

AN ABSTRACT OF THE DISSERTATION OF

Julie Ann Reeder for the degree of Doctor of Philosophy in Public Health
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Insecurity and Hope in Oregon's Mexican Agricultural and Seafood Workers.

Abstract approved:



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Food Insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain (LSRO, 1990). Factors that increase a household's risk for food insecurity include being low income and not being able to access formal and informal supplemental food sources. Migrant agricultural workers, defined by the U.S. Department of Labor as persons who travel greater than 75 miles in search of agricultural work, have household incomes less than \$10,000 and due to clandestine immigration status or constant relocations may have less access to food assistance programs. Therefore, it is likely that this group is at increased risk for food insecurity. The purpose of this study was to 1) gather demographic information, 2) determine sources of social and emotional support and quantify the amount hope for the future expressed by individuals, and 3) determine what percentage of Oregon's Mexican agricultural workers were food insecure. Subjects (n=45) were recruited from 3 places of employment representing the seafood processing (3), tree planting (12), and fruit packing industries (30). Some were migrant and seasonal while others had recently

settled out of the migrant stream. Participants were either given or read a nine-page Spanish language survey. Thirty-two women and 13 men completed the surveys. The average respondent was 30 years old, married (45%) or single (36%) and had a household income of less than \$15,000 with an average household size of 4.4 persons. Ninety-one percent of participants were born in Mexico. Frequently cited sources of internal support included God (75%), family (70%), myself (45%) and the Church (43%). Sixty-five percent reported having family living close by. Less than one quarter reported finding support in the community. Individual scores on the State Hope scale found that most respondents had a fairly hopeful outlook towards their ability to achieve change. As for food security status, 72.7% were classified as food insecure based on USDA food security module scoring standards. Hope Scale scores were not significantly correlated with food security levels. A lower household income, a larger household size, and fewer years of school were significantly associated with being food insecure. Although a small sample size and departures from traditional methodology make these findings applicable only to the sample populations, it may indicate that food insecurity is a major nutritional risk factor for Mexican agricultural and seafood workers. Validation of the Food Security Module in Spanish is necessary to better determine the prevalence of food insecurity in this population.

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**Harvesting Hunger: Measuring Food Insecurity and
Hope in Oregon's Mexican Agricultural and Seafood Workers**

by

Julie A. Reeder

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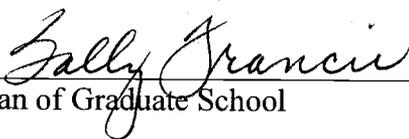
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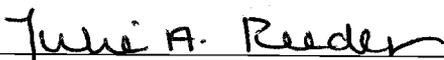


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Harvesting Hunger: Measuring Food Insecurity and Hope in Oregon's Mexican Agricultural and Seafood Workers

Introduction

The relationship between dietary intake and health status has been well established over the past two decades. The Dietary Guidelines for Americans and the Food Guide Pyramid were designed to give people a framework for constructing a healthy diet. Recommended Dietary Allowances have been set and revised to determine optimum levels of nutrient intake. A variety of nutrition education campaigns have been started to encourage Americans to eat less saturated fat and cholesterol, to decrease consumption of simple sugars, and to increase intake of fiber by eating more fruits, vegetables, and whole grains.

Food security, an important indicator of nutritional adequacy, is a dietary variable that has often been overlooked by nutrition educators and the American public. Food security is "having access by all people at all times to enough food for an active, healthy life" (LSRO, 1990). Food security includes, at minimum, the ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways. Food security differs from hunger in that hunger is the uneasy or painful sensation caused by lack of access to food (LSRO, 1990). While hunger is a subjective term and difficult to measure, food security is something that can be defined and evaluated.

Once considered non-existent in the United States, new statistics on hunger and food insecurity demonstrate that some Americans still struggle with accessing a

sufficient quantity of food. A 1999 report on the prevalence of food insecurity and hunger in the United States found 9.7 % of the population was food insecure and 3.5% experienced hunger. Oregon had the highest percentage of hungry persons in the nation (5.8%). It was 7th in the state rankings for households classified as food insecure (USDA, 1999).

A variety of factors influence a household's ability to access sufficient food. Cash income is cited as an important variable, as well as the ability to access supplemental services such as WIC and Food Stamps (Campbell, 1991). Therefore, households who do not have a large cash income and for a variety of reasons cannot access supplemental income and nutrition programs should be at greatest risk for food insecurity. Using these risk criteria, Mexican migrant agricultural workers are one such group of households.

The Hispanic population in the United States grew at a rate faster than any other racial/ethnic group during the 1990's. As of 1999, Hispanics make up 11.7% of the U.S. population. The majority of Hispanics are of Mexican descent (65.2%). Hispanics are more likely to have lower educational attainment, higher unemployment, lack access to health care, and live in poverty than non-Hispanic whites (Bureau of the U.S. Census, 1999). This estimate does not include the many Mexicans who travel across the border each season to work in the fields, packinghouses, nurseries, and processing plants throughout the United States. Oregon is highly dependent on this labor force to harvest potatoes in Klamath Falls, strawberries in the Willamette Valley, pears in Jackson County, cherries in Hood

River County, and to work in food and seafood processing plants throughout the state (State of Oregon Employment Department, 1993).

With the increase in the number of Spanish speaking families, both migrant and non-migrant, within Oregon, the push is on to develop culturally appropriate nutrition education materials. Yet, how can we hope to accomplish this when we have so little factual data about this population? Relying on studies of Tejanos or east coast “Hispanics” simply will not work to meet the needs of Oregon’s largely Central Mexican population. More importantly, we must ask ourselves what type of nutrition education is most relevant for this population. Even if we are able to create the most culturally and linguistically appropriate nutrition education materials ever, how well will campaigns such as “Five a Day,” and “Fight Bac,” “translate” to people whose primary concern is finding their next meal?

Purpose

The purpose of this study is to provide information that will augment anecdotal evidence about the conditions of Mexican agricultural workers.

Although it seems intuitive that migrant workers are likely to suffer from food insecurity, we have no firm data to support this view. Likewise, conclusions made through observation and conversation that the majority of Oregon's agricultural workers are from Central Mexico, are a primarily young population, and have very low incomes, again lacks any specific data to corroborate these statements. This study seeks to provide preliminary data about Oregon's Mexican agricultural and seafood workers and to act as a springboard for future studies of these groups in the U.S.

Research Questions

1. What percentage of Oregon Mexican agricultural and seafood workers in the survey sample are classified as food insecure?
2. What are the challenges of conducting a multi-topic survey with Spanish speaking workers in the field?
3. What are the basic demographics of Oregon's Mexican agricultural and seafood workers in this survey, including age, education levels, marital status, place of origin, and income?
4. Where do Oregon's Mexican agricultural and seafood workers find social and emotional support?
5. What is the relationship in this population of Mexican agricultural and seafood workers between:
 - a. Hope Scale scores and reported feeling toward life
 - b. Reported sources of social support and Hope Scale scores
 - c. Hope Scale scores and food insecurity

Literature Review

Hunger is a subjective term and therefore, hard to measure. Traditionally, the level of hunger in the United States had been estimated from the percentages of households living below or slightly above the federal poverty level. Continued disagreement among politicians, academics, and hunger advocates about how many Americans were truly hungry required the development of a reliable method of measuring "hunger." The 1984 President's Task Force on Food Assistance made the first attempt to better define "hunger" in their report addressing the question of, "How much hunger is there in America?" The challenge was finding a way to measure what was later termed, "first world hunger." First world hunger does not display itself through overt signs of severely malnourished children and adults. Rather, it is something that is often hidden. The task force made a distinction between the medical definition and the common definition of hunger. The common, social definition of hunger was viewed as the most relevant for measuring "first world" hunger. This definition held that "hunger can be said to be present even when there are no clinical symptoms of deprivation, a situation in which someone cannot obtain an adequate amount of food, even if the shortage is not prolonged enough to cause health problems, the experience of being unsatisfied, of not getting enough to eat."

In the early 1990's, as a result of the National Nutrition Monitoring and Related Research Act, the USDA, working with the National Center for Health Statistics, academics, and hunger advocates developed a more objective term for

hunger, and a valid and reliable instrument to measure it. The food insecurity measure that was created has been included in the annual Current Population Survey (CPS) since April 1995.

Defining Food Insecurity

Food security means access by all people at all times to enough food for an active, healthy life. Food security requires at a minimum: 1) the ready availability of nutritionally adequate and safe foods, and 2) an assured ability to acquire foods in socially acceptable ways. Food Insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain (American Institute of Nutrition and Life Sciences Research Office, 1990). Hunger is the uneasy or painful feeling caused by a lack of food, and is a potential although not necessary consequence of food insecurity. The food insecurity survey measures not only income level and perceived hunger, but also the availability of and access to food, certainty of availability and access to food, social and cultural acceptability of food, and nutritional quality.

Current Statistics on Hunger and Food Insecurity

A report on the Prevalence of Food Insecurity and Hunger in each state, from 1996-1998, outlines the latest statistics (Food and Rural Economics Division of the USDA, 1999). During the survey period, 9.7% of U.S. households were food insecure. Included in the 9.7% were 3.5% of households who were

experiencing food insecurity with hunger. The levels of food insecurity varied greatly amongst the states. States making up the western and southern borders of the U.S., in addition to the District of Columbia had the highest rates of food insecurity. New Mexico (15.1%), Mississippi (14%), and Texas (12.9%) had the highest levels of food insecurity. Oregon ranked 7th with 12.6% of the population being food insecure. Midwestern and Northeastern states had the lowest levels. North Dakota (4.6%), Massachusetts (6.3%), and South Dakota (6.4%) had the lowest rates of food insecurity.

Rankings based on the number of individuals experiencing hunger differed somewhat from those for food insecurity. Oregon had the highest percentage of individuals experiencing hunger (5.8%), followed by Texas and New Mexico. North Dakota, Massachusetts, and South Dakota again had the lowest rates of hunger.

The report also examined the relationship between poverty and hunger. Generally, states that had high levels of poverty also had high levels of food insecurity and hunger. Washington and Oregon both had high levels of food insecurity and hunger, yet had poverty rates more than 2 percentage points below the national average.

The use of food stamps was another factor considered. Since food insecurity is associated with poverty, it follows that the greater the number of poor (and therefore food insecure) families, the greater the amount of food stamp usage. This logic holds true for most states. However, both Washington and Oregon,

which have higher than average rates of food insecurity, have food stamp usage rates that were significantly below that of their food insecurity rates. At this time, it is not completely understood what this discrepancy implies. Does this gap indicate a significant amount of the population in the Northwest is being underserved? Or is there another factor that is influencing food stamp usage? How do factors such as housing costs and cost of living differences between rural and urban areas affect hunger? Further directed research is needed to explain the high prevalence of food insecurity and hunger in the seemingly wealthy Northwest.

Factors Influencing Food Insecurity

Cathy Campbell's (1991) article titled, "Food Insecurity: A Nutritional Outcome or a predictor variable," is the first article to explore the myriad of factors that influence a household's level of food security. Rather than attributing hunger to one element, such as poverty level, Campbell finds that a combination of formal and informal food and income sources determine a household's food supply. These are divided into the social context of food access and the experiential dimension of food access.

Parts of the social context of food access are wages from employment in the private sector, as well as payments from social assistance programs, which make up the "formal" sector of sources that contribute to household resources. Informal sources, such as barter or exchange and advice on how to access other means also are determinants of household resources (Campbell, 1991).

A lack of steady or sufficient income requires a family to make difficult decisions about how the limited amount of money should be spent. Many households are overwhelmed with the costs of non-food expenditures. These include the cost of housing, the cost of health care (if they are able to access it at all), taxes (since tax breaks such as Earned Income Credit are not refundable), and a variety of emergencies that inevitably come along in every household. Other factors influencing the amount and distribution of a family's resources include the amount of information a family has about low cost alternatives to housing, bill assistance, and medical care. The health of family members also influences household resources because ill health leads to less income and a greater output to pay for health care (Campbell, 1991).

The combination of factors that contribute to household resources can influence the family's ability to acquire food. Food can be come by through the "normal" purchasing system consisting of grocery stores and restaurants. It can also be attained through the use of government assistance programs such as WIC, The National School Lunch Program, The Summer Food Service Program, programs that feed the elderly, and child centered programs such as Head Start. An alternate to these two methods are private food assistance sources. These include food banks, gifts from family and friends, gleaning, gardening, and hunting (Campbell, 1991).

Wages, government assistance, informal income, non-food expenditures, and food acquisition procedures directly affect the experiential dimension of food

access problems. These factors influence household food supply, which can bring about anxiety related to an unwanted restriction of food. This may cause changes in individual and household food intake that lead to caloric and nutrient inadequacies. Therefore, household food security cannot be determined solely by a family's income level, as had been suggested in the past, but must be determined by the formal and informal network, costs, and procedures that ultimately influence food supply. Campbell concludes that food insecurity should not be studied just as a predictor variable for hunger or its effect on health or quality of life, but as an outcome of its own (Campbell, 1991).

Building on the work of Campbell (1990), Kendall, *et al.* (1996) explored the relationship between food insecurity and hunger with individual food intake and household food availability. The study involved conducting two interviews with 200 white women in upstate New York. During the first interview, a 24-hour recall and a household inventory were taken, as well as the administration of a questionnaire asking about demographics, participation in food programs, fruit and vegetable consumption, food insecurity, and 4 questions about eating disorders from the Stanford Eating Disorders Questionnaire. Three weeks later, a second interview occurred where a 24-hour recall and the household food inventory were administered once again.

Significant differences in individual intakes were found between household classified as food secure and those classified as insecure. There was a significant decline in the consumption of vegetables, fruits, and salads in correspondence with

decreased food security. Conversely, scores on the eating behavior scale increased as the level of food security decreased. With the exception of vitamin A and fat, nutrient consumption was lower (although not significantly) for the food insecure group than those found to be food secure. The food insecure group was also more than twice as likely to be consuming less than half of the RDA for vitamin C. Intakes of potassium and fiber were significantly lower for the food insecure group. Despite these differences, it is important to note that neither group had diets that followed the suggested national dietary guidelines.

A random sample of persons seeking food assistance from non-profit charitable food programs in Toronto examined the dietary content of women household members (Tarasuk and Beaton, 1999). Women who had experienced hunger in the past 30 days reported lower intake of calories and several nutrients. Insufficient intakes of iron, folate, and magnesium intakes were prevalent. The study reinforced the observation that when food is scarce, it is often the woman who deprives herself in order to assure sufficiency for her children.

Another Canadian study determined the strength of several influencing factors on nutrient intake among food bank users (Starkey, *et al.*, 1999). It also sought to determine whether dietary quantity and quality differed at different stages of the month. A 24-hour recall was administered to participants each week for four weeks. Macronutrient intake was adequate and did not change according to week of the month. Micronutrient intake varied by participant characteristics. Larger households were likely to have lower intakes of Vitamin C, folate, and iron. Those

who most frequently used food banks reported lower dietary amounts of protein, folate, calcium, Vitamin C, and zinc. However, these micronutrient inadequacies were not more prevalent among food bank users than among the population as a whole. Since there was no difference in dietary intakes from week to week, it was concluded that dietary inadequacies are constant and not intermittent.

The findings that dietary adequacy did not vary significantly from week to week had been previously confirmed by Emmons (1986). Focusing on Black and White low-income women in Cleveland, nutrient analysis showed that calories from protein, carbohydrate and fat varied by less than 1% between weeks 1 and 4. The percentage of the RDA's obtained also did not vary significantly between the two time periods. Intakes of Vitamin D, Vitamin B-6, Vitamin E, magnesium, iron, calcium and zinc were below recommended levels at both weeks 1 and 4. This suggests that nutrient inadequacies are found throughout the month and are not substantially influenced by time since last pay check or time to next pay check.

Food Insecurity and Cost of Living

Community issues such as cost of living are variables that determine a household's ability to access food. Greenberg (1998) states that hungry families are often those with the highest housing costs. At the same time that some states are seeing an increase in hunger, cuts in federal housing programs, rising rents, and a decrease of low incoming housing have pushed more families into economic jeopardy.

Cost of living varies among states and within the country's rural and urban areas. Nord (2000) tackles the difficult question of "does it cost less to live in rural areas" by examining cost of living by measures of food insecurity and hunger, rather than poverty rates. By categorizing households by metro status, by income-to-poverty-ratios and by calculating mean levels of food insecurity in each category, it became possible to determine the associations between income, geographic location, and food insecurity. The results showed that households with incomes between one half and three quarters of the poverty level had the highest rates of food insecurity. As household income increased, food insecurity decreased. It was also shown that the cost of living in metro areas was higher than that for rural areas. Regression analysis demonstrated that as a national average, the cost of living is about 16% lower in nonmetro than metro areas.

Private versus Public Food Assistance Programs

Traditionally, health and social service programs were delivered by the public sector. In the past two decades there has been a move by legislators to deliver these services not through government programs but through private agencies. Daponte (2000) explored the role of food pantries vs. food stamps in alleviating short-term food shortages among poor households, and the characteristics of persons who prefer each type of service. Factors associated with food stamp usage include being a household below poverty, being African American, having children in the house, having a relatively young head of household, and being a household that spends more than 40% of its income of

housing. Characteristics associated with the use of food banks were households with an older (often elderly) head of household, or a married couple. The subject's level of education did not influence whether food stamps or food pantries were used. Households with vehicles were more likely to use, and max out, food assistance than those without a one. However, the distance a subject must travel to get food from a pantry did not significantly influence food pantry use. The lowest income families often used both public and private food assistance, with food pantries acting as a supplement to their food stamp allotment.

To determine whether food pantries and/or food stamps helped decrease hunger, Daponte collected a household recall of food shortages. The data demonstrated that reports of hunger and food insecurity were greater among households that used either food stamps or food pantries compared to those who used neither. Families with an elderly head of household had a much higher level of food security (80%) compared to those headed by a younger adult (46%).

The heights and weights of the children under the age of 12 in the sample households, as remembered and reported by their mothers, was also collected and analyzed. In an average population group one would expect 2.3% of the population to have anthropometric measures two standard deviations above and 2.3 % to have measures that fall two standard deviations below the mean. In the sample population 32% of children were outliers for height, with 12% demonstrating height deficits. As for weight measures, 4 percent were severely underweight while 21% were considered obese. Despite the high percentage of children with outlying

scores, further analysis of the data demonstrated that neither food stamp nor food pantry usage influenced children's anthropometric measures. In combination, the household food shortage recalls and the anthropometric data lead Daponte to conclude that neither food stamps nor food pantries had any impact on the levels of household food insecurity in the study population.

Physical and Social Effects of Long and Short Term Hunger

Most people are familiar with the sights of "third world hunger." The effects of protein-calorie malnutrition display themselves as kwashiorkor and marasmus. The physiological results of severe nutrient deficiencies are also easily recognized. Goiter caused by a lack of iodine, anemia from a lack of iron or folic acid, pellagra from a lack of niacin, and xerophthalmia from lack of vitamin A are all common issues in international nutrition. However, with the exception of deficiencies of iron and folic acid, severe nutrient deficiencies are not commonly seen in developed countries. Yet, a lack of a reliable food supply negatively affects Americans throughout the lifecycle. In a summary of studies looking at the effects of hunger, Cason (1999) cited the fact that children who experience hunger have two to four times as many health problems as those who are also low income but do not experience hunger. In addition, children who were hungry were 12 times as likely to report feeling dizzy, four times as likely to suffer from fatigue and three times as likely to suffer from irritability. When hunger strikes during adulthood, pregnant women are especially vulnerable. Infant mortality is linked to the quantity and quality of the mother's diet. Poorly nourished mothers are more likely

to have pre-term or low birth weight babies, who in turn are at a higher risk for development delays later in life. Older adults are also affected by a lack of access to adequate amounts of food. A caloric deficit can lead to a decrease in muscle mass that increases the chances for a debilitating injury. The immune system is also negatively impacted by an insufficient diet, increasing one's susceptibility to infection.

Impaired physical functioning is not the only negative effect of food insecurity. An analysis of child hunger as reported on CCHIP and psychosocial problems assessed by standardized measures examined the relationship between hunger and psychosocial functioning in low-income children (Murphy, *et al.*, 1998). Study participants were recruited from four Philadelphia schools that offered a free breakfast program to all the children in the school. Eighty-two percent of the participating children were in grades 3 to 5, and 80% were from African American families. The study found that children who were hungry or at risk for hunger were absent from school significantly more days than those not hungry and a greater amount of attention and behavioral problems were reported by both teachers and parents. The mean score on the Hyperactivity Index was significantly higher for hungry children than for those who had not experienced hunger. The researchers concluded that children who were hungry were at a greater risk for psychosocial problems. Since the study was cross sectional it was not possible to prove causality between hunger and problems such as drug use and

family violence. However, the data suggested that further research into the link between hunger and family dysfunction is warranted.

The Role of Nutrition Education in Food Insecurity and Hunger

If food insecurity is more than a predictor variable, and is a nutritional outcome of its own, then food insecurity should be a key area of concern for nutrition educators. In fact, organizations such as the American Dietetic Association have recently noted the importance of dietitians and other nutrition professionals in taking part in the fight against hunger. Vozenilek (1998) suggests that dietitians can assist in hunger relief efforts by being actively involved in food recovery efforts such as gleaning. The Central Texas dietetic Association assisted a local soup kitchen by creating a cookbook that helped cooks create large-quantity recipes from donated foods that were often in small, household sizes. Martha's Kitchen Cookbook included more than 100 recipes and at the time of the article 256 copies had been sold or given away. Other groups of nutrition professionals have worked to reduce hunger in their community by planting community gardens, assisting local food banks in finding cold storage facilities, and by providing tips on safe food handling and storage.

A small but growing number of nutrition professionals believe that the traditional methods of delivering nutrition education are not appropriate for addressing the issues of hunger and food insecurity. Travers (1997) argues that the traditional nutrition education model focuses on making changing at the individual and household level. The role of the nutrition educator is to translate scientific

research into recommendations and then disseminate these recommendations to the public. She argues that the influence of positivism, which are “philosophies characterized by an extremely positive evaluation of science and the scientific method,” overemphasize the value of “expert” opinion while diminishing the role of community knowledge. Therefore, an unhealthy dependency develops between the experts and the community. Are the traditional pillars of nutrition research, the pursuit of technical knowledge through empirical experimentation and the reshaping of this knowledge for the general public, adequate means for addressing problems that are mainly rooted in social conditions?

Travers argues that nutrition professionals must abandon their reliance on theories based in positivism and move to nutrition education based on critical social science. Critical social science focuses on the role of social context in shaping people’s behavior. She illustrates the strength of critical social science over traditional methods with this striking example:

When nutrition education for an impoverished woman concentrates on teaching her how to budget for food, she may learn to manage her resources effectively, but the social reality of poverty will not have been addressed. As long as nutrition educators place primary emphasis on changing individuals without consideration of their social context, the potential exists for victim blaming. Dogmatic nutrition messages do not assist the disadvantaged in making reasonable choices, and foster a sense of inadequacy and guilt among those who fail to live up to the standard.

Therefore, in order for nutrition educators to truly address the problems of hunger and food insecurity they must embrace the ideas of community empowerment and consciousness raising described in Paulo Freire’s Pedagogy of the Oppressed.

The role of nutrition educators in assuring access to food was examined by the Norwegian researcher Edie (1982). She provided an analysis of the current models offered to explain underdevelopment. The first model assumes that people are hungry due to the recent population explosion. There are simply too many mouths to feed and not enough agricultural output to sustain everyone. This model finds that the mother should be the target of nutrition education, as she is the one creating additional children. Therefore, family planning is the answer to decreased hunger.

A second model suggests that poverty is the true cause of hunger. People do not have access to resources and so they become malnourished. The answer to decreasing hunger within this model is for the wealthy to transfer resources to those without them, until the poor are able to obtain these resources on their own. Again, the emphasis rests on providing the individual with a method of coping until things improve. This model is demonstrated by most foreign aid programs and is used as a justification for the industrialization of developing countries. If only industry could thrive in these nations, the poor would be fed and hunger would be eliminated.

The third model recognizes that a conflict of interest exists between different groups both within and between nations. Historically, those who had the most power and money won the conflict. What is the nutrition educator's role in this model? Would it be to inform the losers that they are being exploited? It is better for the nutrition educator to act as a voice on behalf of the poor on key policy

decisions. Nutrition educators must concern themselves with the effects of various activities related to food access. These include the introduction of new technologies, activities of multinational corporations and development planners, and the influence of advertising on the abandonment of traditional foodways.

If nutrition educators are to reshape their message to match the realities presented in the conflict of interest model, they must change their orientation from simply giving information about the causes of nutritional problems to one that considers the social, political and economic factors influencing hunger. To conclude her article Eide states, "We must expand the number and types of target groups for nutrition education. We must identify the people who make fundamental decisions in the economic and political spheres. Some of these decisions eventually may have a stronger impact on nutritional conditions than any deliberate nutrition interventions."

The State Hope Scale

Over a century ago, Neitzche stated that hope was the worst of all evils for it prolonged the torment of man (reported by Menninger, 1959). Yet, in the later half of this century, both anecdotal and empirical evidence has shown that a positive outlook may influence the length and quality of life. Subsequent attempts to define hope have proved difficult. How does one best define such a broad and subjective term? How does hope differ from optimism? How would an abstract concept like hope best be measured?

The terms hope and optimism are differentiated by the fact that optimism is a cognitive variable, while hope is an emotion with cognitive components (Scioli, *et al.*, 1997). Optimism is a generalized belief in good outcomes. People who are optimistic expect events to turn out in their favor. Optimism is based on reasons, evidence and a belief in one's personal ability. In contrast, as an emotion, hope influences motivation and behavior. Hope is not as easily controlled as optimism and is more easily influenced by external factors including the actions of others. It is based not on "rational" evidence but on memories formed from early trust experiences (Scioli, *et al.*, 1997).

The methods for measuring hope have been further refined by considering hope as an overall perception of how well one's goals can be met (Snyder, *et al.*, 1991). Hope can be divided into two interrelated components. The first component is pathways, which is the person's perceived ability to generate routes to their goals. The second is agency, which is the individual's perceived ability to start and maintain the actions necessary to achieve a goal. The State Hope Scale consists of twelve questions, with 4 measuring agency, four measuring pathways, and 4 distracters. The inclusion of "state" in the title indicates that the use of this instrument merely provides a snap shot of the person's current feelings. It is not valid for determining feeling of hope over an extended period of time.

"Defining" the Study Population

Hispanics are a broad and diverse population. Even deciding on a name for this group has proven to be a divisive and political issue. The term "Hispanic"

comes from España, home of the conquistadors who through successive conquests eventually ruled the majority of the Caribbean and Latin America. These conquistadors intermarried with the Amerindians that were present before conquest as well as with African slaves who were brought into the area during the 15th century (Novas, 1994). This very racially and ancestrally diverse group, comprised of 21 separate republics is lumped together as “Hispanic” in the United States. People living in the countries of Latin American do not refer to themselves as “Hispanic,” but rather as Mejicanos, Puertorriqueños, Cubanos, Dominicanos, etc. Some Hispanics in the United States embrace the term “Hispanic” because they feel it is a term of unification. Others reject it saying that it is a word tied to colonialism, and they prefer the word “Latino.” This refers to a more ancient empire, the one that conquered Spain, long before conquistadors came to “the new world.”

A third term used to categorize a part of the “Hispanic” population is “Chicano.” The term is an abbreviated form of “Mexicanos.” Anglos and Mexican-Americans used it as a derogatory term to describe newly arrived, unskilled Mexican laborers. The term was considered objectionable until the labor revolts of the 1960, when some Mexican-Americans decided to embrace the term as a symbol of their solidarity with *la raza* (Novas, 1994).

In the context of this research project, the target population will be referred to as “Mexican” migrant workers because the vast majority of survey respondents were from Mexico or were Mexican in origin. Incidentally, the name of the

country derives itself from the word "Mexica," a Nahuatl word that the Aztecs used to refer to themselves. Therefore, the country of Mexico is really named after the Aztecs (Novas, 1994).

Demographics of the Hispanic Population in the United States

According to March 1999 data from the U.S. Census Bureau, Hispanics make up 11.7% of the total U.S. population. Of the total number of persons classified as Hispanic, 65.2 % are of Mexican origin, 9.6% Puerto Rican, 4.3% Cuban, 14.3 % Central or South American, and 6.6% other. The Hispanic population is increasing at a rate faster than the U.S. population as a whole. From 1990 to 1994, the Hispanic population increased 28% (U.S. Census, 1995). It is predicted that if population trends remain unchanged, that by 2050, one in four Americans will be of Hispanic descent. One explanation for the rapid growth of this population is a high level of immigration, with 2 million Hispanic immigrants having entered the U.S. between 1990 and 1994. Another factor leading to a faster growth rate is the fact that the Hispanic population is younger than the population as a whole. Over one-third (39%) of Hispanics were born outside the United States. The median age of the Hispanic population is 26, which is ten years younger than for non-Hispanic whites. Among Hispanics, Mexicans were the youngest with a median age of 24, while Cubans had a median age of 43 (Bureau of the Census, 1995).

As for educational attainment, 56.1% of Hispanics had a high school diploma compared to 87.7% of the Non-Hispanic white population. Those of

Mexican descent were least likely to have finished high school (49.7%) and to have received a Bachelors degree (7.1%). Cubans were the most likely to have a high school diploma (70.3 %) and to have graduated from college (24.8%).

Hispanic men are engaged in the labor force at a higher rate than non-Hispanic white men. Hispanic women participate in the labor force at a lower rate than their Non-Hispanic white counterparts. Median family income for Hispanic families in 1993 was \$23,670, substantially less than the \$41,100 for non-Hispanic white families. Unemployment rates are also higher among Hispanics than among the population as a whole (Bureau of the Census, 1995).

Poverty is three times as common among Hispanics as among non-Hispanic whites. Of all Latino people in poverty, about one-half were children under 18. Based on 1998 figures, 34.4% of Hispanic children were living in poverty compared to 10.6% of non-Hispanic white children. Consequently, Hispanic families were more than three times as likely to be living in poverty than the general U.S. population (Bureau of the Census, 1999). In addition, Hispanics are least likely to have insurance coverage when compared to all other racial and ethnic groups. Between 1990 and 1992, 10% of Hispanics were not covered by health insurance as opposed to 3% of non-Hispanic whites (U.S. Bureau of the Census, 1995).

History of Mexican Migrant Agricultural Workers in the United States

The United States has relied on the import of agricultural workers since before it became an independent nation. Slaves were brought in to work the land

during the country's earliest days. Traditionally, migrant farm workers were a mix of racial and ethnic groups, including poor whites, African Americans, Hispanics, and other immigrants. Today, however, 55% of all migrant agricultural workers were born in Mexico (National Agricultural Workers Survey, 1997).

Mexicans have been present in the United States since before its formation. The Spanish speaking population in New Mexico dates back to the beginning of the 17th century. These people automatically became citizens when Mexico ceded the area to the United States in 1848. Before the 1880's, few Mexicans moved across the Rio Grande. The construction of an extensive Mexican railroad system allowed potential immigrants to overcome the once forbidding obstacle of the Sonoran Desert. Most of the first Mexican migrant workers were recruited to work on construction and maintenance of the American railroads. The Mexican Revolution displaced more of the population. A sharp increase in the cost of living and a repressive Hacienda System of government encouraged other to try their luck in the United States (Hoffman, 1974).

Another important pull was an unparalleled expansion of the agricultural industry in the southwestern portion of the United States. This agricultural work was seasonal in nature, so American farmers looked to a place that could supply them with a large seasonal labor source. This source was Mexico. During World War I, cuts in the number of Asian and European immigrants, as well as the move of African Americans from agricultural work to industrial jobs caused agricultural labor to become more reliant on Mexican workers. After WWI, several prominent

citizens involved with the Los Angeles Chamber of Commerce's agricultural department lobbied Congress for unrestricted immigration of Mexican laborers well into the 1920's. The promotion of Mexican laborers continued until the onset of the Great Depression when these same workers were the first ones to lose their jobs. The United States government began a "repatriation program" from 1929-1939, inviting U.S. migrant workers to return to Mexico, as new irrigation projects in many of the Mexican states promised a revitalization of agriculture (Hoffman, 1974). Essentially this was a program of mass deportation. Migrant workers as well as second generation Mexican-Americans were rounded up and sent "home." The Mexican government established resettlement camps in Chiapas, Guerrero, Michoacán, and Oaxaca for the newly deported (Novas, 1994). With the onset of WWII, however, the forced return to their "homeland" was abruptly reversed.

The Bracero Program began in August of 1942, as a direct result of American male workers having gone off to WWII. The U.S. needed industrial and farm laborers so 250,000 braceros were hired to do seasonal work in response to harvest times. Most worked on a one-year contract and returned when the contract ended. Others stayed until the next year, or continued to return to the same areas year after year. After WWII ended the U.S. government wanted to terminate the program, but farm owners lobbied to keep the program going. The second phase of the Bracero Program ran from 1945 to 1964. Complaints about worker exploitation from groups such as the National Council of Churches and the AFL-CIO, along with the increasing mechanization of harvesting led to the end of the program

(Novas, 1994). The death of the Bracero Program did not end U.S. agriculture's dependence on migrant farm workers.

History of Migrant Workers in Oregon

In Oregon, Mexican workers first arrived in the early 1900's (Gamboa and Buan, 1995). Some were displaced during the Mexican Revolution. Others were originally from the southwest and moved to Oregon to work in the Nyssa area during WWI. Even during the great depression migrants were recruited for agricultural work in Oregon. During WWII, under the Bracero Program, 15,136 Mexican men were recruited to Oregon. After the war they stayed on in jobs that had been taken by Anglos before, who no longer wanted them after returning to a more prosperous economy. They moved from being field laborers to being tractor and truck drivers and workers in warehouses and food processing. During the 1940-50's the Golden Gate Hop Ranch south of Independence housed more than 1500 adult migrant workers. During the 1960's the Oregon Council of Churches tried to enforce some minimum health regulations for migrant camps, with little success. It is in this decade that Oregon State University Extension Service began a Spanish language newsletter for homemakers. In 1969, Governor Tom McCall established Oregon's Advisory Committee on Chicano Affairs (Gamboa and Buan, 1995). Current Oregon population estimates find Hispanics are 5.5% of the population.

Classifications and demographics of Migrant Farm Workers

From the viewpoint of the Mexican government, there are several types of migrant workers. The first group is made of temporary workers. They may be documented or undocumented, but their primary residence is in Mexico. The second group is made of permanent residents. They also may be undocumented or documented, but their main residence is in the United States. The third group is made of those that have become U.S. citizens through naturalization. According to the Mexican Secretary of Foreign Affairs (1997), most migrants from Mexico are men (73-94%). Most are married (56-85%) and have an average age range from 28-32. They have completed 6 years of schooling and earn from \$185-\$240 per week while working in the U.S., of which they send approximately 30% home to Mexico.

There are a number of factors that help predict who will choose to come to the United States as a migrant worker and who will choose to stay in Mexico. Several strong predictors of migration to the U.S. include being male, being between the ages of 15 and 44, and coming from a town with less than 100,000 inhabitants. Family structure also influences migration decisions, as those who come from extended family households, come from a household with children under 12, or who have family members living in the United States are more likely to migrate to find work. Those who have made the trip before are more likely to do so again. Persons with legal documents to enter the U.S. are also more likely to

seek migrant work. Finally, persons who do not own a home, land, or a business in Mexico are most likely to seek work in the United States (Zenteno and Massey, 1999).

The National Agriculture Workers Survey (NAWS), directed under the United States Department of Labor defines a migrant as someone who travels more than 75 miles in search of farm work (NAWS, 1993). The Migrant Health Program definition of migrant and seasonal farmworkers is “one who establishes for the purpose of seasonal agricultural employment, a temporary abode.” Excluded from the migrant worker definition are those who work in seafood processing. Thus, with different opinions on who classifies as a migrant and/or seasonal worker, it is hard to find solid statistics on the group. For example, April 2000 data from the National Agricultural Statistics Service (NASS) finds that only 8.8% of agricultural workers were migrants. However, much debate about this statistic has occurred. A flaw in the sample is that the data was collected during the week of April 9-15, hardly a peak time for migrant seasonal labor. Additionally, the estimate excludes workers hired by labor contractors. Therefore, the NASS statistics are not representative of how many migrant agricultural workers are employed in the United States during the year.

A 1997 report from the U.S. Department of Labor found that the U.S. agricultural labor force is relying more and more on Latin American immigrants, particularly Mexican men. Almost 7 out of 10 farm workers were foreign-born, with 94% of these workers being born in Mexico. Most are married and have

children, but live and work away from their spouses and children. Fifty-six percent of farm workers lived in households made up of unrelated individuals.

Seventy five percent of farmworkers were paid by the hour, 21% paid by the piece, and 4% paid by a combination of the two. On average, farm workers found 29 weeks of farm work, and had 1.7 employers per year. About 14% of the populations followed the crops to extend their earnings (NAWS, 1993). Average household incomes for migrant workers were between \$7500 and \$10,000. This group had few assets with half owning a car and one-third buying a home or trailer. Over 60% of farmworkers lived below the poverty threshold, with undocumented workers (80%) being the most likely to live in poverty (NAWS, 1997).

Health and Nutritional Status of the Migrant Population

The majority of studies that have been conducted to assess the health of the "Hispanic" population have used long term, non-migrants as participants. Few focus on migrant workers, and even fewer on persons who follow the crops. The Hispanic Health and Nutrition Examination Survey (HHANES), conducted from 1982-1984, was the first collection of knowledge on Hispanic health in the United States. It did not generally capture the migrant and seasonal population. Fanelli-Kuczmarksi and Woteki summarized the relevant finding from HHANES for nutrition monitoring. Differences were found among Mexican Americans, Cubans, and Puerto Ricans. The prevalence of common nutrition related issues like high cholesterol, inadequate iron intake, and overweight were similar to the general

population. However, children ages 2-5 of belonging to all three Hispanic groups had a higher rate of low height for age than the reference population.

Block, *et al.*, (1995), used data collected from the HHANES to determine the primary foodstuffs contributing to energy, vitamin and mineral intakes in the diets of low income Hispanic American women. A comparison of this data to that previously collected for black and white Americans by the National Health and Nutrition Examination Survey (NHANES) demonstrated that dietary intakes were similar between the survey groups. Beans, rice, tortillas, and salsa were the only items that were consumed more often by Hispanics than non-Hispanics. Cold cereals and enriched bread products were important sources of iron for women and children. Beans were the third highest contributor of dietary iron. Calcium was primarily consumed in full fat or reduced fat dairy products. Vitamin C was obtained from orange juice, other fruit drinks, and fresh oranges. Primary contributors to dietary fat were hamburgers, whole milk, beef products, and cheeses.

The issue of dietary acculturation was explored by Romero-Gwynn, *et al.* (1993). Before coming to the United States, the typical diets of the Mexican American women were based in foods rich in complex carbohydrates and vegetable proteins. After moving to the U.S., foods such as white sliced bread, mayonnaise, salads, cookies, ice cream, oil, soft drinks, and ham became much more common staples. While some dietary substitutions are healthful, such as the change from lard to vegetable oil, others such as the switch from aguas frescas (juice drinks) to

Tang[®] and Kool Aid[®] are not. Increased consumption of mayonnaise, salad dressing, American sour cream and margarine have increased the amount of fat consumed, despite elimination of lard use.

The change in diet between first generation and second generation Mexican Americans has been found to be substantial (Guendelman and Abrams, 1995). Mexican born women had higher intakes of calcium, folic acid, protein, and Vitamins A and C, than white women or second generation Mexican Americans. These women had superior intakes in spite of having the lowest socioeconomic status. Second generation Mexican American women had the highest risk among the three groups for dietary inadequacy.

The use of the Fat Avoidance Scale with Mexican-American and Anglo parents of preschoolers found that Mexican-American families had a lower mean score for fat and cholesterol avoidance than Anglo parents (Frank, *et al.*, 1991). A higher consumption of whole milk and eggs, and a small percentage of Mexican-Americans who used lard for cooking contributed to the difference. However, both Anglo and Mexican-American families primarily used vegetable oil as a cooking fat, and both were just as likely to remove fatty chicken skin and to purchase extra lean hamburger. These findings were further substantiated by a study conducted to determine differences in foods consumed and amounts consumed among Latino children with low and high saturated fat intakes (Basch, *et al.*, 1992). The determining factor between children classified as having high saturated fat intakes and those classified as low, was the consumption of whole milk. Also, children

who drank whole milk also drank more of it than children who drank reduced fat milk. If lower fat milk had been substituted for whole milk, all children would have come within the recommended levels for saturated fat intake.

A study of the relationship of dietary adequacy and nutrition-related conditions was conducted with migrant workers in Michigan (Kowalski, *et al.*, 1999). The data collected demonstrated that the mean energy intake was 1,398 calories for women and 1,894 calories for men. Five of the women were found to be consuming less than 825 calories per day. Almost 25% of the women in the sample were anemic, and more than 50% had inadequate intakes of calcium. Vitamin C intake was low for both genders, even after including traditional foods high in Vitamin C such as chili peppers and salsa. Despite a modest caloric intake, more than 50% of the sample was declared obese. Thirty-three percent had diabetes and 22% had hypertension.

DiSogra, *et al.*, (1994) examined dietary behaviors of White and Mexican American adults in Fresno County California, through the Food Behavior Checklist. Only one-half of respondents, regardless of race reported drinking reduced fat dairy products, eating salads, eating 2 or more fruits, or having a vegetable with lunch or dinner. Mexican Americans reported higher consumption of fried foods and a lower consumption of low fat dairy products, salad and vegetables a dinner. Therefore, even in a county with an abundance of fresh fruits and vegetables, intakes were less than desirable for Whites and Mexican Americans.

The health of migrant workers and their children has been nicely summarized in several articles. Migrant children suffer from a variety of illnesses. Intestinal parasites, chronic diarrhea, severe asthma, and chemical poisoning are common ailments (DHHS, 1997). Poor dental health and a number of nutritional deficiencies are also common among migrant farmworker children (Morrison, *et al.*, 1995). As for their parents, common complaints are dysentery, tuberculosis, dental problems and shigellosis. A study of male migrant workers receiving services from Del Norte Clinics, Inc. in Northern California found that most participants could more easily describe their illness in terms of symptoms rather than as a diagnosis (Perez, *et al.*, 1998). The most common complaints were blurred vision (38%), headache (22.7%), low back pain (20.5%), ear infection (20.5%), chest pain (18.2%), and dental disease (18.2%). Acute conjunctivitis, a potential cause of the reported eye trouble, is the 11th most common diagnosis made by migrant health clinics. Poor sanitation conditions and lax enforcement of OSHA guidelines increase the risk for this infection as well as ear infections. As for mental health needs, 13.6% reported they had felt a "strong anger," and 4.5% reported having had "low spirits."

Pregnant migrant women may also be at increased risk for certain conditions. A study comparing rates of neural tube defects between women of Mexican descent and White women found that the risk of neural tube defects was twice as high among the women who were born in Mexico. Several maternal factors were suggested to explain the higher risk. Intake of folic acid was

considered, but women who had taken prenatal vitamins actually showed an increased risk for neural tube defects. Also, several dietary studies have concluded that Latinas who were born in Mexico actually have better dietary intakes than second generation Latinas. Other measures of birth outcomes, including the incidence of low birth weight babies is lowest among recently arrived Latinas. If diet is not the deciding factor than what is? Socioeconomic status, poor housing conditions, and exposure to pesticides were all suggested as possible factors that needed further investigation.

Mental health issues of migrant farm workers are often overwhelmed by the need to provide even basic health services. An assessment of the prevalence of psychiatric disorders in 8 to 11 year old children of migrant farm workers in North Carolina found that 66% percent of the sample population met the criteria for one or more psychiatric disorder (Kupersmidt and Martin, 1996). However, this rate was not significantly higher than rates previously found among other low-income children who were not migrants.

A survey of key informants regarding the mental health needs of Mexican-American agricultural workers in southern California identified a variety of issues. Mental health professionals familiar with the population identified family problems such as child abuse and neglect, and alcoholism as the most common problems experienced by rural farmworkers (Vega, *et al.*, 1985). These professionals felt that a combination of conflicts between generations and harsh living conditions were the underlying factors for these problems. The existing mental health staff

emphasized the importance of obtaining more bilingual and bicultural staff.

However, the general sentiments were that migrant workers' mental health needs were not being served. One respondent stated, "It seems that when people are really poor and they have lousy living conditions and are struggling to survive and have no power, we don't do much for them. They have needs that are so basic to survival that mental health is almost a luxury" (Vega, *et al.*, 1985).

Methods

Development of the Survey

The nine-page survey utilized in the study was created through the compilation of several pre-existing surveys. The Food Insecurity Module was created and validated under the guidance of the USDA Economic and Research Service. The State Hope Scale used in this survey was a revision of other previous versions, revised and validated by Snyder, *et al.*, (1991). The demographics questions of the survey were modeled closely after the demographic information section of the latest National Health and Nutrition Examination Survey.

The entire survey was translated by a Mexico City native who had been living in the United States for 3 years. She was employed as a translator with the local Head Start program. After the initial translation, the Spanish form of the survey was presented to several persons who were “native” Spanish speakers but who were equally or even more competent in English. They determined there were a few mistakes in the interpretation of some English colloquialisms. The survey was revised. The quality of the Hope Scale received extra attention since it contained many English “sayings.” Five native, Spanish speaking adults, who were also competent in English, were recruited to critique the translation of the Hope Scale. They were provided with both the original English and the newly translated Spanish versions of the scale. Their evaluations did not find any inaccuracies in the translation. The surveys also went through limited pilot testing by conducting one

to one interviews with 3 monolingual Spanish speaking mothers, who had not completed high school, recruited from a local Head Start. The researcher met with each woman at her home and read the survey aloud. After the survey, each woman was asked whether there was anything in the survey that she thought others wouldn't understand or might find offensive. None of the women indicated that any of the survey items were confusing nor did they find anything that was potentially offensive.

Development of the Current Food Insecurity Survey

In 1992, the Food and Nutrition Service of the USDA joined with the National Center for Health Statistics to “recommend a standardized mechanism and instrument(s) for defining and obtaining data on the prevalence of food insecurity or food insufficiency.” A review of existing measures found that two outstanding examples had been developed in the past decade. The Community Child Hunger Identification Project (CCHIP), sponsored by the advocacy organization, Food and Research Action Center (FRAC) had created and validated an instrument for measuring hunger and risk of hunger among children of low-income families. The Cornell University Division of Nutrition had developed several food insecurity scales to be used at both the individual and household levels. In addition, the report of the Life Sciences Research Office (LSRO) in 1990 gave firm definitions to what constituted hunger. The interagency committee synthesized and built upon these existing works and in January of 1994 convened a 2-day working Conference on Food Security Measurement and Research. At this conference decisions were made

regarding the specific questionnaire items, and a draft was developed that was critiqued by various participants throughout the year. A final version was presented to the U.S. Bureau of the Census for pilot testing and further revisions. After revision, it was included as a supplement to the April 1995 CPS. The CPS was chosen as the method for collecting food insecurity data because it reached a large sample size at a moderate cost, had an excellent sample design, and good data collection and quality control procedures. Food insecurity has been measured in the September 1996, April 1997, and August 1998 surveys.

Developing the Statistical Model for the Food Insecurity Measure

Associates in September of 1995 to analyze the CPS food insecurity data. Both linear and non-linear factor analysis techniques were employed to examine the collected data (Carlson, et al., 1999). Factor analysis is used to describe the relationship among variables, derive a smaller number of variables from a larger set, or to determine how much variance in the data set is determined by each factor (Tabachnick and Fidell, 1996). The results of the non-linear modeling found that most of the food insecurity indicators that had been proposed fit a unidimensional measurement scale. One general indicator that did not fit was coping strategies used by the food insecure to obtain food. These include methods such as borrowing money or using a food bank. After narrowing the key indicators to a fit along a scale of a single dimension, item-response statistical modeling (Rasch model) was employed. The model was fitted independently with three household types; households with children, household with elderly but no children, and

household with neither an elderly person nor children. The analysis found that a single Rasch scale was robust across all three household types (Abt and Associates, 1997).

Analysis of the food insecurity scale indicated that food insecurity and hunger can be viewed as a unidimensional phenomenon, with qualitatively distinct behaviors and conditions characterizing different levels of severity (Abt and Associates, 1997). The severity ranking of the questions in the scale supports the concept of food insecurity and hunger as a managed process of efforts to cope with food insufficiency. The relationship between the scale and other constructs were as expected. Food insecurity decreases as incomes increases and the amount of expenditures on food decreases.

There are some conceptual limitations to the food security scale (Abt and Associates, 1997). The LSRO definition of food security includes being able to access food through socially acceptable means and includes the dimension of food safety and dietary quality. These aspects of food security are not included in the scale because they did not meet statistical criteria for inclusion.

Cognitive Testing of the Food Insecurity Model

Statistical testing alone does not ensure the quality of a survey. Although statistical analysis may find the instrument to be valid and reliable, the quality of the survey is limited by the respondents' understanding of the questions. Cognitive testing is a tool to determine the quality of survey items. Semi-structured, retrospective interviews were used to determine the cognitive strength of the food

insecurity survey (Alaimo, et al., 1999). The study sought to find whether respondents understood the survey items and wording as intended by the developers, and if the respondents were able to answer the item in a manner that reflected their experience with food insecurity. Fifteen women and one man were recruited from food pantries and a WIC clinic in urban and rural areas of upstate New York. The sample consisted solely of Whites and African Americans. Testing found that most of the respondents interpreted the specific terms used in the questionnaire as the developers had intended. The term hunger was identified as a “severe problem of decreased food quantity,” while not eating enough was interpreted as a less severe problem of quantity. However, a few respondents interpreted “not eating enough” as an indicator of primarily quality and not quantity. It was concluded that the items composing the food security module were generally understood with the White and African American upstate New York participants. However, further testing of the measure with different populations was suggested.

The face validity of the food security module was explored through the use of focus groups of Caucasian, Filipino, Hawaiian, and Somoan residents of Hawaii (Derrickson, and Anderson, 1999). These respondents interpreted the word “hungry” as meaning a loss of pride and an increase in stress by not knowing where the next meal was coming from. When discussing specific items from the food security survey, many participants responded to “what does a balanced diet mean”, with examples of meals that contained meat and starch but no fruits or vegetables.

Another survey item discussed was the statement, “adult has lost weight but didn’t want to.” Many laughed and said “they wished.” The focus groups also found that use of food banks was not a common coping strategy of food insecure participants, but food sharing was quite common. Analysis of comments from focus groups determined that the basic food security module was valid with an Asian/Pacific Islander population with the exception of the adult weight loss question. It was also suggested that questions regarding coping strategies be revised to include food sharing practices.

Recruitment of Survey Participants

Potential study participants were recruited through their place of employment. The three Western Oregon employers who cooperated in this study were Naumes, Inc. in Medford, Holliday Tree Farms in Corvallis, and Depoe Bay Fish Company in Newport. Initial contact with the Presidents of these companies was made by the researcher by telephone to determine their willingness to participate in the survey. They were then asked a series of questions to determine whether or not their employee base contained enough seasonal workers or recently settled migrants to qualify under the parameters of the desired survey population. All three employers were assured that no immigration status or work condition questions were included in the survey. The company heads were faxed a copy of the survey for their review. None objected to the contents nor asked for any changes in the survey.

Procedures

The first collection of data occurred in October, at the end of the pear harvest, at Naumes, Inc. in Medford. The company sent out fliers in English and Spanish the week before the proposed visit announcing that a researcher would be there next Monday and that they were looking for people who wanted to participate in a survey about hunger. The Friday before the data collection was to begin, The Immigration and Naturalization Service came through and deported many of the people who had agreed to participate and scared many others from returning to work. Needless to say, things were in chaos that Monday, as the company was short 100 workers. However, Sue Naumes, the company co-President, took me over to the packinghouse and introduced me to the floor supervisor and told her to give me whatever I needed to complete the surveys. I started the day sitting on a stack of pear boxes where a few ladies were taking a break. They were very skeptical about who I was after the events of the prior week. I wore a big name tag stating who I was and that I was from Oregon State University. I talked with the ladies about how I had heard "la migra" had been through on Friday and assured them that I definitely was not associated with that. I explained that I was doing a survey to complete my Ph.D. and that it was on hunger. Two of the youngest women that I was talking to agreed to participate. After they had finished, they went to other ladies who worked close to them on the packinghouse floor, and asked if they wanted to do the survey too. They assured the others that the questions weren't too hard and that I was OK to talk to. At lunch, I went to the

“break room” that is above the packing room floor. The floor supervisor got everyone’s attention (she did not speak Spanish) and I stood up and introduced myself and explained who I was, what my survey was about, that their answers were completely confidential and that their participation was voluntary. I also explained how data from this survey could help programs like Clinica Del Valle (the local migrant clinic) write grants to expand nutrition services (all of this in Spanish). After lunch, more people wanted to participate in the survey, and the floor supervisor allowed all who wanted to do it to come away from the sorting table without losing pay. I obtained 15 surveys the first day. I returned the second day, and stood by the two sorting tables. Fourteen more ladies came off the sorting tables, one at a time, to complete the surveys.

At the Naumes site, the women (and 1 man) were read and shown a written copy of the informed consent statement in Spanish. It was then again explained that their answers would not be shared with their employer and that their participation was completely voluntary. Most women were read the survey by the investigator. About half of the participants who read well chose to take the survey and complete it on their own. The average time to complete the nine-page survey varied based on the respondents educational level, with the most educated taking only 10-15 minutes, while those with little education (even with the investigator reading the survey) took 45 minutes.

At Holliday Tree Farms, the investigator was not allowed by the company President to go to the individual work sites of the survey respondents. The reason

for this was that the worksites were scattered around Benton, Linn, Lane, and Lincoln counties and were in some pretty muddy environments. The data was collected in February, which is not the peak of the tree planting season, but was at a time where the company owner felt he had enough migrant and seasonal employees to meet the target population requirements. A written letter on OSU letterhead stationary was prepared, in Spanish, which explained who I was and what the survey was about. It emphasized that their participation was voluntary, that their answers would remain confidential, and who to contact if they had any questions about the survey. The questionnaires, which were distributed by the crew supervisor to the men at the work sites, were collected and returned to the office for pick-up. In total, 12 men completed the surveys.

The final data collection was conducted at Depoe Bay Fish Company in Newport in March. Although the company owner stated that he employed many migrant and seasonal workers, most had not been called in to work, because only crabs had been brought in on the day the investigator came to survey. After waiting in the company break room for the workers to go on lunch, only six possible survey participants were identified. They were approached while eating their lunch and asked if they would like to participate in the survey. If they agreed, they were given a copy of the survey with the informed consent letter on top. They were also told orally the reason for the study, that their answers would be kept confidential, that their participation was voluntary, and who to contact if they had

questions about the survey. Of the six potential respondents, three (one man and two women) agreed to participate.

Summary and Analysis of the Data

A total of 45 surveys from three different work sites were collected. The Hope Scale and Food Insecurity module were scored by hand according to methods determined for each scale. The scoring guide developed by the USDA and Abt and Associates was used to determine a household's food security classification (Appendix B). A household with or without children, who had 3 positive answers on the Food Insecurity Module was deemed as food insecure without hunger. A household without children who gave 6 positive answers was considered food insecure with moderate hunger. This same categorization was achieved for households with children when 8 affirmative answers were given. A household was classified as food insecure with severe hunger if they gave 9 positive answers (without children) or 13 positive answers (with children). Scores on the State Hope Scale were determined by assigning one point for answer of false, two points for mostly false, three points for mostly true, and four points for true. Only the statements measuring pathways and agency were scored. The possible range of Hope Scale scores was from 8 to 32. The actual range of scores reported by survey participants mirrored the possible range.

Demographic information, sources of support, and scores from the Food Insecurity Module and Hope Scale were entered into SPSS[®] 7.5 for Windows[®] (SPSS Inc., 1997). Summary statistics were calculated and frequencies were

determined. Since much of the data were not normally distributed, statistical analysis of correlations between factors were determined by use of Spearman's Rho.

Results and Answers to Research Questions

Demographic Characteristics

Thirty females and fourteen males participated in the survey. All but one respondent reported speaking exclusively Spanish at work and at home. The average age of the respondents was 30.7 years old (range of 18-53). The mean number of years of school attended was seven (range of 1 to 14). Slightly less than half were married. Single persons were the next largest group, with living together and being separated as the 3rd and 4th most common category choices. The average respondent lived in a household with four other persons. More than half of the participants reported having a total household income of less than \$10,000 per year. Seventy-nine percent reported less than \$20,000 per year in total household earnings. The primary method for obtaining housing was by renting either a house or an apartment. Twenty-three percent reported living in a house that they owned (this might include some trailers). Two persons reported living in a migrant camp and one person reported living in a tent. Almost all respondents indicated that they lived in a place with running water, sewer service, and adequate cooking and food storage facilities (Table 1). The single largest group of workers came from the state of Michoacan, with those indicating Mexico as the second largest. However, this group includes persons who are from Mexico the state, and those who may have just written Mexico to indicate the country. Many other states were represented including Guerrero, Zacatecas, Jalisco, Durango, Baja California Sur,

Sonora, Oaxaca, and Veracruz (Appendix C). Two persons indicated they were from California. One person was from Guatemala.

Table 1. Demographic Characteristics of Survey Respondents

Characteristic	Category	Frequency	Percent
Gender	Female	30	68.2
	Male	14	31.8
Marital Status	Married	20	45.5
	Single	16	36.4
	Living Together	3	6.8
	Separated	4	9.1
	Divorced	1	2.3
Age Categories	<20 yrs	6	13.9
	21-30 yrs	14	32.5
	31-40 yrs	18	41.8
	41-50 yrs	4	9.3
	51-60 yrs	1	2.3
Household Size	1-2 persons	3	8.1
	3-4 persons	17	46.0
	5-6 persons	14	37.8
	7-8 persons	2	5.4
	9 persons	1	2.7
Years of Schooling	<4 years	7	15.9
	6 years	17	38.6
	7-8 years	7	16.0
	9-10 years	5	11.3
	11-12 years	6	13.7
	13-14 years	2	4.5
Household Income	< \$5000	10	22.7
	\$5000-10,000	7	15.9
	7500-10,000	5	11.4
	10,000-12,500	4	9.1
	12,500-15,000	2	4.5
	15,000-17,5000	4	9.1
	17,500-20,000	1	2.3
	20,000-25,000	2	4.6
	25,000-30,000	1	2.3
	no answer	5	11.4
	no income last year	1	2.3
Housing Situation	Own House	10	22.7
	Renting House	16	36.4
	Renting Apartment	13	29.5
	Migrant Camp	2	4.5
	Trailer	2	4.5
	Tent	1	2.3

Place of Birth	Michoacan	13	29.5
	Mexico	10	22.7
	Guerrero	5	11.4
	Zacatecas	5	11.4
	Jalisco	2	4.5
	Durango	2	4.5
	Baja Sur	1	2.3
	Sonora	1	2.3
	Oaxaca	1	2.3
	Veracruz	1	2.3
	California	2	4.5
	Guatemala	1	2.3

Reported Sources of Support and Life Feelings

The most frequently reported source of inner strength was God (75%). Family (70%), in myself (45%), and the Church (43%) were the next most frequent answers. Friends and the community were cited least frequently as sources of inner support (41% and 23%, respectively). When asked to indicate which activities they participated in that might link them to informal support networks, the most frequently marked activity was going to church. Most who indicated this option attended 3 to 4 times per month. The majority of respondents (65%) reported having family living close by. Very few (11%) reported participating in community activities.

When asked to choose from a variety of responses that indicated how they felt about their lives as a whole, the majority indicated they felt positive. Sixty-four percent indicated feeling enchanted, happy or principally satisfied about their life so far. About a third felt equally satisfied and dissatisfied with their lives, and only two persons reported feeling primarily dissatisfied.

A question was included to determine whether respondents believed their life would improve in the next three months. Although about one-third did not answer this question, those that did most often chose “maybe.” About 20% responded “no.” One note that must be made about these responses is that the time a year when the majority of respondents were surveyed was at the end of the work season. Therefore, many would be facing unemployment for the next several months.

When asked about their use of services that provide access to food and nutritional support, most (59%) indicated receiving none of those listed. WIC was the most commonly used program. No one reported receiving food stamps alone, with the two persons who reported getting them also using WIC services. Only two reported accessing free food sources such as food pantries and soup kitchens or receiving food boxes. Those who had gotten food boxes reported they were given to them at Christmas time (Table 2).

Table 2. Reported Use of Nutrition Services of Survey Respondents

Service	Frequency	Percent
WIC Only	12	27.3
Food Box Only	1	2.3
Food Stamps Only	0	0.0
Food Pantry Only	1	2.3
WIC & Food Pantry	1	2.3
WIC & Food Stamps	2	4.5
WIC & Food Box	1	2.3
None of these Services	26	59.1

Food Insecurity and State Hope Scale Scores

Only 27% of the survey population was found to be food secure.

Approximately 73% of survey respondents were classified as being food insecure.

Of the survey group, 9.1% were declared food insecure with moderate hunger and

15.9% were determined to be food insecure with severe hunger (Table 3).

Table 3. Classification of Food Security Level of Survey Participants

Classification	Frequency	Percent
Food Secure	12	27.3
Food Insecure w/o hunger	21	47.7
Food Insecure with moderate hunger	4	9.1
Food Insecure with severe hunger	7	15.9

The mean score on the Hope scale was 22 out of 32 possible points. The scores ranged from a low of 8 to a high of 32. Upon visual examination it appeared that Hope Scores were higher among men than women. However, statistical analysis did not find a significant relationship between gender and Hope Scale score ($r = -.155$, $p = .326$). The woman who had the lowest possible score on the State Hope Scale wrote a note at the bottom of the page saying, “Mi problema aorita es mi estado de trabajo. Ayuden por favor a con segir un permiso de trabajo. (My problem right now is my work status. Please help me obtain work permission).”

Statistical Analysis of Relationships between Variables

Relationships between the variables were explored through Spearman Rank Correlation Coefficient. After examining the distributions of the different variables, it was determined that not all would meet the assumption of bivariate normality. Therefore, a non-parametric test was employed. The primary finding was that with the sample size obtained, there was not a significant relationship between scores on the Food Insecurity and State Hope Scales ($r = -.290, p = .062$). None of the demographic or sources of support variables were significantly associated with the total State Hope Scale score. The respondent's indication of their overall feeling towards their life was not found to be associated with the Hope Scale Score.

Several variables were found to be significantly associated with a household's level of food security. Age was positively correlated with food insecurity ($r = .368, p = 0.015$). Household size was also significantly correlated with food insecurity ($r = -.502, p = .001$). Other associations included the number of years in school with age ($r = .521, p = .001$) and income and age ($r = .389, p = .012$). Marital status ($r = -.199, p = .195$), housing type ($r = .098, p = .526$), feelings about life ($r = .129, p = .415$), and receiving nutrition support services ($r = -.107, p = .488$) did not correlate with food insecurity status.

Table 4. Correlations Between Variables

		Correlations								
		AGE	food insecurity level	HOPESCAL	household size	income	marital status	SCHOOL	services	
Spearman's rho	Correlation Coefficient	AGE	1.000	.368*	-.090	.049	.389*	-.271	-.564*	-.190
		food insecurity level	.368*	1.000	-.290	.521*	.187	-.199	-.502*	-.107
		HOPESCAL	-.090	-.290	1.000	.111	-.073	.042	.209	.141
		household size	.049	.521*	.111	1.000	.181	-.095	-.252	-.057
		income	.389*	.187	-.073	.181	1.000	-.293	-.260	-.065
		marital status	-.271	-.199	.042	-.095	-.293	1.000	.274	.046
		SCHOOL	-.564*	-.502*	.209	-.252	-.260	.274	1.000	.186
		services	-.190	-.107	.141	-.057	-.065	.046	.186	1.000
		Sig. (2-tailed)	AGE		.015	.576	.776	.012	.079	.000
food insecurity level	.015			.062	.001	.236	.195	.001	.488	
HOPESCAL	.576		.062		.519	.652	.793	.184	.371	
household size	.776		.001	.519		.292	.575	.133	.739	
income	.012		.236	.652	.292		.059	.097	.682	
marital status	.079		.195	.793	.575	.059		.072	.769	
SCHOOL	.000		.001	.184	.133	.097	.072		.227	
services	.223		.488	.371	.739	.682	.769	.227		
N	AGE		43	43	41	36	41	43	43	43
	food insecurity level	43	44	42	37	42	44	44	44	
	HOPESCAL	41	42	42	36	41	42	42	42	
	household size	36	37	36	37	36	37	37	37	
	income	41	42	41	36	42	42	42	42	
	marital status	43	44	42	37	42	44	44	44	
	SCHOOL	43	44	42	37	42	44	44	44	
	services	43	44	42	37	42	44	44	44	

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

Research Questions

Research Question 1: What percentage of Oregon Mexican agricultural and seafood workers surveyed are classified as food insecure?

In total, 73% of the sample population was classified as food insecure either with or without hunger. Only 27% of the population was considered as food secure. Although it was anticipated that food insecurity would be high in the survey population, the finding was even higher than anticipated. A comparison of

survey population, the finding was even higher than anticipated. A comparison of these numbers to statistics on the prevalence of food insecurity and hunger in the United States finds that food insecurity is more than six times higher with this sample (USDA, 1999). The fact that food insecurity is more common with Oregon Mexican agricultural workers than in the United States population as a whole is not surprising since the Oregon Mexican agricultural worker sample had a much lower income than the national average and did not commonly access nutritional support services.

Research Question 2: What are the challenges of conducting a multi-topic survey with Spanish speaking workers in the field?

Migrant agricultural workers have been identified as a “difficult to sample population”, which are defined as subgroups that contain few individuals or subgroups that are difficult to identify, locate, enumerate, or interview (Anderson, 1990). Therefore, traditional methods of conducting surveys that require participants to come to a central location or that rely on the fact that potential survey participants can be easily found because they are frequent users of certain services, may not work for this population. Indeed, most of the sample population for this study did not receive any of the services from which people are typically recruited for studies (WIC, food pantries, Food Stamps).

The nine-page survey was tested on the packinghouse floor, in the woods, and inside a seafood processing plant. The lessons learned from these experiences were that in order to have a survey that can “go where the people are,” it must be compact, it must not require a lot of extra props, you must have lots of pencils and

clipboards ready, you must gain the trust of those you want to survey, and you must have patience. It is also important to plan ahead on how to deal with external forces such as the noise from worksite machinery, having no designated area to conduct the survey, time restrictions, and immigration raids.

In general, the nine-page survey was usable in the field. However, the length of the survey was a barrier. It is difficult to ask people who only have a half hour lunch to spend most all of it answering your survey instead of eating. It is also difficult to get employers to let employees come away from their work for 15-45 in order to complete a questionnaire. If surveying at a large employer, the loss of even 15 minutes of work time per employee could be substantial.

Another challenge when planning to collect data at places of employment is the fact that there is little incentive for employers to allow researchers to do so. Why would an employer want someone to come in and gather data that demonstrates that most of their workers are struggling to feed their families? Most agricultural employers will not participate in research that does not support their political interests. When organizations such as the Farm Bureau and the Oregon Association of Nurserymen are fighting unionization efforts by their workers and denying worker mistreatment, it is not in their interest to let “outsiders” talk with their employees.

Research Question 3: What are the basic demographics of Oregon’s Mexican agricultural and seafood workers in this survey?

With the sample size obtained, Oregon’s Mexican agricultural and seafood workers are a mix of young and middle aged adults. They have completed a

primary (6th grade) education but tend to have completed less if they are in their late 30's or older. Low literacy levels are not uncommon. However, it is clear that a number of migrant workers also read and write in Spanish at quite advanced levels as well. The survey population was comprised of more females than males, which cannot be interpreted as a reflection of the gender make up of Oregon's Mexican agricultural and seafood workers. This gender composition can be ascribed to the fact that pear sorting, a source for many of the participants, is almost exclusively a job done by women. Also, even in mixed gender jobs, women were more likely to want to participate in the survey. Oregon's migrant workers are poor, with an average household size of 4.5 persons and with most making less than \$20,000 per year. Housing was obtained by renting a house or apartment, although a significant percentage indicated living in a home they owned. Some of the reported home ownership may include the purchase of trailers or mobile homes.

The most frequent places of origin for Oregon's migrant agricultural workers were the states of Michoacan and Mexico. The number of persons indicating they are from Mexico is probably not accurate, since some simply wrote Mexico to indicate their country of origin, and did not mean that they were from the state of Mexico. Guerrero and Zacatecas were the next most frequently identified places of birth. In total, 10 Mexican states, and 3 countries were represented in the survey's small sample population. Few pear workers and seafood processors worked in other crops at other times. Many of the men working in tree

planting indicated working with other crops during the year (Table 5). None of the three seafood processors worked elsewhere.

Table 5. Other Crops Worked In During the Past Year

Current Work	Other Crops	Location of other Crops
Sorting Pears	Grapes, apples, vegetables	Southern Oregon
Sorting Pears	Apples	Washington
Sorting Pears	Corn, beans, squash	Michoacan
Sorting Pears	Cherries, apples, peaches	Washington & Oregon
Sorting Pears	Pumpkins	Not Indicated
Tree Planting	Corn, beans, wheat, sorghum	Michoacan
Tree Planting	Cherries and strawberries	Oregon
Tree Planting	Cherries and strawberries	Oregon
Tree Planting	Cherries and strawberries	Oregon
Tree Planting	Strawberries	Oregon
Tree Planting	Strawberries	Corvallis & Forest Grove
Tree Planting	Strawberries, blueberries	Oregon
Tree Planting	Strawberries	Independence
Tree Planting	Lettuce, broccoli Apples	California Washington

About one-third of the agricultural workers in this survey were employed in other crops during the previous year. This includes people who went home to Mexico and worked their land during some part of the year. The number of

persons who worked only for one employer may reflect the dates the surveys were taken and the ages of persons participating. In all three work places, many of the temporary seasonal workers had already moved on or were yet to arrive.

Therefore, more year round employees were found. Also, since the average age of the population was 30, many had "settled out" of the migrant stream. The sample of tree planters contained many younger individuals and all males. Younger males are more likely to be migrants and this was reflected in the fact that many reported working in other crops.

Research Questions 4: Where do Oregon's Mexican agricultural and seafood workers find social and emotional support?

The most frequently cited source of inner strength was God. Looking to themselves, the church and family were also indicated by more than 40% of respondents. Seeking help to maintain inner strength from the community was the most infrequent source. Questions concerning the participant's ability to access and become part of formal and informal social networks found that most had at least one link to outside support. About two-thirds of respondents indicated they had family living close by. More than half indicated that they attended church (*Misa*) regularly. Only 11% indicated that they participated in community activities.

Research Question 5: What are the relationships between Hope Scale scores and reported feeling toward life, sources of social and emotional support and Hope Scale scores, and Hope Scale scores and food insecurity?

The median score on the State Hope Scale for the sample population was 22 out of 32, indicating that most of the Oregon Mexican agricultural and seafood workers sampled felt fairly hopeful about their abilities to generate the routes needed to reach goals and in their capacity to initiate and sustain the actions needed to reach these goals. Snyder, *et al.*, 1991, testing a version of the hope scale with 8 levels of answers instead of the 4 levels used in this study found the average score among college freshman to be 37.15. Since these two studies used different scales, it is not possible to compare feeling of college students to the Mexican agricultural workers in this study.

Responses to how one felt about their life indicated the majority felt positive. More than 60% chose the words enchanted, happy or principally satisfied to describe their life. Only two respondents indicated they felt principally unsatisfied. This seems to agree with the largely positive indication of the scores of this population on the Hope Scale. Responses to the question of whether things would be better in three months from now was less positive. Fifty-nine percent said maybe or no. However, this could simply be a reflection of the fact that the majority of respondents were asked this question when the work season was winding down and times of unemployment were likely ahead. Scores on the Hope Scale and answers to the question about overall feeling towards life were not significantly correlated ($r = -.222$, $p = .158$). With the sample size obtained, no

significant relationships found between cited sources of emotional support (God, Church, Family, Myself, Friends) and Hope Scale scores. Hope Scale scores did not significantly influence food security status ($r = .290$, $p = .062$).

Discussion

Sampling Methods

Although this study employed a convenience sample to recruit participants, this methodology may be justified when sampling migrant agricultural workers. Lepowski (1991) determined that migrant workers are classified as difficult to sample since they are a group for which the “data are inadequate or lacking from ordinary data collection sources.” Difficult to sample groups can be divided into four categories. One group consists of persons who are rare but covered by an existing sampling frame such as a variety of low-income groups. Another group is made up of persons who are not covered by existing frames and are difficult to identify or unlikely to cooperate. This group may include substance abusers and undocumented workers. A third group is composed of persons not covered by existing frames but for whom a frame may be reasonably developed such as persons in a variety of institutional settings. The final group consists of persons for whom no frame is available and the development of such a frame would prove difficult. This group includes the homeless and migrant farm workers. While Lepkowski is able to suggest statistically sound sampling methods for the first three groups, he concludes that the fourth group may require the use of convenience sampling or the adoption and modification of existing frames to collect some data on an at risk population. Anderson (1990) concurs that because the persons who compose the category of populations for which no sampling frame exists and its

development would be difficult, “compromises in design and departures from more rigorous sampling methods may be the only solution.”

Methodological Issues

In order to obtain a reasonable sample size for this study, some departures in methodology were required. The primary issue concerns the fact that not all the surveys were administered in the same way. Some women at the pear packing plant chose to fill out their own surveys, while others required it to be read to them. All three seafood workers filled out their own surveys. The owner of the tree planting service would only allow the surveys to be passed out and collected by the crew foreman. Differing methods of administering the survey may introduce bias into the results. Persons may have responded differently to the questions when read by the researcher, compared to filling out the survey on their own. In addition, the researcher was not able to observe the surveys being done by the tree planting crew. Therefore, it is not known whether each one filled out his own survey, or how much “sharing” of answers might have occurred. Although the differing administration techniques were less than ideal, they were necessary in order to obtain a sampling of a hard-to-reach population.

A second methodological issue concerns the fact that the characteristics of individuals within the total sample varied greatly. In this study, all Mexican agricultural and seafood workers were considered as one group in order to obtain a sufficient sample size. However, it is likely that people’s perceptions of hunger and hope differ based on certain characteristics. For example, the way a married

woman perceives her family's food security status may be drastically different than the perceptions of a single man.

Another issue that may have potentially biased some respondents is that participants were told orally, or in writing, that the data from this type of research could be used in grant proposals from migrant clinics to further fund nutrition support services. This statement was introduced, because with no monetary incentive to complete the survey, one had to be motivated to participate by the fact that sharing your situation might help the community. It is possible that people wanting to provide supporting data for these grant proposals may have been predisposed to indicate they were more food insecure than they may have been. However, it is believed that most were honest in their answers.

Issues with the Survey Content

The Spanish language version of the Food Security Module that was created for this project was generally successful with the target population. However, the questionnaire was very difficult in some sections for persons who had not completed 6th grade. Even with the investigator reading the questions, it often took 45 minutes for people with little schooling to complete the survey. When asked to describe what a balanced diet was, most people could not answer and seemed not to want to continue with the survey at that point. After explaining that they could skip any question they wanted, most continued with the rest of the survey. This calls in to question the validity of two questions in the Food Security Module that state, “

We couldn't afford to eat *balanced* meals," and "We couldn't feed the children a *balanced* meal because we couldn't afford that."

Table 6. Responses given to question of "What is a balanced meal?"

- | |
|---|
| <ol style="list-style-type: none"> 1. coffee and bread, hamburger with French fries and a coke 2. 3 tortillas and a little bit of everything 3. vegetables, white meat, cereal, and grains 4. vegetables, fruits, meat, milk 5. pepper, garlic, and onion 6. I don't know 7. meat, beans, milk, eggs, fish 8. meat, milk, eggs, vegetables, cereals 9. chicken and beef 10. many fruits and vegetables 11. eggs, meat, milk, tortillas, fruits, vegetables, chicken, milk products 12. light food 13. beans and rice 14. milk and vegetables 15. drink milk, eat fruits, vegetables, and meats 16. that which you make at home and has a combination of vegetables, grains, etc |
|---|

The translation of the State Hope Scale into Spanish was acceptable to the majority of the target audience. However, as with the Food Security Module, participants with less than a 4th grade education had a difficult time answering the questions. Several of those who had only attended first or second grade had a difficult time with the whole concept of the Hope Scale. They wondered what these kind of questions were about? The Likert scale format was also confusing as many seemed to see things as either true or false and not somewhere in between. Several of the less formally educated women had a difficult time with understanding the phrase "Consigo mis metas energeticamente" (I pursue my goals energetically). Some did not seem to know what the word "metas" was, even though metas is not a particularly formal word.

Demographic Characteristics

The demographic characteristics of the sample population were similar to those documented in the National Agricultural Workers Surveys. Incomes of the Oregon Mexican agricultural workers in this sample were slightly higher than those reported by NAWS with more than 50% reporting a household income of \$10,000. The strong presence of Mexican born workers agrees with the NAWS data that finds greater than 70% of farmworkers are foreign born and more than 94% of those are born in Mexico. The presence of an almost 100% Mexican sample can be attributed to the fact that the Western Migrant Stream (Appendix C) is not as heterogeneous as the Midwestern and Eastern Streams. The Eastern Stream, in particular, consists of persons from Haiti and Southeast Asia, as well as some U.S. born African Americans.

A variety of factors may be influencing the large presence of persons from Central Mexico in Oregon's agricultural workers. Economic reforms began by the Mexican government in the 1980's reversed a historical trend of making active government interventions in the economy (Dussel-Peters, 1998). An increased reliance on market forces has led to a shift away from the traditional focus on domestic based production to an export orientation. Under this system, many companies that were previously state owned became privatized. Although this shift in policy has resulted in some positive outcomes for certain sectors of the Mexican economy, these outcomes have not been felt in every region of the country. A few

branches of the economy have prospered, mainly automobiles, electronics, and petrochemicals. Agriculture and manufacturing have decreased in economic importance. Meanwhile, the number of jobs generated by the export-based economy has fallen short of the number of persons entering the work force. Even though Maquiladoras (Border State factories often operated under NAFTA) have been the most active generator of employment, a gap of 7.8 million jobs was seen between 1990 and 1996. Real wages also declined during this period. This lack of jobs pushed many Mexicans into the informal economy, which consists of jobs in construction and migrant work in the United States (Dussel-Peters, 1998). It is only logical that people from states that relied heavily on agriculture and manufacturing, such as those from Central Mexico would be pushed into the informal economy of migrant labor.

Food Security Status

It was anticipated that a substantial percentage of households of Mexican agricultural and seafood workers would be classified as food insecure. However, the finding that 72% were food insecure was a bit higher than expected. This stands in significant contrast to the 11.7% of Oregon's general population classified as food insecure. What factors may be influencing this high number? Statistical analysis demonstrated that the participant's age, years of schooling, and household size all were correlated with food security status. Participants who had completed fewer years of school were more likely to be food insecure than those who had completed more. Older persons were more likely to be food insecure than younger

ones. As household size increased, risk for food insecurity increased as well. Age and years of school were significantly related. This was not surprising because through the interview process it was clear that it was often the oldest women who had completed only 1st or 2nd grade. The correlation between household size and food insecurity is as expected. Feeding a larger family takes more resources and increases risk for hunger. However, it might be possible that a large household size could be beneficial if it was composed of single adults pooling their resources. However, if the adults were acting as separate economic units it may be that some individual could be food insecure while others were not.

Another factor that may be contributing to the high rate food insecurity among the survey population is the fact that many Mexican agricultural workers send almost one-third of their earnings home, to family still in Mexico. Some anecdotal evidence suggests that those spending a shorter amount of time in the U.S. send more of their earnings to Mexico compared to those who are more established here. This survey did not inquire as to whether participants were sending money home or how long they had been in the U.S., so whether or not sending money back to Mexico is a major determinant of food insecurity is yet to be concluded.

The actions of the Immigration and Naturalization Service (INS) may also affect the incomes of some Mexican migrant agricultural workers. As previously noted, an INS raid occurred prior to one of the data collection days. Contrary to what might be expected, a large percentage of people deported or who quit in fear

of deportation, were not seasonal workers, but long term employees. These people had often moved into positions that paid above minimum wage and were based on an hourly rather than piece rate. Many of those who quit and even those who were deported returned to work in the United States within a short period of time, but now had to start at the bottom of the pay scale once again. How this “cycle of deportation” affects income and therefore food security may be a variable worth exploring.

Although not found to be statistically significant ($r = -.107$, $p = .488$) few of the food secure or insecure households were receiving nutritional assistance from government programs. WIC was indicated as the most commonly used program. Yet with a good percentage of the survey population being young, single men or women without children or with older children, increasing WIC participation is not a primary solution. Few received food stamps and it is not know whether this was influenced by immigration status and recent changes in food stamp eligibility for immigrants, or if it was an outcome of not knowing about the program. More research into the low participation of migrant workers in the Food Stamp Program is warranted.

A direct comparison of food insecurity rates in the U.S. and Mexico is not possible at this time because Mexico has not collected this type of data. However, data on the percentages of children experiencing malnutrition in each state of Mexico has been analyzed. INEGI (1997, 1998) found 9.5% of children in the nation were malnourished at some level. The state with the highest level of

malnutrition was Guerrero (24%), followed by Oaxaca (22%), Chiapis (19%), Zacatecas (15%) and Veracruz (13%). The States of Michoacan, Jalisco, Durango, and Mexico had rates of malnutrition less than the national average. These findings suggest that although malnourishment is a problem in Mexico, the degrees vary by region. Migrant workers may actually be at greater risk for hunger in “the land of plenty” than they were in Mexico.

Hope, Sources of Support and Food Insecurity

Hope for the future was evident in the majority of survey respondents. Most chose a positive description of their feelings towards their life. How can people who generally have very little be so hopeful? Although there may be a myriad of factors influencing hope in this population, a simple fact may be that the majority of the population was younger, and therefore had a substantial portion of their lives ahead of them. Also, many of the participants may view themselves as having gained in monetary wealth since seeking work in the United States. The issue of hope and optimism in migrant agricultural workers deserves more studies.

The most frequently cited sources of inner strength were God, myself, and my family. A reliance on strength from God was also noted as a source of strength for African American women experiencing food insufficiency (Ahluwalia, *et al.*, 1998). It was determined that these women had three levels of social support. The first level consisted of primarily family who provided money, groceries and help with childcare and transportation. The second level consisted of friends and assistance at this level was considered as an exchange for which repayment of some

kind would be required. The third level was composed of neighbors, although many women reported being distrustful of their neighbors and not wanting to ask them for help for fear they would be reported to child welfare services for not being able to adequately feed their children (Ahluwalis, *et al.*, 1998). A similar order of social support was found for the Oregon sample. Most relied on close family or themselves for help. This may reflect the fact that persons in their social network have limited resources and may not be able to give assistance. A low rate of citation for support from the community and participation in community activities may suggest that the migrant population suffers from isolation from the rest of the larger community. Efforts to include this population may be an important step to increasing social support.

Maintaining a positive attitude and having a social support network are thought to influence health. Therefore, the finding that neither of these factors influenced food security status seems to be surprising. Yet, viewing health determinants through the Ecological Model (McLeroy, *et al.*, 1988) finds that many external factors influence nutrition and health. Factors in the Ecological Model include self, social relations, community and outer community. Support from the community is limited in that most survey respondents did not indicate being involved in it. The outer community, in terms of national and international laws are not favorable towards migrant workers. The quantity and quality of social relationships vary between individuals. However, is it fair to expect someone to rely solely on the strength of their social networks to get by? Pilisuk and Minkler

(1985) have criticized the new emphasis on social support as a poor excuse for reducing the responsibility of governments to provide adequate services.

Individuals are seen as the source of blame for their ill health, and one is considered to be poor because of failure to achieve or take precautions. Another problem with social support is how will researchers define and measure it? How will social support be supplied when there are few sources and many in need?

In keeping with the Ecological Model of Health, it is important to strengthen all of the determinants influencing food security. Increasing migrant agricultural wages, closely monitoring the use of piece wages to subvert the minimum wage, and enforcing occupational safety and health guidelines are all policy implementations that would improve the lives of migrant agricultural workers. The revision of current U.S. immigration policy would allow migrants to access services without fear. The 1996 Personal Responsibility Act denied some migrants access to health and nutrition programs. Although some of these cuts have been restored, a lot of confusion exists within the community about what programs will accept you if you are undocumented or what programs you may utilize without jeopardizing your chances at citizenship. There is a need to educate this population about what services are available and accessible.

Ethical Dilemmas

As previously mentioned in the results section, one survey participant wrote a note asking for help with fixing her work status. Although the note was seen well after the data had been collected, and there was no possible way of identifying who

wrote the note, the incident brought up the question of what should be done when a research participant reveals that they are in need of help. This raises the larger question of what does a researcher “owe” to their study subjects? If a woman reveals during an interview that she is being physically abused, what responsibility does the researcher have to this woman? Does a simple referral to a crisis hotline or a women’s shelter suffice? With the woman who asked for help with her work status, would a simple referral to Legal Aid fulfill the obligation? The researcher must “owe” more to their study subject than just a simple referral, but to what extent? To truly address the underlying causes of poor health and hunger one would need to address the issue of social justice, a cause that could easily turn into a lifelong obligation.

Study Limitations

The results of this study cannot be generalized to all migrant agricultural workers in Oregon. The small sample size did not allow for comparisons to be made among employment types. The use of a convenience sample to obtain the study population decreases the external validity of the findings. Self-selection bias is a common occurrence with the method of sampling, in that those who chose to complete the surveys may be significantly different from those who did not.

The sample population did not include a large number of “traveling” workers. At the time the surveys were conducted, most of these very seasonal workers had already returned to their home bases in Mexico, California, or Texas, or had moved on to work with other crops. It also did not capture those who were

specifically working and living in migrant camps. Surveying migrant camps would have increased the number of males responding to the survey and most likely would have increased the number who indicated they did not have access to potable water, sewer, and adequate cooking facilities. Another limitation is the fact that no survey work was done among migrants living in the Portland metro area. It may be that higher housing costs make these metro households at greater risk for food insecurity. On the contrary, these households may have greater access to nutritional and social support that may offset the higher housing costs.

A final limitation is the fact that several of the least formally educated women seemed to struggle with the survey questions. It is possible they may have misinterpreted some of the items and therefore provided inaccurate answers.

Conclusions

The Need For Further Research

This study has demonstrated that a small sample of Oregon's Mexican agricultural and seafood workers were hopeful and had positive outlooks on life, but suffered from a high rate of food insecurity. A number of questions worthy of future exploration have arisen from this initial study. The essential first step for further investigation of food insecurity in the Mexican agricultural worker population is to validate the Spanish language version of the food security module with this group. The English language version was validated with African Americans and Whites in upstate New York, and therefore the concepts of being food insecure and being hungry may not be the same across cultures. This, added to the fact that in this survey, most participants could not identify what a "balanced" meal was, may indicate that the English version of the module may need more than a straight translation to be appropriate for this population.

More research into explanatory models of hunger is needed with this population. What are the reasons that one becomes hungry? Is there a social stigma attached to being classified as hungry? How does being deemed food insecure reflect upon one's perceived parenting abilities? This last question is vital because the food security module asks whether children have gone without food. It was suggested during the administration of the survey, that no one would want to

answer yes to these questions, even if they were true, because it would mean that they had failed as a parent. Is the fear of being labeled a bad parent keeping persons from truly divulging their food security status, and therefore causing the number of persons classified as food insecure with severe hunger to be much lower than in reality?

The role of gender in determining how one perceives their food security status may also be an important factor for investigation. Women are the primary food purchasers and preparers, so it is assumed that they have a better concept of the family's situation than would a man. When resources are short, it is often women who go without in order to make sure the husband and children will be fed. In order to assess how gender influences food security perceptions, it may be necessary to interview couples separately to see how their views differ. Will the woman reveal a different picture than the man?

Further research into the sources of social and emotional support for Mexican agricultural workers is also recommended. What is the structure of their social networks? If God is the primary source of internal support, how does that make a difference in terms of accessing resources? If family provides the majority of practical support, how well does this system work when others in the support network also have very limited resources?

The potential role of the church (in this case primarily, although not exclusively the Catholic Church) in providing social and practical support also

deserves additional examination. A substantial amount of survey participants reported attending Mass regularly, and receiving inner strength from the Church. Is the Church providing practical and emotional support to Mexican migrant agricultural workers? And if so, how? Is the Church a potential source for providing nutritional support and health education? What are the limitations of relying on the Church for these types of support?

A third area for further exploration is the large percentage of individuals who did not see the community as a source of support. How is the concept of "community" defined by Mexican agricultural workers? Does this definition change when in the United States versus Mexico? What barriers exist that keep this population from feeling as though they belong to the larger community? And finally, how does this lack of belonging to the community affect ability to access and manage resources?

Recommendations

In order for more research to be conducted with this population, a specific definition of who are migrant and seasonal agricultural workers must be determined. Starting with the existing NAWS and Migrant Head Start definitions, a group of interested researchers, policy makers, and those from the target populations should be convened to decide on operational definitions to be used by all concerned. These working groups would need to determine when one ceases to be migrant. Is it when they have stopped moving for work? Is it when they have permanently established themselves in one community? Is it when they feel they

are a part of their larger, surrounding community? If working definitions can be created for such subjective terms as hunger and food security, surely migrant and seasonal can be defined as well.

Along with coming together to better define the target population, researchers interested in migrant farmworkers/seasonal workers/Mexican agricultural workers/border health, must network with each other to share the data and ideas for future research. The very recent creation of a migrant health listserv has opened the door to communications between interested parties. A greater emphasis should be placed on conducting collaborative research, particularly with seasonal workers who visit several states a year. Connections should be made with researchers in our Oregon population's "home bases" of Mexico and California. This would allow for tracking of workers throughout the year and could lead to many interesting research projects.

Interested researches should also come together to determine guidelines that can help Institutional Review Boards better evaluate potential research projects with these populations. Of primary issue is obtaining informed consent. How shall this best be done when some of the survey population may not be literate? How does the idea of confidentiality carry across cultures? Does the statement "your answers will be kept confidential" clearly identify that they may be included in a published journal article? How much value does the inclusion of the Research Office's phone number have when no one is available to speak to them in their language about their rights as a research subject?

As important as the treatment of potential research subjects is our treatment of the migrant clinics and community organizations with which we form partnerships. These partnerships have been less than equal in the past. Often, a researcher would come in to collect data without obtaining the approval of an Institutional Review Board or informed consent from participants. Clinic staff would give up their valuable time to assist in the data collection, but none of the findings ever found their way back to the clinic. Community members and some paraprofessionals are not familiar with the concept of research, in terms of why it is conducted and how their involvement could be beneficial. At the same time, researchers must become informed about the needs of the partnering organizations and the communities they wish to study.

A greater link between Universities, government agencies, and migrant organizations needs to be established. This can be accomplished by utilizing current web sites that allow organizations with unmet research needs to link up with researchers. Some current web sites include <http://www.LINKResearch.org>, <http://futurehealth.ucsf.edu/ccph.html>, and <http://www.loka.org>.

To address the issue of working successfully with the targeted communities and collaborating organizations all research institutions should adopt or create a policy on the Principles of Community Based Research, similar to the one approved by the Health Sciences Deans at the University of Washington in July 1996. These principles clearly define the responsibility of the researcher to assure

that community involvement occurs at each step of the research process and that the process and outcomes of the study should benefit the community. In addition, migrant clinics and other organizations may want to draft their own policies regarding research. The Yakima Valley Farmworkers Clinic has drafted such a policy that could be used as a template for others.

The final recommendation focuses not on how research is conducted and disseminated, but how the results are used to form policy. As researchers, we cannot hide behind the belief that our findings are “value neutral.” When our investigations uncover terrible injustices, our greatest responsibility lies in making these injustices known to those who can most quickly and efficiently remedy them. This means that in order to be effective advocates for our study population, we must make our findings known to those who hold power in the political sphere. Shaping public opinion can also be an important tool for advocates. Yet, few people are aware of the high levels of poverty and hunger in the population as a whole, much less with Mexican agricultural workers. Bringing these issues into the public consciousness is key to addressing high rates of food insecurity in this population.

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Appendices

Appendix A

Project Proposal and Surveys

**Application for the Approval of the OSU Institutional Review
Board for the Protection of Human Subjects**

**Harvesting Hunger: Measuring food insecurity and feelings of hope
in migrant and seasonal farmworkers in Oregon**

Principal Investigator: Susan L. Prows PhD, MPH, CHES

Student Theses Project: Julie Reeder MPH, CHES

Department of Public Health

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Significance of Project

Hunger is an issue that has been in the public's attention for several decades. The ability to quantify how many people were hungry had been hampered by the lack of an exact definition of hunger. The term "food insecurity" was created as an objective measure of hunger. Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable food in socially acceptable ways is limited or uncertain. A questionnaire measuring food insecurity was included in the Third National Health and Nutrition Examination Survey. Although we now have an idea of what the general level of food insecurity is in the U. S. population as a whole, there are several subgroups who normally are not represented in national surveys and are at high risk for food insecurity. Migrant and seasonal farm workers, people who move frequently following crop cycles for employment are such a group. This study seeks to gather basic demographic information about migrant and seasonal farm workers in Oregon and quantify the prevalence of food insecurity in this population.

Methods and Procedures

A 9 page survey will be administered *orally*, in Spanish, to participants identified as being migrant and seasonal farm workers. The survey will be administered by the Principal Investigator or a qualified assistant. This survey (see attachment) gathers data regarding demographics, access to channels of communication, food insecurity, and a number of psycho-social factors. The food insecurity section contains questions developed and validated by the Food and Nutrition Service of the USDA. Psycho-social data is gathered through the use of the "Hope Scale" (Gottschalk). There are no further study obligations after a participant answers the initial survey questions.

Benefits and Risks

The benefits of the study to the participants are indirect in that the results of the study will help quantify the prevalence of food insecurity in the migrant/seasonal farm worker population and the demographics and social network information gathered will help agencies that work with this group to focus and improve their services. There are no anticipated risks of participating in the study.

Subject Population

There are approximately 3 to 5 million seasonal farmworkers and their families that move across the country each year to find work. A migrant worker is defined by the United States Department of Labor as someone who traveled 75 miles or more in search of farm work. As a portion of total farmworkers who earn money from working perishable crops, 42% fall under the migrant classification. Of workers identified as migrant, 94% are Latino, with 8 out of 10 being born in Mexico. This population is primarily male, young (median age 31), foreign born, undereducated (median level 8th grade), and poor (median income < \$7,500). Oregon and Southwest Washington farms, nurseries and canneries use this group of laborers to harvest and process a number of crops. A worker could move from harvesting cherries for two weeks in June and July in The Dalles, to the Willamette Valley in July and August to harvest caneberries and vegetables, and then to Madras in the fall to harvest potatoes, and so on. It is the traveling migrant worker adults in the northwestern portion of the state that are the subjects of this study.

Recruitment of Subject Population

Due to the temporary nature of migrant and seasonal farm labor, potential subjects will need to be recruited from several different areas of the state. An initial attempt to access the population will occur through reaching families whose children attend a special migrant education school that runs 2-3 weeks during the Cherry Harvest in The Dalles. After that time, contacts with potential subjects will be made by accompanying health care providers from the various Migrant Health Clinics, recruiting subjects at workplaces and at common public gathering spots.

Informed Consent

Informed consent will be obtained in a short written contractual form utilizing the applicable elements required as listed in the human subjects handbook. A copy of the consent form will be given to the interviewee. No form of identification will be requested from the participant so no link can be made at a later date between the survey data and the participant.

Obtaining Informed Consent

Informed consent will be obtained with the interviewee and researcher, face to face. The prospective survey respondent will be given verbal and written information about the research project and the informed consent form. They will be asked if they would like to voluntarily participate in the survey. If so, they will be given a copy of the consent waiver before beginning a face to face survey gathering information about food insecurity, demographics, and psycho-social characteristics. ****As requested by the OSU Institutional Review Board no signatures will be required for obtaining informed consent. The Board members felt that since many of the potential study participants might not be working in the U.S. legally, requiring a signature would put them at risk.

Study Participation

Participation in the study will not affect prospective subjects' anonymity or confidentiality. Subjects will not be asked to reveal potentially damaging information. They will not be asked to give their name or any information that may reveal their current immigration status. Participants are free, and will be informed of, their freedom to refuse to answer any questions and may discontinue interview participation at any time without consequence.

Informed Consent Document

Health and Nutrition Study of Northwest Migrant Farm Workers

I voluntarily participate in this important study measuring hunger and feelings of hope in migrant and seasonal farmworkers. I know that participation in this study is voluntary. There is no penalty for refusing to participate in any part of the study. Participation in this study will consist of answering a 9 page questionnaire that will be read to me aloud. The questionnaire contains questions about hunger in my household, my current living conditions, and my feelings of hope. I can choose not to answer certain questions during the interview. There are no further obligations of being a study participant after completing the interview. I understand that I will not be subject to any foreseeable risks by participating in this study, and that the benefit I will receive from being a subject will be knowing that my answers will help people who work with migrant and seasonal farm workers provide better services.

I know that my answers to this survey will be kept in strict confidentiality. I understand that while my answers will be part of a study my identity will not be given to any organization or government agency.

I understand that any questions I have about the research study or specific procedures should be directed to Dr. Susan Prows (541)737-3838 and Julie Reeder (541)737-1281.

If I have questions about my rights as a research subject, I should call Mary Nunn, Director of Sponsored Programs, OSU Research Office, (541)737-0670.

INSTRUCTIONS: Read each question carefully. Place a check mark in the box that best describes your situation.

1. Which language do you mainly speak at home?

- English
- Spanish
- Other

2. Which language do you mainly speak at work?

- English
- Spanish
- Other

3. What is your age? _____

4. What is the highest grade or year of regular school you have completed?

- None
- Elementary 1 2 3 4 5 6 7 8
- High School 9 10 11 12
- College 13 14 15 16
- Graduate 17
- Trade School 97
- Don't know 98
- Refused 99

5. Are you currently....

- married
- not married but living with a partner
- separated
- divorced
- widowed
- never married
- refused

6. Do you have any children age 17 or younger living in your household?

- yes (if yes go to question 7)
- no (move to question 8)
- don't know
- refused

7. Please list the gender, age and relationship to you for all people living in your household.

8. In which city, state, and country were you born and raised?

9. What city, state, and country do you currently consider to be your primary place of residence

10. How many months of the year do you spend in your primary place of residence?

11. How many months of the year do you travel in order to obtain work?

12. What other crops do you harvest in other parts of the year? In what states are these crops located?

13. Which of the following best describes your current living situation?

- Living in home I own
- Living in house I rent
- Living in an apartment I rent
- Living in a hotel/motel room
- Living in a migrant camp
- Living in a trailer or mobile home
- Camping (in a tent)

14. Do you currently have....

- TV(if yes, which channels do you watch _____)
- Radio (If yes, which stations do you listen to _____)
- VCR
- A permanent mailing address
- Access to a newspaper in your language (which paper _____)
- A permanent telephone number
- Access to a library

15. In the last 12 months have you received:

- Services from WIC
- Food Stamps
- A food box (or visited a food bank)
- A soup kitchen or other site (Salvation Army, School Lunch)

16. I find inner strength in (mark all that apply):

- God
- The Church
- My Family
- My Friends
- My community
- In myself
- Other _____

17. Do you...

- Attend Church (if yes, how many times per month) _____
- Participate in community activities
- Have family living close to you

18. In the place that you are currently living, do you have...

- A stove
- A refrigerator
- Potable water
- Cooking utensils
- A place to store your food
- Sanitary services
- Bathrooms with sewer hook up

19. What was your total household income for 1998 ?

- less than \$5000
- \$5000- \$7500
- \$7500-\$10,000
- \$10,000-\$12,500
- \$12,500-\$15,000
- \$15,000-\$17,500
- \$17,500-\$20,000
- \$20,000-\$22,500
- \$22,500-\$25,000
- \$25,000-\$30,000
- \$30,000-\$35,000
- \$35,000-\$40,000
- more than \$40,000

20. What do you consider a *balanced* meal to be?

21. Where did you learn this?

22. How do you feel about your life as a whole?

- Delighted
- Pleased
- Mostly satisfied
- About equally satisfied & dissatisfied
- Mostly dissatisfied
- Terrible

23. In the next 3 months, will your household be able to purchase the things that it needs now?

Yes NO Maybe

1. Which of these statements best describes the food eaten in your household in the last 12 months, that is since (current month) of last year?

- We always have enough to eat and the kinds of food we want
- We have enough to eat but NOT always the Kind of food we want
- Sometimes we don't have enough to eat
- Often we don't have enough to eat

1a. (If selected sometimes or often) Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why YOU don't always have enough to eat. (Mark all that apply)

- Not enough money for food
- Too hard to get to the store
- On a diet
- No working stove available
- Not able to cook or eat because of health problems

1b. (If selected too hard to get to store) Here are some reasons why people don't always have the kind of foods they want or need. For each one please tell me if that is a reasons why YOU don't always have the kinds of food you want or need. (Mark all that apply)

- Not enough money for food
- Too hard to get too the store
- On a diet
- Kinds of food we want not available
- Good quality food not available

2. Now I'm going to read several statements that people have made about their food situation. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months .

The first statement is "we worried whether our food would run out before we got money to buy more." Was that often true, sometimes true, or never true for your household?

- Often true
- Sometimes true
- Never true
- Don't know or refused

3. The food that we bought just didn't last, and we didn't have money to get more. Was that often, sometimes, or never true for your household in the last 12 months?

- Often true
- Sometimes true
- Never true
- Don't know or refused

4. We couldn't afford to eat balanced meals. Was that often, sometimes, or never true for your household in the last 12 months?

- Often true
- Sometimes true
- Never True
- Don't know or refused

5. We relied on only a few kinds of low-cost food to feed our child (children) because we were running out of money to buy food. Was that often, sometimes, or never true for your household in the last 12 months?

- Often true
- Sometimes true
- Never True
- Don't know or refused

6. We couldn't feed our children a balanced meal because we couldn't afford that. Was that often, sometimes, or never true for your household in the last 12 months?

- Often true
- Sometimes true
- Never true
- Don't know or refused

7. Our children were not eating enough because we just couldn't afford enough food. Was that often, sometimes, or never true for your household in the last 12 months?

- Often true
- Sometimes true
- Never true
- Don't know or refused

8. In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
- No
- Don't know or refused

8a. (If yes above) How often did this happen?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- Don't know

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

- Yes
- No
- Don't know

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

- Yes
- No
- Don't know

11. In the last 12 months, did you lose weight because you didn't have enough money for food?

- Yes
- No
- Don't know

12. In the last 12 months, did you or other adults ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- Don't know

13. (If yes above) How often did this happen?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- Don't know

14. In the last 12 months, did any of the children ever skip meals because there wasn't enough money for food?

- Yes
- No
- Don't know

14a. (If yes above) How often did this happen?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- Don't know

15. In the last 12 months, were the children ever hungry but you couldn't afford more food?

- Yes
- No
- Don't know

16. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- Don't know

Instructions:

Listen to each item carefully. For each statement indicate whether it is Definitely False, Mostly False, Mostly True, or Definitely True for you.

1. I can think of many ways to get out of a jam.
DF MF MT DT
2. I energetically pursue my goals.
DF MF MT DT
3. I feel tired most the time
DF MF MT DT
4. There are lots of ways around any problem.
DF MF MT DT
5. I am easily downed in an argument
DF MF MT DT
6. I can think of many ways to get the things in life that are most important to me.
DF MF MT DT
7. I worry about my health
DF MF MT DT
8. Even when other get discouraged, I know I can find a way to solve a problem.
DF MF MT DT
9. My past experiences have prepared me well for my future.
DF MF MT DT
10. I've been pretty successful in life
DF MF MT DT
11. I usually find myself worrying about something.
DF MF MT DT
12. I meet the goals that I set for myself.
DF MF MT DT

Lea cada pregunta cuidadosamente y ponga una flecha (/) en la caja para la respuesta más apropiada

1. Qué idioma habla principalmente en su casa?

- Inglés
- Español
- Otro

2. Qué idioma habla principalmente en su trabajo?

- Inglés
- Español
- Otro

3. Qué edad tiene usted? _____

4.Cuál es el grado mas alto o año de escuela que usted ha completado?

- Ninguno
- Primeria 1 2 3 4 5 6 7 8
- Preparatoria 9 10 11 12
- Universidad 13 14 15 16
- Licenciatura 17
- Escuela Tecnica
- No sé
- Reuso a contestar

5. Estado civil....

- casada (o)
- soltera (o)
- separada (o)
- divorcada (o)
- viuda (o)
- unión libre
- reuso a contestar

6. Tiene usted niños menores de 17 años viviendo en su casa?

- sí
- no
- no sé
- me reuso a contestar

7. Por favor enliste el sexo, edades y parentesco que tienes con todos las personas que viven en tu casa.

8. En qué ciudad, estado, y país nació y creció?

9. En qué ciudad, estado, y país consideras que vives principalmente?

10. Cuantos meses de el año pasas en el lugar donde vives principalmente?

11. Cuantos meses de el año viajas por cuestiones de tu trabajo?

12. Que otros cultivos cosechas en otras epocas del año? En qué areas o estados estan estos otros cultivos?

13.Cuál de los siguientes describen mejor tu situación actual?

- Viviendo en mi propia casa
- En la casa que vivo pago renta
- Pago la renta de un departamento
- Vivo en el cuarto de un hotel/motel
- Vivo en un campo
- Vivo en una casa rodante (trailer)
- Vivo en una casa de campaña

14. En este momento tiene usted: (marca todo que apliquen)

- Televisión (si es sí, cuales canales) _____
- Radio (si es sí, cuales estaciones) _____
- Videograbador (VCR)
- Acceso al correo
- Acceso a algún periódico en su idioma (si es sí, cuál?) _____
- Un numero de telefono permanente
- Acceso a la biblioteca

15. En los últimos 12 meses, ha recibido:

- Servicios de WIC
- Estampillas de comida
- Caja de comida (despensa)
- Comida gratis (Salvation Army, Comida de escuela, caridad religiosa)

16. Encuentra ayuda moral en (marca todo que apliquen):

- Dios
- La Iglesia
- Mi Familia
- Mis Amigos
- Mi comunidad
- En mi mismo
- Otro _____

17. Usted...

- Atiende Iglesia (si es sí, cuantas veces al mes _____)
- Participa en actividades de comunidad
- Tiene familia viviendo cerca de usted?

18. En el lugar donde está viviendo tiene:

- Una estufa
- Refrigerador
- Agua potable
- Muebles de cocina
- Lugar en donde guarda su comida
- Servicios sanitarios
- Excusados con drenaje

19.Cuál fué tu ingreso total incluyendo todos sus recursos en 1998 ?

- menos de \$5000
- \$5000- \$7500
- \$7500-\$10,000
- \$10,000-\$12,500
- \$12,500-\$15,000
- \$15,000-\$17,500
- \$17,500-\$20,000
- \$20,000-\$22,500
- \$22,500-\$25,000
- \$25,000-\$30,000
- \$30,000-\$35,000
- \$35,000-\$40,000
- mas de \$40,000

20. Qué considera una comida balanceada para ser?

21. Dondé aprendió usted esto?

22. En general, como sientes sobre tu vida? (Marca una)

- Encantado
- Agradado
- Principalmente satisfecho
- Sobre igualmente satisfizo y descontento
- Principalmente descontento
- Infeliz
- Terrible

23. ¿Piensa usted que su casa podrá pagar por lo del que necesita ahora en 3 meses?

Si

No

Tal Vez

1. Cúal de las siguientes oraciones describe mejor la alimentación en su casa en los ultimos 12 meses, a partir de hoy?

- Nosotros siempre tenemos comida suficiente y la variedad de comida que queremos
- Nosotros tenemos suficiente comida pero NO siempre la variedad de comida que queremos
- Algunas veces no tenemos comida suficiente
- Frecunetemente no tenemos suficiente comida

1a. (Si seleccionó algunas veces o frecuentemente) Aquí hay algunas razones porque la gente no tiene siempre suficiente comida. Para cada uno, por favor marca si es la razon por la cual tu no tienes siempre suficiente comida. (Marca todos los que apliquen a tu situación)

- No tengo suficiente dinero para comprar comida
- Muy dificil de almacenar en buenas condiciones los alimentos
- Estoy haciendo dieta
- No tengo una estufa que funcione disponible
- No puedo cocinar o comer por problemas de salud

1b. (Si seleccionó muy dificil de almacenar) Aquí hay algunas razones por las cuales la gente no siempre tiene la clase de comida que ellos quieren o necesitan. Para cada uno por favor marca si es una razón por la cuál TU no tienes siempre la clase de comida que quieres o necesitas. (Marca todos los que se apliquen para tu situación).

- No tengo suficiente dinero para comprar comida
- Es muy dificil de almacenar en buenas condiciones los alimentos
- Estoy haciendo dieta
- La comida que quiero no está disponible
- No hay buena calidad de comida disponible

2. *Ahora voy a leer varias oraciones que la gente ha tenido sobre su situación alimenticia. Para estas oraciones, por favor marca si alguna de las oraciones fueron: frecuentemente, algunas veces, nunca para tí o tu familia en los últimos 12 meses..*

La primera frase es “ nosotros nos preocupamos cuando hemos tenido poco dinero y nuestra comida se está acabondo y no nos alcanza el dinero para comprar más comida.

- Frecuentemente
- Algunas veces

- Nunca
- No sé o me reuso a contestar

3. La comida que compramos no alcanzó y no tuvimos dinero para comprar más. Qué tan frecuente sucedió en los últimos 12 meses en tu hogar?

- Frecuentemente
- Algunas veces
- Nunca

4. No pudimos comer alimentos balanceados. Qué tan frecuente sucedió en los últimos 12 meses en tu hogar?

- Frecuentemente
- Algunas veces
- Nunca
- No sé o me reuso a contestar

5. Nosotros utilizamos solo alguna comida barata para alimentar a nuestros hijos, porque no tuvimos dinero. Qué tan frecuente sucedió en los últimos 12 meses en tu hogar?

- Frecuentemente
- Algunas veces
- Nunca
- No sé o me reuso a contestar

6. No pudimos alimentar a nuestros hijos con alimentos balanceados, porque no pudimos comprarlos. Qué tan frecuente sucedió en los últimos 12 meses en tu hogar?

- Frecuentemente
- Algunas veces
- Nunca
- No sé o me reuso a contestar

7. Nuestros hijos no comieron lo suficiente porque no pudimos comprar suficiente comida. Qué tan frecuente sucedió en los últimos 12 meses en tu hogar?

- Frecuentemente
- Algunas veces
- Nunca
- No sé o me reuso a contestar

8. Durante los últimos 12 meses, tu o otros adultos en tu hogar tuvieron que reducir sus alimentos o dejar de comer alguno de ellos, porque no había suficiente dinero para comida?

- Sí
- No

8a. (Si la respuesta anterior fué sí) Qué tan frecuente sucedió?

- Casi cada mes
- Algunas meses pero no todos
- Solamente 1 o 2 meses
- No sé

9. En los últimos 12 meses; Comiste menos de lo que deberías haber comido porque no había suficiente comida?

- Sí
- No
- No sé

10. En los últimos 12 meses; Estubiste hambriento pero no comiste porque no podias comprar comida?

- Sí
- No
- No sé

11. En los últimos 12 meses; Bajaste de peso porque no tenias suficiente dinero para comida?

- Sí
- No
- No sé

12. En los últimos 12 meses, Tú o adultos en tu hogar no comieron durante un día entero porque no tenían suficiente dinero para comprar comida?

- Sí
- No
- No sé

13. Si la respuesta anterior fué sí) Qué tan frecuente sucedió esto?

- Casi cada mes
- Algunos meses pero no todos
- Solamente 1 o 2 meses
- No sé

14. En los últimos 12 meses, alguno de los niños no comió alguno de sus alimentos porque no había suficiente dinero para comida?

- Sí
- No
- No sé

14a. (Si la repuesta anterior fué sí) Qué tan frecuente sucedio esto?

- Casi cada mes
- Algunos meses pero no todos
- Solamente 1 o 2 meses
- No sé

15. En los últimos 12 meses, los niños estuvieron muy hambrientos pero tu no pudiste comprar más comida?

- Sí
- No
- No sé

16. En los últimos 12 meses algunos de los niños no comió durante un día entero porque no había suficiente dinero para comida?

- Si
- No
- No sé

Instrucciones:

Escucha cuidadosamente. Indica cual de las siguientes se acomoda más a tu situación. Falso (F), Mas ó Menos Falso (MF), Mas ó Menos Verdadero (MV), Verdadero (V).

1. Yo tengo muchas formas para salir de apuros.
F MF MV V
2. Consigo mis metas energéticamente.
F MF MV V
3. Me siento cansada la mayor parte del tiempo.
F MF MV V
4. Hay muchas formas de salir de algún problema.
F MF MV V
5. Soy vencido fácilmente durante una discusión.
F MF MV V
6. Yo sé como conseguir las cosas que son más importantes para mi.
F MF MV V
7. Me preocupa mi salud.
F MF MV V
8. Aún cuando otros se desaniman, yo se como encontrar la forma de resolver un problema.
F MF MV V
9. Las últimas experiencias me prepararon bien para el futuro.
F MF MV V
10. He sido muy exitoso en la vida.
F MF MV V
11. Usualmente me preocupo por algo.
F MF MV V
12. Alcancé las metas que me propuse.
F MF MV V

Appendix B

Food Security Module Scoring

Appendix B. Food Security Scoring Scale Adapted from Guide to Implementing the Core Food Security Module (USDA, ERS, 1997)

SCALE VALUES AND FOOD STATUS CATEGORIES FOR THE CORE SCALE
(For Complete Responses Only)

Households with Children			Households without Children		
Number of Affirmative Responses (Out of 18)	Scale Value	Food Security Status Category ^a	Number of Affirmative Responses (Out of 10)	Scale Value	Food Security Status Category ^a
0	0.0	0	0	0.0	0
1	0.7	0	1	0.9	0
2	1.6	0	2	1.9	0
3	2.2	1	3	2.7	1
4	2.8	1	4	3.5	1
5	3.3	1	5	4.2	1
6	3.7	1	6	4.9	2
7	4.2	1	7	5.7	2
8	4.6	2	8	6.5	2
9	5.1	2	9	7.4	3
10	5.5	2	10	8.1	3
11	5.9	2			
12	6.4	2			
13	6.8	3			
14	7.2	3			
15	7.7	3			
16	8.3	3			
17	9.2	3			
18	10.0	3			

- ^a 0 = Food secure
 1 = Food insecure without hunger
 2 = Food insecure with moderate hunger
 3 = Food insecure with severe hunger

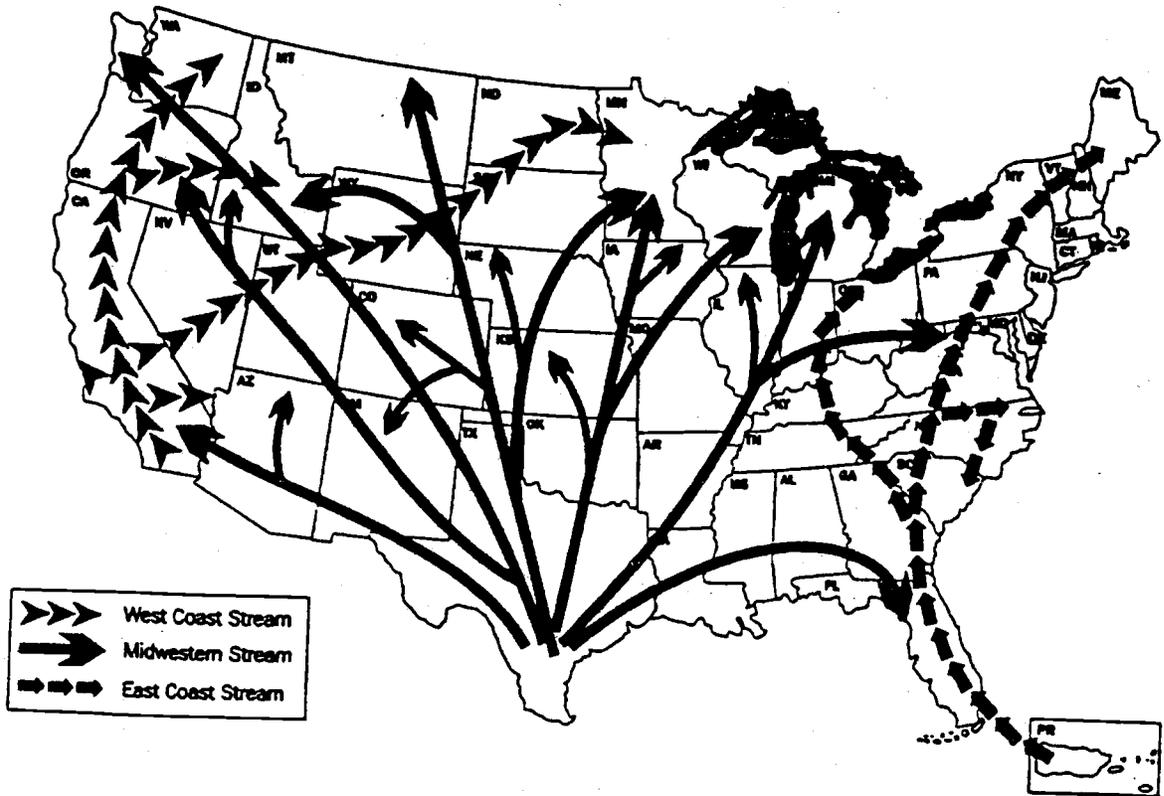
Appendix C

Reference Maps



C-1. Map of the States of the United States of Mexico

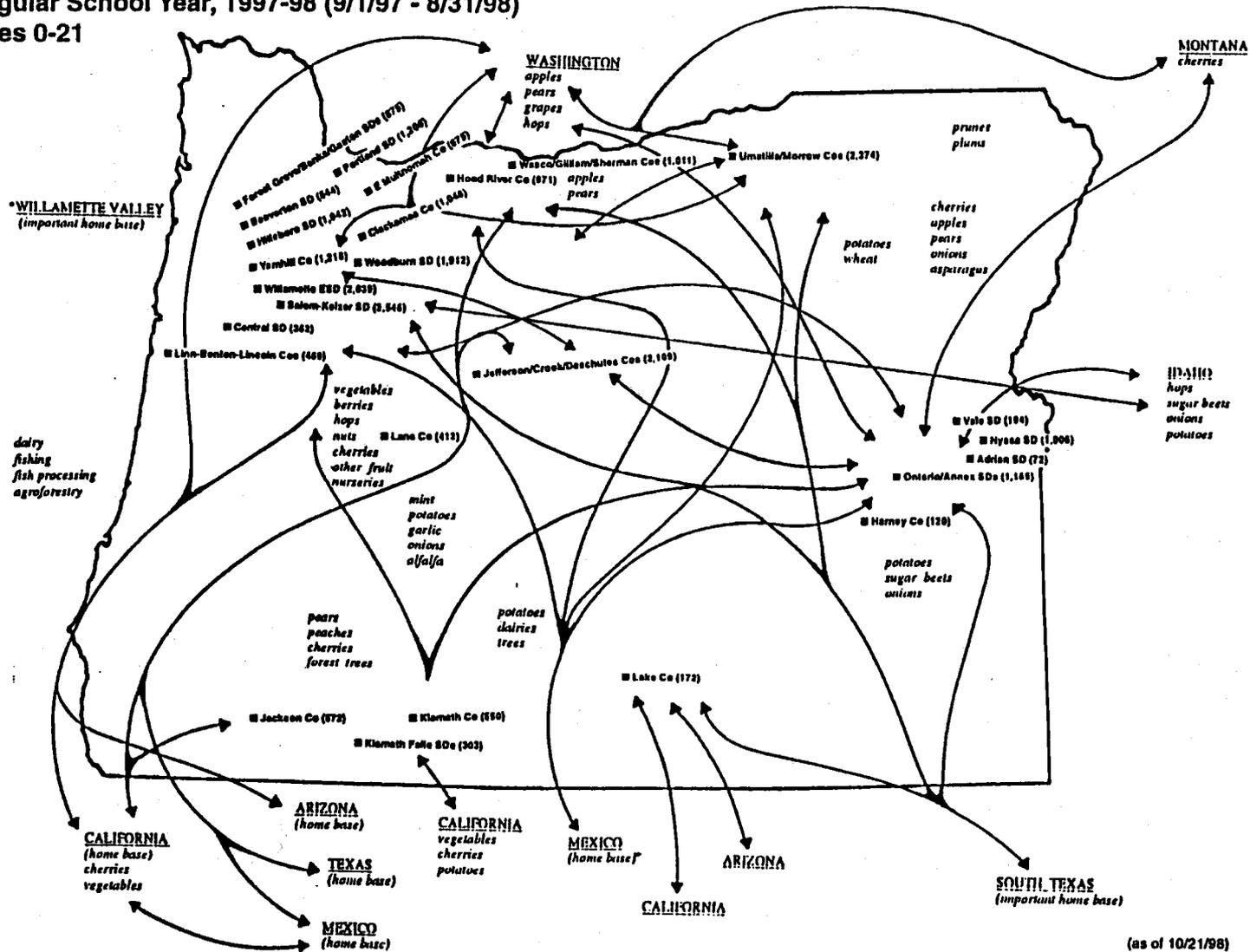
C-2. Map of the Western, Midwestern and Eastern Migrant Streams



Location of Students by Migrant Patterns and Crops

Regular School Year, 1997-98 (9/1/97 - 8/31/98)

Ages 0-21



C-3. Map of the Locations of Students by Migrant Patterns and Crops in Oregon

Appendix D

Unsuccessful Participant Recruitment Contacts

Naumes, Inc., Holliday Tree Farms and Depoe Bay Fish Co., were not the only businesses and organizations contacted to recruit subjects. I first started by contacting the Virginia Garcia Clinic in Cornelius. After many attempts at reaching the Director, she returned my call requesting a fax of the survey, my resume, and a letter explaining my personal interest in the migrant farmworker population. She told me that she thought my survey would be "too stressful" for "their people," but if "I wanted to come up and try some to find out that I would not be successful, she was not going to stop me." So I did go one rainy day in the fall. I met with the Clinic Supervisor who was quite supportive of the project, and commented that she thought food insecurity would be even worse among farmworkers living in town than in the camps. She explained that it was not uncommon for families of five to be paying up to \$150 per person to live in one bedroom of a house. Obviously this left little money for luxuries like food.

I then joined the Outreach Team that consisted of a Vista volunteer, a nurse and one support staff. We drove in the Clinic van to a number of camps in Washington and Yamhill Counties. The camps are tough to find and are usually not visible from the roadside. We had gathered donated foods from Centro Latino (across from the Clinic in Cornelius) before we had headed out, and we distributed these at the camps. Carrots, apples, a few chilies, some radishes and packaged chorizo were the foods we offered. We also had warm clothing in different sizes, which was important because many of the workers who come do not anticipate staying into the fall and are lacking in weather appropriate clothing. Many women

had nothing more than T-shirt and a summer skirt on a day that required a heavy sweatshirt or winter coat. The nurse checked to see if anybody at the camp was sick or needed some over the counter cold and flu medications that we had on hand. After distributing the food we would move on to the next camp. Living conditions varied from a small, single-family house for the farm supervisor, to a low lying building similar to a group of studio motel rooms. A common source of housing was trailers. At one camp, the trailers had been modified with creaky wooden bunk beds so that 10-12 men would be sleeping inside a small, single wide at the peak of the season. At another camp, the staff explained that during the summer, the camp owner had placed unrelated and not previously acquainted males and females in the same trailers, which was totally unacceptable to the women. The crew leader at that camp was notorious for sexually harassing all the new, young female workers. At the last camp we visited, a woman came out to tell the nurse that she heard that a girl had been sexually assaulted at one of the camps and asked the nurse to check up on her. She said she would follow up on that.

Upon returning from the morning camp route, I met with the Clinic's primary social service worker. We agreed that it was too difficult for me to do surveys with the Outreach team because of the "in and out" nature of the visits. It was not really safe for me to go out to the camps on my own, so she suggested that I could go along with her when she did her regular home visits. So I left, having set things up to accompany her in two weeks. However, when I called her the week before, the staff told me that she was not available. I left many, many messages. I

eventually found out in December that she had to return to Mexico for a family emergency and was gone for quite a while. When she returned she told me that several of the clients had children that had died and they required intensive counseling so it would not be appropriate for me to accompany her on the home visits. That was the end of my involvement with Virginia Garcia.

I also planned on recruiting subjects at Salud Medical Clinic in Woodburn. I contacted the Outreach Coordinator, and in contrast to the previously mentioned clinic, she stated that they would work with me as long as the work would benefit the farmworker community. She reported that they went to the camps every Friday and I agreed to meet them at the Clinic the following week. When arrived, neither of the two Outreach workers were there. I waited 2 hours and finally one did come back to work but said that it was now too late in the day to go out. I called the following 2 weeks to confirm that they were visiting the camps but was told that they were not going because it was raining. Finally, a day arrived when they were going to the camps. We jumped in the Clinic van and went to Monitor, where several men were living in the upstairs of an "abandoned" building. A few came down to get some warm clothes we had brought. We visited a couple more sites, and while in transit we decided that it would be good for me to survey people at the bi-monthly classes that the Outreach Workers lead for persons with diabetes. I agreed and returned in the evening about 2 weeks later to discover that the group was not there. I asked a staff member where this worker was and they stated that

they didn't know and that the group should be meeting, but no one was ever found. That was the end of my involvement with Salud.

I also wanted to get some participants from east of the Cascades. I tried several places in Klamath Falls. I called the Klamath County Health Department, which is listed in the Farmworker Pocket Directory. I explained the project to the receptionist and was told that they really didn't "serve the Illegals," but I could speak with the new Director. After being transferred to him, he reaffirmed that they did not serve "those people" and referred me to Klamath Open Door Clinic. I called this clinic, spoke with the director and faxed a copy of my survey. After a meeting of the board, the Clinic decided to participate in the survey. I was assigned to the Outreach Worker and he stated that he would have some interviews lined up for me when I got into town. Upon arrival at the clinic we got into his car and drove up to Bly Mountain (about a half hour out of Klamath Falls proper) where many of the migrant families were living. Bly mountain is accessed by a winding, dirt road. Different housing types are common with quite a few persons living out of old school busses. The land is cheap to obtain because there is no water or sewer access, so many of the families are going without these services. When we arrived at the trailer where our first interview was supposed to be, we were told that the woman had gotten pneumonia and was taken to the Hospital. Several of the other interviews he had lined up fell through. We went to Nuell, CA. to a large migrant camp to see if we could find any potential participants. Ironically, this migrant camp is just a stones throw away from the Tule Lake Internment Camp

used during the “relocation” of Japanese Americans during WWII. We could hardly find anybody and the camp supervisor said that a lot of families had moved on already due to cold weather. I left Klamath Falls defeated.

Several other attempts were made to access farm workers in Klamath Falls. Typical reactions included, “you’re surveying what” to “we don’t have any migrants on staff.” This last excuse was questionable because these places had been identified by the local office of the Oregon Human Development Corp. as large employers of seasonal workers. Therefore, I gave up on getting data from Klamath Falls.