

# The Relationship between Food Access, Food Insecurity and Obesity

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For a more comprehensive overview by Professor Olson on food insecurity go to the following web site:

<http://www.cornell.edu/video/?videoID=691>

<http://www.socialsciences.cornell.edu/0811/Video.html>

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# LSRO Definitions of Food Insecurity and Hunger

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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.

*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: 1575-76s 1990.

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# 2009 PREVALENCE OF LOW AND VERY LOW FOOD SECURITY

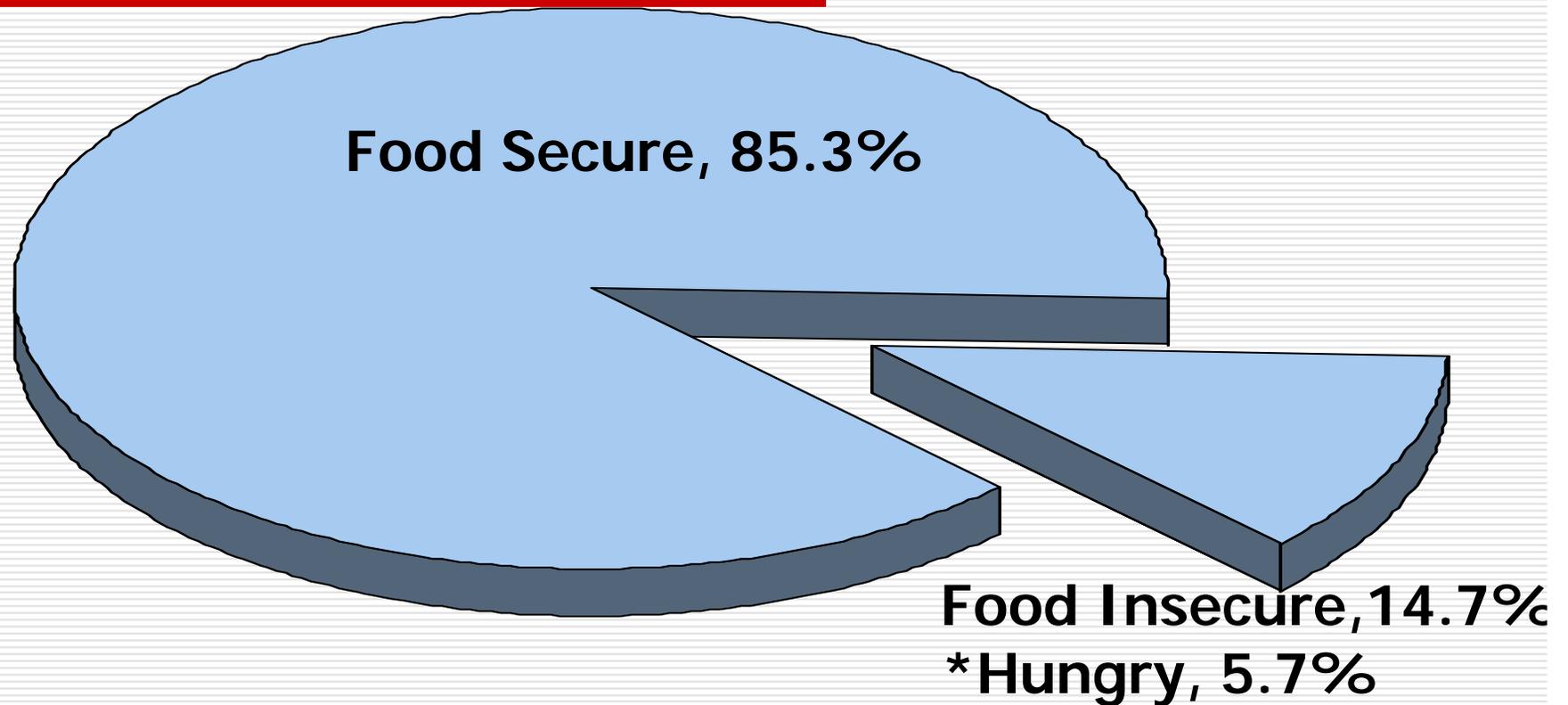
Note change in terminology



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# Prevalence of Food Security and Hunger in US, 2009

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USDA, Economic Research Report, Nov. 2010

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\*Very Low Food Security = Hunger

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# RISK FACTORS (ANTECEDENTS)



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# Being Poor Increases Risk of Food Insecurity

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- Families with household incomes <185% poverty are 2.5 times more likely to be food insecure.
  - 43% of households <100% poverty are food insecure; 18.5% have very low food security\*
- Unexpected life events that result in losses of family income or increases in expenses can result in food insecurity.

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\*From: Nord M et al. Household Food Security in the US, 2009. ERS Report Number 108, Nov. 2010.

# Families with Children

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- Families with children are more likely to be food insecure (21.3% vs. 11.4%).
- In 2009, 42.8% of households with children making <185% of the Federal poverty line were food insecure.

From: Nord M et al. Household Food Security in the US, 2009.  
ERS Report Number 108, Nov. 2010.

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# CONSEQUENCES



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# The Consequences of Food Insecurity

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- Decreased food and nutrient intake and blood levels of nutrients
- Compromised health and cognitive achievement in children
  - Near and long-term implications
  - Near-term weight in children

From: Pelletier D, Olson C, Frongillo E. *Present Knowledge in Nutrition*. 10<sup>th</sup> Edition. Forthcoming in 2011.

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# Consequences of Food Insecurity for Children – Weight (Near-Term)

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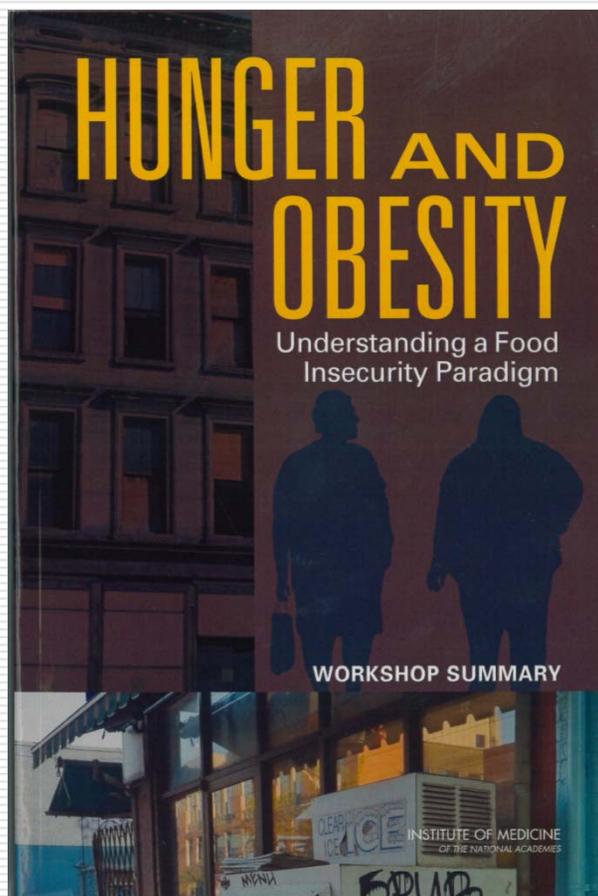
- "...the majority of studies either found no evidence of a direct relationship between household food insecurity and weight status or found evidence indicating that children living in food-insecure households are less likely to be obese."

Larson NI, Story MT. Food insecurity and weight status among U.S. children and families. *Am J Prev Med* 40(2):166-173, 2011.

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# Consequences for Children – Weight in the Long-Term

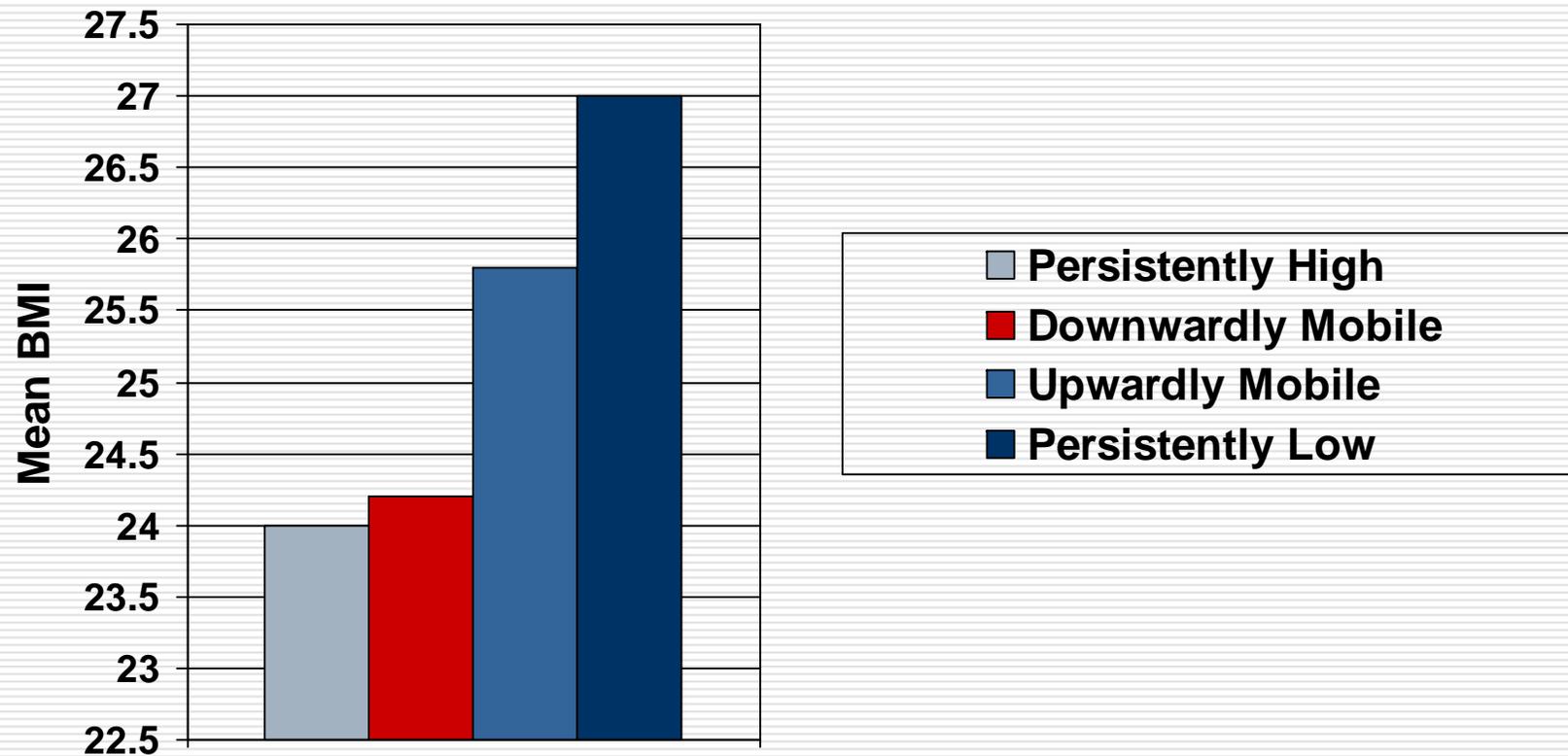
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- Life course perspective
  - Means the exposure and the outcome can be separated by time.
  - “A framework extending across the life course can help explain the long-term links among socioeconomic position, food insecurity and health.” p.71

# BMI at 26 years by SES trajectories

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From: Poulton et al. Lancet 360: 1640-1645, 2002.

# Explanations

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- ❑ Eating patterns that develop in childhood in the context of poverty and food deprivation may predispose individuals to obesity in adulthood
- ❑ Adult food insecurity and other life stresses may trigger a reversion to emotional eating patterns/overeating that lead to obesity

# The Consequences of Food Insecurity (continued)

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- ❑ 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, but not men or children
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# Food Insecurity Leads to Obesity in Women

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- 7 of 13 cross-sectional studies found food insecure women more likely to be overweight or obese
- Little evidence from longitudinal studies that food insecurity promotes weight gain over time

Larson NI and Story MT. *Am J Prev Med* 40 (2):166-173, 2011.

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# Weight of Sample by Food Insecurity Group, Means and Proportion Obese

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<b>Variables</b>	<b>Food Secure (N=90 (47%))</b>	<b>Hhold Insecure N=50 (26%)</b>	<b>Individ. Insecure N=33 (17%)</b>	<b>Child Hunger N=20 (10%)</b>
<b>BMI</b>	<b>25.6</b>	<b>28.2</b>	<b>25.5</b>	<b>25.9</b>
<b>Percent obese (BMI &gt;29)</b>	<b>26</b>	<b>37</b>	<b>28</b>	<b>22</b>

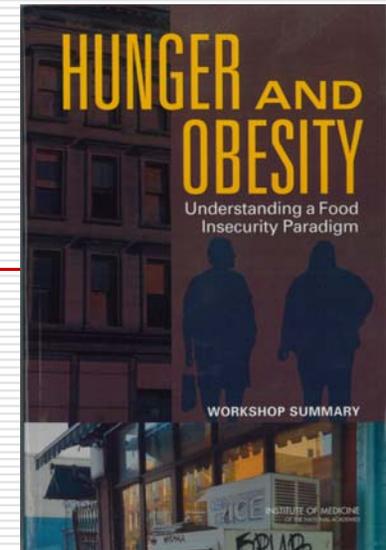
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Olson. *Journal of Nutrition* 129: 521S-524s, 1999.

# Food insecurity includes:

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- Sufficiency of food
  - Nutritional quality of food
  - Availability of & access to food
  - Certainty of availability and access to food
  - Social and cultural acceptability of food
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# 1. Sufficiency of food

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- Aspect of food insecurity that is shared with “hunger”
  - Source of the notion of the food insecurity-obesity paradox
  - Calories are the measure for sufficiency
    - Evidence for periodic low intakes at certain times of the month in women → deprivation → overeating when food available
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## 2. Nutritional quality of food

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- ❑ Fruit and vegetable intake is consistently lower among women in food insecure households
  - ❑ Very few other differences
  - ❑ Little direct evidence to support notion of increased consumption of energy-dense foods at times of food insecurity
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### 3. Availability of and access to foods

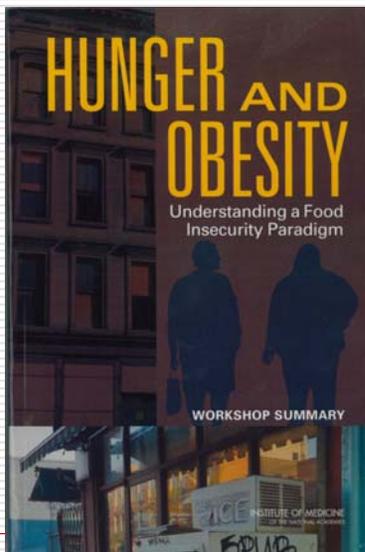
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- Availability – “4.1% of total US population live in a low income area more than a mile from a supermarket.”
- Access – “Access to all food, rather than lack of access to specific healthy foods, maybe a more important factor in explaining increases in obesity.”

# 4. Certainty of availability and access to food

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- Volatility leads to distress/stress
  - Uncertainty related to poor outcomes across a spectrum of domains including feeding and health



See Chapter 9, Putting the Levels Together.  
Comments by Pamela Morris.

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# Conclusions

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- ❑ Food insecurity is multi-faceted concept that offers multiple avenues for links to obesity.
  - ❑ The most serious consequences of food insecurity related to weight are likely to be long-term and affect those who have the responsibility for managing household food supplies.
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# Discussion

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- ❑ Thank you for listening!
- ❑ Questions and comments



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