



## **P. L. 480 TITLE II**

# **MOZAMBIQUE - FOOD FOR THE HUNGRY**

**July 2008 to June 2011  
Multi-Year Assistance Program**

## **Baseline Survey**

**January-February, 2009**

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## ABBREVIATIONS AND ACRONYMS

ACT	Artemisinin combination therapy
AIDS	Acquired immune deficiency syndrome
Anova	Analysis of variance
CDC	Center for Disease Control
CSTS	Child Survival Technical Support
DD	Dietary diversity
DHS	Demographic and health surveys
DPS	Provincial health department
FH	Food for the Hungry
HDDS	Household Dietary Diversity Score
HIV	Human immunodeficiency virus
IMCI	Integrated management of childhood illness
IPTT	Indicator and performance tracking table
LCL	Lower confidence limit
LLITN	Long-lasting insecticide-treated (mosquito) net
LQAS	Lot quality assurance sampling
MAHFP	Months of adequate household food provisioning (scale)
MdP	Moçimba da Praia (district)
MOH	Ministry of Health
MUAC	Mid upper arm circumference
MYAP	Multi-year assistance project
NCHS	National Center for Health Statistics
ORS	Oral rehydration salts
PDA	Personal digital assistant
PSI	Population Services International, a social marketing organization
UCL	Upper confidence limit
USAID	United States Agency for International Development
WHO	World Health Organization

# I. Methodology

## *Sampling*

The baseline survey was performed using a 30-cluster sample design with parallel sampling. Sample sizes were calculated to yield confidence intervals of about five percentage points plus and five percentage points minus for most binomial variables. Thirty communities were selected for clusters using a standard population-probability method described in the *KPC 2000+ Field Guide* (Espeut, D; 2003). The list of communities selected is found in Appendix A. The overall list of communities from which these were chosen included only those that were to be targeted by the MYAP, and did not include any of the three district capitals as these will not be targeted by MYAP activities. An initial household was randomly selected in each cluster using techniques described in the *Field Guide* (Espeut, D 2003), and the interview teams proceeded with the interviews following the “nearest door” rule until a full set of interviews had been obtained.

In each cluster, the following respondents were sought: ten mothers of children 0-23 months of age, ten heads of household (self-defined), and fifteen children 24-59 months of age. Mothers of children under two were interviewed using a health questionnaire and their children weighed and measured, heads of household using an agriculture and food-security questionnaire and the children 24-59 months were weighed and measured only. Interviewers were instructed to allow one child 0-23 months and another child 24-59 months from the same household, but not more than one of each. The three sets of respondents were obtained using parallel sampling and therefore, it is not possible to perform cross-tabulations between the unlinked interviews between the three groups.

## *Questionnaires*

Two questionnaires were developed for the interviews, based on the indicator definitions in the MYAP indicator and performance tracking table (IPTT, FH 2008). Indicators to be included in the survey were those deemed feasible and appropriate for quantitative surveys, and for which the IPTT indicated that the source would be the baseline survey. The health questionnaire was based on guidelines from USAID CSTS as well as the baseline survey for FH’s Child Survival project in Sofala Province, Mozambique. The agricultural questionnaire was also based on the indicators in the IPTT, and questions were developed using FH’s Title II project in Sofala Province, as well as guidelines provided by USAID/FANTA (Bilinsky, P *et al*, 2007; Coates, J *et al* 2007; Swindale, A 2006). An anthropometry tabulation form was developed for recording names, birthdate, age, weight and height for the children 24-59 months of age.

Both questionnaires were developed in Portuguese. The most prevalent local language is Makonde, and Portuguese is not spoken by most of the population. However, it was felt that because interviewers are not accustomed to reading Makonde, a written Makonde questionnaire would not be useful in the field. Questionnaires were independently translated from Portuguese to Makonde in writing by three translators. These conferred

and produced a consensus questionnaire that was then back-translated to Portuguese by a fourth translator. The four then achieved consensus on written Makonde versions of the questionnaires that would then be used in the training of interviewers.

### *Training*

Supervisors (three) and interviewers (twelve) were selected from MYAP staff (eight) plus three non-staff that were hired for their language skills. (Some MYAP staff do not speak local languages as they were transferred from the FH project in Sofala Province.)

Supervisors were trained for one-half day prior to training of interviewers. Interviewers received three days of training, including one day for a field test. Training was initially done in a classroom setting using Portuguese questionnaires, including training on household and respondent selection, questionnaires and practice. The second day, the Makonde questionnaires were read aloud, with the interviewers repeating the phrases in Makonde several times. This was followed by practice with the questionnaires in Makonde.

### *Logistics*

Each team consisted of one supervisor, one nurse (from the District Health Department), four interviewers and one driver. During the first day of data collection, all teams collected interviews from communities in Mocimba da Praia district in order that they be close by if problems were detected. Thereafter, one team proceeded to Palma, another to Nangade, and the third remained in Mocimba da Praia. Nine days were reserved for data collection. One team completed data collection in only five working days, a second in six, and the third in eight days. The overall process took ten total days, however, as each team took at least one rest day.

### *Data management*

Data entry was performed during the data collection phase as completed questionnaires were brought to the office in Mocimba da Praia. Five project staff were trained for data entry for the health forms. All but ten agriculture forms were entered by the consultant. Data were entered into Microsoft Access databases. Initial first-level processing was done in Microsoft Access 2003, and the resulting MS-Access queries were exported to Epi Info 3.4.1 for statistical analysis. The Epi Info for DOS program CSAMPLE 6.04d was used to calculate the actual design effect for key variables. The raw data are stored in the MS-Access databases.

### *Design effect*

Design effect is the error introduced by cluster sampling over simple random sampling. It can be thought of as the difference *within* a given cluster (or community, in our case) compared with the difference *between* clusters. It reduces the effective sample size and widens the resulting confidence intervals. A design effect of “one” is the same as a simple random sample. If the design effect is not known, it is common to assume a design effect of two in surveys using cluster sampling. This would reduce the effective sample size in the current survey from 300 to  $300 / 2 = 150$ , significantly widening the confidence intervals. In addition, for some variables such as access to water and sanitation, diarrheal prevalence, and economic activity (fishing, for example), the design

effect would be expected to be quite high, as conditions *within* each cluster tend to be very similar (i.e., there is a lot of “clustering” of the thing being measured). Therefore, wherever possible, design effects were measured directly using the Epi Info program CSAMPLE, which examines the data and calculates the actual design effect observed in the data. As this process is tedious, the true design effect was calculated for all major indicators, and then extrapolated to the similar minor indicators and sub-component indicators.

The effect was to reduce the design effect in the health questions to one in many cases, or a very low number in others. However, for some indicators, especially water and economic activity, the true design effect was six or more. The specific design effect used for each indicator is included in the indicator table in the annex. Some representative calculated design effects are illustrated in the following table:

**Table 1: Calculated design effects for some indicators**

<b>Indicator</b>	<b>DE</b>	<b>Indicator</b>	<b>DE</b>
Exclusive breastfeeding 0-5 months	1.04	Percentage of all mosquito nets that are long-lasting insecticide-treated nets (Permanents)	1.97
Percentage of mothers of children 0-23m who report being tested for HIV while they were pregnant.	1.39	Proportion of families with year-round access to improved water sources.	6.36
Vitamin A supplementation in the past 6 months	1.0	Handwashing 2 or more appropriate times per day	4.2
Children with diarrhea in the previous 2 weeks treated with ORS or home fluids	1.0	Proper disposal of children’s feces	2.38

## ***A. Methodological challenges***

### *Logistics*

The most important logistical challenge was the difficulty communicating with the teams during the data collection phase. Neither the Nangade nor the Palma teams had cell phone coverage during the data collection phase. The only means to communicate was to send staff on motorcycles to locate the field teams to exchange notes and pick up completed questionnaires for data entry. This created a delay in communicating the revised instructions for the interviewers that needed to be communicated. A second less important logistical challenge was posed by the absence of electricity in Mocimba da Praia, which restricted work on data entry and cleaning to office hours while the office generator was running.

### *Health*

The survey encountered significant methodological problems with the anthropometry measurements. On analysis, fully 35% of weights were recorded as integers (rather than having a precision of 0.1 kg), as were 87% of height measurements. This is against a maximum of about 8-12% expected integers. This is a sign that the nurses who performed the measurements were rounding measurements, leading to problems with precision.

The child and infant feeding questions were somewhat problematic, as some of the original questions were not specific enough to elicit hardly any positive responses. This was especially noted in the questions on “foods made from grains” and/or the “papas” (porridge) question, which initially elicited almost no positive responses even though “xima” (a commonly eaten corn or cassava based porridge) was included in the question. This was noted after the first day of data entry. Interviewers were then instructed to specify “xima” before saying anything else. After this change, there was an increase in positive responses. In the same way, the “green vegetables” question did not elicit a positive response until the interviewers were instructed to specifically ask about “matapa”, a local dish made from boiled manioc leaves. (As the questions were modeled and adapted from FH’s previous baseline for the Child Survival project in Sofala, that survey may have also suffered from the same methodological flaw for that particular question.) In the current survey, the questions were modified (or “sharpened”) *during* the data collection, which led to a change in the response patterns from that point forward. We believe that this did not significantly affect the key project indicators, but some of the ancillary indicators changed “mid-stream”. Comments are made in each of the relevant analysis sections, where analysis is done both including and excluding the earlier less specific responses. It is recognized that this introduces statistical problems in the cluster sampling methodology, but the differences are instructive nonetheless.

### *Agriculture*

This survey also presented methodological challenges in terms of agricultural data. It became evident during the data entry phase that many of the indicators related to income, agricultural practices and economic activity are highly clustered. That is, entire communities engage in similar sorts of activities, whether they are fishing communities or agricultural communities, whether they engage in commerce, and the types of crops they plant. This leads to a very high “design effect” when using cluster sampling. In the future, a different approach to sampling with a lower design effect should be used for the agriculture component. The project may opt for one of two options: simple random sampling or LQAS would provide overall estimates of income and other indicators in the project zone with smaller confidence intervals (since they both have a design effect of 1.0). Alternatively, the project may opt for a more directed sampling method to measure impact only in target areas or among targeted (or participant) families and simply not try to measure overall impact in the general population. A “case/control” type design using simple random sampling among matched communities (participant and non-participant) would be a viable alternative to the current cluster sampling method.

Furthermore, basing the sample on the entire population of target communities may be misleading for the agricultural interventions, as many of the indicators are worded as

“proportion of participants’ or “proportion of beneficiaries”. This is justifiable at baseline, but may not be appropriate during monitoring surveys and the final survey. As the MYAP will work with only a portion of any community, it is not expected that all community members will adopt the recommended practices and crops, especially during the short life of the project (three years). Secondary adoption of newly-introduced crops and techniques is too much to expect from such a short project. During monitoring surveys and the final survey, it may be best to limit the sample to direct beneficiaries.

### *Nutrition*

Six children in 0-23 month range were excluded from the analysis for various reasons. The following table outlines the distribution and reasons for the exclusions.

**Table 2: Exclusions from nutrition analysis**

Cluster number	Number of children included	Reason for disqualification
7	7 children 0-23m	The other three were substitutions and were eliminated
8	9 children 0-23m	1 child was a substitution and was eliminated
15	9 children 0-23m	1 child was outside the age range and eliminated
20	9 children 0-23m	1 child was a substitution and was eliminated

## ***B. Indicators regarding productivity***

It became obvious during the survey that questioning the heads of households about the size of their plots and their yield the previous year was not an accurate way of estimating yields. Most respondents were uncertain about the exact size of their plots. Furthermore, extensive intercropping (43% of households) and agroforestry (17% of households) significantly distort yields. It is recommended that the indicators relating to “yields” either not be gathered at all, or that yields should be estimated based on the field trials and demonstrations to be done as part of the project. The actual yield of secondary spread of newly introduced crops is expensive and time-consuming to measure directly, and is confounded by weather as well as the other factors just mentioned.

# **II. Results and Discussion**

## ***A. Health***

### **1. Nutrition**

The original survey sample was to include 300 children 0-23 months of age and another 450 children 24-59 months. A total of 735 children under five had valid weights, height

and birth date measured. An additional child (male, in the 0-5 months age range) was included in the weight for height analysis as his exact birth date was unknown, but the child was known to be under 6 months of age, giving a total of 736 children for the weight for height analysis. (Age is not needed for calculation of weight for height.)

There are valid weight, height and birth date measurements for 294 children 0-23 months and 441 children 24-59 months (albeit that some of the measurements were not as precise as was hoped). Of the initial sample of 300 children 0-23 months, one was too old, and four more did not appear for weighing after the interview with the mother. In the older age group, eight children were outside the proper age group, and one did not have a proper birth date noted, so only weight-for-height could be analyzed. The other children were not included in the analysis.

An analysis of age groups shows that there was a bias toward younger children in both the 0-23 month age group and in the 24-59 month age group. There were only 43 children (14.6% of total) in the 18-23 month age group, against an expected 23<sup>1</sup>-25% (of all children 0-23m of age). The median age of children in the 0-23 month sample was 10 months. This occurs in surveys of this type when interviewers were instructed to chose the younger child if there were two children in the same household that were under two years of age. The sex breakdown was equal for all age groups (overall 50.7% female, 49.3% male).

**Table 3: Breakdown by age groups with valid weight, height and date of birth 0-23 months**

Age Group (months)	Frequency	Percent	Cum Percent
0-5	67	22.80%	22.80%
6-11	99	33.70%	56.50%
12-17	85	28.90%	85.40%
18-23	43	14.60%	100.00%
<b>Total</b>	294	100.00%	100.00%

Likewise, there was an apparent age bias among children 24-59 months as well. The mean age of this sample was 35 months (against expected 42 months). The following table illustrates the breakdown by age. The gender breakdown was again equal (female 48.8%, male 51.2%).

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<sup>1</sup> Given survival rates.  
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**Table 4: Breakdown by age group with valid weight, height and date of birth 24-59 months**

Age Group (months)	Frequency	Percent	Cum Percent
24-29	120	27.20%	27.20%
30-35	96	21.80%	49.00%
36-41	82	18.60%	67.60%
42-47	70	15.90%	83.40%
48-53	49	11.10%	94.60%
54-59	24	5.40%	100.00%
<b>Total</b>	<b>441</b>	<b>100.00%</b>	<b>100.00%</b>

There are not expected to be large differences between age groups for this age range. The bias may be due to which children were found in the home at the time of the survey, as younger children are likely to be closer to the mother, whereas older children may be outside or with another relative. The principal effect of the age bias is likely to reduce the apparent prevalence of stunting, as children do not recover much of their loss in height in later years. Because of this, it may also reduce the apparent percentage of children judged to be “underweight” for the same reason. It is not possible to predict the effect the bias might have on the apparent prevalence of wasting.

Nutritional status was assessed using WHO standards and categorized using Z-scores, following the standard used to define the project indicators. Definitions for malnutrition follow the 1978 CDC/WHO normalized standards of the 1977 NCHS reference curves, with less than two standard deviations below the mean being considered “malnourished” and less than three considered “severely malnourished” for any given measure. The tables in the following sections outline the results for the three indicators, weight for age, height for age, and weight for height.

#### *Underweight (weight-for-age)*

Weight-for-age is a commonly-used measure of nutritional status, especially in routine growth monitoring programs, as measuring weight is technically simpler than measuring height. This measure is best used in series, to judge whether individual children are growing, where faltering growth is a very sensitive measure of the cumulative effect of poor feeding and childhood illness. However, weight-for-age must be interpreted with caution as a static measure of the nutritional status of populations, as it is affected both by chronic malnutrition and by acute malnutrition. And whereas acutely malnourished children are at high risk of dying, those with chronic malnutrition are much less so.

Nevertheless, one of the key project indicators is “Proportion of all children 0-59m in the target area (Palma, Mocimboa da Praia, Nangade) who are underweight (WAZ<-2).” For this indicator, a total of 27% (95% CI: 24%-31%) of children were found to be underweight or severely underweight. However, as we shall see later, this reflects more the very high rate of chronic malnutrition (stunting) than acute malnutrition. The following table outlines weight-for-age by sex and age group.

**Table 5: Weight for age**

Group	Normal	Underweight ( $<-2 Z, \geq -3 Z$ )	Severely underweight ( $<-3 Z$ )	N	95% Confidence Intervals		
					Normal	Underweight	Severely underweight
All children 0-59 m	73%	22%	5%	735	69%-76%	19%-25%	3%-7%
Male	71%	22%	8%	371	66%-75%	18%-26%	5%-10%
Female	75%	23%	2%	364	70%-79%	18%-27%	1%-4%
0-5m	99%	1%	0%	67	96%-100%	0%-4%	0%-0%
6-11m	72%	19%	9%	99	63%-81%	11%-27%	3%-15%
12-17m	71%	25%	5%	85	61%-80%	16%-34%	0%-9%
18-23m	67%	30%	2%	43	53%-81%	17%-44%	0%-7%
24-59m	70%	25%	5%	441	66%-74%	21%-29%	3%-7%

The following table analyzes the same data using the DHS age ranges and comparing the MYAP baseline survey with national and provincial DHS data:

**Table 6: Weight for Age MYAP vs. DHS**

Group	MYAP		DHS (NATIONAL)	
	Severely Underweight * ( $<3 Z$ )	Underweight* ( $<2 Z$ )	Severe Underweight ( $<3 Z$ )	Underweight ( $<2 Z$ )*
All children 0-59 m	5.0%	27.3%	6.4%	23.7%
Male	7.5%	29.3%	6.7%	24.7%
Female	2.5%	25.3%	6.2%	22.6%
0-5m	0.0%	1.5%	1.0%	5.4%
6-9m	6.3%	30.1%	6.2%	19.7%
10-11m	13.9%	25.0%	10.1%	36.9%
12-23m	3.9%	30.5%	10.6%	34.5%
24-35m	4.2%	26.9%	9.5%	28.5%
36-47m	4.6%	30.3%	5.0%	22.3%
48-59m	9.6%	39.7%	3.0%	18.3%
<b>DHS CABO DELGADO</b>			9.2%	34.2%

\*Includes children severely underweight ( $<3 Z$ )

As can be seen, there is no significant difference in underweight by gender. Whereas children under six months of age have a low rate of underweight, there is a huge increase from 1% to 28% in the six to eleven month age group, and relative stabilization thereafter. The causes of this will become clearer as we examine the other two nutrition indicators that follow.

Comparison of weight for age between the MYAP baseline and the DHS shows close correlation between the national DHS data from 2003 and the MYAP baseline, but the MYAP baseline reveals higher rates of underweight than the DHS estimate for Cabo

Delgado. The DHS data also shows male children to have a higher prevalence of underweight than female children. The difference in the exact pattern by age is probably due to small sample sizes in the DHS data. Cabo Delgado has the highest levels of stunting in the nation and this increases the prevalence of underweight.

*Wasting (weight for height)*

Weight-for-height in children is the standard measure of acute malnutrition in populations. It is sensitive to acute changes in food availability, feeding practices and childhood illness such as diarrhea. Children who are wasted are at greatly increased risk of dying compared to children of normal weight-for-height. The following table outlines weight-for-height by sex and age group.

**Table 7: Weight for height**

Group	Normal	Wasted (<-2 Z, ≥-3 Z)	Severely Wasted (<-3 Z)	N*	95% Confidence Intervals		
					Normal	Wasted	Severely Wasted
<b>All children 0-59 m</b>	94%	5%	1%	736	92%-96%	4%-7%	0%-1%
<b>Male</b>	94%	6%	1%	372	91%-96%	3%-8%	0%-2%
<b>Female</b>	95%	5%	0%	364	92%-97%	3%-7%	0%-1%
<b>0-5m</b>	96%	1%	3%	68	91%-100%	0%-4%	0%-7%
<b>6-11m</b>	87%	13%	0%	99	80%-94%	6%-20%	0%-0%
<b>12-17m</b>	94%	5%	1%	85	89%-99%	0%-9%	0%-3%
<b>18-23m</b>	79%	19%	2%	43	67%-91%	7%-30%	0%-7%
<b>24-59m</b>	97%	3%	0%	441	95%-99%	1%-5%	0%-0%

\*Note that one additional child, male, 0-5 months, is included here, as he was known to be under 6 months of age, but the exact birth date was unknown. Therefore, he was not included in the weight-for-age or height-for-age analysis, but was included here since exact age is not needed to calculate weight-for-height.

The following table analyzes the same data using the DHS age ranges and comparing the MYAP baseline survey with national and provincial DHS data:

**Table 8: Weight for Height MYAP vs. DHS**

Group	MYAP		DHS (NATIONAL)	
	Severely Wasted* (<3 Z)	Wasted* (<2 Z)	Severe wasted (<3 Z)	Wasted (<2 Z)*
<b>All children 0-59 m</b>	0.5%	5.8%	0.9%	4.0%
<b>Male</b>	0.8%	6.4%	0.9%	4.0%
<b>Female</b>	0.3%	5.2%	1.0%	4.0%
<b>0-5m</b>	2.9%	4.4%	0.1%	1.3%
<b>6-9m</b>	0.0%	14.3%	0.7%	3.3%
<b>10-11m</b>	0.0%	11.1%	0.7%	7.4%
<b>12-23m</b>	1.6%	11.0%	1.7%	7.3%
<b>24-35m</b>	0.0%	4.2%	1.3%	4.7%
<b>36-47m</b>	0.0%	0.7%	0.8%	3.4%
<b>48-59m</b>	0.0%	4.1%	0.5%	1.6%
<b>DHS CABO DELGADO</b>			0.9%	4.1%

\*Includes children severely wasted (<3 Z)

The “global acute malnutrition rate” is defined as the percent of children 6-59 months with weight-for-height <-2 Z-scores (or 80% of median), or MUAC < 12.5 cm, with or without edema. The global acute malnutrition rate for the survey was 40 children out of 668 with wasting or severe wasting, giving a global acute malnutrition rate of 6% (95% CI 4%-7%).

The table above demonstrates that there is no significant difference in acute malnutrition by gender. The lowest rates of acute malnutrition occur in the 0-5 month and 24-59 month age groups (4% and 3%, respectively), and the highest rate (10%; 95% CI 7%-14%) occurs in the 6-23 month age group. This rate is alarmingly high, and is likely to reflect poor overall infant feeding practices, frequent infections, and food insecurity during the rainy season. This reinforces the importance of the project design to focus on children under two years of age, as these are at the highest risk of acute malnutrition and child mortality.

The MYAP shows a significant difference in overall wasting as compared with both national and provincial DHS figures, with the MYAP being slightly higher (6.4% wasting vs. national average of 4.0% and provincial average of 4.1%). This may be expected as the target districts are more rural than the national average, and the survey was performed during the hungry season, in the month of February.

*Stunting (height for age)*

Height-for-age is a measure of chronic malnutrition. It changes relatively slowly, and is therefore not a good “early warning” indicator for malnutrition in populations. However, as it is largely irreversible, it tends to reflect overall wellbeing of children and populations that result from repeated periods of poor diet and repeated childhood illnesses. The following table illustrates the rates of stunting in the population measured:

**Table 9: Height for age**

Group	Normal	Moderately Stunted (<-2 Z, ≥-3 Z)	Severely Stunted (<-3 Z)	N	95% Confidence Intervals		
					Normal	Moderately Stunted	Severely Stunted
<b>All children 0-59 m</b>	58%	27%	15%	735	55%-62%	24%-30%	12%-17%
<b>Male</b>	52%	32%	16%	371	47%-57%	27%-36%	12%-20%
<b>Female</b>	65%	23%	13%	364	60%-69%	18%-27%	9%-16%
<b>0-5m</b>	94%	1%	4%	67	88%-100%	0%-4%	0%-9%
<b>6-11m</b>	77%	20%	3%	99	68%-85%	12%-28%	0%-6%
<b>12-17m</b>	65%	28%	7%	85	55%-75%	19%-38%	2%-13%
<b>18-23m</b>	60%	21%	19%	43	46%-75%	9%-33%	7%-30%
<b>24-59m</b>	47%	33%	20%	441	43%-52%	28%-37%	16%-23%

The following table analyzes the same data using the DHS age ranges and comparing the MYAP baseline survey with national and provincial DHS data:

**Table 10: Height for age MYAP vs. DHS**

Group	MYAP		DHS (NATIONAL)	
	Severe Stunting (<3 Z)	Stunting (<2 Z)*	Severe stunting (<3 Z)	Stunting (<2 Z)*
All children 0-59 m	15%	42%	18%	41%
Male	16%	49%	19%	43%
Female	13%	35%	17%	39%
0-5	4%	6%	2%	12%
6-9m	3%	19%	11%	26%
10-11m	3%	31%	13%	34%
12-23m	11%	37%	22%	48%
24-35m	28%	42%	19%	44%
36-47m	27%	57%	22%	49%
48-59m	27%	77%	21%	45%
<b>DHS CABO DELGADO</b>			30%	56%

\*includes severely stunted (<-3 Z)

The relevant project indicator is “Proportion of all children 6-59m in the target area who are stunted (HAZ<-2)”. This is 302 children of 668, or 45% (95% CI 41%-49%). From the pattern above, one can see that stunting is significantly more common in boys than girls. Among girls and boys 6-59 months, a total of 176/339 boys (52%; 95% CI 46%-57%) and 126/329 girls (38%, 95% CI 33%-44%) are stunted, a statistically significant difference ( $p<0.05$ ). This is common in sub-Saharan Africa.<sup>2</sup> It is unclear, however, why this should be the case. As would be expected, stunting increases with age from only 6% among those 0-5 months to 53% among those 23-59 months.

Once again, there is good agreement on stunting between the MYAP and national DHS figures from 2003, however, the MYAP estimate (42% 95%, CI 39%-45%) is lower than the DHS estimate for Cabo Delgado (56%; 95%, CI 51%-59%). This may reflect improvements in overall nutritional status and access to health care in the intervening years.

## 2. Breastfeeding and infant feeding

Virtually all children surveyed breastfeed at some point. At the time of the survey, 282 of the 299 (94%) children 0-23 months were breastfeeding. As for initiation of breastfeeding, only 26% of mothers of all children (76/296; 95% CI 21%-31%) stated that they initiated breastfeeding within the first hour of birth. Among mothers of children 0-5.9 months, this was 30% (95% CI 19%-41%), essentially the same.

<sup>2</sup> Boys are more stunted than girls in Sub-Saharan Africa: a meta-analysis of 16 demographic and health surveys. (2007) Wamani H et al. BMC Pediatrics, 7:17. <http://www.biomedcentral.com/1471-2431/7/17>

Strictly exclusive breastfeeding is the exception. Only 13 of 68 (19%; 95% CI 10%-29%) mothers of children 0-5 months reported breastfeeding exclusively. However, if one excludes water from the analysis, the proportion rises to 68%. Of all children 0-5 months, 77% of mothers reported giving water. All other foods and liquids were given to 6% or fewer. This is alarming in light of the water treatment indicator below, where 94% of mothers reported no water treatment at all, although only 34% had access to an improved water source. Young children are at high risk for acquiring intestinal infections.

The breakdown of exclusive breastfeeding by age group is illustrated in the following table:

**Table 11: Exclusive breastfeeding by age group**

Group	Exclusive breastfeeding	N	LCL 95%	UCL 95%	DHS (national)
All children 0-5m	19%	68	10%	29%	32.1%
0-1m	35%	17	12%	58%	41.4%
2-3m	23%	26	7%	40%	
4-5 m	4%	25	0%	12%	N/A

The data agree closely with the national DHS data (there are no provincial data for exclusive breastfeeding in the DHS report). The MYAP baseline for exclusive breastfeeding plus water (68%) is higher than that reported in the DHS (37.9%). There appears to be an abrupt reduction in exclusive breastfeeding between 3 and 6 months of age, although the samples are too small to be certain. However, this is not due to weaning, as continued breastfeeding in children 12-15 months old was reported to be 96% (95% CI 91%-100%).

Complementary feeding is common, though the quality of the diet is poor and frequency inadequate. Among children 6-8 months of age, 80% (95% CI 67%-92%) were receiving some kind of solid or semi-solid food. The true proportion may be slightly higher than this, as initially the question about “xima”, the local starch staple, was not eliciting the expected number of responses. When the question was adjusted to be more specific and direct, a somewhat higher proportion of positive responses was elicited. It is not possible to know exactly how this would affect the overall result, but as the sample of children 6-8 months is small and the confidence intervals wide, it is unlikely to change the overall conclusion that most children are receiving some solid or semi-solid food at this age. According to the DHS (national), 79.4% of children 6-7 months of age consume some solid or semi-solid foods.

Both the diversity and frequency of the diet are poor, however. Only 4% (9 of 231 children, 95% CI 1%-6%) of children 6-23 months were receiving the “minimum acceptable diet”, defined as a minimum number of meals by age group (6-8 months 2 meals per day, above that, 3 meals per day), continued breastfeeding and a dietary diversity score of four or more. Only 15% of children 6-23 months had a dietary diversity

of 4 or more (34/231, 95% CI 10%-19%). An acceptable dietary diversity score is 4 or more, while in the MYAP districts the mean dietary diversity score was 2.16 (95% CI 2.01-2.31), and the median score was 2. The table that follows illustrates the dietary diversity of children 6-23 months by food group, and can be interpreted as foods the child ate during the 24 hours prior to the survey.

**Table 12: Dietary diversity by food group**

<b>Food group consumed in the previous 24 hours among children 6-23 months</b>	<b>%</b>	<b>N</b>	<b>LCL 95%</b>	<b>UCL 95%</b>	<b>DHS (national)</b>
Grains	82%	231	77%	87%	86.5%
Legumes	15%	231	11%	20%	15.9%
Dairy	1%	231	0%	2%	3.7%
Flesh food	54%	231	47%	60%	27.5%*
Eggs	2%	231	0%	3%	N/A
Vitamin A rich fruits and vegetables	48%	231	41%	54%	55.9%
Other fruits and vegetables	15%	231	11%	20%	61.3%
Adding Oil <sup>3</sup>	22%	231	16%	27%	45.3%
<b>Dietary diversity by age group</b>					
DD ≥4 groups among 6-11 months	10%	100	4%	16%	
DD ≥4 groups among 12-17 months	15%	87	7%	22%	
DD ≥4 groups among 18-23 months	25%	44	12%	38%	

\*includes eggs

On analyzing the details of the responses, children are being fed “xima”, the local starch staple, fish, “matapa”, a green vegetable dish made from boiled manioc leaves, and mango and papaya, though few children are given all of these foods. Although legumes are common in the area (see the agricultural section below), few children are receiving ground nuts and beans or cow peas. These are high in oils and protein and are a potential source of iron as well. Although around half of families have chickens, children are not being given eggs. This may be, in part due to the annual epidemic of Newcastle disease which devastates the chicken flocks. The MYAP program will attempt to address this problem as well. There is a weak trend of increasing dietary diversity by age, but even in the oldest age group it is inadequate. This also mirrors the adult dietary diversity, which is poor (see section II.B.5. below).

The comparison with the national DHS figures is remarkably similar, with the exception that in the MYAP target communities a significantly higher percentage of children consume flesh foods, probably due to the abundance of fish; however, fewer children in

<sup>3</sup> “Adding oil” is not a component of the dietary diversity score, but is a recommended best-practice for infant nutrition.

the target zone are consuming oils than the national average. If all children received the foods that are already available in the region and being given to only some children, the diet would be adequate; that is, there is no need to introduce completely new foods into the diet. The locally available foods contain sufficient vitamin A, iron, and protein if fish and legumes are included.

One interesting and very abundant potential source of protein, calories and iron are oysters, which are profusely abundant and inexpensive in some of the coastal communities. These did not receive mention in the survey results, but may be a potential source of nutrients.

After dietary diversity, meal frequency proved to be the second most important bottleneck to a minimum acceptable diet. Among children 6-8 months, only 40% (17/42, 95% CI 26%-55%) were receiving at least two meals per day. Among children 9-23 months, only 13% (22/174, 95% CI 8%-18%) were receiving the minimum of three or more meals per day. Clearly both adequate diversity and frequency should be important messages for the project. The DHS does not report exactly the same variables, but they do report that the mean number of times children 6-7 months of age ate grains (“xima”) was 1.3, and was only around two times per day for older children.

### **3. Supplementation, weighing and deworming**

This section examines coverage of programs that require the intervention of the health system, and therefore are not entirely under the direct influence of the MYAP. These programs include vitamin A supplementation, deworming and regular growth monitoring. The following table illustrates the key indicators for this area. It should be remembered that mothers were shown a vitamin A capsule, an albendazol pill and the MUAC tape when the respective questions were asked.

**Table 13: Indicators for vitamin A, deworming and growth monitoring**

Indicator	%	N	LCL 95%	UCL 95%
<b>Vitamin A in the last 6 months children 6-23 months</b>				
Mother's word*	78%	231	73%	83%
Card verified (among those with cards and a date for the last given vitamin A)	62%	170	54%	69%
Card and date verified (among all children 6-23 months with cards and dates within the last 6m)	45%	231	39%	52%
<b>Children 0-23 months measured or weighed in the last 4 months</b>				
Either MUAC (mother's word) or card-confirmed weighing in the past 4 months*	81%	299	77%	86%
Card-confirmed of all children (no card = not weighed)	80%	299	76%	85%
<b>Children 12-23 months who have received albendazol or mebendazol for deworming in the previous 6 months</b>				
Mother's word	28%	131	21%	36%

\*These are the indicators that are reported in the IPTT table.

Among all children, 98% (292/298) had child health cards that were seen by the interviewer. Coverage for vitamin A supplementation is fairly high, given the logistical challenges faced by the district health directorate. This is important, as among the three, this is the intervention with the greatest potential impact on child mortality. Coverage for vitamin A supplementation was higher than that reported in the 2003 DHS (57.2%, mother's word).

The growth measurement in the table reflects almost exclusively routine weighing by health personnel. Only 13% of mothers said their child had been measured using MUAC. Interpretation of dates for weighing posed a significant challenge, as in many cases, the cards did not note the date, but rather, simply had either the graph of the weight-for-age or an annotation of the weight-for-age and the next appointment date. Interviewers were required to perform considerable extrapolation to estimate dates, and this may have introduced some error. Nevertheless, it was clear that the majority of children are being weighed regularly. This also indicates relatively good access to health services, as weighing is only done by health staff and not by community workers.

Deworming coverage is lower than vitamin A for two reasons. It is a relatively recent program, and there is nowhere on the child health card to record the deworming. It is hoped that MYAP community health workers will be able to administer albendazol, which should significantly increase coverage.

#### **4. Childhood illness: malaria and diarrhea (including bednets)**

This section will address household management of diarrhea, maternal knowledge about childhood illness, and care seeking and treatment of malaria. In addition, the indicators about treated bednets will also be included for lack of better place to put them.

A total of 39% of mothers of children 6-23 months reported that their child had diarrhea in the two weeks prior to the survey (91/231, 95% CI 33%-46%). Of these, 70% (64/91; 95% CI 61%-80%) received either oral rehydration salts (ORS), home mix or recommended home fluids. The most common of these was ORS (65%). Only 13% of mothers gave home mix solution, and 7% gave other liquids. Again, this indicates relatively good access to health care services. Unfortunately, whereas fluid management is fair, only 36% of mothers reported offering the same or more food (27/75; 95% CI 25%-47%). Note that the other children do not eat), and only 54% offered the same or more breastmilk (95% CI 43%-65%).

The 2003 DHS reported 21% of children 0-23 months had diarrhea in the previous two weeks (14% for 0-5 years). However, the indicator definitions for treatment have changed significantly since the 2003 DHS, so they are not directly comparable, as the DHS reports the treatment only among those children whose mothers sought care at a health facility. Feeding the same or more food during diarrhea (children 0-59 months) was reported as 35% nationwide and 14.6% for Cabo Delgado. The current rate of 36% found in the MYAP baseline is only a slight improvement.

Only 25% of mothers were able to name three or more signs of childhood illness that would prompt them to seek care. The following table illustrates the results:

**Table 14: Mothers' knowledge of signs of childhood**

<b>Signs of childhood illness Mothers of children 0-23 months</b>	<b>%</b>	<b>N</b>	<b>LCL 95%</b>	<b>UCL 95%</b>
<b>Can name 3 or more signs of childhood illness</b>	<b>25%</b>	<b>299</b>	<b>20%</b>	<b>30%</b>
• Appears unwell, won't play	60%	299	54%	65%
• Won't eat or drink	33%	299	28%	39%
• Lethargic, difficult to wake up	6%	299	3%	8%
• High fever	88%	299	84%	92%
• Rapid or difficult breathing	7%	299	4%	10%
• Vomits everything	8%	299	5%	11%
• Convulsions	3%	299	1%	5%
• Other	9%	299	6%	13%
• Don't know	1%	299	0%	3%

Note that that multiple responses were possible. Spontaneous naming---answers were not read to mothers.

It is encouraging that mothers recognize fever and lethargy as important signs, as these are the most common important signs of childhood illness. In addition, only one percent said they didn't know. This is in sharp contrast to the question on prevention of HIV transmission, where around half said they didn't know.

With regard to receiving prompt and appropriate malaria treatment, the situation is not as heartening as with home management of diarrhea. A total of 48% of mothers of children 0-23 months reported their child had fever in the two weeks prior to the survey (143/297; 95% CI 42%-54%). Of these, 69% sought care at a health facility, but this is broken down as follows:

**Table 15: Care seeking and treatment of malaria among children with fever in the past 2 weeks**

<b>Malaria care seeking and treatment</b>	<b>%</b>	<b>N</b>	<b>LCL 95%</b>	<b>UCL 95%</b>
Sought care (of those with fever)	69%	143	61%	76%
• 1 day or less (of those with fever)	36%	143	28%	45%
• 2 days (of those with fever)	18%	143	11%	25%
• 3 days or more (of those with fever)	13%	143	7%	19%
• Don't know (of those with fever)	1%	143	0%	2%
Received ACT <sup>4</sup> (of ALL children who sought care)	23%	98	15%	32%
<b>Children 0-23 months with fever who received ACT within the first 24 hours*</b>	<b>5%</b>	<b>143</b>	<b>1%</b>	<b>8%</b>

\*This is the key indicator from the IPTT

This table indicates two significant problems with malaria care-seeking and treatment. It appears that a significant proportion of mothers either don't seek care, or wait before seeking care (63%). In addition, it appears that health workers are not providing ACT for children with malaria according to MOH protocols. The MOH protocols for the Integrated Management of Childhood Illness (IMCI) indicate treatment with antimalarials (ACTs) for all children presenting with fever. The low percentage of children receiving treatment could indicate any of three things (or a combination): 1) mothers misunderstood the question (unlikely, as they were shown examples of the ACT treatment currently in use), 2) health workers are not properly trained and supervised in implementing the new IMCI protocols, or 3) there have been stockouts of ACTs. Project health sector staff would be advised to investigate these factors and devise a strategy to improve this indicator if possible, as malaria is the number one cause of infant and child mortality in the region.

The DHS reports this indicator as “the percentage of children 0-5 years with fever in the past two weeks treated with an antimalarial” and “the percentage of children 0-5 years with fever in the past two weeks treated with an antimalarial the same day or the next day”. These are outlined as follows:

<sup>4</sup> Artemisinin combined therapy. In Mozambique, this is artemisinin + Fansidar  
 FH Mozambique Multi Year Assistance Project  
 Baseline Survey  
 January-February 2009

**Table 16: DHS results for treatment with fever with antimalarial**

Region	Among children 0-5 years with fever in the past two weeks	DHS
National	Any antimalarial	14.9%
	Antimalarial the same day or the next day	8.3%
Cabo Delgado	Any antimalarial	12.7%
	Antimalarial the same day or the next day	7.9%

It is clear from the above table that access to prompt treatment with antimalarials was a problem in 2003, and, according to the MYAP baseline, it continues to be a problem in 2009. This will require significant attention from the project, especially in training and supervision of health facility staff if it is to improve.

Insecticide-treated bednets are an effective means of preventing malaria in children and in communities. If coverage reaches 70-80%, it is believed that a “herd immunity” effect is seen, and malaria prevalence falls precipitously. A total of 74% of families reported having at least one net and 58% of children 0-23 months slept under a bednet the night prior to the survey. However, only 27% of all families owned a long-lasting insecticide-treated net (LLITN), which represented only 37% of all household nets observed by the interviewers.<sup>5</sup> Only 16% of children 0-23 months (47/299; 95% CI 11%-21%) slept under an insecticide-treated bednet the night prior to the survey.

The 2003 DHS reported that only 18% of mothers of children 0-5 years of age nationwide and 12.6% of mothers in Cabo Delgado possessed at least one mosquito net. Of these, only 42% nationally and 25.2% in Cabo Delgado were treated nets, similar to the percentage in the MYAP. Use of nets was lower in the DHS as well, with only 9.7% of children 0-5 years nationally and 8.8% of children in Cabo Delgado reporting having slept under a treated or untreated net the night before. Although the increase to 16% sleeping under *treated* nets found in the MYAP baseline is encouraging, it is insufficient to significantly reduce mortality due to malaria.

The interpretation of the results is interesting, in that families appear to own *and use* bednets, and most children sleep under nets. There appears to be little or no resistance to using the nets. However, the number of *treated* nets, and specifically LLITNs is simply inadequate for the population. It would appear that the project emphasis should be on increasing coverage of net ownership by increasing net distribution. This is in contrast to some other regions where ownership is high, but use is low. In the MYAP target zone, there appears to be little need to educate families about the need to use the nets once they have them. It is recommended that there be at least two nets per family in order to achieve maximum protection.

<sup>5</sup> All nets were inspected by interviewers. It was assumed that any net that was not an LLITN was untreated, as the MOH has not held any retreatment campaigns for nets in the past year, and retreatment kits are not readily available in the market.

## 5. Maternal health and HIV and health education

This section discusses the results of the indicators for maternal nutrition and for maternal HIV prevention knowledge and antenatal HIV testing. Among mothers of children 0-5 months, only 26% (18/68, 95% CI 16%-37%) stated that they ate more than usual while pregnant. Another 31% said they ate “the same amount”, and 41% ate less. It may be interesting to investigate why this is so using qualitative methods.

There was no question for the indicator: “Percentage of pregnant and lactating women who consumed iron rich foods in the last 24 hours”. This was not included for several reasons. Pregnant women were not included in the sample (though lactating women could have served as an excellent proxy). In addition, lactating women do not pass any significant amount of iron to children in breastmilk, so their inclusion seems technically misleading. In fact, all women of reproductive age need iron all the time, as it takes time to rebuild the losses that occur during the third trimester of pregnancy when the bulk of iron is passed to the fetus. The survey was already asking detailed questions about family food intake (dietary diversity in the agriculture section) and child food intake, and included the question about “more food” during pregnancy. The definition of “iron-rich foods” is somewhat complicated, as heme iron is absorbed so much better than non-heme iron. Therefore, although green vegetables are “iron-rich”, they provide little iron that is absorbed. The best sources of iron in the local diet appear to be fish and beans. Oysters are potentially an excellent source of iron (on par with liver, in fact), but it is not known whether these are consumed and why or why not. Finally, and most importantly, the Ministry of Health routinely provides iron supplements to pregnant women, so encouraging regular antenatal care visits for this and other reasons, including presumptive treatment for malaria and HIV testing, would seem like the best approach. For these reasons, this indicator should be eliminated, or changed to “percent of women receiving three months of iron supplementation during their previous pregnancy”.

Almost all mothers had heard of HIV or AIDS (89%). However, knowledge of how to prevent HIV transmission is limited. Only 8% (24/299, 95% CI 4%-12%) named three methods. The most common answers were to use condoms (21%), limit sex to one partner (20%) and abstain from sex (13%). Half of mothers couldn't name any method (49%; 148/299, 95% CI 43%-56%). All other answers were less than five percent, and the list can be seen in the appendix in the indicator table. Antenatal HIV testing was surprisingly common: 44% of mothers of children 0-23 months said they had been tested for HIV during their pregnancy (131/299, 95% CI 37%-50%). The MYAP Health Coordinator, who supervised one of the data collection teams, feels that the percentages may underestimate the true knowledge due to mothers' reluctance to discuss sexual matters with strangers, especially male interviewers.

Only 10% of mothers said they had ever had a visit from a health promoter or heard an educational talk, and only 4% (13/299, 95% CI 2%-7%) had met at least biweekly with a health promoter to discuss health issues. This should improve markedly with the introduction of the Care Group model.

## 6. Water and hygiene

Water and hygiene are important to health, as water and food borne illness take a significant toll on child health. Only 20% of mothers (59/299; 95% CI 8%-31%) had year-round access to an improved water source within 200 meters of their house. The following table breaks down the components and most common water sources (only those with 4% or more responding):

**Table 17: Water sources**

Water source	%	N	LCL 95%	UCL 95%	DHS 2003 (Cabo Delgado)
Percentage of households with year-round access to improved water sources, where access means either direct connection to the home or public facility within 200 meters of the home.*	20%	299	8%	31%	N/A
Water sources (most common)					
• Open public well	39%	299	34%	45%	44.9%
• Protected public well	24%	299	20%	29%	24.3%
• Spring, river, or stream, not protected	23%	299	18%	28%	8.3%
• Faucet (piped water)	4%	299	2%	6%	13%***
Improved water source*	34%	299	21%	48%	N/A
Distance to water source <200 meters*	37%	299	24%	51%	27.9%**

\*Design effect >6

\*\*Distance < 15 minutes

\*\*\*includes “inside house,” “inside neighbor’s house”, and “public fountain” responses

The very high design effect (> 6) demonstrates that some communities have benefited from water improvement projects. The MYAP boreholes should significantly improve water access. It is interesting to note the relatively high correlation between the results of the MYAP baseline and the DHS results for Cabo Delgado from 2003.

How water is handled after collection is nearly as important as the source itself. Water treatment is the weak link here, as 94% of mothers reported doing nothing to treat water after collection, as illustrated in the following table:

**Table 18: Water treatment and storage**

<b>Water treatment and storage</b>	<b>%</b>	<b>N</b>	<b>LCL 95%</b>	<b>UCL 95%</b>
Proportion of caregivers that demonstrating proper food/water hygiene behaviors (includes both treatment <i>and</i> storage)	5%	299	2%	7%
Percentage of households of children age 0-23 months that treat water effectively at point-of-use.	6%	299	3%	10%
Water treatment (responses 1% or more)				
• Nothing	94%	299	90%	97%
• Boiling	3%	299	1%	5%
• Chlorine bleach	3%	299	0%	5%
• Certeza (commercial product, PSI)	1%	299	0%	3%
Water storage: water containers with lids	69%	299	61%	76%

As can be seen from the table, water storage is relatively good, and could be easily improved. “Certeza”, PSI’s commercial water purification product is not readily available in the rural communities, according to project staff. In some parts of Mozambique where cholera is common, the Ministry of Health and the Red Cross have mobilized volunteers to provide chlorine at the point of water collection in each community, and in these areas, chlorine is available from health facilities. FH may wish to investigate whether this program could be extended to the target districts of Cabo Delgado.

The MYAP agriculture component will distribute moringa seedlings and encourage their cultivation to both improve nutrition and to use the seeds as a method for water purification. Moringa seeds have been used as a flocculant to speed the settling out of particulates and the pathogens that adhere to them, and thus improve water quality. This may partially reduce waterborne disease, but is insufficient and should not distract the project from encouraging more definitive water purification methods such as chlorine, Certeza and exposure to sunlight.

Proper hygiene behaviors including handwashing and proper disposal of children’s feces are important in preventing intestinal infections. The following table illustrates the results for the questions and indicators regarding handwashing and the presence of water and soap/ashes for handwashing.

**Table 19: Handwashing behavior**

<b>Proper handwashing</b>	<b>%</b>	<b>N</b>	<b>LCL 95%</b>	<b>UCL 95%</b>
Percentage of beneficiary caregivers demonstrating proper personal hygiene behaviors <sup>6</sup>	3%	299	0%	5%
Handwashing at 2 or more appropriate times*	42%	299	31%	54%
• Never	9%	299	3%	16%

<sup>6</sup> Includes handwashing 2 or more appropriate times, and presence of water and soap or ash at handwashing station.

• Before food preparation	44%	299	33%	56%
• Before giving food to children	22%	299	12%	31%
• After defecating	33%	299	22%	44%
• After caring for child who defecated	27%	299	17%	37%
• Others	5%	299	0%	11%
• Don't know	1%	299	-1%	4%
Water at place for washing	35%	297	30%	41%
Soap or ash at place for washing	14%	297	10%	18%

\*Spontaneous responses, multiple responses possible. Responses not read to mothers.

It is clear from the table that there are difficulties with each of the various components. Mothers do not report washing their hands often enough, and water and soap/ash are not present. What is interesting about these indicators is how they cluster. The design effect for handwashing indicators was measured to be 4.2, whereas the presence of water or soap/ash did not cluster. This is curious, and may indicate that there has been a program in place previously that provided health education for personal hygiene.

Finally, proper disposal of children's feces is another important aspect of hygiene. Only 16% of families properly dispose of children's feces (49/299, 95% CI 10%-23%). The most common responses were "outside on the ground" (53%), "in the child's clothes" (20%) and "on the floor in the house" (9%). The complete list can be seen in the appendix with the summary indicator tables. The 2003 DHS reported that for children under five, 33% of mothers reported proper treatment of children's feces, that is, use a toilet or latrine. Curiously, the DHS reports Cabo Delgado as higher than the national average (58%). Nevertheless, in the MYAP target communities there is significant room for improvement in this indicator.

## ***B. Agriculture***

### **1. General indicators: family size and composition, income and proxies of income**

The questions and indicators for the agriculture intervention were more challenging than for health, as many of the indicators are not population-based, but rather, aimed at "participants" and "beneficiaries". In addition, the language in many indicators mentions "percentage adopting" some new technique or crop. This implies a baseline of zero. For many of these, baseline questions were included in order to establish the current situation.

#### *Household composition*

As stated in the section on methodology above, the definition of "household" was a group of people who share the same kitchen or stove, or who eat from the same pot. The survey included 300 interviews with heads of households. Of these, 76% were male and 24% were female (male 227/300 95% CI 69%-82%, female 73/300, 95% CI 18%-31%). It was interesting to note that there were only 9 families (3%) where there were two or more

women in the household. That is, although many families are polygamous, the majority of wives are heads of their own individual households. Another curiosity is that there were 15 households (5% of total) where the head of household was female, even though there was a husband living in the house. In those cases where this was explained, the women insisted that they owned their own land and made the decisions regarding what was planted and sold. These results are consistent with the observations made in several of the references (Min. de Admin Estatal 2005 (Palma and Mocimba), and Carlos, D 2008) that asset inheritance is largely matriarchal in the societies of this region.

The relatively large proportion of female-headed households has implications for the MYAP, especially in light of repeated comments from project staff that men and women are not accustomed to meeting in the same groups. All MYAP agriculture sector field workers are male. It may be necessary to form women-only agricultural groups, as well as making a stronger effort to recruit women as field staff.

The mean number of household members was 4.6 (95% CI 4.28-4.94). Only 202 of the 300 heads of household knew the ages of the members of the family. Using only these households, the breakdown by age is illustrated in the following table:

**Table 20: Household composition**

Household	Mean number	N	LCL 95%	UCL 95%
Among households who know all ages (202)	4.55	202	4.24	4.86
• Household members mean <15	1.93	202	1.62	2.24
• Household members mean 15-65	2.47	202	2.16	2.78
• Household members mean >65	0.15	202	0.00	0.46

It is clear that most household members are adults of working age, which represents a potential economic resource.

### *Household income*

USAID and the University of Michigan have been working to develop and validate a methodology for estimating household income using easy to collect proxy indicators (Tschirley, D 2000). The exact methodology, called INCPROX, was not available to the team at the time of the survey, and a specific external consultant is required to analyze and tabulate the results (FANTA, 2003). Direct measurement of household income or expenditure was considered outside the scope of this survey, as was trying to estimate caloric intake.

Household economic activity was measured using a set of simple questions classifying the family's sources of income as agriculture/livestock, fishing, commerce, salary, handicrafts and other, allowing multiple answers. The analysis showed the following:

**Table 21: Sources of income by type of economic activity**

Source of household income*	Percent	N	LCL 95%	UCL 95%
Agriculture	99%	300	98%	100%
Fishing	18%	300	10%	25%
Commerce	19%	300	12%	27%
Salary	7%	300	2%	12%
Handicrafts	4%	300	0%	7%
Other	6%	300	1%	11%
1 Activity	53%	300	45%	61%
2 Activities	41%	300	34%	48%
3 Activities	6%	300	2%	10%

\*Multiple answers allowed.

Whereas virtually all families farm (only three did not), only about half of all families depend on a single economic activity. No fishing families depended entirely on fishing. Unfortunately, the MYAP will not directly target diversification of income sources from non-agricultural income. If the project is successful, however, in the long-term one might expect to see an increase in diversification as more families invest in alternative activities, such as commerce.

Other proxy indicators of income that were included in the survey include the following:

Assets: These often include household possessions and animals. The team felt that household possessions would be too rare to provide any sort of good estimate, as almost no families have any significant possessions. Livestock is sometimes used, although the MYAP will not be working directly with livestock production (except for encouraging vaccination of chickens against Newcastle disease). In addition, although about half of families have chickens, the number of chickens would have been strongly affected by recent epidemics of Newcastle disease and therefore would not provide an accurate estimate of income. Other livestock are simply too rare to be of much use (only 18% of families have goats). Nevertheless, the survey did enumerate livestock ownership and sale.

Dietary diversity: this measure is commonly used and well-standardized (Swindale, A *et al* 2006). It was included in the survey.

Diversity of agricultural production: this measure was not included in the IPPT table, but was measured during the survey. It does not measure the total family income, but rather, the diversity of income sources. Although it is project specific and not directly comparable between projects (FANTA, 2003), it may prove to be a set of useful indicators from baseline to final. As the MYAP agriculture sector will be working almost exclusively with agricultural production, diversity of crops planted, harvested and sold was also considered to be a viable proxy indicator for the project's impact on income.

These are easily measured and considered to be relatively accurate. They will be reported as:

- Proportion of families with three or more different crops planted last year
- Proportion of families with three or more different crops sold last year

Natural resource management practices: adoption of NRM practices is included as an indicator in the MYAP. Baseline measures were included in the survey.

Food provisioning: this was measured using the “Months of Adequate Household Food Provisioning (MAHFP)” (Bilinsky, P *et al* 2007) The “Household Food Insecurity Access Scale” (Coates, J *et al* 2007) was considered less specific and more subjective and was not applied during the survey.

Each of the above indicators is discussed in a separate section below.

## 2. Agricultural production, diversity and productivity

This encompasses a large number of indicators and measurements about crops planted, area planted, yields and sales of crops. As was mentioned in the methodology section above, one interviewer did not understand this set of questions, and all of his forms (29) had to be excluded from the analysis of agricultural productivity. Only a total of 271 valid interviews were considered for the following table and analysis.

**Table 22: Crops and area planted**

Crop	No. planting	N	%	95% LCL	95% UCL	Mean area planted (Ha)*	Median area planted (Ha)*	Mean 95% LCL	Mean 95% UCL
<b>Groundnuts</b>	40	271	15%	10%	20%	1.03	0.50	0.88	1.17
<b>Rice</b>	88	271	32%	26%	39%	1.23	1.00	1.07	1.40
<b>Cashew*</b>	67	271	25%	19%	31%	155	70	134	176
<b>Beans (boer)</b>	2	271	1%	0%	2%	1.38	1.38	1.19	1.56
<b>Beans (holoco)</b>	1	271	0%	0%	1%	1.50	1.50	1.29	1.71
<b>Beans (jugo)</b>	26	271	10%	6%	14%	0.83	0.50	0.71	0.94
<b>Cowpeas</b>	86	271	32%	25%	38%	1.04	0.50	0.90	1.18
<b>Sesame</b>	20	271	7%	4%	11%	1.33	1.00	1.15	1.52
<b>Manioc</b>	254	271	94%	90%	97%	1.85	1.50	1.60	2.10
<b>Sorghum</b>	83	271	31%	24%	37%	1.71	1.00	1.48	1.94
<b>Corn</b>	145	271	54%	47%	60%	1.48	1.00	1.28	1.69
<b>Other beans</b>	3	271	1%	0%	3%	0.58	0.50	0.50	0.66
<b>Others</b>	8	271	3%	1%	5%	6.92	0.25	5.97	7.86
<b>TOTAL</b>	<b>823</b>					<b>Obs: 759</b>			

Design Effect = 1.32 (measured)

Crops planted includes all crops.

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Area planted excludes those who don't know the size of their field (64 crops, 7.8%).

\*Area planted for cashews is "total number of trees"

The most important crops are clearly manioc (94%), corn (54%), sorghum (31%), rice (32%) and cowpeas (32%). The stated median size of a field was one hectare, which agrees with both local references (Min. Admin Dist. 2005). For the MYAP, it is important to note the low percentage of families with groundnuts (15%), cashew (25%) and sesame (7%), all of which are targets of MYAP interventions. Only 38% of families planted at least one of the three (102/296, 95% CI 27%-42%).

Only 38% of families planted at least one leguminous crop (112/296, 95% CI 30%-45%), but 72% said they had some intensive dark green leafy vegetable production (215/300, 95% CI 65%-78%). No details were available, but most project staff feel this is probably predominantly manioc, and, as will be seen below in the analysis of dietary diversity, only 42% of families consume green leafy vegetables.

Crop diversity is poor. The median number of crops planted was three, and only 56% of families planted three or more crops (166/296, 95% CI 49%-64%).

In addition to introducing new crops to improve crop diversity, the MYAP also aims to improve agricultural productivity. The following table outlines crop harvest and estimated yield.

**Table 23: Harvest by crop**

	Count (of crops harvested and knew how much)	Harvested = 0 (nothing harvested)	Harvested = 99 (don't know how much)	Mean amount harvested (kg)*	SD	Median total (kg)
<b>Groundnuts</b>	30	3	7	141	135	100
<b>Rice</b>	78	7	3	324	406	155
<b>Cashew**</b>	41	16	10	651	1282	200
<b>Beans (boer)</b>	2			53	67	52.5
<b>Beans (holoco)</b>	1			25	0	25
<b>Beans (jugo)</b>	23		3	95	104	50
<b>Cowpeas</b>	70	9	7	97	150	50
<b>Sesame</b>	17	2	1	95	59	100
<b>Manioc</b>	193	22	38	731	1171	400
<b>Sorghum</b>	67	11	5	210	313	100
<b>Corn</b>	115	16	14	367	439	200
<b>Other beans</b>	2		1	120	113	120
<b>Others</b>	5		3	740	1277	100
<b>TOTAL</b>	<b>644</b>	<b>86</b>	<b>92</b>			

\*\*Results for cashews are "per tree", not "per hectare"

**Table 24: Crop yields by crop**

	Count (of crops)*	Yield (Mean kg/ha)*	Yield Mean 95% LCL***	Yield Mean 95% UCL***	Outliers eliminated in analysis (yields >3000kg/ha)	Yields from Moçimba da Praia 2002/2003 season <sup>7</sup> (kg/ha)
<b>Groundnuts</b>	25	286	103	468	5	499
<b>Rice</b>	74	293	214	372	4	500
<b>Cashew**</b>	39	19	5	33	2	
<b>Beans (boer)</b>	2	201	0	649	0	
<b>Beans (holoco)</b>	1	17	17	17	0	
<b>Beans (jugo)</b>	19	182	69	296	4	
<b>Cowpeas</b>	55	161	92	229	15	326
<b>Sesame</b>	15	87	50	123	2	
<b>Manioc</b>	184	428	343	513	9	2000
<b>Sorghum</b>	64	158	83	232	3	600
<b>Corn</b>	108	300	220	380	7	600
<b>TOTAL</b>	<b>644</b>				<b>51 (8%)</b>	

\*Among those who harvested something and knew how much.

\*Also eliminated outliers with yields of >3000 kg/ha

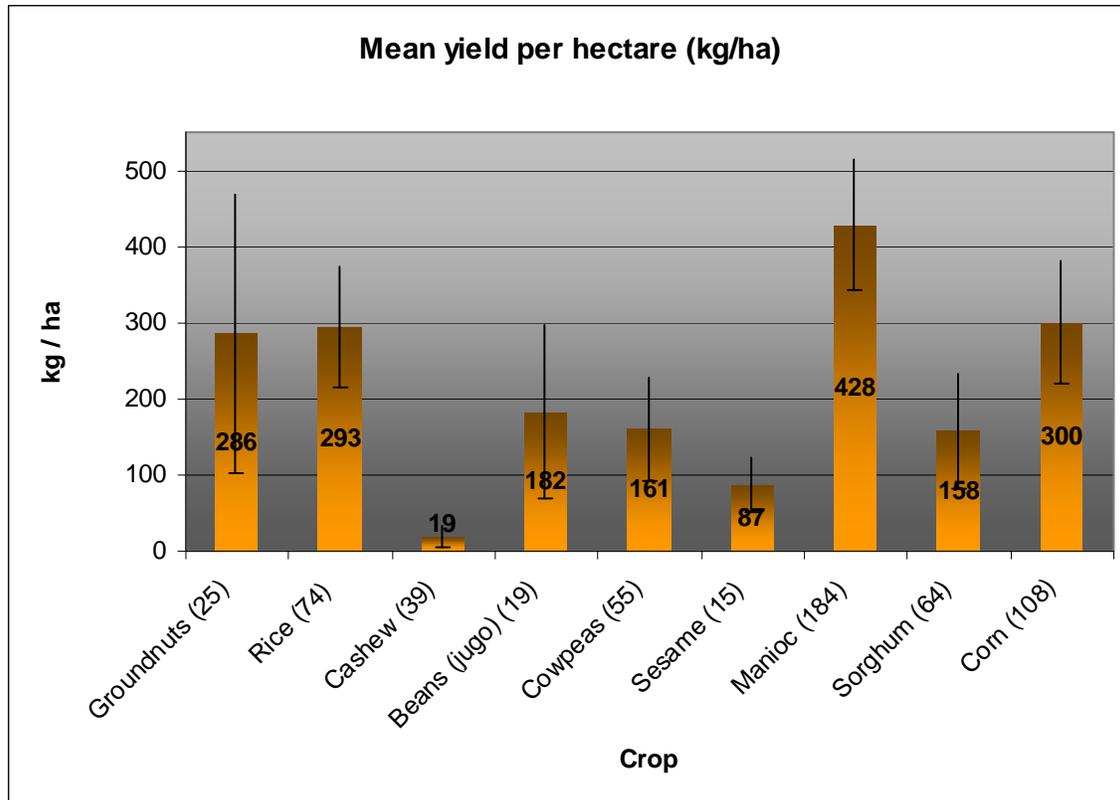
\*\*All results for cashews are “per tree”

\*\*\*Design effect used = 1.34

The calculations above must be interpreted with caution, as there were significant methodological difficulties with the data collection and analysis. Respondents’ knowledge about the size of the fields was limited, and according to FH field staff, farmers tend to overestimate the size of their fields. In addition, many were uncertain about the amount they had harvested as measures are not well-standardized. The results are also confounded by intercropping. Underestimating the size of the field would tend to inflate the yield, where intercropping would reduce it. A total of 8% of crop harvest responses were excluded from the analysis (with cowpeas and groundnuts over-represented) as the yield calculations were outside of reasonable bounds. Many crops had very low sample sizes (some beans and sesame), so confidence intervals are very wide.

In spite of the methodological difficulties, the pattern of the results and *relative* yields between crops are consistent with expectations. However, mean yields remain below that expected based on estimates made by the Moçimba da Praia district’s government. The data in the above table are illustrated more clearly in the following graph:

<sup>7</sup> Min. de Admin Distrital, 2005 Moçimba da Praia. Calculated from total area planted and tons harvested.  
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**Figure 1: Mean yields by crop and 95% CI.**  
**Numbers in parentheses = sample size used in calculation.**  
**Cashew is kg per tree.**

In addition to the amount of each crop harvested, the survey attempted to estimate the value of the crops sold. Although there is even more uncertainty in the responses for sales than there was for harvest, the results are still enlightening. The following table illustrates the results obtained:

**Table 25: Sale of crops**

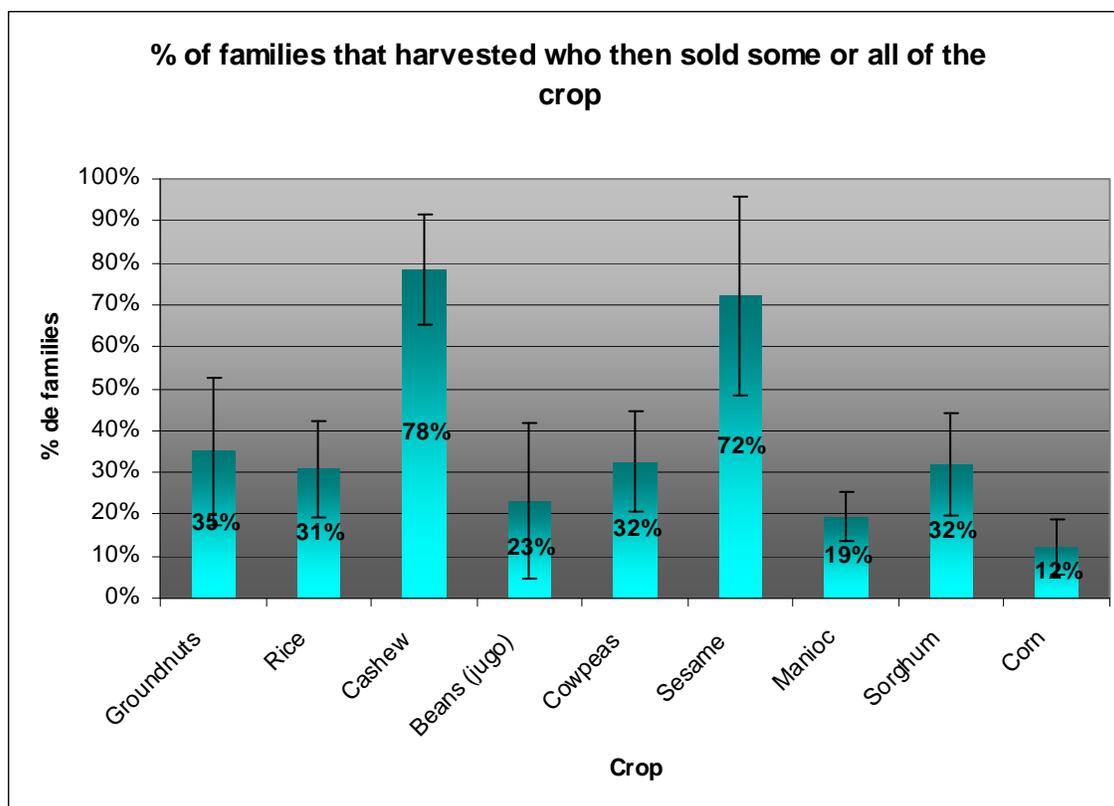
Crop	Number of crops harvested and some or all sold*	% of those who harvested some, who also sold some**	95% LCL	95% UCL	Those with crops harvested and sold, but did not know how much they sold.	Mean kg sold (among those who knew how much they sold)
Groundnuts	13	35%	17%	53%	2	165
Rice	25	31%	19%	42%	4	348
Cashew**	40	78%	65%	91%	3	586
Beans (boer)	1	50%	0%	130%		75
Beans (holoco)		0%	0%	0%		
Beans (jugo)	6	23%	4%	42%	1	124
Cowpeas	25	32%	20%	44%	1	73
Sesame	13	72%	48%	96%		87
Manioc	45	19%	14%	25%	10	406
Sorghum	23	32%	20%	44%	5	106
Corn	16	12%	6%	19%	4	114
Other beans	1	33%	0%	95%		200
Others	1	13%	0%	39%		
<b>TOTAL</b>	<b>209</b>	<b>32%</b>			<b>30 (14%)</b>	

\*Only counts those who know how much they sold, as 24/30 of those who “didn’t know how much they sold” were from the same interviewer. It is suspected that many of these didn’t sell anything, but were recorded as “didn’t know”.

\*\*Denominator includes those who harvested, but didn’t know how much they harvested.

In the above table, the third column listing the number who did not know how much they sold is shown to provide information on the sample size used in the calculation of the mean amount sold. For example, of the 284 respondents who planted manioc, only 231 harvested some, and 193 of those who harvested some also knew how much. Of the 231 who harvested anything, only 45 sold any, and of these, only 35 knew how much they sold. The sample sizes begin to get quite small, and confidence intervals quite wide. In addition, it is possible that those with the best knowledge are not representative of the whole population.

The following graph illustrates the same data a bit more clearly:



**Figure 2: Proportion of families who harvested who then sold crops by type**

It is clear that the important cash crops are sesame and cashew, and to a lesser extent the legumes. Only 19% of families who harvested manioc sold any of their crop, and only 12% who harvested any corn did so.

The team proposed the following new indicator as a measure of cash-crop production and sale: “Proportion of families that sold three or more crops last year”. This was only 12% at baseline (36/296, 95% CI 7%-17%). Exactly 50% of the 296 families who planted something sold no crops, 25% (73/296) sold at least some of one crop, and 13% (39) sold at least some of two crops. These measures are relatively simple to collect and don’t rely on quantitative measurement of the area planted, quantity harvested or quantity sold. The indicators should also be relatively sensitive to the specific MYAP interventions.

Although an attempt was made to quantify income from crop sales, the results were not satisfactory and will not be reported, as too few respondents knew how much they had earned. In addition, there was significant confusion between the new and old Mozambican currencies and about whether to report the value per unit sold, or the value of the total sale.

### 3. Livestock ownership and sales

Household assets are commonly used as a proxy for income, and livestock are commonly used as a measure of these assets. They can be sold for cash in times of hardship. (FANTA, 2003). The following table illustrates the responses obtained during the interviews:

**Table 26: Livestock**

	Number with or who had animal	% of total with animal	95% LCL*	95% UCL*	Mean no. of animals per farmer owning	95% LCL*	95% UCL*	Median number of animals per farmer owning
Goats	52	17%	6%	29%	8.65	5.7	11.6	6
Chickens	146	49%	40%	58%	8.35	6.9	9.8	5
Ducks	8	3%	0%	15%	6.75	0.0	13.5	4.5
Pigs	5	2%	0%	14%	4.8	N/A	N/A	6
Pigeons	1	0%	0%	13%	6	N/A	N/A	6

\*Design effect = 1.20

The number owning chickens and number of chickens owned is strongly affected by periodic epidemics of Newcastle disease. Nevertheless, it is clear that the number of animals is not large. In addition to ownership, sale of animals was also included. The following table illustrates animal sales:

**Table 27: Livestock sold**

Animal	Number of farmers who sold any	Total number of animals sold	% of those with animal who sold any	95% LCL*	95% UCL*	% of all farmers who sold animal	95% LCL*	95% UCL*
Goats	23	96	44%	22%	66%	8%	4%	11%
Chickens	52	335	36%	21%	50%	17%	13%	22%
Ducks	3	13	38%	0%	98%	1%	0%	2%
Pigs	0	0	0%	N/A	N/A	0%	N/A	N/A
Pigeons	0	0	0%	N/A	N/A	0%	N/A	N/A

\*Design effect = 1.20

With only 8% of farmers selling goats and 17% selling any chickens, the total income generated is negligible. Among the entire sample, only 335 chickens and 96 goats were sold in the past year. As MYAP will not be working with livestock (other than facilitating immunization of chickens for Newcastle disease), the contribution of livestock to income is unlikely to change significantly by the end of the project.

## 4. Introduction of new techniques for natural resource management

The MYAP intermediate result 1.2 is “Natural resource base protected and enhanced”. The most prominent strategy for this is the introduction of improved natural resource management techniques. These techniques include green manure cover cropping, use of agro-forestry, composting and animal manure, reduction of tillage and reduction of burning. In addition, intercropping and crop rotation with increased use of legumes is mentioned. As some of these techniques are already in use as traditional practices (Min. Admin. Dist, 2005, both Palma and MdP), it was thought important to establish a baseline value and set realistic targets.

Questions to measure indicators relating to post harvest grain processing and storage management were not included in the baseline, as the FH team was reasonably certain that they were essentially a zero baseline. These techniques would be new introductions. Mid-term and final surveys will require the addition of these questions in order to assess progress toward targets.

Interviewers received training in the definitions for each of the techniques described, and a brief description was included on the survey forms for clarification. The following table outlines the baseline results:

**Table 28: Natural resource management techniques in use**

Natural resource management techniques in use	%	N	LCL 95%*	UCL 95%*
Proportion of respondents currently using the following natural resource management techniques				
• Agroforestry	17%	300	11%	22%
• Composting	32%	300	25%	39%
• Crop rotation	18%	300	12%	23%
• Green manure	39%	300	32%	47%
• Intercropping	43%	300	35%	50%
• Reduce burning	30%	300	23%	37%
• Other technologies: goat manure, linear seed bed	1%	300	0%	3%
Adopted 3 or more technologies (National Resource Management)	33%	300	26%	40%
Families who received technical assistance from an extensionist in the past year	17%	300	12%	23%
Using at least one natural resource management technique	71%	300	64%	78%

\*Design effect = 1.77

Every one of the techniques is already in use by someone, though a majority of farmers used none of the techniques. Intercropping is the most common, as the same field is used for many crops. Although interviewers were trained in the definitions, some thought it

possible that some respondents may have confused intercropping with simply planting different crops side-by-side in the same field in different areas. Still, it is known that intercropping is in current use in the districts as a traditional method of natural resource management (Min Admin. Dist. 2005). It is encouraging to see that the natural resource management techniques described in the MYAP proposal are already known to the population, as this will greatly enhance their acceptability.

Only a small percentage of families (17%) received technical assistance in the past year. Of the 52 families who received assistance, 39 received it from FH, 1 from INCAJU, 10 from government agencies, and 2 from others.

## 5. Dietary diversity

For the purposes of this survey, the Household Dietary Diversity Score is probably the best-standardized and most accurate and reproducible proxy for income and well-being besides child nutrition. The HDDS was measured using standard technique described in Swindale, A and Bilinsky, P, 2006.

The results of the Household Dietary Diversity Score analysis is described in the following table:

**Table 29: Household Dietary Diversity Score**

Indicator	Mean or %	Sample or variance	95% LCL	95% UCL	DE
Mean Household Dietary Diversity Score	3.25	SD = 1.61	2.99	3.51	1.96
Head of household male, mean HDDS	3.37	Var = 2.65	3.11	3.63	1.96
Head of household female, mean HDDS	2.88	Var = 2.22	2.64	3.12	1.96
• Grains	95%	300	92%	98%	1.5
• Roots	13%	300	8%	19%	2.28
• Greens	42%	300	31%	54%	4
• Fruit	25%	300	18%	32%	1.95
• Flesh foods	7%	300	4%	10%	1.18
• Fish	60%	300	52%	69%	2.44
• Eggs	4%	300	1%	7%	1.36
• Legumes	10%	300	5%	14%	1.78
• Dairy	3%	300	1%	5%	1.04
• Oil	22%	300	13%	31%	3.35
• Sweets	18%	300	12%	24%	1.75
• Tea/Coffee	25%	300	17%	34%	2.91

The chi squared analysis for male versus female head of household  $p=.0211$ , a significant difference by this measure, with female-headed households having a lower HDDS than male-headed households (2.88 vs. 3.37). Using confidence intervals, they are *nearly* a significant difference, though the 95% confidence intervals overlap slightly. This is probably due to the fact that the chi squared analysis did not take into account the design effect, whereas the confidence interval analysis did, leading to wider confidence intervals.

The overall analysis leads to the same conclusion as for children: the diet is based on xima, fish and greens, in that order. Other foods are consumed far less often. It should be noted that the HDDS and child dietary diversity scores are not directly comparable due to the difference in the number of food groups, twelve for adults and seven for children.

Looking at the design effect for each food group is informative. Eating green vegetables clusters strongly, but planting leafy vegetables does not ( $DE=1.00$ ; see section B.2 above). This implies that, although dark green leafy vegetables are readily available everywhere, families in some communities tend to consume them and others not. This implies cultural factors, and anecdotal evidence from project staff indicates that there is a common saying along the coast that “we’re not goats; we don’t eat leaves”. The fact that eating fish clusters more strongly than most other foods is no surprise ( $DE=2.44$ ), although the clustering is not as prominent as one may have guessed. This implies a widespread trade in fish.

Cross tabulation of HDDS with other variables yielded some statistically significant correlations, illustrated in the following table:

**Table 30: Mean dietary diversity score vs. other agricultural variables**

Mean HDDS	Mean	(N) S <sup>2</sup>	95% LCL	95% UCL	DE used in calc.
Number of cash crops planted (cashew, legumes, or sesame)					1.96
• 1	2.99	2.30	2.70	3.29	
• 2	3.44	2.53	2.93	3.96	
• 3	4.21	2.26	3.37	5.05	
• 4	4.83	5.77	2.14	7.52	
Number of Economic Activities					1.96
• 1	2.95	1.95	2.65	3.25	
• 2	3.52	3.20	3.08	3.96	
• 3	4.11	2.22	3.15	5.08	
Economic activity fishing					1.96
• Yes	3.47	3.33	2.78	4.16	
• No	3.21	2.42	2.93	3.48	
Economic activity commerce					1.96
• Yes	3.96	2.78	3.36	4.57	
• No	3.09	2.40	2.81	3.36	

Mean HDDS	Mean	(N) S <sup>2</sup>	95% LCL	95% UCL	DE used in calc.
Number of legumes planted					1.96
• 0	3.11	2.65	2.78	3.44	
• 1	3.12	1.65	2.69	3.55	
• 2	3.86	2.64	3.12	4.60	
• 3	4.13	6.13	1.72	6.53	

The table demonstrates apparent trends for each of these indicators. Analysis of variance (anova) of the HDDS cross tabulations yields a  $p < .01$  for the number of cash crops planted, number of economic activities, and economic activity of commerce. For number legumes planted,  $p = .030$ .

Anova yielded no significant difference for HDDS for indicators of economic activity as fishing ( $p = .28$ ), economic activity as salary ( $p = .054$ ), number of crop planted ( $p = .186$ ) or crops sold ( $p = .481$ ).

Linear regression results for several important variables is outlined in the following table:

**Table 31: Correlation coefficients for DDS and other variables**

Variable	Correlation coefficient	p-value
<b>Economic activities (number)</b>	0.58	0.00014
<b>Salary (Yes/No)</b>	0.70	0.05402
<b>Fishing (Yes/No)</b>	0.27	0.27653
<b>Commerce (Yes/No)</b>	0.88	0.00018
<b>No. of cash crops</b>	0.57	0.00001
<b>No. of legumes planted</b>	0.31	0.00410
<b>No. of crops planted</b>	0.15	0.00719
<b>No. of crops sold</b>	0.11	0.09502
<b>MAHFP</b>	0.18	0.00028

The strongest correlation is with economic activity being salary or commerce, though for the former the sample size was too small to reach significance. Others strongly correlated are the total number of different economic activities and, to a lesser degree, number of legumes planted.

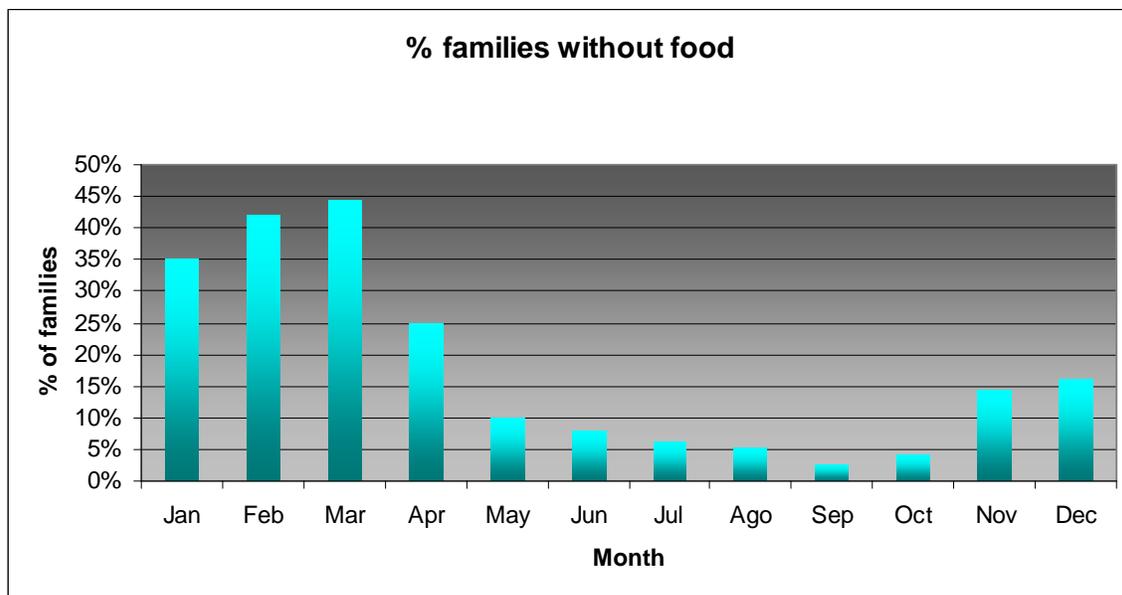
## 6. Food security

The final indicator included in the survey was the Months of Adequate Household Food Provisioning score (MAHFP) using the methodology developed by Bilinsky, P and Anne Swindale, A. (2007). This queries respondents about the months that the family had insufficient food during the last year. The results are as follows:

**Table 32: Months of Adequate Household Food Provisioning by Month**

Indicator	%	N	95% LCL	95% UCL	DE
Months of Adequate Household Food Provisioning	9.87	S <sup>2</sup> =300	9.66	10.08	0.927
Jan	35%	300	30%	40%	
Feb	42%	300	37%	47%	
Mar	44%	300	39%	50%	
Apr	25%	300	20%	30%	
May	10%	300	7%	13%	
Jun	8%	300	5%	11%	
Jul	6%	300	3%	9%	
Ago	5%	300	3%	8%	
Sep	3%	300	1%	4%	
Oct	4%	300	2%	6%	
Nov	14%	300	11%	18%	
Dec	16%	300	12%	20%	

The following graph illustrates the pattern observed in the table above:



**Figure 3: Months of Adequate Household Food Provisioning by Month**

It is very clear from the graph that the rainy season and shortly thereafter is also the “hungry season”. Anova was inappropriate for almost all variables due to a high level of heterogeneity among the variances. The pattern for the MAHFP is instructive. There is a bi-modal distribution, with 35% of families indicating 12 months of food provisions, 56% having 9 months, and only 4% reporting 8 months. Only 5% gave *any* other response, and each of these was under 2%.

Linear regression showed the following correlations:

**Table 33: Correlation coefficients for MAHFP and other variables**

Variable	Correlation coefficient	p-value
<b>Economic activities (number)</b>	0.35	0.0503
<b>Salary (Yes/No)</b>	0.44	0.3035
<b>Fishing (Yes/No)</b>	-0.10	0.7335
<b>Commerce (Yes/No)</b>	0.48	0.0855
<b>No. of cash crops</b>	0.56	0.0002
<b>No. of legumes planted</b>	0.51	0.0000
<b>No. of crops planted</b>	0.23	0.0004
<b>No. of crops sold</b>	0.11	0.0950
<b>MAHFP</b>	0.18	0.0002

Clearly the strongest correlations are with the number of cash crops and legumes planted. Commerce as an economic activity looks strong, but the sample size was too small for statistical significance.

### **III. Conclusions and recommendations (including recommended targets and recommendations for changing indicators)**

#### ***A. Methodological conclusions and recommendations for follow-up surveys***

An overall methodological recommendation for future surveys is for FH Mozambique to consider introducing PDAs for data collection. FH has considerable expertise in performing surveys and uses them in all programs for both monitoring and evaluation. The advantages include a reduction in errors of data collection and data entry, speed in data processing and a reduction in cost (photocopying, data entry). The initial cost would be rapidly recovered, probably in less than two years. The principal disadvantages include the need to have in-house computer programming skills to program the PDAs and to retrieve and process the data, possibly increased training time for interviewers, and the possibility of theft.

#### *Health and nutrition*

The rounding error introduced into the nutrition measurements is significant enough to cast doubt on the interpretation of the overall results. Food for the Hungry may wish to consider repeating the nutrition portion of the survey. The most economical way to do this would be to use LQAS sampling over a period of several months during routine supervision visits. An additional option is to wait until the first year monitoring survey is performed and include a nutrition component, as nutritional status is not expected to change significantly during the first twelve months of the project. One important lesson

learned is the importance of adequate refresher training and supervision for those performing the weighing and measuring in order to improve precision.

One of the health indicators, that of iron intake during the previous pregnancy, should either be eliminated or modified, as described in section II.A.5. above. This is because any woman of childbearing age should consume extra iron, as it takes a long time to replenish iron stores lost during the previous pregnancy. Consuming iron-rich foods only during pregnancy is not enough. In addition, the definition of iron-rich foods is complicated by bio-availability issues, with heme iron being much better absorbed than non-heme iron. Finally, the MOH iron policy is to provide iron supplementation during pregnancy. A reasonable substitute indicator would be “the proportion of mothers of children under two who received one hundred or more iron supplementation tablets during the previous pregnancy.

Finally, the health indicators related to water and sanitation have very high design-effects and would be best measured using more random sampling techniques, such as LQAS. It may be best to include these questions in the future agriculture survey rather than the health survey if the agriculture survey is to use LQAS. However, these questions can be included in health sector LQAS monitoring surveys.

#### *Agriculture*

As described earlier, FH would be advised to use random or LQAS sampling in future surveys of the agriculture sector in order to reduce the design effect introduced by cluster sampling methods. Some of the indicators should be adjusted. The population-based surveys method is inadequate to estimate crop yields and income under these circumstances, as farmers are uncertain as to the size of their fields, and the units of measure for harvest are far from standardized. In addition, many of the heads of household simply didn't know how much they harvested or sold in the previous year. Furthermore, practices such as intercropping and agroforestry plus weather effects further confound efforts to estimate crop yields. Finally, the short lifetime of the project, three years, is too short to realistically expect generalized population-based improvements in crop yields and household income.

A more accurate measure of crop yields could be obtained by using the planned demonstration plots. The MYAP could then compare between existing plant varieties and practices and newly introduced varieties and practices. This would estimate *potential* improvements under real field and weather conditions.

Some indicators, such as natural resource management adoption, were included in the agriculture baseline even though they were worded as “percent of families adopting....” or “percent of families introducing...” where it is implicit that the baseline is zero. In order to measure these indicators accurately, it may be necessary to rephrase the questions in future monitoring and final surveys to capture “new adopters”. Another reasonable approach is to simply count the number of families that participate in training and then adopt the new practices or crop varieties, as the project life is too short to reasonably expect secondary adoption.

The indicator “average production (tons) per cash crop adopting and producing households” should be eliminated. The mean production may even fall as many families adopt the practice but only plant on small plots until they are convinced of the benefit. Cashew yield will not be expected to increase greatly for several years among families that plant seedlings (though it may rise significantly among families that improve management of existing trees). The overall effect on “average production” is unpredictable, so the indicator is not a good one, even if it could be measured accurately.

Questions to measure indicators relating to post harvest grain processing and storage management were not included in the baseline, as the FH team feels certain that their use at baseline was essentially zero. These techniques would be new introductions. Mid-term and final surveys will require the addition of these questions in order to assess progress toward targets.

Finally, after reviewing the results, the team suggested that the following two indicators serve as proxies for project outcome, as both of them had significant correlation with dietary diversity, both are directly under the influence of the project, and both are easily and accurately measured using sample surveys:

- Proportion of families that planted three or more different crops in the past year
- Proportion of families that sold at least some of three or more crops in the past year

## ***B. Programmatic conclusions and recommendations***

### *Health and nutrition*

The nutritional status of children under five is very poor, with the prevalence of acute malnutrition (low weight for height, the most sensitive measure of malnutrition) peaking in the 6-12 month age group. This appears to be primarily due to two factors: 1) Poor dietary diversity (and, by inference, low caloric density) and 2) Infrequent feedings. Foods are available in the region that could provide adequate nutrition if children were fed them: starch, legumes, fish and edible leafy vegetables. As a substantial proportion of young children are receiving at least one of the last three, it appears that there are no significant taboos to feeding them to children.

The primary cause of malnutrition appears to be an absolute lack of food diversity in many families, as half of all families don't sell any crops at all and only 38% planted at least one leguminous crop. Only 15% of children 6-23 months and 10% of adults ate legumes the previous day. These families simply don't have the cash to buy fish and legumes. Therefore, the agricultural component of the project will be fundamental to improving child nutrition. The project should focus nutrition messages on the immediate weaning period (6-12 months) and should emphasize increased frequency, diversity and density of foods in addition to adding oil.

The survey results suggest a number of avenues for further study, especially through the use of qualitative techniques. Among these are:

- Why don't mothers breastfeed immediately after delivery? This would lend itself to barrier analysis as well as focus group discussions.
- In spite of the fact that thirty-eight percent of families planted at least one leguminous crop, only fifteen percent of children 6-23 months and ten percent of adults reported eating legumes the previous day. Are there barriers to feeding children legumes?
- Investigate the beliefs around giving water to children under six months of age. If mothers can be convinced that infants don't need water, exclusive breastfeeding rates would increase dramatically.
- Are oysters available in the region, and are there any significant taboos associated with eating oysters? This may be important as dried oysters could prove to be a significant source of protein, calories, vitamin A and iron.
- Pregnant mothers are not eating more food during pregnancy (36%). The reasons for this may be investigated as well using both qualitative methods and barrier analysis.
- Only 42% of adults said they had eaten green leafy vegetables on the previous day (leafy vegetables were not discriminated from other plant sources of beta carotene in the child questionnaire). In addition, FH field staff mention that they have often heard the comment "we don't eat leaves---we aren't goats". The strength of this taboo and how to overcome it would be interesting to investigate using qualitative methods.

Coverage for health programs that depend on MOH DPS services is relatively good. This includes vitamin A supplementation (78%), weighing (81%) and antenatal HIV testing (44%). This is surprising given the difficulties in accessing services and the paucity of outreach services. However, coverage for deworming is apparently low (28%) although this *may* reflect poor communication between nurses and mothers about the purpose of the pills, the fact that this is a relatively new program, and that there is no place to record deworming on the child health card. However, children are not receiving prompt appropriate treatment for fever with effective antimalarials (only 5% of children with fever received prompt treatment). Whereas 69% of children seek care for fever, only 23% of these receive antimalarials. It would be advisable to investigate whether this is due to stockouts or whether health care workers are not following IMCI protocols. It may be necessary to improve training and supervision of health care workers in IMCI if the latter is the case, even though this was not included in the original project design.

The most important barrier to effective malaria prevention appears to be an absolute lack of LLITNs in the project zone, rather than lack of knowledge or unwillingness to use nets. Although net purchase and distribution was not included in the original project design, FH may be able to facilitate contacts between the national malaria program and provincial and regional malaria officers to acquire more treated nets.

Water treatment is another very weak area discovered in the survey. Only six percent of families purify their water in any way, and only 34% of families get their water from an improved water source. Given the absolute poverty and lack of commercial markets in

the zone, it is not reasonable to expect that families will be able to purchase Certeza. Introduction of simple water purification techniques (filtering, settling, sunlight exposure, etc.) should be explored, as well as discussion with the DPS to get stock and distribute chlorine from health facilities free of charge as is done in areas of Mozambique that are prone to cholera outbreaks. Water storage practices appear to be relatively good, so only a modest effort will be needed in this area.

Handwashing is another important area in need of improvement, and FH messages will necessarily have to emphasize behaviors that don't cost anything, such as using ash rather than soap.

### *Agriculture*

The overall conclusion of the agriculture survey is that the agriculture intervention appears to be appropriate and well-designed to meet the principal weaknesses in agriculture, and should have a significant impact on the overall health and nutrition of the population if it is successful. As 99% of the population in the target communities is engaged in agriculture, even where families fish or are involved in commerce, this is an appropriate area of emphasis.

The most interesting observation from the survey is the fact that 24% of households are headed by women. This has implications for project implementation, as the qualitative reports indicate that women and men are not accustomed to working together. Therefore, FH is encouraged to plan for about 25% of its farmer groups being all-women. FH is also encouraged to identify at least one female agricultural extension officer for its staff, which may be very challenging indeed.

The three crops chosen for improvement and dissemination by the MYAP, sesame, cashew and ground nuts appear to be appropriate, as these are all already present in the region, and are the crops most likely to be sold when they are grown. Working to improve yields of stands of existing cashew trees would seem to be expected to give especially rapid results. The agriculture program should work closely with the health program to encourage both sale *and* consumption of legumes and cashews, rather than focusing exclusively on sale.

An unexpected result that came from the survey was the impact of elephants and monkeys on crops. Although the exact impact was not quantitatively measured, a significant number of families reported that their entire crop was destroyed by animals the previous year. Even if this occurs in fewer than ten percent of households, the effect can be devastating, as an entire year's investment and labor disappear, with a likely severe effect on the family's health and nutritional status. This is in some ways analogous to maternal mortality, where although the event is not very common, when it does occur it is devastating to the affected family. Unfortunately, FH can do little to reduce the frequency of animal crop destruction (though the Community Development Committees may wish to address this problem). FH's project may help mitigate the effects of animal predation through emphasis on cashew development (which is less susceptible to animals).

The introduction of calorie-dense foods such as legumes and cashews is absolutely appropriate given the high rate of malnutrition. In addition, reducing the length of the hungry season through the introduction of short season crops is also appropriate.

### ***C. Recommendations on monitoring the community development component***

The qualitative focus-group based community study as well as the background literature indicate that the MYAP focus on developing the CDCs is the correct approach for several reasons. The CDCs are now part of the formal government structure in Mozambique, and as such will be recognized by the district governments. It is these district governments through which the Mozambican government funnels bilateral and multi-lateral development aid funding for local development. In addition, the traditional village structures appear to have been weakened by the long war for independence, civil war and the community resettlement programs carried out by the Portuguese and the Mozambican government in turn. In addition, the variation in religious belief from one community to the next from mostly Catholic to nominal Muslim to devout Muslim would hamper the use of religious structures as a means to reach the communities.

Monitoring and evaluating the community development component of the MYAP will pose a challenge, but need not be overly difficult or expensive. The IPTT table lists the following as the MYAP indicators for the community development component:

IR 3.1 Increased leadership capacity of existing formal and informal community leaders to address factors that affect food security

- % of communities (CDC's) that have completed development projects using community, government, or donor funds that do not come from the FH/MYAP project.
- % of CDC's that have identified and independently resolved problems within MYAP Agriculture, Nutrition, or Watsan programs.
- # of PRA/HCA conducted and reports prepared
- # of CDC leaders participated in leadership/management training
- % of CDC members who are women

IR 3.2 Increased community capacity in planning and implementing small scale economic infrastructure projects

- % of Community Development Committees (CDC) that have completed a small scale development project
- # of small scale projects implemented [yearly total]
- # of communities with improved physical infrastructure (well, bridge etc) to mitigate the impact of shocks [Cumulative]
- Amount contributed by community for small scale project implementation (US\$) [yearly total]

#### IR 3.4 Increased ability to predict and mitigate shocks

- % of selected CDCs that correctly used their early warning system in the past year
- % of communities that have reported on risks and disasters occurred in their communities
- # of months increase of adequate food provisioning (measured in baseline)
- % households used their carry over food and cash crop stock to cope to disasters

It may be wise to eliminate the indicator on the use of the early warning system, as a either a high percentage or low could be interpreted as success: high means the system is successful, or low means the agricultural component of the MYAP lessened the risk of crop failure.

In addition to the above indicators, Phillippa Keys, the lead investigator in the qualitative assessment that was carried out prior to this baseline survey, suggested the following topics for investigation:

- community members' perceptions of leader's capacity to manage projects
- community members' perceptions of leadership qualities in their leader(s)
- level and quality of participation of community members in public affairs
- level of government services provided in response to community action
- community members' perceptions of their own ability to influence decisions made at the community or district level
- capacity of grassroots organization to manage projects (SEE BELOW)
- community members' notions and practices of 'democracy, citizenship, gender roles, community development, environmental protection, active and effective participation of community members in public affairs

All of these but the second-to-last relating to management of projects would best be measured using qualitative techniques such as focus-group discussions, rather than quantitative surveys such as this baseline. As the project will target fewer than 50 communities and each FH community development officer will have only about five communities each to supervise, it would seem reasonable to train them in conducting focus group discussions in their own communities. A questionnaire should be agreed upon and at least one group of men, one group of women, and one group of leaders be interviewed in each community. In order to facilitate monitoring and evaluation, each question could be scored semi-quantitatively, as with the following examples:

a. Perception of leaders' capacity to manage projects:

Very high (successful history already)      Moderate      Poor

b. Perception of the level that families participate in community decision-making

Very high participation      Some participation or information      Almost none or none

The focus groups should not be asked to do the ranking, but rather, the interviewer should judge the consensus and score the question while taking qualitative notes on the discussion.

As the key activity and budgetary investment for the MYAP community component is the funding of community-initiated development projects, a scoring system like the following example could be used:

1. Functioning CDC
  - a. Not formed 0 points
  - b. Formed but rarely meets 1 point
  - c. Formed and meets regularly 2 points
2. Community development plan
  - a. Not developed 0 points
  - b. Partially developed 1 point
  - c. Developed and written 2 points
3. MYAP development project plan
  - a. Not developed 0 points
  - b. Developed and funds requested (pending), or not approved 1 point
  - c. Approved and funds disbursed 2 points
4. MYAP development project execution
  - a. Not started 0 points
  - b. In progress 1 point
  - c. Completed and financial report submitted and approved 2 points
5. MYAP development project impact
  - a. None 0 points
  - b. Some people impacted, or small impact for many<sup>8</sup> 1 point
  - c. Significant impact for most community members 2 points
6. Sustainability
  - a. No other development projects executed by CDC 0 points
  - b. Other non-MYAP funded development projects underway 1 point
  - c. Other non-MYAP funded development project(s) completed 2 points

Using a semi-quantitative scale, each community would score between one and twelve on the development of the CDC and implementation of community development projects. This would allow the MYAP to easily monitor progress and impact of the community development component.

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<sup>8</sup> Such as a health post or school without staff, but used episodically, or a mill or a well or irrigation system used by only a few people, or a mill or a well or irrigation system not operating because it is broken and needs a spare part

## **Weighted nutrition indicators**

Due to the uneven distribution of children by age group, an effort was made to measure the effect this may have on the overall nutrition indicators. The following tables illustrate the effect on overall weight for age, weight for height and height for age measurements if these are stratified to simulate a smooth age distribution. As can be seen, all three indicators increase with weighting, however, in now case was the increase greater than the confidence interval. As would be predicted, height-for-age was the most affected by the weighting, as the effects of stunting accumulate as children grow, and the original age distribution disproportionately low number of older children. However, even in this case, the adjusted height-for-age is only three percenetage points higher than the unweighted estimate, and still well within the original confidence intervals. (NB: the confidence intervals calculated here did not take the design effect into account, and so are slightly different from those in the body of the report.).

Weight for Age

Group	<2 Z	N	p	weight	Adjustment			LCL	UCL
					Wgt*p	(wt <sup>2</sup> *pq)/n	CI		
All children 0-59m	201	735	27.3%	1	0.273	0.000540636	4.6%	22.8%	31.9%
0-5m	1	67	1%	0.1	0.001	2.19442E-06			
6-11m	28	99	28%	0.1	0.028	2.04885E-05			
12-17m	25	85	29%	0.1	0.029	2.4425E-05			
18-23m	14	43	33%	0.1	0.033	5.10647E-05			
24-35m	58	216	27%	0.2	0.054	3.63734E-05			
36-47m	46	152	30%	0.2	0.061	5.55383E-05			
48-59m	29	73	40%	0.2	0.079	0.000131202			
All children 0-59m adjusted	201	735	28.5%		28.5%	0.000321287	3.5%	25.0%	32.1%

Weight for Height

Group	<2 Z	N	p	weight	Adjustment			LCL	UCL
					Wgt*p	(wt <sup>2</sup> *pq)/n	CI		
All children 0-59m	41	736	5.6%	1	0.056	0.000142944	2.3%	3.2%	7.9%
0-5m	3	68	4%	0.1	0.004	6.20166E-06			
6-11m	13	99	13%	0.1	0.013	1.15222E-05			
12-17m	5	85	6%	0.1	0.006	6.51333E-06			
18-23m	9	43	21%	0.1	0.021	3.84872E-05			
24-35m	9	216	4%	0.2	0.008	7.39455E-06			
36-47m	1	152	1%	0.2	0.001	1.71991E-06			
48-59m	3	73	4%	0.2	0.008	2.15929E-05			
All children 0-59m adjusted	43	736	6.2%		6.2%	0.000093	1.9%	4.3%	8.1%

Height for Age

Group	<2 Z	N	p	weight	Adjustment			LCL	UCL
					Wgt*p	(wt <sup>2</sup> *pq)/n	CI		
All children 6-59m	306	735	41.6%	1	0.416	0.000661221	5.0%	36.6%	46.7%
0-5m	NA	NA	NA	NA	NA	NA			
6-11m	23	99	23%	0.1	0.023	1.80151E-05			
12-17m	30	85	35%	0.1	0.035	2.68675E-05			
18-23m	17	43	40%	0.1	0.040	5.55926E-05			
24-35m	90	216	42%	0.2	0.083	4.50103E-05			
36-47m	86	152	57%	0.2	0.113	6.46505E-05			
48-59m	56	73	77%	0.2	0.153	9.78878E-05			
All children 6-59m adjusted			44.8%		44.8%	0.000308	3.4%	41.4%	48.2%

Nutrition indicators summary

Indicator	Unadjusted	CI	Weighted	CI
Weight for age 0-59m	27.3%	22.8%-31.9%	28.5%	25%-32%
Weight for height 0-59m	5.6%	3.2%-7.9%	6.2%	4.3%-8.1%
Height for age 6-59m	41.6%	36.6%-46.7%	44.8%	41.4%-48.2%

# Summary indicator tables

Indicator	Related indicators and components	%	N	LCI 95%	UCI 95%	DE	Calc Des	Comments
Proportion 0-59 months who are underweight (WAZ <Z)		27%	735	24%	31%	1	Measured	
Proportion 6-59 months with stunting (HAZ <Z)		45%	668	41%	49%	1	Measured	
Breastfeeding in first hour after delivery		26%	296	21%	31%	1	Measured	If DE < 1, then 1 is used
Exclusive breastfeeding 0-5m		19%	68	10%	29%	1.04	Measured	
	Exclusive except water 0-5m	68%	68	56%	79%	1.04		No difference by sex. Chi-square = 0.48 p=0.49
	Water	77%	68	66%	87%	1.04		
	Formula	2%	68	-1%	4%	1.04		
	Juice	2%	68	-1%	4%	1.04		
	Tea	6%	68	0%	12%	1.04		
	Liquid medicine	4%	68	-1%	9%	1.04		
	Porridge	6%	68	0%	12%	1.04		
	Other	6%	68	0%	12%	1.04		
	Exclusive breastfeeding 0-1m	35%	17	12%	58%	1.04		
	Exclusive breastfeeding 2-3m	23%	26	7%	40%	1.04		
	Exclusive breastfeeding 4-5m	4%	25	0%	12%	1.04		
Complementary feeding 6-8 months		80%	44	67%	92%	1.04		No difference by sex. Chi-square = 1.00 p=0.32
Continued breastfeeding 12-15 months		96%	68	91%	100%	1.04		
Minimum Dietary Diversity (?4 groups among 6-23 months)		15%	231	10%	19%	1	Measured	
	Mean dietary diversity = 2.16 SD 1.20	2.16	231	2.01	2.31	1	Est.	
	Median dietary diversity = 2							
	DD=0 6-23 months	8%	231	4%	11%	1		
	DD=1 6-23 months	21%	231	16%	26%	1		
	DD=2 6-23 months	37%	231	31%	43%	1		
	DD=3 6-23 months	20%	231	15%	25%	1		
	DD=4 6-23 months	12%	231	8%	16%	1		
	DD=5 6-23 months	3%	231	1%	5%	1		
	DD=6 6-23 months	0%	231	0%	0%	1		
	DD=7 6-23 months	0%	231	0%	0%	1		
	DD ?4 groups among 6-11 months	10%	100	4%	16%	1		
	DD ?4 groups among 12-17 months	15%	87	7%	22%	1		
	DD ?4 groups among 18-23 months	25%	44	12%	38%	1		
	Grains 6-23 months	82%	231	77%	87%	1		
	Legumes 6-23 months	15%	231	11%	20%	1		
	Dairy 6-23 months	1%	231	0%	2%	1		
	Flesh foods 6-23 months	54%	231	47%	60%	1		
	Eggs 6-23 months	2%	231	0%	3%	1		
	Vitamin A rich fruits and vegetables 6-23 months	48%	231	41%	54%	1		
	Other fruits and vegetables 6-23 months	15%	231	11%	20%	1		
	Adding Oil	22%	231	16%	27%	1		

<b>Indicator</b>	<b>Related indicators and components</b>	<b>%</b>	<b>N</b>	<b>LCI 95%</b>	<b>UCI 95%</b>	<b>DE</b>	<b>Calc Des</b>	<b>Comments</b>
<b>Minimum acceptable diet: (Minimum number of meals by age, continued breastfeeding and Dietary Diversity ? 4)</b>	6-23 months	4%	231	1%	6%	1		
	Minimum acceptable diet 6-11 months	1%	100	-1%	3%	1		
	Minimum acceptable diet 12-17 months	6%	87	1%	11%	1		
	Minimum acceptable diet 18-23 months	7%	44	-1%	14%	1		
	BF 6-8 months and ? 2 meals / day	40%	42	26%	55%	1		
	BF 9-23 months and ? 3 meals / day	13%	174	8%	18%	1		
	Not BF 6-23 months and ? 4 meals / day	0%	15	0%	0%	1		
<b>Vitamin A in the last 6 months children 6-23 months</b>	Mother's word	78%	231	73%	83%	1	Measured	
	Card verified (among those with cards and a date)	62%	170	54%	69%	1		
	Card verified (among all children 6-23 months; no card = no Vit A)	45%	231	39%	52%	1		
<b>Mothers of children 0-5 months who ate more food during their pregnancy</b>		26%	68	16%	37%	1		
	Ate the same	31%	68	20%	42%	1		
	Ate less	41%	68	29%	53%	1		
<b>Children measured or weighed in the last 4 months</b>	Either MUAC (mother's word) or card-confirmed weighing in the past 4 months	81%	299	77%	86%	1		
	MUAC (mother's word)	13%	299	9%	17%	1		
	Card-confirmed of all children (no card = not weighed)	80%	299	76%	85%	1		
	Card seen by interviewer	98%	298	96%	100%	1		
	Card lost or in other place	2%	298	0%	3%	1		
	Never had card	0%	298	0%	1%	1		
<b>Children with diarrhea in the last 2 weeks who received ORS or recommended home fluids</b>		70%	91	61%	80%	1		
	Diarrhea in last 2 weeks	39%	231	33%	46%	1		
	ORS	65%	91	55%	75%	1		
	Home solution	13%	91	6%	20%	1		
	Other liquids	7%	91	1%	12%	1		
	Nothing	18%	91	10%	25%	1		
<b>Children with diarrhea in the last 2 weeks who received the same or more food</b>		36%	75	25%	47%	1		"illness" and not diarrhea. The question in the survey is specific to diarrhea. NOTE: 15 children are exclusively breastfed, so not included in the denominator. 1 missing response.
	Offered the same or more breastmilk	54%	83	43%	65%	1		NOTE: 7 children are not breastfed and so are not included in the denominator. 1 missing response.

<b>Indicator</b>	<b>Related indicators and components</b>	<b>%</b>	<b>N</b>	<b>LCI 95%</b>	<b>UCI 95%</b>	<b>DE</b>	<b>Calc Des</b>	<b>Comments</b>
<b>Mothers that can name three or more signs of illness that indicate a need for treatment</b>		25%	299	20%	30%	1		
	Appears unwell, won't play	60%	299	54%	65%	1		
	Won't eat or drink	33%	299	28%	39%	1		
	Lethargic, difficult to wake up	6%	299	3%	8%	1		
	High fever	88%	299	84%	92%	1		
	Rapid or difficult breathing	7%	299	4%	10%	1		
	Vomits everything	8%	299	5%	11%	1		
	Convulsions	3%	299	1%	5%	1		
	Other	9%	299	6%	13%	1		Others: cries a lot (10), diarrhea (8), cough (4), red eyes/conjunctivitis (2), won't sit (1), swollen head (1), constipation (1), blank (1)
Don't know	1%	299	0%	3%	1			
<b>Children 12-23 months who have received albendazol or mebendazol for deworming in the previous 6 months</b>	Mother's word	28%	131	21%	36%	1	Measured	
<b>Children 0-23 months who slept under an insecticide-treated bed net the previous night</b>		16%	299	11%	21%	1.49	Measured	
	Family has at least one bed net	74%	299	67%	80%	1.49	Measured	
	Child slept under a bed net the previous night (of all children)	58%	299	51%	65%	1.67	Measured	
	Permanet (of all families)	27%	299	20%	34%	1.97	Measured	Only Permanets have been distributed in the last year, and there have been no retreatment campaigns. Therefore, any regular nets are assumed to be untreated.
	Permanet (of all nets)	37%	220	28%	46%	1.97		
<b>Children 0-23 months with a fever in the past 2 weeks that were treated with an effective antimalarial within 24 hours after the fever began.</b>		5%	143	1%	8%	1	Measured	
	Had fever in the past 2 weeks	48%	297	42%	54%	1		2 invalid responses
	Sought care (of those with fever)	69%	143	61%	76%	1		
	1 day or less (of those with fever)	36%	143	28%	45%	1.13	Measured	
	2 days (of those with fever)	18%	143	11%	25%	1.13		
	3 days or more (of those with fever)	13%	143	7%	19%	1.13		
	Don't know (of those with fever)	1%	143	0%	2%	1.13		
	Received ACT (of all children with fever who sought care)	23%	98	15%	32%	1	Measured	ACT = Artusenate combined therapy (the only "effective" antimalarial in Mozambique). Fansidar + artemisinin

<b>Indicator</b>	<b>Related indicators and components</b>	<b>%</b>	<b>N</b>	<b>LCI 95%</b>	<b>UCI 95%</b>	<b>DE</b>	<b>Calc Des</b>	<b>Comments</b>
<b>Proportion of beneficiary mothers of children 0-23m of age who regularly (biweekly or more often) meet with a health promoter to learn about health.</b>		4%	299	2%	7%	1		
	Ever received a visit from a promotor or leader or listened to a talk to learn about health	10%	299	7%	14%	1	Measured	
<b>Percentage of beneficiary pregnant women or mothers of children 0-23m who can name 3 methods of preventing HIV</b>	Of all mothers	8%	299	4%	12%	1.51	Measured	
	Heard of AIDS	89%	299	85%	93%	1.51		
	Methods to avoid virus that causes AIDS							
	Nothing	4%	299	1%	7%	1.51		
	Abstain from sex	13%	299	8%	18%	1.51		
	Use condoms	21%	299	15%	26%	1.51		
	Limit to one partner	20%	299	15%	26%	1.51		
	Limit no. of partners	3%	299	1%	5%	1.51		
	Avoid sex with prostitutes	3%	299	1%	5%	1.51		
	Avoid sex with people with many partners	1%	299	0%	2%	1.51		
	Avoid sex with people who inject drugs	1%	299	0%	2%	1.51		
	Avoid blood transfusions	1%	299	0%	3%	1.51		
	Avoid injections	2%	299	0%	4%	1.51		
	Avoid kissing	1%	299	0%	2%	1.51		
	Avoid mosquito bites	1%	299	0%	3%	1.51		
	Seek traditional healer	1%	299	0%	2%	1.51		
	Avoid sharing blades or knives	4%	299	1%	6%	1.51		
	Others	0%	299	0%	0%	1.51		
	Don't know	49%	299	43%	56%	1.51		
<b>Percentage of mothers of children 0-23m who report being tested for HIV while they were pregnant.</b>	Of all mothers	44%	299	37%	50%	1.39	Measured	

Indicator	Related indicators and components	%	N	LCI 95%	UCI 95%	DE	Calc Des	Comments
Percentage of households with year-round access to improved water sources, where access means		20%	299	8%	31%	6.36	Measured	
	Water sources					1	Measured	
	Piped in home or yard	1%	299	0%	2%	1		
	Public faucet (piped)	4%	299	2%	6%	1		
	Open well in yard	0%	299	0%	1%	1		
	Open well, public	39%	299	34%	45%	1		
	Protected well in yard	1%	299	0%	2%	1		
	Protected well, public	24%	299	20%	29%	1		
	Spring, river or stream, not protected	23%	299	18%	28%	1		
	Spring, protected	4%	299	2%	6%	1		
	Rainwater	1%	299	0%	3%	1		
	Tanker truck	0%	299	0%	0%	1		
	Bottled water	0%	299	0%	0%	1		
	Lake, pond or irrigation canal	2%	299	0%	3%	1		
	Other	0%	299	0%	0%	1		
Improved water source	34%	299	21%	48%	6.36	Measured		
Distance <200m	37%	299	24%	51%	6.36			
Percentage of beneficiary caregivers demonstrating proper personal hygiene behaviors[1] [All children at baseline and final]		3%	299	0%	5%	2.37	Measured	
	Handwashing at 2 or more appropriate times	42%	299	31%	54%	4.2	Measured	
	Never	9%	299	3%	16%	4.2		
	Before food preparation	44%	299	33%	56%	4.2		
	Before giving food to children	22%	299	12%	31%	4.2		
	After defecating	33%	299	22%	44%	4.2		
	After caring for child who defecated	27%	299	17%	37%	4.2		
	Others	5%	299	0%	11%	4.2		
	Don't know	1%	299	-1%	4%	4.2		
	Water at place for washing	35%	297	30%	41%	1	Measured	
	Soap or ash at place for washing	14%	297	10%	18%	1	Measured	
Percentage of beneficiary caregivers demonstrating proper environmental hygiene behaviors[2] [All children at baseline and final]	Proportion disposing of child's feces in a proper place.	16%	299	10%	23%	2.28	Measured	
	Bathroom or special pit	8%	299	4%	13%	2.28		
	Potty in house	1%	299	-1%	3%	2.28		
	Washable diapers	5%	299	1%	9%	2.28		
	Disposable diapers	1%	299	-1%	3%	2.28		
	On floor in house	9%	299	4%	14%	2.28		
	Outside on ground	53%	299	44%	61%	2.28		
	In child's clothes	20%	299	14%	27%	2.28		
	Other	1%	299	-1%	3%	2.28		

Indicator	Related indicators and components	%	N	LCI 95%	UCI 95%	DE	Calc Des	Comments
Proportion of caregivers that demonstrating proper food/water hygiene behaviors	Treatment and storage	5%	299	2%	7%	1.35	Measured	
Percentage of households of children age 0-23 months that treat water effectively at point-of-use.		6%	299	3%	10%	1.46	Measured	
	Nothing	94%	299	90%	97%	1.46		
	Boiling	3%	299	1%	5%	1.46		
	Chlorine or bleach	3%	299	0%	5%	1.46		
	Certeza (PSI commercial product)	1%	299	0%	3%	1.46		
	Filtered with cloth	0%	299	0%	1%	1.46		
	Ceramic filter	0%	299	0%	0%	1.46		
	Solar	0%	299	0%	1%	1.46		
	Sedimentation	0%	299	0%	0%	1.46		
	Other	1%	299	0%	2%	1.46		
	All water stored in containers with a lid	69%	299	61%	76%	2.05	Measured	

#### Weight for Age

Group	Normal	Underweight (< 2 Z, ?-3 Z)	Severely underweight (<-3 Z)	N	95% Confidence Intervals		
					Normal	Underweight	Severely underweight
All children 0-59 m	73%	22%	5%	735	69%-76%	19%-25%	3%-7%
Male	71%	22%	8%	371	66%-75%	18%-26%	5%-10%
Female	75%	23%	2%	364	70%-79%	18%-27%	1%-4%
0-5m	99%	1%	0%	67	96%-100%	0%-4%	0%-0%
6-11m	72%	19%	9%	99	63%-81%	11%-27%	3%-15%
12-17m	71%	25%	5%	85	61%-80%	16%-34%	0%-9%
18-23m	67%	30%	2%	43	53%-81%	17%-44%	0%-7%
24-59m	70%	25%	5%	441	66%-74%	21%-29%	3%-7%

Group	MYAP		DHS (NATIONAL)	
	Severely Underweight t* (<3 Z)	Underweight* (<2 Z)	Severe Underweight (<3 Z)	Underweight (<2 Z)*
All children 0-59 m	5.00%	27.30%	6.40%	23.70%
Male	7.50%	29.30%	6.70%	24.70%
Female	2.50%	25.30%	6.20%	22.60%
0-5m	0.00%	1.50%	1.00%	5.40%
6-9m	6.30%	30.10%	6.20%	19.70%
10-11m	13.90%	25.00%	10.10%	36.9%
12-23m	3.90%	30.50%	10.60%	34.50%
24-35m	4.20%	26.90%	9.50%	28.50%
36-47m	4.60%	30.30%	5.00%	22.30%
48-59m	9.60%	39.70%	3.00%	18.30%
DHS CABO DELGADO			9.20%	34.20%

### Weight for Height

Group	Normal	Wasted (<-2 Z, ?-3 Z)	Severely Wasted (<-3 Z)	N*	95% Confidence Intervals		
					Normal	Wasted	Severely Wasted
All children 0-59 m	94%	5%	1%	736	92%-96%	4%-7%	0%-1%
Male	94%	6%	1%	372	91%-96%	3%-8%	0%-2%
Female	95%	5%	0%	364	92%-97%	3%-7%	0%-1%
0-5m	96%	1%	3%	68	91%-100%	0%-4%	0%-7%
6-11m	87%	13%	0%	99	80%-94%	6%-20%	0%-0%
12-17m	94%	5%	1%	85	89%-99%	0%-9%	0%-3%
18-23m	79%	19%	2%	43	67%-91%	7%-30%	0%-7%
24-59m	97%	3%	0%	441	95%-99%	1%-5%	0%-0%

Group	MYAP		DHS (NATIONAL)	
	Severely Wasted* (<3 Z)	Wasted* (<2 Z)	Severe wasted (<3 Z)	Wasted (<2 Z)*
All children 0-59 m	0.50%	5.80%	0.90%	4.00%
Male	0.80%	6.40%	0.90%	4.00%
Female	0.30%	5.20%	1.00%	4.00%
0-5m	2.90%	4.40%	0.10%	1.30%
6-9m	0.00%	14.30%	0.70%	3.30%
10-11m	0.00%	11.10%	0.70%	7.40%
12-23m	1.60%	11.00%	1.70%	7.30%
24-35m	0.00%	4.20%	1.30%	4.70%
36-47m	0.00%	0.70%	0.80%	3.40%
48-59m	0.00%	4.10%	0.50%	1.60%
<b>DHS CABO DELGADO</b>			0.90%	4.10%

Global malnutrition rate (children 6-59 months weight for height < 2 Z)      Global main. Rate    LCI      UCI  
 6%      4%      7%

### Height for Age

Group	Normal	Moderately Stunted (<-2 Z, ?-3 Z)	Severely Stunted (<-3 Z)	N	95% Confidence Intervals		
					Normal	Moderately Stunted	Severely Stunted
All children 0-59 m	58%	27%	15%	735	55%-62%	24%-30%	12%-17%
Male	52%	32%	16%	371	47%-57%	27%-36%	12%-20%
Female	65%	23%	13%	364	60%-69%	18%-27%	9%-16%
0-5m	94%	1%	4%	67	88%-100%	0%-4%	0%-9%
6-11m	77%	20%	3%	99	68%-85%	12%-28%	0%-6%
12-17m	65%	28%	7%	85	55%-75%	19%-38%	2%-13%
18-23m	60%	21%	19%	43	46%-75%	9%-33%	7%-30%
24-59m	47%	33%	20%	441	43%-52%	28%-37%	16%-23%

Group	MYAP		DHS (NATIONAL)	
	Severe Stunting (<3 Z)	Stunting (<2 Z)*	Severe stunting (<3 Z)	Stunting (<2 Z)*
All children 0-59 m	15%	42%	18%	41%
Male	16%	49%	19%	43%
Female	13%	35%	17%	39%
0-5	4%	6%	2%	12%
6-9m	3%	19%	11%	26%
10-11m	3%	31%	13%	34%
12-23m	11%	37%	22%	48%
24-35m	28%	42%	19%	44%
36-47m	27%	57%	22%	49%
48-59m	27%	77%	21%	45%
<b>DHS CABO DELGADO</b>			30%	56%

<b>Indicator</b>	<b>Related indicators and components</b>	<b>%</b>	<b>N</b>	<b>LCI 95%</b>	<b>UCI 95%</b>	<b>DE</b>	<b>Calc Des</b>	<b>Comments</b>
<b>People per family</b>	Mean	4.6067	300	4.28	4.94	1.64	Est.	Var = 5.18 N=202 Median = 4
<b>People per family by age group (among families who know all ages)</b>	Among families who know all ages (202)	4.55	202	4.24	4.86	1	Measured	If DE < 1, then 1 is used
	Family members mean <15	1.93	202	1.62	2.24	1		
	Family members mean 15-65	2.47	202	2.16	2.78	1		
	Family members mean >65	0.15	202	0.00	0.46	1		
<b>Heads of Household</b>	Male 227	76%	300	69%	82%	1.64	Measured	
	Female 73	24%	300	18%	31%	1.64	Measured	15 of these households (5%) had a female HHH and a male husband in the household
								NOTE: 10 households had 2 wives in the house, 1 household had 3 wives in the house
<b>Economic Activity (family)</b>	Agriculture	99%	300	98%	100%	1	Measured	
	Fishing	18%	300	10%	25%	2.84	Measured	
	Commerce	19%	300	12%	27%	2.84	Measured	
	Salary	7%	300	2%	12%	2.84	Measured	
	Handicrafts	4%	300	0%	7%	2.84	Measured	
	Other	6%	300	1%	11%	2.84	Measured	
	1 Activity	53%	300	45%	61%	1.77	Measured	
	2 Activities	41%	300	34%	48%	1.77	Measured	
	3 Activities	6%	300	2%	10%	1.77	Measured	
<b>Ag Production: Number of crops planted</b>	1	19%	300	13%	25%	1.77		
	2	24%	300	18%	30%	1.77		
	3	23%	300	17%	29%	1.77		
	4	14%	300	9%	20%	1.77		
	5	9%	300	5%	14%	1.77		
	6	5%	300	1%	8%	1.77		
	7	4%	300	1%	6%	1.77		
	8	0.3%	300	-1%	1%	1.77		
	11	0.3%	300	-1%	1%	1.77		
<b>NEW INDICATOR</b>	3 or more crops planted	56%	296	49%	64%	1.77		
<b>NEW INDICATOR</b>	3 or more crops sold	12%	296	7%	17%	1.77		
	0	50%	296	42%	58%	1.77		
	1	25%	296	18%	31%	1.77		
	2	13%	296	8%	18%	1.77		
	3	5%	296	2%	9%	1.77		
	4	4%	296	1%	7%	1.77		
	5	2%	296	0%	4%	1.77		
	6	0%	296	-1%	1%	1.77		
	7	0%	296	-1%	1%	1.77		
	9	0%	296	-1%	1%	1.77		

<b>Indicator</b>	<b>Related indicators and components</b>	<b>%</b>	<b>N</b>	<b>LCI 95%</b>	<b>UCI 95%</b>	<b>DE</b>	<b>Calc Des</b>	<b>Comments</b>
Families that planted at least one leguminous crop		38%	296	30%	45%	1.77		
Families with intensive production of dark green vegetables		72%	300	67%	77%	1	Measured	
% of HH adopting and producing at least 1 high value improved cash crop	Cashew, sesame, groundnut	34%	296	27%	42%	1.77		
<b>Technologies</b>	Agroforestry	17%	300	11%	22%	1.77		
	Composting	32%	300	25%	39%	1.77		
	Crop rotation	18%	300	12%	23%	1.77		
	Green manure	39%	300	32%	47%	1.77		
	Intercropping	43%	300	35%	50%	1.77		
	Reduce burning	30%	300	23%	37%	1.77		
	Other technologies: goat manure	1%	300	0%	3%	1.77		
Adopted 3 or more technologies (National Resource Management)		33%	300	26%	40%	1.77		
Families who lacked food for at least 3 months last year		65%	300	58%	72%	1.77		
Families who received technical assistance from an extensionist in the past year		17%	300	12%	23%	1.77		
	FH	39						
	Other NGO (Incaju)	1						
	Government	10						
	Other entity	2						
<b>Dietary Diversity Score</b>	Mean	3.25	SD = 1	2.99	3.51	1.96	Measured	
	HHH male	3.37	Var = 2	3.07	3.67	1.96		Chi squared p=.0211 male HHH vs. female HHH
	HHH female	2.88	Var = 2	2.40	3.36	1.96		
<b>Grãos</b>	Grains	95%	300	92%	98%	1.5	Measured	
<b>Raízes</b>	Roots	13%	300	8%	19%	2.28	Measured	
<b>Verduras</b>	Greens	42%	300	31%	54%	4	Measured	
<b>Frutas</b>	Fruit	25%	300	18%	32%	1.95	Measured	
<b>Carne</b>	Flesh foods	7%	300	4%	10%	1.18	Measured	
<b>Peixe</b>	Fish	60%	300	52%	69%	2.44	Measured	
<b>Ovos</b>	Eggs	4%	300	1%	7%	1.36	Measured	
<b>Leguminosos</b>	Legumes	10%	300	5%	14%	1.78	Measured	
<b>Queijo, etc.</b>	Dairy	3%	300	1%	5%	1.04	Measured	
<b>Óleo</b>	Oil	22%	300	13%	31%	3.35	Measured	
<b>Doces</b>	Sweets	18%	300	12%	24%	1.75	Measured	
<b>Café/chá</b>	Tea/Coffee	25%	300	17%	34%	2.91	Measured	
<b>Mean Household Food Provision</b>	Mean months	9.87	SD 1.90	9.66	10.08	0.927	Measured	HHH male vs. female no difference.
	Jan	35%	300	30%	40%	0.927		
	Feb	42%	300	37%	47%	0.927		
	Mar	44%	300	39%	50%	0.927		
	Apr	25%	300	20%	30%	0.927		
	May	10%	300	7%	13%	0.927		
	Jun	8%	300	5%	11%	0.927		
	Jul	6%	300	3%	9%	0.927		
	Ago	5%	300	3%	8%	0.927		
	Sep	3%	300	1%	4%	0.927		
	Oct	4%	300	2%	6%	0.927		
	Nov	14%	300	11%	18%	0.927		
	Dec	16%	300	12%	20%	0.927		

### Crops and area planted

Crop	No. planting	N	%	95% LCL	95% UCL	Mean area planted (Ha)*	Median area planted (Ha)*	Mean 95% LCL	Mean 95% UCL
Groundnuts	40	271	15%	10%	20%	1.03	0.5	0.88	1.17
Rice	88	271	32%	26%	39%	1.23	1	1.07	1.4
Cashew*	67	271	25%	19%	31%	155	70	134	176
Beans (boer)	2	271	1%	0%	2%	1.38	1.38	1.19	1.56
Beans (holoco)	1	271	0%	0%	1%	1.5	1.5	1.29	1.71
Beans (jugo)	26	271	10%	6%	14%	0.83	0.5	0.71	0.94
Cowpeas	86	271	32%	25%	38%	1.04	0.5	0.9	1.18
Sesame	20	271	7%	4%	11%	1.33	1	1.15	1.52
Manioc	254	271	94%	90%	97%	1.85	1.5	1.6	2.1
Sorghum	83	271	31%	24%	37%	1.71	1	1.48	1.94
Corn	145	271	54%	47%	60%	1.48	1	1.28	1.69
Other beans	3	271	1%	0%	3%	0.58	0.5	0.5	0.66
Others	8	271	3%	1%	5%	6.92	0.25	5.97	7.86
<b>TOTAL</b>	<b>823</b>					<b>Obs: 759</b>			

Design Effect = 1.32 (measured)

Crops planted includes all crops.

Area planted excludes those who don't know the size of their field (64 crops, 7.8%).

\*Area planted for cashews is "total number of trees"

### Harvest by crop

	Count (of crops harvested and knew how much)	Harvested = 0 (nothing harvested)	Harvested = 99 (don't know how much)	Mean amount harvested (kg)*	SD	Median total (kg)
Groundnuts	30	3	7	141	135	100
Rice	78	7	3	324	406	155
Cashew**	41	16	10	651	1282	200
Beans (boer)	2			53	67	52.5
Beans (holoco)	1			25	0	25
Beans (jugo)	23		3	95	104	50
Cowpeas	70	9	7	97	150	50
Sesame	17	2	1	95	59	100
Manioc	193	22	38	731	1171	400
Sorghum	67	11	5	210	313	100
Corn	115	16	14	367	439	200
Other beans	2		1	120	113	120
Others	5		3	740	1277	100
<b>TOTAL</b>	<b>644</b>	<b>86</b>	<b>92</b>			

\*\*Results for cashews are "per tree", not "per hectare"

### Crop yields by crop

	Count (of crops)*	Yield Mean (Mean kg/ha)*	Yield Mean 95% LCL***	Yield Mean 95% UCL***	Outliers eliminated in analysis (yields >3000kg/ha)	Yields from Moçimba da Praia 2002/2003 season[1] (kg/ha)
Groundnuts	25	286	103	468	5	499
Rice	74	293	214	372	4	500
Cashew**	39	19	5	33	2	
Beans (boer)	2	201	0	649	0	
Beans (holoco)	1	17	17	17	0	
Beans (jugo)	19	182	69	296	4	
Cowpeas	55	161	92	229	15	326
Sesame	15	87	50	123	2	
Manioc	184	428	343	513	9	2000
Sorghum	64	158	83	232	3	600
Corn	108	300	220	380	7	600
<b>TOTAL</b>	<b>644</b>				<b>51 (8%)</b>	

\* Among those who harvested something and knew how much.

\*\* Also eliminated outliers with yields of >3000 kg/ha

\*\* All results for cashews are "per tree"

\*\*\* Design effect used = 1.34

### Sale of crops

Crop	Number of crops harvested and some or all sold*	% of those who harvested some, who also sold some**	95% LCL	95% UCL	Those with crops harvested and sold, but did not know how much they sold.	Mean kg sold (among those who knew how much they sold)
Groundnuts	13	35%	17%	53%	2	165
Rice	25	31%	19%	42%	4	348
Cashew**	40	78%	65%	91%	3	586
Beans (boer)	1	50%	0%	130%		75
Beans (holoco)		0%	0%	0%		
Beans (jugo)	6	23%	4%	42%	1	124
Cowpeas	25	32%	20%	44%	1	73
Sesame	13	72%	48%	96%		87
Manioc	45	19%	14%	25%	10	406
Sorghum	23	32%	20%	44%	5	106
Corn	16	12%	6%	19%	4	114
Other beans	1	33%	0%	95%		200
Others	1	13%	0%	39%		
<b>TOTAL</b>	<b>209</b>	<b>32%</b>			<b>30 (14%)</b>	

\* Only counts those who know how much they sold, as 24/30 of those who "didn't know how much they sold" were from the

\*\* Denominator includes those who harvested, but didn't know how much they harvested.

### Livestock owned

	Number with or who had animal	% of total with animal	95% LCL*	95% UCL*	Mean no. of animals per farmer owning	95% LCL*	95% UCL*	Median number of animals per farmer
Goats	52	17%	6%	29%	8.65	5.7	11.6	6
Chickens	146	49%	40%	58%	8.35	6.9	9.8	5
Ducks	8	3%	0%	15%	6.75	0	13.5	4.5
Pigs	5	2%	0%	14%	4.8	N/A	N/A	6
Other animals	1	0%	0%	13%	6	N/A	N/A	6

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# Evaluation schedule

January-February 2009

Mon	Tue	Wed	Thur	Fri	Sat	Sun
						<b>January</b> 25 Consultant arrival in Pemba (late evening)
<b>January</b> 26 Travel to MdP	27 Finalize questionnaire, train supervisors	28 Training	29 Training	30 Field test [1/2 day holiday]	31 Data collection	<b>February</b> 1 Data collection
2 Data collection	3 Data collection [Holiday]	4 Data collection & Data entry	5 Data collection & Data entry	6 Data collection & Data entry	7 Data collection & Data entry	8 Data collection & Data entry
9 Data collection & Data entry, cleaning	10 Return to Pemba	11 Data cleaning	12 Data cleaning	13 Analysis	14 Analysis	15 Analysis
16 Analysis	17 PowerPoint Presentation to team	18 Consultant departure to Bangkok	19	20	21	22

# PARTICIPANTS

## *Supervisors*

- Fabiola Vuelvas (MYAP Health Program Manager)
- Justice Duri (MYAP M&E officer)
- Jose Nsuca (MYAP Community Development Program Manager)

## *Nurses (anthropometry)*

- Carlitos Benjamin
- Chaibo Ndala
- Guido Celestus Nampripi

## *Interviewers*

- Ana Albino Moises
- Pedro Zacharias Mamba
- Dionisio Antunes Neves
- Luqina Bartolomew
- Filipe Alberto Luis
- Matias Raimundo Ndombi
- Augusta Anselmo
- Hortencio Pedro Ishmael
- Raimundo Atibo
- Zacarias Armando Cosme
- Jose Antonio Zibute
- Paulo Bernabe Minga

## *Technical assistance in agriculture and data entry*

- Simon Chinsenga (coordinator)
- Jorge Joao
- Rodriques Vilanculo
- Estevio Joao Araujo
- Armaldo Zeca Camacho

## *Others*

- Jeff Arensen, Cabo Delgado Program Director
- Nicholas Dexter, MYAP Agriculture Program Manager
- Loice de Felicidade (Logistician Mocimboa)
- Antonio Alberto (driver)
- Jorge Molumo (driver)
- Driver for the hired vehicle

## *Consultant*

- Donald Whitson

***FH Headquarters***

- Carolyn Wetzel, Child Survival and Health Programs Coordinator
- Tom Davis, MD, Director of Health Programs

# LIST OF COMMUNITIES INCLUDED IN THE SURVEY

## Mocimba da Praia (12)

- Malinde , Panjele, Chitolo, Mumu, Nango, Chuculua, Ncomangano, Mitope, Ulo, Naquindunga, Maculo, Nantelemule

## Nangade (9)

- Chitunda, Mualela, Nhangá, Itanda + Junho, Ntoli, Ngangolo, Chicuaia, Litingina Quilimane, Namiune

## Palma (9)

- Nkumbi, Quionga, Namoto, Mondlane, Quirinde, Olumbi, Quissenge, Lalene, Manguna

# SURVEY QUESTIONNAIRES

**Perguntar da mãe se ela tem uma criança menos de 24 meses de idade que mora com ela. Se for sim, proceder com a entrevista. Se for “não, agradecer e parar a entrevista.**

Identificação		
Número do conglomerado		
Número da entrevista		
Nome da comunidade		
Nome da mãe		
Nome do supervisor		
Digitador		Data digitação: ___/___/___ dia/mês/ano

	1	2	3	Visita final		
Data da entrevista	___/___/___ dia/mês/ano	___/___/___ dia/mês/ano	___/___/___ dia/mês/ano	<i>Para supervisor</i>		
Nome do inqueridor				Dia		
				Mês		
				Ano		
Código do resultado*				Código		
*Códigos dos resultados: 1. Completo 2. Respondente ausente da casa 3. Prorrogado 4. Recusado 5. Outro _____ Especificar:						

-----  
**PREENCHER, TIRAR E ENVIAR COM A MÃE DA CRIANÇA DE 0-23 MESES PARA PESAGEM**

Identificação para Pesagem	
Número do conglomerado	
Número da entrevista	
Nome da comunidade	
Nome da mãe	
Nome da criança	
Idade da criança	Meses / Data nascimento:   ___   ___   ___   dd / mm / aa
Nome do inqueridor	

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**DECLARAÇÃO DE CONSENTIMENTO**

Aló. O meu nome é \_\_\_\_\_, e estou a trabalhar com a Fundação Contra Fome. Nós estamos administrando uma pesquisa e apreciáramos sua participação. Eu gostaria de lhe perguntar acerca da sua saúde e a saúde de sua criança mais nova abaixo de dois anos de idade. Estas informações ajudarão (Fundação Contra Fome) a planejar serviços de saúde e avaliar se está indo ao encontro de suas metas para melhorar a saúde de crianças. A pesquisa normalmente leva \_\_\_\_\_ minutos para completar. Qualquer informações que você providenciar serão mantidas estritamente confidencial e não serão mostradas a outras pessoas.

A participação nesta pesquisa é voluntária e poderá escolher não responder qualquer pergunta individual ou todas as perguntas. Porém, nós esperamos que você participará nesta pesquisa porque suas opiniões são importantes.

Neste momento, você quer me perguntar qualquer coisa acerca da pesquisa? **[Responda qualquer pergunta que a mãe tiver.]**

**Você concorda ser entrevistado?**

RESPONDENTE CONCORDA SER ENTREVISTADO. . . . . 1 → ENTREVISTE

RESPONDENTE NÃO CONCORDA SER ENTREVISTADO ...2 → TERMINE A ENTREVISTA

Assinatura do entrevistador: \_\_\_\_\_ Data: \_\_\_\_\_

**Todas perguntas devem ser feitas a Mães ou provedores de cuidado chefe de crianças de menos de 0-23 meses de idade (AINDA NÃO COMPLETOU 24 MESES)**

No.	Perguntas e filtros	Categorias de Codificação	Saltar
<b>Introdução</b>			
1		CRIANÇA MAIS NOVA	
a	Qual é o nome, sexo e data de nascimento da sua criança mais nova que você deu a luz e que ainda está viva?	NOME _____	
b	Será que (NOME) é masculino ou feminino?	SEXO ..... Masc / Fem	
c	Qual é a data de nascimento de (NOME)? [confirmar com cartão de vacina]	DATA DE NASCIMENTO .....  __   __   __  DIA MÊS ANO "99/99/99" = "não sabe"	
d	Quantos meses de idade tem (NOME)?	IDADE DA CRIANÇA .....  __   __  (MESES COMPLETOS)	
<b>Amamentação e alimentação</b>			
2	Você alguma vez amamentou (NOME)?	SIM.....1 NÃO.....2 NÃO SABE.....9	→ 6 → 6

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No.	Perguntas e filtros	Categorias de Codificação	Saltar
3	Quanto tempo após o parto você pôs (NOME) à mamar?	IMEDIATAMENTE/DENTRO DA PRIMEIRA HORA APÓS O PARTO.....1 DEPOIS DA PRIMEIRA HORA APÓS O PARTO.....2 NÃO SE LEMBRA/NÃO SABE.....9	
4	Estás actualmente a amamentar a (NOME)?	SIM.....1 NÃO.....2	→ 6
5	Por quanto tempo você amamentou a (NOME)?	MESES..... _ _ _  [SE MENOS DE UM MÊS, REGISTE "00" MESES]	
6	Agora eu gostaria de lhe perguntar acerca dos tipos de líquidos que (NOME) bebeu ontem durante o dia e à noite. Será que (NOME) bebeu qualquer dos seguintes líquidos ontem durante o dia e à noite?  [LEIA A LISTA DE LÍQUIDOS (A ATÉ H, COMEÇANDO COM "LEITE MATERNO"). CIRCULE A LETRA SE A CRIANÇA BEBEU O LÍQUIDO EM QUESTÃO -- PERMITE-SE MULTIPLA RESPOSTA.	SIM NÃO NÃO SABE	
	A. Leite materno?	.....1 2 9	
	B. Água?	.....1 2 9	
	C. Fórmula infantil como Lactogêne?	.....1 2 9	
	D. Qualquer outro leite além de leite materno como leite em pó, leite enlatada ou leite de vaca ou cabra?	.....1 2 9	
	E. Sumo de fruta?	.....1 2 9	
	F. Chá ou café?	.....1 2 9	
	G. Medicamentos tradicionais que eram líquido ou semi-líquido?	.....1 2 9	
	H. Maheu?	.....1 2 9	
	I. Sais de reidratação ou líquidos para tratar a diarreia?	.....1 2 9	
	J. Qualquer outro líquido?	.....1 2 9	
		Se for "Sim" Especificar _____	
7	Eu gostaria de lhe perguntar acerca da comida que (NOME) comeu ontem durante o dia e à noite, quer separadamente ou associada com outras comidas. Será que (NOME) comeu quaisquer das comidas seguintes ontem durante o dia ou à noite?		
	<b>GROUP 1: LEITE, QUEIJO E IOGURTE</b>	<b>SIM NÃO NÃO SABE</b>	
	A. Queijo ou outros productos feitos de leite?	.....1 2 9	
	<b>GROUP 2: GRÃOS, RAÍZES E TUBÉRCULOS</b>	<b>SIM NÃO NÃO SABE</b>	
	B. Comida frabricada para crianças como Cerelac?	.....1 2 9	
	C. Alguma sopa de xima ou aveia?	.....1 2 9	

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No.	Perguntas e filtros	Categorias de Codificação			Saltar
	D. Qualquer pão, arroz, macarrões, bolachas, biscoitos, ou qualquer outra comida feita de grãos.	.....1	2	9	
	E. Qualquer batata branca, inhames brancos, mandioca, ou qualquer outra comida feita de raízes?	.....1	2	9	
	<b>GROUP 3: FRUTAS E VERDURAS RICAS EM VITAMINA A</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	F. Qualquer abóbora, cenouras, batatas doce que são amarelas ou laranja dentro?	.....1	2	9	
	G. Qualquer verdura ou legume verde escuro? (NÃO CONTAR COUVE)	.....1	2	9	
	H. Manga madura ou papayas	.....1	2	9	
	<b>GROUP 4: OUTRAS FRUTAS E LEGUMES</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	I. Qualquer outra fruta ou vegetais?	.....1	2	9	
	<b>GROUP 5: OVOS</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	J. Ovos?	.....1	2	9	
	<b>GROUP 6: CARNE, PEIXE, FRANGO, ETC.</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	K. Qualquer fígado, rim, coração, tripas, utumbo ou outro órgão de carne?	.....1	2	9	
	L. Qualquer carne de boi, carne de porco, cordeiro, cabra, coelho, ou carne de caça?	.....1	2	9	
	M. Qualquer galinha, pato, ou outras aves?	.....1	2	9	
	N. Qualquer peixe fresco ou secou, camarão ou mariscos?	.....1	2	9	
	O. Insectos, caracois, ou outros animais com proteína?	.....1	2	9	
	<b>GROUP 7: LEGUMES E NOZES</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	P. Qualquer comida feita de feijões, ervilhas, ou lentilhas?	.....1	2	9	
	Q. Qualquer nozes como castanha de cajú, ou almeidoim?	.....1	2	9	
	<b>GROUP 8: ÓLEOS E GORDURAS, OUTROS</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	R. Você acrescentou óleo ou gordura no prato ou na comida de (NOME)?	.....1	2	9	
	S.				
	<b>GROUP 9: OUTRAS COMIDAS</b>	<b>SIM</b>	<b>NÃO</b>	<b>NÃO SABE</b>	
	T. Qualquer comida doce como chocolate, doces e bolos?	.....1	2	9	
	U. Qualquer outra comida sólida ou semi-sólida?	.....1	2	9	
8	Quantas vezes a (NOME) comeu comidas sólidas, semi-sólidas, ou macias diferente de líquidos ontem durante o dia e à noite? (Que tipo de comida comeu ele/ela?)  CONTAR APENAS REFEIÇÕES NÃO CONTAR PEQUENAS LANCHES, LÍQUIDOS, SOPAS MAGRAS OU MAHEU	NÚMERO DE VEZES <input type="text"/>			
		NÃO SABE .....9			

No.	Perguntas e filtros	Categorias de Codificação			Saltar
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<b>Suplimentação com Vitamina A e Desparasitação</b>			
9	A (NOME) recebeu uma dose de vitamina A como esta durante os últimos 6 meses?  [MOSTRAR CÁPUSLAS OU XAROPE]	SIM.....1 NÃO.....2 NÃO SABE.....9	
10	A (NOME) recebeu uma dose de mebendazol ou albendazol como esta nos últimos 6 meses para desparasitação?  [MOSTRA COMPRIMIDO OU CÁPSULA]	SIM.....1 NÃO.....2 NÃO SABE.....9	
<b>Control de Crescimento</b>			
11	Você alguma vez recebeu uma visita ou assistiu uma palestra de um Promotor de Saúde ou Mãe Líder ou Mãe treinada para aprender sobre cuidados de saúde?	SIM.....1 NÃO.....2 NÃO SABE.....9	→ 13 → 13
12	Quantas vezes no ultimo mês você recebeu uma visita ou assistiu uma palestra de um Promotor de Saúde ou Mãe Líder ou Mãe treinada para aprender sobre cuidados de saúde?	DUAS OU MAIS VEZES.....1 UMA VEZ.....2	
13	A (NOME) foi medido com uma fita ou tira como esta nos últimos 4 meses?  MOSTRAR FITA MUAC	SIM.....1 NÃO.....2 NÃO SABE.....9	
14	O (NOME) tem um cartão de monitorar crescimento? SE SIM: Posso vê-lo por favor?	SIM, VISTO.....1 NÃO DISPONÍVEL/PERDIDO.....2 NUNCA TEVE CARTÃO.....3 NÃO SABE.....9	→ 19 → 19 → 19
15	COPIAR DATA DE ADMINISTRAÇÃO DE VITAMINA A E DESPARASITAÇÃO DO CARTÃO, E A DATA DA ÚLTIMA PESAGEM	DIA      MÊS      ANO VIT A    . _ _ _  /  _ _ _  /  _ _ _	
16	COPIAR A DATA DA ÚLTIMA PESAGEM	Desparat . _ _ _  /  _ _ _  /  _ _ _	
17	[99 = NÃO ANOTADO]	Pesagem . _ _ _  /  _ _ _  /  _ _ _	
18	OLHA PARA O CARTÃO DE MONITORAMENTO DE CRESCIMENTO DE (NOME) E VEJA SE (NOME) FOI PESADA NOS ULTIMOS QUATRO MESES	SIM.....1 NÃO.....2	

No.	Perguntas e filtros	Categorias de Codificação	Saltar
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No.	Perguntas e filtros	Categorias de Codificação	Saltar
<b>Control da Diarréia</b>			
19	A (NOME) teve diarréia nas últimas 2 semanas?	SIM.....1 NÃO.....2 NÃO SABE.....9	→ 23 → 23
20	Quando (NOME) teve diarreia, o que deu a (NOME) para prevenir a desidratação?  <b>RESPOSTAS MÚLTIPLAS</b>  <b>NÃO LER AS RESPOSTAS</b>  <b>MAIS ALGUMA COISA?</b>	SIM NÃO N/SABE A. SOLUÇÃO DE REIDRATAÇÃO ORAL .....1 2 9 DE PACOTÉ? B. SOLUÇÃO DE REIDRATAÇÃO ORAL FEITO EM CASA? .....1 2 9 C. LÍQUIDOS CASEIROS RECOMENDADOS (ÁGUA SUMO, OUTROS) .....1 2 9 D. OUTRO ESPECIFICAR: <hr/> E. NADA.....1	
21	Quando (NOME) teve diarreia, você amamentou a ela/ele menos que o habitual, a mesma quantidade, ou mais que o habitual?	A. MENOS.....1 B. IGUAL.....2 C. MAIS.....3 D. CRIANÇA NÃO MAMOU.....4 E. NÃO SABE/NENHUMA.....9	
22	Quando (NOME) teve diarreia, ele/ela foi oferecida menos que o habitual para comer, cerca da mesma quantidade, ou mais que o habitual para comer?	A. MENOS.....1 B. IGUAL.....2 C. MAIS.....3 D. CRIANÇA SÓ MAMA.....4 E. NÃO SABE/NENHUMA.....9	

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No.	Perguntas e filtros	Categorias de Codificação	Saltar
<b>Doenças da infância e malária</b>			
23	<p>Às vezes as crianças adoecem e precisam receber cuidado ou tratamento para doenças. Quais são os sinais de doença que indicariam que sua criança precisa de tratamento? (Qualquer outro sinal?)</p> <p><b>PERMITE-SE MULTIPLAS RESPOSTAS</b></p> <p><b>ANOTAR TODAS AS RESPOSTAS</b></p> <p><b>MAIS ALGUMA COISA?.</b></p>	<p>PARECE INDISPOSTA OU NÃO BRINCA NORMALMENTE.....1</p> <p>NÃO COME OU NÃO BEBE.....2</p> <p>LETÁRGICO OU DIFÍCIL DE DESPERTAR.....3</p> <p>FEBRE ALTA .....4</p> <p>RESPIRAÇÃO RÁPIDA OU DIFÍCIL.....5</p> <p>VOMITA TUDO .....6</p> <p>CONVULSÕES. ....7</p> <p>OUTRO _____ 8 (ESPECIFICAR)</p> <p>OUTRO _____ 9 (ESPECIFICAR)</p> <p>OUTRO .....10 (ESPECIFICAR)</p> <p>NÃO SABE... .....99</p>	
24	A (NOME) teve febre nas últimas 2 semanas?	<p>SIM.....1</p> <p>NÃO.....2</p> <p>NÃO SABE.....9</p>	<p>→ 29</p> <p>→ 29</p>
25	Quando (NOME) teve febre, você levou para tratamento num hospital, centro de saúde ou posto de saúde?	<p>SIM.....1</p> <p>NÃO.....2</p> <p>NÃO SABE.....9</p>	<p>→ 29</p> <p>→ 29</p>
26	Quanto tempo depois o início da febre você levou (NOME) para o hospital, centro de saúde ou posto de saúde?	<p>UM DIA OU MENOS.....1</p> <p>DOIS DIAS.....2</p> <p>TRÊS DIAS OU MAIS.....3</p> <p>NÃO SABE.....9</p>	
27	A (NOME) tomou algum medicamento do hospital, centro de saúde ou posto de saúde para febre ou malária	<p>SIM.....1</p> <p>NÃO.....2</p> <p>NÃO SABE.....9</p>	<p>→ 29</p> <p>→ 29</p>
28	<p>Qual foi o medicamento que (NOME) tomou para febre ou malária do hospital, centro de saúde ou posto de saúde?</p> <p><b>[RESPOSTAS MÚLTIPLAS, NÃO LER RESPOSTAS]</b></p> <p><b>(MAIS ALGUMA COISA?)</b></p>	<p>ARTESUNATO COM FANSIDAR.....1</p> <p>FANSIDAR.....2</p> <p>CLOROQUINA.....3</p> <p>PARACETAMOL.....4</p> <p>OUTRO (ESPECIFICAR)_____5</p> <p>NÃO SABE.....9</p>	

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No.	Perguntas e filtros	Categorias de Codificação	Saltar
<b>VIH e SIDA</b>			
29	Voçê já alguma vez ouviu falar duma doença chamada SIDA?	SIM..... 1 NÃO.....2 NÃO SABE.....9	→ 32 → 32
30	O que a pessoa pode fazer para evitar contrair o SIDA ou o vírus que causa o SIDA? (Que mais?)  <b>[RESPOSTAS MÚLTIPLAS, NÃO LER RESPOSTAS]</b>  <b>(MAIS ALGUMA COISA?)</b>	NADA.....1 ABSTER DE SEXO.....2 USAR PRESERVATIVOS.....3 LIMITAR SEXO A UM PARCEIRO SÓ / FICAR FIEL A UM PARCEIRO ..... 4 LIMITAR O NÚMERO DE PARCEIROS SEXUAIS.....5 EVITAR SEXO COM PROSTITUTAS.....6 EVITAR SEXO COM UMA PESSOA QUE TEM MUITOS PARCEIROS.....7 EVITAR RELAÇÕES SEXUAIS COM PESSOAS DO MESMO SEXO.....8 EVITE SEXO COM PESSOAS QUE INJETAM DROGA INTRAVENOSA.....9 EVITAR TRANSFUSÕES DE SANGUE.....10 EVITAR INJECCÕES.....11 EVITAR BEIJOS.....12 EVITAR MORDIDAS DE MOSQUITO.....13 BUSCAR PROTECÇÃO DE CURANDEIRO TRADICIONAL.....14 EVITAR COMPARTILHAR LÂMINAS E/OU NAVALHAS.....15 OUTRO (ESPECIFICAR) _____ OUTRO (ESPECIFICAR) _____ NÃO SABE.....99	
31	Durante o tempo que você estava grávida de (NOME), você fez teste do HIV ou SIDA?	SIM..... 1 NÃO.....2 NÃO SABE.....9	
32	Durante o tempo que você estava grávida de (NOME) você comeu mais que o habitual, a quantidade normal, ou menos que o habitual?	MENOS.....1 IGUAL.....2 MAIS.....3 NÃO SABE/NÃO LEMBRA.....9	
<b>Água e Saneamento</b>			
33	Agora eu gostaria de lhe fazer algumas perguntas acerca da sua casa. Qual é a principal fonte de água de beber, fazer comida e lavar as mãos para membros de sua casa?  <b>RESPOSTA ÚNICA</b>	CANALIZADA ATÉ A RESIDENCIA / QUINTAL / TERRENO..... 1 TORNEIRA PUBLICA ..... 2 POÇO ABERTO NA RESIDÊNCIA / QUINTAL / TERRENO..... 3 POÇO PÚBLICO ABERTO ..... 4 POÇO PROTEGIDO NA RESIDÊNCIA / QUINTAL / TERRENO ..... 5 POÇO PUBLICO PROTEGIDO ..... 6 FONTENARIA / RIO / AFLUENTE NÃO PROT. .... 7 FONTENARIA PROTEGIDA ..... 8 ÁGUA DA CHUVA..... 9 CAMIÃO CISTERNA ..... 10 ÁGUA ENGARRAFADA..... 11 ÁGUA DE BARRAGEM / LAGOA / CANAL DE IRRIGAÇÃO ..... 12 OUTRO _____ 96 (ESPECIFICAR)	

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No.	Perguntas e filtros	Categorias de Codificação	Saltar
34	Você obtém sua água de beber desta fonte ao longo do ano?	SIM ..... 1 NÃO..... 2	
35	A fonte principal de água fica quantos metros da sua casa?  ANOTAR DE PREFERÊNCIA METROS	SÓ PREENCHER OU METROS OU MINUTOS  METROS . . . . .  __  __  __   MINUTOS..... __  __  __   NÃO SABE . . . . . 998	
36	Na semana passada, você fez qualquer coisa para a água que (NOME) bebe para torná-la segura para beber? Se for, o quê?  <b>[RESPOSTAS MÚLTIPLAS, NÃO LER RESPOSTAS]</b>  <b>(MAIS ALGUMA COISA?)</b>	NÃO FEZ NADA / NÃO TRATOU ..... 1 FERVEU A ÁGUA ..... 2 ADICIONOU JAVEL / CLORO NA ÁGUA ..... 3 USOU UM PRODUCTO COMERCIAL EX: CERTEZA..... 4 FILTROU ATRAVÉS DE UM PANO LIMPO ..... 5 USOU UM FILTRO DE ÁGUA (cerâmica, aréia, composto) ..... 6 USOU DESINFECÇÃO SOLAR (deixou no sol) ..... 7 USOU SEDIMENTAÇÃO (deixou assim para o sedimento cair ao fundo) OUTRO (ESPECIFICAR)..... 96	
37	Como você guarda a sua água em casa?	EM RECIPIENTES COMO GARRAFAS, BALDES, GALÕES..... 1 EM TANQUE NO TETO OU CISTERNA ..... 2 ÁGUA NÃO GUARDADA ..... 3 OUTRO (ESPECIFICAR) ..... 96	→ 40 → 40 → 40
38	SE FOR RECIPIENTES, Posso ver os recipientes?	SIM ..... 1 NÃO..... 2	→40
39	OS RECIPIENTES TÊM TAMPAS? (OBSERVAR E VERIFICAR)	TODOS..... 1 ALGUNS..... 2 NENHUMA ..... 3	
40	Posso ver o lugar onde você normalmente lava as suas mãos?	SE SEM PERMISSÃO ..... 99	→44
41	PEDIR PARA VER E OBSERVAR	SIM NÃO TEM ÁGUA E/OU TORNEIRA? 1 2	
42		TEM SABÃO, CINZAS OU OUTRO AGENTE PARA LAVAR 1 2	
43		TEM BACIA? 1 2	
44	Quando você lava suas mãos com sabão ou cinza?  <b>(Quando mais?)</b>  <b>[PERMITE-SE RESPOSTAS MÚLTIPLAS]</b>  <b>NÃO LER AS RESPOSTAS</b>	NUNCA..... 1 ANTES DE PREPARAR A COMIDA..... 2 ANTES DE DAR DE COMER ÀS CRIANÇAS ..... 3 DEPOIS DE DEFECAR..... 4 DEPOIS DE CUIDAR DE UMA CRIANÇA QUE DEFECOU..... 5 OUTRO (ESPECIFICAR)..... 6 NÃO SABE / NENHUMA RESPOSTA ..... 96	

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No.	Perguntas e filtros	Categorias de Codificação	Saltar
45	A última vez que (NOME) fez necessidades maiores, onde foi que ele/ela defecou?	USOU CASA DE BANHO OU LATRINA OU COVA ESPECIALMENTE CAVADA NO CHÃO ..... 1 USOU PINICO (DENTRO DE CASA) ..... 2 USOU FRALDAS LAVAVEIS ..... 3 USOU FRALDAS DESCARTÁVEIS ..... 4 FEZ NO CHÃO DENTRO DE CASA ..... 5 FORA DA CASA NO CHÃO ..... 6 FEZ NA ROUPA DA CRIANÇA ..... 7 OUTRO (ESPECIFICAR) ..... 96	
<b>Malária e uso de Redes Mosquiteiras Tratadas</b>			
46	A sua casa tem redes mosquiteiras para usar quando dormir?	SIM ..... 1 NÃO ..... 2	→ 49
47	Quem dormiu abaixo da rede mosquiteira ontem à noite?  SE MENCIONAR QUALQUER PESSOA FORA DA CRIANÇA	NINGUEM ..... 0 CRAINÇA (NOME) ..... 1 OUTRO ..... 2	→ 49  → 49
48	Qual tipo de rede misquiteira é que (NOME) usou ontem à noite?  MOSTRAR FOTOS DE REDES TÍPISAS	<u>REDES COM TRATAMENTO PERMANENTE</u> ..... 1 OUTRA REDE ..... 2 NÃO SABE A MARCA OU TIPO ..... 9	
<b>Antropometria</b>			
49	Podemos pesar e medir (NOME)?  SE RESPONDER "SIM" ENVIAR PESAR COM PAPEL DA PRIMEIRA FOLHA PREENCHIDA.	SIM ..... 1 NÃO ..... 2	→ EN-CAMI-NHAR  → fim

**Agradacer a mãe pela entrevista**

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**Perguntar se o chefe de família está presente. Se for sim, proceder com a entrevista. Se for “não, agradecer e parar a entrevista.**

Identificação	
Número do aglomerado	
Número da entrevista	
Nome da comunidade	
Nome do chefe da família	
Nome do supervisor	
Digitador	Data: ___/___/___ dia/mês/ano

	1	2	3	Visita final
Data da entrevista	___/___/___ dia/mês/ano	___/___/___ dia/mês/ano	___/___/___ dia/mês/ano	<i>Para supervisor</i>
Nome do inqueridor				Dia
				Mês
				Ano
Código do resultado*				Código
*Códigos dos resultados: 6. Completo 7. Respondente ausente da casa 8. Prorrogado 9. Recusado 10. Outro _____ Especificar: _____				

**DECLARAÇÃO DE CONSENTIMENTO**

Aló. O meu nome é \_\_\_\_\_, e estou a trabalhar com a Fundação Contra Fome. Nós estamos administrando uma pesquisa e apreciáramos sua participação. Eu gostaria de lhe perguntar acerca de agricultura e nutrição da sua família. Estas informações ajudarão (Fundação Contra Fome) a planejar serviços de ajudar a melhorar a agricultura e nutrição das famílias do distrito. A pesquisa normalmente leva \_\_\_\_\_ minutos para completar. Qualquer informações que você providenciar serão mantidas estritamente confidencial e não serão mostradas a outras pessoas.

A participação nesta pesquisa é voluntária e poderá escolher não responder qualquer pergunta individual ou todas as perguntas. Porém, nós esperamos que você participará nesta pesquisa porque suas opiniões são importantes.

Neste momento, você quer me perguntar qualquer coisa acerca da pesquisa? **[Responda qualquer pergunta que a mãe tiver.]**

**Você concorda ser entrevistado?**

RESPONDENTE CONCORDA SER ENTREVISTADO. . . . . 1 → **ENTREVISTE**

RESPONDENTE NÃO CONCORDA SER ENTREVISTADO ...2 → **TERMINE A ENTREVISTA**

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 Assinatura do entrevistador: \_\_\_\_\_ Data: \_\_\_\_\_

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**GOSTARIAMOS PERGUNTAR ALGUMAS COISAS ACERCA DAS PESSOAS QUE MORAM AQUI COM VOCÊ.  
 QUEM MORA NESTA CASA COM VOCÊ?**

A. Identificação				
No.	Nome	Sexo	Relação com o chefe	Idade (em anos)
	APENAS O PRIMEIRO NOME. NAO ANOTAR APELIDOS NÃO PRECISA DO NOME COMPLETO	1 Masc 2 Fem	1 Próprio 2 Cónjuge 3 Filho(a) 4 Irmão(a) 5 Pai/Mãe 6 Outro familiar 7 Sem relação	Menor de 1 ano = "00" Não sabe = "99"
MEM	NOME	SEXO	RELAÇÃO	IDADE
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				

B. Actividade Económica Prinicpal	
<p>Agora eu quero fazer algumas perguntas sobre o seu trabalho, produção e vendas no último ano.</p> <p>A. Qual é a actividade ou trabalho principal que é a fonte principal de renda principal para sua família?</p> <p>B. Há outra actividade que você ou a sua família faz que é uma fonte de renda? Se for, qual é?</p> <p>C. Há outra actividade que você ou a sua família faz que é uma fonte de renda? Se for, qual é?</p> <p>CÓDIGOS:                      1 Agricultura                      2 Pesca                      3 Comércio (carvão, pequenas vendas, outros)                      4 Salário                      5 Artesenato                      6 Outro</p>	<p>CÓDIGO DE ACTIVIDADE ECONÔMICA</p> <p>A. PRINCIPAL..... ____ </p> <p>B. DOIS..... ____ </p> <p>C. TRÊS... .. ____ </p>

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Agora vamos falar na sua produção agrícola e venda de productos no último ano. Qual foi o tamanho da machamba que você plantou, quanto colheu, quanto vendeu e quanto recebeu pela venda?

LER AS VÁRIAS PLANTAS E AS RESPOSTAS. Se tiver "1" na coluna B01 que plantou, não deixar o resto em branco.  
 "99 = NÃO SABE OU NÃO TEM CERTEZA".

C. Produção e Venda Agrícola								
No último ano você plantou.....?	Código	Quantidade produzida				Quantidade vendida		
		Colocar "1" se o chefe da família diz que plantou nos últimos 12 meses	Área total da machamba (em hectáreas) "99 = NAO SABE"	Quantidade colhida "99"= NAO SABE	Unidade CÓ-DIGO	Quantidade vendida "99=NAO SABE"	Unidade CÓDIGO	Valor total de venda para o ano (em Mt) "99"= N/ SABE
	Código	C01	C02	C03	C04	C05	C06	C07
a. Mandioca	1							
b. Arroz	2							
c. Feijão nhemba	3a							
d. Feijão jugo	3b							
e. Feijão holoco	3c							
f. Feijão boer	3d							
g. Outro feijão (especificar):	3e							
h. Almemoim	4							
i. Gergelim	5							
j. Milho	6							
k. Caju	7		No. Arvores:					
l. Mapira	8							
m. Outro (especificar)	9							
n. Outro (especificar)	10							
o. Outro (especificar)	11							

**CÓDIGOS PARA UNIDADES COLUNAS C04 E C06**

1=Kg    3=Saco de 50kg    5=Latas de 5kg    7=Lata 20kg  
 2=Saco de 25kg    4=Saco de 100kg    6=Latas de 10kg

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D. Outros produtos no último ano				
No último ano, você colheu ou vendeu outros productos? Qual foi a quantidade aproximada vendida no último ano e o valor total da venda?  <b>LER AS POSSIBILIDADES</b>  SE TEVE PRODUTO EM COLUNA C01, NÃO DEVERIA DEIXAR O RESTO EM BRANCO. EM COLUNA C02 E C02, *99=SABE OU NÃO TEM CERTEZA"				
No último ano você colheu ou vendeu .....?	Código	Quantidade colhida ou produzida no último ano e unidade de medida  "0=NENHUMA, NÃO HOUE"	Vendida no ano "99=NÃO SABE OU NÃO TEM CERTEZA"	
			Quantidade e unidade de medida	Valor total o ano
		D01	D02	D03
a. Peixe (fresco ou seco)	1			
b. Mariscos (camarão, ameijoas, caracois, etc.)	2			
c. Carvão	3			
d. Outro (especificar)	4			
e. Outro (especificar)	5			
f. Outro (especificar)	6			

**E Agora eu quero perguntar sobre os animais que a sua família tem e que produziram no último ano. Quais dos seguintes animais a sua família criou e/ou vendeu nos últimos 12 meses?**

(INDICAR A QUANTIDADE DE CADA TIPO PRODUZIDO E VENDIDO. NÃO DEIXAR CAMPOS EM BRANCO.  
 0=NENHUM; 99=NÃO SABE, OU NÃO TEM CERTEZA)

Animal		Quantos você tem agora?		Quantos você vendeu no último ano?		Quanto você ganhou com a venda?
a. Cabras	E01a		E02a		E03a	
b. Frangos/galinhas	E01b		E02b		E03b	
c. Patos	E01c		E02c		E03c	
d. Bois ou vacas	E01d		E02d		E03d	
e. Ovelhas	E01e		E02e		E03e	
f. Outros (especificar)	E01f		E02f		E03f	

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F. Outras actividades econômicas (trabalho por salário, pequenos negócios, etc.)			
Você realizou outra actividade no último ano que contribuiu á renda da sua família? Favor descrever o tipo de actividade, quem realizou a actividade e o valor aproximado que você ganhou no ano passado.			
	Descrever a actividade	Quem realiza a actividade (chefe, esposa, filho, etc.)	Valor anual da actividade "99=NÃO SABE OU NÃO TEM CERTEZA"
	F01	F02	F03
a.			
b.			
c.			

G. Outras Perguntas			
01	No último ano você plantou cultivos de folhas verdes escuras como fabóbora, mandioca, ou moringa para consumo ou venda das folhas?  NAO CONTAR COUVE OU REPOLHO COMO FOLHA VERDE ESCURA	SIM.....1 NÃO.....2  NÃO SABE.....9	
02	No último ano, você adotou algumas das seguntes técnicas para melhorar a sua produção?		SIM NÃO NÃO SABE
02a	a. Adubo verde? [ <i>misturar capim cortada para melhorar o solo</i> ]	.....1	2 9
02b	b. Cobertura morta? [ <i>espalhar e cubrir superficie do solo com restos secos de cultivos anteriores</i> ]	.....1	2 9
02c	c. Consorciação ( <i>cultivar duas diferentes plantas no mesmo lugar juntas na mesma altura para melhorar o solo, como milho com feijão, arroz com feijão</i> )?	.....1	2 9
02d	d. Agro-florestais? [ <i>plantar árvores para proteger e melhorar a produção no mesmo terreno</i> ]	.....1	2 9
02e	e. Rotação de culturas? [ <i>alternar plantação entre cultivos que esgotam o solo com cultivos como feijão que melhoram o solo</i> ]	.....1	2 9
02f	f. Diminuição de queimadas?	.....1	2 9
02g	g. Adotou outras técnicas (especificar) _____		
04	No último ano, você recebeu assistência técnica de um extensionista ou outra entidade para melhorar a sua produção ou renda?	SIM..... 1 NÃO..... 2 NÃO SABE / NÃO RESPONDE ..... 9	→ H → H
05	Quem deu essa assistência?	FUNDAÇÃO CONTRA A FOME..... 1 OUTRA ONG..... 2 NOME DE ONG: _____ GOVERNO..... 3 OUTRA ENTIDADE..... 4 NOME DA ENTIDADE _____	

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<b>H. Aproveitamento de Alimentos</b>			
01	<p>Agora eu gostaria de perguntar sobre o abastecimento de alimentos da família ao longo do ano. Quando você responder a estas perguntas, pense no período dos últimos 12 meses.</p> <p>Durante os últimos 12 meses, houve um período de 3 meses em que não havia comida suficiente para a sua família?</p>	<p>SIM, HOUVE 3 MESES..... 1</p> <p>NÃO..... 2</p> <p>NÃO SABE / NÃO RESPONDE ..... 9</p>	<p>→ I</p> <p>→ I</p>
02	<p>Se houve um período de 3 meses em que não havia comida suficiente para a sua família durante os últimos 12 meses, quais foram os meses em que faltou comida para a sua família?</p> <p>NÃO LER OS MESES. ANOTAR TODOS OS MESES MENCIONADOS</p>	<p>A. JANEIRO (2009) ..... 1</p> <p>B. DEZEMBRO (2008) ..... 1</p> <p>C. NOVEMBRO (2008) ..... 1</p> <p>D. OUTUBRO (2008) ..... 1</p> <p>E. SETEMBRO (2008) ..... 1</p> <p>F. AGOSTO (2008) ..... 1</p> <p>G. JULHO (2008) ..... 1</p> <p>H. JUNHO (2008) ..... 1</p> <p>I. MAIO (2008) ..... 1</p> <p>J. ABRIL (2008) ..... 1</p> <p>K. MARÇO (2008) ..... 1</p> <p>L. FEVEREIRO (2008) ..... 1</p> <p>OUTRO (ESPECIFICAR)..... 6</p>	

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<b>I. Diversidade da Dieta</b>		
01	<p>Agora eu gostaria de perguntar sobre os tipos de alimentos que você ou qualquer membro da sua família comeu ontem durante o dia e noite.</p> <p>LER A LISTA DE COMIDAS E COLOCAR UM CÍRCULO EM .</p> <p>A. Qualquer tipo de xima, grãos, arroz, trigo, pão, macarrão, bolacha ou outros alimentos feitos de farinha, arroz, trigo, ou mapira?</p> <p>B. Batata rena, batata doce, mandioca, ou outros alimentos feitos de raízes ou tubérculos?</p> <p>C. Verduras de qualquer tipo?</p> <p>D. Frutas de qualquer tipo?</p> <p>E. Carne de animal como cabra ou boi, frango, carne de caça, ou outras carnes?</p> <p>F. Peixe, peixe seco, camarão ou outros mariscos?</p> <p>G. Ovos?</p> <p>H. Alimentos feitos de feijão, lentilhas, amendoim, castanha, ou outas nozes?</p> <p>I. Queijo, leite, iogurte ou outros alimentos feitos de leite?</p> <p>J. Alimentos feitos de óleo, azeite, manteiga ou gordura?</p> <p>K. Açúcar, cana de açúcar, mel, refresco ou soda?</p> <p>L. Outros alimentos ou condimentos como café, chá,</p>	<p>SIM      NÃO      NÃO                  .....      .....      SABE</p> <p>A.....1.....2.....9</p> <p>B.....1.....2.....9</p> <p>C.....1.....2.....9</p> <p>D.....1.....2.....9</p> <p>E.....1.....2.....9</p> <p>F.....1.....2.....9</p> <p>G.....1.....2.....9</p> <p>H.....1.....2.....9</p> <p>I.....1.....2.....9</p> <p>J.....1.....2.....9</p> <p>K.....1.....2.....9</p> <p>L.....1.....2.....9</p>