

# Understanding Food Insecurity at the State and Local Level

Bruce Weber, Mark Edwards and Conor Wall

Oregon State University

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and Policies* Research Symposium

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# Outline

- What is Food Insecurity?
- Understanding household-level food insecurity
- Estimating county-level food insecurity rates
  - two models for estimating county-level food insecurity
- Food Availability and Affordability in Rural Oregon
- Future research directions



# Defining Food Security

- A household is “**food secure**” if “all household members had access at all times to enough food for a healthy active life” (Gunderson et al. 2011)
- A household is “**food insecure**” if it “had difficulty at some time during the year providing enough food for all their members due to a lack of resources” (Coleman-Jensen et al. 2012)



# Food Insecurity Includes...

- **Low food security** (previously “food insecurity without hunger”)
  - reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.
- **Very low food security** (previously “food insecurity with hunger”)
  - reports of multiple indications of disrupted eating patterns and reduced food intake.



# How Food Insecurity is Determined

- The Current Population Survey's Food Security Supplement asks households with children 18 questions about food actions taken because of a lack of resources, including:
  - Being worried that food would run out before getting money to buy more
  - Cutting the size of meals
  - Skipping meals
  - Not eating for an entire day



# How Food Insecurity is Determined

Households with children are classified as

- **“food secure”** if they answer yes to 2 or fewer of the 18 questions
- **“food insecure”** =
  - **“low food secure”** if they answer “yes” to 3 to 7 questions
  - **“very low food secure”** if they answer “yes” to 8 or more questions

(Households without children are asked 10 questions and the thresholds are 3-5 affirmatives for low food security and 6 or more for very low food security)



# Understanding Food Insecurity: Household Level

- In 2000, Oregon was reported to have the highest hunger rate in the country and 3rd highest food insecurity rate in the country
- Since Oregon is not a high-poverty state, this surprised many people
- USDA Economic Research Service established a cooperative agreement with Oregon State University to try to understand this #1 ranking



# Understanding Household Food Insecurity

Certain household characteristics make households more vulnerable to food insecurity [FI]:

- Poverty or low income
- Unemployment
- Lack of full-time employment
- Blue Collar Employment
- Single-mother/one-earner household status
- Renting
- Having moved in the past year





# 1) Household Food Insecurity in Oregon: 2000

- Edwards and Weber (2003) examined the 1999 and 2001 CPS data to explore Oregon's high FI
- Oregon's higher food insecurity and hunger rates
  - **not due to higher proportions of vulnerable populations**
  - **not due to higher FI rates among some vulnerable populations** (Poor households, unemployed households and single-mother households)



# Food Insecurity in Oregon: 2000

- Oregon FI rates were **higher than U.S. rates**
  - **for some *more vulnerable* populations** (renters, movers, two-adult households with children, and blue-collar workers)but also (**surprisingly**)
  - **for many *less vulnerable* populations** (households with full-time, full-year workers; households with no unemployed workers)
- Future research should examine role of housing costs (rent) and social supports



## 2) Estimating Food Insecurity for Oregon Households: 2000

- Bernell, Weber, and Edwards (2006) used data from the 2000 Oregon Population Survey (OPS) to study factors associated with food insecurity at the household level
- OPS sample: 4,725 Oregon households contacted by random-digit dialing and asked questions that include National Center for Health Statistics six-question subset of the Food Security Core Model
- Logit model of food insecurity included both household and county characteristics



# Household Characteristics Matter

- Household characteristics associated with increased food insecurity:
  - Low income
  - Single motherhood
  - African-American
  - Having moved in the past five years
  - Disability
  - Lack of a college degree

(Bernell, Weber, and Edwards, 2006)



# County-Level Characteristics Also Matter

- Housing costs matter
  - Living in a high-rent county exacerbated food insecurity for those in the lowest income quintile
- Social support matters
  - The percent of the population living in rural areas was associated with lower food insecurity
- County wages and unemployment did not have significant effect on food insecurity

(Bernell, Weber, and Edwards, 2006)



# Estimating County Food Insecurity

- Because of small sample sizes for the CPS Food Security Supplement, food insecurity estimates are reported by USDA only at the national and state levels.
- There have been several attempts to estimate county-level food insecurity rates



# 1) Oregon County Food Insecurity: 2000

- Tapogna, Suter, Nord, and Leachman (2004) examined the relationship between state-level food insecurity rates and
  - Percent of households that moved in the previous year \*
  - Peak unemployment rate (3-year average)
  - Poverty rate \*
  - Percent of renters spending more the 50% of their income on rent \*
  - Percent of the population that is white, non-Hispanic, (2000)
  - Percent of population below age 18 \*



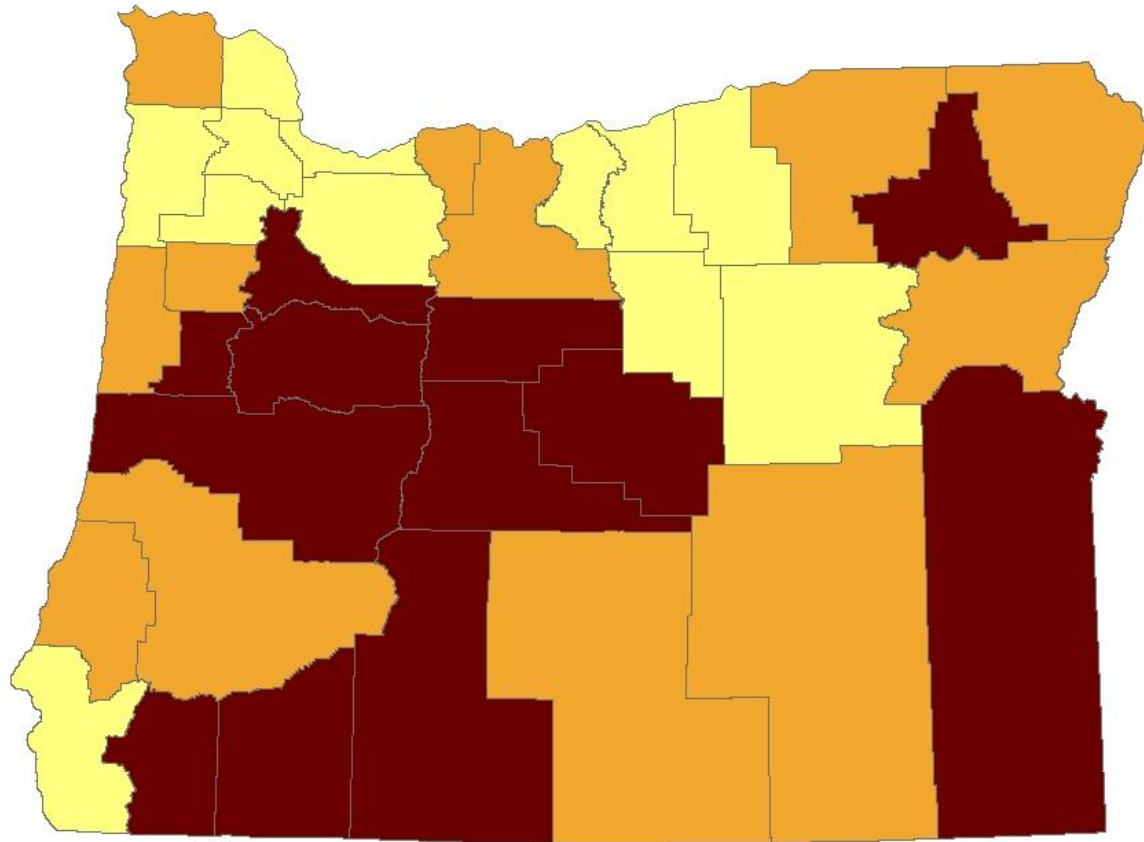
# Oregon County Food Insecurity Model

- Grussing (2007) estimated county-level food insecurity and hunger rates for Oregon counties by
  - applying estimated coefficients from the Tapogna et al. state-level model
  - to county-level economic/demographic data for Oregon

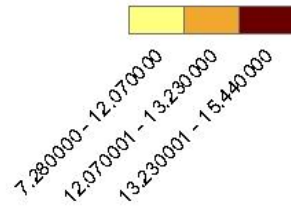




# Grussing's Projections of 2000 Food Insecurity



Grussing\_Insecurity



# 1a) Testing the Robustness of Tapogna et al. Model

- Chatfield (2011) re-estimated the Tapogna et al. model of state-level food insecurity for 2000, and for each of the subsequent years 2002-2008.
- She generally reproduced the results for 2000
- Coefficients in single year models for 2002-2008 were unstable and had lower predictive power
- Coefficients in panel data models for 2000-2008 and 2002-2008 models were closer to original results for some key variables (poverty, population under 18, mobility)



## 2) U.S. County Food Insecurity Rate Estimates: 2010

- Gunderson et al. (2012) developed 2010 food insecurity rate estimates for Feeding America *Map the Meal Gap* project
- They apply estimated coefficients from a regression of state-level food insecurity rates to county-level economic/demographic data to estimate county-level rates

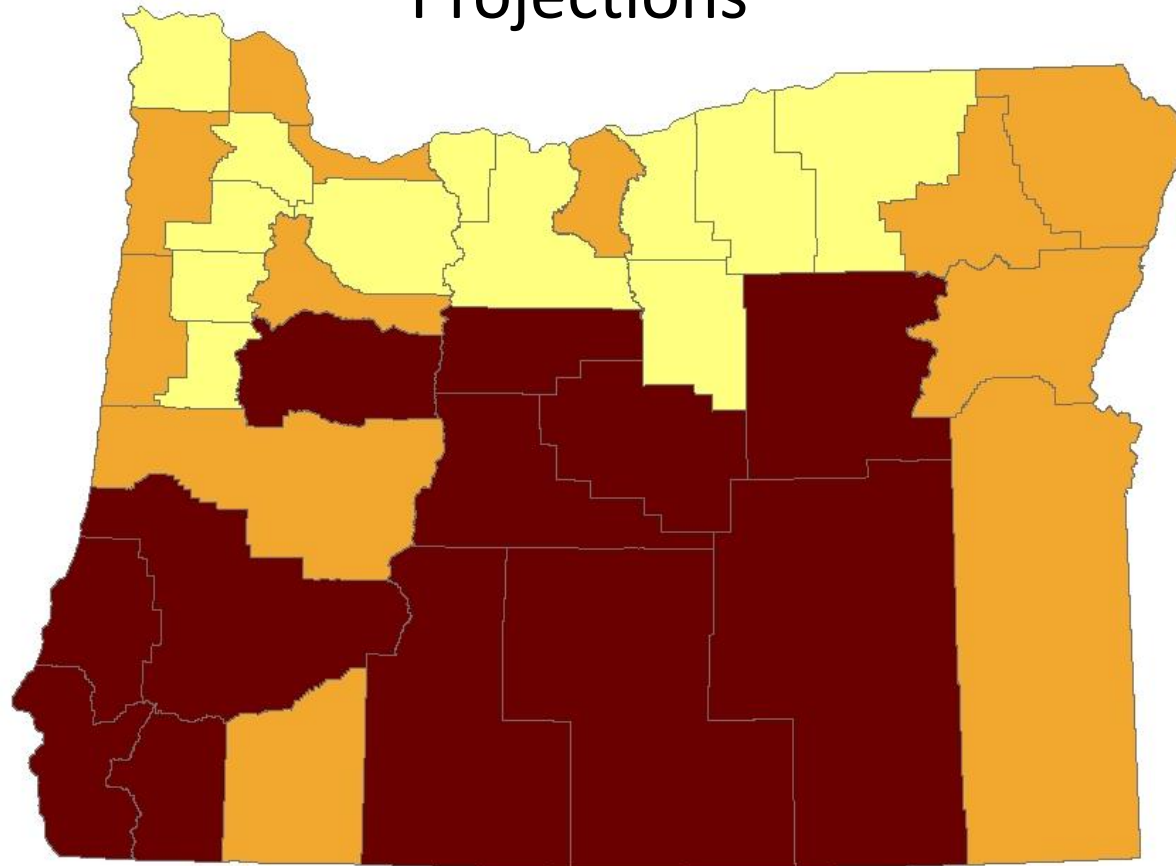


# *Map the Meal Gap Model*

- Unemployment \*
- Poverty \*
- Median Income
- Percent African-American
- Percent Hispanic
- State and year fixed effects \*



# Map the Meal Gap 2010 County Food Insecurity Projections



FA\_Insecurity



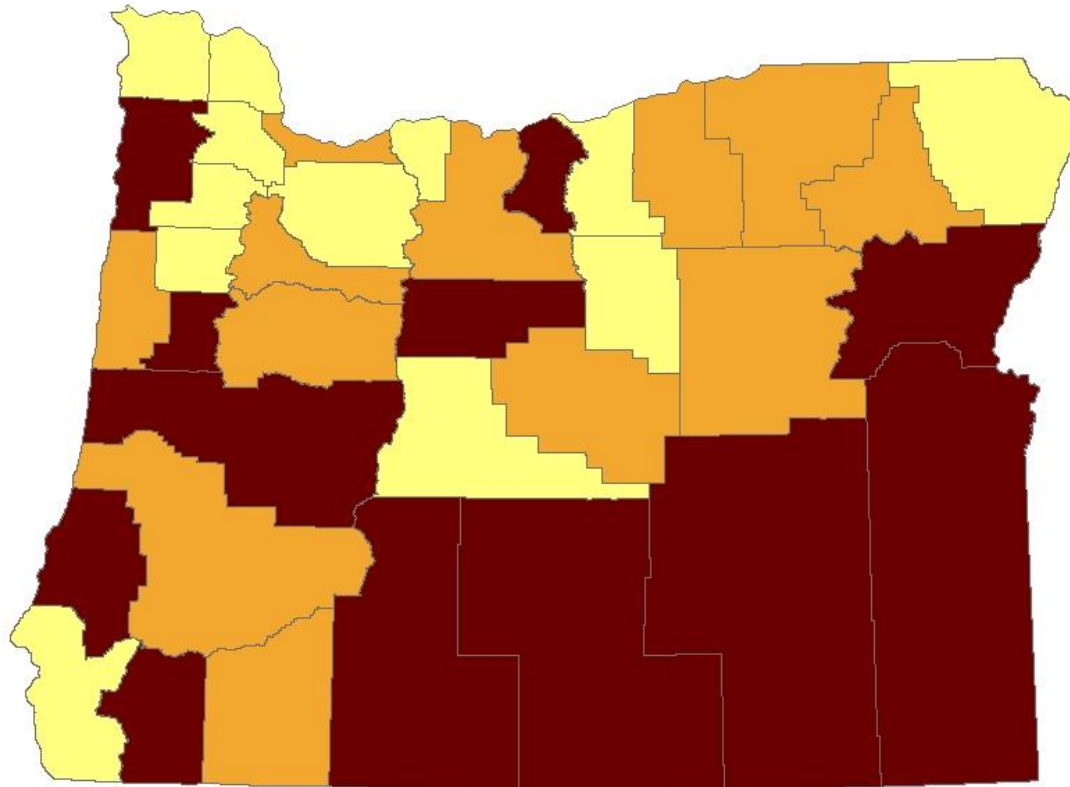
11,800,000 - 15,700,000  
15,700,001 - 17,200,000  
17,200,001 - 20,400,000



Rural Studies  
Program OSU  
Oregon State  
University

# How Well Does Estimated County Food Insecurity Correlate with Other Indicators of Food Distress?

# Oregon County Poverty Rates, 2010



Oregon Counties

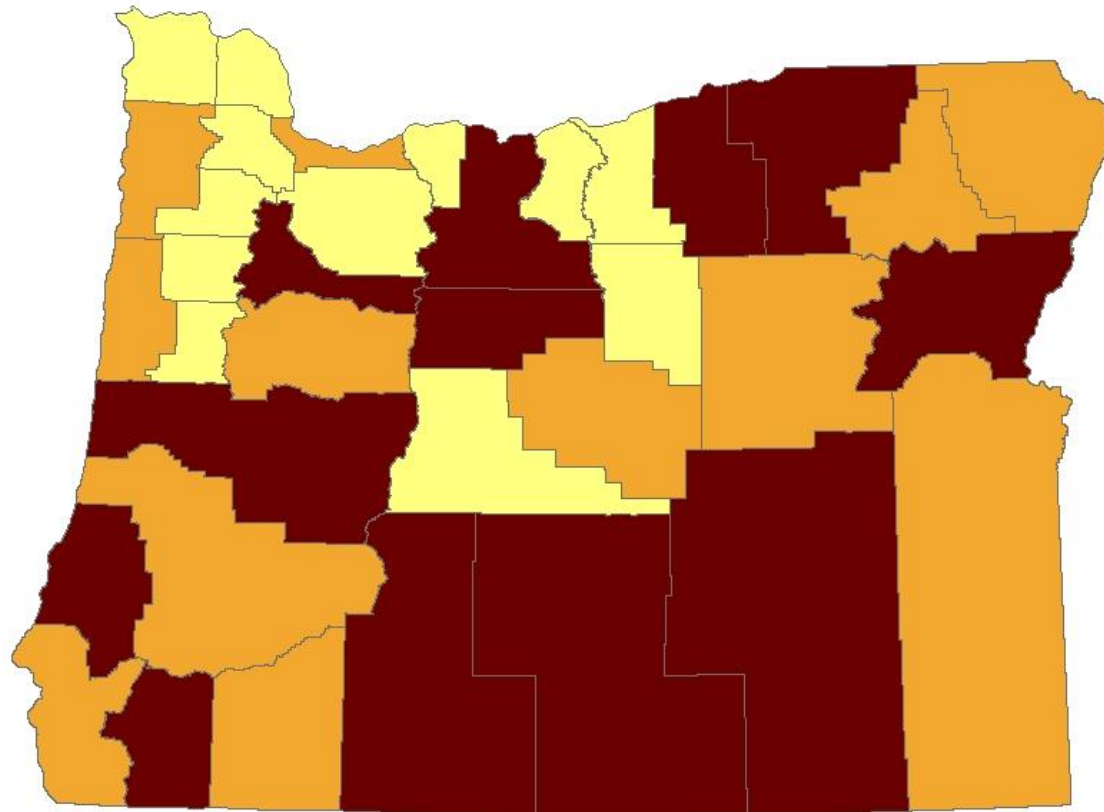
Poverty



9.000000 - 13.900000  
13.900001 - 18.200000  
18.200001 - 22.700000

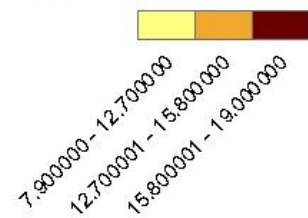


# Percentage of Residents Receiving SNAP Benefits, 2010



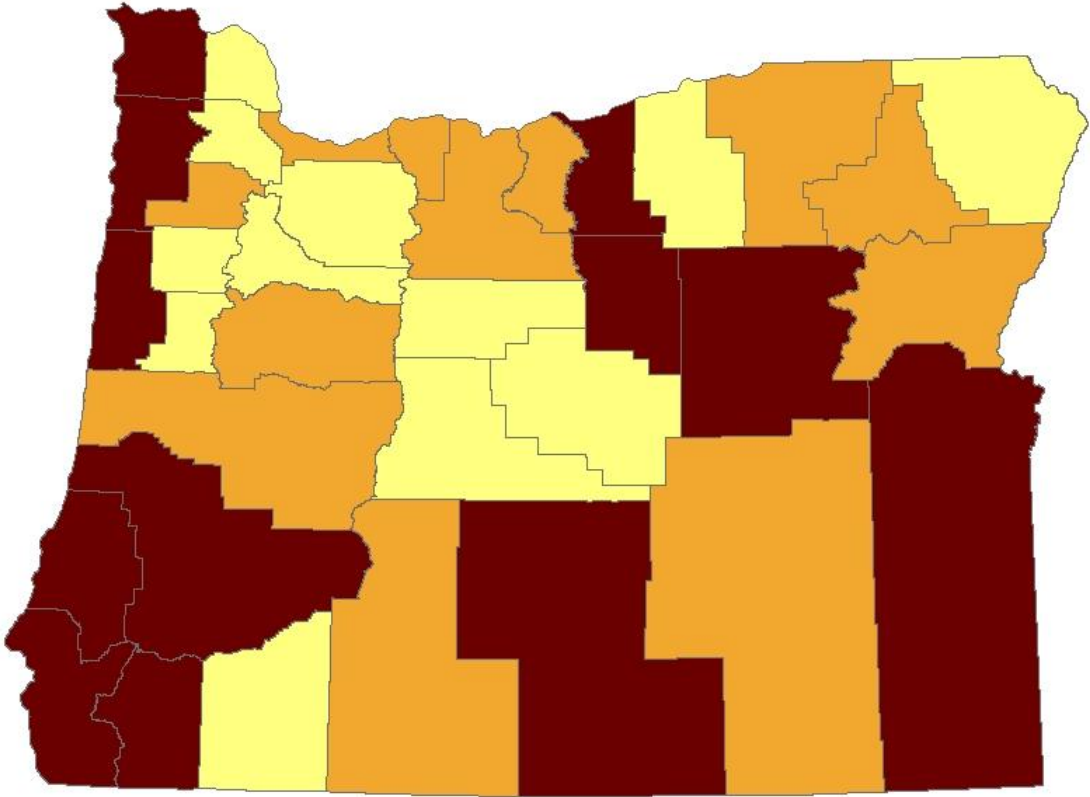
Oregon Counties

SNAP Benefits





# Food Boxes Distributed Per Capita, 2010



**Oregon Counties**  
Food Boxes Distributed Per Capita, 2010



0.068892 - 0.217830  
0.217831 - 0.279057  
0.279058 - 0.655630

# Food Availability and Affordability in Rural Benton County, Oregon

- In May 2012, a group of graduate students in the Rural Studies 513 Contemporary Rural Issues class undertook a comparison of prices and availability of foods in the USDA's Thrifty Food Plan in rural and urban food stores in Benton County, Oregon
- The students visited two large urban supermarkets and seven rural food stores, noting the costs and prices of 123 foods in the USDA's Thrifty Food Plan



# Food Availability and Affordability in Rural Benton County, Oregon

- Urban stores had far superior selection and generally lower prices
- Availability of dry and canned goods was considerably higher at rural grocery stores than availability of fresh fruits, vegetables, or meats
- Considerable variation in prices and selection existed between rural stores, with some appearing similar to convenience stores and others resembling full grocery stores or general stores



# Food Stores in Benton County, Oregon

	Urban/ Rural	Population	Items Available
Store 1	Urban	54,462	99%
Store 2	Urban	54,462	92%
Store 4	Rural	4,584	84%
Store 3	Rural	617	69%
Store 4	Rural	3,303	68%
Store 5	Rural	58	52%
Store 6	Rural	n/a	45%
Store 7	Rural	66	43%
Store 8	Rural	840	37%



# Average Availability and Food Costs

	Average Availability	Average Total Cost*
Urban Stores	96%	\$222
Rural Stores	57%	\$352

\*Preliminary data. Prices for items not carried by any of rural stores are not included in the price averages



# Fruits and Vegetables

	Urban Stores		Rural Stores	
	Availability	Price*	Availability	Price*
Fresh fruits	100%	\$6.48	33%	\$10.85
Fresh vegetables	97%	\$14.34	29%	\$17.36
Canned fruits	100%	\$11.09	78%	\$22.36
Canned vegetables	95%	\$19.30	77%	\$10.75
Frozen fruits and vegetables	90%	\$16.10	50%	\$23.17

\*Preliminary data. Prices for items not carried by any of rural stores are not included in the price averages



# Grains, Dairy, and Oils

	Urban Stores		Rural Stores	
	Availability	Price*	Availability	Price*
Breads, Grains, and Cereals (fresh)	92%	\$10.94	50%	\$16.97
Breads, Grains, and Cereals (dry)	97%	\$25.08	66%	\$38.59
Dairy Products (fresh)	94%	\$22.38	75%	\$31.01
Fats and Oils	100%	\$18.34	83%	\$31.81

\*Preliminary data. Prices for items not carried by any of rural stores are not included in the price averages



# Meats and Prepared Foods

	Urban Stores		Rural Stores	
	Availability	Price*	Availability	Price*
Meats and meat alternatives, fresh	100%	\$16.20	31%	\$30.05
Meats and meat alternatives, frozen or canned	92%	\$23.44	52%	\$26.85
Sugars and Sweets	86%	\$38.03	76%	\$67.06
Prepared foods (packaged or frozen)	100%	\$7.79	69%	\$14.82

\*Preliminary data. Prices for items not carried by any of rural stores are not included in the price averages





# Where to go from here....

Three questions for us to answer:

1. Is there a strong demand for local estimates of food insecurity?
2. If there is a need for better estimates of local food insecurity, what research can we do to provide better estimates?
  - Research of the type initiated here at University of Missouri that tests the performance of county-level “household food uncertainty” estimates



# Where to go from here....

- A new line of research initiated here in the Interdisciplinary Center for Food Security that estimates local “community food uncertainty”
3. To what extent, and for whom, does limited food availability and affordability in rural areas important affect local food insecurity? How do low-income consumers in limited access areas obtain their food?



Contact information:

Bruce Weber

Department of Agricultural & Resource Economics

Oregon State University

Corvallis OR 97330

[bruce.weber@oregonstate.edu](mailto:bruce.weber@oregonstate.edu)

