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# Adaptation of the U.S. Food Security Survey Module in a small rural Dominican Republic community: A pilot to assess food insecurity

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## Abstract

Food insecurity continues to affect a significant proportion of the population in many countries. The concept and measurement of food insecurity at the household and individual levels has been an area of extensive research resulting, among other things, in the development of the Food Security Survey Module (FSSM) in the United States, where it is now the standard methodology for determining household food security status. One of the purposes of this study was to adapt the U.S. FSSM and assess its validity in the context of a less developed economy. We administered the U.S. FSSM in a pilot household survey of 110 low-income families in the Dominican Republic in 2006–2007 from information generated from a focus group a year earlier. The survey results indicated that 93% of the respondents were food-insecure, of whom 80% experienced very low food security (food insecurity with hunger). In 89% of households with children, children faced very low food security (food insecurity with hunger). The results of this pilot study demonstrate at a preliminary level the validity of the FSSM in its adapted and modified form for assessing the degree of food insecurity in the Dominican Republic.

## Keywords

Dominican Republic, food security, survey data, USDA Food Security Survey Module

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## Introduction

Food insecurity continues to affect a significant proportion of the population in many countries. According to the Food and Agriculture Organization of the United Nation (FAO), 29.3% of the global population faced food insecurity in 2021 (FAO et al., 2022).[1] The cited figure is 8.1 percentage points higher than the rate that prevailed in 2014, indicating a worsening of the food-insecurity problem globally. No comparable data are available for the Dominican Republic, although it may be deduced from the experience of the Caribbean as a subregion whose food insecurity rate (64%) is reported to be more than twice the global rate during the same year, and represents a rise of 8.9 percentage points compared to 2014 (FAO et al., 2022). The rate of severe food insecurity—a condition in which "individuals have likely run out of food, experienced hunger and, at the most extreme, gone for days without eating, putting their health and well-being at serious risk"—for the region in question in 2021 was reported to be 30.5% (FAO, 2022).

As food insufficiency is recognized to pose long-lasting challenges to nutrition, health, and social policy, researchers both at public and private institutions have recently exhibited renewed and growing interest in its measurement at the household and individual levels (Bickel et al., 1999, 2000; Carlson et al., 1999; FAO, 2003; Girvan, 2001; Olson, 1999; USDHHS, 1993). Most of the recent research on the subject has used food insecurity as a core indicator of the deprivation of basic food needs. The concept of food insecurity at the household and individual levels has been an area of extensive research since the late 1980s by individual researchers and public agencies. This work culminated in a report by the Life Sciences Research Office of the Federation of American Societies for Experimental Biology, published in 1990, in which food (in)security and hunger were conceptualized as follows:

> **Food security**—"Access by all people at all times to enough food for an active, healthy life. Food security includes at a minimum: (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies)."
>
> **Food insecurity**—"Limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways." (as cited in Bickel et al., 2000, p. 6)

Subsequent to the release of the aforementioned report, a national benchmark measure of food security was developed and tested in order to estimate trends in household food insecurity in the U.S. This process involved designing survey instruments with the view to "obtaining information on a variety of specific conditions, experiences, and behaviors that serve as indicators of the varying degrees of the severity of the condition" (Bickel et al., 2000, p. 8). The set of standardized food security questions determined through these surveys provided the basis for the Household Food Security Scale.

The Household Food Security Scale measures the extent of household food insecurity and hunger as perceived, experienced, and described by respondents. The scale, using a single numerical value, is used to classify respondents into one of the following categories, each representing a range of severity: food security (at high and marginal levels), low food security, and very low food security. Ranking individuals or households based on the various degrees of severity of food insecurity is argued to be an important factor that will help target and evaluate food-related policies and programs (Pérez-Escamilla et al., 2020). The construction of the food security scale reflects and underscores the

[1] The prevalence of food insecurity including "moderate or severe food insecurity is an estimate of the proportion of the population who face moderate or severe constraints on their ability to obtain sufficient food over the course of a year" (FAO et al., 2022, Section 1.2, para. 1). This is measured using FAO's Food Insecurity Experience Scale survey module, which is "a set of eight questions asking respondents to self-report experiences associated with limited access to food" (FAO et al., 2022, Section 1.2, para. 1).

importance of household financial resource constraint as the ultimate cause of food insecurity. However, because the scale is based on household conditions, events, behaviors, and subjective reactions, it provides more comprehensive information about the sense, occurrence, and degree of food deprivation than can be ascertained through traditional income and poverty measures.

The food security instruments and scale have been employed by a number of researchers who have studied the prevalence of food insecurity, its determinants, and coping strategies in the U.S. among various segments of the population (e.g., Bezuneh & Yiheyis, 2020; Carlson et al., 1999; Gundersen & Zihiak, 2018; Himmelgreen et al., 2000; Kasper et al., 2000; Myers & Painter, 2017; Nord & Golla, 2009; Polit et al., 2000). The U.S. Household Food Security Scale Module (U.S. HFSSM) has also been adapted and validated for use in other countries, including developing countries. For example, Pérez-Escamilla et al. (2004) assessed the validity of the U.S. HFSSM 15-item scale in Brazil by translating the module into Portuguese and testing it for content and face validity. The authors reported results indicating the validity of the adapted version of the U.S. HFSSM in the city of Campinas, with similar results replicated in four additional states in Brazil.

The validity of the HFSSM 18-item scale was also tested in Trinidad and Tobago by Gulliford et al. (2006) using a survey of primary school children with their parents completing the module questionnaires. The results reported support the application of the U.S. HFSSM to measure and classify food insecurity status of children and adults in Trinidad and Tobago. Hackett et al. (2007) assessed the validity of a modified version of the module on a sample drawn from four rural communities in Ecuador, and the results suggest the usefulness of their modified version to measure food insecurity in the country. Randolph et al. (2007) adapted and validated the U.S. HFSSM in a rural area in Senegal and reported its validity for measuring food insecurity in the country, also drawing similar implications for sub-Saharan and other African countries. The module was also adapted and applied in Peru in the context of urban and rural communities, with the quantitative results showing robustness in the reliability of the adapted 15-item scale (Vargas & Penny, 2010).

In a similar vein, this paper seeks to assess the validity of the U.S. HFSSM among a rural, low-income population in the Dominican Republic based on a survey of rural households conducted in 2006–2007. In addition to adapting the FSSM in the context of the Dominican Republic, the paper assesses the prevalence of food insecurity and explores the characteristics of food-insecure people in a low-income community in the country. To our knowledge, this study is the first attempt to adapt and validate the FSSM instrument to assess household food security status in the Dominican Republic.[2] The rest of the paper is organized as follows: The next section provides an overview of the concept and measurement of food insecurity; we then describes the study site, sample, and methodology used in the study. An overview of the sampled community and the food security status of households is provided next, followed by an analysis of data and a discussion of results. The final section summarizes and offers concluding remarks.

## The Study Site, Sample, and Methodology

To put the present study in perspective, we first provide a brief macro-data overview of the study country from which implications for food security may be drawn.[3] The Dominican Republic is an island nation in the Caribbean with a population of 11.1 million as of 2021, with 16.8% living in rural areas. The country's land area is 48,310 sq. km (18,653 sq. miles), of which, in 2020, agricultural land and arable land were 50.3% and 18.2%, respectively, with an average of 0.08 hectare (0.2 acre) of arable land per person. Of the total agricultural land, an average of 9.9% was irrigated in the 2010s, with about one percentage point increase from the preceding decade. With a GDP per capita of US$8,411 (constant 2015 US$) or US$18,626 (in

[2] This paper is based on the food security study report submitted to USDA ERS by Bezuneh et al. (2008).
[3] Unless noted otherwise, the figures in this macro-data overview are from World Bank (n.d.) using the latest year for which data were available at the time of writing.

constant 2017 international $) and an adult literacy rate of 95.2% in 2021, the Dominican Republic ranks among upper-middle-income countries. Its economy grew at annual average rate of 4.3% and 5.6% in the 2000s and 2010s, respectively, with a remarkable turnaround in 2021 at a rate of 12.3% from the decline of 6.7% it suffered in 2020. The majority of the country's economic activity in terms of value-added products originates from the services sector, accounting for 54.6% of GDP in 2021, while the contribution of agriculture, forestry, and fishing was a mere 5.7%. International tourism remains a major source of foreign exchange, although the receipt therefrom as a share of total exports has been on a decline from a mean of 47.2% in the 2000s to 34.4% in 2010s.

The food production index[4] in the country increased by 44.8% in the 2010s compared to that of the 2000s, with a 22.1% increase registered in 2020 relative to the prior decade's average. The country's degree of openness measured in terms of the sum of exports and imports as a share of GDP was 52.7% in 2021, which represented a considerable decline from 79.3% in 2000, compared to an average of 68.4% during the first decade of the 2000s. The country is a net exporter of food, albeit not by a wide margin. In 2021, for example, the share of food imports in total merchandise imports was 16.7%. The corresponding figure for food exports stood at 22.8%.

Despite its upper-middle-income status, the pattern of income distribution in the country with a Gini coefficient of 39.6 in 2020 suggests that access to necessities including food is a challenge for a considerable segment of the population. This figure, which is roughly equivalent to that of the U.S. for the same year, is better than the average of 50.3 recorded in the 2000s. More tellingly, the share of income held by the highest 20% was 45.7% in 2021, although it is lower than the more than 50% for most of the preceding couple of decades.[5] The bottom 40% received 21.7% of the nation's income in 2021. Using the measure of poverty headcount ratio at national poverty lines, 21% of the country's population lived in poverty in 2019 (latest year), 5.6 percentage points lower than what was experienced two years earlier. The measure of poverty headcount ratio at US$6.85 a day (2017 purchasing-power parity) puts the poverty rate at 23.2% in 2021, which is about half of the average of the poverty rate recorded in 2000s.

According to the FAO's estimates, the prevalence of undernourishment in 2019–2021 was 6.7%, in contrast with an average of 19.7% in the decade of 2000s. The country's infant mortality rate (per 1,000 live births) was 27.3 in 2021, not considerably lower than that observed approximately a decade before. Notwithstanding an improvement over the years in the pattern of income distribution and the incidence of poverty and its manifestations, the challenge remains that increases in economic growth and food production have not enhanced access to the fruits of growth for the poorest segment of the population.

As mentioned, knowledge of the degree of severity of the problem of access to food is the first step for targeted policy and program intervention and evaluation. The empirical approach to quantify the effects of lack of access to food encompasses the use of the U.S. HFSSM, which this study seeks to apply and validate, and thereby to assess the extent of food insecurity in the Dominican Republic (D.R.). To that end, a small and relatively poor community, Las Tablas, in the municipality of Baní in Peravia Province, was selected as a survey site for the present study.

The study site is located in the southwest part of the country, about 47 miles (75.6 km) from the capital city, Santo Domingo (Figure 1). Although any community within the country could have been chosen, Las Tablas has features that attracted this pilot work: It is (1) relatively very poor and rural, (2) has a clear demarcation for survey sampling, and (3) has a convenient transportation route for enumeration. Prior to conducting the survey, we first organized and carried out a focus-group exercise to make the survey more culturally sensitive. The final survey was administered in 2006–2007.

[4] "Food production index covers food crops that are considered edible and that contain nutrients" (World Bank, n.d., "Long definition").

[5] No data were found on this variable from the same source prior to 2017.

**Figure 1. Map of the Dominican Republic with the Study Area Indicated**


Source: Map of Dominican Republic (World Atlas, n.d.).

Despite the long delay since the primary survey, the continuing food insecurity condition in the study area, in particular, and the D.R., in general, prompted us to revisit the food insecurity situation and consider disseminating the findings of the study.[6] As a result, we carried out a review of the current literature not only about the specific study site and country but also across the subregion in order to validate the information that was generated from the survey data. Given the food insecurity situation in the D.R. and our objective of adapting and validating the U.S. food security measurement scale in a different cultural setting, we believe that the data and information are still relevant and valid even after the passage of time.[7] At the time of the survey, this community had 193 households and almost 900 people, with an almost equal gender ratio (453 female and 447 male). One hundred and ten households were randomly selected for this study, representing more than 50% of the households in the community. Every other household in a grid of three streets was selected for

[6] For example, two of the coauthors visited the study site and conducted meetings in October 2018 and March 2019 with field/extension workers to discuss the changes that they were able to observe to the food security situation in the area. We learned from these discussions that the food security situation has not improved and may have gotten worse.

[7] The methodological adaptation process continues to be valuable, particularly for researchers at Instituto Dominicano de Investigaciones Agropecuarias y Forestales (IDIAF), where one of the coauthors is a principal researcher of national food security for the northern region and former director of the institute. The findings and methodology of the study remain relevant and have been reflected in numerous studies including del Rosario, 2021; del Rosario et al., 2018; and del Rosario et al., 2008.

interview. However, 10 to 14 households were included in the final sample even though their spatial locations did not fit either the grid or the every-other-household pattern.

Table 1 summarizes the basic characteristics of the sample. Ninety-three percent of the households surveyed were families with children. Family size ranged between one and 10 (each accounting for 1% of the sample), although a typical family in the sample had fewer than five members. Eighty percent were female-headed. That ratio is somewhat higher among households with no children. The illiteracy rate was 39%, lower among families with children, but still far higher than the national average. For roughly half of the respondents, primary education is the highest educational attainment. The rate of attainment at the secondary level is much lower. The percentage of respondents with primary and secondary education is slightly higher for those in households with children.

## The Measurement of Food Insecurity and Adaptation of the U.S. HFSSM

Since 1992, when the Food Security Measurement Project was established as a result of the National Nutrition Monitoring and Related Research Act (1990), the U.S. Departments of Health and Human Service (DHHS) and Agriculture (USDA) have been developing a national standard of measuring food insecurity and hunger through the national nutrition monitoring system (USDHHS & USDA, 1993). As mentioned, one of the outcomes of the joint efforts of these two federal departments in this area has been the Food Security Core Survey Module (FSCSM), which is now the standard method of measuring household food insecurity in the U.S. as well as Canada (Bickel et al., 2000; Tarasuk et al., 1999; USDA, 1998). The USDA, for example, has been monitoring the national food security and hunger status using the FSCSM since 1995 (Andrews et al., 2000).

The food security module is a survey-based method that was developed to provide a numerical scale describing and assessing the food security status of a given population and/or household using a 12-month reference period (that is, the preceding 12-month data). The scale is developed from household direct responses to a series of 18 questions about food security conditions and experiences (see Table A1). A brief review of the nature and implications of these questions is in order (see Bickel et al., 2000, for details).

1. Three questions ask about the food situation of the entire household, seven about the experiences and behaviors of adults, and eight of children (answered only by households with children).
2. Three are follow-up questions that elicit information on the frequency of a previously stated event (Q8a, Q12a, and Q14a).
3. The survey questions were designed and administered in three stages. The first stage serves as an internal screener to the next

**Table 1. Selected Characteristics of the Study Sample by Household Child Status**

| Characteristic | Full Sample | Households with Children | Households with No Children |
|---|---|---|---|
| Number of Households | | | |
| Total | 110 | 93 | 17 |
| % of Total | 100% | 84.5% | 15.5% |
| Mean Household Size | 4.6 | 5.1 | 2.4 |
| Household Head, Female (%) | 81.8% | 80.6% | 88.2% |
| Household Head, Illiteracy Rate (%) | 39.1% | 37.6% | 47.1% |
| Household Head with Primary Education (%) | 52.7% | 53.8% | 47.1% |
| Household Head with Secondary Educ. (%) | 7.3% | 7.5% | 5.9% |

Note: Percentage figures represent percent of the relevant sample and subsamples.
Reprinted from Bezuneh et al., 2008 (Table 1).

stage of questions.[8]

4. Responses would be recorded as affirmative when respondents chose "yes," "often true," or "sometimes true" as an answer to each food-insecurity question.
5. While the 18 questions as a whole are used to derive a measure of food security status, as subgroups they are designed to capture four kinds of food insecurity situations or events.

Thus, affirmative responses to Q2 and Q3 would indicate an "anxiety or perception that the household budget or food supply was inadequate." An affirmative response to Q4, Q5, and/or Q6 amounted to perceiving "that the food eaten by adults or children was inadequate in quality." In affirming Q8, Q8a, Q9, Q10, Q11, Q12, and Q12a, households were reporting "instances of reduced food intake, or consequences of reduced intake, for adults." Likewise, "instances of reduced food intake or its consequences for children" would be apparent when Q7, Q13, Q14, Q14a, Q15, and Q16 were affirmatively answered (Bickel et al., 2000, p. 24).

The responses to these survey questions were combined into a single measure called the household food security scale.[9] Based on the scale scores, households were formally classified into four categories: food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger. A description of each follows as it appeared in Bickel et al. (2000, pp. 11–12):

**Food secure**—Households show no or minimal evidence of food insecurity.

**Food insecure without hunger**—Food insecurity is evident in household members' concerns about adequacy of the household food supply and in adjustments to household food management, including reduced quality of food and increased unusual coping patterns. Little or no reduction in members' food intake is reported.

**Food insecure with hunger (moderate)**—Food intake for adults in the household has been reduced to an extent that implies that adults have repeatedly experienced the physical sensation of hunger. In most (but not all) food-insecure households with children, such reductions are not observed at this stage for children.

**Food insecure with hunger (severe)**—At this level, all households with children have reduced the children's food intake to an extent indicating that the children have experienced hunger. For some other households with children, this already has occurred at an earlier stage of severity. Adults in households with and without children have repeatedly experienced more extensive reductions in food intake.

In 2006, the above-listed categories were relabeled (USDA ERS, 2025). Using the same assessment method, the food scale scores are now categorized reflecting levels of food security ranging from high to very low with the following labels: high food security, moderate food security, low food security, and very low food security.[10]

As mentioned, one of the objectives of this study was the adaptation and validation of the U.S.

[8] Thus, respondents were asked the second-stage questions if they affirmatively answered any one of the first-stage questions. Likewise, third-stage questions were posed only to households who provided at least one affirmative response to questions in the second stage.

[9] The scale is normally not affected by hunger due to voluntary dieting since food insecurity and hunger are the result of lack of money or other relevant resources to obtain food, as implied in the 18 questions.

[10] The USDA ERS notes the comparability of the old and new labels as follows. "High food security (old label=Food security): no reported indications of food-access problems or limitations. Marginal food security (old label=Food security): one or two reported indications—typically of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake. … Low food security (old label=Food insecurity without hunger): reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake. Very low food security (old label=Food insecurity with hunger): reports of

HFSSM in the D.R. in the context of the study site described above. In order to use the U.S. HFSSM in the context of culturally and economically different countries, one must modify the instrument in a socially and culturally sensitive manner (Nord et al., 2002). Accordingly, the U.S. HFSSM questions were first translated into Spanish, not only as recommended by Harrison et al. (2003) but also, and more importantly, taking into consideration colloquial Dominican Spanish. In addition, we adjusted the U.S. HFSSM standard 12-month reference period to a shorter 30-day period, asking respondents about their relevant experience in the last 30 days rather than the last 12 months.[11] The shorter reference period was used in light of this research project's focus on households that are likely to be confronted with frequent and severe food deprivation. The relevant questions in the HFSSM were accordingly modified and pretested using a focus group from within the study site. The statistical analysis of this study is descriptive, involving interpretive tabular and cross-tabular classificatory analyses.

The study was carried out in several steps. The first step was an explorative exercise in which we explored and learned how selected households in the sampled community described their food situations. This was carried out in a focus-group format with in-depth and open-ended questions and discussions, in which 10 women participated. The results from this activity were then used to make appropriate changes and adaptations to the FSSM prior to implementing it in the study area of Las Tablas. It must be noted, however, that neither the content nor the focus of the core questions of the FSSM changed.

## Results of the Modified HFSSM

The data analysis of this study strictly followed the steps and procedures outlined by the authors of the U.S. HFSSM, as revised in 2000. This includes coding and converting survey responses into data and classifying households into the relevant food security status level categories. The scaling analysis of the responses to the pilot survey conducted by the Economic Research Service (ERS) of the USDA, using the Rasch model–based statistical analysis, showed that the item-fit statistics were found to be "quite good (near unity) for most items, indicating that they measure a common phenomenon and do so with approximately equal sensitivity" (USDA ERS, 2000; see Appendix, Figure A1).[12]

### *Household Food Security Scale Questions: An Overview of the Responses*

The responses to food security scale questions administered in Las Tablas are summarized in Table 2, where the standard survey questions and the percentage of sampled households affirming them are recorded. In the full sample, 86% of the respondents worried that their food would run out before they got money to purchase more. The corresponding figure for those who indicated that the food they bought did not last is 84%. A larger proportion of the respondents viewed the quality of their food as inadequate. Thus, in 90% of households, adults felt that they could not afford to eat balanced meals and had to feed their children a few kinds of low-cost food. In three-quarters of the sample, adults cut the size of their meals or skipped meals, and 79% of them had done so for at least three days during the preceding month. In 80% of households, adults ate less than they felt they should, although this figure dropped nine percentage points when asked if they were ever hungry but did not eat. Thirty percent of households reported weight loss for lack of food. A smaller proportion did not eat for a whole day; of this portion of the sample, 91% of them had not eaten for three or more days during the preceding month.

Events of reduced food intake and the consequences thereof for children were relatively fewer,

multiple indications of disrupted eating patterns and reduced food intake" (USDA ERS, 2025, "Ranges of Food Security and Food Insecurity," para. 1–7).

[11] Although in the standard module the questions refer to the previous 12 months, the module may be adjusted to refer to shorter reference periods (Bickel et al., 2000).

[12] Scaling analysis report received from ERS upon the request of the authors. However, further scaling analysis based on a larger survey is recommended before the food security measurement methodology is formalized for general application in the context of the Dominican Republic.

albeit sizeable. Two-thirds of the relevant sample cut the size of children's meals, while three out of five households reported the incidence of children skipping meals. Three-quarters of the households in which children had to skip meals for lack of food had done so for three days or more in the course of the preceding month. Sixty percent of families with children reported instances of hunger among children, with fewer cases of children not eating for a whole day.

Disaggregating the sample into households with and with no children reveals that the two groups affirmed the survey items at different rates. Families with children expressed agreement with six of the 10 common questions at a higher rate than did households with no children. The difference is particularly striking with respect to weight loss and the instance of adults not eating whole day. On the other hand, a greater proportion of households with no children indicated that their food supply did not last and that they were hungry but did not eat (Q3 and Q10). The pattern of responses regarding access to balanced meals and adequate amount of food (Q4 and Q9) was essentially the same.

### *Household Food Security Status: Who Is Food Insecure?*

Item frequencies across households described above are useful, individually and as a subgroup, to

**Table 2. Household Food Security Items: Affirmative Responses by Child Status**

| | | Affirmative Responses (%) | | |
|---|---|---|---|---|
| | | | Households with: | |
| Q. No. | In the last 30 days: | Full Sample | Children | No Children |
| **Stage 1 Questions** | | | | |
| Q2 | Worried whether food would run out. | 86.4 | 87.1 | 82.4 |
| Q3 | Food bought just didn't last. | 83.6 | 82.8 | 88.2 |
| Q4 | Couldn't afford to eat balanced meals. | 92.7 | 92.5 | 94.1 |
| Q5 | Relied on only a few kinds of low-cost food to feed the children. | 88.2 | 88.2 | N/A |
| Q6 | Couldn't feed the children a balanced meal. | 88.2 | 88.2 | N/A |
| **Stage 2 Questions** | | | | |
| Q7 | The children were not eating enough. | 79.6 | 79.6 | N/A |
| Q8 | Adult(s) in the household cut size of meals or skipped meals. | 75.5 | 76.3 | 70.6 |
| Q8a | Adult(s) cut or skip meals, 3 or more days. | 60.0 | 61.3 | 52.9 |
| Q9 | Ate less than felt he or she should. | 81.8 | 81.7 | 82.4 |
| Q10 | Hungry but didn't eat. | 72.7 | 71.0 | 82.4 |
| Q11 | Lost weight because there wasn't enough food. | 31.8 | 35.5 | 11.8 |
| **Stage 3 Questions** | | | | |
| Q12 | Adult(s) did not eat for a whole day. | 20.9 | 24.7 | 00.0 |
| Q12a | Adult(s) did not eat for whole day, 3 or more days. | 19.1 | 22.6 | 00.0 |
| Q13 | Cut size of child's meals. | 66.7 | 66.7 | N/A |
| Q14 | Child skipped meals. | 60.2 | 60.2 | N/A |
| Q14a | Child skipped meals, 3 or more days. | 46.2 | 46.2 | N/A |
| Q15 | Child hungry but couldn't afford more food. | 61.3 | 61.3 | N/A |
| Q16 | Child did not eat for a whole day. | 9.7 | 9.7 | N/A |

Notes: QN= the serial number of the questions as they appear in the Household Food Security Survey Module. Figures represent percent of the relevant sample.
Reprinted from Bezuneh et al., 2008 (Table 2).

assess the various manifestations and events of food deprivation. However, we need the aggregate value of these frequencies across the survey questions for each respondent to determine the extent and severity of food insecurity. Accordingly, a measure of food security scale value was derived based on affirmative responses as per USDA's guidelines. The sample was then classified into the various categories of food security status, as shown in Table 3.

A glance at the full sample in Table 3 shows that 7% of the respondents were food-secure, with no or minimal perception and experience of food hardship during the reference period. The overwhelming majority (93%) were food insecure, some more so than others, with the percentage rising as a higher degree of food deprivation is considered. A small proportion of the food insecure (20%) had access to just enough food to avoid hunger. Households with very low food security represented 74% of the entire sample and 80% of the food-insecure group. Out of every five households, more than two suffered food deprivation that would be characterized as severe hunger. Roughly half of these households reported instances of an adult skipping or cutting meals or having gone hungry at least one whole day during the reference month.

It appears that families with no children were more food secure than families with children. The experiences of different groups of households also varied with respect to the degree of food insecurity. Households with no children had a substantially higher incidence of low food than did households with children. However, all cases of severe hunger occurred in families with children, among whom 52% experienced it.

Also presented in Table 3 is a measure of food insufficiency, which is based on the pattern of responses to the first screening question of the food security survey. Respondents are classified as food insufficient if they "sometimes" or "often" did not have enough to eat. Although this measure is known to be weaker and conceptually less encompassing than the food security measure, it is juxtaposed for comparative purposes and as a complementary indicator of food hardship. According to this indicator, most of the survey respondents were food insufficient. The average figure for the full sample of 80% contrasts to the 93% who felt food insecure as gauged by the pattern of their responses to the 18 survey questions. In sum, most of the surveyed households faced food insecurity, with the majority experiencing a high degree of severity.

### *The Prevalence of Food Insecurity: Child Versus Adult Scale* [13]

Although the prevalence of "food insecurity with severe hunger" could provide a reasonable proxy

**Table 3. Food Security and Sufficiency**

| | | Households with: | |
|---|---|---|---|
| Category and Outcome* | Full Sample | Children | No Children |
| Secure (%) | 7.3 | 6.5 | 11.8 |
| Insecure (%) | 92.7 | 93.5 | 88.2 |
| Low food security (%) | 19.1 | 16.1 | 35.3 |
| Very low food security (%) | 73.6 | 77.4 | 52.9 |
| Food insecurity with moderate hunger** (%) | 30.0 | 25.8 | 52.9 |
| Food insecurity with severe hunger** (%) | 43.6 | 51.6 | 00.0 |
| Food insufficient (%) | 80.0 | 81.7 | 70.6 |
| Sample Size (*n*) | 110 | 93 | 17 |

* Figures (except those in the last row) represent percentages of the relevant sample size.
** Using old labels applied at the time of survey.

[13] In the Dominican Republic, persons are considered children up to the age of 14 years. Those aged 15 and older are considered adults.

measure for children's hunger, there is a concern that the proxy measure would underestimate the incidence. Supporting this view is the evidence of a considerable number of households with only moderate hunger who reported instances of hunger among children (Bickel et al., 2000). This has led to the development of a new children's food security subscale calculated from the responses to the eight items in the survey that ask about the conditions and experiences of children (Nord & Bickel, 2002). Table 4 compares the prevalence and degree of food insecurity between children and adults. It is clear that in both cases, most of the respondents are food insecure. The prevalence of food insecurity is slightly (two percentage points) higher among adults than among children. The same relative magnitude was observed with respect to the incidence of very low food security. On the other hand, low food security appeared to be more common among children than among adults.

**Table 4. Food Security Status: Adult Versus Child Scale**

| Category and Outcome | Household Scale | Adult Scale | Child Scale |
|---|---|---|---|
| Secure (%) | 7.3 | 12.7 | 10.8 |
| Low food security (%) | 19.1 | 20.9 | 26.9 |
| Very low food security (%) | 73.6 | 66.4 | 62.4 |
| Sample size (*n*) | 110 | 110 | 93 |

## The Added Survey Questions[14]: Summary of Findings

In addition to the standard food security survey instruments, the pilot survey included, among others, questions about the relative importance of certain food items, distance to markets, the relative importance of produced and purchased items, employment status, women's contribution to household income, and respondents' characterization of their overall well-being. This section tabulates the responses to the additional questions and explores the relationships some of them may have with the prevalence and degree of food insecurity.

### *The Relative Importance of Certain Food Items in Households' Diets*

Table 5 records the percentage of households who indicated their ranking of specified food items in their diet at the time of the survey and a couple of years prior to the survey, focusing on the highest three items. Using the highest percentage of households recorded in each column as an indicator of household's ranking, it can be gleaned from the table that rice (*arroz*) and beans (*habichuela*) were identified by more than three-quarters of the respondents as the two most important food items among the nine types of food

**Table 5. Ranking of Food Items: Current (17a)**

| | Percent of Households Ranking Item | | | | | |
|---|---|---|---|---|---|---|
| | Current (at time of survey) | | | Two/Three Years Prior | | |
| Food Item | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| Beans (*Habichuela*) | 26.4 | 50.0 | 9.1 | 2.8 | 2.9 | 1.3 |
| Milk (*Leche*) | 12.7 | 8.2 | 18.2 | 16.0 | 12.7 | 2.7 |
| Rice (*Arroz*) | 52.7 | 25.5 | 7.3 | 2.8 | 2.9 | 1.3 |
| Plantain (*Plátano*) | 4.5 | 5.5 | 12.7 | 5.7 | 8.8 | 6.7 |
| Chicken (*Pollo*) | 0.0 | 4.5 | 29.1 | 2.8 | 5.9 | 10.7 |
| Eggs (*Huevos*) | 1.8 | 4.5 | 15.5 | 6.6 | 2.9 | 13.3 |
| Cassava (*Yuca*) | 0.9 | 0.9 | 1.8 | 10.4 | 22.5 | 24.0 |
| Sweet Potato (*Batata*) | 0.0 | 0.0 | 1.8 | 43.4 | 16.7 | 16.0 |
| Potato (*Papa*) | 0.9 | 0.9 | 4.5 | 9.4 | 24.5 | 24.0 |

[14] See Table 9 and the survey questions in the Appendix.

listed. Respondents' ranking of the nine food items in their diets two or three years ago indicates that sweet potato (*batata*) ranked first, followed distantly by milk (*leche*) and Cassava (*yuca*).[15]

A striking contrast emerges between the two sets of rankings. At the time of the survey, the majority of the respondents (53%) indicated that rice was their most important food item. By contrast, this food item was ranked first only by 3% of the respondents in their diets a couple of years ago. At that time, sweet potato was selected by 43% of the households as most important, but at the time of this survey, no one chose it as the top item. These two sets of rankings demonstrate a clear shift and reversal of the relative importance of different kinds of food in people's diets.

### *Economic Activities and Living Conditions: Implications for Food Security*

This section describes the responses to the additional questions included in the pilot survey related to economic activities and living conditions and then explores them for food security. The first row of Table 6 presents the frequencies of the responses to a selection of the added questions. The majority of households surveyed resided not far from markets where they made purchases, but relatively few households described the distance as "very near." Most respondents (92%) purchased the food they consumed. The remainder acquired it through a combination of their own production and purchases.

Thirty-nine percent of the interviewees were gainfully employed, with service and other nonagricultural activities identified as the major source of employment. Women's contribution to household income was affirmed only by 25% of the sample. The majority of the respondents felt unhappy about their lives. Nearly half of these described their situation as "not happy at all." Only 8% of the respondents felt that they were very happy (see Appendix, Table A1).

The remainder of the present section explores the implications of distance to markets, employment status, type of work, sources of food, and women's contribution to household income for the prevalence and degree of food insecurity, as well as households' characterization of their overall happiness level classified by food security status. Table 6 provides a dichotomous breakdown of household food security status by the aforementioned attributes. Consider first the cross-tabulation of market distance and household food security status. Regardless of how far households travel to make purchases, the percentage of households falling in the food status categories increases as a higher degree of food deprivation is considered. This is true for the majority of the subsamples constructed. Having noted that, none of the households residing far or very far from the market where they shop were classified as food secure. Put differently, all food-secure households reported that they resided close to the market where they made purchases. On the other hand, those who were located far from the market experienced severe hunger at a higher rate than households residing nearby did. In fact, although not shown in the table, none of the households that described the location of the market as very near experienced severe hunger.

It appears that households with employed members tended to enjoy a higher degree of food security than did households with no employed adults. Six of the eight food-secure families had employed members; all but two households with no employed members were food insecure. Households with no employed members experienced severe hunger at a higher rate (14 percentage points higher) than their counterparts with employed members. Among families with employed adults, those engaged in the service sector tended to be more food secure than those engaged in agricultural and other activities. None of the households whose members were working in the agricultural sector was classified as food secure. Those householders who identified agriculture as the source of their employment suffered greater insecurity with hunger than did their counterparts working in the other two sectors of the economy.

Households that produced their food and sup-

[15] The majority of the households did not indicate the order of importance of the various food items beyond the third rank. Even for the third rank, the response rate was only 68%.

plemented it by purchases were slightly more food secure than families who obtained their food supplies only from purchases, the paucity of households in the former category notwithstanding. Respondents who acquired their food only from purchases appear to have experienced moderate hunger at a lower rate that the other group. The converse is true with respect to the incidence of severe hunger. The probability of being food secure was three times higher among households where women contributed to the family income than among families where women were not reported to have generated income.

Of those who felt good about their lives ("happy" and "very happy"), 16% were classified as food secure. The corresponding proportion for those who described their life situation as "not very happy" or "not happy at all" stood at 3%. It is observed that a greater percentage of "unhappy" respondents faced very low food security. Considering extreme cases (not shown in the table), 44% of the "very happy" respondents were food secure, while 65% of the "not happy at all" subsample faced severe hunger. It is worth noting, however, that some people felt "happy" even when they perceived their food condition as unsatisfactory and a few others felt "unhappy" in spite of relative food security, indicating the absence of perfect correlation between the perceptions and experiences of being "happy" and being "food secure."

## Summary and Conclusions

The primary purpose of this study was to adapt and validate the U.S. Food Security Survey Module in the context of the Dominican Republic and thereby assess the prevalence of food insecurity and hunger in a rural community in the country. The module was administered as a pilot in a household survey of 110 low-income families in the country. The study found that 93% of the respondent were food insecure. A relatively small proportion of the food-insecure households (20%) experienced low food security. Households who faced very low food security represented 74% of the entire sample and 80% of the food-insecure group. Child hunger was observed among 89% of households with children. Only 7% of the households were found to be food secure, with no or minimal

**Table 6. Food Security Status by Employment and Other Indicators**

| | | Distance To Buy | | Employment Status* | | Type of Work* | | | Sources of Food* | | Women's Contribution | | Happiness* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category and Outcome (%) | Full Sample | Near | Far | Empd. | Not Empd. | Agr. | Service | Nonagr. | Purchases | Own Prod.+ | Yes | No | Happy | Not Happy |
| % of Relevant Sample† | --- | 65.4 | 34.6 | 39.1 | 60.9 | 27.3 | 31.8 | 40.9 | 91.8 | 8.2 | 24.5 | 75.5 | 34.5 | 65.5 |
| Secure | 8 | 11.4 | 0.0 | 14.0 | 3.0 | 0.0 | 21.4 | 16.7 | 6.9 | 11.1 | 14.8 | 4.8 | 15.8 | 2.8 |
| Low food security | 21 | 18.6 | 21.6 | 14.0 | 22.4 | 8.3 | 21.4 | 11.1 | 19.8 | 11.1 | 14.8 | 20.5 | 21.1 | 18.1 |
| Very low food security: | 81 | 70 | 78.4 | 72.1 | 74.7 | 91.7 | 57.2 | 72.2 | 73 | 77.7 | 70.3 | 74.7 | 63.1 | 79.1 |
| Moderate hunger‡ | 33 | 32.9 | 27.0 | 37.2 | 25.4 | 41.7 | 28.6 | 38.9 | 28.7 | 44.4 | 37.0 | 27.7 | 26.3 | 31.9 |
| Severe hunger‡ | 48 | 37.1 | 51.4 | 34.9 | 49.3 | 50.0 | 28.6 | 33.3 | 44.6 | 33.3 | 33.3 | 47.0 | 36.8 | 47.2 |
| Sample Size§ | 110 | 70 | 37 | 44 | 67 | 12 | 14 | 18 | 101 | 9 | 27 | 83 | 38 | 72 |

* Empd.=employed, Agr.=agriculture, Nonagr.=non-agricultural activities exclusive of services. Own Prod.+=own production and purchases. The four alternative responses about distance to where purchases are made are collapsed in the above table into two: "Near" encompasses "near" and "very near" while "far" includes "far" and "very far." Likewise, the four alternative responses to "how good or happy respondents feel about their lives" are reduced into two groups: "Happy" and "very happy" are combined to form the group "happy." Responses "not very happy" and "not happy at all" constitute the "not happy" group.

† Percent of the sample applicable to a given indicator. The aggregate sample size for "Distance" is 107 because of 3 other responses.

‡ Old label in use at the time of survey.

§ All figures except sample size are percentages.

Note: This is an expansion of data reported in Bezuneh et al., 2008, Table 15.

perception and experience of food hardship during the reference period (the preceding month).

The responses to the additional survey questions revealed the following. There was a shift in the relative importance of certain food items in households' diets. A minority of respondents were gainfully employed, most engaged in services and other nonagricultural activities. Women contributed to household income in a quarter of the sample. Most of the households bought the food they consumed, and the majority resided near markets where they made purchases. Nearly two-thirds of the respondents characterized their living condition as unhappy. Notwithstanding the lack of observations, a cross-tabulation of these findings with the status of food security revealed that those who were employed, engaged in the service sector, resided near markets where they made purchases, depended on own production supplemented by purchases, and where women contributed to household income were marginally more food secure than their comparators.

Finally, despite the long delay in disseminating the information in a peer-reviewed journal, the results from this pilot study could serve as the first step in addressing the question, Could the HFSSM used in wealthy countries be appropriate to measure food security in low-income countries, such as the Dominican Republic? Consistent with the related evidence reviewed above, our observation and experience during this pilot study and the results from it lead us to believe that the core HFSSM instruments could usefully be adapted to assess the food security status of households in countries with less-developed economies, such as the Dominican Republic.

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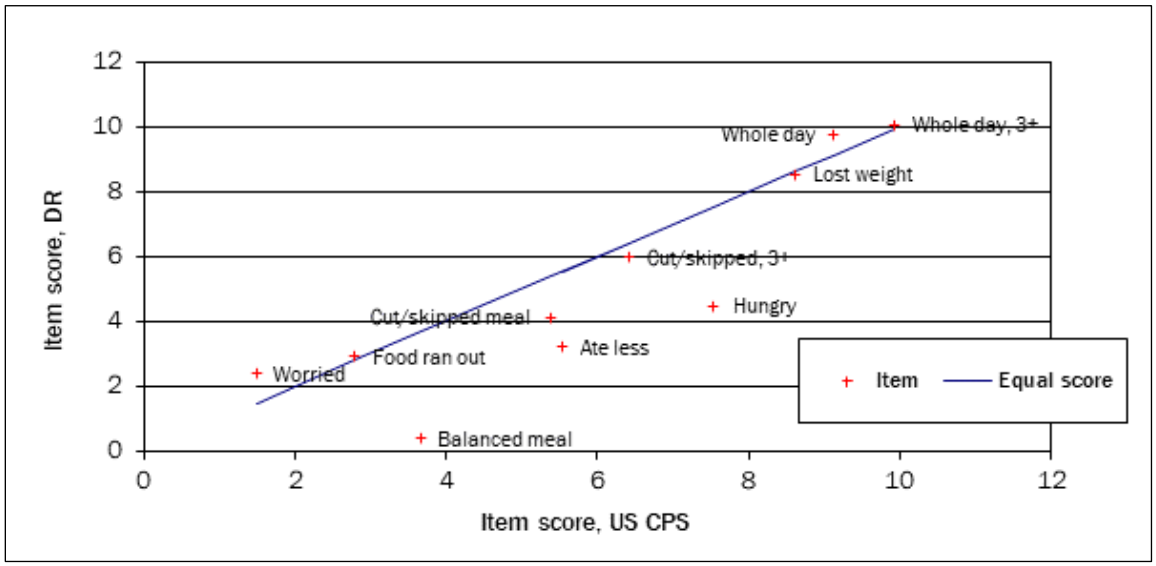
## Appendix

**Table A1. Responses to Other Added Questions (% of Respondents)**

| Question | % |
|---|---|
| *Market distance to make purchases* | |
| Very far | 10.9 |
| Far | 22.7 |
| Near | 60.0 |
| Very near | 3.6 |
| No response | 2.7 |
| *Sources of food items* | |
| Purchases | 91.8 |
| Own products and purchases | 8.2 |
| *Family member employed?* | |
| Employed | 39.1 |
| Not Employed | 60.9 |
| *If employed, type of work* (*N*=44) | |
| Agricultural | 27.3 |
| Nonagricultural | 40.9 |
| Services | 31.8 |
| *Do women contribute to household income?* | |
| Yes | 24.5 |
| No | 75.5 |
| *How happy?* | |
| Very happy | 8.2 |
| Happy | 26.4 |
| Not very happy | 34.5 |
| Not happy at all | 30.9 |

**Figure A1. Comparison of Item Severity Scores on Adult Food Security Scale, Dominican Republic Food Security Pilot Survey vs. US CPS-FSS (metrics equated based on all items except balanced meals, ateless, and hungry)**




Note: Figure reprinted from Bezuneh et al., 2008 (Figure 3).
Source: Prepared by ERS based on data from the Dominican Republic Food Security

**Figure A2. Comparison of Item Severity Scores on Children's Food Security Scale, Dominican Republic Food Security Pilot Survey vs. U.S. CPS-FSS (metrics equated based on all items except balanced meal and whole day)**