Hunger and Food Insecurity in the US: History, Correlates & Dynamics

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US Hunger in the 1980’s

“A most serious emergency”
U.S. Conference of Mayors, 1982

“I don’t know of any authoritative figures that there are hungry children. I’ve heard a lot of anecdotal stuff...”
Edwin Meese, 1983

The Problem with Calling Food Deprivation of the ‘80s Hunger

- Hunger, as it was understood by most people, didn’t accurately characterize the nature of food deprivation as it was experienced by people in the US.
- Hunger = Starvation

Measurement of Hunger and Food Insecurity in the US

Highlights of Cornell’s Role in the History of Food Insecurity Measurement

US Hunger in the 1980’s

“While we have found evidence of hunger in the sense that some people have difficulties with access to food, we have also found that it is at present impossible to estimate the extent of that hunger...We cannot report any indicator that will tell us where and by how much hunger has gone up in recent years...”
President’s Task Force on Food Assistance, 1984

The Problem with Calling Food Deprivation of the ‘80s Hunger

Kathy L. Radimer, PhD Dissertation, Cornell University, Ithaca, NY 1990

Understanding Hunger and Developing Indicators to Assess It
Radimer’s Research Methods

- In-depth interviews with 32 women in rural and urban areas of Central New York who had gone hungry or been close to going hungry
- Survey with 189 women with children from the same geographical area

Distinction Between Hunger and Food Insecurity

Going hungry, hungry is when there is absolutely nothing in the house. But also going hungry is when you have to eat the same thing all week long and you have no variation from it and you know sooner or later you’re gonna run out of that, too, because it’s only gonna go so far. So each day you cut the portions down a little bit smaller and a little bit smaller...And you have a tendency to send your kid off to play with somebody else so that they’re there at mealtime so that they do eat.’


Definition of Food Insecurity

The inability to acquire or consume an adequate quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so.


Conceptual Structure of Food Insecurity

<table>
<thead>
<tr>
<th>Component</th>
<th>Household</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative</td>
<td>food depletion</td>
<td>insufficient intake</td>
</tr>
<tr>
<td>Qualitative</td>
<td>unsuitable food</td>
<td>nutritional inadequacy</td>
</tr>
<tr>
<td>Psychological</td>
<td>food anxiety</td>
<td>lack of choice and feelings of deprivation</td>
</tr>
<tr>
<td>Social</td>
<td>food acquired in unacceptable ways</td>
<td>disrupted eating patterns</td>
</tr>
</tbody>
</table>


Products of Radimer’s Research

- Definition of food insecurity
- A conceptual framework
- Items to measure food insecurity

Radimer et al. Journal of Nutrition Education 24:36s-45s, 1992

National Nutrition Monitoring and Related Research Act of 1990

Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program (NNMRRP) included the task assignment to:

Recommend a standardized mechanism and instrument(s) for defining and obtaining data on the prevalence of “food insecurity” or “food insufficiency” in the U.S. and methodologies that can be used across the NNMRRP and at State and local levels.
LSRO Definitions of Food Insecurity and Hunger

**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.

**Hunger**, in its meaning of the uneasy or painful sensation caused by a lack of food, is in this definition a potential although not necessary, consequence of food insecurity.

**SOURCE:** LSRO, FASEB. "Core Indicators of Nutritional State for Hard to Measure Populations," J Nutr. 120: 1575-76 1990.

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Radimer/ Cornell Measure Validation Methods, 1993

- Selected a relatively typical rural county in Upstate New York
- Selected a stratified random sample of households with women who had children at home
- Conducted in home interviews that included questionnaire and weighing
- Returned for second 24-hour recall and food inventory


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**Validation Survey Results**

Mean Household Food Inventory Score by Hunger and Food Insecurity Status

<table>
<thead>
<tr>
<th></th>
<th>Secure n=90</th>
<th>Household Insecure n=50</th>
<th>Individual Insecure n=33</th>
<th>Child Hunger n=20</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dairy</strong></td>
<td>4.9</td>
<td>4.2</td>
<td>4.0</td>
<td>3.4</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Meat</strong></td>
<td>2.7</td>
<td>2.3</td>
<td>2.2</td>
<td>2.1</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Grains</strong></td>
<td>12.6</td>
<td>11.2</td>
<td>10.2</td>
<td>9.9</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Fruits</strong></td>
<td>8.6</td>
<td>7.1</td>
<td>5.9</td>
<td>5.7</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Vegetable</strong></td>
<td>12.9</td>
<td>11.5</td>
<td>10.1</td>
<td>9.6</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>78.5</td>
<td>67.6</td>
<td>59.1</td>
<td>60.1</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

**Validation Survey Results, 1993**

**Sensitivity and Specificity of Radimer/Cornell Measure Relative to the Definitive Criterion Measure (n=189)**

<table>
<thead>
<tr>
<th></th>
<th>Definitively Secure</th>
<th>Probably Insecure</th>
<th>Definitely Insecure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radimer/Cornell</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Secure</td>
<td>63</td>
<td>66</td>
<td>44</td>
</tr>
<tr>
<td>Insecure</td>
<td>37</td>
<td>38</td>
<td>56</td>
</tr>
<tr>
<td>Radimer/Cornell without one uncertainty item</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure</td>
<td>71</td>
<td>74</td>
<td>51</td>
</tr>
<tr>
<td>Insecure</td>
<td>29</td>
<td>30</td>
<td>49</td>
</tr>
</tbody>
</table>


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1995, Status of Hunger & Food Insecurity Measurement

1) USDA developed an 18-item food security measurement tool
   13 items from Radimer/Cornell Measure
2) USDA funds the yearly assessment as part of the Current Population Survey (CPS) conducted by the US Census Bureau
2006, Status of Hunger & Food Insecurity Measurement

- USDA requested the National Academy of Sciences to review the concepts, methodology and measures of hunger and food insecurity.
- Panel concluded:
  - “USDA should continue to measure and monitor food insecurity regularly in a household survey. Given that hunger is a separate concept from food insecurity, USDA should undertake a program to measure hunger, which is an important potential consequence of food insecurity.”


Prevalence of Food Security and Hunger in US, 2007 (% of households)

- Food Secure, 88.9%
- Food Insecure, 11.1%
- *Hungry, 4.1%

* Very Low Food Security = Hunger

Correlates of Food Insecurity in the US

Nationally and in Rural NY State

Poverty is Associated with Food Insecurity

- Families with children and with household incomes <185% poverty are more likely to be food insecure.
- In 2007, 35.4% of households with children making <185% of the Federal poverty line were food insecure.

Poverty Guidelines, 2009

<table>
<thead>
<tr>
<th>Size of Family Unit</th>
<th>48 Contiguous States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$10,830</td>
</tr>
<tr>
<td>2</td>
<td>14,570</td>
</tr>
<tr>
<td>3</td>
<td>18,310</td>
</tr>
<tr>
<td>4</td>
<td>22,050</td>
</tr>
<tr>
<td>5</td>
<td>25,790</td>
</tr>
<tr>
<td>6</td>
<td>29,530</td>
</tr>
<tr>
<td>7</td>
<td>33,270</td>
</tr>
<tr>
<td>8</td>
<td>37,010</td>
</tr>
</tbody>
</table>

Federal Register, vol 74, no. 14, Jan. 23, 2009, p.4200

Prevalence rate of food insecurity drops as income rises

In Rural Upstate NY, food insecurity is more common in households who:

- Have little wealth - no savings
- Find their food stamps insufficient to cover food needs for a month
- Spend very little on food
- Have unexpected expenses


Katherine Alaimo, PhD Dissertation, Cornell University, Ithaca, NY 2000

**Consequences of Food Insufficiency for American Children**

Food insecure children were more likely to have:

- Lower arithmetic scores
- Repeated a grade
- Seen a psychologist
- Difficulty getting along with other children


**Compromised Diet Quality and Food Anxiety in Elders**

Essie Mae, a woman in her mid-60’s, lives in subsidized family housing in the inner city. She has diabetes for which she takes insulin.

"The end of the month, I start getting out of food...but I have to eat something, 'cause if I don't eat behind my [insulin] shot, that shot will make you so sick. . ."


"This past June, I just didn’t have the money [so] I didn't have the food to eat. I had a lot of low blood sugar spells. They had to take me to the emergency room."


**The Consequences of Food Insecurity**

- Decreased food and nutrient intake and blood levels of nutrients
- Compromised health and cognitive achievement in children
- Inability to follow medically-prescribed diets in the elderly and others with chronic diseases
- Increased risk of obesity in women
**Weight of Sample by Food Insecurity Group, Means and Proportion Obese**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Food Secure (N=90 (47%))</th>
<th>Household Insecure N=50 (26%)</th>
<th>Individual Insecure N=33 (17%)</th>
<th>Child Hunger N=20 (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>25.6</td>
<td>28.2</td>
<td>25.5</td>
<td>25.9</td>
</tr>
<tr>
<td>Percent obese (BMI &gt;29)</td>
<td>26 37 28 22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


**Food Insecurity Leads to Obesity in Women**

- 6 studies found food insecure women more likely to be overweight or obese
- 1 study found food insecure adults, including women, no more likely to be morbidly obese

See: [www.frac.org](http://www.frac.org) for Proceedings

**Direction of Causality Between Food Insecurity and Obesity**

- Food insecurity at time 1 (early pregnancy) leads to major weight gain (> 5 pounds) at time 2 (2 years postpartum) in obese women


**Association of Overweight with Childhood SES (N = 30)**

- Eating pattern score is sign. associated with ovwt/obesity (p=0.03,2-tail test)
- Eating pattern score of 0 varies with SES
  - 13.3% - Low SES
  - 40.0% - High SES
  - P = 0.11 (1-tail test)


**Dynamics of Food Insecurity**

Recent Work on What Holds Poor Families Back from Escaping Food Insecurity
Objectives for NYS Study

- Examine the relationship between depression and leaving food insecurity across time in a low-income, rural New York State sample of 29 families
- Understand possible mechanisms that may mediate this relationship using qualitative methods

Dynamics of Food Insecurity

<table>
<thead>
<tr>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI N=17</td>
<td>FI N=9</td>
<td>65% Still FI</td>
</tr>
<tr>
<td>FS N=1</td>
<td>FS N=8</td>
<td>35% Left FI</td>
</tr>
<tr>
<td>59%</td>
<td>47%</td>
<td></td>
</tr>
</tbody>
</table>

Depressive Symptoms & Remaining Food Insecure (FI)

<table>
<thead>
<tr>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI N=17</td>
<td>Symptoms</td>
<td>FI 100%</td>
</tr>
<tr>
<td>No Symptoms</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>p=.009</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Depressive symptoms at Wave 2 were associated with remaining FI at Wave 3 (p=.009)

Lent et. Journal of Healthcare for the Poor and Underserved, 2009

Purpose of National Study

- To identify predictors of change in food security status across time in rural low-income families.
  - Particular change of interest is leaving food insecurity over a three-year time period and "root" or fundamental predictors related to human and social capital

Sample

- Longitudinal sample = 193 families from 10 states that retained at least 50% of families
- Escaping food insecurity analysis = 99 families who were food insecure at wave 1 (1999-2000)
  - 45 families (45.5%) left food insecurity over 3 years time

States Excluded from Longitudinal Analysis Shown in Orange (N = 3)
Multivariate Model of Leaving Food Insecurity

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of Depression</td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>Reference</td>
</tr>
<tr>
<td>Not at risk</td>
<td>5.20 (1.84, 14.70)</td>
</tr>
<tr>
<td>SES of Family of Origin</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Reference</td>
</tr>
<tr>
<td>Higher</td>
<td>3.49 (1.09, 11.15)</td>
</tr>
<tr>
<td>Severity of Food Insecurity</td>
<td></td>
</tr>
<tr>
<td>With hunger</td>
<td>Reference</td>
</tr>
<tr>
<td>Without hunger</td>
<td>3.42 (1.10, 10.62)</td>
</tr>
<tr>
<td>Max-Rescaled R-sq</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Conclusions from Quantitative Analyses on National Sample

- Food insecurity is a persistent condition in poor rural families with only 45.5% leaving food insecurity over 3 years.
- Human capital and related factors, particularly poor mental health are significant barriers to leaving food insecurity.

Healthy People 2010 Objectives - Nutrition

Food Security Objective:
20. Increase the prevalence of food security among U.S. households to at least 94% of all households.

Target Setting Method:
50% decrease in food insecurity consistent with the U.S. pledge to the 1996 World Food Summit

Programs and Policies

What can be done?

Food insecurity is more common nationally among:
- Low income families (<130% PIR)
- Central city and rural residents than suburban residents
- Single parent families
- Households with children under 6 years of age

In a rural Upstate NY county, the majority of food insecure households:
- Were two parent families (71%)
- Had at least one household member who was employed (64%)
- Had graduated from high school (81%)
- Made less than $20,000 per year (62%)
What are we doing to address food insecurity?

- Use of Federal Food Assistance Programs
  - In July 2009, 1 in 9 Americans participated in SNAP (the new name for Food Stamps).
- Use of charity-based food assistance
  - Feeding America provides food to 25 million Americans a year.
  - In any given week, it provides food to 4.5 million different people.

What can be done to prevent food insecurity?

- Address the underlying causes of food insecurity by increasing economic security
  - Low wages
  - Un- and under-employment
  - Lack of education
  - Access to affordable, quality physical and mental health care
- Increase the availability and access of sound nutrition and financial management education to all individuals

Role for education

- Food security was associated with these life skills:
  - Manage your bills (p = 0.004)
  - Make a family budget (p = 0.002)
  - Stretch groceries to the end of the month (p = 0.02)
- In NYS, graduation from EFNEP associated with decreased risk of food insecurity compared to EFNEP entrants who did not graduate.

Informative Web Sites

- www.feedingamerica.org
- www.ers.usda.gov/briefing/foodsecurity/