Research Opportunities Concerning the Causes and Consequences of Child Food Insecurity and Hunger: A Workshop Summary

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WORKSHOP SUMMARY

Nancy Kirkendall, Carol House, and Constance F. Citro, *Rapporteurs*

Committee on National Statistics

Division of Behavioral and Social Sciences and Education

Food and Nutrition Board

Institute of Medicine

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This workshop summary has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's (NRC's) Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published summary as sound as possible and to ensure that the summary meets institutional standards for clarity, objectivity, and responsiveness to the charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this workshop summary: Helen H. Jensen, Food and Nutrition Policy Division of the Center for Agricultural and Rural Development, Iowa State University; Sonya Jones, Center for Research in Nutrition and Health Disparities, University of South Carolina; Robert A. Moffitt, Department of Economics, Johns Hopkins University; and Parke E. Wilde, Friedman School of Nutrition and Policy, Tufts University.

Although the reviewers listed above have provided many constructive comments and suggestions, they did not see the final draft of the workshop summary before its release. The review of this summary was overseen by Alicia Carriquiry, Department of Statistics, Iowa State University. Appointed by the NRC, she was responsible for making certain that an independent examination of this summary was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this summary rests entirely with the authors and the institution.

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1

Introduction

Section 141 of the Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296) authorized the development of a research program on the causes and consequences of childhood hunger and food insecurity, and the characteristics of households with childhood hunger and food insecurity, with a particular focus on efforts to improve the knowledge base regarding contributing factors, geographic distribution, programmatic effectiveness, public health and medical costs, and consequences for child development, well-being, and educational attainment. The Economic Research Service (ERS) and Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA) conducted two outreach efforts to obtain input from the research community and other stakeholders to help focus on areas and methods with the greatest research potential. First, FNS sought written comments to selected questions through publication of a *Federal Register* notice.[1] While the opportunity to comment was available to any member of the public, FNS also reached out to leading experts to ensure their awareness of the opportunity to influence the course of future research. The second effort was to convene a workshop under the auspices of the Committee on National Statistics (CNSTAT) of the National Research Council (NRC).

[1]See https://www.federalregister.gov/articles/2012/09/11/2012-22290/request-for-information-research-on-the-causes-characteristics-and-consequences-of-childhood-hunger [August 13, 2013].

In the fall of 2012, ERS and FNS requested that CNSTAT and the Food and Nutrition Board of the Institute of Medicine (IOM) convene a joint workshop, to be led by CNSTAT. The statement of task was as follows:

> An ad hoc steering committee will organize a public workshop on research gaps and opportunities to advance understanding of the causes and consequences of child hunger in the United States. The workshop is requested by the Economic Research Service of the U.S. Department of Agriculture, which is assisting the Food and Nutrition Service fulfill a mandate from Section 141 of the Healthy, Hunger-Free Kids Act of 2010 to pursue a research program on this important topic for the nation. The workshop agenda will review the adequacy of current knowledge, identify substantial research gaps, and consider data availability in such areas as:
>
> • economic, health, social, cultural, demographic, and other factors that contribute to childhood hunger or food insecurity;
> • the geographic distribution of childhood hunger and food insecurity;
> • existing federal assistance programs, and assessing the extent to which they reduce childhood hunger and food insecurity;
> • measures of food insecurity, specifically the degree to which they accurately estimate childhood hunger and food insecurity given survey constraints (e.g., the impact of exclusion of certain subgroups, such as the homeless); and
> • the effects of childhood hunger on child development, well-being, and educational attainment.
>
> The steering committee will develop the agenda for the workshop, identify topics for and authors of possible commissioned papers, select and invite speakers and discussants, and moderate the discussion. Following the workshop, a designated rapporteur will prepare an individually authored summary of the presentations and discussion. Commissioned papers may be published with the summary or posted on the Internet.

The steering committee, working by teleconference and e-mail, planned the workshop to fulfill the statement of task. The day-and-a-half workshop focused on four key topic areas: (1) determinants of child food insecurity and hunger; (2) individual, community, and policy responses to hunger; (3) impacts of child food insecurity and hunger; and (4) measurement and surveillance issues. Each session was initially planned to have one main speaker who would also prepare a commissioned paper, and two discussants, ending with open-audience discussion. The steering committee identified potential speakers for a topic based on their knowledge of individuals who conduct state-of-the-art research or have unique expertise in that topic, and selecting the group of speakers with a range

of disciplines and viewpoints. The steering committee also agreed on the following cross-cutting themes for the topics:

1. Does the way food security is measured, the unit (household versus child hunger), and the severity/threshold matter for understanding of the topic?
2. Is existing evidence sufficient to make causal claims or merely associational?
3. Are there important data gaps? What types of additional data would be most beneficial: longitudinal, experimental, demonstrations, administrative, linked administrative-survey data, qualitative?
4. How might the USDA prioritize research efforts? What are the critical questions in each topic area, and what kind of research could begin to answer them?
5. How can research questions be action oriented, i.e., to link research with potential programmatic or policy solutions?

The four topic areas and the cross-cutting themes were intended to cover the questions of interest in the statement of task.

The Workshop on Research Gaps—Causes and Consequences of Child Food Insecurity and Hunger took place at the main building of the National Academy of Sciences in Washington, DC, April 8–9, 2013. There were eight main sessions and a final wrap-up by the chair of the steering committee. (The workshop agenda can be found in Appendix A, and a list of workshop registrants can be found in Appendix B.) Chapter 2 provides a brief introduction to the food security measure that has been used in the United States since 2001. The description is based largely on comments by a number of presenters and is provided as background, because speakers referred to the concept and the measurement of food insecurity throughout the workshop. Each of the following eight chapters (3 through 7 and 9) is dedicated to one of the workshop sessions, with Chapter 8 covering two sessions and Chapter 10 providing a wrap-up by the chair of the steering committee.

This report was prepared by a team of rapporteurs as a factual summary of what occurred at the workshop. The steering committee's role was limited to planning and convening the workshop. The views contained in the report are those of individual workshop participants and do not necessarily represent the views of nonparticipants, other workshop participants, the steering committee, the NRC, or the IOM.

2

Defining and Measuring Food Security

This chapter introduces the food security measure that has been used in the United States since 1995 and provides a brief history of its development, as described by workshop participants.[1] This information is provided as background in this chapter because most speakers used the concept and measurement of food insecurity throughout the workshop.

DEFINING FOOD SECURITY

"Food security" is a status assigned to households and some individuals in households based on responses to questions that have constituted the Household Food Security Survey Module (HFSSM) in the Current Population Survey (CPS) since 1995 (Economic Research Service, 2012). Various aspects of it were described during the workshop by Craig Gundersen (Chapter 3), John Cook (Chapter 8), and Edward Frongillo (Chapter 9). As shown in Box 2-1, the HFSSM consists of 10 questions for households without children and 18 questions for households with children. Each question is qualified by the stipulation that the outcomes are due to a lack of financial resources. This version of the questionnaire uses a one-year reference period, asking many questions about the time period "in the last 12 months." The questions may also be asked using a

[1]Detailed information about the history of food security measurement and the measurement itself is available on the website of the Economic Research Service (ERS), U.S. Department of Agriculture. See http://www.ers.usda.gov/data-products/food-security-in-the-united-states.aspx [August 14, 2013].

BOX 2-1
Questions Used to Assess Food Security of Households in the Current Population Survey

To reduce burden on higher income respondents the full Food Security Supplement in the Current Population Survey is not administered to households that (1) report incomes above 185 percent of the federal poverty line and (2) give no indication of food access problems on both of two preliminary screening questions. The preliminary screening questions are listed below:

1. People do different things when they are running out of money for food in order to make their food or their food money go further. In the last 12 months, since December of last year, did you ever run short of money and try to make your food or your food money go further?
2. Which of these statements best describes the food eaten in your household—enough of the kinds of food we want to eat, enough but not always the *kinds* of food we want to eat, sometimes not enough to eat, or often not enough to eat?

These households are deemed to be food secure and are not asked the questions in the Household Food Security Survey Module.

Household Food Security Survey Module Survey—One-Year Reference Period

Now I'm going to read you 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 your household in the last 12 months.

1. "We worried whether our food would run out before we got money to buy more." Was that OFTEN, SOMETIMES, or NEVER true for you in the last 12 months?
2. "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 you in the last 12 months?
3. "We couldn't afford to eat balanced meals." Was that OFTEN, SOMETIMES, or NEVER true for you in the last 12 months?
4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals, because there wasn't enough money for food? (Yes/No)
5. *(If yes to question 4)* How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
6. In the last 12 months, did you ever eat less than you felt you should, because there wasn't enough money for food? (Yes/No)
7. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food? (Yes/No)

continued

BOX 2-1 Continued

8. In the last 12 months, did you lose weight, because there wasn't enough money for food? (Yes/No)
9. In the last 12 months, did you or other adults in your household ever not eat for a whole day, because there wasn't enough money for food? (Yes/No)
10. *(If yes to question 9)* How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

(Questions 11–18 were asked only if the household included children age 0–17)

Now I'm going to read you several statements that people have made about the food situation of their children. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true in the last 12 months for any child under 18 years old living in the household.

11. "We relied on only a few kinds of low-cost food to feed the children in our household, because we were running out of money to buy food." Was that OFTEN, SOMETIMES, or NEVER true for you in the last 12 months?
12. "We couldn't feed the children in our household a balanced meal, because we couldn't afford that." Was that OFTEN, SOMETIMES, or NEVER true for you in the last 12 months?
13. "The children in our household were not eating enough, because we just couldn't afford enough food." Was that OFTEN, SOMETIMES, or NEVER true for you in the last 12 months?
14. In the last 12 months, did you ever cut the size of any of the children's meals, because there wasn't enough money for food? (Yes/No)
15. In the last 12 months, were the children ever hungry but you just couldn't afford more food? (Yes/No)
16. In the last 12 months, did any of the children ever skip a meal, because there wasn't enough money for food? (Yes/No)
17. *(If yes to question 16)* How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
18. 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)

SOURCE: Coleman-Jensen et al. (2012:3–4). Reprinted with permission. Question text excerpted from December 2012 Current Population Survey Food Security Supplement. See http://www.ers.usda.gov/datafiles/Food_Security_in_the_United_States/Current_Population_Survey/2012/qn2012.pdf [October 10, 2013].

30-day reference period. The CPS collects responses for both the previous 12 months and for the 30 days just prior to the survey.

Households are classified into food security status categories based on the number of food-insecure responses to the questions,[2] consistent with statistical evidence that this number reflects the level of food hardship experienced by the family. The three categories of household food security are (1) food secure (fewer than 3 food-insecure responses); (2) low food security (more than 2 but fewer than 6 food-insecure responses for households without children, more than 2 but fewer than 8 food-insecure responses among households with children); and (3) very low food security (6 or more food-insecure responses among the 10 questions for households without children, 8 or more food-insecure responses among the 18 questions for households with children). Families are said to be food insecure if they fall in categories 2 or 3. Children in a food-insecure household are said to have low food security if 2 to 4 of the child-related questions have food-insecure responses. They are said to have very low food security if 5 or more of the child-related questions have food-insecure responses.

The responses to the HFSSM support three summary scales: (1) the 18-item food security scale, sometimes referred to as the combined adult-child scale; (2) the 10-item adult food security scale; and (3) the 8-item child food security scale (see Box 2-1). These are all considered household-level measures because they reflect food-insecure conditions of any person in the household, any adult in the household, or any child in the household.

HISTORY

During the workshop, the history of the development of the HFSSM was described by Frongillo (see Chapter 9 for the rest of his presentation) and Cook (see Chapter 8 for the rest of his presentation). Frongillo explained that the basic definition of food security used in the United States was developed for the American Institute of Nutrition by the Expert Panel on Core Indicators of Nutritional State for Difficult-to-Sample Populations, as documented in Anderson (1990). In Anderson's work, food security was defined to be "access by all people at all times to enough food for an active, healthy life[3] and includes at a minimum: (a) the ready

[2]According to Coleman-Jensen et al. (2012), food-insecure responses are indicated by responses of "often" or "sometimes" to questions 1–3 and 11–13; "almost every month" or "some months but not every month" to questions 5, 10, and 17; and "yes" to the other conditions shown in Box 2-1.

[3]ERS currently uses the first part of this definition to define food security. See http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us.aspx [August 20, 2013].

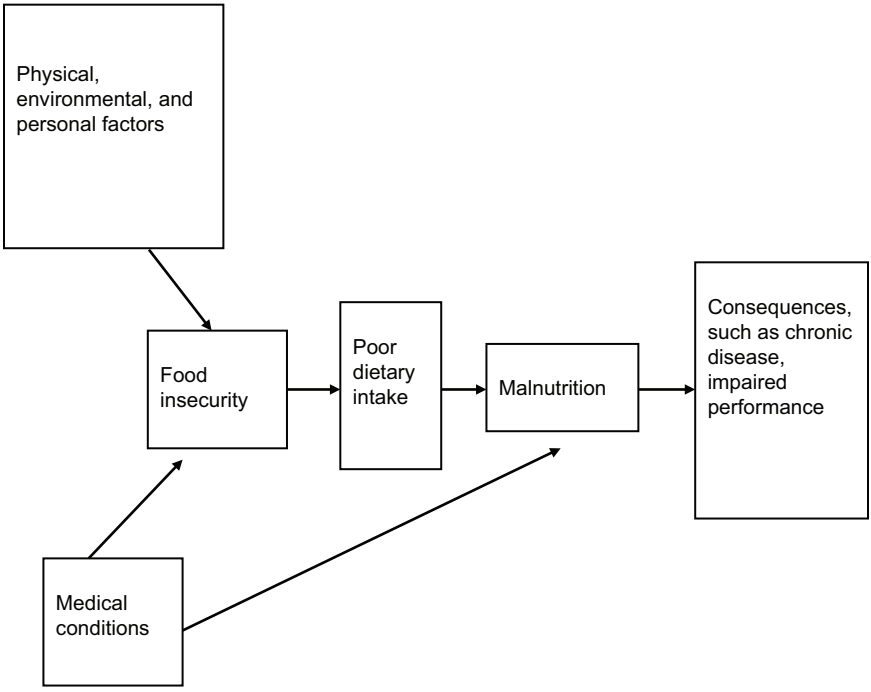

FIGURE 2-1 Core concepts related to nutritional state.
SOURCE: National Research Council (2006:44).

availability of nutritionally adequate and safe foods, and (b) the assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, and other coping strategies)" (Anderson, 1990:1560). Frongillo pointed out the basic definition has many different aspects. When the national surveillance effort began, he said, food security was conceptualized as one of the core concepts related to nutritional state (see Figure 2-1).

Frongillo said that at the same time, Congress enacted the National Nutrition Monitoring and Related Research Act (P.L. 101-445) that led to the development of a 10-year plan for assessing the dietary and nutritional status of the U.S. population. Later in the workshop, Cook noted, as described in Bickel, Andrews, and Klein (1996), that the measure was developed by the Food Security Measurement Project (1995–1997), with a multiobjective mandate to develop reliable measures of food security, food insecurity, and hunger that were scientifically valid for the U.S. population, consistent with the goals and policies of the U.S. government.

This project developed the 18-item HFSSM that was first administered in the CPS in April 1995, with minor refinements in 1998, 2005, 2006, and 2007.

Cook noted that researchers use several different scales. The 18-item questionnaire can be used with a 12-month (see Box 2-1) or 30-day reference period. There is also a 6-item abbreviated scale[4] and the 10-item adult scale (the top 10 questions in Box 2-1). Of most interest in this workshop, he said, is the 8-item child food security scale (the last 8 questions in Box 2-1), although he pointed out that this scale does not include a question about the affective component of food insecurity or the anxiety or worry that food would run out.

MEASURING FOOD SECURITY[5]

The HFSSM has been included in a number of national-level periodic surveys. As noted above, the full 18 questions referenced to 12 months have been included in the Current Population Survey Food Security Supplement annually since 1995. For each question, an affirmative response is followed up with a query as to whether the condition or behavior occurred in the previous 30 days.[6]

The full 18 questions have also been included in the family questionnaire of the National Health and Nutrition Examination Survey since 1999. In addition, from 2001–2010, a subset of the more severe questions with 30-day reference were asked about the sampled person rather than all persons in the household.

The Survey of Income and Program Participation (SIPP) included a nonstandard module with five adult questions and a four-month reference period in wave 8 (the adult well-being module), beginning with the 1996 panel and continuing through the end of the 2013 panel.[7] The Survey of Program Dynamics included the standard 18-item module with 12-month reference annually from 1998 to 2002. The Early Childhood Longitudinal Study-Kindergarten (ECLS-K) Cohort included the standard 18-item questionnaire with 12-month reference for four rounds from 1998–2007 when children were in kindergarten, grade 3, grade

[4]The 6-item abbreviated scale uses questions 2, 3, 4, 5, and 6 in Box 2-1, plus a follow-up question, like 5, for question 2.

[5]The information below was provided by email from Mark Nord (ERS) on August 19, 2013. Much of this background is also on the ERS website, at the link shown in footnote 1.

[6]Prior to 2005, the 30-day follow-up questions were only administered for the more severe questions (those with a yes/no response) in the module.

[7]The five-item SIPP questions were chosen before the six-item short module was standardized. Subsequent panels continued with the same questions for continuity. The SIPP beginning in 2014 will include the standard six-item short module.

5, and grade 8. The module is also in the new ECLS-K beginning with the kindergarten class of 2010–2011. The Early Childhood Longitudinal Study

-Birth Cohort included the standard 18-item questionnaire with 12-month reference in the panel beginning in 2002. The food security questions were included in surveys in 2002, 2004, 2006–2007, and 2007–2008. The National Health Interview Survey has included the standard adult 10-item questionnaire with a 30-day reference annually beginning in 2011. The Panel Study of Income Dynamics (PSID) included the standard 18 items with 12-month reference in its child development supplement in 1997, and in the core PSID in 1999, 2001, 2003, 2005, and 2007.

As examples of other uses in large studies, the standard 18-item module was included in multiple waves of the Fragile Families Study and Children's HealthWatch (previously Children's Sentinel Nutritional Assessment Program) beginning in 1998. Although neither of these studies is fully nationally representative, they represent large vulnerable populations.

3

Individual and Household Determinants of Child Food Insecurity and Hunger

The first session of the workshop dealt with individual and household determinants of child food insecurity and hunger. It focused on vulnerable populations (disabled, minority, and homeless) and considered potential risk factors, such as health and disability (of parents and/or children), poverty, economic shocks, and resource constraints. It also addressed the role of knowledge and behaviors, such as financial behaviors, resource management strategies, and nutrition knowledge. Susan Parish, Brandeis University, moderated the session. Craig Gundersen, an economist in the Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, and executive director of the National Soybean Research Laboratory, was the principal speaker. The two discussants were Alisha Coleman-Jensen, a sociologist in the Food Assistance Branch, Economic Research Service (ERS), U.S. Department of Agriculture (USDA), followed by Sanders Korenman, an economist and professor at the School of Public Affairs at Baruch College, City University of New York.

STATEMENT OF CRAIG GUNDERSEN[1]

Gundersen began by providing a brief description of the Household Food Security Survey Module (HFSSM) that has been part of the Current Population Survey (CPS) since 2001 (see Chapter 2) and commented on

[1]Gundersen (2013b) prepared a commissioned paper for the workshop.

the extent of food insecurity based on current data. As he detailed in his background paper (Gundersen, 2013b), the extent of food insecurity is at an all-time high, with many demonstrated negative health consequences associated with food insecurity (see also Chapter 7).

Gundersen said that food insecurity is a function of economic factors, demographic factors, and participation in food assistance programs—the typical model is for households, and some models are longitudinal. He focused on economic and demographic factors, noting the impact of food assistance programs would be discussed later in the workshop (see Chapter 6). Rather than provide a comprehensive overview of extant research,[2] he said he would focus on some of the findings on determinants from the first round of grants funded through the Research Program on Childhood Hunger, a program funded by the USDA Food and Nutrition Service (FNS) and managed by the University of Kentucky's Center for Poverty Research (UKCPR).[3] He said that this research used a wide variety of econometric techniques and datasets and posed distinct questions. Some of the main findings regarding the determinants indicate certain categories of children are more likely to be food insecure after controlling for other factors, which include children with:

- an incarcerated parent (Wallace and Cox, 2012);
- a parent who is an immigrant (Balistreri, 2012);
- complicated household structures (Balistreri, 2012);
- a parent with disabilities (Balistreri, 2012);
- changing residences (Jacknowitz and Morrissey, 2012); and
- declines in maternal or child health (Jacknowitz and Morrissey, 2012).

He also noted the following analyses that indicate correlates of food insecurity in all households, including households with children, using cross-sectional data, such as:

- lack of financial management skills (Gundersen and Garasky, 2012);
- an American Indian head of household (Gundersen, 2008);
- at high risk of homelessness (Gundersen et al., 2003);
- no child support (Garasky and Stewart, 2007);

[2]Gundersen indicated that controlling for other factors—households that are more likely to be food insecure include those with lower incomes; those headed by a single parent, a non-Hispanic black, a Hispanic, or someone with less education; those with more children; and those who do not own their home. He noted that these results are consistent with previous work on food insecurity across population types.

[3]Gundersen and James Ziliak are the principal investigators on this grant.

- a noncustodial father who does not visit regularly (Garasky and Stewart, 2007);
- lack of access to social capital (Martin et al., 2004);
- summertime (Nord and Romig, 2006); and
- a cigarette smoker in the home (Cutler-Triggs et al., 2008).

He noted that in studies using panel datasets, dynamic factors have been associated with being at higher risk of food insecurity, including negative income shocks, lack of assets, changes in household composition, and becoming unemployed (Gundersen and Gruber, 2001; Leete and Bania, 2010; Ribar and Hamrick, 2003).

Open Questions About the Determinants

Gundersen observed that based on the literature a great deal is known about determinants of food insecurity among households with children but little about mechanisms. In this context, he said, "mechanisms" refer to what it is about the determinant that is related to food insecurity. For each determinant, the question is "why does it matter?"

Coleman-Jensen and Nord (2013) described the effect of disability status on food insecurity, noting that it is not fully known why disability status matters, or what it is about having a disability that means markedly higher rates of food insecurity. Possible reasons may differ depending on who in the household has a disability and the type of disability, but Gundersen said understanding the mechanisms helps guide the appropriate policy interventions.

Similarly, he stressed the importance of understanding the reasons why immigration status and level of education have an impact on food security.

Gundersen noted a number of open questions about income and food insecurity. Depending on the year, many poor households are food secure. What are they doing differently than similar households who are food insecure? Do they have better financial management skills? Do they have more knowledge about how to get by on less? Is there underreporting of income? Conversely, about 10 percent of households with incomes above the poverty line are food insecure, despite seemingly having enough money to be food secure. Is the poverty line appropriately defined? With the recent economic downturn, is it because families have lost income but have fixed expenses? Often, food is an expense in which people can cut back if they cannot cut back on a mortgage payment. Might it also be lack of knowledge about how to get by on less money, different expectations about what constitutes a sufficient amount of food, or lack of access to food assistance programs for families with income above 185 percent of the poverty threshold?

He went on to ask why having a grandparent in the household is protective against food insecurity for the children in the household. For example, is it because it makes for a less expensive form of childcare, is easier to prepare meals at lower cost, or makes it easier to be eligible for Supplemental Nutrition Assistance Program (SNAP) benefits?

Finally, he asked, how do determinants differ by whether the household reports that they participated in food assistance programs? How do changes in household structure impact food insecurity, especially if there is a discontinuity in SNAP benefits? Does household size make a difference in determinants? How do determinants differ by whether the children are receiving meals through the National School Lunch Program or the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)? He said it is well established that older children have higher rates of food insecurity than younger children and that rates of participation in the National School Lunch Program and WIC decline quite a bit as children age. Are those two things connected? Gundersen said that it has been shown that the National School Lunch Program is protective against food insecurity.

How to Interpret Determinants

Gundersen stated that more information is needed about the relative magnitudes of food insecurity determinants in order to more effectively target scarce resources. Gundersen went on to say that the food insecurity literature (like that on poverty) has tended to say that someone is either food insecure or food secure, but measures are also needed for the depth and severity of food insecurity. Clearly, he said, if someone responds affirmatively to 15 questions on the food insecurity module, that household is much worse off than the household of someone who responds affirmatively to 3 questions. He observed that in some earlier work (Gundersen, 2008), he described an approach to more fully utilize the 18 HFSSM questions to better understand incidence, depth, and severity of food insecurity. Some determinants might be correlated with the reporting of food insecurity. For example, people with higher education levels may be less likely to report that they are food insecure because they have a different understanding of the questions. Gunderson said further exploration of how people interpret and answer the questions should be considered. He also noted that the food insecurity literature in the United States and the food insecurity literature in developing countries have been relatively separate and distinct, and that many insights could be gained by cross-fertilization.

Gundersen asked whether *consequences* of food insecurity might actually be *determinants* of food insecurity. He noted sometimes it is clear that

one or another factor should be an exogenous determinant of food insecurity, but, in other cases, causality is not clear. An example is a mother's depression. If a mother cannot feed her child, that might be depressive. However, if a mother has untreated depression, it may impair her ability to feed her child. Gundersen suggested employing econometric methods to more adequately determine the causal direction of food insecurity and its correlates.

Gundersen asked why data on food expenditures are often inconsistent with responses to the food insecurity questions. Along with the HFSSM, the December supplement of the CPS asks other questions regarding food-related topics. One of these questions is, "In order to buy just enough food to meet (your needs/the needs of your household), would you need to spend more than you do now, or could you spend less?" This is followed by a question, "About how much more (less) would you need to spend each week to buy just enough food to meet the needs of your household?" He suggested the combination of the responses to these questions and the HFSSM could provide researchers with a new way of interpreting the extent of a family's food insecurity. Overall, he said, these questions have been underutilized in the study of food insecurity and have not been included on other surveys, although he has done some work on the question (e.g., Gundersen and Ribar, 2011; Gundersen et al., 2012a). Gundersen also wondered how the effects of determinants might differ if children rather than adults were asked the questions, a topic discussed later in the workshop (see Chapter 9).

Data Issues

Gundersen observed that while many of the research directions noted above can be pursued with existing datasets, some can only be pursued with new data collection efforts because most studies use nationally representative data and may exclude some groups, such as persons who are homeless or marginally housed. Better understanding of these overlooked groups will be important to policy responses because these groups are likely to have higher food insecurity rates than the general population.

Omission from the sampling frame (e.g., the homeless) is one reason why some people are overlooked. Another is survey nonresponse—higher levels of nonresponse may be associated with the marginally housed, immigrants, or individuals without immigration documentation. Nonresponse may contribute to bias in estimates for the overall population.

Gundersen went on to say that, to date, most understanding about food insecurity in the United States is based on quantitative datasets. In contrast, there has been very little recent work using qualitative data and, furthermore, the work that has been done has not had much influence on

the food insecurity literature or the policy ideas that have been generated. To give a more complete picture of food insecurity in the United States, he said more research with qualitative data would be worthwhile, both to address questions that quantitative data cannot address and to help inform development of new questions for quantitative data collection efforts. Gundersen offered three suggestions for qualitative research: (1) development of questions that quantitative data cannot address; (2) sampling of both food-secure and food-insecure households; and (3) use of transdisciplinary teams to allow for richer approaches to studying food insecurity. There is a need, Gundersen noted, for longer panel datasets over longer time periods to get at not only the dynamic determinants but also the duration of food insecurity. Examples of longitudinal datasets include the Panel Study of Income Dynamics and the National Longitudinal Survey of Youth–1979. In part due to the relatively recent development of the HFSSM, there are not any datasets with a long panel of observations on food insecurity. Datasets with multiple years of observations would allow for more effective use of econometric panel methods.

Gundersen concluded by saying that there is a need for more data with specifics about food spending and food access. He cited the National Food Acquisition and Purchase Survey, sponsored by ERS and fielded by Mathematica Policy Research in 2012, as a promising new survey and database for analysis.[4]

STATEMENT OF ALISHA COLEMAN-JENSEN

Coleman-Jensen stated that the main reason to understand determinants of children's food insecurity data and the mechanisms by which they operate is to improve the design and targeting of programs and policies meant to improve food security. Important questions are where research efforts should be focused to address the determinants of food insecurity by level of severity and what the mechanisms are by which determinants affect food insecurity. Another question is whether it is more important to identify new determinants or to figure out how to use the information about known determinants.

Citing data from 2011 (as presented by Coleman-Jensen et al., 2012), she noted that the majority of households with children, 79.4 percent, were food secure. However, almost 21 percent were food insecure. Only the adults were food insecure in 10.6 percent of these households with children. In the remaining 10 percent, children also experienced the effects

[4]As of the date of this publication, the data were not yet available. Information about the survey is available at http://www.ers.usda.gov/topics/food-nutrition-assistance/supplemental-nutrition-assistance-program-(snap)/national-food-study.aspx [August 2, 2013].

of food insecurity with direct evidence of reductions in children's dietary quality and quantity. One percent of households with children experienced the most severe food insecurity—the parents reported that the children were not getting enough to eat because of lack of resources for food. She noted further that from research on outcomes of food insecurity, children in food-insecure households have detrimental effects on their development—even if there is no evidence that the children themselves had reductions in their dietary quality or quantity. There may be more severe effects of food insecurity for households in which children actually are not getting enough to eat.

The Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296) calls for research on the causes of childhood hunger and food insecurity, which Coleman-Jensen said justifies focusing on any and all levels of severity. However, she noted, where to focus the investment remains an open question, pointing out that some recent UKCPR research focuses on the severe conditions of food insecurity among children with very low food security. Very low food security among children is difficult to study because it is relatively rare (as noted above, 1 percent of households with children). Even in large national datasets, the sample sizes are relatively small: The CPS is one of the largest datasets that include food insecurity questions, yet even in the CPS, which is the source for USDA statistics on food security, only 127 households in the sample had very low food security among children in 2011. This limits the research questions that can be addressed with these datasets. Coleman-Jensen suggested a need to learn more from specific efforts, such as the Witnesses to Hunger Project (see Chapter 5), focusing on the most vulnerable populations likely to experience severe conditions.

Current analysis assumes that the determinants of food insecurity, at the broader levels of the food insecurity, also affect very low food security. Coleman-Jensen stated that this is probably justified given that most parents will try to protect children from experiencing the more severe conditions. Investing in ways to help parents maintain their food security may also help children, she said.

She referred to research (Coleman-Jensen and Nord, 2013) that found that disabilities are an important risk factor for food insecurity. Not only was food insecurity more prevalent in these households, but also it tended to be more severe, with much more very low food security in these households than the researchers expected. She said more research is needed to identify how disabilities affect food security. She agreed with Gundersen about the need to understand the mechanisms of how disabilities (and other determinants) affect food security, especially if a policy goal is to reduce food insecurity.

Using the CPS data for 2010–2011, Coleman-Jensen noted among households with children, if an adult in the household is unable to work

due to disability, both the incidence rate and the severity rate of food insecurity among children are more than double those rates among households with children without a disabled adult. This indicates that disability is a very important risk factor for food insecurity.

Coleman-Jensen stated almost nothing is known about how disabilities among children affect food security. She referred to research by Parish et al. (2008), who examined material hardship among households raising children with disabilities and found higher food and other types of hardships. An important finding is that for households without disabled children, the number of hardships decreased as income increased above the poverty line, but this was not the case with households with disabled children. Coleman-Jensen noted her research with Nord also found households that include disabled members need a lot more income to make up for the costs associated with disabilities.

She pointed to new research opportunities in this area. FNS has funded data collection using the HFSSM 10-item adult food security questions in the National Health Interview Survey (NHIS), and this module was included in the 2011, 2012, and 2013 NHIS surveys. The NHIS includes a wealth of data on disabilities and health impairments for all household members and makes it possible to examine children and adults with disabilities in the same households. She characterized this dataset as a great research opportunity.

Coleman-Jensen noted that in their research Nord raised a question about how much variation in food insecurity is explained by known determinants, asking how much of the variation would be explained if all of the known determinants were contained in one study. She referred to a study by Bartfeld and Dunifon (2006) in which they explained variations in state-level hunger rates[5] using a variety of household factors and state factors. They found about 86 percent of the variation was explained. However, she said it is not known whether this analysis would also apply to household food insecurity.

She returned to her earlier question about the need to decide whether to invest more in identifying new determinants or to invest more in better understanding already identified determinants. She said determinants are important, but so is translating those determinants into policy, perhaps targeting specific populations. In addition, she noted that it is important to balance identifying key determinants of food insecurity with understanding the characteristics of food-insecure households.

She displayed Figure 3-1, showing results from the CPS for 2010–2011 to illustrate the prevalence rate and severity rate of food insecurity among

[5]State-level "hunger rate" is the prevalence rate or the share of households that are very low food secure.

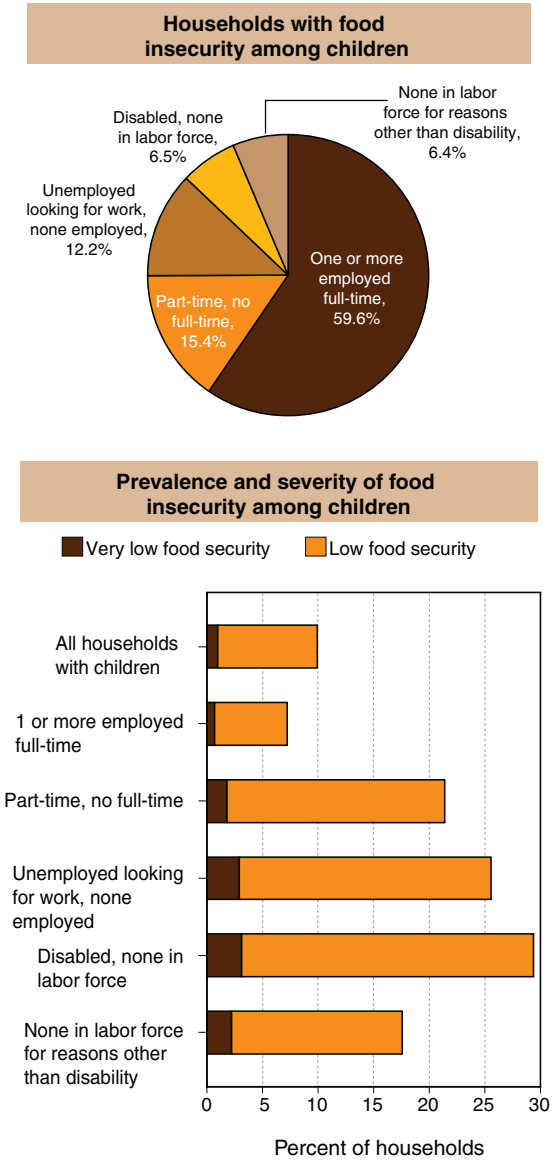

FIGURE 3-1 Prevalence and distribution of food insecurity among children, by employment and labor force status of adults in the household, 2010–2011 average from the Household Food Security Survey Module of the Current Population Survey (CPS-HFSSM).
SOURCE: Coleman-Jensen, McFall, and Nord (2013:Fig. 6). Reprinted with permission.

households in various situations. The graph shows that the majority of households with children (almost 60 percent) include a full-time worker and that prevalence of food insecurity is much lower for households where one parent or more are employed full time (about 7 percent) and much higher for households with unemployed adults (more than 25 percent) or in which adults are unable to work due to disability (more than 29 percent). Among food-insecure households with children, more than 15 percent have adults with only part-time work, more than 12 percent have adults who are unemployed and looking for work, more than 6 percent have disabled adults with no adult in the workforce, and 6 percent have no household member in the labor force for reasons other than disability.

Coleman-Jensen noted while it is important to target unemployed households and those with disabilities, the majority of food-insecure households with children would be missed if only those households were targeted. She said it is important to identify determinants and risk factors, but it is also important to keep in mind the entire population of food-insecure households.

She identified several potential research questions. In general, current food assistance programs target low income as the primary determinant of food insecurity. They all have income tests with the implied assumption that higher-income households do not need those programs. As Gundersen pointed out, this is not always the case. Is it possible to effectively target other determinants of food insecurity with policies or programs, Coleman-Jensen asked. Examples might include determinants such as time constraints around food preparation, lack of financial management skills, or physical disabilities that make it difficult to get to a store.

She asked whether specific programs should be targeted to specific populations, such as policies or programs to target persons with disabilities, or whether there should be less targeting and instead more general programs. For example, SNAP, available to low-income households, has special provisions for persons with disabilities. People with disabilities can deduct their medical expenses from their monthly income, which effectively raises their SNAP benefit. She said, however, that some research suggests that more needs to be done for households with disabilities.

She asked what level of severity should be targeted—the tip of the iceberg or the whole iceberg?[6] The "tip of the iceberg" might represent households with food insecurity among children or, at the very tip, very low food security among children. The "whole iceberg" is the less severe condition that affects more children—food insecurity in households with children. Is it possible to shrink the tip of the iceberg without shrinking

[6]She attributed this analogy to Mark Nord.

the whole iceberg? Coleman-Jensen said she thinks the whole iceberg should be targeted, noting however, that this is an open area for discussion that can guide research investments.

Ultimately, she concluded, the question is how to invest the money from the Healthy, Hunger-Free Kids Act on research that will improve food security. Understanding the determinants and mechanisms is necessary to improve the design and targeting of programs and policies intended to improve food security.

STATEMENT OF SANDERS KORENMAN

The theme of Korenman's remarks was that measurement matters, and measurement issues affect key variables that are central to a study about the determinants of food insecurity. He said the most important constructs are poverty, food insecurity, and program participation, especially participation in SNAP, and he praised research of Craig Gundersen, Mark Nord, David Ribar, and others on the topic. However, he posited, the understanding of measurement problems may yet not be deep enough to inform policy analysis concerning the determinants of food insecurity.

Korenman stated that priorities should be to improve measurement validity of the key determinant variables, understand reasons for measurement problems, and support research on determinants informed by an improved understanding of the key measurement problems. He said there has been some research on this, but not enough, and noted the goal of the research would be both to improve measures and to improve the estimation and interpretation of determinants in order to guide policy.

To explain why measurement matters for determinants, Korenman returned to Gundersen's open questions about why so many poor households are food secure and why so many nonpoor households are food insecure. He noted measurement error could produce this pattern of results. He questioned whether the implication is that more work is needed to explain this result as a real phenomenon, or whether the result suggests the need for more valid measures of poverty to use in the analyses. Another question is how determinants differ by whether or not study subjects are participating in SNAP. The ability to answer is going to be affected by mismeasurement of SNAP participation, he said, especially if there is interest in determinants among poor SNAP participants and nonparticipants since mismeasurement of poverty compounds these errors. He referred to work by Meyer and Sullivan (2012a:117) that has shown that underreporters of income are disproportionately represented at the bottom of the income distribution, particularly by those whose incomes are below half of the poverty line.

He said he agreed with Gundersen's suggestion of an analysis to

determine the relative magnitudes of various determinants, but mismeasurement would affect this analysis. In general, the more a determinant is mismeasured, the smaller the magnitude that will be estimated, which will influence the impression of which determinants matter more than others.

Korenman stated an analysis of how different determinants influence responses to food security questions is particularly important. He noted that there has been some analysis about how participation in SNAP affects responses to food security questions, but further research is needed. He described what he termed two mysteries. The first leads to concerns about the external validity of both the food expenditure measure and the food insecurity measure, as Gundersen and Ribar (2011) concluded that food hardships are underreported at the low end of the expenditure distribution. He cited a report by Nord (2009b) on the same topic that showed that even at essentially zero food expenditures, household food insecurity is still only at about 20 percent. Korenman stated that the data may be masking genuine distress, and it may mean that the food insecurity and insufficiency measures will have difficulty registering increases in well-being from policy innovations and economic improvement. The validity issues affecting these measures affect the ability to answer key questions of interest.

His second mystery, he said, is why SNAP participation is not inversely related to food insecurity among the poor. He referred to Gundersen and Kreider (2008), who observed that the apparent paradox of food stamp households appearing to be more likely to be food insecure than similar eligible nonparticipating households hinges on strong assumptions about the reliability of the data. They find that error rates in food stamp participation smaller than 12 percent would be sufficient to mask the relationship between food stamp participation and food insecurity. Korenman said that Gundersen and Kreider (2008) described measurement issues associated with the reporting of the food insecurity items, and food insecurity measures may reflect a different point in time than reported food stamp receipt. Korenman said that validity issues should become a more central part of research on determinates of food insecurity. He urged that poverty measurement and its validity be a concern for all studies concerning the determinants of food insecurity for several reasons. First, if poverty is measured poorly, it is going to bias estimates of the effects of poverty on food insecurity. Poverty is directly used as a partial screen in the HFSSM interview. It is also going to be important when looking at the determinants of food insecurity among the poor. He noted the poverty measure matters for important issues like identifying the needy and for assessment of policy effects.

He provided two brief examples. First, he noted that Meyer and

Sullivan (2012a) brought measurement issues to broad attention by comparing a consumption-based poverty measure to income-based measures of poverty like the official measure and the supplemental measure for determining the most disadvantaged, which Korenman termed a critical point. The identification of the most disadvantaged depends on how poverty is measured. As a second example of the fundamental importance of measurement and validity issues, Korenman considered whether the War on Poverty continued or failed to have sustained impact on poverty after the early 1970s. He said the answer to this question appears to depend on the poverty measure used. Discussing a graph from Meyer and Sullivan (2102b:149) that displays three poverty measures from 1960–2010, he noted that the official income poverty measure is relatively flat, showing little change after the early 1970s. The consumption poverty measure, available since 1984, shows much greater reductions in the poverty rate and thus implies a different story about the success of policy and the economy in reducing poverty over the past 30 years.[7]

He said Kaushal et al. (2012) took the issue of poverty measurement and brought it to bear on food insecurity, an example of the kind of measurement-focused research on food security that Korenman said he advocates. Kaushal et al. (2012) compared the magnitude of the relationship between food insecurity and poverty using the official poverty measure and the supplemental poverty measure. The supplemental poverty line or threshold in this case is greater than the official threshold, so each increment in income relative to that threshold is a bigger step up the income distribution. They found a bigger effect of increases in income relative to the poverty line when the higher supplemental poverty line is used. Thus, Korenman noted, a potential problem with the Kaushal et al. (2012) approach is that it may confound the rate of poverty with the measure itself. (To explore this, Korenman suggested that they could compare the effects of the two measures when they are "anchored" at the same rate.) Nonetheless, he stated that this paper illustrates important points and addresses the right questions.

Korenman speculated about a source of error that may or may not be unappreciated. He went through the order of the questions on the CPS questionnaire, noting the differences in the questions asked for poor and nonpoor households. He posited that respondents to the CPS questionnaire, particularly SNAP participants, may suspect they are being moni-

[7]During the open discussion, Joel Berg noted that between 1960 and 1974, the third measure shown on the graph (the after-tax money income measure) cut poverty in half, so that 16 million Americans left poverty and entered the middle class. (The official measure declined from about 19 percent to 11 percent.) Korenman added that since 1974 there has been little progress according to one measure and tremendous progress according to the other.

tored for compliance since, for example, questions about SNAP participation are asked before the HFSSM food security questions. Respondents may believe that agencies share data and may be concerned that their benefits might be jeopardized or reduced, thus affecting their responses. Many recipients are aware of stereotypes held by some people of the poor and of food stamp recipients. Korenman stated some interesting work could be done on measurement in this area, especially with the help of ethnographers. While investigators, including Gundersen, have been doing work on these measurement issues, he called for more research that puts measurement issues at the center of studies on the determinants of food insecurity.

OPEN DISCUSSION

Edward Frongillo (University of South Carolina) noted that both Gundersen and Coleman-Jensen asked how much of the variation in food insecurity is explained by hypothesized determinants, which determinants are the most important, and what the relative magnitudes of those determinants are. He said a different set of questions is who is food insecure, which families and which children are food insecure, and why. He posited that some of the methodology used is driving some of the answers that result, referring to research by Olson et al. (1997). Their classification and regression trees method showed that combinations of factors mattered in complex ways: for example, the variables of having some savings, food expenditures, whether solely reliant on food stamps for food expenditures, and whether there was some extra income for food worked well together. It is the combination of different factors that really matters. Gundersen said regression methods do not deal with combinations of factors very well, and other methods might be better.

Sharon Kirkpatrick (National Cancer Institute) commented on Gundersen's question about why some low-income households are food secure and some higher-income households are food insecure by positing that income is an imperfect measure of actual household resources because it does not capture costs of housing and other basic needs, savings, and debt.

Deborah Frank (Boston University) suggested a reason why disability might contribute to food insecurity is that for children (and adults) with diabetes and food allergies, the costs of the recommended diet are much higher, but it is not clear how to capture this on national surveys. She also commented that the concept of "getting by"—which might mean nobody in the family experiences discomfort—is very different than everybody in the family getting enough of the right foods

for health. The Healthy Eating Index[8] is complicated, and the linkage between "getting by" and the family's Healthy Eating Index is a missing piece in the story, she suggested.

Korenman asked about research that looks at the relationship between health insurance and food security. Katherine Alaimo (Michigan State University) described research she conducted some time ago, noting that families who did not have health insurance were twice as likely to be food insufficient (Alaimo et al., 2001a). She went on to say that it is important to broaden the perspective about determinants of food insecurity and consider the fundamental causes of poverty in the United States. Some demographic characteristics are associated with poverty, but, she asked, why is it that poverty is more prevalent among African American and Hispanic households? The root causes, such as racism and the economic structure of U.S. society, are not usually discussed. She also noted that 80 percent of food-insecure households have members who are working, which indicates they are not earning enough. Alaimo commented that, in terms of financial management skills, it is hard to manage a budget when the amount of money is not enough. Whether it is important to try to teach people how to manage a very small amount of money is an open question. She said more qualitative research on coping skills is needed to be able to say that lack of financial management skills is a cause of food insecurity. Gundersen agreed it is important to increase people's income, but he noted it might be beyond the scope of food insecurity research. He went on to say there is a debate in the literature about how much people can be taught financial management skills, with some evidence that instruction does not help much and that people seem to have those skills or not.

A participant referred to one of Gundersen's slides, which stated having an older child was an important factor in the level of food security. It led the questioner to wonder whether work has been done to dissect the parents' protective instinct versus the fact that as a child gets older, there is an increasing caloric need that puts the child at a level above the adults in the household. The participant queried whether there is a significantly different interaction for preschool children and younger children, how it changes over time, and whether it changes differently in different subpopulations. Gundersen agreed that this point may be one reason that older children have higher levels of food insecurity than those who are younger.

Joel Berg (New York City Coalition Against Hunger) commented on Korenman's discussion about the official poverty rate and whether or not it indicates that the War on Poverty did not work. Even though the

[8]See http://www.cnpp.usda.gov/healthyeatingindex.htm [September 6, 2013].

official poverty rate was cut in half from 1960–1974, extending the line through the Reagan era and the Bush era is like saying that disease did not go away when penicillin was introduced or that penicillin was taken away and now the disease is at the same level. He called for separate discussion of the two time periods. He agreed that underreporting is a key issue when looking at the CPS and SNAP participation, noting that the CPS underreports SNAP participation by 30 percent. He also agreed with Korenman's point about the questions asked as part of the CPS. A survey taker asks questions that a child welfare worker would ask, and a respondent may fear that answering the question negatively could mean losing his or her children, a much more severe consequence than losing benefits. He called for research comparing the United States to societies that have essentially eliminated hunger and food insecurity, citing the Scandinavian countries' experiences. He suggested that if the preponderance of evidence shows the most meaningful factors affecting food insecurity are unemployment and poverty, more collective efforts should address income and poverty.

4

Contextual Factors Linked to Child Food Insecurity and Hunger

The second session of the workshop focused on contextual factors related to child food insecurity and hunger. In addition to geography, the session considered the political environment, or how local and state governments use existing resources to address child hunger; the food environment, such as food costs, food deserts, and alternative food outlets and the role they play in potentially moderating impacts of poverty and other factors; and economic context, such as the role of wages, unemployment, housing costs, transportation, and the broader safety net. The session provided an overview of what is known and focused on identifying important research questions and data needs going forward. The moderator was Susan Parish, Brandeis University. The main speaker was Scott Allard, School of Social Service Administration at the University of Chicago. Lucia Kaiser, a cooperative extensive specialist in the Department of Nutrition at the University of California, Davis, served as first discussant. The second discussant was Bruce Weber, professor of Agricultural and Resource Economics, Extension Economics, and director of the Rural Studies Program at Oregon State University.

STATEMENT OF SCOTT ALLARD[1]

Allard said the purpose of his presentation was to describe why place matters in the context of food security. He reviewed key terms and defini-

[1]Allard (2013) prepared a commissioned paper for the workshop, which formed the basis of his presentation.

tions and discussed possible causal pathways related to place, along with a summary review of the literature. He concluded his presentation by describing methodological challenges, prioritizing next steps, and suggesting discussion questions that he said were intended to seed later conversations.

Allard noted considering how place and contextual factors relate to food security and hunger is similar to an issue of supply and demand. Supply issues relate to where stores, retailers, and food assistance providers locate. Demand issues relate to how food needs and preferences are spatially distributed within a community. One open question is whether food security is the right outcome variable for thinking about place effects, as he said place and contextual factors might matter in both direct and indirect ways. Most of the studies in the literature do not address child food insecurity and place effects, which he termed a data limitation for two reasons. First, there are very few, if any, studies that can locate child food insecurity in space and model place effects. Second, the lack of data on food security that can locate individuals or households in space is a major limitation confronting all research on food security and place effects. Part of the lack is sample size and part of it is how the problem has been conceptualized.

The poverty literature has addressed why place matters, but it is difficult to unravel place effects from self-selection issues. Food behavior and food outcomes have a spatial component, and spatially correlated phenomena may have a causal component. Food resources and food assistance are located and embedded in space. Where a person lives affects the kinds of grocery stores and kinds of food assistance programs that might be nearby.

Although much of the research has been focused on food deserts, other aspects of place matter as well, as he detailed in his background paper (Allard, 2013:1). Understanding how spatial context shapes food security can mean a number of things, he suggested, and could mean an improved understanding of household and child food security. For example, around the same time that the food security measure was developed, there was a discussion about community food security measures, with a community food security concept embodied in a tool developed by the Economic Research Service (ERS).[2] Understanding how communities are food secure might help establish long-term household and child food security with the idea that food assistance programs are short-term solutions to these issues. Understanding place could also provide better insight into how individuals and households cope, as well as provide

[2]See http://www.ers.usda.gov/publications/efan-electronic-publications-from-the-food-assistance-nutrition-research-program/efan02013.aspx [August 12, 2013].

insight into better models, which might result in better allocation of public and private resources. Allard said better conceptual and empirical understandings of place might support the development of better interventions and more dynamic solutions.

Allard provided context for commonly used terms when looking at the relationship between food insecurity and place. First he described the food insecurity measure (see Chapter 2). He went on to say that research on place is usually specific to a given city or community, such as a study of New Orleans or a study of New York City. The unit of analysis may be a state, county, municipality, tract, or neighborhood. Some studies focus on state differences or county differences. Much research uses tracts as proxies for neighborhoods or block groups. He went on to describe some of the measurement issues related to the terms *distance*, *buffers* or *catchment areas*, *food resources*, *access*, and *nutrition*.

Allard noted four possible pathways through which place matters: (1) spatial proximity to food retailers; (2) safety net programs; (3) political and policy environment; and (4) food prices and economic conditions. Different studies tend to emphasize one of these areas, although there are not strict boundaries between them. He encouraged thinking about the role that self-selection plays: how people get to where they are, and how spatial measures of food access or food resources can help resolve the endogeneity issues that emerge from self-selection as to the neighborhoods people live in and the programs they participate in.

Spatial Access to Food Retailers

The most prominent component of the literature, and the dominant way that scholars, policy makers, and advocates seem to think about place and food security, is spatial access to food retailers, access to community food resources, the food resource infrastructure, or food deserts. Allard said there are many reasons to be concerned about spatial access to food retailers. The closer a person lives to a store, the lower the commute costs, and the lower the time costs. Supermarkets may be better than grocery and other types of smaller stores in that they are more affordable, have greater selection of food, longer hours of operation, and healthier food. He noted that community food security is considered a long-term solution to food insecurity, with food assistance being a short-term way to help families make ends meet.

Food retailer data come from proprietary sources, including Dun and Bradstreet and InfoUSA. Supplemental Nutrition Assistance Program (SNAP) retailer data are also available from the U.S. Department of Agriculture (USDA). Unfortunately, Allard noted that these datasets are neither comprehensive nor consistent. Some studies have compared food

retailer databases, with the finding that 30 percent of food retailers are missing from one list versus another. The source of data used to model food access matters a lot, and he said a substantial effort is needed to clean the data.

Allard said there is no agreement about what is adequate or inadequate in terms of spatial accessibility and a lot of variation in how people measure accessibility. A number of studies, for example, look at which retailers are located in a given census tract or ZIP code. One result is that there can be many different measures that might not compare very well across studies. Sparks et al. (2011) developed a number of different measures in Portland and found that different measures within the same community are highly correlated. Hence, depending on the questions being asked, some of this variation in measurement of access might not matter as much in the context of a single community or city. However, it certainly makes it difficult to compare New York to New Orleans or Chicago.

A large number of studies find race and class differences in access to food retailers. Much of this is based on distance to the nearest supermarket, the average distance to the nearest three supermarkets, or the number of stores in a census track or a ZIP code. Gallagher (2006) found that African American neighborhoods in Chicago are 40 percent farther from the nearest chain grocery store than are white neighborhoods. This is a very common result in comparisons between black and white neighborhoods, poor and nonpoor neighborhoods. However, other studies show small or no differences by race and class. In an ERS report about this literature, Ver Ploeg et al. (2012) found some evidence of race and class differences, but also evidence with mixed results. Some studies find low-income and minority communities have greater access to supermarkets, while there are also some studies that show that nonchain grocery stores or specialty stores, particularly ethnic groceries, are more accessible to low-income and minority communities.

Bartfeld, Ryu, and Wang (2011) showed that only very long distances to grocery stores are related to food insecurity. Few studies can compare access measures to food security outcomes, in part because most of the surveys that provide the food security measures are national in scope. Thus, noted Allard, it is unclear how access affects behavior, program participation, or diet.

There are many assumptions about distance, mode of commuting, and type of store. The vast majority of households are within one mile of a supermarket. Most poor households use a car to get to the grocery store, whether it is their own car or a borrowed car. This is true of food pantries as well, especially outside central city areas. Allard urged challenging what he called common assumptions that all people in poor neighborhoods are poor, all people in poor neighborhoods do not have a

car, and that people can only walk to the grocery store. Allard said that as poverty in the suburbs has increased, there are more poor people in suburbs now than in cities. As a result, the issues of food access and food security have become a big unknown because much of the research focus has been on urban centers or rural places. Little research has been done in suburban areas.

Areas that are deeply segregated by race and class often have the biggest gaps, Allard said. A mix of approaches, a mix of data, and a mix of sites lead to a mix of results. However, this is not yet being linked to the food security questions. Assumptions are made about poverty rates, and what it means to live in a high-poverty tract. A lot of the research is cross-sectional, so establishing causality is difficult. Much of the research looks like asset maps, without connections to behavior.

Another question raised by Allard is how to assess statistical significance to decide if a result is substantively significant. For example, a 40 percent difference in access between black and white neighborhoods in Chicago is a difference between being six-tenths of a mile to the nearest supermarket and four-tenths of a mile to the nearest supermarket. He said research is needed concerning the meaningfulness of such significant differences observed in terms of their impact on people.

Allard asked how measurement could be improved, noting that ready access to GIS software may support better measures that can also be linked to individual and household outcomes. There are important at-risk areas and groups that deserve focus. Spatial access to food is a phenomenon that matters, he said, but it may matter more acutely in certain places.

Safety Net Programs: Public and Private

Allard discussed safety net programs and providers, noting mismatches and gaps between the location of providers and the location of people in need. Safety net assistance matters because it increases household food budgets. Social service programs can help improve well-being and work earnings. They provide emergency assistance that helps families navigate job loss or periods when they might risk becoming food insecure. He characterized food pantries and religious congregations as first responders that can provide food as well as legal aid, employment, and other services. Having such an organization in a community instead of living in a place without that kind of asset potentially matters for many reasons, he said. Proximity to assistance programs is likely to be related to increased take-up. If so, then proximity to assistance programs is likely related to food security—whether a direct or indirect pathway.

He noted how different services and programs are bundled is also important, referring to a discussion in the literature that density of pro-

grams can lead to greater collaboration among community-based organizations. He noted a threshold or tipping point concerning the density of providers: When there are enough providers, the supply of advocacy and intervention or referrals and awareness is greater, and households are better served.

There is also reason to think that formal childcare centers and access to formal childcare matter, especially as they relate to what children eat during a day. He cited research by Kissane (2010) and Neckerman et al. (2009), who considered how people navigate place in the context of safety net programs as it relates to straight-line distance versus street grid. Both of these studies talked about the built environment, how people engage their environment, and concerns about stigma. A person might not go to a food pantry in her neighborhood because she does not want to have people see her in line or might have concerns about safety and violence or about issues of race and ethnicity. A person might not go into a neighborhood because people are different or because it is a different gang's territory. Qualitative studies can educate about these types of conceptual pathways. He said there is not much work focused on the presence or absence of safety net programs or the role of providers.

There is reason to think that if food-insecure households are enrolled in food assistance programs, they will do better over time. Bartfeld and Dunifon (2006) looked at access to food assistance and found it is positively related to food security, and Nord and Golla (2009) looked at SNAP and food insecurity correlation over time.

Not much research has been done concerning food pantries, although they play a big role in areas of high poverty or with individuals who have persistent detachment from the labor market. Allard said he has found that, consistent with some supermarket access research, low-income neighborhoods have about half as much access to emergency assistance food providers as other neighborhoods (Allard, 2009a). He observed empirical research on the spatial location of food programs and food assistance lags behind what people on the ground know, and he noted that talking with someone who is running a grocery store or a food pantry in a poor neighborhood will provide a story that is not present in the literature. He pointed to some promising use of SNAP administrative data to study what people buy and where they buy it.

Allard suggested that research is needed into how receipt and bundling of assistance shapes food budgets and food shopping behaviors, how social service programs can be integrated more explicitly, how food security and program participation are related, and the causes/consequences of exiting from programs. Because store locations are driven by supply and demand and by the built environment, he said, economic conditions and how they shape the location of food resources are important.

He went on to say that there is not a good understanding of why or whether food deserts exist, but researchers are interested in food prices and cost-of-living measures by geography. Labor markets, housing costs, and energy prices all vary by geography. He said that researchers have expressed some interest in informal social support and increasing interest in civic structure and social capital. Where stronger, he suggested, a civic community with less crime and violence and more safety might lead to better health or food outcomes. However, without local-level data, the literature focuses mostly on economic issues.

Prices tend to be lower in supermarkets and supercenters, but there is much regional variation. Some studies find that ethnic grocery stores provide affordable healthy food options in low-income neighborhoods, but these stores are not widely accessible to all low-income neighborhoods. There is evidence that unemployment rates and wage rates affect food security. Allard noted that—in one study—response to the question "how strong do you think the community organizations around you are?" was positively related to food security. He observed that social support is a more prominent coping strategy in rural areas.

Many economic and social factors are highly correlated with each other and with other important variables, and teasing out what matters is difficult. He suggested that the next steps are to understand what creates gaps and mismatches in access, answering these questions: Why do food deserts exist? Can prices and price variation by place be connected to shopping behavior? Can effects of context over time be modeled? And, can measures of civic community and safety concerns be included?

Political and Policy Environment

Allard noted important political and policy variables might matter, but this is a relatively underdeveloped area of the literature. He recommended identifying key causal pathways, working on developing better measures, and establishing a direct connection to household or individual food security, and he pointed to some promising ideas to examine how policy varies at the state and local level and the effect of these variables.

Food Prices and Economic Conditions

Although there is no robust theory of place effects and food behavior, he said that careful thought about causal mechanisms, adequate access, access shifts over time, and the relation of those shifts to food outcomes is important. A lot is known about how poverty varies by place, but available data do not allow very well for the study of food insecurity by place. Moreover, food deserts can be identified but not always why they exist.

Allard said there are serious data limitations in the grocery store data and individual household-level data. He recommended including the food security questions in more panel surveys to obtain geographic coverage.

He reminded the audience that the processes are different in urban, rural, and suburban areas, and models and theories are unlikely to work well in all places. There are endogeneity and self-selection issues with individual and household outcomes, and place variables might help to account for them.

Research on how to link data on place to different food behaviors is important: how people buy food, where they buy it, and for how much. He said this information needs to be connected to stores and the environment around them. Allard suggested natural experiments and behavioral economic experiments, using technology and "big data" to the extent possible to generate new ideas. He noted that as technology is able to scrape data and pull data together from different and unique places, there might be some opportunities to find new sources of data and new measures that would not require panel surveys or that would allow 80 percent of the answer obtained with 20 percent of the investment.

STATEMENT OF LUCIA KAISER

Kaiser began her comments by asking if the concept of place is the "silver bullet." She said she would re-visit the concept of causal pathways, take a closer look at food deserts, and provide her thoughts about reaching hard-to-reach populations.

Causal Pathways

Kaiser reminded the audience about Allard's four causal pathways: (1) spatial proximity to food retailers; (2) safety net programs; (3) political and policy environment; and (4) food prices and economic conditions. Related to spatial proximity, she encouraged research on mixed methods that combine GIS data with other measures, as well as perceptions of proximity. In terms of the safety net, she said analysis needs to decouple the location of the application process from the location of receipt of the service, or "program delivery." She reminded the audience that immigrant populations in particular have many linguistic and trust barriers to the application process, noting that these can be managed by community organizations. She also noted that application for and receipt of benefits may be in different places. She said that in the political and policy environment, state and local policies have a significant impact on local access and food availability and new methods should be piloted before being

rolled out. Finally, concerning food prices and economic conditions, she observed that seasonality is a key issue for immigrant populations. Many immigrants are farm workers, implying both seasonality in work and in availability and prices of food. Some of her qualitative work has demonstrated that these fluctuations may mean an abundance of food at certain times and, at other times, not enough, which affects parenting strategies and the way children are nourished. She said that other types of populations engaged in seasonal work might have similar issues.

Food Deserts

Kaiser questioned the focus on food deserts. She noted that few studies have compared perceived and objective measures of distance to grocery stores and supermarkets. From a local perspective, this is very important and opens the door to mixed-methods studies. To implement strategies that will help prevent food insecurity, she said it is important to understand how people view the distance to stores.

She cited a study (Caspi et al., 2012) conducted among 20 low-income housing projects in Boston, which found a mismatch of 31 percent between actual measured distance by GIS and the perception (from survey data) that the supermarket was within walking distance. Perhaps, she said, those two different measures tap into different constructs or there is an unmeasured individual or place-based characteristic. This study suggests that GIS data need to be augmented from another point of view. To describe the relationship between measured and perceived distance to the supermarket, Caspi et al. (2012) used as an outcome variable the number of servings of fruits and vegetables. The authors found that, after controlling for food insecurity, income, age, gender, and country of origin, the measured distance from the housing sites to the supermarket was not significantly related to servings of fruits and vegetables, but that the perception that the supermarket was within walking distance was very much related to it.

In 2006, Kaiser and colleagues collected 24-hour recalls of food receipts from 117 low-income women living in four counties in California. In a recent analysis of that data,[3] they found educational and motivational factors play a role in diet quality as measured by the Healthy Eating Index.

Andreyeva et al. (2012) looked at the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) stores and non-WIC stores in Connecticut before and after the 2009 implementation of the revised WIC food packages that provided online vouchers to purchase fruits and vegetables, whole grains, and low-fat milk products. The study

[3]See Kaiser et al. (2006).

considered the question "Can food assistance policies change the local availability of healthy foods?" The study found that WIC stores showed greater improvement in availability of healthy foods after implementation of the WIC food packages. Stores that were non-WIC had some changes, probably because there were more providers (e.g., of whole grain bread) going into those areas, but there was a much greater effect on the WIC venders in terms of healthy supplies of foods at their stores. There was also a greater positive effect on food supply for stores that were farther from supermarkets. This study demonstrates that changes in food assistance programs can have a local impact on the variety and the quality of foods that are available at stores. Kaiser observed pilot studies of policy changes prior to implementation may be valuable. She speculated about what a pilot study would have demonstrated if it were conducted before the new WIC food packages were rolled out.

Reaching the Hard to Reach

Kaiser discussed the role of community-based participatory research studies in better understanding hard-to-reach populations, drawing on her experience as a member of the *Niños Santos, Familia Sana* (Healthy Children, Healthy Family) project, a five-year project funded by USDA to prevent childhood obesity. The project involves, among other things, administering the 18-item Household Food Security Survey Module (HFSSM) twice a year over five years in a very high-risk population.

About 90 percent of this population is immigrants, and many of them are undocumented. Her team is working with community advisory groups to reach this population. The group uses lay people from the communities as recruiters, who have helped the team in many ways, including testing questionnaires and techniques. She characterized the project as a long-term commitment that involves building trust. She showed some preliminary data that indicate that in this population about 13 percent have very low food security and only 36 percent are food secure but underscored they are preliminary data and the figures may change.

In conclusion, Kaiser stated that mixed-methods studies, not just GIS, are very important to understand place-based issues. She added that pilot studies of innovations in food assistance programs might help researchers to understand program impacts. Community-based participatory approaches to working with the hard-to-serve require a long-term commitment and may involve new research teams but will lead to a much better understanding of these populations. Her final suggestion was to consider small case studies to look at possible mechanisms, in addition to larger panel data studies.

STATEMENT OF BRUCE WEBER

Weber said he wanted to make the concept of "place" more concrete and consider it in the rural/urban continuum as a set of places. A person can insert his or her own place in this continuum to get a sense of why it matters. He said he would suggest research opportunities along two of the pathways that Allard identified and end with an argument to include measures of place or indicators of place in research that involves individuals to support understanding about how place affects individual outcomes.

He observed that a map of the United States produced by Feeding America, displaying child food insecurity estimates by place,[4] shows how food insecurity among children varies by place, with high concentrations of childhood food insecurity in the Southwest, in the South, in some of the southern counties along the Mississippi River, and in Appalachia. What is more surprising, he said, is that some western states have high levels of child food insecurity in places that do not have particularly high poverty rates.

Pointing to Table 4-1, which displays aggregate measures of food insecurity in all counties, metropolitan counties (split into principal cities and outside principal cities), and nonmetropolitan counties, Weber described how food insecurity and child food insecurity vary across the rural/urban continuum. Food insecurity rates are higher in nonmetropolitan than in metropolitan counties across all of these variables. However, the places that have the highest food insecurity and the highest child food insecurity are the principal cities of metropolitan areas. Weber asked why these differences exist and what characteristics of these places and the people in these places explain the differences in food insecurity and child food insecurity.

Weber stated one of the roles of policy in reducing food insecurity is to change the economic context so households can develop their capacities and earn sufficient income so that they are not food insecure. The major policy player, he said, is macroeconomic policy and all other policies that affect the ability to earn income. Some policies, including local policies, make place-specific investments. These local investments, which are usually physical investments, affect the opportunities that exist in those places.

In addition to changing the economic context, he said policy also needs to provide a safety net, including many of the safety net programs discussed later in the workshop by David Ribar (Chapter 6), for those for

[4]Available: http://feedingamerica.org/hunger-in-america/hunger-studies/map-the-meal-gap.aspx [August 29, 2013].

TABLE 4-1 Child Food Insecurity Across the Rural/Urban Continuum: 2011

	Percent of Households That Are Food Insecure	Percent of Households with Children That Are Food Insecure	Percent of Households with Food Insecure Children
All counties	14.9	20.6	10.0
Metropolitan counties	14.9	20.3	9.9
Principal cities	17.7	24.2	12.0
Outside principal cities	13.2	17.9	8.8
Nonmetropolitan counties	15.4	22.0	10.4

SOURCE: Coleman-Jensen et al. (2012). Reprinted with permission.

whom general economic conditions do not allow them to earn enough income to feed themselves. Food, housing, energy, and childcare assistance all affect the ability of a household to feed itself, and need to be considered as part of food assistance policy and its impact.

Weber discussed two of the four causal pathways identified by Allard: economic and social conditions and safety net programs. Weber noted these different pathways imply and require different kinds of polices. Related to economic and social conditions, Weber suggested a couple research questions: (1) How much, if at all, do local economic conditions, including job opportunities, wage rates, unemployment, housing costs, and other things, affect participation in food assistance programs? and (2) How much do these local conditions influence the effectiveness of food assistance programs in reducing food insecurity? He concurred with other speakers that answering these questions requires mixed-methods research and would help in program design and, in particular, government investment decisions. Household data need to have geographic identifiers in order to link the household to the economic conditions in which that household lives.

Related to safety net programs, he suggested a need to look at cross-program participation dynamics (food assistance, energy assistance, housing assistance) along with employment dynamics to see how they vary with impact. He said he wondered how these dynamics vary across the rural/urban continuum, and if they do, how program and work dynamics are affected by personal demographics, local economic conditions, and program design.

He also considered how well matched food security needs in different places are to federal food assistance programs and emergency food

programs. He suggested one way to start to answer that question would be to look at the map from Feeding America[5] to identify places with high food insecurity and evaluate food security programs in those areas.

Weber also identified two aspects of measurement of local economic conditions that are important for understanding food insecurity. While there are often good measures of some local conditions (unemployment, for example), there are not often good local measures of food costs, housing costs, jobs available to low-income people, and other conditions. He went on to say that the other aspect of measurement is geographic detail. There are some county-level data, but often no good measures of conditions at the subcounty level, which may be more relevant for studies of food insecurity. He reminded the audience of Allard's question: "Why are so many poor households food secure?" Weber argued that part of the answer to that question may be where they live and the personal and household economic conditions of the place they live.

He said another research question is stimulated in part by Wilde (2013) about the "new normal." He asked if a "new normal" regarding food assistance program participation exists since the recession, querying whether the way people view these programs has shifted so that their entry and exit differs from historic patterns. If it is different, forecast models for food assistance programs will no longer be on target because they use models based on an old set of relationships. Data show that people are leaving SNAP at slower rates, which may be related to their job opportunities, food prices, changes in policy, and/or a change in the norms regarding participation. Mixed-methods research would help in understanding this question, and answers may be important in designing programs as well as in making forecasts.

Weber said more policy research has not looked at place for at least three reasons. First, many people can and will move to other places to improve their opportunities. Second, getting people to move can be a very costly way to achieve better food security. Finally, migration of low-income people does not always improve low-income job holding. However, he observed, some people will not or cannot move, and hence the place they live shapes the outcomes affecting their household's resources and decisions. In order to develop and implement policies to address food insecurity, he concluded, it is necessary to understand the spatial context.

[5]See http://feedingamerica.org/hunger-in-america/hunger-studies/map-the-meal-gap.aspx [September 6, 2013].

OPEN DISCUSSION

Hilary Seligman (University of California, San Francisco) noted that the presentations indicate that many barriers result in the same food insecurity outcomes. Food insecurity is conceptualized very broadly in terms of spatial access, physical access, and financial access to food. She said this is very important because the outcomes are all the same. However, the HFSSM in the Current Population Survey, in every question, asks respondents to parse out responses, asking "is this because you can't afford the food item?" A research question related to a measurement issue may be to what extent people are able to cognitively parse out a response, while another is whether there is a reason to more broadly conceptualize food insecurity to include all other considerations that decrease access to food.

Allard asked whether food security is the right outcome for the conversation, observing that having enough food is different than having the right food. A conversation about access to supermarkets or places to get fresh produce is a different question than a conversation about having enough to eat. He stated that better research looks at health outcomes, such as obesity, noting that it is a more seasoned body of literature. He also suggested that it may be worthwhile to think about multiple outcomes, not just food security.

Kaiser described her past research on food insecurity and the interpretation of the food security questions among a Latino population. She said that there may be some issues in understanding the questions and possibly even some overreporting. Children may skip meals for a variety of reasons. She said that, in some of the populations she works with, it is difficult for people to cognitively follow the questions—although she said she is not sure that adding words would make the questions easier to understand. She noted that Pérez-Escamilla has researched issues of food insecurity and understandability of the questions. While the issue of respondent understanding of questions has been addressed in research, she stressed it should always be considered.

In response to Seligman's point, Frongillo said that his research (Wolfe, Frongillo, and Valois, 2003) on in-depth interviewing with older people (who have multiple causes for food insecurity) has tested a series of questions with different ending stems. Their subjects were able to cognitively distinguish the questions. However, a questionnaire can include only so many questions that one can answer where the main part of the question seems very similar to something just answered, with a different tag line. The challenge is not so much cognitive differentiation, he stated, but how to ask a question in a practical way in a survey format.

Maureen Black (University of Maryland, Baltimore) noted it is useful to have the issue of context on the table, including geographic diversity. She referred to the map from Feeding America and said that agricultural

differences, food availability, and cultural differences may explain some of the variability. For example, beans are more popular in some parts of the country (e.g., Nevada) than in others (e.g., Maryland). If beans are included in a food package in Maryland, they might not be used, whereas in Nevada they might be. She asked about research that considers reasons for geographic diversity. Weber said much research looks at economic differences, but he was not aware of research that looks at cultural differences between places as a way of explaining geographic differences.

Allard said he has noticed that different food pantries have different levels of sophistication, such as understanding what local people eat. He stated that really good pantries understand local contours and develop food programs that speak to these contours. Although difficult to take into account from a quantitative perspective, mixed-methods or qualitative research would allow a researcher to think about such causal pathways. More of this type of research might give food pantries or local food programs ideas about how they can do their work better.

Diane Schanzenbach (Northwestern University) asked how Allard's presentation fit into policy, such as locating supermarkets in certain neighborhoods or providing money to households in those neighborhoods. Allard responded that the policy response in the literature is an effort to create incentives for stores to locate in underserved areas. He noted that though this is a supply-and-demand issue, local governments can help developers see opportunities in communities that are underserved, as is occurring in Chicago. He said leading institutions also need to take a role in planning of new store development.

Schanzenbach followed up by asking about the role of the profit-seeking entities in planning the locations of grocery stores. Allard replied that Bitler and Haider (2011) addressed this question. Although it is not known why food deserts exist or change over time, a supply-and-demand logic is known, which Allard suggested is due to the same factors that lead to disinvestment in high-poverty, racially segregated neighborhoods. There is an issue of race that matters, he said, and also not much awareness. He noted the profit margin in selling groceries is very low. He reported one of his former students helped open a nonprofit grocery store called Louis' Groceries on the south side of Chicago, suggesting that this different model might serve as an alternative to a model with the big chain grocery stores. There are probably all kinds of ways to ensure that people have access to food resources or food assistance, and spatial dynamics might help expand household budgets. There are also transportation ideas, whether mobile markets, or delivery or transportation services for the disabled populations.

Kaiser referred to the WIC example in Connecticut as a change in policy that had an effect on local foods, and there are many different

avenues to look at. She noted, however, the unintended consequences of building a large supermarket could put smaller stores out of business. Perhaps, she suggested, a policy should also consider how to help smaller stores. She noted that after WIC implemented its new policy, it was important to work with some of the WIC-only stores to learn how to properly handle perishable foods. Using this example, she noted sometimes changes in policy require education. Some educational interventions would bolster resources that are already in the community and help them do a better job when an incentive is added to encourage participants to buy more.

Allard said there is room to experiment with low-cost interventions to see if they make a difference. He suggested solutions that are tailored to the specific nature of the need in a community and the specific dynamics in which place might matter. Rather than a one-size-fits-all operation, a portfolio of options would be relevant or tailored to specific settings.

James Weill (Food Research and Action Center) noted that his organization is working on strategies for encouraging supermarkets that are subsidized by foundations or by local, state, or federal governments to go into a neighborhood to also conduct aggressive outreach for SNAP, Earned Income Tax Credit, and child credit. He expressed hope that these strategies would grow participation in these neighborhoods.

Sonya Jones (University of South Carolina) encouraged Allard to consider the fact that a food store is the front for an entire food system. It is not surprising to characterize a local problem, but it is also a global marketplace that is dealing with local constraints. She said that she appreciated the example of the nonprofit grocery store, saying that an interesting policy question is how much local control communities have over the kinds of food available and where they are located, and whether this is a predictor of food insecurity in the community. Allard reported on some conceptually promising work on civic community and social capital that addresses those issues. He said the case can be made that areas with greater advocacy, whether political, economic, or policy related, are going to have better or different types of resources.

5

Individual and Family Coping Responses to Hunger

The workshop's third session focused on coping strategies used by individuals and households when faced with food insecurity or hunger. The speakers provided an overview of what is currently known and not known about strategies households use to cope with food insecurity and hunger and focused on identifying what they see as the most important research questions and data needs going forward. The moderator was Sonya Jones, Department of Health Promotion, Education and Behavior, University of South Carolina, and the deputy director of the Center for Research and Nutrition and Health Disparities. The main speaker was Mariana Chilton, Drexel University School of Public Health, director of the Center for Hunger-Free Communities, co-investigator for Children's HealthWatch, and founder of Witnesses to Hunger. The second scheduled speaker, Kathryn Edin of Harvard University, was unable to attend the workshop, but Sarah Zapolsky, social science research analyst with the U.S. Department of Agriculture (USDA) Food and Nutrition Service (FNS), presented the *SNAP Food Security In-Depth Interview Study* (Edin et al., 2013), a study Edin and Mathematica Policy Research conducted for FNS related to the Supplemental Nutrition Assistance Program (SNAP). The discussant was Colleen Heflin, Harry S Truman School of Public Affairs, University of Missouri.

STATEMENT OF MARIANA CHILTON[1]

Chilton stated that she was tasked with talking about coping by individuals and families with a focus on what is known, what is not known, and topics for future research.

Up-Front Concerns

Chilton asked about distinguishing between child food insecurity (1 percent of households) and household food insecurity (21 percent of households), suggesting that the focus should be on all children who are exposed to food insecurity in the household. She observed that hunger is multidimensional as an economic, psychological, physical, social, and life-course experience. She said the food insecurity measure does not pick up the social issues or the dynamics of food insecurity across the lifespan that underlie food insecurity. She pointed out two unsettling areas related to food insecurity. The first has to do with the concept of parenting from two different perspectives: the research professional, who deals with theory, and the parent, who may deal with the actuality of food insecurity. The other is the unsettling nature of admitting that child hunger exists in the United States.

Chilton briefly described the Witnesses to Hunger study (Chilton et al., 2009), a participatory action study ongoing in Philadelphia and now also in Baltimore, Boston, and Camden, New Jersey. Through this program, low-income women work with professionals to explore food insecurity and their interactions with federal safety net programs. The purpose is to make sure that they are participating in the national dialogue on hunger and poverty, and are participating in the design, analysis, and dissemination of research.

She pointed to what she called harmful assumptions that need to be dispelled. First, she said, it is tempting for professionals and researchers to think of parents who may be experiencing food insecurity as well-meaning, deserving, and dedicated to looking after their children. These are the parents who report on a survey that their children are very low food secure. It is unsettling to think about some parents as addicted to drugs and potentially self-medicating because of their experiences with trauma and depression.

She went on to say that it is also unsettling to think about the context and the environments in which young children may be raised. She noted the individuals she describes may be called a hard-to-reach population,

[1]Chilton and colleagues prepared a commissioned background paper on this topic; see Chilton et al. (2013b).

and most current research methods cannot drill down to this level of detail. She stressed that what she described is not what is happening with all families experiencing very low food security at the household level. However, researchers should not be afraid to discuss drug addiction, violence, and some negative environments in which children live.

Witnesses to Hunger started in 2008 and has administered the Household Food Security Survey Module (HFSSM) several times. The group talks to women about why they may answer differently over time. Most of the women who experienced severe violence changed their responses concerning the depth and severity of food insecurity. When asked why, these women talked about how they often hid the true magnitude of food insecurity in their households because they were afraid the person asking the questions might report them to child services. They were afraid that their children would be taken away.

She showed a photograph of a mother and her two children. The mother reported that "it makes me feel like less of a mom not to have food for my children." Chilton concluded that the very act of asking the food insecurity questions challenges a respondent's view of herself as a caring and providing parent.

Chilton said the safety net system is important to consider in a discussion about individual and household coping mechanisms. Although the safety net is supposed to be in place to protect children from experiencing hunger and food insecurity, she said the second unsettling thing about child hunger is that the public assistance systems are not reaching or working for the families and children who need them.

She showed a photograph of a young child with his hand outstretched. His mother took the photograph when they were applying for emergency food assistance. She had been cut off of Food Stamps because she had received a raise at her job, and she and her child were extremely hungry. In that moment, she said, he was reaching out to the caseworker who had a bag of potato chips. The mother ultimately did get the Food Stamps, but it meant child hunger and a challenging interaction with the system to do so. There are many layers to the system, and there should be increased attention given to how well they are working, Chilton urged.

As another harmful assumption, Chilton noted food insecurity is considered to be an individual or family problem as explained by the measure in National Research Council (2006). She called this a harmful assumption because food insecurity does not happen in a vacuum. She said another harmful assumption is the distinction between deserving and undeserving poor. Researchers need to talk to people who are experiencing drug addiction, major mental health problems, and exposure to violence. She asked the audience about how to fight against the common misguided portrayal of people who are on SNAP benefits or who are on

Temporary Assistance to Needy Families (TANF) and welfare as somehow "slumming the system." She agreed that working families who are food insecure are important but said there is still a need to understand the dynamics of unemployment, disability, and other more difficult issues.

Chilton said another harmful assumption is that hunger is a temporary experience with temporary effects. She suggested that researchers look across generations and ask what happened during the childhoods of adults who have food-insecure children. She added that the assumption that food is the only thing that is going to fix the problem is also harmful. Finally, she said researchers and policy makers need to recognize that the safety net is not a single comprehensive program that works.

What Is Known: Issues and Strategies

Chilton went on to say that researchers understand that food insecurity is related to the concept of trade-offs.[2] With not enough money in the household, a family has to make a trade-off among paying for rent, paying for utilities, or paying for food (Frank et al., 2010; Rose, 1999). There is also a trade-off between being able to pay for prescriptions and paying for food (Bengle et al., 2010; Bukusuba et al., 2007; Seligman et al., 2010b). Research indicates that food insecurity is related to depression, social isolation, and anxiety. Depression and anxiety can exacerbate problems with parenting behaviors and with child development.

Chilton showed another photograph taken by a participant in Witnesses to Hunger of a very dilapidated and messy kitchen without running water or electricity in the house of a family experiencing very low food security. She said the image illustrates what happens when a family is housing insecure, energy insecure, and food insecure all at once. She said that researchers sometimes forget the magnitude of the problem and how difficult it is to raise a family in that environment.

Chilton said that social networks can buffer families from food insecurity, including sending a child to a neighbor's house for dinner, relying on a grandparent, living with other people, or sharing resources (including Food Stamps) to feed the family. A social network can also make families more vulnerable, citing Hamelin et al. (2002), Martin et al. (2004), and Tarasuk (2001b), and noting many parents will eat less to minimize the effects of food insecurity on their children (Hamelin et al., 1999).

Chilton said that another known issue is depression, but the causal pattern of depression is unknown. Children's HealthWatch insists that depression and food insecurity cannot be separated. Researchers know

[2]These points are described more fully in the commissioned background paper (Chilton et al., 2013b:10).

about depression but may forget the real physical, emotional, and social pain that it can cause. Depression is very real, she emphasized, and can affect caregivers in profound ways (Black et al., 2012; Casey et al., 2004; Whitaker et al., 2006).

She went on to say that food insecurity is related to poor child health and well-being (Alaimo et al., 2001a, 2002; Cook et al., 2006, 2008). It is related to increased hospitalizations, poor child development, poor school performance, and suicidal ideation among children. However, what is forgotten, she said, is a child's illness affects the family's balance and triggers coping mechanisms. When a child is sick, a parent takes off from work and loses wages. As a result, the family may lag behind on rent or borrow money, which makes them beholden to friends, family, a boyfriend or "sugar daddy," often an older male figure with good financial income with whom a caregiver will live for a time. In this latter situation, there is an explicit understanding that for a month or two, that person will help support the family and buy food, but the relationship can put a woman in a very volatile situation, creating more risk and potentially more debt. For a very low-income family, a child's illness can unleash particular coping mechanisms that can place the family at much greater risk than simply losing a day of work.

Emerging Knowledge

Food insecurity is related to inconsistent or volatile income, violence in the family and in the community, and toxic stress, a topic of emerging research in child development. The idea is that early in childhood, if children experience severe and chronic stress and live in a situation where they cannot buffer themselves, this experience can have an effect on their ability to succeed in school, maintain a job, and earn a living wage later in life. Fram et al. (2011) also showed that children may have a strong sense of food insecurity in the household that may differ from what the parent reports on questionnaires.

Chilton said that she found the conclusions in Coleman-Jensen (2011) are quite true in the Philadelphia neighborhoods where she works. Nonstandard work with unstable income and nonstandard work hours is related to food insecurity. Chilton said that nonstandard work is also related to "churning": more income for a short period of time that causes a loss or reduction in benefits. But when the job ends, the household loses money and then must go back on public assistance. This on-and-off "churning" also creates more volatility and vulnerability to food insecurity.

Chilton showed another photograph of a female participant in Witnesses to Hunger. She was working in a TANF Welfare-to-Work Program

at the time and the papers that she had to file were shown in the photograph. She did not like her job, finding it depressing. She talked about being constantly hungry with a very low paycheck and that she had to decide whether she would be able to get to work (because she could not afford tokens to commute). She was wearing a sticker from the emergency room at Saint Christopher's Hospital where Chilton does research. The woman told Chilton, "If I am not at work, I am usually in the emergency room because my kids are always so sick."

Chilton stated that researchers should try to understand the financial experiences of very low-income families. She called for a comprehensive study on how low-income families try to generate income and interact with financial services: conventional banking, alternative financial services (pawn shops, check cashing places), and family and friends. While researchers know a lot about the financial experiences of low-income families, she said they forget the depth of the problem, particularly when there is sickness in the family. She said the experience during the recession, in which many people lost jobs or had their hours reduced, and experienced more substance abuse, robbery, and theft, increased issues related to very poor housing quality, frequent moves, homelessness, eviction, and alternative living arrangements. The situation is very complex, she said, stating that researchers think they understand the income supports available for low-income families, but research is needed about the relationship of the dynamics of earned income to the dynamics of these income supports. She noted researchers tend to think only about official income, wages, and jobs. They do not think about job satisfaction, and they may or may not consider childcare. There are dynamics between wanting to go to school to improve the chances of earning a better wage, but needing to work in order to pay for food. It becomes a vicious cycle that some of the women in Witnesses to Hunger call the "monster under the bed."

She noted researchers rarely pay attention to shadow earned income. This income may be earned, but it is "under the table" though not necessarily illegal. It may not be reported on their taxes or to the caseworker overseeing their TANF benefits. Shadow jobs might not only include businesses on the side doing hair and nails, childcare, and housekeeping, but also selling Food Stamps, doing sex work, selling drugs or being involved in the drug trade, relying on others who are in the drug trade, misreporting income, or stealing. She said a lot of underreporting of food insecurity occurs in surveys because of stacked questions that might be considered a probe about whether a family is using SNAP benefits to buy toiletries and supplies for the house. From a low-income family's perspective, a lie protects themselves and their benefits, something researchers should be aware of.

She said that Weinreb et al. (2002) discussed the community childhood hunger measure that was developed before the current household food insecurity measure was adopted. He noticed a relationship between severe child hunger and lifetime posttraumatic stress disorder among families experiencing major housing risk or homelessness. Melchior et al. (2009) also looked at the persistence of household food insecurity and how it is associated with the number of mental health problems and domestic violence.

Chilton mentioned her new mixed-methods research (documented in Chilton et al., 2013a) on very low food security at the household level and its relationship to severe violence. Caregivers of young children reported about their own experiences from childhood through the present, using five different qualitative categories of exposure to violence, with short-lived violence, long-term violence, and life-changing (rape, sexual abuse, and severe neglect) violence as the most severe three. In these most severe three categories, the very low food-secure households had more than twice the exposure to violence of the low food-secure households.

Toxic stress is defined as exposure to severe stress and/or hardship without adequate adult support (Shonkoff et al., 2012). It can include physical or emotional abuse, chronic neglect, the caregiver's substance abuse or mental illness, exposure to violence, and also the accumulated burdens of family economic hardship. She said toxic stress affects the brain architecture and the organ systems of children, sometimes called allostatic load. So much stress on the body can increase risk for stress-related diseases and cognitive impairment. Children can be exposed to severe adverse events, but if they have good support, they are more likely to be able to avoid the worst outcomes.

What Is Not Known

Chilton said researchers do not know enough about the intergenerational transfer of hunger. They do not know how existing public systems work to protect or buffer children or whether they exacerbate child hunger. She suggested research on the foster care system and child welfare systems and how they interact with TANF, SNAP, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

She suggested that researchers need to understand how Head Start is buffering young children, what is happening with childcare subsidies, and the USDA Child and Adult Care Food Program. She also called for more attention to family-focused public systems, noting that while there are administrative data and some investigations into churning, not enough is known about the dynamics of child hunger within the recertification time period, income volatility, and the concept of "working for peanuts."

She suggested research into the impact of categorical eligibility, the use of multiple programs, possible protections against child food insecurity by pairing the Low Income Home Energy Assistance Program (LIHEAP) with SNAP, housing subsidies, and pairing TANF and SNAP. Finally, she said more attention should be paid to employment: differences across states, city wage structures, labor laws, paid sick leave, job stability, wages, and employment policies. Researchers consider public assistance programs, she said, but forget about income and the laws and policies that affect people's incomes.

Chilton showed a photograph of a broken telephone taken by one of the Witnesses to Hunger participants, who said, "This is how I think of the welfare office, because I don't have a phone. This is the closest phone to me. They wrote me a letter and said call for appointment. How am I supposed to call for an appointment? If I do call them for an appointment, how are they supposed to call me back?"

Chilton said Witnesses to Hunger has discussed shut-off notices with participants who do not realize they had been cut off of Food Stamps. She reported one person said, "I didn't know that I was cut off of food stamps. I had a full basket of groceries that I was getting ready to buy. I had no food stamp money. I had to leave it all there and walk away. So I took this photograph of the empty cart to show you what that experience is like for me." Chilton said that losing SNAP benefits, whether because of minor increases in income or administrative errors, can be harmful to the food security of children and families (Edin et al., 2013:23; Frank and C-SNAP Study Group, 2006; Gayman et al., 2010). Cook et al. (2002) found that when families reported being sanctioned (losing benefits) they had greater odds of reporting household food insecurity compared to families that had not been sanctioned. Chilton observed that this indicates there is something about SNAP, the income thresholds, and the administrative procedures that needs further attention.

Research Priorities

Chilton said research needs to be more policy and systems oriented. Research should consider multiple systems, not just food assistance, and how they work together, including wages and labor laws, TANF, housing subsidies, LIHEAP, and solution-oriented approaches. Chilton said a lot is known about the causes and consequences of food insecurity, and now is the time to start working with very large numbers of families through broad-scale interventions and demonstrations. If there is a relationship between disability and food insecurity, there should be research into the interaction between Supplemental Security Income and SNAP benefits, perhaps one state at a time.

She said that there is a great need for improvement of the language and the framing of child food insecurity and hunger to help clarify the concepts in discussions among researchers, the press, USDA, and policy makers. Enormous confusion exists among the concepts of food insecurity, low food security, and very low food security (see Chapter 2). The problem must be framed more clearly to communicate with legislators and the public about what is going on.

Research, she said, should be multidisciplinary (epidemiology, economics, nutrition, sociology, anthropology, discourse analysis), using mixed-methods and longitudinal studies to include multiple generations. Finally, she said more research should be participatory (subjects as participants), because understanding the reality of food insecurity and child hunger requires directly talking and testing research ideas with people who have low income.

STATEMENT OF SARAH ZAPOLSKY

Zapolsky described research by Edin et al. (2013) that used the SNAP Food Security In-depth Interview Survey, a small component of the SNAP Food Security Study,[3] noting the larger study results will be published shortly. The larger study was the largest survey of SNAP participants to date and was a longitudinal and cross-sectional combination. The survey consisted of two groups: 6,436 households that were just entering SNAP and 3,275 households that had been on SNAP for six or seven months. Both groups were asked a series of questions, including the HFSSM. Six months later, the same people were interviewed and asked questions, including those from the HFSSM. The study examined differences in food security between the two populations and differences between when they started and six months later.

The SNAP Food Security In-depth Interviews were conducted between February and June 2012 with a subset of 90 SNAP households with children in about six states. The topics included financial situations, use of SNAP, overall food security, eating behaviors, nutritional attitudes, shopping behaviors, triggers of food hardship, and ongoing food strategies. Respondents were also asked about situations in which SNAP affected their overall food security. Interviews were held in the homes of respondents unless they preferred to meet in a public place like a library or coffee shop. Zapolsky acknowledged that this was not a probability sample of respondents, and so results do not generalize to any larger population. Instead, the re-interview study is intended to provide insights.

[3]See http://www.fns.usda.gov/ora/MENU/Published/snap/SNAPPartOther.htm [August 13, 2013].

One technique was an imaginary shopping trip in which the interviewer said, "Pretend you are going to the store. Where would you go first and what would you buy?" Each interview was transcribed and systematically coded for themes. The authors systematically assessed whether there were especially large differences in general financial circumstances of food hardship and coping strategies, eating and food dynamics in the household, and the role that SNAP plays in meeting a family's nutritional needs by food security level and also by race/ethnicity. They observed almost no meaningful differences in coping factors by race/ethnicity and broke respondents' coping strategies into two categories: reactive to deal with food hardships and proactive to avoid food hardships. Most respondents employed both. The most common proactive strategies observed were restricting food intake; altering types of food consumed; turning to networks; visiting food pantries; and shopping modifications, such as scouring the ads for sales, traveling from store to store on multiple occasions, and planning meals exclusively around types of foods that were on sale.

There were noted differences in coping strategies across food security levels. The least food secure were much more likely to say they had to restrict food intake to cope with the shortfall, which, based on the definition of food insecurity, makes sense. However, a number of food-secure households reported in the in-person interview that they skipped meals so often that they considered the practice routine, which may indicate that food insecurity is underreported. For example, a mother said she never eats lunch, just drinking coffee available at work, or eats much less when her children are away. When asked if this counted as restricting meals, she replied, "No, this is what I do."

The most common coping strategy related to family networks. A significant minority of food-secure households with children take advantage of frequent invitations to relatives' homes for meals and receive contributions using cash from friends and family. Those households that can rely on their networks to provide cash or meals were most likely to be food secure near the end of the month when SNAP benefits run out. The study considered households with children and the three food security levels: secure, insecure, and very low insecure. Households with very low food security often explicitly stated that they do not have networks willing to help them. Those with very low food security but who had social ties said they cannot rely on these ties because their ties are usually in worse financial shape than the respondents and turn to the respondents as the contributors.

Those who share their SNAP benefits with others were also clustered in the very low food security group, suggesting that when respondents extend charity to the even less fortunate, it is costly to their well-being. Strategies they said include shopping sales, using coupons, reducing the

number and quality of all meals or those of adults, and never entertaining or having people over, with birthday parties for the youngest children as the main exception.

Respondents saw SNAP as a lifesaver, and they planned their budgets around it. It allowed parents to mostly protect their children from the worst of the food hardship, and it also allowed households to prevent hardships in other areas by using their cash for other bills. Many households organize their budgets around the expectations that SNAP will suffice for the whole month, although the program is not designed to do that. Whether this is a planning issue is irrelevant because they did not have enough food.

As Zapolsky explained, the one underlying factor that differed most among the different food security levels was that of access to family and social networks. All else being equal between two households, such as finances and demography, parents who can send their children to a relative's house for dinner are better off than those who have no such recourse. The flip side is that those who are donors for others are worse off.

Zapolsky said Gundersen's comment (see Chapter 3) about the presence of older children in households being detrimental to food security reminded her of several conversations, such as "younger children are more welcomed to eat at a friend's house than older kids," or, worse, the "dreaded teenage male." She said that respondents mentioned being clear with their older children about not bringing friends over around mealtimes or hiding food if they know that friends were going to come over. However, the strategy was often trumped by the pride taken in one's cooking skills and the desire to make their children's friends welcome.

Zapolsky shared several observations. First, household rosters can be volatile. Normally, a survey asks about household composition on a typical day. In this survey, respondents were asked about a specific day, such as yesterday or last Thursday, and were also asked very specific questions such as, "Who ate breakfast on Thursday?" Specific questions got specific answers. For example, the answer might be that "the uncle ate breakfast with us on Thursday." The conversation might continue, "Tell me more about the uncle?" Followed by "Oh, he is visiting." "How long has he been visiting?" "Six months." There might also be a cousin who shows up at the first of the month or other visitors. As a result, FNS is considering alternative ways of asking about the household roster.

Her second observation concerned respondents' extreme and constant thought devoted to managing the household budget, procuring food, and making it last. She gave an example of the questions about the imaginary shopping trip. When asked about their stops in the grocery store, respondents typically said that they go first to the meat section for meat that will last a couple of meals. Next, they say that they select grains and rice, then

milk and juice. Third, they get nonperishables that will last until the end of the month, with the rest of the shopping trip to stock up on perishables. Between this detail and respondents' to-the-penny knowledge of costs, debts, and SNAP benefits, it is not a lack of education about financial management, she said, but rather that there is not enough money to manage.

Her third observation was about measurement and a need for further research. The less acculturated or Spanish speakers who were interviewed might answer affirmatively to all of the HFSSM questions. However, they would reply no when asked "Are you hungry? Have you experienced hunger?" This led the study authors to wonder about differing perceptions or a stigma to reporting hunger in this population.

STATEMENT OF COLLEEN HEFLIN

Heflin described what is known and needs to be known about two areas integral to understanding how households cope with food insecurity: (1) the trade-offs that households make with other essential needs, and (2) participation in food and assistance programs with a focus on the issue of nonparticipation.

While the workshop focused on the issue of childhood hunger and food insecurity, households that report childhood hunger are also likely to be in dire financial straits and are facing shortages of other essential needs, she noted. Households will go to tremendous efforts to shield children from food insecurity, and those that are reporting childhood food insecurity are unable to cut from any place else, which means they are likely experiencing trade-offs in other essential areas. They could be paying less than their full amount of rent or mortgage, or they are living in poor-quality housing. They may be facing utility cut-offs, or at least they are not paying their full rent or utilities, and they are juggling essential bills. Finally, they may forgo medical care or prescriptions and may be facing transportation needs.

Heflin said that Edin et al. (2013) reported that a respondent talked about not going to church as often to save money for food. In other cases, transportation needs are a trigger for households. When households are faced with having to fix a vehicle, they will take that money from their food budget if they have nowhere else to take it from.

When talking about child hunger, Heflin pointed to a broader picture of other essential needs also not being met. She highlighted results from a Missouri food pantry clients survey (Vancil et al., 2013), conducted in 2010, in which 42 percent of clients reported that they had to choose between buying needed food and paying for medicine or medical care. Forty-six percent reported trading off between buying food and paying for utilities, 56 percent reported trading off between buying food and

paying for rent or mortgage, and 60 percent reported trading off between buying food and paying for gas. Only one-quarter did not report any of these trade-offs, while another one-quarter reported making trade-offs in all four areas within the last year. Food insecurity implicitly means other material needs are not being met, she stressed. She referred to work with colleagues (Heflin et al., 2009) in which they used the Urban Change Data, an ethnographic study done in the early 2000s, and considered unique aspects of food insecurity that impact how households cope with food insecurity versus other types of material needs. She noted food consumption is very sensitive to income fluctuations because a small amount of money may be all that is required to improve or worsen the experience of food hardship, in contrast to some other types of material hardship, like housing or utilities, with higher thresholds. Perhaps as a result of this low threshold for remediation, food hardship is often experienced over a very short time frame. The qualitative reports make it clear that food insecurity is often experienced just for one or two days at the end of the food stamp cycle. Second, she explained, food needs are recurrent because food supplies are not durable like clothing. In addition, unlike utilities paid monthly, there is a continual need to keep the food supply adequate, which is problematic because demand fluctuates over the month. Households expand to include both short- and long-term visitors, making it difficult to plan and optimize. Finally, unlike housing and utility hardships, food hardships are not uniformly experienced within the household. Adults cut back in order to shield their children.

Given that food-insecure households are likely to be experiencing other forms of material hardship, Heflin described the need for a nationally representative dataset that contains measures of food security as well as other forms of material hardship. Currently, the Current Population Survey with the HFSSM is the gold standard to look at food security data, she noted, while the Survey of Income and Program Participation (SIPP) is the standard for nationally representative data on other forms of material hardship, as found in the Adult Well-being topic module. Only 5 of the 18 questions from the HFSSM are included in the SIPP, making it difficult to analyze how food security and other forms of material hardship exist together in a quantitative, nationally representative sample.

She said given the high co-morbidity among these conditions, researchers are likely ascribing some of the consequences to food security that may be due to other types of hardship, or combinations of hardships. When trying to understand how people cope with food insecurity, she said it does not make sense to ignore these other forms of material hardships. To some extent, she said, the issue is that different government agencies manage different programs, which ignores the holistic experience of children and the households in which they live.

Heflin suggested that the Healthy, Hunger-Free Kids Act may provide an opportunity to think about childhood well-being more broadly. She proposed that to better devise strategies to address food insecurity, researchers and policy makers need to know more about where food fits in a family's list of priorities of essential needs and how this prioritization process differs across families. What rules do families use to decide which trade-off to make when they are faced with scarce financial resources? Heflin stated that it is important to understand the optimization process and how the process differs with specific family situations. Examples of specific situations include very high medical needs, violence issues, and drug and alcohol dependence, where families may actually be optimizing something else besides their food security. Heflin acknowledged the work described by Edin and Lein (1997) on food and family budgets, saying that data on family expenditures and resources that could be related to all forms of maternal hardship would help researchers understand how families are prioritizing.

Nonparticipation

Heflin stated that participation in federal food assistance programs is often the main way for food-insecure households to cope, and nonparticipation rates among eligible households vary by program. Cunnyngham et al. (2013) reported that 75 percent of eligible households participate in SNAP. Tiehan and Jacknowitz (2010) reported that 79 percent of eligible households participate in WIC, at least in the first year, when the children are between birth and one year old. Dahl and Scholz (2011) reported that 75 percent of eligible households are participating in the National School Lunch Program and about 50 percent of eligible households participate in the School Breakfast Program.

Heflin noted participation in SNAP increased from 54 percent in 2002–2003 to 72 percent in 2009–2012, noting variation over time. She showed a map of participation rates by state (see Figure 5-1). For example, Oregon's SNAP participation rate is close to 100 percent of eligible participants. However, in Florida the participation rate is about 60 percent.

Heflin noted that American Recovery and Reinvestment Act of 2009 (P.L. 111-5) incentive funds and caseload pressures have induced states to changing their administrative procedures, and these processes might influence participation rates. She said that the food stamp application process is usually thought of as involving a paper application, a wait in an office, and interaction with a caseworker; however, many states, including Florida, use an online application. If applicants have questions, they call a call center, and the eligibility interview takes place over

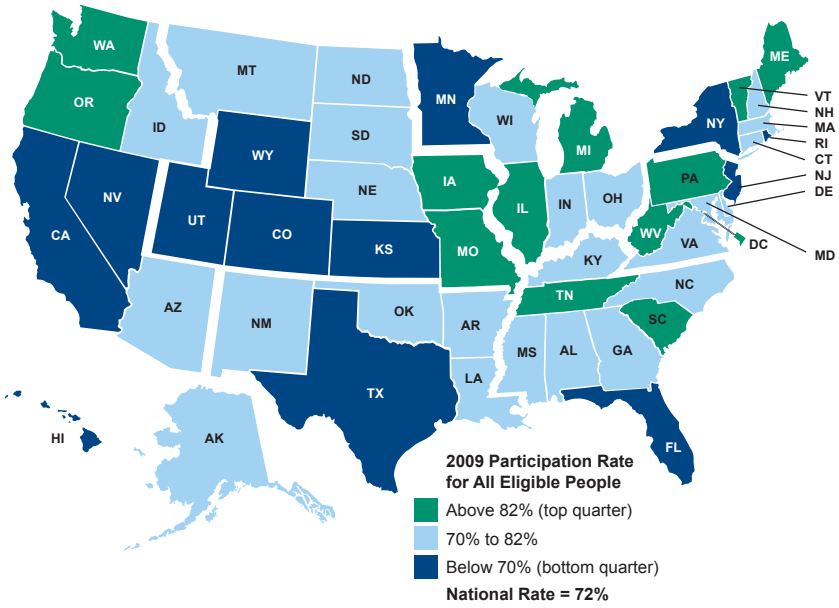

FIGURE 5-1 State SNAP participation rates, FY 2009.
SOURCE: U.S. Department of Agriculture, Food and Nutrition Service (2012a:15). Reprinted with permission.

the phone. It is important for researchers to be aware of which groups are going to be able to negotiate this process and which are not, she said.

Heflin stated that based on her work in Florida, this application process is very easy for the working poor to negotiate and it probably benefits them as they do not have to take time off of work. However, other groups, such as the elderly, the disabled, and those with language or computer literacy issues, may have a much harder time negotiating this modern application process. States are modernizing, and Heflin suggested that FNS and the research community take a close look at the application process to determine what the drive to efficiency is doing to program accessibility.

Finally, she stressed the importance of considering how cultural factors and stigma might be influencing participation rates. Heflin reported that she and colleagues have done some work contrasting the application processes in Florida and Oregon.[4] She said in Oregon, there is a sense of participation in SNAP as a right and almost a responsibility. The governor

[4]A paper on this research has been submitted for publication and is in review: C. Heflin, P. Mueser, S. Porter, and B. Weber, The Great Recession and SNAP caseloads: A tale of two states.

took the food stamp challenge (to purchase food within SNAP limits) and convened a hunger task force. There is a sense in Oregon that the relevant social service agency is organized to make participation as easy as possible for all eligible participants. In contrast, she noted, hunger advocates describe a general attitude in Florida that SNAP participants are individuals who are basically lacking personal responsibility. The difference between 100 percent participation in Oregon and the 60 some percent in Florida is not a surprise, she noted. She suggested that political factors and the role of nonprofit groups and hunger advocacy groups in shaping the culture of participation should receive more attention.

Heflin had two suggestions about the structure of future research opportunities. First, she supported continuation of small grants programs, similar to the one at the University of Kentucky Center for Poverty Research. She said small grants are particularly effective to expand the pool of researchers doing work in this area, attracting the attention of researchers who want to tentatively take a look at the field. Increasing the pool of researchers will increase the number of new ideas.

Her second suggestion was to encourage an interdisciplinary approach because an analysis of childhood hunger and food insecurity involves economic decision making and social processes with nutritional health and developmental consequences that are structured by political, economic, and social factors. This definition includes a need for researchers in the areas of economics, sociology, public health, social work, family studies, and medicine, she said.

OPEN DISCUSSION

Rafael Pérez-Escamilla (Yale University) said that the research studies on coping behaviors summarized by the speakers are examples of what he would term negative or harmful coping behaviors. He asked about work on positive deviance to try to understand how food-secure households living under similar conditions of poverty cope with the condition in a more positive way.

Chilton noted Heflin's reference to participation in public assistance programs as a coping mechanism, saying she does not view participation as a negative. Rather, she said, people are working to get involved with a system meant to help them. She suggested that a positive deviance might be having a small business on the side, such as doing hair and nails, providing childcare, or housekeeping, although, she noted, the current system criminalizes even that kind of activity. She said selling food stamps could be considered a form of positive deviance; however, it is currently criminalized, and acknowledged that talking about it in front of the audience makes many people very nervous. She suggested that language, the

way research questions are framed, and fear of discussing certain issues gets in the way of researchers looking at many of these coping behaviors in a more positive light.

Mark Nord (Economic Research Service) praised the example of Oregon and its near 100 percent participation rate of eligible persons in SNAP. He said that before the food insecurity measure became common, the participation rate in Oregon was about median for the country. In the first years of the measure, Oregon had the highest rate of what is now called very low food security. Governor Ted Kulongoski (2003–2011) ran partly on a platform of doing something about food insecurity. Oregon provides strong evidence that states can improve both food security and participation in programs, and he characterized Oregon as the "poster child" for the value of monitoring.

Nord said more quantitative information about the picture from Witnesses to Hunger would be helpful. He called it an extremely important picture, but understanding how many households face the conditions described by the project would help develop interventions. Although he called the participants' situations discouraging, he said it is clear that there is a broad spectrum of needs to be addressed.

He pointed out that the proportions of households reporting very low food security over the entire five-year period of the Early Childhood Longitudinal Study-Kindergarten Cohort was exceedingly small. Bartfeld and Ahn (2011) suggested that an extreme, persistent multigenerational problem may only be a small piece of the puzzle, although he remains uncertain. He asked about a way to gain perspective on where the types of households Chilton described fit into the whole.

Chilton said photographs from Witnesses to Hunger help to bring to light the severity of the issues, but they bring to light only a certain proportion, and it is hard to know the magnitude. She said this uncertainty points to the need for mixed-methods research. She said that it is also time to look into the child welfare system, tracking food insecurity among foster children or children in the child welfare system. Perhaps questions about drug addiction and exposure to violence need to be added to quantitative studies, she suggested, to start understanding the magnitude of the problem. She said, in her opinion, it is practically impossible to take the methodology of Witnesses to Hunger to scale, although there may be a way to bring quantitative measures into the program by inserting some measures about exposure to violence and drug addiction.

Edward Frongillo (University of South Carolina) stated that he was glad to hear about the in-depth studies with SNAP participants. He referred to Zapolsky's comment that in a face-to-face interview, people are willing to admit to a problem if responses on questionnaire items are reversed over time. He reported when he first started doing in-depth

interviews about food insecurity with older people in the 1990s, he found them very willing to tell their stories, which enabled the researcher to determine whether or not they were food insecure, to what extent, and what it meant. Respondents would not directly say that they were food insecure, yet, they would still tell their stories. This made researchers wonder about the quality of follow-ups done via telephone.

He noted some critical points made by Chilton and Heflin. Context really matters. If people think they are going to lose something by responding affirmatively, for example losing their children or benefits, then, of course, that will affect their response.

He noted the older people he interviewed in upstate New York who had grown up in the South with very challenging experiences had very different views about what was normative. Those life experiences influenced the way they talked about things. As Chilton observed, it is important to think through the implications of a long-term history of material deprivation.

Joel Berg (New York City Coalition Against Hunger) said in New York City, SNAP caseloads increased by 1.1 million in the last decade and cash assistance caseloads have declined by 100,000. As a result, he said, 1.3 million people just in New York City are now getting SNAP who also warrant cash assistance. He stated that individuals may "waste" cash assistance on rent, but some of them use it on food. He asked the speakers if they were aware of research on the link between reductions in TANF and food insecurity during the last decade, and if not, whether they see it as a useful area to look into.

Chilton said that Children's HealthWatch (formerly the Children's Sentinel Nutritional Assessment Program) had a publication on the impact of TANF sanctions on the health and well-being of young children (Cook et al., 2002). It was observed that if a family was sanctioned off of TANF for failure to comply, their risk of hospitalizations increased. She noted that Gayman et al. (2010) looked at reports of increased income, subsequent loss of TANF benefits, and the association with child hunger. Chilton said that she thinks a very strong relationship between loss of TANF benefits and food insecurity exists, and agreed with a need for more research. Heflin cited information in Kalil et al. (2002), based on the Women's Employment Survey, as well as information in Lindhorst and Mancoste (2006) from Fragile Families. Most of the research looks at sanctions, but some also look at the TANF population for surveys that were constructed in the late 1990s and early 2000s that are still ongoing.

Jasbir Sangha (National Center for Health Statistics/Centers for Disease Control and Prevention) said that Chilton's case studies reminded her of her experience 18 years ago as a WIC nutritionist in Philadelphia. One participant who was taking care of foster children was clearly on drugs.

She said that as the system dictated, they gave this woman food packages, but said she remembers feeling that if the woman could afford drugs, she could afford food. She said at the time she was not aware of the multigenerational effect and did not mean to diminish the importance of safety nets like WIC. The words that resonate with her in this workshop session, she commented, related to violence, drugs, and alcohol and asked how the food security research community can address these issues. Though they may be root causes of food insecurity, some of these issues seem to be beyond the scope of food insecurity researchers.

Chilton acknowledged the complexity and the struggle about providing the WIC food package when the participant may buy drugs. She asked the audience to think about why the woman might be using drugs, suggesting she might be self-medicating from past exposure to trauma or sexual violence. If she is not given the food package, what other kind of risks is the program exposing her to? A number of states are making efforts to require people who are signing up for SNAP benefits to undergo drug tests. If they test positive, then they would not be able to receive the benefits. But, she said, no discussion is under way about whether people struggling with addiction might need help, and no effort to help them.

She suggested the need to rethink the relationship between SNAP and WIC and other subsidies, suggesting that the subsidies might be a way to encourage families to come into the system and then find them more help. She said WIC has done a good job in several states integrating domestic violence counseling into the WIC offices and expressed support to providing food and nutrition education and helping hook people into other services. Chilton mentioned also that WIC is associated with reducing stress (Black et al., 2012).

She closed by saying the system needs to recognize that when people are extremely poor, using drugs, or experiencing drug addiction, a long line of offences and violations to their dignity and health and safety need to be taken into account. They should not be judged in the moment for smoking or using alcohol. She said care is needed in framing research. Much research is needed into the impact of exposures to severe violence and to severe poverty at the same time during early childhood. She suggested focusing on early childhood might be the "clincher" to solve this problem.

6

Community Responses to Food Insecurity and Hunger

The workshop's fourth session considered community responses to food insecurity and hunger. Sonya Jones, Department of Health Promotion, Education and Behavior, University of South Carolina, and deputy director of the Center for Research and Nutrition and Health Disparities, moderated the session. Katherine Alaimo, Department of Food Science and Human Nutrition, Michigan State University, was the principal speaker. She provided a brief history of community food programs, reviewed the contributions of community food programs to address food insecurity as can be determined from the research literature, and concluded by suggesting areas for further research.

Joel Berg, executive director of the New York City Coalition Against Hunger and a senior fellow at the Center for American Progress, commented on Alaimo's presentation, followed by open discussion.

STATEMENT OF KATHERINE ALAIMO[1]

Background

Alaimo noted that the United States has a long tradition of providing food to those in need. The modern emergency food assistance system began in the 1960s and 1970s and received a major boost in the early

[1]Alaimo (2013) prepared a commissioned paper for the workshop, which formed the basis of her presentation. She thanked Caroline Crawford for research assistance for her presentation.

1980s when, in response to cutbacks in the Food Stamp Program, congressional legislation authorized the distribution of federally owned surplus food to soup kitchens and other groups that provided free food to needy people.[2] A community food security movement has been in existence since the early 1990s and got a big jumpstart forward in 1996 with the U.S. Department of Agriculture (USDA) Community Food Projects Competitive Grants Programs.[3] Many nonprofit organizations around the country have received these small grants to either start or move forward their community-based projects, and many of the projects Alaimo discussed were funded by that program.

Alaimo noted the issue of defining a "community" response versus a federal response. In fact, she indicated, there is a lot of blending, so that one cannot easily separate the two. Food assistance programs are happening at the community level, and some of them are also funded federally. For the purposes of her presentation, she defined "community responses" as "those that have been initiated at a local level and are at least partially funded by non-federal/non-state sources" (Alaimo, 2013:3).

According to Alaimo, household food security and community food security have different definitions, but overlapping goals. Household food security means that all household members have access at all times to enough food to support an active, healthy life. She noted that community food security has been defined as "a situation in which all community residents have access to a safe, culturally acceptable, and nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (Hamm and Bellows, 2003).

Alaimo commented that community food security advocates see food as an individual and a community right rather than as a commodity or an entitlement. A rights-based approach is different from a needs-based approach. Several people mentioned this difference throughout the workshop, and Alaimo said it is important to bring the difference to the forefront. A needs-based approach focuses on food and providing food to people who need it. In contrast, a rights-based approach, which she said was recently articulated very well in the literature by Chilton and Rose (2009) and Anderson (2013), focuses on creating enabling environments that support people in providing food for themselves with a structure for legal recourse. In other words, a rights-based approach necessitates facilitating social and economic structures that enable people to acquire

[2]For example, the Temporary Emergency Food Assistance Program (TEFAP) was authorized by Congress in 1981 to fund states to store and distribute surplus food commodities to those in need; TEFAP enabled food banks to become a central part of food assistance throughout the United States (see http://www.fns.usda.gov/fdd/programs/tefap/ [August 12, 2013]).

[3]See http://www.csrees.usda.gov/fo/communityfoodprojects.cfm [August 13, 2013].

nutrition for themselves. It is not based on charity or giving something to someone but instead is the duty and obligation of a country to its people.

Alaimo stated that there are implications of the rights-based approach for efforts to address food insecurity. First, all sectors—government, corporate, and community—are needed in order to solve the problem of hunger in the United States. Second, it is not just enough to provide for people in terms of assuaging hunger, but rather, it is important to enable health, dignity, and self-reliance.

Another point, mentioned many times in the workshop, is that the situation for children cannot really be separated from adult food insecurity. Alaimo stated that children face consequences in a household in which the adults are food insecure even if the children themselves are getting enough to eat. Finally, food insecurity includes both quantity and quality, so that focusing on nutritional outcomes is important.

Community Food Security Grants Program

Alaimo provided an overview of the USDA Community Food Security Grants Program.[4] She reported that from 2005–2010, the program provided $25 million in grants, which made it possible to produce 19 million pounds of food worth almost $20 million and for 2.5 million people to receive food through a community food project. Furthermore, the community grants produced 2,300 jobs, led to 1,000 new businesses, and supported 2,600 existing business (Fisher, 2013; National Research Center, Inc., 2011). Alaimo noted that most of the community food projects funded by USDA are not specifically focused on hunger, or providing enough food, but instead are focused on improving nutrition and diet quality, which is a component of food security.

In 2007, the nonprofit Community Food Security Coalition, with 250 member organizations, adopted holistic measures as an approach for evaluating community food security projects. USDA recently used this approach to evaluate the Community Food Projects Competitive Grants Program by specifying six goals for community food security: justice and fairness, strong communities, vibrant farms and gardens, healthy people, sustainable ecosystems, and thriving local economies.

Emergency Food System

Alaimo then turned to the emergency food system more broadly. The largest network in the system is the Feeding America National Network,

[4]See http://www.csrees.usda.gov/nea/food/in_focus/hunger_if_competitive.html [August 12, 2013].

with 33,500 food pantries, 4,500 soup kitchens, and 3,600 emergency shelters.[5] The Network's clients include 71 percent with income below poverty and 75 percent who are food insecure. Yet very importantly, only 41 percent of the Network's clients participate in the Supplemental Nutrition Assistance Program (SNAP).

According to Alaimo, the emergency food system is clearly addressing an important need. It enables many dedicated activists, volunteers, citizens, and corporations to participate in the goal of ending hunger in this country. The system also prevents waste of food because corporations are able to donate food through the system that would otherwise have gone uneaten, and, finally, the system provides outreach for federal programs.

The emergency food system faces some challenges. According to Alaimo, its benefits amount to only a small percentage of the money available to a household from federal programs, such as SNAP and Temporary Assistance to Needy Families. Also, Alaimo was not able to find any evidence that the emergency food system is improving household food security. The issue could be definitional, in that food security is defined in terms of having reliable and regular access to sufficient food. Thus, she noted, if people are obtaining food from the emergency food system, then, by definition, they are food insecure. Alaimo said this seeming paradox needs more discussion.

Poppendieck (1999) talked about the "seven deadly sins" of the U.S. emergency food system: it is insufficient, inappropriate, inadequate, unstable, inaccessible, inefficient, and subjects people to indignity. Alaimo said she thinks many people in the emergency food system have taken those insights to heart and have greatly improved the system.

However, Alaimo argued that some of the points made by Poppendieck are still relevant. For example, a focus on the emergency food system diverts attention from the full range of the problem: for example, when people on the street are asked about hunger and what they can do to solve hunger, they talk about donating a can of food or donating to the food bank. Alaimo said the problem requires a much larger effort than that.

Alaimo stated that there is innovative programming going on right now in the emergency food system. One area of improvement is the greater procurement of fresh food and the adoption of nutrition standards. A critique of the emergency food system traditionally is that it has provided nonperishable packaged food simply because of the facilities that providers have available to them. There have been gains regarding procuring facilities that can handle fresh food. The Food Bank of New York City led the way with regard to nutrition standards by taking a stand

[5]See http://feedingamerica.org/ [August 12, 2013].

in 2004 that it would not accept soda or candy as donations for food bank clients.[6] In a survey of 137 food banks, the Atkins Center for Weight and Health at the University of California, Berkeley, found that 30 percent had a policy to not accept unhealthy foods like sugar-sweetened beverages, although only 20 percent were fully implementing their policy (Webb et al., 2012).

Retail Environments

According to Alaimo, the literature shows mixed results of efforts to improve retail environments for access to healthier food. Moreover, defining "food deserts" in which there is not such access is not straightforward. One example is Flint, Michigan, where people think that a food desert exists in the center of the city because the major chain supermarkets are all located outside the city. Yet it is not known whether people in Flint are actually having a hard time accessing supermarkets. Alaimo suggested that qualitative research would be important to accurately delineate food deserts.

Alaimo commented on several initiatives to improve access to healthy food in food deserts. The first retail initiative she discussed is placing supermarkets in food deserts. For example, Pennsylvania has a Fresh Food Financing Initiative that has now been expanded to the U.S. Healthy Food Financing Initiative.[7] These public-private partnerships work with grocers to place stores in underserved areas. The stores generate tax revenue, create jobs, improve housing values, and grow their own operations. However, the literature that looked at dietary patterns before and after the placement of these stores has not found significant changes in dietary patterns or increased consumption of fruit and vegetables (Cummins, 2007; Cummins et al., 2005, 2008; Wang et al., 2007), although one study found improvement in people with the poorest diets (Wrigley et al., 2003). Alaimo indicated that much more research is needed in this area. Perhaps people need other supports, she suggested, such as coupons for healthy food and nutrition education.

Another initiative is improving choices or lowering prices at corner stores, such as the Philadelphia Healthy Corner Store Initiative funded by the Food Trust and other partners in Philadelphia. This initiative is working with more than 600 corner stores to increase their inventory of healthy products, market the initiative, provide business training for owners, and convert store equipment to support added fruits and vegetables. There is a very small amount of literature on this initiative, but

[6]See http://www.foodbanknyc.org/ [August 12, 2013].

[7]See http://www.hhs.gov/news/press/2010pres/02/20100219a.html [August 12, 2013].

she noted that it looks like these conversions are beneficial by improving purchase and intake of healthy foods for both adults and children (Dannefer et al., 2012; Gittelsohn et al., 2009, 2010; Song et al., 2009).

Placing farmers markets in food deserts is another strategy. Again, there is only a small literature on the strategy, but she said it looks like there is a benefit of placing these farmers markets in underserved areas in terms of fruit and vegetable intake (Evans et al., 2012; Park et al., 2011; Payet et al., 2005; Ruelas et al., 2012; Spalding et al., 2012). One study found that farmers markets had an impact on lowering grocery prices in neighborhoods by providing competition (Larsen et al., 2009). SNAP redemption at farmers markets is growing, but it still accounts for a tiny percentage of SNAP dollars (McGuire, 2012). Fewer than half of states allow farmers at markets to accept Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) benefits, and redemption rates are small and actually decreasing.

Farmers' Markets Coupon Programs

Programs to provide coupons for use at farmers markets are a related initiative. Such programs as the WIC Farmers' Market Nutrition Program (FMNP) and the Seniors Farmers' Market Nutrition Program, both funded by USDA, provide coupons to people to use specifically at farmers markets to procure fresh produce. In federal fiscal year 2011, more than 18,000 farmers, 4,000 farmers markets, and 3,000 roadside stands were authorized to accept FMNP checks or coupons, providing $16.4 million in revenue for the participating farmers. The Michigan Double Up Food Bucks[8] and similar programs in other states match SNAP dollars when used at a farmers market. A related program is the SNAP Healthy Incentives Pilot Evaluation in Massachusetts, which is not specific to farmers markets but stretches SNAP dollars when they are used for healthy food choices at participating retailers.[9]

From a number of studies, she said it appears that coupons increase people's intention to eat and their intake of fruits and vegetables (see, e.g., McCormack et al., 2010). One study in Iowa addressed a concern that prices may be higher at farmers markets—it found that, to the contrary, fruits and vegetables at farmers markets are similar in price to supermarkets (Pirog and McCann, 2009).

Alaimo said there appears to be only one study of food insecurity rates consequent to participating in the FMNP, a study that compared WIC and WIC FMNP participants in a rural county. It did not find an

[8]See http://www.doubleupfoodbucks.org/about [August 12, 2013].
[9]See http://www.fns.usda.gov/snap/hip/qa-s.htm [August 12, 2013].

impact, which is not surprising given that the FMNP coupons were worth only $18. There was, however, evidence of greater consumption of vegetables (Kropf et al., 2007).

Urban Agriculture and Community Gardening

Alaimo noted that gardening is very popular—more than 83 percent of U.S. households are involved in some form of lawn or gardening activities (Butterfield, 2006). They are relatively low cost for families. Also, SNAP benefits can be used to purchase seeds and plant starts. Urban agriculture programs capitalize on available assets in many struggling cities and give a voice and a way for citizens to take action for themselves in order to improve food security and nutrition for their families.

Alaimo cited Detroit as an example, where 30 to 50 percent of the land is vacant. While many people see that as a detriment, it is an asset for food production. Colisanti and Hamm (2010) studied the amount of available land in Detroit and estimated that it is possible to produce 76 percent of the vegetables and 41 percent of the fruit needed by the populace to meet dietary guidelines. Keep Growing Detroit and other organizations in the city have a goal of food sovereignty through changes in the food production system. At present, these organizations grow about 1 percent of the fruits and vegetables that Detroiters eat within the city. The goal of food sovereignty is to produce the majority of fruits and vegetables that are eaten within a city.

The Garden Resource Program of Keep Growing Detroit is similar to many gardening organizations across the country: It provides plants and seed starts to people and assistance with plowing, watering, and other tasks. The Detroit collaborative has over 1,400 gardens and involves over 15,000 adult and youth gardeners. Keep Growing Detroit sponsors another program called Grown in Detroit, which is an income-generation program. For a small fee, people are taught how to wash and package their vegetables, and they can bring their produce to farmers markets throughout the city. Also, they can sell to wholesale markets and take home the resulting income.

Allen et al. (2008), Litt et al. (2010), and Miles et al. (2009) found that gardeners eat more fruit and vegetables than nongardeners—and the more they grow, the more they eat. It appears that this is a larger effect than many other fruit and vegetable interventions because of the access to produce, social connections, and attachment to place and nature that people get from gardening. Only one study, Carney et al. (2012), has looked at food insecurity before and after the intervention of a gardening program. This study had no control group and included only 38 families;

however, it found that the frequency of sometimes or frequently worrying about having sufficient food decreased substantially, although the frequency of skipping meals did not.

Related efforts include farm-to-school and school garden programs. Taylor and Johnson (2013) found that such programs increase school lunch participation and fruit and vegetable selection but did not find an increase in intake. Blair (2009) and Ratcliffe et al. (2011b) found that children who participate in school garden programs are more likely to try to eat vegetables. Also, farm-to-school programs may offer a greater variety of fruits and vegetables than traditional lunch programs (as reported in Joshi and Azuma, 2009), and greater variety has been shown to increase consumption (see, e.g., Adams et al., 2005).

Concluding Comments on Community Programs

In summary, Alaimo said, the strategies that communities use to improve the adequacy and nutritional quality of food include giving away free food; making sure healthy food is available for purchase nearby at affordable costs; making food production cheaper with coupons or other SNAP or WIC incentives; encouraging self-production; and encouraging small business, job creation, and training in the food and agriculture sector. Nutrition education programs are another community-based strategy.

Alaimo said she believes that community programs can improve the diet quality of low-income households. It is also important to think about how such programs can help improve the diet quality of all Americans. Alaimo stated that the field should think globally and not just focus on the low-income population with regard to nutrition education.

She noted that strategies to improve income and wages are generally not emphasized in community food programs other than for growers. Growing food can supplement family food supply and income, yet very little research has been done on the household economic impact and food security status impact of most community food projects. In order to measure such effects, Alaimo said better measures of food security may be needed to capture nuances and to address diet quality.

Alaimo repeated that federal economic policies, poverty programs, and food security programs are and should be the primary responses to food insecurity. Yet the community food programs can help, including through advocacy, nutrition, and income supports and through supporting people to participate in growing food themselves.

Suggestions for Further Research

Alaimo emphasized the need for research that uses mixed methods and is multidisciplinary. She also stressed the importance of using participatory approaches as researchers can learn much by collaborating with community members who can indicate priority research topics, help develop questions, and facilitate access to respondents. A participatory approach, she said, builds a much stronger research program to involve people in the community in research through developing the questions, developing the methodology, interpreting the results, and using those results to advocate.

Alaimo identified a need to determine whether community food programs improve the economic and food security status of the household, which requires that the necessary information be obtained for participating households and control groups. Another research issue is learning what factors make it possible for a community program to work on a larger scale than most programs work today. She said research should continue to document economic development outcomes, when appropriate, and that all such research should use rigorous evaluation methods when possible, including randomized assignment to treatment and control groups and validated measures of diet.

Evaluation of the innovative strategies being used by the emergency food network would also be helpful, as well as expanding support for rights-based approaches and broadening the outcomes measured from programming and pounds of food to include food security and whole measures. Another of Alaimo's research suggestions is to determine how much food insecurity exists in the workforces of companies that donate food to the emergency food system. For retail initiatives, research would be helpful to think about what other kinds of support, such as nutrition education and discounts, are needed to change diet patterns besides placing a supermarket in a food desert area. Research on technologies to enable mobile vendors such as farmers to use the same electronic benefit transfer systems for SNAP, WIC, and coupon programs would be very useful, she noted, as would evaluation of outreach programs to encourage SNAP and WIC recipients to use farmers markets, given that such use seems to improve their fruit and vegetable intake.

Alaimo stated that zoning changes to recognize urban agriculture as an identifiable land use are important to enable these programs to be scaled up. Her final comment was that research is also needed on ways not only to improve food security, but also to enhance the economic impacts of cooperatives and other programs that enable farmers to capture a larger percentage of profits.

STATEMENT OF JOEL BERG[10]

Role of Government and Community Nonprofit Programs

Berg commented that the available data on food security date back only about 15 years, compared with data for estimating poverty that go back more than 50 years. The poverty data provide evidence that if national policy invests in social programs and supports efforts to increase jobs and raise wages, poverty goes down. These initiatives can be paid for by having the wealthiest pay their fair share, he said. In contrast, when the government adopts an alternative set of policies whereby the wealthiest are not asked to pay their fair share and that policy is used as an excuse to slash social programs and programs that create jobs, poverty goes up. He said it is exciting that Congress appropriated $10 million for child hunger research, and, undoubtedly, vital work will be done with these resources. However, he argued that this appropriation represents a distraction.

According to Berg, there is more doubt in Congress and the Obama administration about what works to reduce poverty than is justified by the knowledge base developed by the research community. In his opinion, he said, Congress would rather spend $10 million on research than $10–$20 billion eliminating the problem. Moreover, he said many people seem to define community interventions as distinct from and used in place of government interventions.

Berg stated that he often gives talks that begin something like: "The way to end hunger is to reduce poverty; the way to reduce poverty is to raise the minimum wage and have serious job creation programs and dramatically expand the safety net." Invariably, his listeners will ask, "Why do you want the government to do it? Why don't you want the community to do it?" Berg said he is fascinated that many people in the United States have developed the view that—in a democracy—a small nonprofit group not elected by anyone is a legitimate embodiment of community, while federal laws passed by the U.S. Congress and signed into law by the President of the United States are seen as an illegitimate noncommunity response.

Berg stated that the community food movement does not define itself as an antipoverty movement or even an antihunger movement. In fact, he cited one grant in the USDA Community Food Security Grant Program that was downgraded because one of the peer reviewers said that promoting SNAP promotes dependency. Even progressives, he said, have convinced themselves that community-based responses are better and

[10]Berg's presentation draws heavily on Berg (2013), "Beyond the Charity Myth," a chapter in an edited volume.

more efficient than a national response. He suggested that the data do not necessarily support such a conclusion.

Berg noted that the New York City Coalition Against Hunger, which he directs, spends substantial resources supporting communities and agriculture.[11] The Coalition pioneered a community program that supported an agriculture project in which not only grant money, but also SNAP benefits were used to subsidize shares. It also has a program to use AmeriCorps members to support community gardens and does a lot of outreach to farmers markets. Berg said he wanted to make clear that these are good programs that help the community in many ways—for instance, community gardens can reduce crime, reclaim urban space, and provide other benefits.

Nonetheless, according to Berg, community food programs are doing very little to reduce hunger in America because the issue of scale that Alaimo raised is critical. He cited Growing Power, a community food intervention organization based in Milwaukee,[12] as an example. The program could not survive without heavy government and foundation subsidies and is feeding only a small percentage of the Milwaukee population.

Berg referred to an urban gardener blogger who wrote, "Why don't we have community gardens in Albany instead of SNAP?" Berg observed that Albany has a very robust community gardening program, yet it is feeding only a microscopic percentage of the population compared to SNAP. Also, people need to eat all year round, and the vast majority of the United States has seasons in which growing food is not possible. If food from community programs is stored over the winter, then it is not fresh or picked the day it is sold.

Berg estimated that the emergency food system, including food banks and other programs, distributes about $5 billion of food a year. While this is a large figure, SNAP alone amounts to $80 billion a year. Thus, every morsel of food distributed by every charity in America equals one-sixteenth of the current spending on SNAP, even though one-quarter or more of people eligible for SNAP do not apply for benefits, large numbers of children eligible for school breakfasts are not enrolled, and so on. Full participation in federal nutrition assistance programs would probably account for $100 billion or more of spending on food. Thus, he said, the federal food safety net dwarfs the charitable food system, but that is not what is in the media or what the public sees.

[11]See http://www.nyccah.org/ [August 12, 2013].

[12]See http://www.growingpower.org/ [August 12, 2013].

Suggested Topics for Further Research

Berg made several specific suggestions of research topics. First, he argued for a better explanation, developed through research, about how much of the community food response is government supported. A major source of food for food banks, soup kitchens, and food pantries in America is government food provided under the USDA Emergency Food Assistance Program. The Federal Emergency Management Agency Emergency Food and Shelter Program,[13] although cut back considerably, also provides food. In addition, about half of the states have state food purchasing and grant programs for food banks. Moreover, he said, every penny spent by a nonprofit group, if it comes through a charitable deduction, is subsidized by taxpayers. The lack of well-documented information on the extent of government support for community food programs deprives the public of knowing that their tax dollars are addressing a need and gives the public the false impression that private charity is doing more than it is.

Part of this research, he suggested, should address the issue of efficiency. His rough calculations estimate administrative spending in SNAP at about 10–15 percent of total costs.[14] There is a lot more administrative overhead in the emergency food system because of all the steps involved in transferring food to regional food banks and then to pantries or kitchens. In general, Berg argued for more focus on the actual cost of community food programs. He reminded workshop participants of the historical fact that food banking grew up at the time where there was a massive amount of surplus food, which is no longer the case.

Another area for research, according to Berg, is state interventions. Oregon, for example, responded to the finding that the state had a very high level of food insecurity and achieved a large and statistically significant drop in food insecurity over a period of time, as discussed several times during the workshop. The effect of state initiatives is more than an academic question, he noted. A number of governors have made commitments to end child hunger, working with organizations such as Share Our Strength.[15] He suggested research to determine whether governors can make a difference and, more generally, on whether communities alone can end hunger, acknowledging that he does not believe they can, particularly because of the difficulties of scaling up community food projects. For example, Berg said he does not believe that Detroit can locally produce 51 percent of its food, as some have suggested.

[13]See http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit/recovery-directorate/emergency-food-shelter [August 12, 2013].

[14]See http://www.americanprogress.org/issues/poverty/report/2010/03/26/7436/doing-what-works-to-end-u-s-hunger/ [August 12, 2013].

[15]See http://www.nokidhungry.org/ [August 13, 2013].

Berg commented that when General Motors was a polluter, fought strikers, and paid poverty wages, every community did not develop its own auto factory. There were national interventions to make labor organizing easier, raise the minimum wage, and pass and enforce anti-pollution laws. Similarly, the idea that there will be small farms on the top of every roof as a solution to food insecurity is not economically practical, according to Berg, who called for research on this point. He said he understands that working through government is difficult but argued that there is no alternative as there does not appear to be a single time in history when a community on its own, without leadership from government, solved a massive social problem such as poverty or hunger. Yet it is possible to find examples of effective government action, such as in the 1970s when the federal government almost ended hunger in America. Berg argued for more historical research on this point.

OPEN DISCUSSION

Alaimo addressed Berg's comment about the goal of community food programs in Detroit—clarifying that one goal is to produce the majority (51 percent or more) of *fruits and vegetables*, not all food and pointing out some winter-season growing is possible. She suggested a goal of 51 percent, although lofty, can move a program further along. While agreeing with many of Berg's points, Alaimo said community food programs can do much good by connecting people to the earth. Berg replied that he was not criticizing the community food programs as such, but rather the rhetoric and ideology that have grown up around the programs. People too often use the existence of these programs as an excuse for not having programs that increase wages and provide a broader set of social services.

Deborah Frank (Brandeis University) commented about Alaimo's question about the extent of food insecurity among the workers of donor companies. Another important issue, she said, is the amount of negative nutrition education in the United States, as the amount of money and the technical quality of advertising for nutrition education simply do not compare to the advertising for non-nutritious food, especially advertising targeted to children. It would be interesting to establish the order of magnitude of the difference. Frank said research and policy need to pay more attention to the negative nutrition education that bombards families and children. Such advertising is targeted to ethnic minorities very specifically—for example, children of color often appear in fast food ads. Research should examine this topic, Frank suggested.

Rafael Pérez-Escamilla (Yale University) thanked both of the presenters for their real-world, on-the-ground presentations, and suggested another topic for future research—namely, to develop sound business

plans for community food programs. For these approaches to work, the farmers need to make a living, the store owners need to make a profit even if it is small, the price has to be reasonable for the consumers, and the cost to the government cannot increase to the point where it becomes politically impossible to do. He said it would be very useful to conduct such research so that decision makers understand and are comfortable that there is a way to actually make these programs work and sustainable.

Alaimo referred to an earlier point about learning from international studies and other countries, and suggested there may be lessons from the fair trade movement that would apply to the issue of sustainability of community food programs. There may also be lessons from cooperatives in which growers can participate in not just selling their produce, but also in owning the processing company so that they can capture a larger percentage of the profits from sales to the final consumer.

Berg echoed that point, noting that in an earlier work (Berg, 2009) he argued that real money and room for growth in urban agriculture come not from growing the food or selling the food but rather from processing it. In general, manufacturing jobs pay higher wages than those in other sectors, and there is real room for growth in that regard in food processing.

Jones ended the session noting a need to address the root causes of poverty and food insecurity, as well as a need for community-supported agriculture and community-based food system reform.

7

Public Policy Responses to Hunger

This chapter explores the public policy responses to childhood hunger. This topic includes the impact of the food safety net and the extent to which childhood hunger and food insecurity persist due to gaps in program coverage, the inability of potential participants to access programs, and the insufficiency of program benefits or services. The moderator was Judith Bartfeld, Department of Consumer Science, University of Wisconsin–Madison. The main speaker was David Ribar, Economics Department, University of North Carolina at Greensboro, and the Institute for the Study of Labor (IZA), Bonn, Germany. Ribar was followed by two formal discussants: Lara Shore-Sheppard, Department of Economics, Williams College, and Jim Weill, president of the Food Research and Action Center.

STATEMENT OF DAVID RIBAR[1]

Ribar set the context with a quote from Nord and Parker (2010:1179): "With one important exception, the major determinants of food insecurity are fairly well understood. The exception is the effects of food and nutrition assistance programs." Ribar then defined a conceptual model, followed by a descriptive typology of existing public and private food assistance programs. He discussed the evidence available on the effective-

[1]Ribar (2013) wrote a commissioned background paper on the topic for the workshop.

ness of these programs, and pointed out program and methodological gaps. He ended his presentation with his own suggestions.

Conceptual Analysis

Ribar observed that the use of a conceptual model helps in the understanding of how children get fed and why some go hungry, provides insight into how various programs work, and helps identify potential challenges for program effectiveness. Ribar pointed to the Gundersen discussion in Chapter 2 on the development of conceptual models, to the Institute of Medicine and National Research Council (IOM/NRC) report (2013), and specifically to Barrett's (2002) model of how household food security is determined. The Barrett model adapted Becker's (1965) household production model, and is very similar to Grossman's health production model (1972). Ribar used the Barrett model in his discussion.

The model assumes a household that faces a life-cycle utility function with two objectives in each period. One is to advance its physical well-being, and the other is to consume things based on a preference function that incorporates tastes and culture. Finally, the model assumes that the household will discount the future and that the future will be uncertain.

Ribar explained that in the model, physical well-being in a given period is based on the previous status of physical well-being augmented with inputs of nutrition, activities (such as rest and exercise), nonfood consumption, financial constraints, and other things. It is subject to shocks from illness or injury. Nutritional inputs are based on inputs of food and the household member's time. Their effectiveness is conditioned on the member's health as well as his/her skill and knowledge.

Ribar then described potential outcomes. The household in this model chooses work, activities, and the consumption of food and nonfood items so as to maximize its objectives subject to its constraints. Through its decisions, the household might achieve one of three levels of food security: sufficient for survival, sufficient for nonimpairment, or sufficient for health. U.S. policies typically focus on achieving good health, while survival and nonimpairment are important focuses in developing countries.

He said that within this standard framework for household decision making, Barrett (2002) pointed out six types of static structural threats to food security: (1) low labor productivity (a limited ability to work or to earn, which results in fewer resources available to the household); (2) adverse terms of trade for a given level of work or abilities (the household member is not able to command a very high wage and/or may face high food prices); (3) lack of access to markets where household members could engage in paid labor or purchase goods; (4) asset poverty (low lev-

els of savings and other assets); (5) borrowing constraints; and (6) weak availability of public and private safety nets.

In a dynamic framework, other factors put households at risk, such as operating close to one of the constraint levels. In this situation, a bad shock may push the household into risk. Some households have a susceptibility to adverse shocks (either social or economic) that put them at higher risk. Finally, households with inadequate insurance will also be at greater risk of food insecurity.

The model identifies numerous coping strategies that households use to avoid hunger. The strategies include the use of transfers and loans, foraging, disposal of nonproductive assets, reduced consumption and energy expenditure, disposal of productive assets, expropriation of other's assets, and migration. These coping strategies complicate the measurement of hunger, because even if a household faces a bad shock, it usually does not experience an immediate hunger outcome.

Ribar said that Barrett's general model does not give special consideration to children and their circumstances. Children have limited capacities to work, are dependent on other family members, and have little or no ability to influence decision making. A child's capacity and dependency will vary with age. Within this framework, children are very vulnerable, he said. Instead, the standard model (Becker, 1983) assumes the existence of caring and capable parents. The standard economic assumption is that parents are both rational and altruistic, leading to Ricardian results: Parents will be protective of children and will mitigate the relationship between shocks and/or programs and the outcomes for their children. In particular, if the government does not step in to help children, parents generally will fill the gap. Conversely, if the government adds support, parents may withdraw some of their own support in response. This leads to the household coping strategy in which children typically are the last to go hungry. Ribar said there is strong evidence that this is the typical behavior in households (Edin et al., 2013; McIntyre et al., 2003), but it is not necessarily the only behavior in households.

There are examples of other types of parental actions, as discussed in Chapter 5. Some parents could have limited food preparation capabilities or habits (McLaughlin et al., 2003) or parenting problems brought forward from their own childhood circumstances (Chilton and Rabinowich, 2012). Gundersen also described financial management problems in households (see Chapter 3; also Gundersen and Garasky, 2012). Finally, some children are difficult to parent, causing circular problems in which food problems cause bad outcomes for children, which in turn make those children harder to parent (Kleinman et al., 1998; Pérez-Escamilla and Pinheiro de Toledo Vianna, 2012).

The evidence regarding these threats generally supports the general model. Additional literature includes Nord and Parker (2010), which discussed low income and unemployment, low skills or disability, single parenthood, large household, minority or noncitizen status, and poor local economic conditions and institutions. Kimbro et al. (2012) also described the effect of disadvantaged neighborhoods.

Public and Private Food Assistance Programs

There are three general strategies for providing food assistance in the United States. One is to supplement household resources, which effectively lifts the budget constraint and gives households more opportunity to produce better outcomes for their children. A second strategy is to provide a household or its individual members with specific types of foods, thereby directly supplying the nutritional inputs. The advantages of this type of program are that it is easier to target, the program is harder for people to undermine, and benefits can go directly to children. The third strategy is to help households be more productive with the resources they have. This is the objective of educational programs that help households do more with a given level of resources to lead to better outcomes. All three strategies are being used in the major U.S. food assistance programs.

Ribar described the major U.S. food assistance programs. The largest is the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program. Next are the National School Lunch Program (NSLP) and the School Breakfast Program (SBP), followed by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Child and Adult Care Food Program, which provides assistance through child and adult care facilities. Ribar noted eight additional U.S. Department of Agriculture (USDA)-funded programs that also deliver food assistance for children.[2] Several of them fill gaps in the major programs. For example, the Food Distribution Program on Indian Reservations and the Nutrition Assistance Block Grants are alternatives to SNAP that operate in Indian reservations and U.S. territories. The WIC Farmers' Market Nutrition Program addresses a gap in the WIC Program.

The federal government provides the resources for all these programs, but state and local governments and school food authorities, and in some cases community organizations, run them. This is an opportunity for success, but also a source of weakness with these programs, according to Ribar. The states contribute substantial amounts of administrative resources and, in some cases, fund modest supplementary programs. For instance, North Carolina funds a universal free school breakfast program

[2]Ribar (2013) provides more detail about these programs.

for all kindergarten students. Washington, DC, has just moved to universal free breakfast in its public schools, and Washington State, seeing a hole in assistance for immigrant families, funds a special supplemental program for immigrants. Numerous states have commodity support programs, such as the New Jersey State Food Purchase Program.

Chapter 6 discussed private food assistance programs that provide general assistance, such as food banks and food kitchens. They also help leverage available resources. They may provide special child-oriented programs, such as backpack programs, school pantry programs, and "Kids Cafés" (Tapper-Gardzina and Cotuga, 2003). Though privately run, these programs usually heavily depend on the federal government for resources (Mabli et al., 2010).

All of this leads to a very complex and uneven food assistance landscape, according to Ribar. Depending on where children live and where they attend school, there may be ample potential resources and lots of flexibility, but substantial potential for overlap and inefficiency. The landscape itself is uneven, he noted, often depending on whether the state and local governments apply for grants to run various programs. In some sense, he said, children are at the mercy of state and local governments.

Discussions often highlight the best examples of what state and local governments are doing with the flexibility that they are given and overlook some of the negative impacts of that flexibility, Ribar stated. For example, as mentioned above, North Carolina funds a universal free breakfast program in its public schools; however, the state's charter schools are not required to offer any school meal programs. Thus, he said, these charter schools are effectively discouraging attendance by poor children and are becoming racially segregated. Programs that offer voucher assistance to private schools but do not require those schools to provide school meal assistance are likely to have similar negative results. Food assistance (or lack of it) can become a tool for discrimination, according to Ribar.

Evidence of Effectiveness

Ribar next considered whether existing programs prevent food insecurity and hunger. He emphasized the term "existing," and stated that he does not believe that they do. He said evidence presented at this workshop demonstrates that even with the $100 billion food safety net, there are many examples of children living in households with very low food security. He referred to Coleman-Jensen et al. (2012), who reported that in 2011 11.5 percent of children lived in households with low food security among children, 1.5 percent lived in households with very low food security among children, 23 percent of SNAP households had very low

food security, 17 percent of households receiving NSLP meals had very low food security, and 14 percent of WIC households had very low food security. Even households receiving benefits have high levels of reports of food problems. He said that this is prima facie evidence that the existing network has holes.

A separate question, he said, is whether the existing programs *reduce* food insecurity and hunger, and here, he posited, the answer is *probably*. It is hard to imagine how food given to children and households does not help in some way, he commented, but the evidence is surprisingly weak. He cited a simple descriptive comparison of households that are receiving benefits versus households that are not receiving benefits and pointed out the perverse results that the households on assistance tend to report higher levels of food hardships than the nonparticipating households (Coleman-Jensen et al., 2012).

Numerous empirical studies have investigated these relationships more carefully, including studies with multivariate controls and quasi-experimental designs. These same problematic relationships were reported from many of these studies as well (for example, Barrett, 2002; Colman et al., 2012; Currie, 2003; Fox et al., 2004; Institute of Medicine and National Research Council, 2013). There is evidence in particular studies that food assistance programs increase expenditures on food, but these expenditure increases are less than a dollar for a dollar. Ribar said there is also evidence of positive consumption and specific nutrition effects, especially within the WIC Program, although Besharov and Germanis (2000) strenuously disputed many of the results from the WIC studies.

When specifically addressing food insecurity and hunger, the evidence becomes even more equivocal, Ribar said. For instance, Colman et al. (2012) described as "mixed" the evidence coming from a small number of WIC studies. The 2013 IOM/NRC study took a more positive view of SNAP. However, Ribar commented that while the report pointed to a handful of studies that gave positive results, the authors tended to overlook other studies with less positive results. Ribar stated that it can be very difficult to get a study published showing negative results associated with SNAP, and he believes that the IOM/NRC study overlooked this publication bias in its analysis.

Programmatic Gaps

According to Ribar, a standard set of questions to ask when assessing gaps in assistance programs will help to illuminate the issues: Are the benefits the correct size to do the job; do the programs cover the right people; and do the right people enter the programs? The issue of the sufficiency of benefits is particularly salient for SNAP. Other programs are not

intended to feed an entire household. WIC is a supplemental program, as are the school lunch and breakfast programs.

The maximum SNAP benefits are set each year based on the cost of the USDA Thrifty Food Plan, a basket of foods that can be obtained at low cost while still providing a nutritious diet. Ribar expressed concerns with this approach. A lag exists between the time that the cost of food is measured and when the benefit number is set, and food prices can rise during this time. Even more problematic to him, the process relies heavily on assumptions about households' capabilities and time availability to convert raw ingredients into meals in the way that the Thrifty Food Plan intends. Often these capabilities and time availability do not exist in at-risk households. Third, the plan leaves little margin for such things as spoiled food, utility disruptions, appliance breakdowns, or pest infestation.

In addition, Ribar pointed to coverage gaps. Certain households are not eligible for SNAP, such as noncitizen immigrant households, who are generally prohibited from receiving SNAP benefits. Other rules exist that restrict access to benefits, such as those that apply to felons and individuals with drug convictions. There are limitations on the use of SNAP electronic benefit transfers and WIC vouchers to authorized retail establishments. This limitation could restrict the purchases of otherwise eligible food items.

School and childcare meals are limited to enrolled children, they are generally only provided when the children are in school, and they are not offered at all schools. Ribar termed universal coverage of the SBP in all public elementary schools as elusive, and he also reiterated the gap in coverage in some charter schools.

Ribar cited Currie (2004), who reviewed research on program take-up and offered three principal reasons for incomplete take-up. One is that households may not know that they are eligible or may not have the information to apply. There is evidence that when households receive more information, they do take up the program. Second, the administrative burden to apply for these programs may deter participation. Ribar and Edelhoch (2008) found that many people who end up leaving SNAP because of administrative hurdles are lower in income distribution and face substantial challenges and unstable circumstances. The third reason found for incomplete take-up is stigma (Moffitt, 1983). Taking away the stigma, as with the Universal Free Breakfast Program, increases participation by free-eligible children. Haldeman and Ribar (2011) found that free-eligible participation went up 7–13 percent. In an eligibility-based system, everybody knows who is going into the cafeteria and why. When the program is open to everyone, or better yet served to everyone in a school classroom, it no longer has the stigma attached, Ribar said. A fourth rea-

son is program complexity. With a long list of programs, it is difficult for households to understand and distinguish among them.

Ribar stated household behavior can affect program outcomes. On the one hand, there are the Ricardian results he described earlier, in which protective parents will mediate the effects of withdrawals of program support. On the other hand, certain types of support like SNAP and WIC require a great deal of capability on the part of parents. If parents lack that capability, they may not be in a position to convert the assistance that they are getting into nutritional outcomes for their children. Other, nontargeted household members may share targeted resources such as WIC benefits.

Ribar stated that assistance programs are complex, and measuring their effectiveness is even more complex. Households may receive benefits from multiple programs, making it difficult to judge the effectiveness of an individual program. He stated that the interaction of benefits from multiple programs is typically not modeled in research work. Additionally, food hardships rarely appear as the only problem in a household (Joyce et al., 2012). Instead, food problems often co-occur with hospitalizations and poor health of family members, housing insecurity, and energy insecurity. Households may be receiving assistance from other programs, which in turn positively impact food insecurity. As discussed earlier, Ribar noted that some people advocate looking at food systems more broadly to include problems in communities, reduced economic opportunities, neighborhood food resources, and emergency assistance (Ganapathy, Duffy, and Getz, 2005). Little of this complexity is captured in quantitative research, Ribar observed.

Methodological Gaps and Challenges

Ribar said the biggest methodological challenge to examining childhood hunger is the low statistical power in existing data for quantitative analysis. With very small numbers of observations, high-quality multivariate analysis with appropriate controls and disaggregation is difficult. The estimates are not precise, and it may be difficult to correctly do the analysis, because most statistical theory depends on asymptotic assumptions. When looking at only a few dozen positive responses, some of these assumptions are questionable, Ribar opined.

There are many issues associated with the measurement of food hardships. The 2013 IOM/NRC study pointed to several limitations in measurement, and Ribar stated that USDA is considering that report's recommendations.

Ribar identified additional issues in the measurement of childhood food hardships. An important issue is the social undesirability of parents admitting that they let their children go hungry. Survey methodological

research has shown that questions about socially undesirable actions often are underreported.

The Household Food Security Survey Module (HFSSM) uses extensive screening questions that assume standard household coping strategies. They serve a good purpose, Ribar said, in that they reduce the respondent burden and screen out certain types of reporting errors, but they may also lead to underreporting of child hunger. In order to be asked questions regarding children, the respondent must have screened into that module by affirming other hardships. If the coping strategies for the household are different from the standards assumed, child hunger may be missed.

Ribar said the measures themselves are typically used ineffectively. Researchers rarely utilize all of the information contained in the HFSSM, but instead use a binary indicator for a particular threshold of hardship. Ribar suggested a richer set of results might be beneficial (see DePolt et al., 2009; Wilde and Nord, 2005).

Ribar identified alternative ways to measure program effectiveness, such as pantry inventory checklists (Bryant and Stevens, 2006). He said one advantage to the checklist approach is that it is harder for people to know the purpose of the questions. Diary methods and inventory methods have less scope for social desirability. Another approach used in numerous local studies is an eight-item measure focused more on hunger (developed by the Food and Research Action Center; Wehler et al., 1992). Ribar said there are also problems with measuring "participation" in food assistance programs, and lack of statistical power is a big issue. Participants are a modest proportion of the total population. There are small groups of nonparticipating eligibles and near-eligibles about which little information is available.

Ribar observed that the entire measurement process is made more difficult by the many combinations of different programs (federal, state, local, and private). Most researchers use methods that examine one program at a time, particularly, he said, in economic studies. Ribar termed household self-selection as another methodological challenge. Food program participation is not randomly assigned, and take-up requires a household to take several active and time-consuming steps. Some households with certain characteristics or living in certain conditions are more likely to take these steps and to successfully enroll than others. The challenge in quantitative analyses, he said, is that the very conditions that may determine whether a household enrolls in a program are also likely to affect children's food insecurity and hunger.

Future Research

In conclusion, Ribar provided a number of suggestions for research. First, he suggested testing new and alternative measures of food inse-

curity and program participation, using split-sample modules on the Current Population Survey (CPS) HFSSM for cost-effective testing. For example, most respondents would be asked the standard items from the HFSSM while a minority would be asked a version that has been modified with alternative questions. Ribar also proposed the development of measures for hunger-specific items, other food outcomes, and examination of other periodicities. In addition he pointed to the need for enhanced use of information from existing measures, expanding beyond the use of simple binary measures, and consideration of behavioral item response theory models. He also suggested making more and better use of food assistance program administrative data.

Ribar suggested a stronger focus on intermediaries in the program delivery process, and said research to understand the roles of intermediaries and their effects on the outcomes would be important. He noted federal assistance relies on government intermediaries, school authorities, local organizations, and parents to supply nutrition, but researchers do not typically look at these as actors in models.

He further suggested a closer focus on households and how they make decisions. He said households are often viewed as a black box: Inputs, including food assistance program benefits, enter in one side and nutrition somehow appears on the other side. A better understanding about how nutrition for specific household members is produced and the accompanying challenges to this production are important. He said Chilton's presentation in Chapter 5 provided enlightening information about how households might operate. Ribar suggested that research focusing on participation in multiple programs will also be important. Multiple program use is widespread (Newman et al., 2011), and SNAP eligibility leads to categorical or adjunctive eligibility in other programs. Food assistance program recipients also commonly use community resources (Mabli et al., 2010). Again, the inteconnection between programs appears in some studies, but, in Ribar's view, not often enough. He said researchers should investigate the range and combinations of food assistance program and include these combinations in empirical work.

Food assistance programs are helping households that exist in the context of multiple problems, including health issues, housing insecurity, and energy insecurity. The household may be receiving assistance from programs other than food assistance programs, and is certainly making decisions within the context of the multiple problems. Ribar said understanding this concept and including it in research efforts is key. He commented that qualitative methods applied to especially vulnerable populations may make quicker advances than the current quantitative methods.

Finally, Ribar said, research focused on programs that directly help children is important. Most children are doing okay, but children are

especially vulnerable in these models, and some are falling through the cracks. He characterized as useful research a focus on programs that build additional capacities for children in the situations where their parents or some other institutions may not be as capable. Specifically, he suggested a focus on new programs that (1) can feed children when schools and childcare centers cannot, and (2) empower children to produce nutrition by cooking and preparing food for themselves.

STATEMENT OF LARA SHORE-SHEPPARD

Shore-Sheppard described her research on food security as documented in Schmidt et al. (2012), in which they examined the effects on food insecurity of five major safety net programs. The first three were "cash" programs: Temporary Assistance to Needy Families (TANF), Supplemental Security Income (SSI), and the Earned Income Tax Credit (EITC). Also examined were a health program (Medicaid/Children's Health Insurance Program [CHIP]) and SNAP.

She said that the goal of this research was to pull these programs together in a multiprogram examination. She said she agreed with Ribar that this approach is atypical of current research. Thus, not much is known about the effect of nonfood safety net programs on food insecurity. However, she noted, nonfood programs expand resources available to the household, and they may also change the household's allocation toward food. In addition, enrollment in nonfood programs can affect eligibility for, or enrollment in, food programs.

Shore-Sheppard reported that the interactions are complex. If a household becomes eligible for one program, it might automatically become eligible for another program. Often, she described a "crowding-out effect" in which a household that receives benefits from one program may see its benefits reduced in a different program. For household decision making, the overall effect of these program interactions is somewhat ambiguous. The income effect gives households more resources, making it possible to buy more or higher quality food. However, a substitution effect is also at play in which a household that gets resources not targeted towards food might purchase other goods instead.

She reported that Schmidt et al. (2012) used data from the CPS HFSSM from 2001–2009. The subsample used in the study included households with at least one child younger than 18 years and a reference person between 18 and 64 years of age, and it had a focus on single-parent and low-income households. Immigrant families were excluded because of the added complexity of determining their program eligibility.

She reported that survey respondents reported how much their household spent on food, their use of food assistance programs, and whether

they were able to afford enough food. She noted that the income measure collected in the CPS is crude for this type of analysis, because it includes post-benefit income rather than the pre-benefit income. To offset this, they matched respondent data to other rotations of the CPS to capture earnings data collected when the household rotated out of the sample.

She explained the overall model regresses the *outcomes of interest*, such as food security, on *measures of benefits* for which the household would be eligible by demographic cell, state, and year.

Eligibility and benefit levels for the five major programs were imputed based on a set of "calculators" developed by Shore and her colleagues, using program rules and trying to account as carefully as possible for the interactions between the programs. She noted that benefits are likely endogenous. She and her colleagues developed simulated average benefits that are arguable exogenous variables as the difference between the household's imputed benefit and the average imputed benefit computed over all households in the cell (Currie and Gruber, 1996). Detail can be found in Schmidt et al. (2012).

Shore-Sheppard reported that the take-up of safety net programs is low, and it depends on unobservable variation. She and her colleagues examined the relationship between participation from the March CPS Annual Social and Economic Supplement (2002–2010) and the participation as predicted by their model. For each program, their predicted participation positively predicted actual participation in that program.

She summarized the findings: A more generous cash and food safety net reduces low food security in families with children; there is no evidence that the distribution between cash and food affects food security; and there is no evidence for an effect of health insurance provision.

Shore-Sheppard went on to describe data limitations and gaps. First, she said that immigrants face a diverse and complex set of rules that are difficult to model. She suggested adding a variable to the CPS food security supplement to collect length of time an immigrant has been in the United States. This would help support analysis because many state rules are based on length of time in this country. Second, she and her colleagues combined multiple datasets in order to have a measure of food insecurity, family economic circumstances, and program participation in one place. She suggested a research project to create a single database for researchers to use or to develop an approach that would make linking easier and more direct.

Shore-Sheppard went on to address other knowledge gaps, saying that it would be useful for researchers to consider how the public safety net combines with the private safety net. For example, economists have thought a lot about "crowd-out," referring to Gruber and Hungerman

(2005) who looked specifically at religious charitable giving versus state programs.

In trying to model household eligibility, Shore-Sheppard and her colleagues noted that the current process places a premium on parents who can manage complexity, and there is little knowledge of why some low-income households have low food security and others do not. She wondered about seasonality of food security status, an aspect that will not be picked up in current measures where surveys are conducted once a year. She noted that researchers know little about how resources are translated into nutrition and health. She suggested that better measures of how the food outcomes that are measured, like food security, play into hunger and nutrition at the individual level would be useful and may indicate a role for parental and child education. She went on to suggest that a single dataset with both nutrition measures and resource measures, along with multiple measures during the year would be invaluable.

In closing, Shore-Sheppard provided two big-picture suggestions. One was to more support for experiments within the programs to get around the problem that in many safety net programs, there is not much exogenous variation in eligibility that can be used to determine effects of the programs. The Massachusetts Healthy Incentives Pilot[3] is one example of an experiment. Experiments could take the form of providing information, like a large-scale version of Daponte, Sanders, and Taylor (1999). Her other suggestion was to use the opportunity presented by the implementation of the Patient Protection and Affordable Care Act (P.L. 111-148). Extensive information will be gathered concerning eligibility from Medicaid and subsidies that involves real-time linkages between employer databases and government databases. This new database may provide instantaneous information about a household's eligibility. If this information could be used for a household to enroll in SNAP, that could eliminate a lot of the issues related to application and re-enrollment.

STATEMENT OF JAMES WEILL

Weill presented four categories of what he considers potentially fruitful research, as well as some independent comments about topics discussed in the workshop. He first pointed to the importance of state and local policy choices as they affect food security, not just as helping experimental design, but also in pointing a path toward what works in these programs and what does not. Praising the research of Nord and others on this topic, he said not enough has been learned from either the good or

[3]See http://www.mass.gov/eohhs/consumer/basic-needs/food/snap/hip/ [August 5, 2013].

the bad state-level policies. He said there is probably more state variation than the research community picks up, and more interaction between the advocacy and research communities could help identify where the variation exists.

He reminded the audience that Alaimo challenged researchers to address the question of growing inequality and household economic struggles (see Chapter 6). Weill said the importance of that challenge cannot be overstated. He said that there is a risk of asking food assistance programs to do too much if the underlying economic situation is not first addressed.

Weill noted that he overheard a colleague state that the best use of $10 million to address the causes and consequences of child hunger would be to learn to communicate with politicians. Weill said while he would not address that statement, polls show that public support of SNAP and similar programs remains strong. He said while this workshop has considered how research plays into political programs, it is important for researchers to understand that there is a very strong backdrop of public support.

Returning to the four categories of potentially fruitful research, Weill stated that the first is to explore more deeply food insecurity's adverse consequences and the role of public policy responses in averting such consequences. Weill pointed out that the workshop discussions have dealt little with consequences, an area that he said would benefit from further discussion. Second, he suggested research that is particularly timely and important from the viewpoint of struggling low-income families themselves. Third, he suggested taking advantage of new opportunities created by recent policy and economic changes. Fourth, he suggested research to focus on immigrant families.

Weill said his first suggested research category is looking more at the consequences of food insecurity to child development, health, school readiness, mental health, school achievement, adult workplace productivity, and other effects, which is the central and explicit part of the Section 141 mandate. Congress' interest in this area is not accidental, he said, characterizing U.S. politics and policy as typically utilitarian. The idea that religious, moral, or ethical reasons indicate a collective desire to avoid hunger among children or adults has some resonance, he said, but seldom moves policy or politics. He stated that what has more impact is research and findings on costs and benefits to address the outcomes of the increased prevalence or severity of food insecurity, how health and ability burdens associated with food insecurity affect private and public systems, and the impact of private and public costs. He noted there has been considerable research in the past on these issues, but that a new generation of research on the consequences of food insecurity will be important.

Weill's second category of suggested research relates to the importance of more research on the cumulative long-term human and social

costs of allowing people to suffer food insecurity for extended periods of time or for several times during several years. He referred to Children's HealthWatch research (for example, Joyce et al., 2012), and noted longitudinal studies and qualitative studies are key. Some of the work that has been done by Bartfeld and her colleagues and by Children's HealthWatch[4] starts to show a path, he said.

He noted that more analysis of marginal food insecurity's impact on health and well-being will be important, referring to research that demonstrates the detrimental effect of marginal food security. The more the cumulative impact of food insecurity and consequences to children can be demonstrated, the more likely it is to have an impact on moving public policy. More research on the food insecurity and nutrition impacts of the new low-wage, part-time work, contingent-worker economy will also be important, according to Weill.

Weill said that some of workers' lost income and benefits have been replaced by the combination of the EITC and the Refundable Child Tax Credit, as well as by Medicaid, SNAP, CHIP, school meals, and childcare supports. That substitution has been inadequate, and he suggested more research of the type Shore-Sheppard discussed. Weill said analysis of the impact of the change in the nature of low-income work itself, the increasingly contingent nature of jobs, the increase in part-time work, erratic employment, and nonstandard hours will be important. He cited research by Coleman-Jensen (2011) on this topic that suggests greater food insecurity when wages come from nonstandard work arrangements.

He stated that the workshop did not sufficiently address the adequacy of benefits. He reported that the 2013 IOM/NRC study recently concluded that SNAP benefits are too low and identified flaws in how they are calculated, and USDA followed up by asking for more research. Weill argued that both research and action are critical.

Weill noted that with continued wage stagnation for the bottom third of the population, research is needed to figure out how to make SNAP a more adequate support that will carry families, including low-wage working families, through a month and improve outcomes. This inadequacy issue underscores the importance of being cautious about overstating shortcomings and understating the positive impacts of the existing programs. Those programs are the strongest strands in the safety net for children, and they are crucial in preventing hunger and increasing food security. They certainly could be structured and managed to do much more, he observed. There are shortcomings in preventing hunger as shown in some research with mixed results, but some of that could well be the selection bias and much of it is probably due to inadequate benefits.

[4]See http://www.childrenshealthwatch.org/page/Research [August 12, 2013].

He reported that another area of importance to struggling families is the interaction of food insecurity, low wages, inadequate community and family resources, stress, and the harm caused both to parents and often through parents to children. He referred to Ribar's comment about the importance of research looking at outcomes inside a family's "black box." Weill added that it is important to look at how different family members bear the consequences of household food insecurity and how it changes over time.

Weill's third suggested category of research related to recent policy and economic developments, such as the Patient Protection and Affordable Care Act and the boost to SNAP benefits enacted by Congress in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5). Whether or not it continues, from a research point of view, the boost is hugely important as a source of potential information. Weill said that Nord and Prell (2011) reported that the boost increased food expenditures and reduced food insecurity and a Children's HealthWatch policy action brief on October 2011[5] stated that the boost protected young children's health, noting that much more can be done to ascertain the impact of better benefits. He also suggested research to consider whether improvements in benefits in SNAP and SNAP-like programs can be viewed as key mechanisms to boost food security. He called for a close examination of the impact of 2008 and 2009 congressional actions that significantly increased the EITC value and particularly the value of the Child Tax Credit; growth in participation in the SBP; and changes in school meal standards as other areas of potential research.

Weill noted the recession and its impact on family incomes and food expenditures and relation to food security and hunger is hugely important. As an example, he pointed to recent data that the median African American family and the median Hispanic family spend less than the Thrifty Food Plan amount on food. This is true not just of SNAP families or food-insecure families, he stressed, but all families in these racial and ethnic groups. Weill commented that the recession has been a tragedy, but noted that it will be important for researchers to aggressively seek out the lessons to be learned from it. Lastly, Weill talked about the importance of researching the extent of hunger and the relation of food security to the public policy environment for families with immigrant members and for Hispanics as a community with significant numbers immigrant members. He said that hunger spiked in the immigrant community after the 1996 Welfare Law terminated SSI, Food Stamps, Medicaid, and TANF for almost all documented immigrants. Undocumented immigrants were always ineligible.

[5]See http://www.childrenshealthwatch.org/upload/resource/snapincrease_brief_oct11.pdf [August 13, 2013].

He said that food insecurity in Hispanic households remains high, and noted immigration reform may have an impact. Weill said his organization and others are advocating for access for immigrants to key health and nutrition programs. What this means for the workshop discussion, he said, is the potential for important research looking at the food insecurity impact on immigrant families and on the programs for which they are and are not eligible. Research on the question of how to ensure that needy immigrant families can access benefits, even if only some members are eligible, will be important in the future.

OPEN DISCUSSION

Craig Gundersen (University of Illinois at Urbana-Champaign) responded to Ribar's presentation, saying that it is almost a stylized fact that SNAP leads to reductions in food insecurity once self-selection is properly addressed. He pointed to DePolt et al. (2009) concerning research on childhood hunger programs. This research showed that SNAP leads to reduction in food insecurity, not even controlling for selection. He also referred to Kreider et al. (2012a), which showed that while imposing relatively minor and innocuous assumptions, SNAP leads to up to a 14.2 percentage point decline in food insecurity. His point, he concluded, is that the literature has many examples showing that SNAP leads to reductions in food insecurity.

Ribar, a coauthor of DePolt et al. (2009), responded that he stands behind the work and noted that he and his colleagues were able to use some different research methods, including (1) longitudinal measures that used fixed effects controls, (2) multiple program data that could be examined in another study, and (3) the opportunity to examine response relationships. This study was one of the few that came out in the anticipated direction, and he pointed out that putting it in the context of many other studies that did not get the anticipated result is also important.

Mark Nord (Economic Research Service) supported Gundersen's comments, saying many recent, well-constructed studies have showed fairly conclusive evidence of the effectiveness of SNAP. He also clarified a point made by Ribar: The questions about children's food security in the CPS HFSSM are now asked in any household with children, regardless of how the household respondent answered questions about adult food security. Households with incomes under about 200 percent of the poverty line are asked three food security questions about children. Analysis shows that there is essentially no bias on children's food insecurity measures caused by the questionnaire screening.

James Ziliak (University of Kentucky) commented that, as a member of the panel that prepared the 2013 IOM/NRC study, looking at the

adequacy of SNAP benefits, he supported Gundersen's comments and noted the panel members could be objective because they were not direct contributors to the relevant research. Ziliak acknowledged other studies find the opposite effect, but it was the panel's perspective that most well-crafted studies on this issue showed that these programs reduce the likelihood of food insecurity. Ziliak reported that the panel found that when the researcher appropriately dealt with the issues of self-selection and mismeasurement, there was substantial evidence that these programs reduce the risk of food insecurity.

Ribar responded to Ziliak's remarks, saying that the panel reviewed numerous studies that had mixed results, pointing to the methodological challenges with this area of research. He reiterated that it is difficult to argue that giving people more food does not somehow lead to better food results. Edward Frongillo (University of South Carolina) asked Ribar whether the result that "children go hungry less" was a logical consequence of the standard rational economic model, or whether there was direct evidence. Ribar responded that it is a standard economic assumption that parents are altruistic, which leads to the within-home crowd-out effect in the theoretical model. However, he said that there are studies that have looked at coping strategies and the typical behavior is that the children do go hungry less. Frongillo noted that he would like to see citations to that research.[6]

Jay Hirschman (Food and Nutrition Service) noted that researchers who focus on SNAP and general food security issues may not have seen the evaluation of the Summer Electronic Benefit Transfer for Children documented in Collins et al. (2012). He noted that this analysis is the product of an $85 million appropriation from Congress to conduct demonstrations with rigorous evaluations. He said that it is a clear demonstration that very low food security for children is subject to improvement through a known form of changing benefits. In this case, the benefit was $60 per summer month for each school-aged child in the household. Weill responded that Collins et al. (2012) is a great study for SNAP benefits but a mixed study for summer food purposes. Ultimately, it is common knowledge that children are better off if they are in programs over the summer. Funneling money into the family in lieu of building programs where they can be fed meals and also get mentoring, tutoring, and activity is an artificial choice. Both are important.

[6]One citation discussed during the workshop was Edin et al. (2013). In her statement, Zapolsky stated that this result showed that SNAP helps parents protect children. Another reference provided by Ribar during his talk was McIntyre et al. (2003).

8

Health and Developmental Correlates of Child Food Insecurity from Pregnancy to Adolescence

The workshop's sixth and seventh sessions examined the health and developmental correlates of child food insecurity from pregnancy to adolescence. Topics included the impacts of food insecurity on health, obesity, cognitive, and academic outcomes. The sessions addressed mechanisms/pathways (biological, psycho-emotional, via caregivers) and windows of vulnerability, as well as selected issues related to measurement. Both sessions are summarized in this chapter.

The moderator for the sessions was Deborah Frank, founder and principal investigator of Children's HealthWatch, director of the Grow Clinic for Children at the Boston Medical Center, and professor of child health and well-being at Boston University School of Medicine. The first speaker in Session 6 was Barbara Laraia, School of Public Health, University of California, Berkeley, who focused her remarks on food insecurity and child outcomes. The second speaker, Rafael Pérez-Escamilla, Yale School of Public Health, spoke on household food insecurity and the impact on a child's psycho-emotional, social, and academic condition. Their presentations were followed by a formal discussant, Alison Jacknowitz, of the American University School of Public Affairs.

The main speaker in Session 7 was John Cook, Boston University School of Medicine and one of the principal investigators for Children's HealthWatch. The two formal discussants were Diane Whitmore Schanzenbach, Institute for Policy Research (IPR), Northwestern University, and Hilary Seligman, University of California, San Francisco.

A summary of the open discussion covering both sessions is included at the end of this chapter.

STATEMENT OF BARBARA LARAIA[1]

Laraia stated she would discuss food insecurity during pregnancy; the outcomes from food insecurity for children, including diet, weight status, and chronic disease; and suggestions for "next steps."

Food Insecurity During Pregnancy

Laraia reported that food insecurity during pregnancy has been associated with the low birthweight of the child (Borders et al., 2007; Hobel, 2004), which in turn is associated with insulin-resistance and glucose intolerance later in that child's life. Thus, food insecurity during pregnancy can set the fetus up for a trajectory to be more at risk for chronic disease later in life. Using data from the National Health and Nutrition Examination Study (NHANES), 1999–2010, she and her colleagues (Laraia et al., 2013a) estimated that 10.2 percent of pregnant women were low food secure, 4.4 percent were very low food secure, and an additional 8.8 percent were marginally food secure (unpublished data).

She said that food insecurity is a chronic stressor, and the effect of stress during pregnancy was summarized in Hobel, Goldstein, and Barrett (2008). In the hypothalamus-pituitary-adrenal (HPA) axis stress feedback system of a nonpregnant woman, the hypothalamus secretes corticotrophin releasing hormone that influences the pituitary. The pituitary secretes adrenocorticotropic hormone also known as corticotropin, which acts on the adrenal glands and the kidneys. The adrenal glands, in turn, secrete cortisol and the stress response is launched. In normal conditions, cortisol can provide feedback to the hypothalamus and stop the stress response. But under chronic stress conditions, cortisol levels stay high. In pregnancy, the process is altered. Cortisol levels during pregnancy are high anyway, but under stress the cortisol can cascade and also act on the placenta. The placenta can then launch its own stress attack, releasing more corticotrophin, which can then trigger delivery or influence fetal growth. Thus, food insecurity has a real role in metabolic disturbances during pregnancy.

Laraia illustrated a conceptual framework of household food insecurity on adiposity and health (see Figure 8-1). She hypothesized strong interactions with moderators such as acculturation, genetic factors, the life course stages critical for development, stress, and dietary restraint, and the food environment. She said that for all periods where growth is occurring rapidly and fat tissue is being laid down there is a strong interaction

[1]Laraia and her colleagues, Cindy Leung and Amanda Murphy, prepared a commissioned paper on this topic for the workshop (Laraia et al., 2013a). Laraia acknowledged the assistance of her coauthors in developing her workshop presentation.

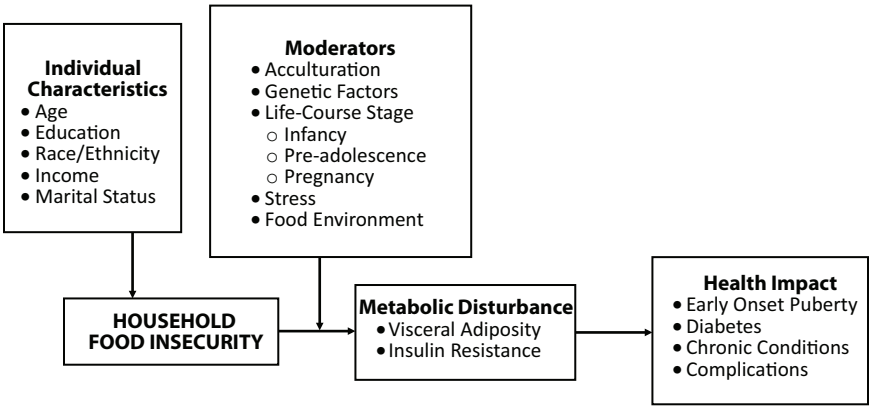

FIGURE 8-1 Conceptual framework of the effect of household food insecurity on adiposity and health.
SOURCE: Modified from Laraia (2013:Fig. 1) with permission.

with stress and dietary restraint and with the food environment. These periods include infancy, the first year of life, the adiposity rebound (ages 4–7), and pre-adolescence. Visceral adiposity and insulin resistance can all lead to negative health outcomes such as early pubertal onset, diabetes, chronic conditions, and other complications. Laraia stated that a focus on examining these interactions would help move research forward, looking specifically at the effects of food insecurity in the life course framework.

She noted Olson and Strawderman (2008) examined the relationship between food insecurity, pregnancy, and significant postpartum weight gain of the mother. They did not find that food insecurity was associated with developing obesity, but instead found a strong interaction between food insecurity and a woman who enters pregnancy already obese. This condition led to significant weight gain (4.55 kilograms, or 10–11 pounds) two years later.

Laraia presented results from the Pregnancy, Infection and Nutrition (PIN) Study[2] with more than 2,000 women enrolled between 2001 and 2006. The survey asked questions related to socioeconomic status, eating behaviors, dietary intake, physical activity, and other health behaviors. It assessed household food insecurity status at 26–32 weeks gestation using the Household Food Security Survey Module (HFSSM) and included questions related to psychosocial factors such as perceived stress, trait anxiety,

[2]The PIN Study was conducted by the Carolina Population Center, University of North Carolina; see http://www.cpc.unc.edu/projects/pin [August 13, 2013].

depression, locus of control, self-esteem, and mastery. When focusing on women whose income was under 400 percent of poverty, 15 percent were marginally food secure and another 10 percent were food insecure.

The study also showed associations with food insecurity and higher scores of stress, anxiety, depression, locus of control given to chance, and locus of control given to powerful others. Food insecurity was also associated with much lower scores of self-esteem and mastery. Thus, she said, food-insecure women are set up to possibly gain significant weight during pregnancy while having potentially lower coping skills (Laraia et al., 2006).

Returning to the topic of stress response, Laraia said that it has been well documented that chronic stress leads to either eating less (40 percent of animals and humans) or eating more (another 40 percent). In a food-abundant environment, more people overeat. In the stress response, high levels of cortisol are being produced, which activates metabolism, with an increase in insulin, leptin, and neuropeptide Y. These chemicals regulate not only metabolism and energy intake, but also, more importantly, where energy is stored. Eating under stress metabolizes food differently, and food and energy are shunted to visceral adiposity.

She said that food insecurity is a threat that can stimulate the HPA axis, triggering hunger and increasing the drive for feeding. The prefrontal cortex usually oversees decision making and reasoning, but under stress conditions, the limbic system overrides that prefrontal cortex. It taps into the reward system and influences the nucleus accumbens to help people reach for highly palatable foods (i.e., food dense with fat and sugar) to help dampen the stress response, which can lead to significant abdominal weight gain.

Laraia noted that in addition to activating the stress pathway and the reward pathway, the basal ganglia (the part of the brain that involves habit formation and memory) participates and a person learns quickly. The next time the person is under stress, he or she is biologically driven, even under a much lower level of stress, to reach for that non-nutritious food. Eating it in the presence of stress drives the store of fat tissues, specifically in the central abdominal region. Thus food insecurity can set people up for metabolic disturbances and chronic disease.

The PIN Study found that food insecurity was associated with greater weight gain, greater risk for gaining in excess of the Institute of Medicine (IOM) guidelines, and a much higher risk for developing gestational diabetes (Laraia et al., 2010). Gestational diabetes leads to insulin resistance and glucose intolerance later in life, so a fetus living in the environment of gestational diabetes is predisposed to childhood obesity, metabolic disturbances, and development of chronic disease later on in life. The study also found a strong interaction between food insecurity and dietary restraint.

The measure of dietary restraint focuses on weight cycling and dieting, so it is really a measure of failed past dieting. Women who scored low on dietary restraint but were food-secure gained significantly less weight than food-insecure women. The results were similar for women who scored high on dietary restraint: Women who were food insecure gained 10 or 11 pounds more than food-secure women, and they were more likely to gain in excess of the IOM guidelines (Laraia et al., 2013b). The mother was also more likely to retain that weight gain after pregnancy. Thus, the baby was more likely to be born with macrosomia or develop chronic diseases later.

Laraia reported that the PIN Study also found that food insecurity in the postpartum period was associated with a significant increase in stress beyond the baseline level of stress, which was already clinically significant. During the postpartum period, women in food-insecure households on average scored 7 points higher on Cohen's perceived stress scale (Cohen et al., 1983). They scored higher on an eating attitudes test, which is a measure of eating behavior, and they ate 4 percent more calories from fat compared to their baseline intake. At 12 months, they retained almost a whole body mass index (BMI) unit higher. Thus, women who entered pregnancy overweight or obese and were food insecure were more likely to retain significant weight at 3 months (one BMI unit higher) and at 12 months (almost two BMI units higher) (unpublished data).

Food Insecurity and Outcomes for Children

Laraia observed the various methods and results in the literature presented age by gender-stratified results for intakes of different foods and nutrients, but results are mixed. Some models (8–20 percent) showed a significant association between food insecurity and nutrient intake, but results were not always significant in the same direction. There was not necessarily a decrease in fruit and vegetable intake or an increase in intake of highly palatable foods. Laraia suggested the research community form a priori hypotheses about how food insecurity is associated with dietary intake, and look at temporality as well. She also identified some data issues, such as that food insecurity may be measured over the past year (for example, in NHANES), but dietary intake is measured for the previous day. It would be useful to have a closer temporal association with those variables, she commented.

She characterized the research looking at Hispanic children as having done a good job with smaller convenience samples. The studies focused mostly on whole food intake and not necessarily on nutrients. The results showed more consistency in the measured association of food insecurity with lesser intake of meat, fruits, and vegetables. There was greater intake

of sweets and highly palatable foods. The various results still had inconsistencies, but at least food insecurity was associated with food intake in the hypothesized direction.

Laraia briefly discussed an animal study with the bonnet macaque monkey and variable foraging demands (Kaufman et al., 2007). The researchers' results suggest that early life stress, characterized by the uncertainty of having enough food, during critical periods of neurodevelopment can result in the peripubertal emergence of obesity and insulin resistance.

Smith and Richards (2008) studied food insecurity among homeless youth in Minnesota and assessed different coping behaviors. Two of the most common coping behaviors were eating snacks (like chips, candy, and soft drinks) and overeating at mealtimes. If they were hungry, the youths said they would eat anything or they would find food somewhere else.

Laraia reported on an updated version of the marshmallow paradigm[3] documented by Kidd et al. (2013) in a homeless shelter or food bank. They initially substituted poor art supplies for the marshmallows and children were told that they would get better supplies if they waited. Children were randomized into two groups. In the first group (reliable situation), children were given poor art supplies, and were told they would be given better art supplies and the art supplies were provided quickly. When they were subjected to the marshmallow test, being asked to wait and told they would be given a second marshmallow by the research assistant, the children waited 12 minutes on average. Children in the second group (unreliable situation) were also given poor art supplies in the beginning and were told that better art supplies would be provided. However, the investigator returned and told them there were no better art supplies available. When these children were subjected to the marshmallow paradigm, they waited an average of three minutes.

Laraia stated that cross-sectional studies have not shown a consistent relationship between food insecurity and child weight status, but said longitudinal studies will be the key to examining this issue, including the Early Childhood Longitudinal Study (ECLS). Existing research had mixed results. In children younger than age 2 in food-insecure households, there is no evidence of an associated weight change. When those children move into the adiposity rebound period (ages 4 to 7), the research begins to

[3]This classic paradigm looked at delayed gratification and self-control among 4-year-olds. A child is given a marshmallow and said that if he/she waits to eat the marshmallow until the researcher returns, he/she will be given a second marshmallow. Results have associated a longer length of time a child is able to wait with higher confidence, higher academics, social and emotional scores, higher SAT scores, and a decreased likelihood of substance abuse. Poor delayed gratification was associated with being at risk of being overweight by age 11.

show some associations. Children subjected to food insecurity during infancy that persisted over time were associated with higher weight gain. She said additional research might try to identify for consistent outcomes.

Laraia provided an overview of several studies that looked at food insecurity in populations of children with chronic disease. Marjerrison et al. (2011) found that food insecurity is prevalent among children with diabetes and is associated with poor diabetes management in childhood. Mendoza et al. (2013), another small study, examined food insecurity and HIV among children. This study found household food insecurity associated with lower levels of CD-4 counts (immune system T helper cells) and higher levels of HIV viral loads. Laraia stated that future studies should consider the role of food security in chronic disease management.

Next Steps

In ending her presentation, Laraia posed several questions and provided her own views.

Is existing evidence sufficient to make causal claims? No, she said, there is not enough evidence to make causal claims. Many of the studies are cross-sectional, and there is evidence of a strong association. In pregnancy studies, there are temporality results that are not population based. There is consistency related to anemia. Regarding diet, there is significance in the expected direction but little consistency for the specific food or nutrient studied. There is considerable inconsistency with weight gain and disease management. Understanding causation is important, she said.

Does it matter how food insecurity is measured? Laraia stated that it depends on the research question. She referred to her comments about temporality issues in measurement between food insecurity and diet.

Are there important data gaps? Laraia said she favors fewer studies using cross-sectional data and more studies using longitudinal and linked administrative data. Big data may be a way to apply nonparametric models to understand interactions, she suggested. Laraia said that monitoring and surveillance beyond the prevalence of food insecurity will be important, as will be assessment of important modifiers of food security.

Are longitudinal, experimental, demonstrations, administrative, and qualitative data all valuable? She said these data are valuable, in her opinion, and are needed to identify causality. Experiments can show mechanisms. Interventions can show impact. She noted the efficiency in linking administrative data with survey data to monitor progress and show strong associations.

STATEMENT OF RAFAEL PÉREZ-ESCAMILLA

Pérez-Escamilla spoke on household food insecurity and the impact on children's psycho-emotional and social development and on academic outcomes. He explained that the conceptual framework for his presentation posits that household food insecurity mediates the relationship of poverty, livelihood strategies, and suboptimal health among household members with maternal mental health and child psycho-emotional, social, and cognitive outcomes. The association between household food insecurity and poor maternal mental health and child development outcomes is, in turn, mediated by nutritional and non-nutritional stress-related pathways.

Household Food Insecurity and Child Psycho-Emotional, Social, and Cognitive Development

Pérez-Escamilla described a review of 26 studies examining household food insecurity and child development outcomes (Pérez-Escamilla and Pinheiro de Toledo Vianna, 2012). By design, all studies measured household food insecurity using an experience-based scale such as the HFSSM. With only one exception, all studies adjusted for socioeconomic and demographic confounders. He summarized the empirical evidence from these studies.

He said that cross-sectional studies conducted in the United States have consistently documented direct associations between household food insecurity and child development outcomes, including problem internalization and externalization and less ability to concentrate in the classroom. This evidence indicates that the relationship between household food insecurity and suboptimal child development can be detected from infancy and subsequently extends into the toddler, preschool, and school-aged periods. Cross-sectional data from the Children's Sentinel Nutrition Assessment Program (C-SNAP; now Children's HealthWatch) found a relationship between household food insecurity and poor child development outcomes among infants and toddlers. Likewise, studies have found negative psycho-emotional and behavioral outcomes among preschoolers associated with household food insecurity. A secondary analysis of NHANES data documents an association between household food insecurity and school-aged children's hyperactivity, school absenteeism, or tardiness, as well as suboptimal academic performance, while further analysis of these data documents an association between household food insecurity and suicidal thoughts and attempts among adolescents. Likewise, a three-state study found that household food insecurity was associated with suboptimal psychosocial function among adolescents.

He reported that of five longitudinal studies, only one (Belsky et al., 2010) was conducted outside the United States, in the United Kingdom.

Analyses of ECLS-Birth Cohort (ECLS-B) data have found an association between household food insecurity exposure in infancy and suboptimal maternal attachment and parental attention at two years of age. Subsequent results from the ECLS-Kindergarten Cohort (ECLS-K) data found an association between household food insecurity exposure in kindergarten and suboptimal social and academic development in third grade. The remaining three longitudinal studies have found associations between exposure to household food insecurity at different ages after kindergarten on youth problem internalization and externalization, as well as lower IQ (in the case of the UK study when not adjusting for socioeconomic status).

Household Food Insecurity, Maternal Mental Health, and Parental Personality

Pérez-Escamilla reported that four cross-sectional studies have consistently documented associations between household food insecurity and maternal stress, anxiety, and depression, as well as problem internalization and externalization. He said a longitudinal study conducted in U.S. rural areas confirmed these associations.

Pérez-Escamilla stated another important question is whether parental personality mediates the relationship between household food insecurity and child development outcomes. Two longitudinal studies support this possible mediation. The analyses conducted by Huang et al. (2010), using data from the Panel Study of Income Dynamics (PSID), included the maternal personality traits of stress, warmth, distress, and self esteem. The E-Risk study conducted in the United Kingdom by Belsky et al. (2010) examined the maternal personality traits of openness to experience, conscientious, extraversion, agreeableness, and neuroticism.

Research Gaps and Policy Questions

To sum up, Pérez-Escamilla noted that different bodies of literature provide strong support for different segments or pathways in his conceptual framework (see Figure 8-2). Very few researchers attempted to test a framework such as this one using path analysis that allows for the identification of mediating factors based on sound conceptual models; however, he said, an exception is a study by Zaslow et al. (2009) based on ECLS-B longitudinal data. By following the approach of theory-based mediation analysis, they were able to discover that the relationship between exposure to household food insecurity at 9 months of age and insecure maternal-child attachment at 24 months of age was mediated by maternal depression and parenting practices. Similar findings were documented with regard to mental development at 2 years of age.

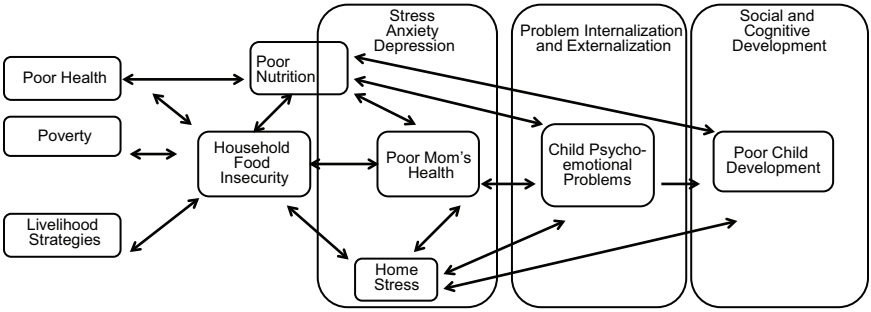

FIGURE 8-2 Conceptual framework of the effect of household food insecurity on child psycho-emotional, social, and cognitive development.
SOURCE: Modified from Pérez-Escamilla and Pinheiro de Toledo Vianna (2012) with permission.

He reported that a major knowledge gap identified in his systematic review is the absence of mediation analysis studies via the dietary intake pathway of the framework. Decades of research have clearly documented the negative impact of malnutrition on child development. However, the vast majority of these studies have been conducted under conditions of protein calorie malnutrition and multiple micronutrient deficiencies, and the exposure was assessed with experience-based household food insecurity measures.

Pérez-Escamilla observed that another important gap is that studies have not been designed to find out if there is a critical period of initial exposure to household food insecurity in terms of child development outcomes. The answer to this question, he noted, has major relevance for policy decisions regarding how to better integrate food assistance and health care services, and how to design or improve existing programs across the life course. He said that an integration of findings from the literature clearly supports the policy research agenda to figure if and how parental mental health and child development remedial programs can be better linked with food assistance programs. A question concerns the importance of linking food assistance programs with parental mental health services or child development remedial programs, and whether a maternal child health care services screen might routinely also screen for household food insecurity, providing referrals for food assistance and child development evaluations.

STATEMENT OF ALISON JACKNOWITZ

Jacknowitz stated that a relatively large literature exists that investigates whether food insecurity influences children's well-being. Most

of this literature, however, focuses on food insecurity as measured by a binary variable: Does the child live in a household that experiences food insecurity or not?

Jacknowitz presented her ideas to help move the research forward. First, she explored five gaps in knowledge with a focus on moving beyond this binary variable of food insecurity: (1) differential effects of food insecurity on children's well-being, (2) the duration of food insecurity, (3) transitions in and out of food insecurity, (4) the pathways through which food insecurity influences children's well-being, and (5) causal relationships. Jacknowitz also discussed whether current data sources adequately address these research gaps.

Differential Effects

She posed a question about whether the effects of food insecurity on children's well-being vary by child or household characteristics. Gender is one of the most-studied characteristics, and she suggested pushing forward with gender analysis but including other variables, such as age of the child, language spoken at home, and urban versus rural location. She noted the considerable discussion at the workshop concerning the uneven landscape of services across the country, with pockets of better and worse social services.

Duration of Food Insecurity

Jacknowitz asked about the effect of length of time that a child spends in food insecurity on the child's well-being, stating that with one exception, a study by Hernandez and Jacknowitz (2009), most research ignores this temporal component. She proposed that researchers address this issue both within a single year and over multiple years. One hypothesis could be that there are cumulative effects of food insecurity, but Hernandez and Jacknowitz (2009) found evidence that this might not be the case. That study used the nine-month and two-year data from the ECLS-B noting the food insecurity measure at both time points.

Jacknowitz reported that the study looked at the outcomes of cognitive and motor development as measured by the Bayley scores, weight-for-age *z*-scores, and health status. Given the above hypothesis, one would expect that a child who resides in a household that is food insecure in both waves would exhibit worse outcomes, but the study found no negative effects of experiencing persistent food insecurity. It is possible that those who experience persistent food insecurity have developed coping strategies to address the situation. The children experiencing no food insecurity

at nine months, but who experienced food insecurity at two years, had lower cognitive scores and health status.

Transitions

She reported these results lead to questions regarding the transition in and out of food insecurity, and whether the number of spells of food insecurity that a child experiences affects that child's well-being. Food insecurity is a transitory condition, with a sizeable movement in and out of food security among low-income children. In understanding how this movement in can influence children's well-being, Jacknowitz suggested that research look not just at movements from one year to the next, but at movements within any year. The hypothesis that constant food insecurity is worse than transitioning in and out of that condition may not be correct, which, she said, is a reason why further research is important.

Identifying the Pathway

Jacknowitz stated that understanding the pathway through which food insecurity affects the outcome of interest provides policy-relevant information—for example, whether the academic or socioeconomic outcome of a child living in a household experiencing food insecurity is influenced by maternal depression or maternal stress. She said that these pathways vary in three ways: (1) who experienced the food insecurity in the household, adult or child; (2) age of the child; and (3) specific outcome of interest (such as academic performance or health).

Causal Relationships

Jacknowitz reported that within the large literature on the negative consequences of food insecurity on children, only a few studies establish causal relationships. As a result, it is not known whether there is either reverse causation or endogeneity that may be biasing results. She said establishing the causal effect of food insecurity on children's well-being is an important current research gap.

Can Current Data Sources Address These Gaps?

She reminded the audience that several major data sources are typically used in food insecurity research. They include two early childhood panel studies: ECLS-B, which focuses on children from birth to kindergarten, and ECLS-K, which focuses on children from kindergarten

through the eighth grade. Other important sources of cross-sectional data include the NHANES, Survey of Income and Program Participation, and Current Population Survey (CPS).

Jacknowitz argued that these data sources cannot answer the questions she posed. The ECLS-B is based on a nationally representative sample of approximately 10,700 children born in 2001. Data were collected when children were nine months, two years, and at preschool, with two kindergarten waves in 2006 and 2007. It includes the 18-item HFSSM and a rich set of children's well-being measures, such as birthweight, weight in each wave, height or length, cognitive test scores, and socioemotional outcomes.

Jacknowitz found that the length of time between waves of the ECLS-B creates information gaps. The timing of the administration of the HFSSM does not match timing of outcomes of interest or possible mechanisms. For example, with maternal depression, it is unclear which came first, the maternal depression or the food insecurity. This is important to understand if studying causation. The ECLS-B does not include the 30-day food insecurity questions or ask about past food insecurity experiences, nor does it specifically isolate whether the targeted child is experiencing food insecurity. There is a measure of child-level food insecurity, but it is unclear whether the targeted child or another child in the household is experiencing that insecurity. Finally, very few children in this age group experience very low food security or even low food security. Thus, the effective sample size is small, making high-quality statistical analysis difficult.

Jacknowitz called for more longitudinal data with more frequent collection that follows children from birth over a longer period of time. She said this would allow researchers to better establish the timing of food insecurity and other events. She also called for more questions that can capture the duration and transitions into or out of food insecurity. Additional questions similar to those asked in the Three City Study[4] would provide information on which child in a household is experiencing food insecurity. Finally, she said, research would benefit from datasets with larger sample sizes to improve statistical power, especially for infants and toddlers.

STATEMENT OF JOHN COOK[5]

Cook noted that Children's HealthWatch's interest in measuring and studying child food insecurity and hunger, and their causes and consequences, derives from an urgent sense to treat and eliminate what the

[4]See http://web.jhu.edu/threecitystudy [August 7, 2013].

[5]John Cook (2013b) prepared a commissioned paper for the workshop.

organization sees as a totally unnecessary and imminently solvable threat to public health, to the public good, and to the country's future prosperity.

He said that Children's HealthWatch research focuses on the early childhood period because the first three years of life are a very vulnerable developmental period for children, with active brain growth and development, and cognitive development. Centric pathways are being developed for hearing and vision; pathways for language and higher cognitive function also are developing rapidly. In this period, exposure to trauma and chronic stress can be very harmful to children's cognitive development and can also harm their trajectory toward success in life, as discussed by Chilton (see Chapter 5).

Cook said that exposure to stress partly affects brain architecture. Brain architecture is a physical structure, which includes systems, subsystems, and networks. Many of the 100 billion cells or neurons in the brain are interconnected in neural networks that store information and are involved in memory and learning in ways that are not yet fully understood. There is an increase in understanding how stress and trauma can affect that process and reduce the complexity and effectiveness of the neural networks, which can, in turn, affect the trajectory of a child's cognitive development, academic school readiness, academic achievement, and educational attainment. Children's health, growth, and development during this period determine whether they might later be chronically unemployed at low incomes as working adults, or fully employed at livable wages and higher incomes, which has profound effects on U.S. society.

The Measurement Framework

Cook provided some history about the development of the HSFFM (see also Chapter 2) and explained that the questionnaire and its associated scales were developed using item response theory (IRT). These methods can also be used to score responses to the scale items based on each item's psychometric and statistical characteristics and the pattern of responses. IRT methods guide and inform decisions about thresholds and categories. The food security categories that are still used are human constructs, based on understanding and judgment.

Cook indicated that much has been learned since the food insecurity scales were developed, and he referred to reviews on this topic, including Cook and Frank (2008), Cook et al. (2013), Gundersen (2013a), Gundersen et al. (2011), Laraia (2013), and Nord (2009a).

Pathways

Cook categorized both nutritional and non-nutritional pathways through which food insecurity influences child health and development.

One example of a nutritional pathway is the perinatal nutrition of the mother and the child, including the internatal period for the mother. A very sensitive and vulnerable period follows (prenatally, and early in the first three years of a child's life) for brain and cognitive development. Developmental events that usually happen during these periods either will not happen or will happen suboptimally in the absence of the necessary nutrients. Some of these deficits can be made up later on under the right conditions, but this is much more difficult and much more expensive than ensuring adequate nutrition during the prenatal period and early childhood.

Cook said adverse growth impacts from food insecurity and hunger persist in the United States, including stunting, wasting, structural system anomalies, endocrine system anomalies, obesity, and oral health issues, the latter of which he identified as an area that warrants more study. Food insecurity could also lead to a compromise in immune system functions, putting a child into what is referred to as an infection malnutrition cycle. When nutrition is suboptimal, it takes a child longer to recover from an illness, recovery is at a lower rate of health, and the cycle can repeat and lead to very strong effects on overall health.

He said energy deficits are relevant and can lead to compromised body temperature and regulation, particularly with regard to the "heat or eat" phenomenon. Babies cannot shiver and raise their body temperature so it is important to protect them and make sure they are well fed. Children who experience hunger are not as attentive to their environment—they want to find food, so they are not exploring other parts of their environment and learning.

Cook said examples of non-nutritional pathways include adverse impacts on the child's and the mother's mental health. Depression, as discussed throughout the workshop, leads to very strong effects on mother-child interactions and other adult-child interactions, one of the primary ways that young children learn. Depression impairs the responsiveness of both the mother and the child and interrupts the serve-and-return process of interaction. However, he said, depression is hard to understand in terms of its manifestation as well as in terms of policy, making it hard to conceive of policies that can address the issue with respect to food insecurity in an effective way, though Cook said that it is important to try.

Cook said that toxic stress (repetitive, persistent, or inescapable acute or chronic stress) includes acute stress like child abuse, domestic violence, and chronic stress such as recurrent or persistent hunger. He asked whether poverty and food insecurity might be a form of toxic stress, saying this is an open question to be clarified. A further example of a non-nutritional pathway involves delays in or deterrence of needed medical

care, and noncompliance with treatment. Over time, these pathways can have a profound effect on the child's health, and both situations occur at significantly higher rates in food-insecure families.

Impact

Cook said that the impact of food insecurity on child health and development has been examined in a number of studies. Borders et al. (2007) found food insecurity positively associated with low birthweights. Laraia et al. (2006) examined psychosocial factors and socioeconomic indicators, finding food insecurity positively associated with psychosocial indicators of perceived stress, trait anxiety, and depression symptoms in pregnant women. There were indications of a dose-response relationship with greater effects at more severe levels of food insecurity. There have been a number of studies on breastfeeding; for example, Zubieta et al. (2006) found food insecurity negatively associated with both initiation and duration (if initiated) of breastfeeding.

Cook discussed two earlier scales that provided input and components for the HFSSM. Radimer, Olson, and Campbell (1990) and Wehler, Scott, and Anderson (1992) provided some of the earliest and most important information about relationships between food insecurity, hunger, and child health. Kaiser et al. (2002) studied food insecurity and nutritional outcomes of preschool-aged Mexican-American children using the Radimer/Cornell scale. They found that limited education, lack of English proficiency, and low income were all negatively correlated with food security, controlling for acculturation. Children in severely food-insecure households were less likely to meet the guidelines set out in the Food Pyramid. The percent of overweight tended to peak among children with household-level food insecurity, but the authors did not find significant differences with weight and height in the children.

He said Children's HealthWatch conducted one of the earlier studies (Cook et al., 2004) that looked at the association between food insecurity and health in young children. They found that food insecurity is positively associated with fair to poor health and that receiving food stamps attenuated the effects of food insecurity on health status but did not eliminate them. Cook also referred to a study by Casey et al. (2004) on maternal depression, which found that maternal depressive symptoms were positively associated with household food insecurity, fair to poor child health, and child hospitalizations. Depression was also positively associated with reductions or loss of welfare and food stamps benefits. He said that Black et al. (2004) reported on a study on participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and infants' growth and health, finding that infants under the age

of 12 months who did not receive WIC benefits because of access problems were more likely to be underweight, short, and perceived as having fair-to-poor health than WIC recipients. Infants receiving WIC and those eligible but not receiving WIC benefits because of access problems were more likely to be food insecure than infants whose caregivers perceived no need for WIC. Cook reported that Skalicky et al. (2006), working with the C-SNAP data, found child food insecurity positively associated with iron deficiency anemia in children 6–36 months of age. Neault et al. (2007) conducted a breastfeeding study on children of immigrant mothers and found that families of U.S.-born breastfed infants of immigrant mothers had greater odds of being food secure than those of nonbreastfed infants of immigrant mothers. The breastfed infants had lower odds of having fair-to-poor health versus excellent to good, of having a chronic health condition, and having been hospitalized less than nonbreastfed infants of immigrant mothers.

Cook said that Whitaker et al. (2006) used the food security scale to examine risk of depression and anxiety in early childhood. They found significant behavioral problems such as being aggressive, anxious/depressed, and having inattention/hyperactivity in both the adults and children in households with food-insecure adults. Rose-Jacobs et al. (2008) looked at associations between food insecurity and at-risk infant and toddler development. Using the Parents' Evaluations of Developmental Status (PEDS) scale, they found that food insecurity is positively associated with parental reports of developmental issues on the PEDS after controlling for confounders.

Cook noted some older studies used the questions and scale from the Community Childhood Hunger Identification Project (C-CHIP), as reported in Wehler et al. (1992), that was specifically designed to identify hunger in early school-aged children. Kleinman et al. (1998) used the C-CHIP scale to study hunger in children in the United States with a focus on behavioral and emotional correlates. Children who were categorized as hungry by the C-CHIP scale were more likely to have clinical levels of psychosocial dysfunction on the pediatric checklist then either at-risk or nonhungry children. The analysis of individual checklist items found that most behavioral, emotional, and academic problems were more prevalent in hungry children. Aggression and anxiety had the strongest degree of association with hunger. Murphy et al. (1998) used data from the same scale to look at relationships between hunger and psychosocial functioning in low-income children. They also found significant associations.

Cook reported that Weinreb et al. (2002), also using the C-CHIP scale, looked at hunger and its impacts on children's health and mental health. They found that severe hunger was a statistically significant predictor of chronic illness in preschool-aged and school-aged children. It

was also significantly associated with internalizing behavior problems. Moderate hunger was a statistically significant predictor of health conditions in preschool-aged children, and severe hunger was associated with higher reported anxiety/depression among school-aged children. He also pointed to three important studies that Alaimo et al. conducted using NHANES data and the HFSSM (Alaimo et al., 2001a,b, 2002). Those studies provided important information that conditioned and guided later research on associating food insecurity with child health.

Cook said that Jyoti et al. (2005) was one of the most influential and important recent studies because using longitudinal data, it showed a priori and subsequent relationships between food insecurity and adverse outcomes, including some associated with both learning and health. Cook said this study may serve as a model for research in the future.

Cook pointed to four studies that address children's experience of food insecurity. Connell et al. (2005) found that children in Mississippi ages 11–16 could describe food insecurity in terms of quantity: that is, eating less than usual or eating fast when food is available. They also described quality (having only a few low-cost foods) and food insecurity's effect on psychosocial states, such as worry, anxiety, or sadness about the family's food situation and shame/fear of being labeled poor. These children reported feelings of having no choice about what they had to eat, and also expressed an understanding that adults were trying to shield children from food insecurity. They described food insecurity in terms of social dynamics of using social networks to get food or being socially excluded. The study indicates that children have their own understanding of food insecurity. Fram et al. (2011) in South Carolina found that children 9–16 years of age experienced food insecurity distinct from their parents' experience, and that adults were not always aware of their children's experience of food insecurity. A study by Bernal et al. (2012) looked at children in Venezuela with very similar outcomes, while Fairbrother et al. (2012) reported that children in the United Kingdom incorporated media information in their expressions about food insecurity and about eating healthy. These children (ages 9–10) prioritized state and corporate responsibility in ensuring that eating healthy is affordable.

Cook stated that most Children's HealthWatch studies make sure of their sentinel sample of more than 40,000 mother-child dyads with the dichotomous variable, household food security status as a predictor. In their studies, they found that food insecurity status was highly predictive of a number of adverse child health outcomes in children and caregivers. Children's HealthWatch is currently engaged in a study funded by the University of Kentucky Center for Poverty Research and the U.S. Department of Agriculture (USDA) to test how foreign-born mothers' status, together with risk and protective factors, are related to very low food

security in children. Very low food security was measured in 1.4 percent of the children in the Children's HealthWatch data compared to 1.1 percent in the CPS data.

In a review of studies addressing marginal food security, Cook said he found that several studies presented evidence that marginal food security is more like food insecurity than it is like food security. All studies found that marginal food security is a significant predictor of adverse health outcomes in children or their mothers, compared to food security. New research shows that marginal food security is associated with the same negative health outcomes as food insecurity, but the magnitude of associations is intermediate between food security and food insecurity (dose response). Cook commented that marginal food security is a separate adverse category.

Closing Remarks

As wrap-up, Cook posed the question of how living in households where adults, but not children, have very low food security affects those children. He reported that in 2011, based on the official food security data from the CPS, his analysis indicates that there were nearly four million children who were not food insecure but lived in households where adults had very low food security. Because of time constraints during the workshop session, Cook pointed to his suggestions for proposed research topics in the background paper he prepared for the workshop (Cook, 2013b).

STATEMENT OF DIANE SCHANZENBACH

Schanzenbach began by commenting on the importance of he Supplemental Nutrition Assistance Program (SNAP) as the largest cash or near-cash antipoverty program in the United States. A large proportion of the U.S. population, 1 out of 6.5 people, is receiving food stamps, and she characterized it as the only universal safety net program in effect in the country. She said that the landscape for providing assistance to low-income families with children has changed since 1980, observing the United States has moved from a system of cash assistance to one with in-kind transfers. She also presented data that shows SNAP has become the fundamental safety net program compared to the Temporary Assistance for Needy Families (TANF).

Schanzenbach referred to a study by Almond et al. (2011), which looked at the initial rollout of the Food Stamp Program (1961–1975) to examine effects on infant health. Researchers have had difficulty separating cause and effect of the program because of its little variation

over time, but, by examining the rollout years, the authors could compare births in counties that received the program earlier with those that received it later. They found that the availability of food stamps in a county in the 1960s and 1970s increased overall birthweight and reduced the incidences of low-birthweight births, particularly concentrated at the bottom end of the birthweight distribution. There was a 2 percent decline in the number of infants born under 1,500 grams, a 2 percent decline in the number of births under 2,000 grams, and no change in the percent of birthweights that were under 4,000 grams.

These infants are now 40 and 50 years old. An important research question is whether this access to the safety net in utero and during early life led to longer term impacts in adulthood. Two theories could guide that question. First, Heckman (2006) argued that investment during early childhood leads to higher returns to human capital than investments later in life. In this hypothesis, access to the safety net, food stamps, will improve the acquisition of human capital during childhood. The second theory is based on a large literature (for example, Barker, 1992) on "fetal origins" that argues that there is a connection between fetal development and early "critical" periods and chronic conditions in adulthood. The hypothesis is that better early life health will improve adult health outcomes, such as potentially better overall health and reduced metabolic syndrome and obesity.

She said that Almond et al. (2011) also used data from the PSID, which provides information on economic and health outcomes. They categorized cohorts by county of birth to include the introduction of the Food Stamp Program in their analysis. With these data, the authors calculated two indexes. First was a metabolic syndrome index, based on health effects, such as whether a person in adulthood is obese, has high blood pressure, has diabetes, has had a heart attack, or has heart disease. The second is an economic self-sufficiency index, based on whether a person graduated from high school, is currently employed, is poor, or participates in TANF or food stamp programs, and his or her earnings and family income.

Schanzenbach reported that the authors found that exposure to the Food Stamp Program in early life reduced the incidence of metabolic syndrome by a highly statistically significant 0.3 standard deviations in adulthood. In looking at the component pieces of the index, only obesity was individually statistically significant, but all components changed in the expected direction. The authors examined other health outcomes (in good health, disabled, height below fifth percentile, ever smoked, drinking of alcoholic beverages). The only one of these outcomes that was individually statistically significant was that exposure to the food stamp program reduced stunting (height less than the fifth percentile). Other outcomes

changed in the expected direction, indicating that better health in early life leads to better health in adulthood.

She went on to say that the authors found that access to food stamps in early life increased economic self-sufficiency by a statistically insignificant 0.2 standard deviations. Looking at the component pieces, high school graduation or higher education was statistically significant. One important observation was that the indicators of receipt of welfare as an adult were negative. This may indicate that access to the safety net during childhood reduces dependency on the safety net in adulthood. Another important and puzzling result, she said, was that the authors found striking gender effects, with a strong statistically significant positive impact of early life access to the safety net on the economic self-sufficiency among women but not among men.

Thus, Schanzenbach said, the exogeneous shock to resources during early life (receipt of food stamps) improved adult health and, for women, improved economic outcomes. The study provided new evidence that the benefits of the safety net are broader than previously thought, with positive external benefits to taxpayers.

Schanzenbach provided several overview suggestions on research. First, she cautioned against focusing research too narrowly, saying that understanding how low-income families cope with different shocks will be beneficial. She went on to say that the measurement of food insecurity is vastly different in the PSID, CPS, and ECLS-K. A first-order question would be to understand and assess these differences. She noted policy-relevant research is important. She said she is not suggesting program evaluation, but a broad agreement to keep an eye on policy. She said that the Department of Education's Institute for Education Sciences Initiative during the Bush Administration would be a good case study of the use of the federal "carrot or stick." Finally, she said that funding of graduate students is important.

STATEMENT OF HILARY SELIGMAN

Seligman first discussed the hypotheses around the relationship between food insecurity and obesity. She explained that food affordability effects changes in nutritional outcomes because healthy foods cost more per calorie. Affordability changes dietary intake, which she said is the easiest way to conceptualize the increased risk of obesity. Researchers also see disordered eating practices (such as hoarding, binging, and preferences for calorically dense foods) in adults related to childhood food insecurity experiences in children, and it is important to look at this issue as it relates to the transition to adulthood. Food insecurity can be a major stressor during the adolescent period. Inflammatory mediators are par-

ticularly important in this discussion because they focus on physiological changes due to stress.

A pregnant mother may also transmit this risk of obesity to the next generation by making her developing fetus avid for nutrients. The unborn baby needs more nutrients if there is evidence that it may be born into a famine environment, thus predisposing children later in life to obesity risk because of the environment they experienced in utero. Seligman said this is very important because the risk of transmitting poverty to the next generation is even stronger than the risk of transmitting other diseases.

Seligman reviewed several studies looking at the association between food insecurity and BMI, extracting results for adolescents from these studies.

Parker et al. (2010) used NHANES data (1999–2006) categorizing boys and girls, 12–19 years, into four groups (food secure, marginal food security, low food security, and very low food security) and found the average BMI was highest for the marginal food security group. This result mimics what researchers see among adult women, she noted, and echoes earlier comments made by Laraia and Cook.

Theall and Dunaway (2013) conducted a study that used NHANES data, with results for 12- to 17-year-olds. The unadjusted association in this study showed the odds of having a BMI in the category of BMI 25 to 30 (overweight) was about 45 percent higher for individuals in a highly food-insecure family, a statistically significant increase. The measured odds were higher in the category of BMI greater than 30 (obese) but were not statistically significant.

Seligman briefly summarized other studies that used cross-sectional data from NHANES: Alaimo et al. (2001a); Bhattacharya et al. (2004); Casey et al. (2001, 2006); Gundersen and Kreider (2009); Gundersen et al. (2008); Lohman et al. (2009); and Smith and Richards (2008). She noted that except for Casey et al. (2001), these studies consistently found no relationship between food insecurity and BMI during adolescence.

Seligman said she views these results as limited, both because researchers were not always limiting analysis to a low-income cohort and because the data were cross-sectional. She said this highlights two weaknesses in using existing data for this type of analysis on adolescents: there is a lack of longitudinal data measuring food insecurity available for this age group, and food insecurity in these data is generally defined at the household level rather than at the child level, although the Lohman et al. (2009) and Gundersen et al. (2008) studies used the child food security status.

Seligman said food insecurity and obesity among adolescents *may* be associated with each other. The association is seen in unadjusted models, but it is probable that food insecurity is a marker for something else in the

adolescent period that is increasing obesity risk, including poverty in general, stress, or eating behaviors.

She argued that looking for obesity and other cardiometabolic risk factors among adolescents is the wrong question because the concern is the development of these long-term outcomes in adults. Obesity, diabetes, high blood pressure, high cholesterol, and metabolic syndrome do not generally develop over the course of a week, a month, or a year. They develop over decades and the failure to see them in adolescence does not mean that they are not there. Potentially, she suggested, the substrate is not detected early enough. To her, a more relevant research question is whether food insecurity during adolescence, childhood, or in utero is associated with cardiometabolic risk factors when the individual is 40, 50, and 60 years old. She said this outcome is important to understand not only because of the nutritional outcomes associated with food insecurity that could drive some of these cardiometabolic diseases, but also because coping strategies are laid down in childhood. It may be that coping strategies are leading to adverse health outcomes over time, and eating patterns established during childhood are resulting in cardiometabolic diseases many decades later.

Seligman read a quotation cited in Olson et al. (2007:203). A mother said, "I have this phobia about food and remembering that experience of having no food, now I constantly have to have food in the house, we start getting low and I start freaking." The mother's comment, Seligman says, raises a number of important points. First, the mother's eating patterns were established when she was food insecure as a child. Second, she developed coping strategies that might increase her risk of chronic disease as an adult. Thus, even if her food insecurity when she was age two or four had no direct impact on her risk of diabetes as an adult, the way she is responding now probably does have an impact.

Seligman next provided a review of adult cardiometabolic risk factors and their association with food insecurity, saying that food insecurity, at least mild food insecurity, is consistently associated with obesity among women. Among women and men, there are associations with diabetes, high blood pressure, increased risk of some inflammatory markers, and metabolic syndrome. There probably is not an association with high cholesterol, she said, although a number of articles have found substratifications of cholesterol that are associated with food insecurity.

Seligman stated that a very important association is between food insecurity and tobacco, an association that does not get enough attention by researchers. Tobacco absorbs disposable income and, even more importantly, many smokers indicate that smoking makes them less hungry. This phenomenon is very important as a risk factor for poor health outcomes.

She said that studies, such as by Theall and Dunaway (2013), increasingly show that food insecurity increases the risk of inflammatory markers, and these inflammatory markers increase risk of many diseases. There are little data on most of these diseases in adolescence because, although possibly changing, people for the most part do not have these diseases in adolescence. Parker et al. (2010) used NHANES data for 12- to 17-year-olds to look at the components of the metabolic syndrome. The only difference in anthropomorphic measurements was in waist circumference for the marginal food insecurity group, a pattern that mimics what is seen in adults. There were no other differences in other components of the metabolic syndrome. An article by Theall and Dunaway (2013) looked at food insecurity and C-reactive proteins (CRPs), which researchers use to predict a person's cardiovascular risk in 20–30 years. The study found no association between food insecurity and CRP levels among adolescents, although research has found the association with younger children.

In closing, Seligman addressed the research gap in terms of the long-term health implications of childhood food insecurity. She suggested longitudinal studies, starting with adolescents or younger, with follow-up into adulthood; a primary focus on understanding the health implications of food insecurity; repeated measures of food insecurity to develop a better understanding of what it is about food insecurity over time that confers the greatest risk, and whether there is a way to quantify the "dose" of food insecurity over time; robust measurement of health data, rather than relying on self-reported data; and robust measurement of coping strategies, public program participation, tobacco/drug use, dietary intake, geographic food access, and parental feeding behaviors.

OPEN DISCUSSION

Craig Gundersen (University of Illinois at Urbana-Champaign) began the discussion with two comments. First, he said, economists use cross-sectional data to establish causality. Conversely, even longitudinal data may or may not establish causality, so he said he would not dismiss the possibility of looking at causal issues using cross-sectional data. He stated some of the methods that can be used in this type of analysis have not been exhausted. Longitudinal data definitely provide advantages. Schanzenbach's work illustrates how one can do more analysis if there is cross-sectional variation, and variation over time. Second, he urged a focus on what it is about food insecurity that really matters. Figuring out ways to isolate the effect of food insecurity (apart from other things) is important in terms of causality.

Laraia responded that she doubts that the causality of food insecurity in a life course framework can be identified with cross-sectional data

because there is a baseline issue. If an analyst observes a cross-sectional relationship, there is no way to know what came first. She said she considers it challenging to examine the health effects of food insecurity using cross-sectional data.

Ronette Briefel (Mathematica Policy Research) commented about the blurring of household-level versus individual-level measures. She stated the HFSSM is great for assessing food security at the household level (and by household characteristic or all adults/all children in the household). Its purpose was to provide a good population-based scale that could be measured and tracked over time. It is now widely used, but in ways that she said are inappropriate when trying to link individual-level food security to individual-level health and nutrition outcome data. She asked researchers to clearly think about the conceptual framework and their choice of a variable, as she said she sees a lot of blurring because a household-level indicator is being used as an individual-level variable. She also suggested that future research look at an exposure variable in terms of severity and duration. Even for studies that are appropriately using the 30-day measure to answer research questions, there is no good indication of the experience in the past, how well a 30-day measure tracks to longer periods (e.g., an annual measure), and whether survey respondents' perceptions of food security change depending on severity and duration over time.

Seligman responded that she thinks that Briefel's points are well taken and important. However, she said, if living in a household that is food insecure, an individual's risk of being food insecure is very high whether every member in that household is food insecure or not. She said current measures are probably sufficient, because the children in the household are probably being underreported in terms of their individual food insecurity status. Briefel agreed, but something beyond the current four-category classification scheme would help, perhaps an intervention study or a small study to compare across subgroups. In particular, severity and duration measures would be important to assess variability within and across food security categories.

Deborah Frank (Boston University) observed that the technical problem with young children is that they cannot talk about the impact of living in a food-insecure household, although they show it physiologically. Cook said that a periodic census of the household members, in which all the people in the households are interviewed to collect food security information from each individual in the household instead of just the household respondent, or alternatively all adults and all children as groups could be done easily with the child scale. Although a little more expensive, the main cost is associated with having the household interview. James Weill (Food Research and Action Center) said that Seligman's quotation from the woman who kept food in the house reminded him of people who grew

up during the Depression and who keep food in their homes many years later. It raised the question to him whether people in the current recession will change their long-term coping strategies and whether researchers are measuring that change. He noted data from a robust longitudinal study of adolescents, as advocated by Seligman, would support an analysis of whether interventions are reducing the use of coping strategies.

David Ribar (University of North Carolina at Greensboro) said that other countries routinely collect information from all members of the household, including sensitive measures on hardships. He said the difference is that these countries pay for high-quality surveys, but, he asserted, the United States underfunds its survey operations.

Edward Frongillo (University of South Carolina) referred to Schanzenbach's remarks, noting the people who are the most disadvantaged are often most responsive to intervention. He also observed that the major gain researchers derive from longitudinal data is the elimination of unmeasured confounders, and not from getting to causality through a chronology of events. He agreed with Gundersen that sometimes cross-sectional data are very helpful. He highlighted Schlüssel et al. (2013) that, with coauthor Pérez-Escamilla, showed that different points in the life course reveal a different picture of how food insecurity is related to obesity. Referring to Laraia's research, Frongillo pointed out other measures to be concerned about. BMI in children is particularly problematic because it does not get at fatness at all. Laraia responded that she agreed, but is concerned about using cross-sectional data to ask individuals about their food insecurity experiences in childhood. She said bias is associated with the way a family copes with a food insecurity experience. Longitudinal data are critical, she said, because she does not like asking adults whether they were food insecure as a child and using that to determine health outcomes.

Lara Shore-Sheppard (Williams College) said that she wanted to reiterate a comment from Seligman. Neither cross-sectional nor longitudinal data will do a good job if the correct thing is not being measured. She said she worries that the cause of the problem is not really known: food insecurity, whatever is triggering food insecurity, or some other kind of a shock. The current system does not measure the cause of the problem well and this matters for policy. She said food insecurity may suggest a wide set of policies. However, if the real problem is economic insecurity or another family issue, then food stamps may not be the best response. Considering the accurate targeting of policy to a problem, it is important to observe other things in addition to food insecurity.

Jay Hirschman (USDA) commented that it is helpful to focus on the measurement question. He noted that most researchers have used the HFSSM or variations of it, but the concept of existence and duration

are both important, as is the frequency of bouts of food insecurity. One of the measurement challenges is to devise a way for cross-sectional surveys to ask questions retrospectively over some period of time, which can be validated in some simple way and fed into the research process.

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Measurement and Surveillance of Child Food Insecurity and Hunger

The workshop's final session before wrap-up examined the measurement and surveillance of child food insecurity and hunger. It examined what is known about the adequacy of the current measurement approach, in both conceptualization and implementation. The moderator was Judith Bartfeld, professor of consumer science, School of Human Ecology, University of Wisconsin–Madison. The session had two speakers, each followed by a discussant. The first speaker was Edward Frongillo, professor and chair of the Department of Health, Promotion, Education and Behavior at the Arnold School of Health, University of South Carolina. Mark Nord, Economic Research Service, served as discussant. The second speaker was Elizabeth Adams, Department of Public Health and Preventative Medicine at Oregon Health and Science University. Maureen Black, Department of Pediatrics and the Department of Epidemiology and Public Health at the University of Maryland School of Medicine, served as the session's final discussant.

STATEMENT OF EDWARD FRONGILLO[1]

Frongillo stated that he changed the title of his presentation to "assessment and surveillance" rather than "measurement and surveillance" for reasons that would be clear as he proceeded. He stated that his aim in the presentation was to address what is known about the adequacy of the cur-

[1]Frongillo and his colleagues, Eliza Fishbein and Maryah Fram, prepared a commissioned paper on this topic; see Frongillo, Fishbein, and Fram (2013).

rent assessment approach: Does it capture key dimensions? Are important populations (i.e., the homeless) missing? Does it adequately describe the experience of everyone in the household? How can assessment be improved? Second, he said he would suggest research topics that might enhance and augment the current surveillance system.

Conceptualization of Food Security

Frongillo began with the conceptualization of food security itself as it has been designed and implemented in the Household Food Security Survey Module (HFSSM) in the Current Population Survey (CPS; see Chapter 2). Frongillo said that from the beginning, this work prioritized mothers' perspectives, because mothers were thought to be the food decision makers and primary actors in acquiring and managing food, and mothers, especially if single, are also more likely to be food insecure. He said most common knowledge about child food insecurity is based on reports from mothers.

He highlighted two underlying assumptions. First, food insecurity as developed in Radimer et al. (1992) is a household issue that involves managing a process. Second, parents sacrifice and try to buffer their children against the effects of suffering in general and food insecurity in particular. Radimer's work, in addition to that documented in Hamelin et al. (2002) established the basic foundation for the way experiences of food insecurity are considered.

Frongillo said that traditionally food insecurity is viewed as having four domains: quantitative, qualitative, psychological, and social (Hamelin et al., 2002; Radimer et al., 1992; Wolfe et al., 2003). The quantitative domain ranges in severity from (1) least severe: food depletion, low food stocks but adequate calories; (2) more severe: having to eat less food than usual; and (3) most severe: one or more days without food, actual hunger.

The qualitative domain similarly can be thought about in terms of range of severity. The least severe involves having to buy and eat less preferred foods. This is not considered food insecurity in the United States. The more severe state is having to eat a nutritionally inadequate or poor quality diet. The most severe state is not being able to eat the right foods and meals for health.

The psychological domain focuses on a household's knowledge and perception of its food situation, and how they feel about that situation. The domain has two components. First, the uncertainty of the food situation and not being able to get the right food for healthy eating leads to feelings of worry and anxiety. Second, the lack of choice and the need to make compromises leads to feelings of deprivation and depression.

The social domain relates to accessing foods in socially unacceptable ways, such as getting food from food pantries, having to ask others for food, borrowing money for food, buying food on credit, or other means. The concept is not based on what people say but on social norms. A second component in this domain is having socially or culturally less normative patterns, like eating peanut butter for dinner daily for weeks in a row.

He said, as has been discussed at this workshop, children in food-insecure households do poorly in many different ways, including behavior, mental health, social, academics, developmental trajectories, hospitalizations, and obesity. Frongillo said he believes that this means that the uncertainty component in the psychological domain is particularly salient for children. Referring to National Research Council (2006) work that showed important consequences of food insecurity, including distress and adverse family and social interactions, Frongillo hypothesized that these particular pathways are the ones that are most detrimental for children.

Frongillo reported that, in Fram et al. (2011), he and his co-authors saw in their qualitative interviews many examples of responses to food insecurity within families, some of which were disturbing. Parents try to provide for the quality and quantity of food, and they try to provide emotional support around eating, but, as he found in his research, they are not fully successful. The researchers also found protective actions were attempted not just from parents to children, but also from parent to parent and that children also try to protect their parents and siblings. Mothers and children tried to protect other children in the family, particularly younger children, and also poorer children in other families.

There is considerable evidence, he said, that children end up living adult roles in food-insecure households. They prematurely act like adults, doing activities that take away from the activities that they should engage in for their own development. In one study, Frongillo and his coauthors intentionally talked to children as well as their mothers and fathers. They found that mothers talked about their social role as being a manager and their job to protect children. Fathers talked about being the provider, trying to protect the wife and children. But children talked about how they actively contribute and how they act to protect other children and their parents. Children even talked about the fact that they know that it is important to their parents to feel like they are protecting the children. The children said they make sure that they hide what they are doing so their parents will still feel good about themselves.

He noted better understanding about what he termed the myth that parents are protecting their children from food insecurity would be invaluable. The available evidence shows that they are trying but are not fully successful at that protection.

Assessment and Measurement

Frongillo turned next to assessment and measurement, and how the concepts fit together, noting his comments reflect ideas particularly from the psychology and clinical chemistry literatures on assessment and measurement. He noted that in psychometrics, item response theory may be used, and generally it is believed that a scale comprised of multiple items has greater reliability than a single item, as in college entrance examinations like the SAT. If a unidimensional scale is assumed, as is often done, there is one underlying construct. Typically it is assumed that the frequency of affirmation is a function of the severity. Again thinking about the SAT, the items that students get wrong more often are the ones that are considered to be difficult (more severe). That idea has been brought over to food insecurity assessment.

There are a number of options for constructing indicators from measures (Frongillo, Nanama, and Wolfe, 2004). The simplest would be to create a scale and report the average. Second, one could create a scale and construct ordinal categories by making cut-points based on the distribution. A third option would be to create a scale and construct ordinal categories by making cut-points on the scale based on specific meaning of items. Finally, one could construct nominal categories based on the specific meaning of items and not on the scale.

Frongillo provided an example of an assessment and different ways for constructing indicators using a study about food insecurity affected by seasonality in northern Burkina Faso (Frongillo, Nanama, and Wolfe, 2004). The average scale was used to document that pre-harvest household food insecurity was very high (scale scores of 10.7, 7.5, and 6.2), in post-harvest it got much better (scale scores of 4.9 and 4.5), and then it cycled again. He then constructed indicators in several ways. He used this example to point out that whenever one creates a scale and establishes cut-points (the third option above), the process will generally underestimate severity because of the way the psychometrics works.

Current Assessment Method

Frongillo explained that when the predecessor of the HFSSM was deployed in 1995 in the CPS, it was intended to estimate prevalence, overall and for certain groups of households, to answer the question "how many are affected."

It is now used for other purposes. At the group level, it is used as a potential early warning (to determine when action is needed); to target that action; to monitor whether the situation is changing; and to evaluate impact. At the separate household or individual level, the system has

been used for even more purposes, such as for screening, diagnosis, and monitoring.

He said the current assessment method makes a number of assumptions. First, it focuses on households, but there is now an additional focus on children as a subset of the household. The focus is on access to food that is constrained by money, not by the other causes discussed in this workshop. The assessment collects a mixture of items that refer to households, adults, and children. The method has many items about the quantitative domain, few items about the qualitative domain, and one item about the psychological domain on worry and anxiety, with nothing collected about deprivation. The child measure is the same except that it has no psychological measure. Thus, he said, the tool is only getting at part of the story.

In addition, the scale is unidimensional, so it assumes that frequency equals severity and it only contains items that fit a unidimensional framework. He noted the cut-points were based on specific meaning involving the concept of hunger but that meaning is now suppressed in the reported categories.

Current Assessment System

Frongillo noted a few concerns about the current system. First, he said, there may be inadequate coverage of certain subpopulations, such as people who are institutionalized, in the military, indigenous, homeless, marginally housed, and have chronic disease. He said that it is known that food insecurity is important for those with HIV and chronic diseases like diabetes. He asked whether or not food insecurity is being captured adequately among the mentally ill, certain ethnic groups, and immigrants, particularly undocumented immigrants. Second, he said that the sample sizes for children in households with very low food security are too small to support detailed analysis. He referred to Coleman-Jensen's earlier point (see Chapter 3) that, even in the largest survey, researchers can end up with a really small sample size.

Third, he observed that now the HFSSM has been included in several national surveys, but there are unexplained discrepancies in the result of food insecurity assessment across these different surveys.

Direct Assessment of Children

Frongillo turned to direct assessment of children. The questions used in the HFSSM of the CPS and other surveys are typically answered by a single respondent, almost always an adult, for all people in the household. Although children and adults may have similar experiences regard-

ing food security, they need different language to report those experiences (Connell et al., 2004; Nord and Hopwood, 2007). Multiple studies now show a poor agreement between adult and adolescent reports. Nord and Hanson (2012) found that adolescents self-report food insecurity more often than adults report for them. These adult reports are only weakly associated with the self-reports of the adolescents. The finding that parent and child reports do not give the same information has been replicated in the United States by Fram et al. (2013), as well as in Ethiopia (Hadley et al., 2008) and in Venezuela (Bernal, 2011).

Frongillo said that these studies demonstrate that parents are not fully knowledgeable of their children's food insecurity experiences. Researchers think this is due to lack of communication and because of efforts to protect each other. People in the household are hiding things and they are not talking openly to each other about these issues.

In a qualitative study of 16 families (Escobar-Alegría et al., 2012), all 16 targeted children had cognitive awareness of food insecurity, but only seven parents were fully aware. Four parents were aware of part of what their child was experiencing, and five others were not aware at all. Fifteen children, but only eight parents, had emotional awareness. For two children experiencing physical awareness of food security, no parent was aware. Eight children initiated responses to food insecurity and one child generated resources. None of their parents was knowledgeable about these actions.

Frongillo described his mixed-methods study (Fram et al., 2013) funded by the Research Innovation and Development Grants in Economics Program. In-depth interviews with 100 children were conducted with questions developed based on earlier qualitative work. These questions were used to develop a definitive measure, a very accurate classification of what the children were experiencing, based on these in-depth interviews. The children were classified in terms of six domains that the authors thought were accurate. The parents were asked the HFSSM questions, and their answers were compared with the child reports. For cognitive, emotional, and physical awareness, the child report was accurate. For participation and resource generation, the child report was not accurate. On the other hand, parent reports under cognitive and physical awareness (the only two domains that could be tested) were not accurate. In other words, he said, relying on the child's report is much more accurate than the parent's report. Particularly disturbing is that parents missed more than half of the incidences of hunger because the actual prevalence was 33 and parents only picked up only 15 of those. This is further evidence that parents do not know about the experiences that their children are having and, therefore, if parents' reports are the only gauge for a child's experience, results will not be accurate.

Improving Assessment of Child Food Insecurity and Hunger

Frongillo said household food insecurity is a powerful stressor and a marker for other stressors, as Laraia posited earlier (see Chapter 8). Further, he observed, it is plausible that non-nutritional pathways (as opposed to nutritional pathways) deliver the most harm to children. Children are accurate reporters of their own experiences, but parents are inaccurate reporters of their children's experiences. Therefore, he said, the current parent-report system very likely underestimates the prevalence of food insecurity and hunger among children.

The current system is valuable for the purposes for which it was developed—to estimate the prevalence of household food insecurity. It has been a very powerful tool for that purpose and to monitor how food insecurity has changed over time. However, he suggested, there is more to understand, such as ways in which children experience food insecurity, how many children have those experiences, which children have those experiences, and which actions will ameliorate those experiences.

He questioned the most salient causes of child food insecurity, noting lack of money is not the entire story. Parental physical and mental health is crucial, as are transportation barriers to accessing food or food assistance, parental work demands and schedules, stigma, and other social issues. He noted the most salient domains are awareness (cognitive, emotional, physical) and responsibility (participation, initiation, and resource generation).

To respond to child food insecurity, he said an assessment system that builds on existing systems would be important. Frongillo and his co-authors, funded by the Nord Family Foundation, have been working in schools in the last 18 months, testing to see to what extent schools can become a part of the system to address child food insecurity. Schools respond formally to child food insecurity, through the National School Lunch, School Breakfast, and Afterschool Snack Programs, as well as informally. More than one-half of teachers nationally purchased extra food to give to students whom they thought were food insecure and did other things to help children cope with food insecurity (Share Our Strength, 2012b). Holiday food baskets, food backpacks, and other approaches have been used. Schools do many things, he said, and the process is somewhat haphazard.

School is a place where food insecurity in children is observed and where children get food. But it is also a place where food insecurity is secret and stigma is perceived. If the government is going to potentiate schools as a system for addressing food insecurity, he said, education and training of school personnel, systematic attention to the problem responses, and meaningful assessment of holistic responses will be important.

Schools only reach school-aged children, he observed, and they can-

not operate in a vacuum. As others have discussed, food augmentation may not be the best response, and it can be overtly harmful. Therefore, community-wide systems that augment the schools will be important, which holistic community assessment and response can help. He provided an example from the implementation of the U.S. Triple P System Population Trial in South Carolina. Triple P is the Positive Parenting Program, described by Sanders (2008). This randomized study showed that training the existing workforce in positive parenting could have large effects on reducing the number of substantiated maltreatment, out-of-home placement of children, and child maltreatment injuries.

Finally, Frongillo stated that—to end child hunger—new thinking is needed based on systems, public health, resource realism, and a holistic approach. Assessment instruments and systems to directly and accurately identify child food insecurity are fundamental. They include questionnaires that cover all domains of child food insecurity, and making use of observation is key. The development of resources and protocols for the actions that can help when children's food security is identified is beginning. Those efforts involve training school personnel, nurses, pediatricians, clergy, and other professionals who come in contact with children so they can assess, identify, target, act, and then monitor what happens.

STATEMENT OF MARK NORD

Nord said that he appreciated Frongillo's comments and agreed that the current measure of food insecurity is essentially economic access, although it is likely that other aspects or adjuncts of food insecurity are important. He said he does not believe that this is a weakness of the current measure nor does he support adding other components onto the current measure. Instead, he said, it may be useful to add additional measures addressing other dimensions and adjuncts.

Nord suggested research to address what he termed missing pieces. He said that the greatest incidence of food insecurity in children is in older children. However, it is thought that the greatest impacts of food insecurity, at least through nutritional channels, and possibly through psychological channels, are on younger children. He pointed to evidence presented at the workshop that shows the importance of early childhood. He said that may be good news, because those children appear to be shielded more successfully from food insecurity. But he questioned if that is really the case, since the assessment is based on parent reports. He noted the assessment of the accuracy of parent-reported insecurity for older children, but not for younger children who cannot speak for themselves. He suggested this is an area where further research is indicated. If parents are able to report the food insecurity of younger children

with reasonable accuracy, then the overall monitoring of food insecurity among children is not too bad. Although older children are not being monitored perfectly, they are impacted less. When one combines the older and younger children, he said the overall monitoring may be acceptable.

Monitoring has specific purposes: to retain and improve an effective, efficient program and policy framework in order to prevent, or minimize, the extent and severity of childhood hunger and food insecurity. This purpose includes the ability to maintain public and policy-official awareness and understanding of the extent and severity of children's food insecurity. The purpose also includes the ability to document trends over time and the distribution by relevant household characteristics and geography. He said that this purpose of the monitoring leads to the following measurement and statistical tool requirements: credible, consistent, timely measurement; understandable to policy officials and the public; at the appropriate geographic level; publicly accessible; regularly interjected into policy and program consideration; prevalent, with some measurement error acceptable if random relative to reported categories; and implementable at a large scale.

He said the current measure meets most of these criteria. Nord said some level of measurement error in a monitoring tool can be tolerated as long as that error is not systematic across the key categories. Random error can matter more in certain research applications. He noted that Frongillo made the point that the purpose of the measure and its use may be different.

He pointed to a major finding (Nord and Hanson, 2012) that youth-reported personal food insecurity did not compare well to what their parents reported. Nord added that there was almost no statistically significant association between their reports. If both the parent and the youth said that the youth was food secure, then the average mean Healthy Eating Index for the youth was higher. If they both thought the youth was food insecure, the Healthy Eating Index was lower. If they were in that in-between category where they disagreed one way or the other—one thought the youth was food insecure, the other did not—their Healthy Eating Index was in the middle, but there was not clear priority of one over the other. Unfortunately, he said, the study did not provide insight into which type of report was most accurate.

He referred to a study (Nord, 2013a) that could shed more light on this issue. It incorporates confidential data from the National Center for Health Statistics to see to what extent adults appear to be shielding youth from food insecurity. Based on adult and youth self-reports in the same household, it shows considerably less food insecurity among the youths than among the adults. So a protection mechanism seems to be working to a considerable extent, though not as completely and strongly as would be ideal.

When the measurement is intended for screening, this different purpose requires that the measurement have high sensitivity, reasonable specificity, low burden, and suitability for the context. He noted screening should identify those individuals who need help, so high sensitivity is important. Reasonable specificity will avoid people who would not qualify requesting assistance. Low burden is important. Nord noted that Frongillo and others have talked about having only one or two items for screening. Finally, the context is important because it does not make sense to ask certain types of questions in certain screening situations.

Collection of food insecurity data to support research presents another set of purposes for the measures, as Frongillo laid out. The purpose of data for research is to identify the causes and consequences of food insecurity, gauge effectiveness of programs and policies, and assess quality and characteristics of the measure. Nord noted that measurement error, particularly systematic measurement error, matters greatly in these situations. With a high level of error, associations in general are underestimated and statistical significance may be elusive as a result. The measure must also be collectable from the population of interest.

He noted that researchers who have collected these data know the difficulty, for example, of obtaining institutional review board approval for surveys that ask children about their food security. He said the idea of using a school-based assessment is innovative, and maybe such an experiment would be useful.

Nord talked about current issues in measurement, some of which were discussed earlier at the workshop. First, how well do adults report food insecurity of younger children? Second, how can frequent or persistent food insecurity within a survey year be addressed? Nord stated that there has been an inconsistency in what is meant by "frequency," saying that he uses the term to mean "how often it happened"—for example, almost every month, some months, often, sometimes, etc. If frequency of occurrence is perfectly collinear with maximum severity during the year, then that proposed measure does not provide additional information, although it could shed light on what the level of severity means in terms of frequency. According to his research (Nord, 2013b), they are not quite perfectly collinear, but the patterns of lack of agreement seem to make some sense. A third current issue in measurement is improving the household-level measure in households with children. He identified several problems with the current measure. It overstates food insecurity and understates very low food security in households with children relative to those without children. The biases vary depending on the ages of the children. The U.S. Department of Agriculture is considering changing the methodology based on the work done following the National Research Council report (2006). The new procedures would use the child scale and

the adult scale, and, if either shows food insecurity, then the household would be categorized as food insecure. If either one of them shows very low food security then the household would be categorized as having very low food security.

Nord suggested that another useful research issue is the development of a better understanding of the causes of the differences between youth and adult-proxy reports of youth's food security.

STATEMENT OF ELIZABETH ADAMS

Adams described the Childhood Hunger Coalition[2] (CHC) to inform the context of her presentation about a pilot screening project for food insecurity. She concluded with general remarks.

Screening for Food Insecurity

The CHC is an interdisciplinary collaborative in Oregon that includes health care professionals, public health professionals, educators, and anti-hunger advocates. The coalition focuses on hunger as a public health concern, trying to eliminate problems that may come about because of food insecurity.

In 2008, the CHC conducted a survey of health care providers in Oregon to assess what is known about food insecurity. The survey revealed that providers understood a lot about food insecurity and its impact on children, but identified barriers that limited their ability to screen for it. Nearly 90 percent of health care providers said they would be willing to screen if they had guidance about what questions to ask and how to approach a family about such a sensitive issue. They also said that if they were to screen, they wanted a way to provide assistance to families.

Based on this study, CHC developed tools that health care providers could use and a model of how they could work with families to address food insecurity. These tools included a two-question screen (discussed by Black later in this session), as well as an intervention algorithm, an online continuing medical education course (http://www.ecampus.oregonstatedu/hunger), educational toolkits mailed to providers, a quarterly digest that reports on the current news and findings, and the CHC website. The health care providers were given a set of recommendations or actions that they could take to assess the impacts of food insecurity, as well as information about food assistance programs and other resources for food-insecure families.

Adams said that the Oregon Food Bank and Oregon Health and Sci-

[2]See http://www.childhoodhunger.org [August 28, 2013].

ence University are now carrying out a pilot study to assess how well these screening and intervention procedures are working. The pilot is being conducted in two pediatric clinic sites. It will quantify prevalence of food insecurity, as well as the use of available resources by food-insecure households before and after screening. The pilot will also assess the impact on families and on providers through qualitative studies to see how well they think the project is working. These quantitative and qualitative results will be used to develop best practices and "lessons learned." The CHC intends to share information with health care providers in other clinical settings and then with schools and Head Start programs, which have expressed interest in tested strategies for screening and intervention.

The screening and intervention protocol for the pilot project is as follows: Physicians screen as part of routine care, provide the parent of a child identified at risk with a link to resources, and follow up with the child per clinical judgment. Interventions are not standardized, but may be based on the CHC algorithm.

Families of children who were under 18 and who screened positive for the food insecurity screen between December 2012 and March 2013 of this year were eligible and recruited for the follow-on study. The study will follow the screened child for six months. In recruitment, the researcher reviewed the protocol and met with the parent to answer questions and obtain informed consent. Following the initial visit, the family was given an electronic medical record summary that provides information about all the resources for food insecurity available in the family's community. The summary provided to families included information about resources, such as the OregonHelps website; the Supplemental Nutrition Assistance Program; the Special Supplemental Nutrition Program for Women, Infants, and Children; child nutrition programs; emergency foods; gardening; gleaning; and farmers' markets.

Families in the study are asked to complete a baseline questionnaire that covers issues of health, household situation, and food security over the last six months. Then in six months, they complete a follow-up survey focusing on the first child that was seen. The follow-up survey includes changes in the child's health, changes in demographic characteristics, and changes in employment status over the last six months.

To date, 1,130 patients have been screened in the first four months of the study, and 143 have screened positive for food insecurity. Providers have supported the project and are surprised by the number of families screening positive. Families have appreciated the issue being raised.

Response to Workshop Presentations

Adams shifted into the role of discussant. Referring to Frongillo's overview of the child food insecurity screening and assessment tools, she said it is important to work together toward a better system for assessing and monitoring children's experiences of food insecurity. She sees a parent-child discrepancy in food insecurity reporting in a clinical setting, in which one may hear different things from the child than from the parent. She agreed with Frongillo's suggestion about coordinating the efforts of public health, medical, and other disciplines that focus on children.

Adams noted the importance of better understanding the experiences of food insecurity, and about triggers and outcomes in the food-insecure population and what they mean for assessment and monitoring. As mentioned earlier in the workshop, understanding the root causes of hunger among children is important, and information about the intergenerational patterns of food insecurity and what happens over the life course will help. These determinants and experiences can have implications for policy and program planning.

Finally, Adams said that community-based resource systems are very important to link the families to the programs that are available in their communities. Food stamps, for example, are an important part of the safety net for many reasons. But she thinks there may be even more resources that individual communities would be able to use. There are models for community-based organizing systems, such as the F.E.A.S.T. model (Food, Education, Agriculture Solutions Together) that comes out of Oregon. This approach is starting to be applied in other states and may be a good model to pursue.

Adams said many potential sources for data exist to address the gaps that have been identified. Existing surveillance systems collect data about food insecurity and health outcomes of parents and children, and these systems can be used or built upon to collect information that will inform strategies to address childhood hunger. Regional clinical health information networks also could be a source of data. There are many research opportunities to collaborate with existing programs like schools and Head Start. Adams suggested it is also important to integrate food security research with the emerging regional and national transformations currently under way in health care and education.

STATEMENT OF MAUREEN BLACK

Black first discussed the global measure of food insecurity, observing that more than 90 percent of the world's children live in low- and middle-income countries where food insecurity is an enormous concern. She then discussed the food insecurity screener and parental assessment

of body size, observing that Frongillo had talked about parents' ability to recognize food insecurity among their children, and closed by providing a few thoughts about future research topics.

Global Food Insecurity

Looking at household access to food and at children's growth from a global perspective, food insecurity is often grouped in three categories: availability of food, access to food, and utilization. There is evidence that more than 50 percent of child deaths worldwide are associated with malnutrition. Viewed from a chronic perspective, stunting occurs when a child's linear growth slows down, especially during the first two years of life. Wasting is acute undernutrition. Black said food insecurity in childhood relates to stunting and wasting. She described data from the MAL-ED[3] Study (Psaki et al., 2012), for which she is a consultant. The study is fielded in eight countries—Bangladesh, Brazil, India, Nepal, Pakistan, Peru, South Africa, and Tanzania—and includes 800 families, 100 per site, with children between 24 and 60 months of age.

Black showed a world map with global estimates of stunting in children under five years old, mostly in South Asia, sub-Saharan Africa, and Guatemala. With stunting, not only is a child's growth hampered, but also his/her development, academic performance, and work productivity, and it is a lifespan intergenerational concern. The study used a household food insecurity and access scale developed by Food and Nutrition Technical Assistance Program[4] of the U.S. Agency for International Development. The scale is similar to the household food security scale used in the United States, except that it reflects the past four weeks. There are nine "occurrence" questions; if the household endorses any one of those questions, then there is a frequency question. There is one question on anxiety, three questions on quality, and five questions on food intake and consequences. Sometimes the last three questions are used as a household hunger set. In terms of access to food, 37 percent of households reported no problem.

How does food insecurity relate to children's growth? She said that stunting was seen in all eight countries, with the overall rate of stunting in this sample about 43 percent, an enormous problem. There is not as large a proportion of children wasted as stunted. However, it is still a major problem in several countries.

Food insecurity is related to both stunting and wasting. In particular, there is a clear relationship with height for age. After adjusting for

[3]See http://www.fnih.org/work/key-initiatives/mal-ed [August 13, 2013].
[4]See http://www.fantaproject.org/ [August 13, 2013].

socioeconomic status (including water source, maternal education, and household density), she explained that food insecurity is associated with a definitive negative shift in the distribution of height for age (as indication of stunting). This is a consistent relationship across countries, even beyond the eight countries in this study. The study found no relationship with weight for height, the indicator of acute status of wasting. The study also found no relationship with hunger. From the study, some cultural aspects in responding to the questionnaire could be seen in the data from Nepal and Tanzania. In spite of that, food insecurity does relate to poor growth and height beyond socioeconomic status. Multiple factors relate to child growth, not only food insecurity.

Developing a Screener

Black discussed the process of developing the two-item screener for food insecurity (see Hagar et al., 2010), of which she is a coauthor, noting that this is the screener used by Adams and others in Oregon. The objective was to identify those questions that are most often endorsed by food-insecure families. She and her colleagues started with a screener used by Children's HealthWatch and chose the first two questions addressing anxiety and food intake. These questions are slight rewordings of the first two questions in the HFSSM.

If either one or both of the statements is endorsed, then the household is said to be at risk for food insecurity. They validated the results using data from more than 30,000 Children's HealthWatch participants (children under three years old from seven medical centers across the country). They found sensitivity of 97 percent, meaning the screener captured 97 percent of food-insecure families. The specificity was 83, meaning that 17 percent of food-secure families were incorrectly classified as insecure. However, these households were certainly still at risk for food insecurity.

Black compared the two-question screener with the full 18-item HFSSM in terms of odds for a number of negative outcomes: fair/poor child health, child hospitalizations, developmental risk, fair/poor caregiver health, and caregiver depressive symptoms. These odds were adjusted for site, race/ethnicity, U.S.-born versus immigrant mother, marital status, education, child gender, caregiver employment, breastfeeding, and low birthweight.

The screener odds ratios were slightly attenuated from using the entire scale, but were still significantly associated with children's health, hospitalizations, developmental risk, caregiver health, and caregiver depressive symptoms. As noted by Adams, this screener is being used in Oregon, and it enables health care providers to assess risk for food insecurity and immediately provide support to the families.

Black stated that in the United States, there is not the association with the children's height or weight that was obvious in the global perspective. Food insecurity is often invisible, and a way to identify it would be invaluable. More universal interventions might ensure that children have the nutrition and the food patterns that will help them grow, she commented.

Parental Assessment

An open question has been whether parents can/do give an accurate assessment of child food insecurity. Black provided an example of parental assessment in terms of reporting a child's size. Using pictures of four toddlers of different body sizes, she said parents express a preference for a large body size and concern about a smaller body size. Parents participate in the assessment with a sense of how they would like their children to look. This is not just true for parents of toddlers. If one asks adolescents and parents to judge both how the adolescent's body size is and how they would like it to be, the parent and adolescent agree if the adolescent is within the normal range. But if the adolescent is overweight, the parent thinks it is fine while the adolescent does not.

Direction of Future Research

Black ended with remarks about measuring food insecurity and how it fits within a larger perspective of children's early nutritional health and growth. While food insecurity may have an impact on whether children meet dietary guidelines, it is not the whole story. Fixing food insecurity does not necessarily fix helping children meet optimal dietary guidelines. Children do not do well in terms of feeding patterns—how they use food and when they eat—nor do they do well eating breakfast. Parents often use food to manage behavior and teach their children to do so. She stated that a larger perspective would be to determine what can be done to ensure children's early eating patterns and health, which goes beyond thinking about the problem of food insecurity and not having enough food.

OPEN DISCUSSION

Hilary Seligman (University of California, San Francisco) followed up on a statement by Frongillo concerning the lack of concordance between parent and child's reports of food insecurity. She said, as was discussed earlier at the workshop, the HFSSM questions can be viewed as a threat to the parent's identity as a good parent. Because being the parent of

a child who is not being adequately fed causes so much cognitive dissonance, researchers may not be able to accurately get to the bottom of food security experiences of the children using the parents as a proxy even in the context of a qualitative interview. At some level, parents might understand the food insecurity experiences of their children but are not able to communicate those experiences to an interviewer or perhaps even to themselves. Seligman suggested conceptualizing this as "lack of knowledge" because in the context of a really stressful experience—a parent unable to feed their child—it might help drive improvement in the questions.

Nord expressed general agreement but noted the result of comparing what a parent said about children and what the children said about themselves using National Health and Nutrition Examination Survey (NHANES) data was not strongly systematically biased one way or the other. The marginals were somewhat, but not significantly, different. A participant stated that when she was working with the NHANES data, she saw data for families that answered the household questions both in the home and at the Mobile Examination Center during the same time period. She recalled that a large number of families did not answer the same question in the same way within two weeks, suggesting a possible problem in getting people to answer the questions accurately. Nord replied that in the method that he and his coauthor used in their paper, they also compared what adults said about adults in the family, and what the sampled adult said about his or her personal food security in the Mobile Examination Center interview. He noted the agreement was a lot higher for single-adult households and even in multiple-adult households than it was between adult reports for youth and what the youth said.

Frongillo stated that the issue is not just whether parents are knowledgeable but whether, at the moment of the interview, they will express their views. He said this willingness depends on how they are feeling at the moment. He said that is why he tried to emphasize the importance of the context of roles and shared beliefs about those roles.

Pérez-Escamilla stated that Mexico has now included the HFSSM in the Mexican equivalent of NHANES. The data have been released for 2011 and 2012 and show a very strong relationship between household food insecurity and stunting, but not wasting, similar to the results discussed by Black. He said he is struggling with these results about why a measure of food insecurity in the past three months or four months would be causally predictive of stunting and not wasting.

Black responded that it could depend on the age of the child and whether one takes seasonality into the perspective. Food insecurity in developing countries is more severe and more chronic than in the United States, and the children are undoubtedly micronutrient deficient. The

rates of wasting are much lower than the rates of stunting as well. She said a grim possibility is that the most severely wasted children are dead by the time the survey is taken. Another participant agreed, saying that these deaths probably happened early in life and that 50 percent of the deaths of children are associated with malnutrition.

Another participant commented on the issue of measurement for adults versus children, saying that when doing dietary information intake it would be considered ludicrous to expect parents to know what a teenager ate. As a result, some surveys, including NHANES, ask the teenager directly. The speaker asked if something similar could take place for the measurement of food security. The speaker also asked whether work has been done to develop the appropriate wording for requesting the information from teenagers. Frongillo said he finds that school-aged children can answer accurately, with occasional failures. For the most part, children as young as age six or seven can answer the questions, but whether that would work in the context of NHANES is a different challenge. While children are able to report experiences of pain and other things, he said middle school children are most likely to hide information. Older children do not care what they say, and younger children will talk about whatever they are thinking and whatever has happened. Frongillo said it would be possible to do a direct assessment of children, and he and his collaborators have been doing so for about a year and a half in a school district's elementary and middle schools. They are trying to develop a model from those observations, augmented by reports from teachers and others.

10

Wrap-Up

James Ziliak is the founding director of the Center for Poverty Research, and Carol Martin is the Gatton Endowed Chair in Microeconomics in the Department of Economics at the University of Kentucky. Ziliak was the chair of the steering committee that developed the program for the workshop, and provided closing remarks, followed by open discussion.

CLOSING REMARKS

Ziliak stated his purpose was to pull together recurring themes. He clarified that he was speaking for himself and not on behalf of the National Academies or the other members of the steering committee.

Ziliak described the charge to the steering committee and the key objectives of the workshop, based on the Healthy, Hunger-Free Kids Act of 2010 (see Chapter 1). He suggested that there are several fundamental questions. First, how adequate is the current state of knowledge? Second, do substantial knowledge gaps remain? Third, do data exist to support research to fill any remaining substantial knowledge gaps, and if not can such data been generated? Fourth, how great are the research opportunities in this area? It was with these questions in mind that Ziliak and others on the steering committee put together the workshop.

Ziliak said that in the area of identifying the determinants of hunger, the workshop covered much of the existing knowledge and issues, including the geographic and environmental factors associated with the risk of childhood hunger, the role of the social safety net (especially federal food

assistance programs), and the extent to which there are gaps in program coverage or inability to adequately access those programs. He said that one fundamental question posed by Allard (see Chapter 4) is outstanding: how is *adequate* access defined? This question remains as a challenge to be answered.

Regarding the consequences of childhood hunger, he noted the workshop participants discussed the public health and medical consequences in some depth. Much attention was focused on measurement and its implications for how child development, well-being, and food insecurity are understood. Ziliak asked about the adequacy of the current state of knowledge, noting tremendous progress over the last 15 years since the food security module was introduced into the Current Population Survey (CPS). The collection of these data has been a tremendous resource for research to move forward. He said that researchers have learned a lot about what is affecting low-income and disadvantaged populations in this country through the food insecurity measures and its links to child development and other outcomes. Even though the data have some issues and gaps, Ziliak said he believes that important research on child hunger has progressed because of the available data. Its strengths and importance can be acknowledged, along with a discussion about opportunities for improvement.

Ziliak noted recurrent themes expressed by several speakers concerning the knowledge gaps that remain. He said that, as others observed during the workshop, measurement matters, both how food insecurity is conceived and how the questions are asked. He said that Korenman raised a provocative issue about the screener, the sequence and issues that are associated with this screen, and the questions asked in the implementation of the food security supplement (see Chapter 3). Ziliak said that he and several colleagues have been examining food insecurity as measured in the Panel Study of Income Dynamics (PSID), using data collected in 1999, 2001, and 2003. The rates of food insecurity measured in that survey are about half of those measured on the CPS, and the question is why. He said that he and his colleagues will review measurement issues based on Korenman's comments.

Ziliak said workshop presenters provided valuable information about the scale to measure food insecurity. He noted a recurring debate about whether narrowly measuring food insecurity or including marginal food insecurity is most important, which the advocacy community has also taken up. Ziliak reported that the Meals on Wheels Association of America and the National Foundation to End Senior Hunger, for which he and Gundersen have done work, prefer the marginal food insecurity measure, whereas Feeding America prefers the food insecurity measure. The best measure, he noted, could be different for different purposes. For

example, Meals on Wheels focuses on seniors, and Feeding America worries about the entire age distribution, while other advocacy groups focus on children. He suggested that the research community might provide better guidance to the advocacy community as to which measure seems to capture which types of phenomenon and which ones seem to be the most pressing.

Another theme discussed throughout the workshop, he noted, is the shortage of longitudinal data. He referred to the debate about whether or not causal pathways can be identified with cross-sectional data. Ziliak said he agrees with Gundersen that there are some abilities to address causal pathways with cross-sectional data, but many important questions can better be addressed with longitudinal data, such as issues of duration, transitions on and off, and the evolution of health status over time. The health profession, and health economists in particular, has created a literature about the gradient of health status, not only with the life cycle but also across the income spectrum. There is an interaction between age and income over the life cycle, and longitudinal data allow for a look at those interactions. He said that Chilton presented provocative ideas about multigeneration links between hardships in childhood and food insecurity.

Ziliak described the currently available data to address some of these longitudinal issues. He noted the Early Childhood Longitudinal Study-Birth (ECLS-B) and -Kindergarten (ECLS-K) Cohorts support answers to some limited questions but those data are limited to specific cohorts of children. The National Health and Nutrition Examination Survey is not a panel, and the CPS allows for the matching of at most one-half of the sample for two years. He said that one could do repeated cohorts, but that requires more assumptions than a true panel. The PSID is a true panel, and he said he has used the PSID data for 25 years,[1] which he said has come to life for a new generation of research. The dataset follows families since 1968, their children, and their grandchildren. Starting in 1999, the PSID began collecting food security information as well as comprehensive information on health, consumption, and assets. With the PSID, a researcher has data from a true panel, with food security information as well as additional depth of information on consumption, health, and wealth.

The information on food insecurity is only available in three waves (1999, 2001, and 2003). The PSID is fielded every two years. A 10-year-old in 1999 will be 26 in 2015, and he called this an opportunity to add the food security scale back to the PSID to allow researchers to do analysis of

[1]Ziliak disclosed that he is on the Board of Overseers of the PSID, which is an unpaid position.

first intergenerational transmission of food security. He said researchers could look at the consequences of being food insecure as a child, as a young adult, and as a 25- to 35-year-old in 2015 (as suggested by Chilton in Chapter 5). That is just one example of potential research.

He said that the PSID has a comparatively small sample and statistical power is an ongoing challenge if the intent is to drill down to the concept of very low food insecurity. The only dataset Ziliak said he is aware of with an adequate sample size, offered on an ongoing basis, is the American Community Survey (ACS). The ACS funding is continually challenged in Congress, and he said the Census Bureau is careful about adding more items. He suggested that there may be an opportunity to propose the addition of the two-item screener discussed in Chapter 9 rather than the full 18 items, saying that if policy makers could find the financial will to add a food insecurity screener to the ACS (covering three million U.S. persons annually), the issue of statistical power for many research purposes would be addressed.

The analysis of existing data may illuminate important data items that do not exist today. Identifying and collecting new data is an area where demonstration projects could be useful. Ziliak said workshop funders may like to understand how demonstration projects could help to assess upcoming proposals and identify areas where further research is warranted. Ziliak noted themes expressed by some workshop participants included the issue of geographic differences in the cost of living, and he asked whether a demonstration project could examine variable Supplemental Nutrition Assistance Program (SNAP) benefits based on this factor. He referred to Shore-Sheppard's work, described in Chapter 7, which includes a labor-intensive nonexperimental assessment of whether an extra dollar of SNAP benefits affects food insecurity. He also noted that the pilot study of the Summer Electronic Benefits Transfer for Children documented in Collins et al. (2012) indicates that additional SNAP benefits matter. Ziliak suggested this area might result in other excellent demonstration projects.

He said that population groups are important to study, such as immigrant families and the challenges and hardships they face. Another important population group, he said, is individuals with physical or mental disabilities, whether the parent in the household, the child, or both.

Ziliak acknowledged tremendous momentum on the research spectrum of childhood hunger, and suggested keeping that momentum moving, perhaps through a system of centers of excellence. Ziliak noted that the assistant secretary for planning and evaluation in the U.S. Department of Health and Human Services has been running poverty research centers since the 1960s, providing one existing model, and the population research centers of the National Institutes of Child Health and Human

Development provide another example. The population and poverty centers are slightly different from the Research Innovation and Development Grants in Economics Program in that the former have a very strong component of mentoring the next generations of scholars. Ziliak noted Diane Schanzenbach (see Chapter 8) mentioned the importance of funding graduate students in her presentation, which he said he thinks is a fundamental component of a center.

Ziliak suggested creating a network of scholars, bringing together the human capital that attended this workshop, and conducting workshops on a more regular basis to keep a community of scholars connected with one another—bringing together ideas from the multiple disciplines of medicine, public health, economics, sociology, social work, nutrition, and others.

Ziliak made two additional suggestions. He said he and Gundersen have evaluated many proposals in the last several years, and one challenge is that not all the surveys use the 18-item scale. If they use a shortened scale, different surveys may use different subsets of questions. One suggestion would be to establish funds to create a questionnaire bank. Researchers could apply to use those questions.

Second, he said a funding mechanism that would allow new questions to be added to existing surveys would be important. He suggested that if researchers identify a common set of questions and develop a mechanism to help fund that subset on different surveys, even a competitive program might provide another mechanism to keep up the momentum and branch out to important new sources of data.

OPEN DISCUSSION

David Smallwood (Economic Research Service) stated that he was speaking as a program manager and funder of research, rather than a researcher. From that perspective, he stressed the importance of more data and models with a big emphasis on data. Research centers are great, he said, but data are essential for research to move forward. He stated that, for example, most of the research presented at this workshop was based on data that the U.S. Department of Agriculture (USDA) had the foresight to fund years ago, including the measure in the CPS, PSID, and ECLS-B and ECLS-K. In looking to the future, new kinds of data will be necessary to foster new insights. Otherwise, he asserted, researchers will be faced with diminishing returns from current data, which are themselves quite limited for studying very low food insecurity in children. For example, he referred to the fact that only 127 households with very low levels of food insecurity of children were identified in the most recent year of the CPS. Are researchers going to do case studies on those? The CPS data

cost about $600,000 a year to collect, which he said is very reasonable because it is an add-on module to the CPS survey. He noted that if longitudinal data are important, USDA could add the food security module to an additional survey. However, to find enough observations to examine very low food security over time in such a survey might take more money than USDA has available. He suggested thinking outside the box on data, especially using existing monitoring systems, such as the school system monitoring approach that Frongillo mentioned. He noted certain biological markers could inform different data collections. He referred back to the modeling idea and the iceberg metaphor that Coleman-Jensen used (Chapter 3): Rather than just looking at the 127 households in the CPS at the tip of the iceberg, researchers could use data from all households to model the entire iceberg and then extrapolate from the base to the tip.

Ziliak responded by encouraging greater linking of administrative data to currently existing data. He noted that in looking at SNAP effects on food insecurity through survey data, there are selection problems or reverse causation. There is also measurement error from underreporting. The linking of administrative data to existing datasets can solve some of those problems, although good mechanics are needed to deal with reverse causation.

Mandy Murphy (University of California, Berkeley) commented that the workshop illustrated the problem of food insecurity among children, but researchers seem to be unclear about how to best define the problem. If the community tries to completely and perfectly understand and define the problem by improving measurements, methodology, and understanding the determinants, she said, the problem probably will have shifted by the time it is defined. Instead, she invited and challenged participants to focus on innovative solutions by including the people to be helped as an integral part of the conversation and ultimately the solution. Using the community resources in place, creating new solutions, and looking at how to improve the federal assistance food programs would be ideal, she said. Ziliak noted at a time of financial and fiscal retraction, evidence-based policy development is key. He reiterated the need to work toward creative solutions to the problem.

Jay Hirschman (Food and Nutrition Service) thanked the speakers and the National Academies for the workshop. He concurred that it will be important to keep the network alive and interacting, recognizing the unique opportunity of research funding provided under the Healthy, Hunger-Free Kids Act of 2010, Section 141. He also called attention to language in Section 141 that authorizes demonstration projects with truly rigorous evaluation to provide the knowledge and results of long-term lasting value. He noted that USDA wants to ensure that research and demonstration projects are coupled to provide the best, well-planned ideas.

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Appendix A

Agenda

Workshop on Research Gaps—
Causes and Consequences of Child Food Insecurity and Hunger

Committee on National Statistics
Food and Nutrition Board

April 8–9, 2013
National Academy of Sciences Main Building, Room 125
2101 Constitution Ave., NW, Washington, DC

This workshop will provide a forum for expert discussion of research gaps and opportunities to advance understanding of the causes and consequences of child hunger and food insecurity in the United States. The workshop is requested by the Economic Research Service and the Food and Nutrition Service of the U.S. Department of Agriculture, which have a mandate from Section 141 of the Healthy, Hunger-Free Kids Act of 2010 to pursue a research program on this important topic.

Monday, April 8

8:30–9:00 a.m. **Introductions**
Constance Citro, Committee on National Statistics, National Academy of Sciences
Mary Bohman, Economic Research Service, U.S. Department of Agriculture
Steven Carlson, Food and Nutrition Service, U.S. Department of Agriculture
James Ziliak, University of Kentucky

9:00–10:15 **Session 1: Individual and Household Determinants of Child Food Insecurity and Hunger**

Moderator: Susan Parish, Brandeis University

Speaker: Craig Gundersen, University of Illinois at Urbana-Champaign

Discussants:
Sanders Korenman, Baruch College, City University of New York
Alisha Coleman-Jensen, Economic Research Service, U.S. Department of Agriculture

10:15–10:30 **Break**

10:30–11:45 **Session 2: Contextual Factors Linked to Child Food Insecurity and Hunger**

Moderator: Susan Parish, Brandeis University

Speaker: Scott Allard, University of Chicago

Discussants:
Lucia Kaiser, University of California, Davis
Bruce Weber, Oregon State University

11:45 a.m.–12:45 p.m. **Lunch**

12:45–2:00	**Session 3: Individual and Family Coping Responses to Hunger**
	Moderator: Sonya Jones, University of South Carolina
	Speaker 1: Mariana Chilton, Drexel University
	Speaker 2: Kathryn Edin, Harvard University
	Discussant: Colleen Heflin, University of Missouri
2:00–2:15	**Break**
2:15–3:15	**Session 4: Community Responses to Hunger**
	Moderator: Sonya Jones, University of South Carolina
	Speaker: Katherine Alaimo, Michigan State University
	Discussant: Joel Berg, New York City Coalition Against Hunger
3:15–3:30	**Break**
3:30–4:45	**Session 5: Public Policy Responses to Hunger**
	Moderator: Judith Bartfeld, University of Wisconsin–Madison
	Speaker: David Ribar, University of North Carolina at Greensboro
	Discussants: Lara Shore-Sheppard, Williams College James Weill, Food Research and Action Center

Tuesday, April 9

8:30–9:15 a.m. **Session 6: Health and Developmental Correlates of Child Food Insecurity from Pregnancy to Adolescence, Part 1**

Moderator: Deborah A. Frank, Boston University

Speaker 1: Barbara Laraia, University of California, Berkeley

Speaker 2: Rafael Pérez-Escamilla, Yale School of Public Health

Discussant: Alison Jacknowitz, American University

9:15–9:30 **Break**

9:30–10:45 **Session 7: Health and Developmental Correlates of Child Food Insecurity from Pregnancy to Adolescence, Part 2**

Moderator: Deborah A. Frank, Boston University

Speaker: John Cook, Boston University

Discussants:
Diane Whitmore Schanzenbach, Northwestern University
Hilary Seligman, University of California, San Francisco

10:45–11:00 **Break**

11:00 a.m.–12:30 p.m.	**Session 8: Measurement and Surveillance of Child Food Insecurity and Hunger**
	Moderator: Judith Bartfeld, University of Wisconsin–Madison
	Speaker 1: Ed Frongillo, University of South Carolina
	Discussant 1: Mark Nord, Economic Research Service, U.S. Department of Agriculture
	Speaker 2: Elizabeth Adams, Oregon Health Sciences University
	Discussant 2: Maureen Black, University of Maryland, Baltimore
12:30–1:00	**Wrap-Up**
	Speaker: James Ziliak, University of Kentucky
	Open Discussion

Appendix B

Registered Participants

Workshop on Research Gaps—
Causes and Consequences of Child Food Insecurity and Hunger

Elizabeth Adams, Oregon Health & Science University
Katherine Alaimo, Michigan State University
Scott Allard, University of Chicago
Andrea Anater, RTI International
Judith Bartfeld, University of Wisconsin–Madison
Sapna Batheja, American Association of School Administrators
Joel Berg, New York City Coalition Against Hunger
Danielle Berman, Food and Nutrition Service, U.S. Department of Agriculture
Maureen Black, University of Maryland School of Medicine
Mary Bohman, Economic Research Service, U.S. Department of Agriculture
Tiffany Boiman, Institute for Women
Ed Bolen, Center on Budget and Policy Priorities
Christine Borger, Westat
Amanda Breen, Drexel University School of Public Health
Ronette Briefel, Mathematica Policy Research
Steven Carlson, Food and Nutrition Service, U.S. Department of Agriculture
Mariana Chilton, Drexel University School of Public Health
Alisha Coleman-Jensen, Economic Research Service, U.S. Department of Agriculture

Leah Connor, Cornell University
John Cook, Boston University School of Medicine
Carrie Draper, University of South Carolina
Nicole Dreisbach, Grantmakers in Health
Kathy Edin, Harvard University
Eliza Fishbein, University of South Carolina
Mary Kay Fox, Mathematica Policy Research
Deborah Frank, Boston University School of Medicine
Edward Frongillo, University of South Carolina
Gloria Gonzalez, Food and Nutrition Service, U.S. Department of Agriculture
J.K. Granberg-Michaelson, Alliance to End Hunger
Craig Gundersen, University of Illinois at Urbana-Champaign
Karla Hanson, Cornell University
Heather Hartine-Grafton, Food Research and Action Center
Colleen Heflin, University of Missouri
Jay Hirschman, Office of Research and Analysis, Food and Nutrition Service, U.S. Department of Agriculture
Hazel Hiza, Center for Nutrition Policy and Promotion, U.S. Department of Agriculture
Kristen Hyatt, Office of Management and Budget
Eileen Hyde, Feeding America
Allison Jacknowitz, American University
Sonya Jones, University of South Carolina
Lucia Kaiser, University of California, Davis
Jacob Kaplan, Office of Management and Budget
Sharon Kirkpatrick, National Cancer Institute
Sanders Korenman, Baruch College, City University of New York
Barbara Krimgold, Center for Advancing Health
Barbara Laraia, University of California, Berkeley
Kathryn Law, Food and Nutrition Service, U.S. Department of Agriculture
Cindy Leung, University of California
Angela Liese, University of South Carolina
Suzanne McNutt, Westat
Erica Meade, U.S. Department of Health and Human Services
Greg Mills, Urban Institute
Taryn Morrissey, American University
Mandy Murphy, University of California, Berkeley
Mark Nord, Economic Research Service, U.S. Department of Agriculture
Susan Parish, Brandeis University
Jennifer Park, Office of Management and Budget
Sherita Parks, Witness to Hunger
Lynn Parker, Institute of Medicine

Rafael Pérez-Escamilla, Yale School of Public Health
Todd Post, Bread for the World Institute
Sasha Pudelski, American Association of School Administrators
David Ribar, University of North Carolina at Greensboro
Dotti Rosenbaum, Center on Budget and Policy Priorities
Beatriz Sanchez, Center for Hunger-Free Communities
Jasbir Sangha, National Center for Health Statistics, Centers for Disease Control and Prevention
Diane Schanzenbach, Northwestern University
Hilary Seligman, University of California, San Francisco
Lara Shore-Sheppard, Williams College
Jeff Simms, U.S. Department of Health and Human Services
Anita Singh, Food and Nutrition Service, U.S. Department of Agriculture
David Smallwood, Economic Research Service, U.S. Department of Agriculture
Joanne Spahn, Center for Nutrition Policy and Promotion, U.S. Department of Agriculture
Jay Variyam, Economic Research Service, U.S. Department of Agriculture
Bruce Weber, Oregon State University
James Weill, Food Research and Action Center
Sarah Zapolsky, Food and Nutrition Service, U.S. Department of Agriculture
James Ziliak, University of Kentucky

COMMITTEE ON NATIONAL STATISTICS

The Committee on National Statistics was established in 1972 at the National Academies to improve the statistical methods and information on which public policy decisions are based. The committee carries out studies, workshops, and other activities to foster better measures and fuller understanding of the economy, the environment, public health, crime, education, immigration, poverty, welfare, and other public policy issues. It also evaluates ongoing statistical programs and tracks the statistical policy and coordinating activities of the federal government, serving a unique role at the intersection of statistics and public policy. The committee's work is supported by a consortium of federal agencies through a National Science Foundation grant.