

Meaning from method: An investigation of United States food security measurement tools

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Abstract:

Food security is one of the most important concepts in current research related to food and inequality. Considering the importance of food security to policy decisions and discussions on public assistance, it is critical to regularly interrogate what food security means and how we as researchers think about it. This paper seeks to understand the definition of the term that emerges from the social process of researching it. I first identify the most-cited scientific pieces of research on United States food security and then identify the methods they adopt in measuring food security. I analyze these methods using a content analysis of the most commonly used survey instruments to determine how food security is defined by the inclusion and exclusion of certain questions. In the analysis presented here, I find that the components of economic access and dietary quantity are heavily emphasized by the methods most used to measure food security while other concepts like dietary quality are given considerably less attention. I argue that the definition of food security that emerges from research methods reflects the needs of a translational model of social science. I argue that such a model of science privileges the needs of policy makers and statisticians while laying aside inconvenient complexities of food security.

Introduction

According to the United States Department of Agriculture (USDA), an estimated 14.5 percent of households experienced food insecurity in the United States at some point in 2010 (Coleman-Jensen, 2011). The effect that food security has on these households can range from mild inconvenience to serious far-reaching consequences. In recent years, food security has become important part of popular discourse. In an NPR interview (NPR, 2012), Raj Patel—a world-renowned, journalist, activist and author of *Stuffed and Starved: The Hidden Battle for the World Food System*—talks about hunger, food insecurity, obesity and poverty in the United States. In relation to food stamps and Newt Gingrich’s attacks on President Barack Obama on this topic, he cites numbers provided by the USDA and—given his nuanced understanding of the world food system—he proceeds to explain the linkages between poverty, the political economy of food distribution and health outcomes in a land of plenty.

Country musician Brad Paisley and his wife make an appearance on the long-running children’s television program Sesame Street to talk about one of the characters on the show, Lily, who is facing food insecurity in her daily life. The appearance is part of an hour long-special entitled “Growing Hope Against Hunger.” Again, numbers cited are similar to those produced by the USDA to highlight the existence of food insecurity within the US. These statistics are interspersed with interview clips from children facing hunger and food insecurity (Adamjee, 2011). The emotional impact of these interviews is clear—hearing children talk about being hungry has intense resonance with broad audiences.

While hunger has been a phenomenon of concern in the United States for a long time, it is only in the last 50 years that “food security” as a concept has emerged to describe

the intersection of food and inequality in the United States. The aforementioned examples of the resonance of food security in the popular media underscore the acceptance of the term as an important component of understanding the experience of inequality in the United States. As this term gains acceptance and prominence in the academic, governmental and popular consciences, it becomes increasingly important to distinguish what it actually means. If anyone (governmental or nongovernmental) is to do anything to address an issue like food security, the solutions or aid efforts must be guided by a clear understanding of what the problem itself looks like. Prevalence rates mean little if the phenomenon in question is muddily understood. When attempting to understand a concept, the most basic approach is to look for a definition, but a search for such a definition of food security yields some mixed results.

The USDA defines food security—measured at the household level— as “[having] consistent, dependable access to enough food for active, healthy living” (Coleman-Jensen, 2011). The FAO’s definition describes food security as “a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (1996). These definitions overlap some, but researchers have found over 200 different applications of this concept (Hoddinott, 1999; Smith et al., 1992). At the very least, this suggests that food security is multidimensional, complex and contested.

This analysis turns its focus to the scientific instruments scholars use to measure “food security.” In so doing, it seeks to answer the question: *What definition of food security does the scientific discourse around the topic produce? Specifically, what version of food security is represented in the measurement tools used by scientists?* It is neither necessary

nor sufficient to rely on what scientists *say* they are measuring when it is possible to actually *observe* and *analyze* their methodological approach. The act of measurement constitutes a very clear demarcation of what is and what is not food security (Callon, 1981; Latour, 1987; Law, 2004). If the act of measurement produces a very specific vision of food security, then any conclusions or action based on the data produced with these tools will only ever be pointed at that piece of the picture.

Toward this end, I first use a bibliometric technique known as citation indexing to identify the most frequently cited works about food security in the United States. After codifying these works according to the frequency with which they are cited, I then identify the methods that the authors of these works use to operationalize the concept of food security. Through this process I show that within the most-cited food security research, despite heterogeneity in the theoretical definitions of food security, there is considerable homogeneity in the ways that food security is operationally defined. That is to say, only a few instruments are used in these works to operationalize the concept. In the final step of this research, I conduct a content analysis on the survey instruments identified through the steps above. In so doing, I show what specific components of the broad notion of food security are included and emphasized in its operational definition and which pieces have been discarded. This is essentially a novel approach to assessing whether the transition from construct to measure to refined measurement tool has proceeded as anticipated, and to determine whether that final measurement tool performs the appropriate task. I reach these conclusions by interrogating the end product of these processes through content analysis of the survey instrument itself. While it would be ambitious to say that this study

fully achieves this goal of determining the proper functioning of a measurement tool, it is certainly a different step in the right direction.

To summarize the arguments that follow, I first argue that citation networks are evidence of a co-created web of authoritative knowledge wherein the very definition of a concept (such as food security) is either contested or confirmed. In the particular context of food security in the United States, I argue that while some theoretical definitions differ, there is considerable convergence in practically defining the construct through the use of identical survey tools. After identifying these survey tools—those most used to measure where and how much food insecurity exists in the United States—I turn my focus to the contents of those instruments themselves. Upon examining these survey instruments, I further argue that certain components of what is theoretically called “food security” are heavily emphasized in these instruments while other important pieces of that puzzle are either briefly mentioned or totally excluded. In concluding, I suggest that such emphases within these measures reflect the model of translational social science, which epistemologically anticipates policy-based intervention.

Citation Networks and Knowledge Claims

Emerging from the field of library science, bibliometrics have been applied in a broad number of contexts ranging from the assessment of a library’s periodical collection to tracking the output of individual scholars or universities to the impact and quality of scientific journals in their particular field of study (Sengupta, 1992; Shapiro, 1992; Weinberg, 1997). One of the fundamental assumptions of work in bibliometrics is that when scholars cite each other, important intellectual and ideal relationships are formed (Latour 1984). More importantly, the ideas, and arguments cited are granted varying levels

of authority through the formation of citation networks. These networks are central to the assignment of validity and power to certain arguments or ideas while a lack of citation allows other lines of thought to fade into the obscurity of undiscussed non-science. At their heart, applications of bibliometrics like the one presented below are about examining what ideas and whose ideas scholars are talking about most frequently. With an entirely constructed concept like food security, how knowledge is built—partially through citation—is fundamental to understanding what the concept itself even is. Hyland (1999) explores the ways in which academic citation practices contribute to the construction of disciplinary knowledge—or in the case of food security, a particular subject of interest. Hyland notes that social scientists tend to cite more frequently than natural scientists and that these citation practices in the social sciences are linked to the practice of knowledge construction.

Moreover, knowledge is not just constructed in these citation-based interactions, rather certain types of knowledge are granted more authority than others (Gilbert, 1977; Gilbert and Mulkay, 1984; Latour, 1987; Law and Williams, 1982). As Latour argues, citation is used as support and defense for claims that the author makes about a topic, and many authors using a piece to defend themselves gives power and authority to the ideas of that work. In essence, what we may observe is a “convergence on the truth” where agreement becomes proxy for validity, and scientific truth becomes, in part, socially constructed (Hacking, 1999; Latour and Woolgar, 1979; Pinch and Bijker, 1984). Scientific inquiry involves a process of argumentation, critique and replicability. The notion that convergence or agreement may signal that the results or conclusions are correct is not entirely unfounded. However, if this convergence or general agreement is a reflection of

“common practice” by a group of scientists, then from time to time such practices must be evaluated to determine if the tool is still serving its purpose. The focus of this paper is therefore, to consider what has become the authoritative common practice in the scientific study of “food security,” and to assess what vision of that concept these practices produce and galvanize for researchers. Considering governmental and nongovernmental funding is made based on food security research, how one chooses to measure the concepts in question—and the acceptability of those methods to those in power—is no small decision.

My use of citation indexing here reflects the Latourian approach of examining how knowledge claims are defended through citation networks. This is a step beyond simply using citation indexing as a method for evaluating scientific work (Merton, 1979). Simply put, getting cited often and in great volume says little about the “scientific quality” of a piece of work. It does, however point to whose work is being heard most loudly and frequently in the discussions about these topics. As scholars cite articles, which measure food security in specific ways, they ground the defenses of their knowledge claims in the understanding of food security presented in the works they cite. What food security “is” therefore develops from a consensus around methodology within the literature’s social-citation networks, and citation indexing is our evidence of that consensus. The issue of causation—whether science and scientific definitions are developing to meet the needs of scientists and policy makers or whether policy makers are using what scientists can produce—will be further discussed in the conclusion to this paper.

Why Focus on Measurement Tools?

Focusing on the process of research—and more specifically the “tools” of scientific knowledge construction—is often used within the vein of the sociology of science (Clarke

and Fujimura, 1992; Wise, 1995). In analyzing these tools in a given research process, we can uncover unstated, or sometimes faulty, assumptions and better understand the way knowledge and ideas are created, given authority, or critiqued in that research endeavor. Such a critical analysis will then help us identify weaknesses in the research process, and therefore suggest ways to improve it.

This paper considers the definition of food security that emerges from the scientific instruments used to operationalize the term. Analyzing the instruments created and used to scientifically study food security reveals much about how we understand the topic today. In interrogating the measurement tools used to assess levels of food security, we can learn how the scientific approach to the topic actually comes to define the term itself. What begins as nebulous, theoretical and broad, through the process of operationalization becomes concrete, empirical and focused. The ways that such measures define reality also reveals much about our view of the conceptual purpose of food security.

Development of a United States Food Security Measure: A Very Brief Overview

The current methods for measuring United States food security were first developed in the 1990s by scientists working for the USDA. These methods have undergone multiple iterations and revisions in the course of their development. Today, there are two instruments that are used prominently in broadly measuring food security in the United States. The 18-item “US Household Food Security Survey Module” (US-HFSSM or US-FSSM) is the product of ongoing collaboration between the United States Department of Agriculture and the United States Department of Health and Human Services. This instrument (in a constantly evolving form) has been in use dating back to 1997 (Nord, 2008). The other major tool used for measurement of food security—the Food Security

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Supplement to the Current Population Survey (CPS-FSS)—is used in general population surveys conducted by the Census Bureau annually. The analysis below confirms that these two instruments do hold a position of dominance in the field of food security.

As the methods have evolved, there have been several key developments in both the measures themselves and in the ways that the data produced with these instruments may be interpreted. There has also been no shortage of opinions regarding where food security measurement should be heading. Maxwell (1996) perceives three primary shifts in food security theory and measure. First a shift from global and nation-state levels of measurement to more localized levels such as individuals and households. Second, he sees a shift from just focusing on food to more broadly conceptualizing livelihood security. Third, he emphasizes a shift from objective to subjective measures. Webb, et al (2006: p. 1405) give an overlapping, but distinct overview of some of the general changes they have noted, “1) a shift from using measures of food availability and utilization to measuring ‘inadequate access’; 2) a shift from a focus on objective to subjective measures; and 3) a growing emphasis on fundamental measurement as opposed to reliance on distal, proxy measures.” Both these accounts suggest a meaningful dialectical development of theory and method as we have learned more about how food security looks in a real and constantly changing world. As we have seen from the sheer number of theoretical applications of food security presented above, establishing consensus about what food security looks like in practice strictly from these definitions becomes impossible.

In addition to these more broad shifts in the measurement and theorization of food security, there have also been some very concrete changes in the measurement tools analyzed below. The National Academy of Sciences document entitled, “Food Insecurity and

Hunger in the United States: An Assessment of the Measure” (Wunderlich and Norwood, 2006) is invaluable in understanding some of these changes. In its semi-historical account, this assessment makes oblique reference to the process of food security’s development beginning in the 1960s when broader awareness of hunger-related problems in the United States grew. Through the 1970s and 80s, the government began to take a more active role in developing the study of the concept of “food security” and by the mid-1990s, they had produced an instrument which bears a resemblance to the current version of the US-HFSSM. A few key pieces of information about the negotiation process of the instrument are of interest here.

Perhaps the most notable development in this branch of food security measurement history was the eventual exclusion of hunger from instruments and assumptions specifically related to food security. It is particularly significant because much of the early interest and discourse on the topic focused on the existence of hunger in a land of plenty. Nevertheless after a long process of discussion and negotiation, the panel convened to give recommendations regarding the study of food security decided that, “Hunger itself is an important concept, but it should be measured at the individual level distinct from, but in the context of, food insecurity” and that “although a strong theoretical and research base exists for the conceptualization and measurement of food insecurity, we do not have a correspondingly strong base for either the conceptualization of hunger or its measurement” ” (ibid, 2006: 5). Thus hunger—the more readily imaginable source of much interest in food security to begin with—is separated out from a construct that had until then been its complement.

On the topic of dietary adequacy, attempts at briefly addressing issues of perceived

adequacy by asking about “balanced meals” have been critiqued as neither reliable nor valid (Derrickson et al., 2001). With regard to more nutritionally specific adequacy measures, the National Academies panel (2006: 51) concludes, that elements of nutritional adequacy are already measured in other surveys and are therefore unnecessary and inappropriate to include in the food security module. In fact more generally they state, “it is neither required nor necessarily appropriate for USDA to attempt to measure all elements of the conceptual definition of food insecurity as part of the HFSSM”. This explicit recognition brings into focus the intentionality of the limiting of the HFSSM to measuring what a food security theoretician would see as merely one small part of the access component of the conceptual definition.

Clearly these methods have been heavily scrutinized, amended and applied by a group of experts. Looking ahead to the analysis of this paper, I will begin by establishing an empirical basis for the claim that these instruments dominate food security discourse before proceeding to examining the contents of the instruments in their most up to date form.

A Brief Description of the Instruments

US-HFSSM

This tool is an 18-item survey (see Appendix A) with 3 screening questions at the beginning, which determine whether the house is in any way food insecure. This means that most people (the food secure) will only hear these three questions. The remainder of the survey is divided into Adult-Referenced and Child-Referenced questions, which attempt to get at who—within a household—is feeling the effects of food insecurity. It accomplishes this through the use of a mix of yes or no style questions as well as some likert scales using

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the “often, sometimes, or never” qualifiers. All questions are closed ended. All questions have been repeatedly statistically evaluated and validated. This survey is relatively short and has been successfully adapted to various international contexts (Coates et al., 2003; Frongillo and Nanama, 2003; Webb et al., 2002). Additionally, there are short-form versions of this survey that may be incorporated into other survey tools. Respondents are given a score based on their responses and classified according to their food security status (food secure, food insecure, or very food insecure). This survey was developed to be used in a wide variety of contexts, and the studies used in this analysis used it in ways appropriate to their research questions. Regardless, the content of the questions these studies asked was the same.

CPS-FSS

This survey tool (included in Appendix B) is considerably longer than the US-HFSSM and is used primarily by the Census Bureau and the Bureau of Labor Statistics in conducting the Current Population Survey. It is also the source for the data used by the USDA in assembling and proliferating information about food security in the United States. The survey itself is broken down into five content areas of interest. These are, (1) food expenditures, (2) minimum spending need to have enough food, (3) food program participation, (4) food sufficiency and food security, and (5) ways of coping with not having enough food. This survey includes a mix of self-reported estimates (related to spending practices, or the number of days that something like meal-skipping happened), yes or no responses, and likert scales using the “often, sometimes, never” qualifiers. All questions are closed ended. All questions have been repeatedly statistically evaluated and validated. Respondents are given a score based on their responses and classified according to their

food security status (food secure, food insecure, or very food insecure). Like the US-HFSSM, this instrument was developed to be used in a wide variety of contexts. It is additionally used in the rolling data collection processes of the Current Population Survey administered by the Census Bureau and the Bureau of Labor Statistics

Methods

The methods used in this study have two distinct parts. In the first stage, using a Citation Index through the online database Web of Science, I identify the most-cited pieces of literature related to food security research that share a few important characteristics. Web of Science is an online database, which includes the Science Citation Index Expanded, the Arts and Humanities Citation Index, and the Social Sciences Citation Index. Web of Science was used for this study because it serves as both a database of published journal articles in the field of science and as an indexing tool, which allows for the creation citation counts and graphical representation of citation trends. When searching desired criteria, one can easily create citation reports that show which articles are being cited most and when these citations are happening. In my analysis, I used the Science and Social Science Citation Indexes and excluded the Arts and Humanities Citation Index in order to focus on the “science” of food security.

After accessing the Web of Science via the internet, I executed four separate searches for food security using the following combination of search terms, including: “food security united states,” “food security us,” “food insecurity united states,” and “food insecurity us.” I entered each word of each search as a different search criterion with the category of “topic” selected from the drop down menu to the right of the search bars. The goal of these different search term combinations was to maintain focus on the concept of

food security within a United States context while accounting for the variability in how these terms might be mentioned or abbreviated. The results of these searches had publication dates between 1991 and 2009. I also refined these results to what the database labels “articles.” The search “food security united states” returned 299 results, “food security us” returned 287 results, “food insecurity united states” returned 240 results and “food insecurity us” returned 180 results. These results include peer-reviewed articles, symposium papers and United States government documents (i.e. grey literature). I then generated a citation report for each of these results collections.

I then collected the top ten results for each citation report (the top ten most cited articles per search) for a total of 40 documents and combined them in an Excel document. To select a sample of at least twenty appropriate articles to analyze, I read through each article twice and excluded any articles that did not fit the following criteria: (1) is focused on populations in the United States; (2) operationalizes the concept of food security and (3) uses that operationalized concept of food security as either a dependent variable or as a primary independent variable. After eliminating results that did not fit the above criteria, I found eight articles—not a large enough sample to analyze. I therefore returned to the citation reports and extended my sample to include the top 30 most-cited results for each discrete search (n=120). I then eliminated redundant results (n=60) and those that did not fit the criteria above (n=37). After eliminating those articles, I identified the way that food security was operationalized within each of the remaining articles (n=23). A list of these articles can be found in Table 1 below.

Based on the steps above, I identified the most commonly used instruments within these pieces. This was based simply on the frequency with which these methodologies

were used. Of these 23 pieces, 15 used the United States Household Food Security Survey Module (US-HFSSM) while 8 used the Current Population Survey Food Security Supplement (CPS-FSS) as their tool for operationalizing the concept of food security.

Each of these survey instruments consists of a series of questions relating to food consumption patterns. To conduct a content analysis on the survey instruments themselves, I downloaded Microsoft Word document versions of these instruments from the USDA website. The raw interview documents contain instructions for interviewers and data coders about question skip logics and how to code different responses. I deleted all of this extraneous content, leaving only the questions themselves. Given the relative simplicity of this content analysis as well as the very small amount of data, I began the analysis by hand. I read through each set of questions carefully 10 times each to fully familiarize myself with their contents. Before forming coding categories, I entered the instruments into the computer program NVIVO. After entering them into the program, I produced a simple word count to see which keywords appear most frequently within these instruments. The results of this word count can be found in Table 2 below. This provided some basic “descriptive statistics” about the instruments, which further informed the formation of the categories into which I coded the survey questions. These categories were intended to highlight the component(s) of food security that each question measured.

I created the following categories based on my repeated readings of the instruments in light of the word counts produced. I also took into consideration the process of measurement development briefly outlined above.

Food Assistance

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Any explicit reference to either governmental (SNAP, WIC, etc.) or non-governmental food assistance usage is coded in this category.

Children

This is a category for any question, which explicitly mentions children.

Coping

Any question, which explicitly refers to behavioral changes done in order to cope with the situation of food security, is coded into this category.

Economic Access to Food

Any question that explicitly mentions money or affordability is coded in this category.

Hunger

Questions that use any form of the word hunger or hungry are coded into this category.

Dietary Quality

As many have pointed out, “enough calories do not assure a healthy and nutritional diet” (Pinstrip-Andersen, 2009). Therefore, one part of the food security definition—for many—has been the quality of diet available. One of the frequently used images in discussions of United States food insecurity, the food desert, is not devoid of food, but rather “healthy food.” This points to the importance of dietary quality in some conceptions of food security. Questions, which address this component of food security are coded in this category. Usually such questions use words like “balanced meal” and “quality.”

Dietary Quantity

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Not getting enough calories is still a major piece of why food security matters in the health of individuals. Any time “enough” is used in reference to food, that question is coded into this category.

Stress

This category centers on questions focusing on “worries” or concerns. The role of stress in experiences of poverty and food insecurity should not be underestimated.

Having these themes in mind, I read through each instrument again to assure that I had created as many categories as I would need. I then read through each instrument again and coded each question according to which categories it embodied. The frequencies of this coding can be found in Table 3 below. Note that although an instrument may be an 18 item survey, there are sometimes multiple questions within one “item” and this accounts for the larger numbers of questions addressing each category.

Findings

The articles analyzed can be found in Table 1 below. For the sake of space, I have included only the first authors for each article and excluded the article titles. Full references for all these articles may be found in the references section below. The data reveals that several journals—namely the *Journal of Nutrition*—factor heavily in the discussions of food security science. Most of the articles discussed here were published sometime between 1999 and 2006, which makes sense given that they would have more time to gain authority and to be cited. Additionally, it suggests that these dominant pieces have moved past the early iterations of food security measurement tools found during the early 1990s. One perplexing piece of the data presented here is that there is not an

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abundance of work by the traditional authorities on United States food security, such as Nord, Coates and Frongillo.

Table 1. Most Cited Articles in Food Security Science*

Authors	Instrument	Source Title	Publication Year	Total Citations	Average per Year
Olson, CM	CPS-FSS	JOURNAL OF NUTRITION	1999	111	7.93
Adams, EJ	HFSSM	JOURNAL OF NUTRITION	2003	97	9.7
Cook, JT	HFSSM	JOURNAL OF NUTRITION	2004	84	9.33
Tarasuk, VS	CPS-FSS	JOURNAL OF NUTRITION	2001	77	6.42
Carlson, SJ	CPS-FSS	JOURNAL OF NUTRITION	1999	66	4.71
Whitaker, RC	HFSSM	ARCHIVES OF PEDIATRICS & ADOLESCENT MEDICINE	2006	63	9
Frongillo, EA	CPS-FSS	JOURNAL OF NUTRITION	1999	58	4.14
Stuff, JE	HFSSM	JOURNAL OF NUTRITION	2004	55	6.11
Bhattacharya, J	CPS-FSS	JOURNAL OF HEALTH ECONOMICS	2004	54	6
Rose, D	HFSSM	PEDIATRICS	2006	50	7.14
Whitaker, RC	HFSSM	PEDIATRICS	2006	47	6.71

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Casey, PH	HFSSM	ARCHIVES OF PEDIATRICS & ADOLESCENT MEDICINE	2005	46	5.75
Skalicky, A	HFSSM	MATERNAL AND CHILD HEALTH JOURNAL	2006	46	6.57
Rose, D	CPS-FSS	JOURNAL OF NUTRITION	1999	44	3.14
Jones, SJ	HFSSM	ARCHIVES OF PEDIATRICS & ADOLESCENT MEDICINE	2003	40	4
Melgar-Quinonez, HR	CPS-FSS	JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION	2004	39	4.33
Kaiser, LL	HFSSM	AMERICAN JOURNAL OF CLINICAL NUTRITION	2004	33	3.67
Rose-Jacobs, Ruth	HFSSM	PEDIATRICS	2008	33	6.6
Cook, John T.	CPS-FSS	REDUCING THE IMPACT OF POVERTY ON HEALTH AND HUMAN DEVELOPMENT: SCIENTIFIC APPROACHES	2008	33	6.6
Cook, JT	HFSSM	JOURNAL OF NUTRITION	2006	32	4.57
Harrison, GG	HFSSM	JOURNAL OF NUTRITION	2003	31	3.1

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Olson, CM	HFSSM	JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION	2002	29	2.64
Casey, PH	HFSSM	PEDIATRICS	2006	27	3.86

*Only first authors are presented in this table. Full references for all articles presented here may be found below.

Table 2 shows the word counts and the associated categories produced using NVIVO. The entire process through which these categories were developed is described above in the methods section. Initially, the words listed in the first column were used to form the coding category, but once coding began, those words were then also used as markers for putting a question into that category. For example, the preponderance of the word enough (either preceding food or money) necessitated the creation of the categories of adequate dietary quantity and economic factors. When coding the questions, the use of the word enough became a marker justifying the coding of the question into that category. It is important to note that the word counts were only used to guide and inform the process of coding category formation.

Table 2. Selected word counts used to aid in the creation of coding categories

Word	Associated Coding Category	Count
enough	Quantity/Economic	39
money	Economic	33
children	Children	26
child	Children	18
spend	Economic	11
afford	Economic	10
more	Quantity	9
skip	Coping	8
benefits	Assistance	7
stamp	Assistance	7
hungry	Hunger	6
kinds	Quality	6
receive	Assistance	6
snapname1	assistance	6
bought	Economic	5
cost	Economic	5
less	Quantity	5
balanced	Quality	4
program	Assistance	4
purchases	Economic	4

Table 3 shows the number of questions that fell into each coding category. These counts are for each of the instruments individually, and then a total for both instruments combined. Although these instruments have a relatively small number of items, each item can have several questions. The data below says that, for instance, in the CPS-FSS, there are 29 questions that address the economic component of food security, while there are only 4 questions that address the dietary quality of respondents.

Table 3. Number of questions from US-HFSSM falling into each coding category

Category	US-HFSSM	CPS-FSS	Total
Economic	15	29	44
Quantity	10	13	23
Coping	10	11	21
Children	7	12	19
Assistance	0	14	14
Quality	4	4	8
Hunger	2	2	4
Stress	1	1	2

The data presented here yields several particularly interesting findings. First, and perhaps most obviously, we can see that the most heavily emphasized component of food security within these survey instruments is economic access. It was the most often assessed piece of food insecurity overall and in each instrument individually. Dietary quantity also receives a rather large amount of focus while dietary quality was considerably less emphasized. The coping strategies used by those experiencing food security and the food insecurity experience of children were also both moderately emphasized in the instruments. Food assistance was an important component of interest in the Current Population Survey, but was relatively much less important in the Household

Food Security Survey Module. The categories of hunger and stress were considerably less important parts of both survey instruments.

Clearly many questions cover more than one category, but a deeper reading of the instruments shows that several themes tend to go together often. The primary overlap of interest is the duo of Economic Access and Dietary Quantity. The general phrasing of questions of this sort is something like “did you have enough money for enough food.” This may be a general question about whether such conditions existed or it may ask about coping mechanisms when there were inadequate funds and food. While there was considerable coincidence between these two components, throughout the instruments economic access was coupled with many of the other categories. At the end of many questions, “because there wasn’t enough money for food” becomes a familiar refrain. Through this phrase, many other components of food security become mediated by economic access.

Considering some of the developments in the measurement of food security discussed above, there are a few somewhat surprising results from the data presented here. First, hunger is still incorporated into both instruments. Despite the fact that the developers of the measure felt that there was not a theoretical basis for measuring hunger within a food security module, and that food security was conceptually distinct from hunger, the word “hungry” still appears in these questions. It is not a focus, but it is present. In the same document that suggests the separation of hunger and food security, there is an acknowledgment that food security measurements should not be used as evaluative data for the performance of food assistance programs. That does not seem to be the purpose of

the food assistance-focused questions here, but it is important to note that there are still questions about this topic included in these instruments.

On the topic of dietary adequacy, we can see that there are several questions on each survey instrument that focus on “what kind” instead of exclusively “how much.” This is somewhat surprising considering the aforementioned statement that it is not the task of food security measurement tools to assess dietary adequacy. It is also important to note that several of the quality-related questions employ the already mentioned “balanced meal” language thoroughly critiqued by Derrickson, et al (2001). Thus, the measure we find is not exactly as the authors of the “Assessment of the Measure” called for or anticipated. Many of the vestiges of earlier forms remain, some of which have been shown to be problematic.

Discussion

A fairly clear definition of food security emerges from the analysis above. The findings presented and discussed show that the overwhelming emphasis in food security as measured by these most-used survey instruments falls on the relative inability of respondents to economically access enough food. Despite all of the florid and complex theoretical definitions presented in the introductions to most discussions of food security in the United States, any analysis based on data collected using these instruments only tells us about that kind of food security (Hoddinott, 1999; Mooney and Hunt, 2009; Smith et al., 1992). Direct questions about amounts of money and food, and other questions about coping mechanism in response to shortages are the two primary pathways used to assess this dominant component. Any social scientist knows that when translating theoretical constructs to operational instruments, some of the nuance of the original concept is lost. The fact that these results show that some piece of food security is missed in the

operationalization is not particularly interesting. The interesting story is the one regarding what gets lost and what remains when a theoretical term is made scientifically concrete. In this case, the results of this analysis show a very specific vision of food security emerging from the instruments—the products of a long process of invention and refinement.

In moving forward, the answers to two questions become crucial to the future of food and social justice both in the United States and globally. The first question will be addressed here, while the second is discussed in the conclusion below. The first is, why has this become the dominant de facto definition of food security? Huish (2008) points to the process of knowledge translation from academics to policy makers in understanding how food security came to be thus defined. In explaining phenomena related to social justice and social change, certain critical dimensions of the concepts and the ways of framing solutions are lost. Specifically he argues that, “the knowledge translation process puts social justice concepts at risk of being truncated, compartmentalized and disconnected from their original aims of improving the human condition for the most vulnerable individuals” (Huish, p. 1388). So rather than a broad program for change, food security instead becomes a broadly cited and “accurate,” but limited measurable phenomenon.

Therefore one possible explanation for why this version of food security has emerged is that it reflects the sacrifices necessitated by the model of translational science. A term that is often used in discussions of the links between medical research and clinical practice (Pardridge, 2003; Woolf, 2008), translational science also has major implications for any social scientist working with issues of social justice. If the work (in this case the measurement of food security) is to be translated into some kind of action (in this case the amelioration of said food security) then some seem to assume that there is a fundamental

epistemological difference in approaching that work. Measurability, precision and accuracy all rank high on priorities of any kind of research, but in the case of translational science, the need for “actionable” results is central.

In essence, the version of food security that we see in the instruments analyzed above represents a version of the problem that policy makers are equipped to handle. To use an analogy, since policy makers only have a hammer in their toolkit, even screws are made to look like nails. I would like to advance this argument slightly by arguing that in this specific case, the version of food security we see is the result of the intersection of statistical need to limit the focus of measurement and the need of policy makers to have a statistical base for action. Therefore the fact that policy makers not only need a version of the problem they can address, but they also need the story of that problem to be told in “valid,” authoritative numbers is highly pertinent to this conversation.

Conclusion

In recognizing that need for authority, “actionability,” and defensibility, this paper comes full-circle. Through citation networks, I evaluated how certain ideas are confirmed through convergence, and granted authority by being used to defend claims. In the back end of this argument, I submit that policy makers need a specific kind of scientific tool to guide and validate their work. Food security has risen to meet this need. Channeling Voltaire, if such a measurement did not exist, then it would be necessary to invent it. I do not interpret the invention of this tool as mal-intended or as rooted in any particularly salient social conflict. Rather it is emergent from the social process of scientific knowledge creation and may be understood as such. These processes often happen subtly and through the collective activity of many people with good intentions, and this paper does not seek to

cast “blame” for how things have happened. Additionally, the fact that the instruments fit well with a model of translational science that makes sense to policymakers does not mean that it is unhelpful. It does force us to begin addressing the second important question raised in this conclusion.

The second question crucial to the future of United States and global food inequality is, is understanding food security in the ways that these measures allow us to understand it helpful for scientific, policy and community-based goals? That is to say, do the findings of this analysis matter? If we are still able to achieve meaningful increase in the welfare of the populations studied, then a slightly problematic measure seems less of an issue. With rates of both low and very low food insecurity in fact rising between 1999 and 2009 (Andrews and Nord, 1999; Nord and A. Coleman-Jensen, 2010), this does not seem to be the case. The major economic downturn of the late 2000s certainly has played a role, but this simple trend in the food security prevalence rates may also suggest that our efforts to understand and mitigate the phenomenon have not been entirely successful.

I argue that practically defining food security in these specific ways has major effects on how we can even think about solving the problem. My fear is that seeing food security as “economic access to a quantity of calories” anticipates purely economic solutions, and in so doing drastically limits our creativity in thinking about these problems. I also argue that it epistemologically encourages a missionary-beneficiary approach to the food insecure that dismisses the possibility of change emergent—not from money—but from community. Therefore, my critique is aimed squarely at the way that the current approach to measuring food security in the United States encourages economically focused interpretation of the data it produces. It is not necessarily logical to assume that more

money is the solution. Policymakers, thoroughly convinced that it is their job to legislate the solution can easily interpret these results as a need for more money (i.e. food assistance, welfare, etc.) thrown at the problem. While economic access is a central component of food security, and I fully support the assessment of the economic pieces of this puzzle, I simply caution that reductionism is dangerous.

Future efforts in this area should seek to understand how food security measurement could be useful to actually addressing the social justice issues encapsulated by the term. If our science is to be truly translational, then it should translate to real impacts in the lives represented by the data points on the statistician's screen. Like Miller-Day (2008: 12), I too long for "a science that pushes beyond the current status quo, [and] strives toward an engaging, relevant, empowering social science". If the problem studied is complex, then it is complex, and unintentionally implying it is simple or of a single dimension does not make it so. A food security score and label such as "very low food security" belies much of the complexity of the experience of food insecurity. The data presented and discussed above suggest that the authors of these instruments did include several components of the food security definitions advanced by the USDA. The data also suggest that several components of the food security definition dominate in this approach to measurement. A vision of a complex social justice phenomenon reduced to one or several dominant concepts—while statistically necessary and convenient—may lead to problems in moving forward toward truly meaningful action. Some may argue that this is a call to resignation and frustration at the complexity of the issue at hand. On the contrary, I feel that in looking forward, the complexity of both the problems presented and the solutions they will require reveals a plethora of opportunity for engagement between many

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diverse institutions and individuals to tailor action to the local and relevant context in which these actors work and live. By seeing this instrument as a product of the social process of scientific research and seeing some of its limits, perhaps we can use its results merely as background information for understanding and addressing the real and connected problems our local, national, and global communities face.

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Appendix A: United States Household Food Security Survey Module Questions (Coleman-Jensen, 2012a)

Which of these statements best describes the food eaten in your household in the last 12 months: —enough of the kinds of food (I/we) want to eat; —enough, but not always the kinds of food (I/we) want; —sometimes not enough to eat; or, —often not enough to eat?

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 (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is “(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more.” Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?

“The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?

“(I/we) couldn't afford to eat balanced meals.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?

In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?

In the last 12 months, did you lose weight because there wasn't enough money for food?

In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No (Skip 12a)
- DK (Skip 12a)

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How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

“(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?

“(I/We) couldn’t feed (my/our) child/the children) a balanced meal, because (I/we) couldn’t afford that.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?

"(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?

In the last 12 months, did (CHILD’S NAME/any of the children) ever skip meals because there wasn't enough money for food?

How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?

In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

Appendix B: Current Population Survey Food Security Supplement (Coleman-Jensen, 2012b)

I. FOOD EXPENDITURES

This month we are asking some questions about food used in your household and the ways you are managing to meet your food needs. (/The best person to answer would be the adult most knowledgeable about food shopping and meal preparation. Would that be you or someone else?)

These first questions are about all the places at which you bought food LAST WEEK. By LAST WEEK, I mean from Sunday through Saturday.

First, did (you/anyone in your household) shop for food at a supermarket or grocery store LAST WEEK?

Think about other places where people buy food, such as meat markets, produce stands, bakeries, warehouse clubs, and convenience stores. Did (you/anyone in your household) buy food from any stores such as these LAST WEEK?

LAST WEEK, did (you/anyone in your household) buy food at a restaurant, fast food place, cafeteria, or vending machine? (Include any children who may have bought food at the school cafeteria).

Did (you/anyone in your household) buy food from any other kind of place LAST WEEK?

Now I'm going to ask you about the ACTUAL amount you spent on food LAST WEEK in all the places where you bought food. Then, since LAST WEEK may have been unusual for you, I will ask about the amount you USUALLY spend.

How much did (you/anyone in your household) ACTUALLY spend at supermarkets and grocery stores LAST WEEK (including any purchases made with <SNAPNAME1> or food stamp benefits)?

How much of the (fill with S20) was for non-food items, such as pet food, paper products, alcohol, detergents, or cleaning supplies?

How much did (you/your household) spend at stores such as meat markets, produce stands, bakeries, warehouse clubs, and convenience stores LAST WEEK (including any purchases made with <SNAPNAME1> or food stamp benefits)?

How much of the \$(fill with S40) was for non-food items, such as pet food, paper products, alcohol, detergents, or cleaning supplies?

How much did (you/your household) spend for food at restaurants, fast food places, cafeterias, and vending machines LAST WEEK, not including alcohol purchases?

How much did (you/your household) spend for food at any other kind of place LAST WEEK?

(Let's see, it seems that (you/your household) did not buy any food LAST WEEK. /Let's see, (you/your household) spent about (fill with \$80) on food LAST WEEK.) Now think about how much (you/anyone in your household) USUALLY (spend/spends). How much (do you/does your household) USUALLY spend on food at all the different places we've been talking about IN A WEEK? (Please include any purchases made with <SNAPNAME1> or food stamp benefits). Do not include non-food items such as pet food, paper products, detergent or cleaning supplies.

If that is because you shop for food infrequently, how much would the weekly average be over several weeks?

II. MINIMUM SPENDING NEED TO HAVE ENOUGH FOOD

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?

About how much MORE would you need to spend each week to buy just enough food to meet the needs of your household?

About how much LESS could you spend each week and still buy enough food to meet the needs of your household?

III. FOOD PROGRAM PARTICIPATION

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?

In the past 12 months, since December of last year, did (you/anyone in this household) get <SNAPNAME2> or food stamp benefits?

In which months of 2010 were <SNAPNAME1> or food stamp benefits received?

On what date in November did (you/your household) receive <SNAPNAME1> or food stamp benefits?

How much did (you/your household) receive the last time you got <SNAPNAME1> or food stamp benefits?

During the past 30 days, did any children in the household (between 5 and 18 years old) receive free or reduced cost lunches at school?

During the past 30 days, did any children in the household (between 5 and 18 years old) receive free or reduced cost breakfasts at school?

During the past 30 days, did any children in the household receive free or reduced-cost food at a day-care or Head Start program?

During the past 30 days, did any (women/women or children/children) in this household get food through the WIC program?

How many (women/women or children/children) in the household got WIC foods?

IV. FOOD SUFFICIENCY AND FOOD SECURITY

The next questions are about the food eaten in your household in the last 12 months, since December of last year, and whether you were able to afford the food you need.

Which of these statements best describes the food eaten in your household-- enough of the kinds of food (I/ we) want to eat, enough but not always the kinds of food (I/ we) want to eat, sometimes not enough to eat, or often not enough to eat?

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 (you/your household) in the last 12 months.

The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months?

Did this ever happen in the last 30 days?

"The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that OFTEN, SOMETIMES or NEVER true for (you/ your household) in the last 12 months?

Did this ever happen in the last 30 days?

"(I/we) couldn't afford to eat balanced meals." Was that OFTEN, SOMETIMES or NEVER true for (you/ your household) in the last 12 months?

Did this ever happen in the last 30 days?

In the last 12 months, did (you/ you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

How often did this happen almost every month, some months but not every month, or in only 1 or 2 months?

Now think about the last 30 days. During that time did (you/ you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

How many days did this happen in the last 30 days?

In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

How often did this happen almost every month, some months but not every month, or in only 1 or 2 months?

Did this happen in the last 30 days?

In the last 30 days, how many days did you eat less than you felt you should because there wasn't enough money for food?

In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

How often did this happen almost every month, some months but not every month, or in only 1 or 2 months?

Did this happen in the last 30 days?

In the last 30 days, how many days were you hungry but didn't eat because there wasn't enough money for food?

In the last 12 months, did you lose weight because there wasn't enough money for food?

Did this happen in the last 30 days?

In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

How often did this happen almost every month, some months but not every month, or in only 1 or 2 months?

Now think about the last 30 days. During that time did (you/ you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

How many times did this happen in the last 30 days?

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.

"(I/we) relied on only a few kinds of low cost food to feed (the child in (my/our) household/the children) because (I was/we were) running out of money to buy food. Was that OFTEN, SOMETIMES or NEVER true for (you/ your household) in the last 12 months?

Did this ever happen in the last 30 days?

"(I/we) couldn't feed (the child in (my/our) household/the children) a balanced meal, because (I/we) couldn't afford that." Was that OFTEN, SOMETIMES or NEVER true for (you/your household) in the last 12 months?

Did this ever happen in the last 30 days?

"(The child in (my/our) household was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that OFTEN, SOMETIMES or NEVER true for (you/ your household) in the last 12 months?

Did this ever happen in the last 30 days?

Wolff—Meaning from Method

In the last 12 months, did you ever cut the size of (the child's/any of the children's) meals because there wasn't enough money for food?

How often did this happen - almost every month, some months but not every month, or in only 1 or 2 months?

Did this happen in the last 30 days?

In the last 30 days, how many days did you cut the size of (the child's/any of the children's) meals because there wasn't enough money for food?

In the last 12 months, (was the child/were the children) ever hungry but you just couldn't afford more food?

How often did this happen - almost every month, some months but not every month, or in only 1 or 2 months?

Did this happen in the last 30 days?

In the last 30 days, how many days (was the child/were the children) hungry but you just couldn't afford more food?

In the last 12 months, did (the child/ any of the children) ever skip a meal because there wasn't enough money for food?

How often did this happen almost every month, some months but not every month, or in only 1 or 2 months?

Now think about the last 30 days. Did (the child/any of the children) ever skip a meal during that time because there wasn't enough money for food?

How many days did this happen in the last 30 days?

In the last 12 months, did (the child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

Did this happen in the last 30 days?

V. WAYS OF COPING WITH NOT HAVING ENOUGH FOOD

During the past 30 days, did (you/anyone in this household) receive any meals delivered to the home from community programs, "Meals on Wheels," or any other programs?

Wolff—Meaning from Method

During the past 30 days, did (you/anyone in this household) go to a community program or senior center to eat prepared meals?

In the last 12 months, did (you/you or other adults in your household) ever get emergency food from a church, a food pantry, or food bank?

How often did this happen almost every month, some months but not every month, or in only 1 or 2 months?

Did this happen in the last 30 days?

Is there a church, food pantry or food bank in your community where you could get emergency food if you needed it?

In the last 12 months, did (you/you or other adults in your household) ever eat any meals at a soup kitchen or shelter?

How often did this happen-almost every month, some months but not every month, or in only 1 or 2 months?

Did this happen in the last 30 days?