Measuring Food Insecurity

Updated November 2018

Grameen Foundation seeks to support the self-help efforts of the chronically hungry poor. To do this, we have to be able to identify who is a chronically hungry person. Grameen Foundation has chosen to measure food security to determine whether a person is chronically hungry. This measure is also a strategic indicator that will contribute to Grameen's understanding of its achievement in reaching poor, food insecure households. This document is broken up into two sections. Section One describes food security and the simple measure used for program monitoring. Section Two provides different versions of the food security survey as well as other associated survey instruments that Grameen uses to measure hunger, food security, and dietary diversity that can be administered depending on the context.

SECTION ONE: HOW DO WE MEASURE FOOD SECURITY?

Definition of Food Security: Food Security is defined as access to food, availability of food and utilization of food. This means that a food secure person is one
- Who has access to food (enough money or resources to pay for food),
- Who has food available (there is food available to purchase or consume—often influenced by agricultural cycles or political strife)
- Whose body can utilize the nutrients of the food eaten (which can be influenced by the range of foods eaten, effects of illness on absorption of nutrients, etc.).

For the purposes of establishing outreach to food insecure populations in its programs, Grameen uses the following short-question to measure food security, which primarily measures access to food:

FOOD SECURITY
(VERSION 1: Short version)

I will read 4 choices for your response. Please tell me, which of the following best describes the food consumed by your household in the last year:	1) Enough and the kinds of food we wanted to eat. 2) Enough but not always the kinds of food we wanted to eat. 3) Sometimes not enough food to eat, was sometimes hungry. 4) Often not enough to eat, was often hungry.

Scoring:

Answer 1 = Food Secure
Answer 2 = Food insecure without hunger
Answer 3 = Food insecure with moderate hunger
Answer 4 = Food insecure with severe hunger

Grameen research has shown that this measure is correlated to dietary diversity[i], poverty[ii], and women's autonomy[iii], resilience[iv], among others. This gives Grameen confidence that despite the simplicity of the question, it can be a useful measure for identifying food insecure households due to these correlations with anticipated outcomes.

The rest of this document establishes some of the research behind the use of other measures of food security that Grameen uses when there is luxury of space in surveys or when accuracy of the food security measure is important to program outcomes.

Development and Validation of Food Security Survey
Since 1995, the United States Department of Agriculture (USDA) has incorporated a validated set of questions about behaviors and attitudes to measure levels of food insecurity across US households. The US Household Food Security Scale Module (US HFFSM) has since been adapted for use in developing countries to quantify levels of food insecurity.[v]

In 2006, Freedom from Hunger, who integrated its programs with Grameen Foundation in 2016, validated the use of a modified version of the US HFSSM in Bolivia, Burkina Faso, and the Philippines[vi]. The US HFSSM has been similarly adapted and validated in similar contexts in Latin America[vii,viii,ix] and in Africa[x] and Southeast Asia[xi]. All of these studies validated that the US HFSSM successfully categorized food secure houses according to either food expenditure levels[xii], routine poverty line tools[xiii], incomes and probabilities of daily intake of fruits, vegetables, meat/fish, and dairy [xiv] and have demonstrated that the US HFFSM has proven to be successful across a wide variety of contexts and populations.

What is the Food Security Survey (FSS)?
The food security survey is a 17-question survey instrument that measures household "access" to food through available resources to purchase or barter for food. Nine of the 17 survey questions serve as a scale. This means that all nine questions measure food security, and each subsequent question measures a higher degree of food insecurity. For example, question #1 measures whether a household has worried about not having enough food because they didn't have money to buy more food, whereas question #9 measures whether an adult in the family had to go an entire day without eating because there was not enough money to buy more food.

Generating the Food Security Score for the FSS

There are two methods for scoring the food security survey. The first method measures the occurrence or prevalence of food insecurity and the second method measures the intensity (measure of the degree to which experiencing food insecurity is chronic) of food insecurity. The nine questions that comprise the scale measure the prevalence of food insecurity (considered the "prevalence score"). When the subsequent answers of how often a phenomenon occurred ("rarely," "sometimes," or "often') are considered, we gain the measure of the degree to which those experiencing food insecurity at any time of the year, experience it on a chronic basis (considered the "chronic score".)

- **Method 1- Prevalence Score:** To determine whether the household has experienced periodic food insecurity during the past year, one scores each affirmative response ("yes") to a <u>primary</u> question as a "1," and each negative response ("no") to a primary question as a "0." At the end of the survey, the points are summed to give a raw score (which will be between 0 and 9). A score of zero corresponds to the most food-secure households; a score of 9 indicates the most food-insecure households, those suffering from hunger.

- **Method 2 –Chronic Score:** This measure assesses how severe or chronic the client's level of food-insecurity is. This is accomplished by scoring an answer of "yes, frequently" or "yes, sometimes" as a "1," and an answer of "yes, rarely" or "no" as a "0." Again, the points are summed to give a raw score, based upon which the client is classified as either food secure or food insecure.

To determine whether a household is food secure or insecure, a household that scores 0-2 on the scale is considered food secure, and a household that scores 3-9 is considered food insecure.

Number of Affirmatives	Food-Security Status Level
0-2	Food-secure
3-9	Food-insecure

Additionally, we can break up the *food insecure* households into two categories: those that score 3-5 are considered moderately food insecure, and those that score 6-9 are considered severely food insecure.

Number of Affirmatives	Food-Security Status Level
0-2	Food-secure
3-5	Moderately Food-insecure (or food insecure without hunger)
6-9	Severely Food-insecure (or food insecure with hunger)

Strengths of the Food Security Survey

The FSS accurately measures the food security levels of households in the countries where we work. The FSS has been found to be an easily-administered survey instrument. It takes no longer than 10-15 minutes to administer per household. Because the nine questions serve as a scale, a household can quickly be categorized as food secure or food insecure by simply adding up the number of times a household indicates that they have experienced the situations of food insecurity presented in the scale.

When the food security survey is added to other surveys, such as the Poverty Probability Index (PPI), it helps provide a much more comprehensive view into client well-being. In some cases, clients may look "less poor" by PPI standards, but may be quite food insecure suggesting that they are having cash-flow challenges and are unable to put food on their table.

Weaknesses of the Food Security Survey
Freedom from Hunger conducted research to determine whether the food security survey could act as a reliable proxy measure of daily expenditure (the standard definition of poverty is in terms of expenditure per person per day), but it was not found to be equally accurate and reliable in all the countries where it has been tested. However, Grameen Foundation contends that if a family is food insecure by the FSS measure, it must so poor that it cannot purchase enough food for all family members throughout the year or at certain times of the year, which means the family is chronically hungry. Therefore, we use the terms food insecure, very poor and chronically hungry interchangeably. Where possible, Grameen Foundation incorporates both a food security measure and the PPI to assess multiple dimensions of client well-being.

An additional challenge with the food security survey is that it is quite sensitive to seasonality issues; therefore, if tracking clients over time, it is important to conduct the survey during the same period each year, for example, if conducted during the hunger season in year A, they should conduct the survey at the same time in year B. In addition, if assessing progress over time, fluctuations in food prices and any food crisis that may be occurring will necessarily make clients look more food insecure. Understanding and exploring meaning behind the results is important.

How is the FSS administered?
Because Grameen Foundation wants to know it is reaching food insecure people, the survey is administered with incoming clients (where possible) or with a cross-section of existing clients of our various partner institutions. In addition, we want to know whether a family's food security status improves over time, thus Grameen aims to measures change over time with anticipated impacts being most anticipated after 3 years of participating in a partner's program. Three years is the currently hypothesized time needed to move a food-insecure family up the scale to food security.

Administering the food security survey with the female head of household often provides one of the most accurate measures of household food security. Prior research indicates that women/mothers will often buffer their children from food insecurity by altering their own dietary intake first.[xv]

Where has the FSS been administered?
Freedom from Hunger conducted a research study to validate the FSS in Bolivia, the Philippines, Burkina Faso and Ghana.[xvi] In addition to this research project, the following partners have assessed the food security levels of their clients. Please note that the percentages provided below are based on the different measures of food security presented in this document.

	Incoming clients	Members in the program 1–3 years
Percentage of members who are food-insecure per organization (country, year data collected)		
PADME (Benin, 2007)	60%	N/A
CRECER (Bolivia, 2006)	60%	N/A
CRECER (La Paz, Bolivia, 2009)	53%	33%
RCPB (Burkina Faso, 2003)	84%	73%
ESPOIR (Ecuador, 2007)	N/A	33%
ESPOIR (Ecuador, same cohort, 2007 & 2009)	47%	34%
Brawka Breman and Afram (Ghana, 2006)	48%	36%
Bandhan (India, 2008)	N/A	49%
Reach India (Patna, Ranchi, Guwahati, Burdhaman & Bhubaneswar, India, 2009)	N/A	32%
CAEB, AIM Youth (Mali, 2011)	44%	N/A
Kondo Jigima (Mali, 2009)	86%	N/A
TONUS, Saving for Change (Mali, 2010)	100%	86%
Alcance (Mexico, 2010)	N/A	51%
Financiera Confianza (Peru, 2011)	74%	N/A
Finca Peru (Peru, 2007 & 2011)	53%	79%
Prisma (Peru, 2008 & 2011)	82%	44%
AlSol (Mexico, 2009 & 2012)	46%	46%
Cooperative San Jose, AIM Youth (Ecuador, 2012 & 2013)	17%	13%
NA= Data Not available		

What is the household hunger survey (HHS)[xvii]?
The household hunger survey assesses household hunger in food insecure areas. Its primary intention is to have a measure that has been validated for cross-cultural use. This means HHS results from one country or context to another should be comparable.

The food security survey, while using the same questions for each country does not take into account that regional or cultural differences determine how people answer the questions; however, the food security survey will provide a much more nuanced picture into a household's food security level whereas the household hunger survey will only pick up cases of extremely food insecure households.

Generating the Household Hunger score

When the HHS is administered, a continuous scale score (with a minimum possible score of 0 and a maximum possible score of 6) can be tabulated for each household in the sample by summing a household's responses to items 1, 2, and 3 (refer to Household Hunger survey at end of this document) where never=0, rarely or sometimes=1, and often=2.)

Households that scored 0-1 are considered to have "little to no household hunger," households that scored 2-3 have "moderate household hunger," and households that scored 4-6 are considered to have "severe household hunger."

Number of Affirmatives	Household Hunger Status Level
0-1	Little to no household hunger
2-3	Moderate household hunger
4-6	Severe household hunger

Strengths of Household Hunger Survey
The HHS is more appropriate for countries and areas where food insecurity is a known factor as it is only going to detect households that suffer from hunger and not necessarily households that suffer from food insecurity. The food security survey asks questions about worrying about food, changing eating habits, etc. which will detect households that have not necessarily reached a stage of actual hunger. The final questions of the food security survey represent the extreme end of food insecurity which is hunger. It is also a much shorter survey instrument, so when really constrained on room, it is an alternative to not including a hunger/food security question. For programs that want to have a culturally comparable measure, this is also its main strength.

Weaknesses of Household Hunger Survey
Because it only measures hunger, it is advised to only use this tool where food security is a challenge. Otherwise, most people will be categorized as "little to no hunger" and this will not assist an organization wanting to track client well-being over time.

Where has the HHS been administered?

	Incoming clients	Members in the program

		1–3 years
Percentage of members who are hungry per organization (country, year data collected)		
ESAF (India, 2011)	n/a	17%
SKDRDP (India, 2011)	n/a	3.5%
NA= Data Not available		

SECTION TWO: FOOD SECURITY/HUNGER SURVEYS

There are two long versions of the food security survey. There is a version that references the money necessary to purchase food and there is a version that is used in contexts where households rarely purchase food with money and may normally grow their own food or will barter with other households. This version is often used in areas that rely on agriculture as primary means of household income. This version has been used in contexts in Mali and Uganda. Pre-testing the survey and qualitative data collected during the pre-test are necessary to determine which version to use as well as to determine how to word certain questions. The two primary versions are presented below. The first version presented is the survey used in contexts where money is rarely used to purchase food. The second version is the traditional version where money is referenced.

FOOD SECURITY
(VERSION 2: Full FSS, money not referenced)

I am going to ask you questions about the food eaten in your household in the last 12 months; in other words, from January of last year until now.

	SCORE

1. During the last year, were you ever worried that your food would run out?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 2*	

1a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

2. Was the food you had ever not enough?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 3*	

2a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

3. Did you ever have to eat the same foods daily because you did not have other types of food in the house?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 4*	

3a. How often did this happen?	

1) Often (frequently) 2) Sometimes 3) Rarely	

4. Did you ever serve yourself or any other adult in your household less food because you did not have enough food in the house?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 5*
	☐

4a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

5. Did you ever miss any meals (breakfast, lunch or supper) because you did not have enough food in the house?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 6*
	☐

5a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

6. Did you ever eat less than you felt you should because you did not have enough food in the house?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 7*
	☐

6a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

7. Were you ever hungry and did not eat because you did not have enough food in the house?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 8*
	☐

7a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

8. Did you or a member of your family ever lose weight because you did not have enough food in the house? This weight loss should not be caused by stress (worrying), hard work or sickness. **You may answer "yes" or "no."**	☐

1) Yes 2) No	

9. Did you or another adult in your household ever not eat for an entire day because you did not have enough food in the house?
 	
You may answer "yes" or "no."
    1) Yes
    2) No
	☐

9a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

FOOD-SECURITY SCORE **(Key: Yes = 1, No = 0)** **Prevalence Score: Only score questions in shaded cells or those with whole numbers (do not score sub-questions, ex. 1a, 2a, 3a, etc.)** **Chronic Score: For all questions shaded questions coded as 1 for Yes, recode the question to a 0 if the person responded "rarely" to the sub-questions (ex. 1a, 2a, 3a, etc.)** **Food Secure = Scores 0-2** **Food Insecure = Scores 3-9**	**P-Score** ☐ **C-Score** ☐

FOOD SECURITY SURVEY

(VERSION 3: Full FSS, money referenced)

I am going to ask you questions about the food eaten in your household in the last 12 months; in other words, from January of last year until now.

	SCORE

1. Were you ever <u>worried</u> that your food would run out before you had money to buy more?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 2*
	☐

1a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

2. Was the food you had <u>ever not enough</u> and you did not have enough money to buy more?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 3*
	☐

2a. How often did this happen?	

1) Often (frequently) 2) Sometimes 3) Rarely	

3. Did you have <u>to eat the same foods</u> daily because you did not have money to buy other foods?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 4*
	☐

3a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

4. Did you ever serve yourself or any other adult in your household <u>less food</u> because you did not have enough money to buy food?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 5*
	☐

4a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

5. Did you ever miss any meals (breakfast, lunch or supper) because you did not have enough money to buy food?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 6*
	☐

5a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

6. Did you ever eat less than you felt you should because you did not have enough money to buy food?
 	
You may answer "yes" or "no."
    1) Yes
    2) No – *Go to Question 7*
	☐

6a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

7. Were you ever hungry and did not eat because you did not have enough money to buy food? **You may answer "yes" or "no."**	☐

1) Yes 2) No – *Go to Question 8*	

7a. How often did this happen?
    1) Often (frequently)
    2) Sometimes
    3) Rarely	

8. Did you or a member of your family ever lose weight because you did not have enough money to buy food? This weight loss should not be caused by stress (worrying), hard work or sickness.
 	
You may answer "yes" or "no."
    3) Yes
    4) No
	☐

9. Did you or another adult in your household ever not eat for an entire day because you did not have enough money to buy food?
 	
You may answer "yes" or "no."
    3) Yes
    4) No
	☐

9a. How often did this happen?
    4) Often (frequently)
    5) Sometimes
    6) Rarely	

FOOD-SECURITY SCORE **(Key: Yes = 1, No = 0)** **Prevalence Score: Only score questions in shaded cells or those with whole numbers (do not score sub-questions, ex. 1a, 2a, 3a, etc.)** **Chronic Score: For all questions shaded questions coded as 1 for Yes, recode the question to a 0 if the person responded "rarely" to the sub-questions (ex. 1a, 2a, 3a, etc.)** **Food Secure = Scores 0-2** **Food Insecure = Scores 3-9**	**P-Score** ☐ **C-Score** ☐

HOUSEHOLD HUNGER SURVEY

1	In the last four weeks, did it happen that there was no food to eat of any kind in your house, because of lack of resources to get food?	Yes……………………………………………A No…………………………B **→2**			
1a	How often did this occur?	Often………………………….. 2	Sometimes/Rarely…………… 1	Never…………………………. 0	☐

2	**In the past four weeks, did it happen that you or any household member went to sleep at night hungry because there was not enough food?**		Yes................................A No................................B →**3**		☐
2a	**How often did this occur?**	Often.................................. 2	Sometimes/Rarely.............. 1	Never............................. 0	
3	**In the past four weeks, did it happen that you or any household member went a whole day and night without eating anything at all because there was not enough food?**		Yes................................A No................................B→**End.**		☐
3a	**How often did this occur?**	Often.................................. 2	Sometimes/Rarely.............. 1	Never............................. 0	

Household Hunger Score

☐

For each main question, an answer of no is automatically a score of 0. When the respondent answers "yes" to a question, if the answer to the subsequent question is "never", score the question as 0. If they answer "sometimes/rarely" score it as 1. If they answer "often" score the question as 2.

Score of 0-1 = Little to no household hunger
Score of 2-3 = Moderate Household Hunger
Score of 4-2= Severe Household Hunger

ENDNOTES

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[xiii] Gonzalez W, Jimenez A, Madrigal G, Munoz L, and Frongillo E. Development and Validation of Measure of Household Food Insecurity in Urban Costa Rica Confirms Proposed Generic Questionnaire, *J. Nutr*. 138: 587–592, 2008.

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