

Session IV: Toward a Research Agenda: Establishing a Framework

Christopher S. Jencks

The food security measure under discussion at this conference is an impressive technical achievement. Five or 10 years ago, I would have doubted the feasibility of constructing a one-dimensional food security measure of this kind.

The questions in the CPS food security survey constitute something like a Guttman scale or, in the language of the summary report, *Household Food Security in the United States in 1995*,¹¹ “they more or less follow a modal pattern.” That finding is important and useful, making the task before us easier. But if these items perfectly followed a modal pattern—if they were exactly a Guttman scale—then we would not need the full methodology of the food security scale. If the data perfectly fit the Guttman-scale model, then we could easily define and measure levels of food security by identifying what percentages of people answered the questions on each side of the scale’s thresholds. We would not need to have anything more in our scale.

Simplicity would be a big advantage. Everybody would intuitively understand exactly what these categories meant. For instance, consider a household with no children. The question at the threshold of the severe hunger category asks, “Was there an adult in the household who went hungry for a whole day?” If the scale fit the Guttman model perfectly, then the number of households in which an adult went hungry for a whole day would exactly equal the number of households classified as suffering from severe hunger by the food security scale. But, of course, that is not exactly what happens.

The report shows on page 48 that among households with no elderly adults and no children, 1.2

percent are classified as having severe hunger. The report’s appendix B-1 shows 2.1 percent of the same set of households contain an adult who went hungry for a day. Therefore, the number of households that answered yes to the adult hungry question—households that in some sense appear on the threshold of severe hunger—is almost twice the number of households actually classified as having severe hunger by the food security scale. The difference arises because some people who answered yes to the hunger question did not answer yes to some previous question, so they fell below the scale’s threshold for hunger. There is nothing wrong with the logic by which this happens, but there is a problem nonetheless.

Suppose an advocacy group asks why it is that 2.1 percent of households say an adult was hungry for a whole day, but that only a little over half of those households were classified as having severe hunger. An average person might not be persuaded by the answer that the household was not really hungry because it did not answer some less stringent question about hunger positively. The intricacies of Rasch modeling are not easy to convey. Nor is it obvious that the underlying logic of the model really applies to hunger. Hunger is not an indicator of a latent trait called “food security.” Hunger is hunger. It can have many causes, but that is another issue.

I suggest that we consider whether there are more transparent ways of making this information available. There is, obviously, always a trade-off between transparency and precision in measuring almost everything, but it would be productive to investigate whether there are simpler and clearer means of conveying the information captured by this scale. For example, the rule for classifying a household to the severe hunger category could be stated in terms of response patterns, that is, a requirement that the household answer positively two out of three questions near the current threshold. Does this requirement of two-out-of-three positives capture less information than the current scale score? If it does, then so be it. But if it does not, there is a huge advantage to pub-

¹¹Hamilton, William L., John T. Cook, William W. Thompson, Lawrence F. Buron, Edward A. Frongillo, Jr., Christine M. Olson, and Cheryl A. Wehler. *Household Food Security in the United States in 1995: Summary Report of the Food Security Measurement Project*. U.S. Department of Agriculture, Food and Consumer Service (currently the Food and Nutrition Service), Office of Analysis and Evaluation. Alexandria, VA. 1997.

lishing information in a form that the average person can understand.

The methodology employed in developing the scale has three potential advantages. First, it can handle missing data, which is always a desirable property. However, there are almost no missing data, so this potential benefit solves a nonproblem.

A second problem that the scale solves is that it can rank households with and without children on a single scale. However, I believe it is a bad idea to combine those two groups. First, as a political matter, people think about these problems totally differently, so numbers ought to be produced separately for children and adults. Second, for households with children, it may be better to use the questions that focus on children, for reasons described in Mark Nord's paper presented earlier at this conference.

The third argument for the scale is that, in principle, it allows you to fix bad questions. I find that point much more compelling than the first two. That property is a big advantage of this method.

Now let me turn to a different issue, the length of time about which the question inquires. Earlier, I worried about advocates using the hungry adult question to argue that there is more hunger in America than the food security scale measures. But skeptics can also argue that there is less hunger than the scale implies. The length of the window of a survey has a huge effect on how many people turn out to suffer from a problem.

When the window is changed from a year to a month, my rough estimate from the Abt report is that prevalence falls by about half. If you cut the window to a day, it falls even more. Of the people who reported any hunger problem in the past month, between half and two-thirds reported more than 5 days of hunger. (I must stress those numbers are very imprecise.) The point is that the numbers can be either big or small, depending on what point you want to make and whether a day, a month, or a year is chosen as the window.

I do not offhand see any strong rationale for saying one of those windows is correct politically, nutritionally, or any other way, and that some other window is incorrect. It is certainly true that the 1-year estimates have much nicer statistical properties. However, statistical properties are not a sufficient argument in favor of a method. Using exclusively statistical arguments to select a question is like looking for the keys under the lamppost because that is where the light is. I do not know how you choose between these windows. My instinct is to report a range here to provide full information. It is problematic to report only the 1-year estimates and ignore the fact that most people who have a problem in a year did not have it last month, much less yesterday.

The results do have a troubling feature. As far as I could tell, the annual and monthly rates do not behave the way I intuitively expected. In the data, there are half as many people who had a problem last month as had it last year. I would have expected the people who had a problem last month to be a poorer subset of those who had the problem in the past year, because they would have had the problem in a larger percentage of months. But the 30-day estimates looked to me like those who had the problem in the past year.

My final issue is one that Susan Mayer raised at the conference's luncheon address. What can we tell from all this about the causes of food insecurity and hunger? The question is particularly critical if we want to think about the policy uses of this scale.

When examining the proportions of households with different income levels in the various hunger categories, ranging from food secure to severe hunger, we saw this morning that the results from the scale make sense. Poor people are at higher risk than rich people. On the other hand, it has been mentioned but not particularly stressed that even in the lowest income category, that is, people with incomes less than half the poverty line, the majority report no food insecurity.

rity. A metaphor for this result is the half-full glass. To understand this process, we need to devote a lot more attention to the majority of low-resource families not reporting any food insecurity, and compare them with similar food insecure families.

One could hypothesize that hunger is at bottom purely a case of limited resources. The cause-and-effect chain is that income affects food expenditures and food expenditures affect food insecurity. This reasoning suggests that there should be a stronger relationship between what people spend on food and food insecurity than between income and food insecurity. But in fact the statistical results are exactly the opposite. The correlation between income and food security is 0.32, so income explains about 10 percent of the variance in food security, leaving 90 percent unexplained. The income measure is not ideal, and we know 30 percent of the variance in the food security measure is noise. So perhaps 20 percent instead of 10 percent of the variance in food security is related to income. Using grocery budgets instead of income, the reported correlations are down near 0.1.

These results mean that food insecurity is not confined to people who normally spend very little on food. At one level, this makes perfectly good sense. Other people have said that food insecurity results from some kind of deviation from usual weekly spending. Deviations occur when a household's patterns of life are disrupted in some way, and the household has no income to deal with the change in the situation. The data certainly suggest that substantial numbers of households report food security problems, even though they have quite high levels of grocery spending per capita, say \$40 per person, which comes close to the grocery expenditure of some people in this room.

These results invite a question about the kinds of instability or unpredictability or management failures that these households experience. Several papers talked about the possibility of a sudden drop in income. The evidence is fairly strong that income drops do play a role. It also appears that food spending adjusts much more

quickly to current income than almost any other form of major expenditure. To use an extreme example to illustrate the process, candy bars probably adjust even faster than total food spending to changes in current income. In contrast to relatively fixed, slowly adjusting items such as housing and automobiles, people run out of food at the end of the month. The simple statement that people run out of food at the end of the month means that those who run out are adjusting their grocery expenditure not to their monthly budget but to their weekly or daily budget.

The issue of instability and unpredictability relates to demographic results. Holding income constant, older households are less likely to be food insecure or, indeed, to suffer from any given material hardship that I have ever examined. Older people regulate their affairs in much more predictable ways than do younger people. Everybody in this room who has a child will know that this is the case. My teenage son at college has an ample budget and has eaten four meals on some days, but then on others has skipped meals—just like everybody he knows at college. We think a responsible parent should plan ahead and budget until the end of the month. But that does not always happen. Lots of us had shorter time horizons at 25 than at 60.

Let me summarize. First, we need to consider whether there are ways to distill more transparent measures out of this set of questions. Second, we need to remember the older traditions of thinking about nutrition, traditions which placed somewhat less emphasis on pure economic constraints and somewhat more emphasis on what people know, how they plan, and why they make the choices they do. Work done on this project and the work that I did, have neglected these other factors. We need to think about not just the 10 percent of the food security variance explained by income but also the 90 percent that is not.

Angus S. Deaton

Like Sandy Jencks, I was not previously familiar with food security. And although there are clearly a lot of economists here, the topic is unfamiliar to many mainstream economists. I also want to

repeat Sandy in saying that I see an astonishingly impressive research program. In the work that I do, I will be thinking about these methodologies on difficult topics like hunger and poverty.

Many speakers said today that there has been real progress in deriving feasible, useful, and relatively cheap-to-collect measures of food insecurity and, possibly, of hunger. From an outside perspective, though, typical economists—and I suspect that I am here to represent them—might be skeptical about or possibly uninterested in these measures, and it is worth trying to understand why this might be so.

The first issue is welfare measurement.

Economists do measure household welfare at a general level and think about poverty and deprivation. But they do not usually look directly at hunger. Instead, economists typically think of poverty in terms of low income or low expenditure. The official U.S. poverty guidelines, even with their many problems, work from this broad idea of resources, and this would be the typical approach among economists. They would not focus on particular areas of deprivation such as food, housing, or clothing. Poverty is low income or low expenditure, not a low intake of food *per se*, or being poorly housed or poorly clothed.

At lunch, Susan noted that components of welfare can be misleading because different people have different choices, and these choices might be driven by relative prices or just by preferences. Many people in India fast regularly, which economists would classify as having to do with preferences. The food security questions do stipulate that the household's problems are due to a lack of money, and so they seem to exclude fasting as a motive. On the other hand, someone who is fasting might still answer the hunger questions affirmatively, that is, that the food intake reduction is due to the lack of money. After all, not fasting certainly has financial implications.

When economists move away from their traditional, money-based measures of living standards, they tend to look not at hunger but at

broader measures of health status—for example, using mortality data for populations—or at education for populations or individuals. Of course, food adequacy and nutrition contribute toward general health status, and for that reason, the food security and hunger measures would be of interest.

Even so, ideas about hunger are closely woven into most people's notion about poverty. The official U.S. poverty line was originally derived from a food standard, or at least that is the rhetoric if not the reality. Hunger and poverty seem inextricably tied to one another—at least at first glance. But even though an ideal measure of poverty can hardly be based on food alone, the language about food and hunger is part of poverty measurement, and that language is tremendously important in the United States and around the world. When people are asked about poverty, they start thinking about hunger, and I am not sure we can or should break that connection. The difficulty of separating hunger and poverty precludes easily declaring some measures to be measures of hunger and other measures to be measures of poverty.

There are a couple of areas of economic analysis where hunger plays an important role. Nobel Laureate Bob Fogel argues European economic development was hampered for hundreds of years by food inadequacy. Until roughly the time of the Industrial Revolution, Europe suffered from a nutritional trap in which people could not work hard due to limited food and they had limited food because they could not work hard. Partha Dasgupta and others argue that this same vicious circle of poverty is the main explanation for deprivation in poor countries today.

The main counterargument to this theory is a point that no one has talked about here today. Food is cheap. Even in India, food is incredibly cheap—at least in normal times. In the rural areas of Maharashtra 20 years ago, when incomes were a good deal lower than they are now, it was possible for 5 percent of the daily wage to buy 2,000 calories of the standard basic food that Indian day-wage laborers eat on a normal basis. Although such foods are not particularly appetiz-

ing, neither are they some horrible nutritional paste. If there are situations of a nutritional trap, in terms of calories, they are extraordinarily easy traps to get out of. This reasoning makes the Fogel story unconvincing to many people. Similarly, many development economists tend to think that nutrition is not the crucial part of the underdevelopment story or of poverty.

For the United States, is poverty really the root of food insecurity? The food security reports and today's discussions all emphasize that people are hungry because they do not have enough money, that is, that a lack of resources is a crucial part of these food security and hunger measures. But the relationships between consumption and socio-economic status, or income, are complex. A related example is smoking, which conceivably could be a larger health problem for children and mothers than is nutrition. Smoking is associated with lower socioeconomic status even though it costs money, and despite evidence that repeatedly shows the vast majority of smokers understand the risks. They may even overstate the risk of smoking. Some people think that smoking is a coping mechanism for low-income people. At any rate, might it be that other behaviors including perhaps poor food choices relate to low socioeconomic status in a manner similar to smoking? What are the ultimate determinants? Income, education, or something else? Clearly, food insecurity is a complicated matter that might not be due just to a lack of money. Smoking is a harmful behavior that people do, in spite of low income. I would be interested to know the cross-correlations between smoking behavior and the food insecurity numbers.

In 1983, the regular National Sample Survey in India asked 123,000 households whether all members of the household got two square meals a day throughout the year. The question is a simpler version of the food security questions. A household answered (a) "Yes," (b) "in some months of the year," or (c) "No, not in any months." A household that answered "yes" can be thought of as food secure. A household answering "in some months of the year" can be interpreted as food insecure. A household that answered "No, not in any months" would have a

chronic shortage of food, in contrast to the seasonal problems experienced by households answering "in some months of the year."

Only 2.4 percent of rural and 0.8 percent of urban households answered "No, not in any months." If we somewhat impertinently adapt our categories to this Indian context and call this group "food insecurity with hunger," then the Indian and American numbers are extremely close. In addition, 18.4 percent of rural households and 6.3 percent of urban households replied either "In some months of the year" or "No, not in any months." These broader numbers are somewhat different for the United States and India, but not vastly dissimilar. Yet in India, 50 percent of the rural households and 58 percent of the urban households were below 2,700 calories a day. Although the calculations are based on expenditure bundles rather than nutritional monitoring, the bundles were very detailed. Of course, the countries' living conditions are quite different: India had a per capita income of \$380 in 1990-96, an infant mortality rate of 65 per 1,000, and 48 percent illiteracy, with 52.5 percent of the population living on less than \$1 per day, and fully 88.8 percent living on less than \$2 per day.

The comparability of food insecurity prevalence for two such different countries suggests that food insecurity may be based on a household's experience relative to its neighbors instead of anything like a uniform human standard. Even so, we must think about the effects of such comparisons on the public acceptability of our measures of hunger. Will policymakers and the public at large be prepared to accept as correct a hunger measure that gives much the same results in India as it gives in the United States? I suspect not.

Many of you have said that hunger is of interest irrespective of its validity as an indicator of poverty. If we think of hunger and poverty as separate things, what about other ways of defining and measuring the concept of hunger or its associated variables. Direct calorie and nutrient monitoring is extremely expensive, especially on a national scale. Malnutrition or direct anthropometric measurement is similarly problematic.

The solution adopted by the food security scale is to ask people directly about their experience. This self-reported approach has pros and cons. Against it, one could say the scale just ducks the issue of definition. In its favor, defenders would say it puts the onus of definition where it belongs, that is, the person experiencing the hunger. And in this case, the scale's questions are extremely well designed.

Although I have almost been persuaded by listening to several people today, I remain skeptical about the interpretation of responses to the question "In the last 12 months, a child did not eat for a whole day because there was not enough money for food." I do not think that a positive answer to this question is equivalent to "food insecurity with severe hunger," which is a label that is convenient because it produces a hunger measure out of the scale. An honest characterization of the category is that it is an extreme point on the food insecurity scale. Why not simply report the number affirming that question without creating the label?

The underlying definition of hunger is "the uneasy feeling due to not having enough to eat." But that definition is not directly present in the questionnaire. Calling a category "severe hunger" is a difficult issue, especially when you take into account the reporting period phenomenon that Sandy explained. That a measure of hunger is inherently so sensitive to the reporting period—something that is often missed by users—is surely a strike against it.

I also want to raise some general points with self-reported measures. One significant weakness is that perceptions get normed over time. It has plausibly been argued that the decline of self-reported health in the 1970's was due not to any real change in the health status of the population but instead to increased social awareness of disability and the increased availability of benefits. Perceptions often go along with possibilities. Another striking example is again from India, where the level of self-reported health among poor people exceeds the level among rich people even though no one believes that the poor are healthier than the rich. The data are consistent

with the notion that poor people do not expect as much as rich people. Undoubtedly self-reported measurements can potentially be affected by such phenomena.

Self-reported hunger questions can have the same drawback as self-reported health questions. Terms and phrases in the survey such as "food you want to eat" or "afford to eat balanced meals" are not unambiguous. Does the definition of a "balanced meal" include vitamin supplements? Advertisers for vitamins may make people feel guilty about not feeding their children balanced meals. I guess the guilt personally worked for me and I recently decided that I have to buy vitamins to have balanced meals. But these supplements are not cheap, even for a Princeton professor, and I hesitate to buy them all. In consequence, if I were answering the survey, I might respond "I do not have enough money to have a balanced meal" simply because the multivitamins are so expensive.

We do not want the success of policy to be measured against perceptions because perceptions can change over time for no obvious reason or, on the other hand, remain stubbornly steady. For instance, school-based nutrition might be very successful as directly measured by child nutritional status, and yet not cause reductions in food insecurity as perceived by people or as measured in the survey. Similarly, the usefulness of a new hospital may be poorly measured by local people's subsequent self-perceptions of their health. Yet both policies might be quite beneficial, and we would not always want to monitor government programs based on self-perceptions in surveys. Because the current survey's questions are so well designed, such a problem is less acute than for other measures but it is still present.

I have some remarks on the food security scale and on the way it is currently reported in the documents before us. First, many users will want to see a precise mathematical statement of the model and its estimation showing, for example, what is being maximized by the algorithm and the interpretations and statistical properties of its estimated parameters. Otherwise, the methodology is not replicable without calling up the people

who did the work. We also need a precise description of the algorithm that determines the households' scores. Reporting the name of the algorithm is not an adequate mathematical description.

The second issue that, at least to date, the internal validation seems to be much stronger than the external validation. Sandy Jencks and I share the same concern that correlations between food security and food expenditure are -0.12. The negative sign is right, but the magnitudes are small, only 0.12 for the 12-month scale and 0.07 for the 30-day scale. Those correlations mean that either the food expenditure data are bizarre, or something is wrong with the scale, or perhaps some other factors are present, such as the issue discussed earlier of whether management matters more than poverty. What we need research on is how some households manage to spend lots of money on food and yet report these terrible outcomes of depriving themselves or their children of meals, or vice versa, how other households spend little on food and yet report good outcomes. I doubt whether a large-scale survey will answer that puzzle. Perhaps an intensive anthropological follow-up of certain survey households could be fruitful. This puzzle must be a research priority.

This morning we saw that food security measures seem to track poverty quite well from 1995 to '96, a period of a small decrease in both. Food insecurity decreased more rapidly in '96 to '97, but that large decrease is not matched by the poverty figures in the March CPS. These results are preliminary and there is more work to be done.

I have spent a lot of my life thinking about economies of scale between costs of children and household size. The food security data actually offer a means by which to measure those terms by identifying what tips households of different sizes to the same point on this scale and inferring the costs or economies of scale.

More importantly, I want to argue that individual measures are vitally important. I understand the

costs of developing individual measures. However, the benefit of such measures is huge because all of our poverty monitoring in this country uses household data, and yet we are ultimately interested in the welfare of individuals, not the welfare of households. We constantly hear statements about different demographic groups, for example, that a smaller fraction of old people than that of children is in poverty. Yet these numbers are not measured but largely invented; we do not have individual data, but data on households filtered through a set of sometimes absurd equivalence scales that have been built into the official poverty statistics for 30 years. For example, the official scales have a built-in discount for old people. Upon removing the discount, old people become more likely to be poor than other adults in the United States. To avoid these sort of absurdities, we need data on the welfare of individuals.

An individual measure of food insecurity is conceptually clear. Development of an individual measure is a huge potential advantage of this research area and you should not be giving it up. You should be selling that advantage by saying that measures of food insecurity can do something that cannot be done with the official poverty counts. The food security scale could portray individual welfare, and that is what people really want to know.

I would also like to suggest a link with the National Longitudinal Mortality Survey, which has merged death certificates from the National Death Index into the CPS and censuses from the late '70's and early '80's. Merging food insecurity measures with mortality would permit important and useful epidemiological work that is currently not possible including an investigation of the links between hunger and mortality.

Finally, people are aware that the CPS does not cover the homeless, but the problem deserves more attention. We need to get those people covered, if we are to talk confidently about hunger in America.

Johanna T. Dwyer

Jean Mayer, who was my mentor and dear friend, said that nutrition was actually an agenda for solving problems.

Biology, social issues, and economics are three important aspects of nutrition. I begin by reviewing secular advances in health, because I specialize in nutrition as a biological phenomenon. I am not an economist, so when I review present conditions, I see the glass half full rather than half empty. Finally, I have recommendations for future research.

We have made enormous advances in health and public health. We understand that disease is multifactorial. We intervene on risk factors and do primary prevention rather than wait until people start dying and do body counts. Diet and nutrition have roles in chronic disease far more complicated than we ever thought. Monitoring systems to assess disease prevalence and risk factors in sentinel groups have improved. Age-specific morbidity and mortality information is better. Disease control has advanced. Our health base as well as the fundamental science is improved.

We realize now that nutritional status is a multifactorial concept, involving diet, biochemical, anthropometric, and clinical factors. Malnutrition includes not only under-nutrition and deficiency disease but also over-nutrition, obesity, and imbalances and excesses in toxicities. These conditions can coexist, resulting in different forms of malnutrition. Gordon Janson's work in rural Pennsylvania found obese women and men with deficiency disease.

Not only does malnutrition cause disease, but disease causes malnutrition perhaps especially among the elderly. There are iatrogenic effects of negative drug-drug and drug-nutrient interactions.

Special nutrient needs are better defined than ever before, for example, between folic acid deficiency and neural tube defect, and between vitamin B-6 excess and peripheral neuropathies among women taking it for premenstrual syndrome.

Finally, population-based estimates of NHANES, CSFII, and others identify malnutrition better than in the past.

There now seems to be a greater consensus for action based on dietary information and on health and nutrition objectives. Healthy People 2010 is a health plan for the Nation for disease control, prevention and risk reduction, and healthy lifestyles.

Valid and reliable measures of food security are becoming available. Food insecurity can be an early warning sign of later nutrition risk. Food security measures are becoming incorporated into health work in our clinics. In our hospital, we incorporate outcomes of quality-of-life and function.

I am optimistic about current conditions. The biological science and social science base, and perhaps the connections between the two, are better than ever. Links between food insecurity, hunger, and nutritional status are recognized. As Dr. Mayer has said, economists must have something to count before they will do anything, and so the first task is to make up something for them to count. Food security metrics are now available. You may not like them but at least the *Boston Globe* likes them, even if their interpretation is inexact. State and local estimates are now feasible.

Specialized tools are being developed for target groups at special risks, such as the work on the elderly in New York by Jan Dodds and others. Handicapped kids and their families need more attention, as do those with mental health problems wandering outside of institutions.

In the future, we need to expand dialogue and collaborative efforts across disciplines and specialties. We need to expand the conceptual framework of food insecurity to include those at high medical or social risk. Poverty may not be the root of all food insecurity. I work in a hospital where I see food insecurity that results from the ravages of disease and people not having anybody who cares about them. Most old people need funds, friends, or family. We also need to

expand the severe range of the food insecurity scale to identify those in dire situations.

We need to better describe food insecurity problems. My specialty is kidneys and hemodialysis patients. Because everybody is covered under one of the amendments to the Social Security Act, the Federal Government spends billions on dialysis. Yet we have dialysis patients, perhaps about 10 percent, who beg for relatively low-cost oral nutrition supplements because they do not get enough money.

We have to better capture periodic or occasional acute food insecurity and to address the limits imposed by the ceiling or the floor-side of severe food insecurity.

It is wonderful to hear the presentation of Val's paper from Canada. We also have to remember our colleagues down South and develop measures that deal with their problems, as we are neighbors.

We need to explore uses of food insecurity data as potential sentinel measures among the children and the elderly. Individual measures, not group measures, are needed for high-risk groups such as the ill, frail, and elderly. Already certain questions pertain to households with children. We should consider developing other specialized food security measures for use with specific groups, such as homebound elderly with chronic diseases; adults discharged from health care facilities with chronic conditions, because people are being discharged quicker and sicker and they cannot get to the store; the mentally retarded and others with developmental needs; the severely handicapped; and migrant children. We need to

improve the sensitivity of condition- and illness-specific measures and make them more useful for nutrition screening.

We need to develop studies of health outcomes for those who are ill and food insecure. We need to expand life-cycle, age-specific food insecurity measures. We also need to determine if food insecurity and hunger measures have predictive value in determining health outcomes in longitudinal studies.

There are a lot of studies over at the National Institutes of Health where they are following people with various problems, usually a disease, for many years. The natural history of food insecurity among those at risk from these biological standpoints would be of great interest.

We also need to capitalize on the potential of the new combined CSFII/NHANES survey to further the synthesis among food insecurity, economic, and biological data. We need to develop standardized methods for measuring food security and hunger that are exportable to States and localities, which would use common methods that link the local results to national surveys. We need to relate food insecurity indices to the Dietary Reference Intakes; Dr. Tarasuk's and Dr. Beaton's presentation is a model.

Conjoint efforts are useful. We need to study the associations between food insecurity and other factors using a variety of cross-sectional and longitudinal studies, and to examine the short- and long-term effectiveness of interventions because nutrition is actually a set of problems to be solved.