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Guidance:
How to Measure the Number of Months of Adequate Household Food Provisioning (MAHFP) Based on Quantitative Methods and Isolating Food Aid Provisions

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1. Introduction

Africare designed the indicator Months of Adequate Household Food Provisioning (MAHFP) to assess the extent of food insecurity in project areas, to develop and initiate intervention strategies, to target vulnerable households, and to assess and track progress made in improving food security throughout the life spans of food security interventions (FSIs). As part of its Institutional Capacity Building (ICB) grant (FY04-FY08) from USAID/DCHA/FFP, Africare identified the need to analyze the questionnaires used by field teams in food security projects to ultimately develop a sound, standardized quantitative measurement of MAHFP. This assessment resulted in distinguishing between two different methods for measuring the MAHFP indicator that have been used by Africare programs that are useful in different ways: MAHFP-PRA and MAHFP-average.[iv]

- The MAHFP-PRA method is based on Participatory Rural Appraisal (PRA) sessions with community food security committees to qualitatively reach an agreement about the estimated percentages of households in different categories of food security based on the committee's perception of MAHFP for households in the community. Over the last decade, Africare has evolved its own internal guidance for field staff about how to conduct the MAHFP-PRA exercise

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and analyze the data. The most recent version of this guidance is published in this series (Africare 2007, AFSR No. 1).

- The MAHFP-average indicator is calculated based on a standard set of questions during the household surveys used to collect data on a number of project indicators (normally during the baseline and final surveys that the USAID/FFP office requires and during a midterm if and when one is conducted). To date, Africare has not had any sort of guidance for this other than the MAHFP guidance developed by FANTA (Bilinsky and Swindale 2007).

The guidance presented here supplements the FANTA guidelines by taking into consideration the type and source of food provisioning (mainly distinguishing food aid from other household food provisions). The guidelines comply with the United States Agency for International Development (USAID) Food for Peace (FFP) reporting requirements (Hammink 2007).[v]

2. Background

Africare developed the MAHFP tool under its USAID-funded Institutional Support Assistance (ISA) grant (FY99-FY03). It has been used to assess project impact on food access and vulnerability and has become one of Africare's core indicators. All Africare programs have incorporated MAHFP into their tracking systems; however the method used in arriving at the figures for MAHFP have varied both between programs and within programs. Some programs reported a quantitative figure based on a sample of household interviews (usually incorporated into the baseline and final surveys) in which the average MAHFP was calculated from the MAHFP for each household (MAHFP-average). Some programs reported a qualitative figure based on Participatory Rural Appraisal (PRA) sessions (MAHFP-PRA). Some programs reported both of these types of MAHFP figures and, at times, it has been difficult to distinguish which of these methods was used for MAHFP figures. At the 2007 Africare food security workshop in Niger, field staff from Africare country programs collaborated to develop the outline for the revised MAHFP-PRA guidance that was finalized later in 2007 (Africare 2007, AFSR No. 1). At the 2007 workshop it was decided that both figures were important. MAHFP-PRA should serve as a check or verification of the MAHFP-average (based on a quantitative survey, as currently recommended by FANTA) and could be used to track food security annually when extensive household surveys are not feasible. At the 2008 Africare food security workshop in South Africa a draft of this guidance for MAHFP-average was developed and the decision to standardize this method as the principle reporting method for MAHFP across Africare programs was made.

After an analysis of field experiences of Africare Title II programs in Burkina Faso, Chad, Guinea, Mali, and Niger, and a review of the FANTA guide "Months of Adequate Household Food Provisioning (MAHFP) for Measurement of Household Food Access: Indicator Guide" (Bilinsky and Swindale 2007), it was evident that existing guideline are useful. However, Africare staff identified the need to disaggregate food aid from other household food provisioning when calculating MAHFP, especially given the emphasis of FFP's strategy on the use of commodities to protect the most vulnerable communities (which ensures continuity in the use of food to save lives). This new consideration in the calculation of the MAHFP measure necessitated creation of four additional questions (Questions 2-5) for MAHFP that provide an understanding of the role of food aid in MAHFP:

1. MAHFP-average as recommended by FANTA (without regard to whether respondents are including food aid),
2. MAHFP-average without food aid (hereafter referred to as MAHFP-average-WOFA),
3. MAHFP-average due to food aid (hereafter referred to as MAHFP-average-WFA),
4. Months food aid was received (regardless of need), and
5. Months food aid received, but not needed.

3. How to Measure MAHFP-Average

Measuring MAHFP-average based on quantitative methods is outlined below in six steps.

3.1. Step 1: Timing of MAHFP Survey

The MAHFP-average is measured through quantitative household surveys. Normally these are conducted as part of the baseline, midterm, and final surveys to report project impact. MAHFP-PRA is often measured annually for vulnerability tracking purposes. See the FANTA guide (Bilinsky and Swindale 2007) for a detailed description of the issues related to the timing of the MAHFP household survey questions. It is advisable to conduct the survey during the critical months, when there is likelihood of food shortages, usually during the period just before the next harvest.

3.2. Step 2: Sample and Sampling Method

The issue of sampling is critical to any food security survey. The topic is especially complex since many programs include anthropometric measurements for subsets of the population such as children of certain ages. To assist programs in determining the most effective sampling design for quantitative surveys, FANTA developed a standard guidance (Magnani 1997) that is still widely used. Given the complexity of the topic, both FANTA and Africare recommend that programs seek technical assistance from a qualified statistician during the initial phases of a project. This guidance on MAHFP-average includes a brief overview in **Annex A** (by Simeon Nanama) of some (but not all) of the key factors that need to be considered in the choice of a sampling design and will assist project staff in working with a statistician and in interpreting the results of the survey.

3.3. Step 3: Designing the Questionnaire – Consideration of Food Aid

After an inventory and analysis of questionnaires used by several Africare Title II programs, including the Zondoma Food Security Initiative in Burkina Faso, Guinea Food Security Initiative, Ouaddaï Food Security Initiative in Chad, and Goundam Food Security Initiative in Mali, the Africare M&E working group sub-team tasked with preparing this quantitative MAHFP guidance realized that questionnaires often measure MAHFP assuming household self-sufficiency and do not consider the effects of food aid. The questionnaire suggested in FANTA's guide also does not isolate the effect of direct food aid, which has become particularly relevant considering the prevalence of food aid distribution in the context of soaring food prices. The following recommended MAHFP-average questionnaire contains FANTA's questionnaire format in Question#1 and the four additional questions Africare has developed to isolate the effect of direct food aid on household food provisioning.

The first part of the questionnaire measures the household food provisioning from all sources; in other words, MAHFP-average as has been recommended in the FANTA MAHFP indicator guide (Bilinsky and Swindale 2007). This MAHFP-average indicator does not ask households to consider food aid when answering the questions on which months they have had enough to eat (it is simply not systematically known whether individual respondents have been including food aid or not when providing their answers). Question 2 is designed to tease out the household's food provisioning that results from agricultural and livestock production and from purchase capacity from self-generated income and remittances (i.e., all household food sources other than food aid). Question 3 isolates the household's food provisioning that is attributed to food aid (i.e., when food aid made them food security and they would not have been food secure without food aid). Question 4 asks respondents to report the number of months they received food aid regardless of whether they needed it to be food secure. Question 5 gathers data on the number of months that households received food aid when they DID NOT need it. The last three questions are designed to provide a more in-depth understanding of the role of food aid in the household's food provisioning, seasonality of food aid, and seasonality of food shortfalls.

Suggested MAHFP-Average Questionnaire (isolating food aid)

Question #1: Now I would like to ask you about your HH's food supply during different months of the year. When responding to these questions, please think back over the last 12 months. In the past 12 months, were there months in which you did not have enough food to meet your family's needs **(not enough food from all sources)**?
(Enumerator: Do NOT list the months for respondents, let them tell you which months they did not have enough food [Bilinsky and Swindale 2007]).

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun,**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Response Code (0 or 1)*												

*1=yes response and 0=no response.

Question #2: List months (in past 12 months) during which you did not have enough food from your agricultural and livestock production, remittances, or generated income to meet your family's needs **(not enough food not including food aid)**.

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun,**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Response Code (0 or 1)*												

*1=yes response and 0=no response.

Question #3: List months (in past 12 months), during which you had to satisfy food requirements of your family by using direct food aid including food for work, direct distribution food, or food for education **(when food aid made you food secure)**.

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun,**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Response Code (0 or 1)*												

*1=yes response and 0=no response.

Question #4: List months (in past 12 months), during which your household received direct food aid including food for work, direct distribution food, or food for education **(regardless of need)**.

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun,**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Response Code (0 or 1)*												

*1=yes response and 0=no response.

Question #5: List months (in past 12 months), during which your household received direct food aid including food for work, direct distribution food, or food for education when your household did not need food aid **(when you would have been food secure without food aid)**.

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun,**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Response Code (0 or 1)*												

*1=yes response and 0=no response.

3.4. Step 4: Selecting and Training Enumerators

A standard set of criteria should be adopted for selecting enumerators. The skills that enumerators should have prior to training on MAHFP-average surveys include:

- Reading
- Writing
- Computing,
- Familiarity with local community values and culture, and
- Proficient communication in the local language.

The training of enumerators must focus on understanding the information on the questionnaire and the basic assumptions and purpose of measuring MAHFP-average with and without food aid. The enumerators must adopt an approach that does not lead the respondent (i.e., open-ended format). The interview should be conducted individually to avoid bias. It is advisable to supervise enumerators during data collection.

3.5. Step 5: Calculating the Data

The general MAHFP-average indicator is an average value of all the scores of individual households within specific strata or for all households regardless of stratification. The formulas below in Box 1 are the same as those recommended in the FANTA MAHFP guide (Bilinsky and Swindale 2007).

First the project calculates the MAHFP for each individual household using the responses from Question 1 in section 3.3, which will indicate the number of months out of the previous 12 that the household had sufficient food to eat (formula below in part A of Box 1). Then the project will calculate the indicator value or MAHFP-average for the sample (formula below in part B of Box 1).

Box 1. MAHFP (Question 1)

A. MAHFP for Each Household

HH MAHFP (0-12 months) = (12) – (Jan+Feb+Mar+Apr+May+Jun+Jul+Aug+Sep+Oct+Nov+Dec)

Key:
12 = total number of months in the past year
Jan-Dec = a score of either 1 for not enough food or 0 for enough food

B. MAHFP-Average

MAHFP-average = Sum of HH MAHFP values (from above)/total # of HHs

Key:
Sum of HH MAHFP = the sum of all MAHFP values for each household surveyed
Total # of HH = the sum of all the households surveyed

Question 2 isolates the months when households are food secure using only their own resources (agricultural, livestock, income, remittances). In other words, when they were or would not have been food secure WITHOUT FOOD AID. The formulas in Box 2 are used for this indicator.

Box 2. MAHFP-WOFA (Question 2)

A. MAHFP-WOFA for Each Household

HH MAHFP-WOFA = (12) – (Jan+Feb+Mar+Apr+May+Jun+Jul+Aug+Sep+Oct+Nov+Dec)

Key:
12 = total number of months in the past year
Jan-Dec = a score of either 1 for not enough food from own hh resources alone or 0 for enough food from hh resources alone

B. MAHFP-Average-WOFA

MAHFP-average-WOFA = Sum of HH MAHFP-WOFA values (from above)/total # of HHs

Key:
Sum of HH MAHFP-WOFA = the sum of all MAHFP-WOFA values for each household surveyed
Total # of HH = the sum of all the households surveyed

Question 3 isolates MAHFP with food aid (MAHFP-average-WFA). In other words, the months when households needed AND received food aid that make it possible for them to be food secure (see Box 3 for formulas).

Box 3. MAHFP-WFA (Question 3)

MAHFP-WFA for One Household

HH MAHFP-WFA = (Jan+Feb+Mar+Apr+May+Jun+Jul+Aug+Sep+Oct+Nov+Dec)

In other words, total number of months that the household satisfied their food needs with use of food aid (this does not represent the total number of months of adequate household food provisioning, nor does it represent the total number of months that households used food aid – it only represents those months when this was achieved using food aid).

MAHFP-average-WFA

MAHFP-average-WFA = Sum of HH MAHFP-WFA values (from above)/total # of HHs

In other words, average number of months households in sample satisfy their food needs with use of food aid (this does not represent the total average months that households in sample are food secure, nor does it represent all months they received food aid – it only represents months for which they reach food security using food aid).

Question 4 asks respondents to report the number of months they received food aid regardless of whether they needed it to be food secure. This is essentially the same as the months food aid was distributed to the household.

Box 4. MWFA (Question 4)

MWFA for One Household

HH MWFA = (Jan+Feb+Mar+Apr+May+Jun+Jul+Aug+Sep+Oct+Nov+Dec)

In other words, total number of months that the household received food aid – regardless of whether they needed it).

MWFA-average

MWFA-average = Sum of HH MWFA values (from above)/total # of HHs

Question 5 gathers data on the number of months that households received food aid when they DID NOT need it. In other words, the household could have provided enough food for its family members using only their own household resources, but they received the food aid anyway. One possible reason this may occur is that food aid may be delayed and reach the household after they need it. If household report any months they received food aid when they did not need it, it does not necessarily mean they don't need food aid in general, they may very well have a critical period when they cannot be food secure without food aid. This question speaks to the timing of food aid distribution as well as need.

Box 5. Months Households Received Unnecessary Food Aid (Question 5)

Months HH Received Unnecessary Food Aid

Month of Unnecessary Food Aid = (Jan+Feb+Mar+Apr+May+Jun+Jul+Aug+Sep+Oct+Nov+Dec)

In other words, total number of months that the household received food aid – but did not need it).

Average Months HHs Received Unnecessary Food Aid

Average Months HHs Received Unnecessary Food Aid = Sum of values from above/total # of HHs

3.6 Step 6: Analyzing the Data

Using the suggested MAHFP-Questionnaire above that includes all five questions on MAHFP and food aid will produce data that can be used in a number of ways. The easiest way to analyze the data is to use the household values to calculate averages (e.g. average number of months households receive food aid when it is not needed). These data can certainly be stratified by socio-economic characteristics to provide a richer dataset. However, using global averages or stratified averages of the data from each of the five questions will not inform programs about issues in seasonality and timing of food security and food aid. See **Annex B** for suggestions on the ways in which the data from the five questions can be used to shed more light on MAHFP and food aid. Since these new MAHFP and food aid questions are to be field tested upon publication of this guide, feedback on revisions and data analysis strategies are essential and field teams have the opportunity to improve this tool, by providing this feedback.

The most commonly used software programs for computing the data include SPSS, Access, and Excel. A sample Excel file with formulas embedded for calculating the data from each household for all five questions that Africare hopes to pilot test in several programs over the next six months is available as **Annex C, Part 2** at http://www.africare.org/news/tech/ASFR-intro.php#paper17 for download. An image of this file is included as **Annex C, Part 1**.

4. Conclusions

This indicator is used to generate data that could be used to build strategies, report to donors, and better target beneficiaries. The indicator is sensitive to crises and could identify ups and downs in food provisioning with events that effect household food security, making it a good trigger indicator of impending food crises. By isolating the effect of direct food aid, humanitarians and development NGOs could meet on the same ground and their impacts could be better tracked. Separating food aid from other household food provisions will allow tracking of the impact of food aid in placing households in more food secure categories (or in maintaining food security levels despite political unrest or natural disasters as was observed in Guinea between 2001 and 2004 [Sidibé et al 2007]) and may assist projects in determining when food aid is no longer essential for household food security, which may be useful as an official measure in phase out plans. The use of MAHFP-average with and without food aid provides a richer dataset that can be used to pinpoint vulnerability and potential for decreasing vulnerability and graduating households.[vi]

5. References and Other Guidance

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Annex A
Selected Basics for Determining and Understanding Sample Size Criteria

Simeon Namana, Ph.D.[vii]

The purpose of this section is to ensure that field staff have a minimal understanding of the factors that need to be taken into account when estimating sample size so that they can provide guidance to the statistical expert designated to compute sample size. This document does not provide sufficient information to enable field staff without statistical training to determine sample size and design MAFHP-average surveys themselves. A statistical expert will be needed for this; however, this outlines the basic information all field staff must know to work with a statistical expert and interpret results.

There are four main factors that should be considered and understood when estimating sample size of MAHFP[viii]:

1) The smallest effect one wants to be able to detect,
2) Type I and type II errors,
3) Study design, and
4) Variable characteristics such as validity and reliability.

1. The Smallest Effect One Wants to be Able to Detect

Africare's Title II projects focus on improving food security of vulnerable populations. Therefore, indicators used are related to food security (e.g., Month of Adequate Household Food Provisioning [MAHFP] and proportion of households that fall into a given food security category) or to nutrition (e.g., proportion of stunted, wasted, or underweight children). When designing a project the MAHFP-average indicator is included in the Indicator Performance Tracking Table (IPTT) with a value for baseline and target values for mid term and final, which sometimes varies for new and original project villages. When the midterm and final evaluations are carried out, the achieved values are also recorded in the IPTT for comparison with the target values. The smallest difference one needs to be able to detect is naturally set. Note that the difference can be expressed as the difference in average MAHFP or the difference in proportion or percentage of households in a particular category of food insecurity based on MAHFP.

It is important to remember that number of subjects required (the sample size or number of households one must survey) is quite sensitive to the magnitude of the smallest effect one want to detect. In fact, reducing the magnitude by half quadruples the number of subjects required to detect it. Therefore, the way you decide on the smallest effect—in other words, the way you set your target in the IPTT—is critical.

Let's assume that a project baseline study found that the average number of adequate household food provisioning is five months and the project would like to increase that figure to 7.5 months on average by the end of its cycle. Alternatively, the project could aim for an average of seven MAHFP in *first generation* villages and five in *second generation* villages.[ix] In each of these two situations the smallest difference the project needs to be able to detect will be 2.5 months. There may be debate about the biological or social significance of 2.5 MAHFP, but let's leave that aside and focus on the statistical aspects, as this is not the focus of this annex.

2. Detecting Type I and Type II Errors

The term 'detecting' here means that if the real difference (the that the population actually experiences rather than what is measured in project surveys) between the two groups of villages between baseline and final in the population of households is 2.5 MAHFP you want to be sure that it will turn up as statically significant in the sample that you draw for your study, otherwise you would have failed to detect the change or impact of interest. Two elements are important in this, *statistical significance* and our idea of

what it means *to be sure that the difference or change will turn up in the sample data.* Both of these elements affect the required sample size.

Statistical significance: The difference is statistically significant, by convention, if the 95 percent confidence interval does not overlap zero, which is the same as saying that the probability (p-value) of observing a difference of that magnitude if the effect is actually zero is less than 0.05. These two values─95 percent or 0.05─define the so-called Type I error rate at five percent. In other words, the probability of detecting a difference of 2.5 average MAHFP when this difference does not actually exist (making a wrong statement) is five percent. Theoretically, you can set the confidence interval or p-value at any level; however a probability of 5% or less is usually acceptable among statisticians. Note however, that the smaller the probability of committing a Type I error, the larger the sample size must be, so project budget, staffing, resources and time need to be considered when setting probability level and sample size.

Being sure that the difference or impact will turn up in the sample data: If the effect (in other words, the impact of the project) really is 2.5 MAHFP in the population, what level of certainty does the project want that the difference observed in the sample will be statistically significant? Very often this level is set at 80 percent minimum. This means that, the statistical power of the study to detect ant effect of the predicted magnitude has to be at least 80 percent. In other words, the Type II error rate─the probability of failing to detect a difference that is actually there─is set at 20 percent or less. This corresponds to one chance in five of missing the thing you're looking for. It may sound high, but remember that it is the rate for the smallest effect. The chance of missing larger effects is smaller. Here also the smaller the rate the larger the sample size, so although the smallest chance of missing an impact is desirable, it has to be weighted against project budget, staffing, resources, and timing.

The above two points can also be illustrated as follows.

Let's assume that we want to test for a difference in MAHFP between baseline and midterm or between new and original project villages (+ representing a difference and – representing no difference). There is the truth that we do not know, which we approximate with a test result.

		Truth	
		-	+
Test result	+	α	
	-		β

α is the probability of concluding on a difference while there is actually none (type one error) . Usually α is kept low (0.05 or 0.1 at most)
β is the probability of concluding on a lack of difference while there is actually one (Type II error). Usually β is set higher than α (0.20). The level of α and β depends on how critical is the situation under consideration. In clinical trial testing the efficacy of a drug or its undesired effects, α will be set very low (0.01) while in social sciences α could be set higher (0.1).

3. Study Design

To recap, we would like to detect a difference of 2.5 MAHFP with rates for false positive and false negative result of five percent and 20 percent, respectively. To carry out this test we must develop or consider the study design. When it comes to sample sizes, there are only two sorts of study designs: **cross-sectional** and **longitudinal**.

Cross-sectional designs include all designs with single observations for each subject (e.g., case control, co-relational, etc.). Note that prospective designs, where subjects are followed up over time, are cross-sectional if there is only one value for each variable (e.g., MAHFP) for each subject (e.g., household).

Longitudinal designs include designs where the dependent variable is measured twice or more (e.g., time series, experiments, controlled trials, crossovers). Typically with these designs there is a measurement taken initially on the subject (e.g., household) and one taken after something is done (e.g., a food security project is implemented) to see if what was done had any effect. Whether or not you have a control group, it is always the case that subjects "act as their own controls," because there are pre and post measurements on the subjects.

4. Variable Characteristics

The sample size for a cross-sectional study (explained above) depends on the *validity* of the variables, while in a longitudinal study (explained above) the influencing factor is the *reliability* of dependent variable. In general, longitudinal designs generally need far fewer subjects than cross-sectional designs.

Validity refers to how conceptually close the variable is to what it intends to measure.[x] For example, child nutrition status is a less valid measure of food insecurity than the number of nights the family members have gone to bed hungry. MAHFP, which focuses on the main staple grain, is considered a valid variable for measuring food security because the populations for whom it is used tend to eat the bulk of their calories from the main staple grain. If their dietary pattern included a variety of foods (e.g., vegetables, fruits, dairy, meat, poultry, and fish) in substantial quantities on a daily basis, then this would be a less valid measure of food security.

Reliability is the extent to which a variable measures the same thing every time. For instance, is temperature a good predictor of rain? To some extent, yes because during the rainy season it often rains when it gets hot. However, it can get hot without rain, especially during the dry season. Validity and relativity are very much related.

Example from Burkina Faso

Most Africare projects use cross-sectional study designs (pre and post measurements) to evaluate the effect of food security interventions. Below is an example of the sample size calculation for the Zondoma Food Security Initiative, Phase II.

At baseline of Phase I, the prevalence of underweight children was 41 percent. The final evaluation for Phase I showed that the figure has dropped to 31 percent. If we exclude existence of a secular trend (i.e., in the absence of the project, prevalence would not have changed), we can assume that the prevalence of underweight children in new project village for Phase II is equal to that found at baseline of Phase I (41%). In addition, if we assume that the project in its second phase will perform at least as well as it did during Phase I, we can estimate that the prevalence of underweight children will be around 31percent for the final evaluation of Phase II. Note that in the IPTT, the baseline figure in new project villages for Phase II is 41 percent and the final target is 31 percent (based on the experience from Phase I).

Based on the above considerations and in light of the sampling strategy adopted by the team (cluster sampling) the following formula[xi] was selected to determine sample size.

$n = D\ [(Z_\alpha + Z_\beta)^2 * (p_1(1-p_1) + p_2(1-p_2))/ \Delta^2]$

Key:

n	=	sample size per survey round or comparison group
Z_α	=	the Z-score corresponding to the degree of confidence with which it is desired to be able to conclude that an observed change of size (p2-p1 would not have occurred by chance (α – the level of statistical significance,
Z_β	=	the z-score corresponding to the degree of confidence with which it is desired to certain of detecting a change of size (p2-p1) if one actually occurred (β – statistical power),
p_1	=	prevalence of underweight in old villages
p_2	=	prevalence of underweight in new villages
Δ	=	difference in prevalence of underweight between the two groups of villages
D	=	coefficient of adjustment for the cluster sampling

If we consider a difference of 10 percentage point in the prevalence between the new and old villages (41 – 31) and if we set α =0.05 and β=0.2 we get a sample size of 563 children aged 0 to 36 months per group.

$N = 2\ [(0.05 + 0.2)^2 * (0.31(1-0.131)) + (0.41(1-0.41))]/ 0.10^2 = 563$

Assuming 0.91 children aged 0-36 month per household (from nationally representative survey) we get about 619 households per group.

This figure is more than what the project can handle from a logistical and financial point of view. The decision was therefore made to set α at 0.1. This resulted in 410 individuals per group, which corresponds to 451 households.

Annex B
Additional Potential Questions to Explore with MAHFP and Food Aid Questions

There are a number of questions that can be answered with data that will be provided using the five MAHFP and food aid questions recommended and presented in this guidance (see Section 3.3 and 3.4 above). While global annual averages for data on each of the five questions will provide useful information, these data will not illuminate the dynamics of timing of need versus receipt of food aid or seasonality issues the way in which MAHFP values have typically been tabulated and reported by Africare. The new questions allow program staff to explore the relationship between food aid and household resources for food security from month to month within households. This annex provides some additional questions to explore with the data from the five questions on MAHFP and food aid presented above. If someone on the M&E team has statistical training, then they can take on these or other additional questions working under the assumptions and requirements of sample size and distribution, as well as any other statistical criteria. As this new MAHFP method is field tested, recommendations and lessons learned on the types and uses of all data and data analysis methods should be recorded and shared so that it may inform future revisions of this guidance and the analysis it recommends.

1. What does the average MAHFP tell us?

Data to use: MAHFP Question #1 (see section 3 above)

Recommendations for analysis: Normally Africare programs report an average MAHFP for the entire sample, as well as for specific groups at times (e.g., original versus new project villages). Programs also commonly report the percentage of households in three standard categories of food security based on MAHFP (most food insecure [0-3 months], moderately food insecure [4-11 months], and least food insecure [12 months]). It may also be fruitful to graph MAHFP values for individual households around the average for the entire sample. If most of the households are near the average then the average is a very accurate picture of reality for most of the households in the sample. If there is a very wide range of values for individual households around the average then the average only reflects reality for a few of the households. Furthermore, as projects already know it is useful to stratify average MAHFP by the known or suspected household socio-economic or demographic characteristics (such as female/male headed and HIV-impacted) and data can be visually displayed this way. Finally, tests of statistical difference can be performed between stratified groups provided the data meet the required assumptions.

What this will tell you: Projects may use a graph of the distribution of the data values for individual households to visually identify vulnerable groups based on MAHFP (the way that the three categories of food insecurity do). Furthermore, when data is viewed visually based on socio-economic or demographic categories it may illuminate differences in the variation of food security within the sample. For example, (hypothetically) the data may be much more widely distributed for a particular sub-group (such as female headed households) than for the entire sample (regardless of whether the average is the same), which may mean that female headed households do not have as homogeneous an experience with food security compared to male headed households, for example.

2. To what extent is food aid provided and does it improve food security of food insecure households?

Data to use: Question #1 (MAHFP) and Question #3 (months when food aid made you food secure)

Recommendation for analysis: Africare has standard categories of food insecurity (least food insecure – 12 MAHFP, moderately food insecure—4-11 months, and most food insecure – 0-3 months). Exploring answers to Question #3 for food insecure households based on Question #1, programs can determine how many months each household (and on average) established food security using food aid,

What this will tell you: Essentially, this provides information on whether the food aid propelled any households into improved food security categories. It is important to consider that without the food aid, families may have been able to scramble to provide more food for themselves, which is not reflected by simply subtracting the number of months food aid made them food secure.

3. Is food aid given to food insecure households when it is needed/ when it is not needed?

Data to use: Questions #5 (food aid received when not needed) and Question #1 (MAHFP)

Recommendation for analysis: Respondents answers to Questions #5 (food aid received when not needed) may illuminate breakdowns in the timing of food aid. For example, if it was needed in June – food insecure based on question #1, and not received until July once crops have been harvested-yes for question #5, then although the food aid seems un-necessary when looking at the household average for question #5 – there in fact were periods when it was needed and not received due to timing of the distribution.

What this will tell you: Projects can use these data to understand the impact of breaks in food management pipelines on household food security. Furthermore, these data will also identify households that receive food rations, but do not need them, perhaps households that may be ready for graduation. However, it is important to look at data month by month and compare it with other MAHFP questions for each household, rather than assuming that one month of unnecessary food aid means they are ready to graduate.

4. Are there months when households receive food aid, but are still food insecure? When?

Data to use: Compare Question #1 (MAHFP) and Questions #4 (months when received food aid)

Recommendation for analysis: For each household calculate (in a new column in Excel file) when food aid was received but household was still food insecure by subtracting the raw data (0 and 1 answers) to Question #4 from the raw data (0 and 1 answers) from Question #1 for each household. This will give you:

For each HH for each month	What this tells you
Q#1=1 Q#4=1 **(1-1)= 0**	Month when HH was food insecure with food aid
Q#1=1 Q#4=0 **(1-0)= 1**	Month when HH was food insecure and did not receive food aid
Q#1=0 Q#4=1 **(0-1)= -1**	Month when HH received food aid and they were food secure

What this will tell you: These data will illuminate the households for which food aid is insufficient in amount for specific months during the year.

Annex C, Part 1.
Africare MAHFP-Average Excel Tool Example

Part 1 of Annex C are the images below that have been pasted in from the Excel file tool (Part 2: http://www.africare.org/news/tech/ASFR-intro.php#paper17) that can be used by Africare field staff for entering household responses to the each of the five MAHFP and food aid questions. The images below are not complete; they represent only a portion of the Excel tool to give the reader an idea of how it is formatted. The values in row 1 are for example only. The first sheet in the file (Household Response Record Sheet) is for entering the responses and the second sheet in the file (Data Calculation Sheet) automatically calculates the indicator values for each of the five questions.

Household Response Record Sheet

This shows how the Excel data entry sheet is formatted by displaying the cells for question #1 on MAHFP (from all sources). In the Excel file questions 2 through 5 continue to the right and are color coded to make it easy to recognize the different questions.

Enter responses from households on this sheet, it will automatically calculate data on Data Calulations sheet

	Question 1 (Q1)=Months when not enough food from ALL SOURCES)											
HH #	Q1: Jan	Q1: Feb	Q1: Mar	Q1: Apr	Q1: May	Q1: Jun	Q1:Jul	Q1: Aug	Q1:Sep	Q1:Oct	Q1:Nov	Q1:Dec
1	0	0	0	0	0	0	1	0	0	1	1	1
2												
3												
4												

Data Calculation Sheet

Formulas imbedded in cells below--do not delete--enter HH responses on HH Response Record Sheet!

HH #	MAHFP (12-response to Q1)	MAHFP-WOFA (12-response to Q2)	MAHFP-WFA (sum of responses to Q3)	MWFA (sum of responses to Q4)	Months received food aid, but not needed	
1	8	7	2	4	2	
2						
3						
4						
5						
6						

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[iii] Pascal Payet is currently working as M&E coordinator for Africare's Niger programs.

[iv] The FANTA MAHFP guide for MAHFP average (Bilinsky and Swindale 2007) is now available on their website, but does not address qualitative PRA methods for MAHFP. Africare (2007) guidance on MAHFP-PRA (AFSR No.1) is available at http://www.africare.org/news/tech/ASFR-intro.php#paper1.

[v] MAHFP is now an indicator identified by USAID Food for Peace in its FY06-10 strategy that serves as a measure of household food access (Bilinsky and Swindale 2007). Anytime MAHFP is used in reporting, a footnote should accompany the indicator explaining clearly which method was used. USAID prefers use of the MAHFP based on quantitative methods.

[vi] Africare studies in this series that have focused on vulnerability and MAFHP include Nanama and Souli (2007) and Tushemerirwe and McMillan (2007), Sidibé et al. (2007), Nanéma et al. (2008), and Bryson and Cohen (2008).

[vii] Simeon Nanama has served as Advisor and then Senior Technical Advisor for Nutrition at UNICEF Chad since 19xx; he is in the process of transferring to UNICEF in DRC. Prior to joining UNICEF, Dr. Nanama co-directed a longitudinal study to improve the various indicators used by FANTA to assess food security impact in collaboration with the Africare/Burkina Faso ZFSI Project. He is the co-author of paper No. 5 in this series.

[viii] Since MAHFP is a household level indicator (meaning that it is measured for all households regardless of composition), unlike percentage of stunted children age 0-24 months (which is only measured for those households with children of that age), there is no need to consider household composition in the calculation for sample size. However, since many Title II projects determine sample size for a number of indicators, some of which may depend on household composition or characteristics (e.g., households with people living with HIV), the number of households in the project survey may be more than what is need for measuring MAHFP. See Magnani (1997: 6 and 13-16) for more through explanation of these sampling size considerations.

[ix] First generation villages entered the project before second generation villages.

[x] There are a number of different types of validity that are outside the scope of this overview for field staff. For example there can be issues of validity in the design of the study's sampling method. To assess validity of the sample for making generalizations about the population projects are attempting to describe it would be important to consider whether the sample has something unique about it in terms of who was surveyed, where they live, or how they answered the questions. Selecting a truly random sampling design avoids this and ensures it is more likely that the individuals in the sample represent a similar distribution of characters as the individuals in the population if the two could be compared.

[xi] Formula taken from FANTA web site: Magnani (1997) Sampling Guide (see reference list above) available at http://www.fantaproject.org/publications/sampling.shtml.