

A Comparison of Surveys for Food Insecurity and Hunger Measurement

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INTRODUCTION

In the early 1990's, the United States Department of Agriculture (USDA) convened expert panels on hunger measurement and developed a battery of survey questions designed to measure "food insecurity" and "hunger".² Subsequently, these questions have been included in several surveys. The full battery of questions is included in the Current Population Survey (CPS) since 1995, the Panel Study of Income Dynamics (PSID) since 2001, the National Health and Nutrition Survey (NHANES) since 1999, and the Early Childhood Longitudinal Survey-Kindergarten Cohort (ECLS-K) since 1998. Individual questions from the battery, or questions that appear to be very similar, have been included in many other data collection efforts, including older NHANES surveys, the Survey of Income and Program Participation (SIPP), the Women's Employment Study (WES) of Michigan TANF recipients, the Los Angeles Family and Neighborhood Survey (L.A. FANS), and the Health and Retirement Study (HRS). Researchers are increasingly using these survey questions to analyze a variety of topics.³

As evidenced by the rapid adoption of the questions by surveys and researchers, the food insecurity and hunger measures are immensely appealing. This appeal is likely related to the significant criticisms that have been raised regarding the ability of the official poverty measure, and income-based measures of well-being more generally, to capture actual deprivation.⁴ The food insecurity and hunger measures directly inquire whether a household's lack of resources affect the procurement of food, a consumption good generally accepted to be a necessity.

In this discussion paper, I consider the following question: On which surveys should we collect information regarding food insecurity and hunger? There are several underlying motivations for posing this question. First, different large-scale surveys have different strengths and collect different types of data. Because of these differences, the choice of large-scale survey will have important implications to the research questions that can be examined. Second, especially for high quality large-scale surveys, asking additional questions is expensive and space for additional questions is scarce because of respondent fatigue.

To answer the question regarding the choice of surveys, I first briefly discuss several conceptual questions regarding food insecurity and hunger measurement. I then provide a general dis-

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² For a description of the process and the resulting scale, see Andrews, Bickel and Carlson (1998) and Hamilton et al. (1997).

³ For recent examples, see Borjas (2002), Siefert et al. (2001), and Winship and Jencks (2002). See Bickel et al. (2000) for a detailed bibliography.

⁴ For example, Jencks and Mayer (1989) argue that the official poverty measure does a poor job of measuring material hardship. A recent National Research Council report concluded that the official poverty measure is flawed and made numerous recommendations for improving it (Citro and Michael 1995). Meyer and Sullivan (2003) examine the extent to which income tracks consumption more generally.

cussion of survey attributes, as well as the potential importance of these attributes to research on food insecurity and hunger. Based on the conceptual issues and the general discussion of survey attributes, I consider the relative merits of several large-scale data collection efforts. I conclude with a summary and discussion of the most important issues regarding survey selection.

PRELIMINARY CONCEPTUAL QUESTIONS

The focus of this discussion paper is the question: On which surveys should we collect information regarding food insecurity and hunger? To formulate an appropriate answer to this question, I first briefly discuss several conceptual questions regarding food insecurity and hunger measurement itself. Although answering these conceptual questions is outside the purview of this discussion paper, the answers will have implications for the choice of the most appropriate survey for data collection.

It is important to note that these and many other conceptual questions were addressed during the development of the current food insecurity and hunger measures. See Andrews, Bickel and Carlson (1998) and Hamilton et al. (1997) for a description of the development process. The various conceptual questions are also addressed in the panel's interim report (National Research Council 2005). The discussion provided here is not meant to completely address the conceptual questions, but rather it is meant to demonstrate their importance to the selection of an appropriate survey.

What is a food insecurity/hunger module supposed to measure?

The current module is comprised of 18 questions. Based on the responses to these 18 questions, households are classified into one of four categories: food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger. Each of these categories is given a fairly detailed definition regarding what occurs in the household. The usual presumption is that the three categories of food insecurity indicate at least some nutritional deprivation.⁵ However, the process of examining exactly what the food insecurity module measures is still in its infancy, and the results do not always support the usual presumption.⁶ This ambiguity regarding food insecurity and hunger measurement is a central conclusion of a recent National Research Council panel, as is a recommendation to refine its definition and measurement (National Research Council 2005).

Regardless of the form of the module, it is useful to begin by precisely defining the state that food insecurity is supposed to measure.⁷ One example definition is that food insecurity is a state

⁵ Habicht et al. (2004) write "Food insecurity is a concept that refers to lack of food" (Habicht et al. 2004). Alaimo et al. (2002) write, "Food insufficiency and low family income are health concerns for US preschool and school-aged children." Nord (2003) writes, "However, the prevalence of hunger among children does not fully represent the extent to which children's diets and meals are disrupted by their families' food insecurity."

⁶ Several studies have examined the internal and external validity of the questions. For a useful discussion of these studies, see the 1999 Supplement "Symposium: Advances in Measuring Food Insecurity and Hunger in the U.S." to the Journal of Nutrition. Other validation studies include Derrickson et al. (2000), Hamilton et al. (1997), Rose and Oliveria (1997), and Dixon (2001). Bhattacharya, Currie and Haider (2004) examine the extent to which food insecurity questions provide additional predictive power for dietary outcomes, over and above the standard poverty measure. Their results suggest that for many age groups the additional predictive power of the food security questions is minimal.

⁷ In their interim report, the National Research Council panel proposes intuitive working definitions for three distinct concepts: hunger, food insufficiency, and food insecurity (National Research Council 2005). These definitions broadly correspond to the example definitions offered here. The panel's efforts to define and clarify these concepts represents an important contribution to food insecurity research.

where households are adjusting their diets due to the lack of financial resources. Such a definition clearly links food insecurity to measurable and specific outcomes—outcomes related to dietary deprivation.

Another example definition is that food insecurity is a state where an economic unit has sufficiently few resources that a poor diet is likely (but not certain). This definition posits that food insecurity is not necessarily affecting dietary intake, but the definition clearly evokes a household with inadequate resources. However, even though all food insecure households would not be expected to experience dietary deprivation under this definition, it would be reasonable to expect that food insecure households would have worse dietary outcomes on average than food secure households. Again, such a definition clearly links food insecurity to measurable and specific outcomes—outcomes related to dietary deprivation and/or few financial resources.

A final example definition is that food insecurity is a state of anxiety about the sufficiency of food. This definition would likely include individuals who are deemed to be food insecure by the previous two definitions, but this definition would also allow for an additional psychological component. Perhaps for two households who have the same income, the same expenses, and even the same food consumption, one household might be food insecure and one not because the household respondents differ in their perception and/or psychological disposition.

In the current formulation, hunger is defined to be the severe range of food insecurity (Hamilton et al. 1997). The National Research Council panel instead proposes to define food insecurity to be a household experience and hunger to be a personal experience (National Research Council 2005). Although the precise distinction between food insecurity and hunger is very important in designing the module and interpreting any results, the distinction often does not matter for the selection of an appropriate survey for fielding the module. For the rest of this discussion paper, I only distinguish between food insecurity and hunger measurement when the distinction matters for survey selection.

Why is food insecurity being measured?

There are various motivations for measuring food insecurity. One motivation could be to measure the prevalence of food insecurity and changes in prevalence over time. Such a motivation might stem from the desire of monitoring the adequacy of the social safety net or the potential effect of a policy change. Another motivation could be to understand the process that causes food insecurity. For example, it might be of interest to understand the extent to which food insecurity is caused by a decline in household resources available for food, perhaps because of a job loss or large medical expenses. A third motivation could be to further understand the effects of food insecurity, such as the precise mechanism through food insecurity is reflected in dietary intake and the eventual effects on later health outcomes.

The measurement burden is different for each of these motivations. To measure changes in prevalence, the level of deprivation that is deemed food insecure could be arbitrary, but measured changes could still reflect real changes in overall well-being. On the other hand, if we were primarily interested in the prevalence at a point in time, then food insecurity would need to indicate a level of deprivation that is directly interpretable. The measurement burden is even greater for understanding the process and effects of food insecurity because the measure must correctly distinguish whether or not an individual/household is food insecure.

There exists another type of motivation for measuring food insecurity. It could be that food insecurity is intended to be a relatively inexpensive measure of a state that is otherwise expensive to measure. For example, standard methods of measuring dietary deprivation can be prohibitively expensive (e.g., blood analysis from a clinical exam or recipe analysis of a dietary recall questionnaire). The value of a food insecurity measure might then be its ability to measure dietary deprivation, albeit with error, with a relatively short module of several questions. A similar argument could be made for food insecurity measuring the state of having few economic resources because the alternative might entail measuring numerous sources of income and expenditures.

What form should the module take?

The form of the food insecurity module will also have implications for the type of survey selected. One important aspect of form is the length of the module (i.e., the number of questions). It may be optimal to place the food insecurity module on multiple surveys if the use of any one survey fails to satisfy all needs. Moreover, the placement on multiple surveys could also allow for important validation. Because the cost of the module will be related to its length, there could be a tradeoff between a short module that is placed on several surveys versus a long module that is placed on fewer surveys.

Another form issue is the role of auxiliary information. For example, the current module uses household income as part of a preliminary screening mechanism. This mechanism directs the food insecurity questions only to those households where food insecurity is deemed to be likely, thereby reducing overall respondent burden.⁸ If such auxiliary information continues to be used, then the survey should adequately collect the auxiliary information.

A third form issue is the definition of the economic unit. The current module considers the household to be the economic unit, deeming the entire household the same state of food insecurity.⁹ This module is then intended to be asked of the household head. It is possible that individuals within a household would respond differently.

RELEVANT SURVEY CHARACTERISTICS

I first provide a general discussion of survey design and its relevance to research on food insecurity and hunger, and then I discuss other survey information that would be useful. I end this section with a brief discussion of survey design that is likely to be very important to food insecurity measurement but is often overlooked: the coverage of the most vulnerable sub-populations.

Survey design

High-quality surveys are complex endeavors with many underlying attributes that interact in numerous ways. I (somewhat arbitrarily) divide these various attributes into three categories.

⁸ In particular, households with an income-to-poverty-line ratio greater than 1.85 may be screened out of the food insecurity module depending on the response to an initial question regarding the sufficiency of food in the household. See footnote 5 of Nord, Andrews and Carlson (2004) for further details.

⁹ It is true that different levels of food insecurity refer to different household members, but that is a definitional issue. Currently, the entire household, whether related or not, is assumed to be in the same food insecurity category.

Sampling frame. Two of the most basic attributes in survey design are the population the survey is supposed to represent and the rate at which the population is sampled. Some surveys are intended to be representative of the population of the United States, while others are intended to be representative of a more specific sub-population. Some examples of a specific sub-population are residents of Michigan, families who left the TANF program within a particular calendar year, or individuals in the military. The rate at which the population is sampled leads to the eventual sample size available for analysis.

The practical benefits of both attributes are readily apparent. The benefit of a larger sample size is that it allows for a more precise characterization of food insecurity. Precision is very important for the study of food insecurity and hunger because the prevalence in the population appears to be low. The benefit of a nationally representative sample is it that it allows for the computation of the national prevalence of food insecurity. However, there are also benefits of relying on surveys that are representative of more specific sub-populations. Quite simply, food insecurity is likely to be rare for certain sub-populations (e.g., high income populations), and thus there might be little benefit from asking the questions of such individuals. Placing food insecurity questions on a survey that targets the at-risk population could obtain the necessary information in a more cost-effective manner.

A related issue is whether a survey over-samples any sub-populations. In other words, a survey may sample a group with a certain characteristic (e.g., race, age, or income level) with a higher probability than others groups. Such a sampling scheme allows for a more precise analysis of the various sub-populations, yet still allows for inferences regarding the whole population when appropriately weighted. Thus, a nationally representative survey that over-samples the at-risk sub-populations could achieve all of the various goals: allow for statements regarding national prevalence, allow for more precise description of the food insecure population, and be relatively cost-effective.

Most large-scale surveys over-sample by geography as a result of using a multi-stage stratification scheme to reduce survey costs. The stratification is important because it affects the extent to which geographic variation can be analyzed.

Sampling unit.

There exist two issues regarding the sampling unit. The first is whether a survey samples and collects information on an individual or a larger unit (e.g., the family, the household, etc). The second is, if a larger unit is sampled, who responds to the survey.¹⁰

It will be important to collect information both about the individual and the household. Many of the underlying circumstances facing an individual will be determined at the household level. For example, food is often purchased and shared at the household level, and income is often pooled (at least to some extent) across various household members. Yet, the event of reducing food intake or skipping a meal happens at the individual level and could vary across household members.¹¹ In addition, it is generally best to have the respondent to the survey be the person most directly associated with the question content. For example, questions about food

¹⁰ Bhattacharya, Currie and Haider (2004) provide suggestive evidence that the response to food insecurity questions can differ by household member using NHANES III data.

¹¹ In fact, such a notion is built into the current food insecurity scale. The distinction between a food insecure household with moderate hunger and a food insecure household with severe hunger rests with who is reducing their food intake. See Hamilton et al. (1997).

purchasing are best posed to the person responsible for purchasing the food, and questions regarding dietary intake are best posed to the person actually consuming the food. An important exception to this latter point is that some individuals, perhaps those who are very young or very old, may not provide reliable responses.

Issues regarding the sampling unit are likely to be very important to survey selection and module design, especially if the National Research Council distinction between food insecurity and hunger were adopted.

Structure/timing of survey.

In a cross-sectional sampling scheme, the sampling unit is interviewed once, but in a panel sampling scheme, the sampling unit is interviewed multiple times. The benefit of a panel sampling scheme is that it allows for the direct study of the dynamics of food insecurity (e.g., becoming food insecure or remaining food insecure). In addition, many statistical methods have been developed that use a panel sampling scheme to facilitate making inferences about behavior. The benefit of a cross-sectional sampling scheme is that it remains population representative even when the characteristics of the population are changing over time.

The frequency of collection will be important to the extent that the goal of the data collection effort is to monitor changes over time. For cross-sectional surveys, the relevant parameter is the frequency the survey is fielded. For panel surveys, there are two relevant parameters: the frequency that a new panel begins and the frequency that a given panel is re-interviewed. Re-interviewing the same panel over a long period of time allows the study of the longer term attributes of food insecurity.

The timing of the survey could matter to the extent there is a seasonal component to food insecurity and hunger. The seasonal component could be caused by seasonal changes in food prices or at-home production or by seasonal assistance programs such as the school nutrition program.¹² Two issues arise with respect to seasonality. First, if an annual survey is fielded at different times of the year, then seasonal changes could confound inferences about year-to-year changes in food insecurity. Second, to study seasonal changes, the survey would need to be fielded over the course of the year.

Survey content

Surveys vary tremendously with respect to the type of information collected, as well as the quality of the information. This variation should not be surprising because the goals of the surveys vary tremendously. I discuss three major types of information relevant to food insecurity: dietary information, economic information, and health information.

Dietary information.

Two methods are typically used to collect dietary information about individuals. The first is the food diary method in which individuals are asked to complete a diary contemporaneously to their food consumption. The second is the food recall method in which individuals are asked to recount what was eaten over a particular time period. The usefulness of both types of data is enhanced by the subsequent application of a “recipe analysis”, where the consumption of particular

¹² Bhattacharya, Currie, and Haider (2005) examine the effect of school nutrition programs on dietary outcomes.

food items (e.g., pizza) is translated into the consumption of nutritional components (e.g., saturated fat or vitamin C) based on typical recipes and serving sizes.

The availability of dietary information is extremely valuable to describing what is meant by food insecurity, as well as understanding the pathway of any consequences that are observed. Furthermore, the availability of a rich description of one's dietary intake will allow the study of how food insecurity manifests itself in the quantity and quality of food intake.

Economic information.

The typical economic information collected by surveys relates to the level of income and assets. Many surveys collect information on income, although they vary substantially with respect to the quality of the information collected. For example, the NHANES III collects the level of income based on one question concerning total annual household income, whereas the March CPS collects detailed information on over 40 sources of income for each household member. Few surveys collect information on household expenditures, which is potentially very important to understanding food insecurity because expenditures can provide important information about household needs. Few surveys collect detailed information on assets, but asset information is likely to be less important because individuals who are likely to be food insecure are likely to have few assets.

The potential use of economic information is important and many-fold. Perhaps most important, food insecurity is supposed to be an economic construct. Food insecurity is defined not just as the state of having too little food, but rather, as the state of having too little food due to the lack of adequate financial resources. Thus, economic information could be critical to the validation of the food insecurity measures. In addition, given the form of the current food insecurity module, economic information is used in its definition.¹³

Economic information will also be important to studying the process that determines food insecurity and the adequacy of various social programs. For example, is food insecurity caused by a loss of household income, perhaps due to a job loss? Does the receipt of Food Stamps reduce food insecurity? Examining these types of questions would be greatly facilitated by economic information related to expenditures, particularly those for food.

Health information.

Surveys vary greatly in the health information collected. Some surveys collect self-reported measures of health such as information on present and past health conditions (e.g., diabetes, cancer, hypertension, etc.), functional ability such as ability to perform "activities of daily living" (e.g., feeding oneself or walking across the room), and general subjective health status. Some surveys even collect clinical health information ranging from measures of height and weight to complete physical exams, including an analysis of blood. Finally, surveys may also collect mental health information such as measures of self-reported general mental health or the administering of a module of questions related to mental health.

Information from a blood analysis can provide an objective measure of dietary outcomes. Such objective dietary information is extremely useful when evaluating the empirical content of the food insecurity measure, particularly for individuals who may have difficulty in providing accurate dietary information through recall questions.

¹³ See the discussion of the screener question in Section 2.3.

Physical health information could be important to assessing the potential consequences of food insecurity. The value of different types of health information depends on how close of a connection can be made between a health outcome and dietary deprivation. For example, information on diabetes might be judged more valuable than information on functional ability if diabetes is more closely connected to diet. This evaluation will be affected by the timing and duration of measured food insecurity. For example, it is unlikely that current food insecurity, especially if it were a short-term phenomenon, would have a substantial impact on diabetes.

Mental health information could be important to evaluating the extent to which the food insecurity measure captures a psychological component, whether as part of the intended definition of food insecurity or as a potential consequence of a physically-based definition of food insecurity.

Coverage of the Most Vulnerable Sub-Populations

An important issue for food insecurity and hunger measurement, which is often overlooked, is the representation of the most vulnerable sub-populations. Individuals who are most likely to lack adequate access to food are also likely to live in circumstances that make them difficult to survey. For example, usual survey methods could miss individuals who live in transient living conditions, who work many hours, or even who do not have a telephone. To the extent that such individuals are missed and they are more likely to be food insecure, then estimates based on household surveys could be very misleading.

As an illustration of the potential magnitude of the problem, Nord, Andrews, and Carlson (2004) estimate that, in 1998, there were 6,500,000 adults and 720,000 children in food insecure households with hunger. These estimates were based on the CPS, a residence-based household survey that necessarily excludes the homeless. Burt (2001) estimates that there are about 600,000 adults and 200,000 children who are homeless on any given day.¹⁴ Computing an estimate of the understatement of food insecurity because of the use of household surveys would require much additional information: better estimates of the size of the homeless population, estimates of the size of other at-risk populations missed by the CPS, and estimates of the prevalence of food insecurity among these sub-populations. Nevertheless, these numbers suggest that the understatement of food insecurity based on a household survey may not be trivial, especially for children.

Although large-scale, national surveys will necessarily have incomplete coverage of the most vulnerable sub-populations, there are several practical questions that should be considered. To what extent does the sampling frame include transient living arrangements, such as short-term rental properties, shared living arrangements, and group quarters? To what extent is detailed information collected about all individuals in the household versus just the householder? To what extent does a survey rely on contact by telephone? How many times does a survey attempt to contact a household and does the time of contact vary? These issues could be some of the most important factors to consider when assessing the merits of alternative surveys for food insecurity measurement.

EVALUATING CANDIDATE SURVEYS

¹⁴ Of course, the fact that the homeless are difficult to survey also implies that these estimates are likely to be imprecise.

I first provide a detailed comparison of four surveys that are the leading candidates as the primary survey for food insecurity measurement. I then discuss several additional surveys with characteristics that complement the primary surveys.

Primary surveys

I consider four surveys to be the primary survey used for food insecurity measurement: the Current Population Survey (CPS), the Survey of Income and Program Participation (SIPP), the National Health and Nutrition Examination Survey (NHANES), and the National Health Interview Survey (NHIS). All of these surveys are large, nationally representative surveys that are well-known and considered to be of the highest quality. Table 1 provides a comparison of survey attributes, and Table 2 provides a comparison of survey content. The appendix provides information regarding the underlying sources for this information.

With respect to sampling frame issues, the CPS has the largest absolute sample, interviewing approximately 60,000 households (about 112,000 individuals ages 16 and older). The SIPP and NHIS are somewhat smaller, interviewing approximately 38,000 and 36,000 households, respectively. The NHANES is a distant fourth, interviewing 14,000 individuals biennially. Importantly, the effective SIPP sample size for studying food insecurity is greater than suggested by the raw number of households because it over-samples poor areas (at a two-thirds greater rate than non-poor areas). Similarly, the effective sample is likely to be somewhat greater for the NHIS because it over-samples by race and ethnicity, and it is well-established that minority households are poorer on average.

The CPS and the SIPP use the household as the sampling unit. However, the CPS interviews one person to collect information for the entire household, whereas the SIPP attempts to interview each person. This difference will have implications for the structure of the food insecurity module, the potential distinction between food insecurity and hunger, and the comparison of results between the surveys. The SIPP structure should be preferred.

The sampling unit is more complicated for the NHIS and NHANES. For the NHIS, some basic information is collected on all household members, with each person asked to respond for themselves or a proxy respondent asked to respond for those not available. The NHIS then asks detailed questions regarding a randomly selected adult and child. The randomly selected adult is required to respond for herself, and a knowledgeable adult is asked to respond for the child. The sampling unit for the NHANES is more complicated. Although it selects individuals within the same household at higher probability than individuals in different households, individuals within a household are still subject to selection so that the NHANES can achieve its complex over-sampling scheme. The NHANES then uses a household respondent for various household characteristics, but then interviews (and examines) each sampled individual.

The NHIS and the NHANES are cross-sectional surveys. The NHIS is collected annually, and because the NHANES requires the combination of 2 years of data to be nationally representative, I consider the NHANES to be collected biennially.

The CPS is more complicated. The CPS interviews approximately 60,000 households every month. Technically, it is a panel survey because a household is in the survey for 4 months, then

out for 8 months, and then back in for 4 more months.¹⁵ Because the food insecurity questions have been asked in successive December supplements, households respond twice to the questions. However, the use of the panel component is questionable for food insecurity research because the CPS returns to the same *household address* for the re-interview, regardless if the original occupants have moved. To the extent that the food insecure population is mobile (i.e., perhaps housing insecure), then they would not be captured in the CPS panel.

The SIPP is designed to be a panel survey of all individuals in a household, and thus, it follows sample members even if they move. A new SIPP panel has been fielded every three or four years over the last decade, and each panel is re-interviewed every four months.

A related issue regarding the structure of the surveys is the placement of the food insecurity module. For example, the SIPP survey is divided into core content that is collected during each wave and topical content that is collected during only some waves. If the food insecurity module were collected on only one topical module, then there would not be a panel component to the food insecurity information. The CPS is fielded every month, and only the March CPS collects detailed household income and demographic information. Currently, the Food Insecurity Supplement is collected on the December CPS. The NHIS has a core module that collects basic information on all household members, a more detailed module that collects information on a randomly selected adult and child, and topical modules that are fielded less frequently. If the food insecurity questions were placed in a topical module on the NHIS, the food insecurity questions might not be asked annually. The ability to study the seasonal nature of food insecurity depends on where the food insecurity questions are placed on each survey. It seems likely, however, that only the SIPP and NHIS would allow the study of seasonality.

The four primary data sets also vary tremendously with respect to content. Only the NHANES has any appreciable information on diet. In fact, the NHANES has replaced the Continuing Survey of Food Intakes by Individuals (CSFII) as the primary data collection effort on dietary intake information for the United States. The survey uses a dietary recall method to collect information on the complete dietary intake for the last 24 hours and supplemental questions to ask about the intake of infrequently consumed food (e.g., shellfish) for the last 30 days. Although the NHIS has collected dietary information in a few specialized topical modules, it does not regularly collect dietary information.¹⁶

Economic information for the SIPP is very good, overall. It has detailed income, assets, and program participation information, asking about numerous different sources for the various household members. Expenditure information is collected on housing, utility, and medical expenditures. With respect to food insecurity research, I consider the expenditure information to be good rather than very good because information is not collected on food expenditures.

The economic information is fairly comparable between the NHANES and NHIS. Both surveys inquire about the participation in the most common assistance programs, but then each survey inquires about annual household income with only one question. The SIPP, on the other hand, inquires about over 50 different sources of income. Expenditure information for both surveys is judged to be fine because the surveys only inquire about medical expenditures.

¹⁵ The CPS uses a rotating sample design so that the same number of new interviews takes place each month. This rotating sample design reduces data collection costs because it reduces the number of new interviews that need to be initiated.

¹⁶ Two Topical Modules that collected some information on diet are the Cancer Control Supplement to the 2000 NHIS and the Complementary and Alternative Medicine Supplement to the 2002 NHIS.

With respect to economic information, the December CPS collects very little information and that which it does collect is judged to be very poor. I list the December CPS as collecting no information on expenditures or program participation because the information that is collected is in the food insecurity supplement itself. The income information is very poor because it is collected for every respondent with only one question using categorical responses.¹⁷ It is true that very good income information is collected in the March CPS, but connecting these households is not straightforward and would only be available for about one-quarter of the food insecurity respondents.

Turning to the health information, the NHANES is unrivaled. Not only does it collect detailed information about self-reported conditions, but it provides a detailed physical exam of its respondents, including a blood analysis. Importantly, this blood analysis provides important dietary information. The NHIS collects very good health information as well. The main difference with the NHANES is that it does not collect health information through a physical exam. The SIPP collects less health information than the NHIS but still collects several interesting health outcomes (e.g., general health and functional limitations). However, it may be that the health information in the NHIS and the SIPP are not closely enough connected to food insecurity to be of much practical importance. The NHANES, NHIS, and SIPP collect basic mental health information. The December CPS collects no information about health.

Secondary surveys

Although a compelling case can be made that the food insecurity should be asked on at least one of the primary surveys discussed above, there are other surveys that could provide additional opportunities for useful research. One such survey is the Panel Study of Income Dynamics (PSID). The PSID began collecting information in 1967 from a nationally representative sample of 5,000 families. Since then, it has attempted to re-interview these original families and all direct descendants. The survey collects detailed information on income, labor supply, and assets, and some information on health. The analytic strength of the PSID is that it allows for research on long-term processes. Another analytic strength is that it collects detailed information on a sub-sample of children with the Child Development Supplement.

Another potentially important survey for food insecurity research is the Current Expenditure Survey (CE). This annual survey collects detailed information on the expenditures and income for approximately 7,000 consumer units. These units are interviewed at 3-month intervals for 5 consecutive quarters. The potential importance of the CE to food insecurity research is that it offers detailed information on consumer unit expenditures, including food. Food expenditure information could provide very important insights into the process of food insecurity for households. Such information is not available in any of the primary data sets.

The State and Local Area Integrated Telephone Survey (SLAITS) developed by the Center for Disease Control-National Center for Health Statistics provides another potential option. The SLAITS is designed to be a flexible surveying mechanism that can collect samples that are sufficient to study sub-national and relatively rare populations. The benefit of the SLAITS system is that it would likely impose fewer constraints on the size of the potential food insecurity module because a dedicated survey could be fielded. This feature could be important when piloting new questions. However, the use of a dedicated survey would likely result in less total survey con-

¹⁷ This question is not in the December CPS itself, but rather, it is asked in the first or eighth month of a person's rotation.

tent, thereby restricting research opportunities (see Section 3.2). Perhaps the most significant drawback to the SLAITS is the fact that it is a telephone survey. It is possible that individuals who are most vulnerable to being food insecure would be missed by a survey that only relies on telephone contact (see Section 3.3).

There exist two very useful panel surveys that would allow the longitudinal study of specific sub-populations. The Early Childhood Longitudinal Survey-Kindergarten Cohort (ECLS-K) follows about 21,000 children who entered kindergarten during the 1998/99 school year. This survey collects detailed information on child well-being and achievement. The Health and Retirement Study (HRS) is a nationally representative panel of individuals born before 1947. The HRS collects detailed information on the financial status and health of older Americans.

Still many other high-quality and even more specialized surveys exist. For example, the Women's Employment Survey (WES) is a longitudinal survey of welfare recipients in Michigan, and the Los Angeles Family and Neighborhood Survey (L.A. FANS) is a longitudinal survey of families and neighborhoods in Los Angeles. Such data collection efforts can provide important additional avenues for food insecurity research.

CONCLUSION

The purpose of this discussion paper is to consider the following question: On which surveys should we collect information regarding food insecurity and hunger? I presented a detailed discussion of the benefits of various survey attributes and survey content to food insecurity research, as well as analyzed the appropriateness of four primary surveys: the CPS, SIPP, NHIS, and NHANES. Each of these surveys has various strengths and weaknesses for food insecurity research. Weighing the relative merits of each survey returns us to the three conceptual questions in Section 2—questions which I did not answer. I first discuss the relative merits of the surveys in terms of potential answers to the conceptual questions, and then I discuss the relative merits of the surveys based on my opinions regarding the answers.

General discussion

One of the conceptual questions put forward in Section 2 is the following: Why is food insecurity being measured? If the answer is to measure the prevalence and changes in prevalence over time, then the CPS provides consistent timing (annual) and very large sample sizes. The NHIS is somewhat less appealing because of its smaller sample size. The SIPP is somewhat less appealing because of its smaller sample size and because the panel nature may make it difficult to untangle short-term trends from issues of sample attrition. However, the smaller sample size of the SIPP might be offset by its over-sample of poor neighborhoods. The NHANES is much less appealing because of its much smaller sample size and biennial data collection. Thus, in terms of monitoring prevalence, the CPS is likely best, with the SIPP being a close second.

There exist at least two other answers to the question regarding why collect food insecurity measures, however. One answer is to validate the food insecurity measure, and another answer is to study of the process and consequences of food insecurity. Both of these answers would suggest that the other information collected on the surveys is important, and thus, both would suggest that the December CPS is the weakest survey. The December CPS collects no informa-

tion on health and diet, and its economic information is by far the weakest. The SIPP collects very good economic information, good subjective health information, but no dietary or clinical health information. The NHANES, on the other hand, collects very good diet, subjective health, and clinical health information but poor income information. The NHIS is similar to the NHANES in its collection of subjective health and economic information (very good and poor, respectively), but collects no dietary or clinical health information. Thus, the SIPP and NHANES should be judged best for research that requires additional information (income for SIPP and health for NHANES), with the relative merits between the two surveys somewhat determined by what the food insecurity questions are supposed to measure.

A related issue regarding what the food insecurity questions are supposed to measure is the intended use of the questions. Suppose the food insecurity measure is intended to be a summary measure of a poor diet. In this case, it might be useful to have the food insecurity questions on the NHANES for validation and research purposes, but there would be a large gain from placing such questions on surveys that currently collect no information on dietary outcomes. A similar argument can be made if the food insecurity questions were intended to be a summary measure of inadequate economic resources—the questions might be very valuable when placed on surveys that currently collect little economic information.

Regarding the sampling unit, ideally household-level information such as food expenditures and income would be collected from a knowledgeable household respondent, and individual-level information such as reducing food consumption and skipping meals would be collected from each able individual. This structure would likely provide more accurate information than asking one household member to respond for everyone. In addition, this structure would also allow for heterogeneity within the household. For example, is it possible that food insecure individuals co-reside with better-off individuals to make ends meet, and in these cases, it is unlikely that all resources within the household are equally shared. The current food insecurity module would overlook these differences within a household. The SIPP, NHANES, and NHIS collect household information and pose at least some questions to each adult in the household. The CPS also collects household information but uses one respondent per household.

Discussion based on personal views

Based on my personal views regarding the various conceptual questions, I believe that the goal of the food insecurity questions should be to provide a summary measure of an inadequate dietary intake. If the measure were intended to be a broader measure of inadequate financial resources, then the name of “food insecurity” is probably misleading, and it is unclear that such a measure would be superior to a general poverty measure.

The module should then be as short as possible, while still achieving the basic measurement goal. A short module could be placed on (and adopted by) as many surveys as possible because each survey has certain strengths and cross-survey validation is extremely valuable. For example, the SIPP would allow for the study of the economic processes associated with food insecurity, and the NHANES would allow for the study of the dietary processes. The CPS allows for better tracking of trends and geographic variation; despite there being relatively little additional information in the CPS for research, such time and geographic variation can be merged with other data sets to allow for important research opportunities.¹⁸ Because research on the valida-

¹⁸ For example, the large literature on welfare reform exploits state-year variation in welfare policies.

tion and processes of food insecurity should come before research on using food insecurity as an outcome, the SIPP and NHANES are the most important surveys for food insecurity research, followed by the CPS.

Finally, I wish to return to the issues that were raised in Section 3.3—the adequacy of coverage of the most vulnerable sub-populations. Again, these issues could be some of the most important factors when considering various surveys. The CPS and SIPP provide easily accessible information regarding their sampling protocols and procedures. This information and the data itself should be analyzed in more detail than is possible in this discussion paper. For example, it would be useful to document the extent to which attrition in the SIPP is concentrated among the poor. As another example, it would be useful to examine the Census Bureau’s evaluation on sampling in the 2000 Census to further determine the types of individuals who are likely missed by various sampling frames. *The coverage of such disadvantaged individuals is likely to be one of the most important issues in obtaining an accurate measure of food insecurity and hunger in the United States and should be examined in much greater detail.*

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APPENDIX: INFORMATION ON THE PRIMARY DATA SETS

The main source of information on the CPS is the March 2002 *Design and Methodology: Technical Paper 63RV*, available at <http://www.census.gov/prod/2002pubs/tp63rv.pdf>.

The main source of information on the SIPP is the 2001 *Survey of Income and Program Participation User's Guide*, available at <http://www.sipp.census.gov/sipp/usrguide/sipp2001.pdf>

The main source of information on the NHIS comes from several websites. The NHIS home page is at <http://www.cdc.gov/nchs/nhis.htm>. A basic description of the NHIS is at <http://www.cdc.gov/nchs/about/major/nhis/hisdesc.htm>. Survey instruments and related documentation are at http://www.cdc.gov/nchs/about/major/nhis/quest_data_related_doc.htm.

The main source of information on the NHANES comes from several websites. The NHANES home page is at <http://www.cdc.gov/nchs/nhanes.htm>. A basic description, the code-books, and the survey protocols are at <http://www.cdc.gov/nchs/about/major/nhanes/datalink.htm>.

Table 1: A Comparison of Survey Attributes

Attributes	CPS-December	SIPP	NHIS	NHANES
Sampling frame				
National representation	Yes	Yes	Yes	Yes
Over sample	No	Low income areas	Race/Ethnicity ^a	Low income, Race/Ethnicity, Age ^b
Sample size	~60,000 households	~38,000 households	~36,000 households	~14,000 individuals
Sampling unit				
Unit size	Household	Household	Household, Adult/Child ^c	Individual ^d
Unit respondent	1 per household	Individual ^e	Adult/Proxy Adult ^f	Individual ^e
Structure/timing of survey				
Cross-sectional/panel	Cross-section ^g	Panel	Cross-section	Cross-section

Frequency	Annual	New panel: 3 yrs Re-interview: 4 mos	Annual	Biennial ^h
Seasonal changes	No	Yes	Yes	No

^a The NHIS over-samples two racial/ethnic groups, African Americans and Hispanics.

^b Over-samples include adolescents 12-19, persons 60+, African Americans and Mexican Americans.

^c A limited amount of information is collected on all individuals in the household. More information is collected on a randomly selected adult and child from the household.

^d Not everyone within the household is automatically selected into the sample if a household is selected, although the probability of any individual is higher once the household is selected.

^e The respondent varies by the type of question, but at least some questions are posed to each individual.

^f The randomly selected adult must respond for herself or himself. A knowledgeable adult is asked to provide proxy responses for children under the age of 18.

^g The CPS technically has a panel component to it because households because of its rotation scheme. However, given the mobility of the very poor population, it is unclear that exploiting the panel component will be of much use.

^h The NHANES is currently in the field every year. However, it requires the pooling of at least two years of data to obtain nationally representative sample. For some analyses, it may require even more years to obtain the sufficient sample size.

Table 2: A Comparison of Survey Content

Content	CPS-December	SIPP	NHIS	NHANES
Dietary information				
Dietary recall	No	No	No ^a	Yes
Economic information				
Income	Yes-very poor _b	Yes-very good	Yes-poor	Yes-poor
Assets	No	Yes- very good	No	No
Program participation	No ^c	Yes-very good	Yes-good	Yes-good
Expenditures	No ^c	Yes-good	Yes-fine	No-fine
Health information				
Self-reported health	No	Yes-good	Yes-very good	Yes-very good
Detailed clinical in-formation	No	No	No	Yes-very good
Mental health	No	No	Yes-good	Yes-good

Note: Where applicable, the content of the survey is categorized on a five-level scale: very good, good, fine, poor, and very poor.

^a The basic and periodic Modules do not collect information on diet. A couple of topical modules have previously collected dietary information, but the dietary information was collected in reference to a specific health condition (such as cancer).

^b Although much more detailed information is collected in other parts of the March CPS, this information can be linked to only about a quarter of the respondents to the December Food Insecurity Supplement given the CPS rotation scheme. There is one income question collected for everyone in the December Supplement (see CPS manual, p. 7-7.).

^c This information is collected in the food insecurity module itself, so I do not note this information here.