ZAMBIA

Feed the Future Zone of Influence Baseline Report

December 2013

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List of Acronyms

5DE	Five Domains of Empowerment
BMI	Body Mass Index
CDCS	Country Development Cooperation Strategy
CSO	Central Statistics Office
DHS	Demographic and Health Survey
FAO	Food and Agriculture Organization (United Nations)
FTFMS	Feed the Future Monitoring System
GDP	Gross Domestic Product
GPI	Gender Parity Index
HHS	Household Hunger Scale
IFPRI	International Food Policy Research Institute
LCMS	Living Conditions Monitoring Survey
LSMS	Living Standards Measurement Survey
MAD	Minimum Acceptable Diet
NFNC	National Food and Nutrition Commission
PBS	Population-Based Survey
PHS	Post-Harvest Survey
PPP	Purchasing Power Parity
RALS	Rural Agricultural and Livelihood Survey
SEA	Standard Enumeration Area
UNC	University of North Carolina
USAID	United States Agency for International Development
USG	United States Government
WEAI	Women's Empowerment in Agriculture Index
WHO	World Health Organization
WRA	Women of Reproductive Age
ZOI	Zone of Influence

Executive Summary

This document reports the findings of the Zambia Feed the Future population-based survey (PBS) and the Rural Agricultural and Livelihood Survey (RALS) that serve as the Zambia baseline for the U.S. Government's (USG) Feed the Future initiative led by the United States Agency for International Development (USAID). Feed the Future seeks to reduce poverty and undernutrition in 19 developing countries by focusing on accelerating growth of the agricultural sector, addressing root causes of undernutrition, and reducing gender inequality. Feed the Future FEEDBACK (FTF FEEDBACK) seeks to capture data in the geographic areas targeted by Feed the Future interventions, known as Feed the Future Zones of Influence (ZOI).

The PBS is a product of FTF FEEDBACK, which is responsible for supporting performance monitoring and impact evaluation of the Feed the Future initiative. FTF FEEDBACK is implemented by Westat in partnership with TANGO International, the International Food Policy Research Institute (IFPRI), and the Carolina Population Center, University of North Carolina (UNC) at Chapel Hill. In Zambia, the PBS fieldwork was conducted by the Zambia Central Statistics Office (CSO) with technical assistance from the National Food and Nutrition Commission, TANGO International, and its Kenya-based local partner, Ronto Research Company. The fieldwork took place between November 19 – December 6, 2012.

The Feed the Future ZOI baseline values for Zambia draw on data from both primary and secondary sources. Of the 11 Feed the Future indicators reported, nine were calculated using data gathered in the PBS: (1) *Women's Empowerment in Agriculture Index (WEAI)*; (2) *Prevalence of households with moderate or severe hunger (Household Hunger Scale [HHS])*; (3) *Women's Dietary Diversity Score*; (4) *Prevalence of underweight women of reproductive age*; (5) *Prevalence of exclusive breastfeeding among children 0-5 months of age*; (6) *Percentage of children 6-23 months of age receiving a minimum acceptable diet*; (7) *Prevalence of underweight children under 5 years of age*; (8) *Prevalence of wasting among children under 5 years of age*; and (9) *Prevalence of stunting among children under 5 years of age*.[1] The remaining two indicators, *prevalence of poverty* and *per capita expenditures* (income) of USG targeted beneficiaries, utilized data from the Rural Agricultural and Livelihood Survey (RALS) conducted by the Zambia CSO in collaboration with Indaba Agricultural Policy Research Institute and Michigan State University between April 2011 and May 2012. All Zambia Feed the Future ZOI baseline values have been entered into the Feed the Future Monitoring System (FTFMS) database for the global Feed the Future initiative. In this report, only differences across subgroups that are statistically significant at the 0.05 level are discussed in the narrative.

The ZOI in Zambia comprises five districts in the Eastern Province: Chipata, Katete, Lundazi, Nyimba, and Petauke. A total of 1,640 households in the ZOI were interviewed for the PBS data collection activity. These households were spread across 82 standard enumeration areas across the five districts. The sampled households were the same as those interviewed as part of the RALS.

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[1] The Women's Dietary Diversity Score and prevalence of underweight women are measured for women of reproductive age (15-49 years).

Overall the prevalence of poverty (based on the $1.25/person/day threshold) in the ZOI is almost 79.8 percent. It is 74.0 percent based on the Zambian national threshold for moderate poverty of $1.03/person/day. The poverty gap at $1.25/day is also very high at 46.5 percent.

The household demographic findings show that the average number of household members is 5.5, and that households with both male and female adults have significantly more people compared to those female adult only or male adult only households (5.9, 3.7, and 2.0, respectively).[2] Generally, there is one child under 5 years of age per household and two children between the ages of 5 and 17. Female adult only and male adult only households have fewer children of both age groups compared to households with both male and female adults. Regarding education, male and female adult households have higher levels of secondary education than male adult only or female adult only households.

Within the ZOI, nearly all households lack electricity. Regarding dwelling characteristics, the average number of rooms per household is slightly higher for male and female adult households (2.8) than female adult only households (2.3). The most common type of roof material is thatch (65.8 percent) followed by corrugated metal for about a third of households. Nearly all households use firewood as fuel (94.5 percent). A significant majority of households use an improved water source (74.6 percent), while just 0.6 percent report an improved sanitation facility, excluding various types of pit latrines reported by 69.5 percent of households (not disaggregated as improved/unimproved).

The nutrition data show that almost one-quarter of all interviewed households reported moderate to severe hunger based on the HHS, with the proportion significantly higher for households with adult females only (32.6 percent) than households with both male and female adults (21.5 percent). Within the ZOI, the prevalence of moderate and severe stunting among children under 5 is 45.5 percent; severe stunting among the same population is 18.7 percent. Among all children under 5, 13.3 percent are moderately or severely underweight; 2.4 percent are severely underweight. Among all children under 5, the prevalence of moderate and severe wasting is 2.7 percent; less than 1 percent are severely wasted. The prevalence of children 6-23 months with a minimum acceptable diet is 16.2 percent. The women's dietary diversity score is low, with women reporting an average consumption of only four out of nine total food groups. The overwhelming majority of women eat grain, roots, tubers, and vitamin A-rich vegetable and fruits. Approximately 75.4 percent of women are considered normal weight while 6.3 percent are underweight.

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[2] As explained in USAID. 2012b. "Feed the Future household (HH) level indicators are disaggregated by 'gendered household types' – that is: (1) HH with male and female adults (18+ years), (2) HH with at least one male adult and no female adult, (3) HH with at least one female adult and no male adults, and (4) HH with children and no adults. This categorization is somewhat different than the standard 'male-headed vs. female-headed households,' and the distinction and change is very meaningful. The concept of 'head of household' is highly loaded, presumes certain characteristics that may or may not be present in household gender dynamics, and often reflects the bias of the researcher or respondent. In addition, the head of household concept may perpetuate existing social inequalities and prioritization of household responsibilities that may be detrimental to women." NOTE: Some of the background data presented in this report were analyzed by household head rather than gendered HH type in the cited reports, and in these cases, the household headship disaggregation is used.

The WEAI measures the empowerment, agency, and inclusion of women in the agriculture sector using two subindices. Overall, the WEAI is 0.80 out of a maximum possible value of 1.0. The Five Domains of Empowerment (5DE) subindex measures women's empowerment in five key domains, and the Gender Parity Index (GPI) measures the average level of equality in the empowerment of men and women in the household. The Zambia PBS data show the average 5DE index value is 0.79. Overall, 40.3 percent of women have achieved empowerment (a score of 0.80 or greater). The GPI is 0.89. Within households with both a male and a female adult, 45.9 percent of women have achieved adequate gender parity (i.e., a 5DE score equal to or higher than the man in their household). The WEAI results presented in this report include data from the primary female decision-maker within each household (excluding the male adult only and child adult only households), including but not limited to women of reproductive age. See Sections 3.5 and Annex D for a detailed description of the WEAI.

Additional analysis requested by USAID/Zambia was conducted to determine the extent that WEAI indicators are associated with the levels of household hunger. The percentages of women who meet empowerment criteria for each of the 5DE indicators are comparable across levels of household hunger. The only significant difference found was that a higher percentage of women had adequate attainment in access to and decisions on credit in the households with moderate to severe hunger than the households with little to no hunger. Further analyses were conducted to determine the extent to which female empowerment and female decision-making ability are associated with other selected Feed the Future indicators. These analyses showed no significant differences for anthropometric child outcomes, underweight women, or dietary diversity.

This report will be used to measure changes in the Feed the Future indicators over time in the Zambia ZOI. It should be noted that the survey was not designed to allow for conclusions about attribution or causality.

1.　Background

1.1　Feed the Future and FTF FEEDBACK Overview

Feed the Future is a United States Government (USG) initiative that seeks to address global food insecurity by focusing on growth of the agricultural sector and improvement in nutritional status in 19 developing countries. The United States Agency for International Development (USAID) is responsible for leading the government-wide effort to implement the Feed the Future initiative. Feed the Future seeks to reduce poverty and undernutrition in 19 developing countries by focusing on accelerating growth of the agricultural sector, addressing root causes of undernutrition, and reducing gender inequality. The high-level target of the initiative is "to reduce by 20 percent the prevalence of poverty and the prevalence of stunted children under five years of age in the areas where we work."[3]

Feed the Future FEEDBACK (FTF FEEDBACK) is a USAID-funded project to support implementation of the performance monitoring and impact evaluation agenda for Feed the Future. FTF FEEDBACK is being implemented by Westat in partnership with TANGO International, the International Food Policy Research Institute (IFPRI), and the Carolina Population Center at the University of North Carolina (UNC) at Chapel Hill.

The main objectives of the FTF FEEDBACK project are to: (1) enable USAID Missions to meet performance-monitoring requirements of Feed the Future and maximize the use and benefits of the data collected; (2) provide high-quality empirical evidence to inform program design and investment decisions that will promote sustainable food security; (3) ensure timely availability of high-quality data for use in monitoring performance and evaluating impacts of the Feed the Future initiative; and (4) facilitate accountability and learning about what Feed the Future interventions work best, under what conditions, and at what cost.

To measure progress in addressing food security, USAID is collecting data through large household surveys in geographic areas targeted by Feed the Future interventions, known as Zones of Influence (ZOI). These population-based surveys (PBS) are utilized along with secondary data for the ZOI to determine the baseline indicator values. The baseline values will be used to measure changes in the Feed the Future indicators over time in the Zambia ZOI. All baseline indicator values have been entered into the Feed the Future Monitoring System (FTFMS) database for the global Feed the Future initiative. The FTFMS is part of an interagency effort to consolidate USG reporting on Feed the Future activities. The FTFMS helps the initiative remain transparent and accountable by capturing performance information against key indicators, as well as providing support in the field, providing foundation for public documents, and supporting learning for future programming and budget allocation. The midterm and final surveys will be conducted in 2015 and 2017, respectively.

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[3] USAID. 2013. Feed the Future. Progress Scorecard, June.

Where possible, existing sources of data are utilized if they meet criteria to provide valid baseline estimates of indicators. These criteria include: (1) the data source must have collected the data within the last two years prior to the start of Feed the Future activities; and (2) the data source must have a sample in the ZOI large enough to estimate selected key indicator values with sufficient precision and power to measure change over time.

1.2   Feed the Future Zone of Influence (ZOI) Profile

1.2.1   Feed the Future Intervention Areas Within the ZOI

The geographic focus of Feed the Future activities in Zambia was determined by three criteria – number of smallholders, number of people living in poverty, and number of underweight children – along with the potential for commercialization of high-priority staple food crops. This analysis identified two zones, one in the Eastern Province and one near Lusaka (Figure 1). Five districts in the Eastern Province were selected for interventions in oilseeds, legumes, and maize. Eastern Province has 240,000 poor smallholders, contains 14 percent of Zambia's underweight children under 5 years of age and 23 percent of the country's single female-headed households.[4] Of the four value chains prioritized for Feed the Future in Zambia – oilseeds and legumes, maize, and horticulture (vegetables) – three are already present in these districts and have the potential for growth.[5]

1.2.2   Rationale for ZOI Designation

Zambia is a landlocked country with a population of approximately 13 million people, one of the lowest population densities in Africa. Thirty-nine percent of Zambia's population is concentrated in urban areas along major transportation corridors. Zambia has a number of major rivers that are the main sources of water, as well as several lakes. The northern part of the country receives the highest rainfall with an annual average of 1,100 mm to 1,400 mm. The southern and eastern parts of the country have less rainfall, ranging from 600 mm to 1,100 mm annually.

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[4] As explained in USAID. 2012b. "Feed the Future household (HH) level indicators are disaggregated by 'gendered household types' – that is: (1) HH with male and female adults (18+ years), (2) HH with at least one male adult and no female adult, (3) HH with at least one female adult and no male adults, and (4) HH with children and no adults. This categorization is somewhat different than the standard 'male-headed vs. female-headed' households, and the distinction and change is very meaningful. The concept of 'head of household' is highly loaded, presumes certain characteristics that may or may not be present in household gender dynamics, and often reflects the bias of the researcher or respondent. In addition, the head of household concept may perpetuate existing social inequalities and prioritization of household responsibilities that may be detrimental to women." NOTE: Some of the background data presented in this report were analyzed by household head rather than gendered HH type in the cited reports, and in these cases, the household headship disaggregation is used.

[5] USAID. 2011b.

Figure 1.   Map of Feed the Future ZOI for Zambia
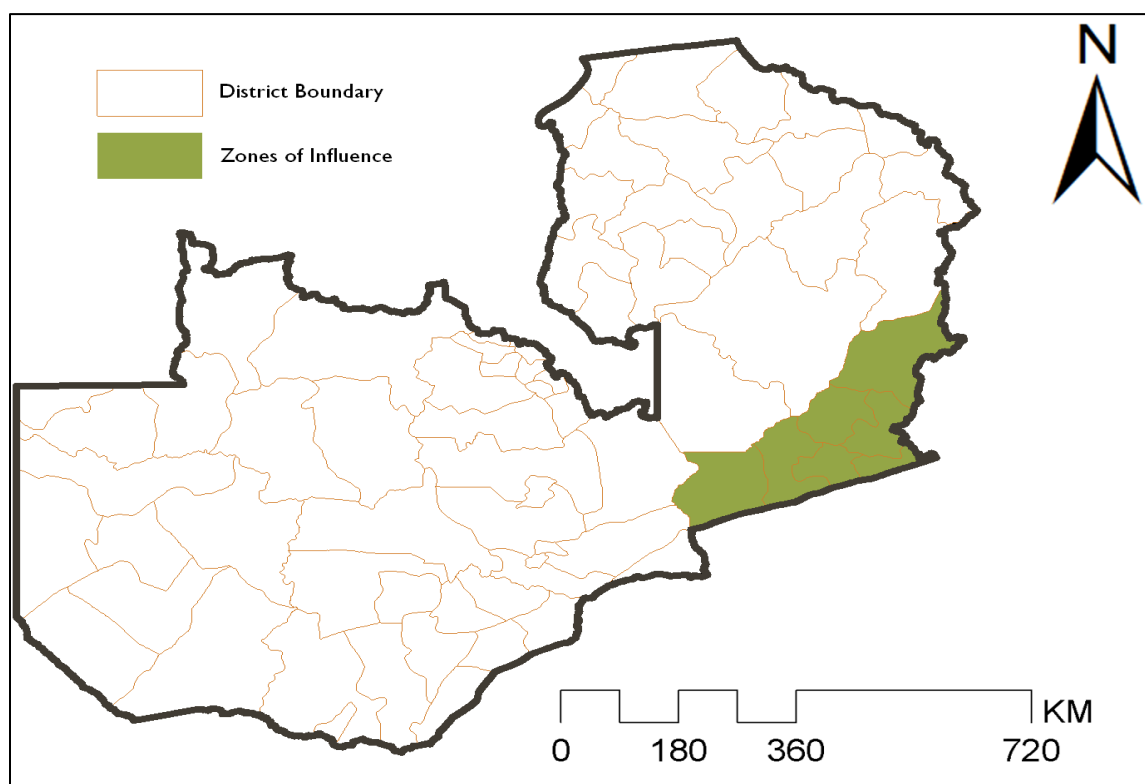
Source: Feed the Future. 2013.

Urban growth is partly the result of extractive industries such as copper; however, agriculture supports the livelihoods of more than 70 percent of the population. Rural poverty remains very high at 80 percent. Despite a positive gross domestic product (GDP) growth of 6 percent per year in the last decade, poverty and malnutrition are rampant, particularly in rural areas. Agricultural productivity of staple crops has been stagnant because of inadequate infrastructure, small agricultural parcels, low productivity and seasonal variability. With a Gini coefficient of 0.53, Zambia is in the top 20 countries globally in income inequality.[6] Zambia's performance against the Millennium Development Goals (MDG) is poor, with only one goal expected to be achieved by 2015: reverse the spread of HIV and AIDS, malaria, and other major diseases.[7]

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[6] USAID. 2011b.
[7] UNDP. 2013.

In consultation with a range of stakeholders, USAID Zambia identified three agricultural commodity value chains in two geographic regions as the focus of Feed the Future activities. USAID Zambia followed this process:

- Identify key geographic areas based on level of poverty and nutritional status (need);

- Analyze value chains to identify those with positive gender, environment, and policy characteristics (socioeconomic);

- Assess the level of commercialization of selected value chains, and the potential for scaling up trade based on transport and market linkages and cost-benefit analysis (market/income opportunity); and

- Identify agents (and technologies) that could generate significant results.[8]

Following this analysis, the Eastern Province was selected as a key focus area.

1.2.3   Strategic Objectives for Feed the Future in the ZOI

Zambia's Feed the Future strategy is derived from the overall Feed the Future framework,[9] the USAID Zambia Country Development Cooperation Strategy (CDCS),[10] and the Global Health Initiative objectives.[11] The goal of Feed the Future Zambia is to sustainably reduce poverty and undernutrition in targeted areas by 2015. The objective of the Zambia Feed the Future program is diversification of production, incomes, and nutrition – based on the following development hypothesis: *the diversification of staple crop production and consumption will increase food security and rural incomes, and contribute to a reduction of undernutrition in children under 5*.[12]

USAID Zambia has set preliminary targets to provide assistance to an estimated 263,000 Zambian women, children, and family members (mostly smallholders) through value chain and economic resilience interventions. Feed the Future in Zambia will target more than 173,000 children under 5 with services aimed at improving nutrition, preventing stunting, and reducing child mortality. Strategic policy and institutional reforms supported by Feed the Future are expected to enable a large percentage of the rural population to improve their incomes and their nutritional status. To meet its objectives, Feed the Future is making core investments in four key areas: (1) oilseeds, legumes, maize, and horticulture value chains; (2) enabling environment through analysis and advocacy to improve agriculture policy; (3) economic resilience by improving household-level food security and ensuring gender equity; and (4) improving nutrition through a combination of scaling up nutrition efforts and strengthened health and nutrition systems. The Zambia Feed the Future strategy strives to maximize positive impacts on female farmers and equitable benefits for men and women. To strengthen women's participation, Feed the Future has prioritized the value chains for

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[8] Ibid.
[9] USAID. 2010.
[10] USAID. 2011c.
[11] USG Zambia Interagency Team. 2012.
[12] USAID. 2011b.

legumes, oilseeds, vegetables, and maize. Capacity-building activities are designed to provide women greater access to economic opportunities related to these commodities. Feed the Future investments in farm technologies will select those that are appropriate to both women and men.

The Zambia Feed the Future program "seeks to build the economic resilience of households to improve food security, reduce vulnerability, and increase incomes."[13] The program will target poor and very poor smallholder households, female adult only households, and women within male and female adult households. Investments in the economic resilience of these households will be directed to helping households to more efficiently manage their resources; by encouraging more equitable intra-household allocation of those resources, especially food for women and children under 5; and by supporting increased labor productivity through improved, labor-saving technology. In emphasizing resilience, Feed the Future Zambia will also integrate activities that build assets with those that reduce risk, and will seek out innovative models to link vulnerable households to value chain interventions and investments in the country's health systems.

1.2.4   Demographics

Table 1 reports the population figures for the ZOI including the disaggregated categories that are reported in the FTFMS database. The population estimates for the Zambia ZOI shown in Table 1 have been projected from data from the 2010 Zambia Census of Population and Housing. Information from the Zambia PBS was used to estimate subpopulations. The total population of Zambia is more than 13 million, and the population within the ZOI is approximately 1.5 million.

1.2.5   Agriculture

Zambia is a large, landlocked country covering a total area of 752,610 km.[14] The country has considerable agricultural potential based on underproductive and unused arable land. Relatively low population density (close to 13 million people in 2010) and scarce infrastructure, however, are constraints in connecting smallholder farmers to private input and output markets. Zambia contains vast tracts of arable land and 35 percent of southern African groundwater. Despite many constraints, the agricultural sector still holds the potential to lift Zambians out of poverty and improve household nutrition.

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[13] Ibid.
[14] USAID. 2011b.

Table 1.   ZOI total population

	ZOI population
Total population[1]	1,509,302
Rural	1,368,782
Urban	140,519
Population in male and female adult(s) households (HH)	1,352,175
Population in female adult(s) only HH	137,850
Population in male adult(s) only HH	18,618
Population in child no adult HH	661
Total HH[2]	271,885
Male and female adults HH	227,584
Female adults only HH	35,226
Male adults only HH	8,744
Child no adult HH	330
Women of Reproductive Age (WRA) (15-49 years)	310,915
WRA Rural	274,636
WRA Urban	36,278
WRA Nonpregnant	273,707
WRA Pregnant	33,559
Children 0-59 months	283,827
Males 0-59 months	132,509
Females 0-59 months	156,570
Children 6-59 months	278,617
Males 6-59 months	130,449
Females 6-59 months	153,420
Children 0-5 months	5,210
Males 0-5 months	2,060
Females 0-5 months	3,150
Children 6-23 months	85,032
Males 6-23 months	43,792
Females 6-23 months	42,449

[1] Source: Zambia 2010 Census of Population preliminary report, inflated to 2012 based on annual growth rates by district, from the same report.

[2] This number is the number of households in the ZOI, and not the number of people living in the household.

The unpredictability of rainfall influences the availability and access components of food security, with both drought and flooding affecting vulnerable communities and families. Rainfall levels in Zambia decrease from the northern to the southern climatic zones. At the same time, crop water requirements, highest in the southwest of the country, increase from the north to the south. The Eastern Province has two distinct physiographic regions: the plateau with elevations ranging from 900 to 1,500 meters, and the Luangwa Valley, with an average elevation of 500 meters. The valley contains a mixture of alluvial soils that are suitable for crops such as rice, cotton, and drought-resistant sorghum and millet. The plateau contains soils that are moderately fertile and suitable for cultivating maize, groundnuts, cotton, sunflower, tobacco, and soybeans. Annual rainfall in the Eastern Province ranges from 850 to 1,050 mm.

Thus, rainfall is lowest in areas where the crop water requirements are highest, exposing rain-fed agriculture in the south and the southeastern part of the Eastern Province to drought risks. Furthermore, variations in rainfall are generally higher in the zones with low rainfall. Despite this massive agricultural potential, Zambian smallholder farm production is often not sufficient to meet household-level nutritional needs, nor is it sufficient to produce a surplus that can be sold in local or other markets. Only 28 percent of rural farmers are net sellers of maize while 49 percent are net buyers.[15] Smallholder agricultural production relies on rainfall, as few have access to irrigation. Production per hectare for smallholders is less than 15 percent that of commercial farmers because of inadequate access to inputs (e.g., fertilizer and seeds), improved technologies, extension services, and output markets. Even during good years, agricultural production is insufficient. Close to 60 percent of farmers face a hungry season from November through February.

Agriculture contributes about 22 percent of the country's GDP. The agricultural sector grew at an average annual rate of 4.5 percent during the 1990s. Recent growth has been slower because of major droughts. The main food crops are sugar cane, maize, cassava, vegetables/fruits, sweet potato, groundnuts, and legumes (Table 2). Cash crops including tobacco and vegetables are gaining importance. Zambia's agricultural production is dominated by small-scale farms cultivating landholdings of one to five hectares and producing most of the country's cotton, millet, and sorghum, as well as a large proportion of its maize, groundnut, and sunflowers. To date, there are about a dozen large commercial agricultural producers that are integrated with agro-processing.[16] The main agricultural exports are sugar, tobacco, cotton, and maize, most of which are grown under contract farming arrangements. The major agricultural imports are palm oil, hydrogenated oils, and soybean oil.[17]

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[15] Food Security Research Project Zambia. 2006.
[16] IFAD. 2013.
[17] FAO. 2013.

Table 2.   Agricultural yields and production at national level

Crop	Production (MT)	Yield (kg/ha)
Sugar cane	3,500,000	106,061
Maize	2,496,430	2,410
Cassava	1,266,300	6,228
Vegetables/fruits	441,688	-
Sweet potato	236,611	18,390
Groundnuts	174,728	728
Legumes	30,172	-

Source: FAO, 2011.

1.3   Purpose of This Report

This report presents baseline values established from primary and secondary data for the 11 Feed the Future indicators in the ZOI in Zambia. This baseline will be used as a reference point for measuring changes in the indicators over time in the ZOI. Determining change over time for the indicators will be based on comparing baseline performance-monitoring data to data collected at the midpoint (2015) and endpoint (2017) of the Feed the Future project. The data will not allow for conclusions about attribution or causality.

The presentation of Feed the Future ZOI baseline values and data findings in this report begins with a methods section (Section 2.0), then general descriptive findings (Section 3), followed by country-specific analysis of findings (Section 4).

2.   Methodologies for Obtaining Baseline Values for Feed the Future Indicators

2.1   Data Sources

This Feed the Future ZOI baseline reports on 11 of the 13 Feed the Future indicators: nine using primary data, and two using secondary data. Where recent and relevant data were available, FTF FEEDBACK utilized these secondary sources to report on the Feed the Future indicators. Where secondary data were not available, FTF FEEDBACK collected primary data through the baseline PBS.

Of the 11 Feed the Future indicators reported, nine were calculated using data gathered in the PBS: (1) *Women's Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale [HHS])*; (3) *Women's Dietary Diversity Score*; (4) *prevalence of underweight women*; (5) *prevalence of children 0-5 months exclusively breast fed*; (6) *percentage of children 6-23 months receiving a minimum acceptable diet (MAD)*; (7) *prevalence of underweight children under 5*; (8) *prevalence of wasted children under 5*; and (9) *prevalence of stunted children under 5*.[18]

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[18] The Women's Dietary Diversity Score and the prevalence of underweight women are measured for women of reproductive age (15-49 years).

The remaining two indicators, *prevalence of poverty* and *per capita expenditures of USG targeted beneficiaries*, utilized data from the Rural Agricultural and Livelihood Survey (RALS), conducted between April 2011 and May 2012 by the Zambia Central Statistics Office (CSO) in collaboration with the Indaba Agricultural Policy Research Institute and Michigan State University. The RALS collects information about household income using the same set of questions as the Zambia Living Conditions Monitoring Survey (LCMS), which the government uses to estimate national income levels and poverty rates. The Feed the Future baseline used income data from the RALS to calculate the poverty and per capita expenditure indicators. Data for women's and children's anemia indicators were not collected because they are not relevant for the portfolio of Feed the Future activities in Zambia.

Table 3 lists the 11 Feed the Future indicators and the data source for the Zambia ZOI.

Table 3.   Feed the Future indicators and data sources

Indicators	Source	Month/year collected
Prevalence of underweight children under 5 years of age	FTF FEEDBACK PBS	Nov-Dec 2012
Prevalence of poverty	RALS[a]	April 2011-May 2012
Prevalence of stunted children under 5 years of age	FTF FEEDBACK PBS	Nov-Dec 2012
Prevalence of wasted children under 5 years of age	FTF FEEDBACK PBS	Nov-Dec 2012
Prevalence of underweight women of reproductive age	FTF FEEDBACK PBS	Nov-Dec 2012
Per capita expenditure (income) of USG targeted beneficiaries	RALS[a]	April 2011-May 2012
Women's Empowerment in Agriculture Index	FTF FEEDBACK PBS	Nov-Dec 2012
Prevalence of households with moderate or severe hunger	FTF FEEDBACK PBS	Nov-Dec 2012
Prevalence of children 6-23 months receiving a minimum acceptable diet	FTF FEEDBACK PBS	Nov-Dec 2012
Women's Dietary Diversity Score	FTF FEEDBACK PBS	Nov-Dec 2012
Prevalence of exclusive breastfeeding of children under 6 months of age	FTF FEEDBACK PBS	Nov-Dec 2012

[a] Data provided by the RALS, which collected household income data for the same households in the ZOI as the FTF FEEDBACK PBS. Note that the RALS uses the same modules to collect household income as the LCMS, and is therefore consistent with national income and poverty estimates.

2.2   Procedures for Estimating Values From Secondary Sources at ZOI Level

RALS data were used to compute the indicators of per capita income and prevalence of poverty. The RALS survey is a nationally representative survey of smallholder agricultural households in Zambia. The survey collects information about farm land by households, agricultural production practices, acquisition of agricultural inputs, crop storage and marketing practices, access to credit, livestock assets and activities, off-farm income sources, and sources of food for household consumption. The national sample of the RALS is 8,839 households, and the sample is designed to provide statistically representative results at the provincial level. Overall, there are 2,000 households included in the RALS sample in the Eastern Province.

The household income and prevalence of poverty calculations were made on the subsample of the 1,640 households in the RALS sample that are within the five ZOI districts of Eastern Province. As discussed in more detail below, the RALS survey included modules to obtain information on the value of agricultural and livestock sales and own consumption, salaries and informal wages, formal and informal business activities, and cash and in-kind commodities received from others. Total household income was computed by adding up value of all these components, and per-capita income was computed by dividing the total household income from all sources by the number of members in the household. Household income information from the RALS was used to compute the prevalence of poverty and per-capita income indicators (rather than the proxy measure of per-capita expenditures as defined in the Feed the Future Indicator handbook and used by most focus countries).

2.3   Organization of Survey Work

For the FTF FEEDBACK PBS, the CSO conducted the fieldwork with technical assistance from the National Food and Nutrition Commission (NFNC), TANGO International, and its local partner in east Africa, Ronto Research Company, based in Kenya. Training started October 14 and fieldwork took place between November 19 and December 6, 2012.[19] The CSO provided qualified field enumerators, including those who had participated and performed well in the RALS. Ronto Research Company facilitated the training of master trainers and enumerators, coordinated the activities in the field, and managed the quality control monitoring teams. The NFNC provided a master trainer/quality control monitor with a specialization in field techniques for taking anthropometric measurements of children and women, and supplied the necessary anthropometric measuring equipment.

Training

Just prior to the fieldwork, a 12-day training of interviewers and supervisors was conducted, including a one-day field test, to prepare them for conducting the interviews. The interviewers received instruction on how to initiate contact with a household, obtain informed consent, conduct the interview, and return to households that require callbacks. Instructions were given on the questionnaire content, including review of the questions and the response codes. Both enumerators and supervisors were trained on how to use the tablets. Field team supervisors were given additional training on how to supervise the interviewer teams, including making and tracking interview assignments, checking the quality of the interview process, and reviewing the data entered for each interview. A copy of the training manuals can be obtained from the Development Experience Clearinghouse or by contacting the FTF FEEDBACK project.

The questionnaire was translated into local languages (Nyanja and Chewa) during the enumerator training. Enumerators broke into subgroups by language, and in these subgroups reached agreement

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[19] Institutional Review Board (IRB) approval was received on October 30, 2012 and authorization from the Ministry of Health was received on November 13, 2012, before the fieldwork commenced.

on how questions should be translated into the local language. Enumerators wrote the agreed translations of questions, key phrases, and terms into their individual notebooks for their reference during the fieldwork.

Fieldwork

The field team supervisors handled the day-to-day management of the field teams. Fifteen survey teams were deployed. The overall field staff consisted of a total of 60 enumerators split into 30 enumerator subteams comprising of one female interviewer and one male interviewer, 15 supervisors, and four two-member teams of quality control monitors. The male/female enumerator teams were needed because the WEAI required interviews of the primary male and primary female decision-makers in the household. The female interviewer interviewed the primary female member of the household while the male interviewer interviewed the primary male member of the household. For the other modules, the general strategy was for the female interviewer to conduct the interview if the respondent was female, and the male interviewer conducted interviews with male respondents. For measurement of women and children, female interviewers assisted in the measurement and male interviewers recorded information in the tablets. The field team supervisors were provided with the list of households included in the RALS, broken down by standard enumeration area (SEA). Each of the 15 field team supervisors was assigned separate lists of enumeration areas to visit. Only one field team visited each SEA.

At the end of each field day, the field team supervisors, with the help of the fifth team member, verified and recorded into daily control sheets the identification information of households interviewed by each of the two enumerator teams under the control of the supervisor; whether the information in the tablets was reviewed and accepted by the supervisor; and the total number of complete and incomplete interviews for the day.

Data recorded during the interviews were inputted directly into tablets provided by Westat. The software used for managing the interviews on the tablets is Open Data Kit (ODK). At the end of each day, each field team supervisor backed up the data on each tablet by making a copy of the data files directly onto the tablet. Each supervisor also made backups of all the teams' tablets onto their own tablet using the "near field communication tapping" procedure. The field team supervisors were responsible for uploading the data to the Westat server whenever they had Internet access. Each day when the teams had network access, the field team supervisors uploaded the data from the tablets of all four field team members onto the Westat server, where the data were aggregated and updated over the course of the fieldwork.

Data Quality Control

During the fieldwork, data quality was maintained in several ways. The data entry software on the tablet computers had programmed checks for variable ranges, skip patterns, and consistency. In the field, the supervisor checked each questionnaire closely for completeness, consistency, range checks, and skip patterns. The team leader also checked a subset of questionnaires in the same manner. The

fieldwork was planned so that all the field teams were within close proximity during the initial days of the fieldwork, and the teams all stayed at the same location in the evening. In this way, problems identified during the first days of fieldwork were shared and resolved with the entire field team.

Westat data management staff also ran data quality programs that incorporated the data quality checks on the tablet computers, the checks done by field staff, and other general checks. These data quality programs included range checks, checks of skip patterns, consistency checks, and completeness checks done by the tablet computer software, and the checks by field editors and supervisors. The programs checked for completeness by listing whether all expected questionnaires per SEA had been received, result of the interview (complete, incomplete, etc.), percent of modules that were completed (by module), and percent of missing data for select variables, such as age and gender of respondents. All of these data were analyzed by Westat data management staff to identify data quality problems to be addressed in the field. In addition to producing detailed reports by enumerator, the programs produced summary reports that were used for general data quality control.

Handling of Missing Values

The approach used in the analysis was to take "don't know" responses and missing data and recode them to null value – to take the value of "no" (if a yes/no question) or "0" (if a numeric response is required) – and to include the recoded data in the numerator and denominator of indicators.

The latter was the approach generally used in the report, unless a specific indicator was defined (e.g., children who were not weighed and measured and children whose values for weight and height were not recorded were excluded from both the denominator and the numerator for anthropometry indicators). Means were computed for questions whose responses were numerical values. Missing, "don't know," and other nonnumeric responses were excluded from the calculations.

Data Imputation

Missing or "don't know" values were generally treated as described above and allowed to stay in the data, with the exception of dates for critical events, which are needed to correctly compute indicators for these individuals:

- Date of birth of women aged 15-49; and

- Date of birth of children under 5.

The procedure that was used to impute these dates followed international Demographic and Health Survey (DHS) standards, as described in the DHS Data Editing and Imputation guidelines.[20]

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[20] Croft, T. n.d.

Methods for Data Analysis

Most of the quantitative results in this report are percentages and means, all with two decimal points in tables and one decimal point in the narrative. Representativeness was maintained by weighting any statistics that apply to the survey population (such as percentages and means) by the inverse of the probability of selection of any given survey respondent:

- **Percentages.** For values provided in nominal scales (e.g., yes/no responses), percentages were computed using the weighted number of cases that provided a given response as the numerator, and the total weighted number of cases for that column as the denominator. Single response variables add up to a maximum of 100 percent, while multiple response variables may total to more than 100 percent.

- **Means.** For variables collected in a continuous scale format (e.g., number of household members), means were computed using the weighted sum of values as the numerator and the total weighted number of cases for that column as the denominator.

The unweighted sample sizes for the results are presented in each table with a column labeled "n." To avoid showing unreliable statistics, results are only shown when the unweighted sample size for a column is equal to or greater than 30 cases.

Computed Variables and Indicators[21]

International standards are used whenever available to compute analytic variables and indicators:

1. Nutrition and Food Security indicators are computed using international standards as described in these documents:

   — 2012 Feed the Future Indicator Handbook;

   — 2011 Household Hunger Scale: Indicator Definition and Measurement Guide;[22] and

   — 2010 World Health Organization (WHO) Indicators for Assessing Infant and Young Child Feeding Practices (Part 2 Measurement).[23]

2. Anthropometry indicators are calculated using the child growth standards and data processing programs published by the WHO in 2006.[24]

3. Data on per capita income were obtained from the RALS data set. The RALS survey includes the module on household income that is used in the Supplemental Survey of the Post-Harvest Survey (PHS) conducted by the CSO. The RALS includes modules to

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[21] Detailed descriptions provided in handling missing values, data imputation, methods for data analysis, and computed variables and indicators are based, in part, from P. D Rosell, et al. 2013. p. 12-14.

[22] Ballard, T. et al. 2011.

[23] World Health Organization et al. 2010.

[24] World Health Organization and United Nations Children's Fund. 2006.

obtain information on the value of agricultural and livestock sales and own consumption, salaries and informal wages, formal and informal business activities, and cash and in-kind commodities received from others. Total household income is computed by adding up the value of all of these components. Per capita income is computed by dividing the total household income from all sources by the number of members in the household.

4. The WEAI is calculated with guidance and materials provided via the USAID Feed the Future webinar conducted on November 9, 2012 and the Instructional Guide on the Women's Empowerment in Agriculture Index.[25]

The details for calculations of the ZOI indicators are provided in Annex D.

2.4 Survey Sample Design

The ZOI in Zambia comprises five districts – Chipata, Katete, Lundazi, Nyimba, and Petauke – all located in Eastern Province. Table 4 shows the sample design for five districts included in the RALS and revisited by the FTF FEEDBACK PBS. This is followed by a description of the sample size calculation, sample weights, sample design, and questionnaire design.

Table 4.   Survey sample design for Zambia ZOI

District[1]	Total[2]		RALS/PBS baseline sample		% Agricultural of HH sampled
	# SEAs	# Agricultural HH	# SEAs	# Agricultural HH	
Chipata	590	52,425	20	400	0.76
Katete	367	33,366	18	360	1.08
Lundazi	379	42,711	18	360	0.84
Nyimba	142	11,756	8	160	1.36
Petauke	467	43,180	18	360	0.83
Five districts	1,945	183,438	82	1,640	0.89

[1] The original sample size was for the RALS, which is why only rural households were included.

[2] Source: 2000 Zambia Census of Population and Housing.

2.4.1 Sample Size Calculation

The sample size was predetermined by the number of households visited by the RALS in order to link the two surveys. The number of households within the five districts of the ZOI included in the RALs sample is 1,640. It should be noted that this sample size was determined by the RALS as part of a national sample, and the sample size for the Zambia PBS was not computed using the standard procedure for ZOI PBS sample size.[26]

Table 5 shows that this sample size is large enough to detect a change of 5.0 percent in the poverty rate, a change of 34.8 percent in underweight, and a change of 14.4 percent in stunting rate. For all

[25] Alkire, S. et al. 2013.
[26] USAID. 2012d.

indicators, the sample sizes are for the populations associated with the indicator. The sample for prevalence of underweight children is for children aged 0-59 months. The sample for underweight women and for the Women's Dietary Diversity Score is women aged 15-49.

Table 5.   Minimum detectable changes for key indicators given 1,640 sample size

Indicator	Current value (%)[a]	Change to detect (%)
Poverty rate[b]	79.75	4.98
Underweight[c]	13.28	34.75
Stunting[d]	45.52	14.42

[a] Values from FTFMS, poverty rate from RALS survey, underweight and stunted from PBS.

[b] Percent change that can be detected with a sample size of 1,640, assuming 95% confidence, 80% power, Deff = 1.93.

[c] Percent change that can be detected with a sample size of 1,114, assuming 95% confidence, 80% power, Deff = 2.01.

[d] Percent change that can be detected with a sample size of 1,114, assuming 95% confidence, 80% power, Deff = 2.14.

The 1,640 households in the ZOI interviewed for the PBS data collection activity were spread across five districts and 82 SEAs. The FTF FEEDBACK PBS revisited the same households that were interviewed as part of the RALS. These households were located using existing GPS coordinates obtained during the RALS. The identification codes for the SEAs and households are the same as those used in the RALS, which allows for the household information from the two survey data sets (RALS and FTF FEEDBACK PBS) to be compared using these unique identification variables.

2.4.2   Sample Design

The RALS sample design is based on the sample design utilized in the PHS. The PHS uses a two-stage sample design, where the first-stage primary sampling unit is one or more SEAs with a minimum of 30 agricultural households. A total of 16,746 SEAs were defined for the 2000 Zambia census, of which 12,202 are classified as rural. In the PHS, the sample frame comprises rural SEAs and urban SEAs with at least 70 percent rural households (households that reported having any crop production, livestock production, poultry production, or fish farming). To improve sampling efficiency, the sample was stratified geographically, by district. Furthermore, in order to ensure adequate representation for specific crops (sorghum, rice, cotton, Burley tobacco, Virginia tobacco, sunflower, soybeans, and paprika), SEAs were stratified by farm size, number of livestock, and the cultivation of the crops listed above. The RALS oversampled in some of these strata.

The overall sample for the RALS is 400 SEAs, with 20 households interviewed in each SEA, to give a total sample for the RALS of 8,839 households. The Feed the Future baseline sample (1,640 households) is made up of the households in the RALS that fall within the area of the Feed the Future ZOI. Note that the Zambia PBS revisited the same households as RALS but failed to locate 159 of them. These households either left the area or were not there at the time of the PBS, resulting in a PBS total sample size of 1,501.

2.4.3   Sample Weighting

Data required for statistical weighting of survey data were collected throughout the sampling process. These data included, but were not limited to: (1) SEA population sizes used for selection of SEAs; (2) population of selected SEAs at time of listing; and (3) response rates at the household, women's, men's, and children's levels. Sample weights also corrected for oversampling in the RALS design in which some household types (larger farms that are made up of larger households) were oversampled.

Sample weights were calculated for households, women, men, and children in the sample. These sample weights were taken from the RALS. Nonresponse rates were obtained directly from the primary data collection activity survey results.

Computations based on the survey sample were weighted so that the results accurately reflected the proportions of the sampled elements within the overall sample frame of the population in the ZOI. Details of how weights were computed are provided in Annex C.

2.4.4   Questionnaire Design

The survey questionnaires were developed based on the Feed the Future baseline survey guidelines provided in Volume 8 of the Feed the Future M&E Guidance Series.[27] The questionnaires were translated into local languages (Nyanja and Chewa) during the enumerator training. The surveys are designed to conform to existing questionnaires such as the DHS and WEAI. Each questionnaire includes the informed consent statement, the household roster, a dwelling characteristics module, and modules for indicators that cannot be calculated using existing data sources. Data for the following indicators were collected in Zambia (Table 6.)

2.5   Limitations

An important limitation of the Zambia PBS is the small sample size (1,640). This limitation is because the sample size for the PBS baseline is determined by the sample of households that fall within the ZOI in the RALS sample. Because of the relatively small overall sample size, some of the sample sizes for individual indicators are exceptionally small. This is especially true for exclusive breastfeeding, where the sample size is less than 30.

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[27] USAID. 2012c.

Table 6. FTF FEEDBACK Zambia baseline survey indicators and questionnaire modules

PBS module	Description of indicator
F	Prevalence of households with moderate or severe hunger
G	Women's Empowerment in Agriculture Index
H	Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age
H	Prevalence of underweight women of reproductive age
I	Prevalence of underweight children under 5 years
I	Prevalence of stunted children under 5 years
I	Prevalence of wasted children under 5 years
I	Prevalence of exclusive breastfeeding for children under 6 months of age
I	Prevalence of children 6-23 months receiving a minimum acceptable diet

Additionally, the representativeness of the data for four indicators may be compromised by high nonresponse rates. First, despite return visits, males were difficult to find at home. Those found were often not willing to be interviewed. The result is a high nonresponse rate for males in the gender parity index of the WEAI.

Second, cultural norms related to the handling of infants resulted in a high nonresponse rate for anthropometric measures of children 0-59 months. The NFNC nutritionist providing technical assistance to the study explained that mothers fear their young children are delicate and are reluctant to have them handled by strangers. The table below shows a much higher rate of nonresponse for children under 12 months. The 2007 DHS nonresponse rates for child nutrition indicators show similar trends. Children under 6 months are under-represented compared to the other age groups.[28]

Age of child in months	# of nonresponse	% of eligible children
0-11	122	58.45
12-23	266	12.11
24-35	278	12.75
36-47	268	13.58

The survey had a high nonresponse rate (40 percent) for the indicator *prevalence of underweight women of reproductive age*, despite a much lower nonresponse rate (14 percent) for questions that determine the *Women's Mean Dietary Diversity Score*. Nonresponse was a result of many refusals to answer this section. This module occurs at the very end of a long survey. Many women agreed to partake in questions about diet, but chose not to be weighed and measured. Women were tired and expressed that they did not have time to continue.

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[28] From the 2007 DHS (CSO et al. 2007), the imputed nonresponse rate, assuming a uniform distribution of all children eligible to be measured across the age categories was 24.4 percent for children 0-5 months old, compared with 13.2 percent for children 0-59 months old, a difference of 84.8 percent.

Finally, results for the HHS may be affected by seasonal trends. The peak hunger season in Zambia ranges from May through July.[29] The FTF FEEDBACK project started in May 2012, and thus it was not possible to obtain the necessary approvals and organize the survey logistics before the end of the hungry season in July. The PBS data collection was conducted between November 19 – December 6, 2012, which may be considered a more food-secure time of year.

3. Descriptive Findings

The baseline values for the Feed the Future indicators are presented in Table 7. This is followed by a detailed description of individual indicators. District-level data for the Zambia ZOI are presented in Appendix A. Household-level indicators are disaggregated by gendered household types: (1) households with male and female adults (labeled as male and female adults); (2) households with one or more male adults, no female adult (labeled as male adult only); (3) households with one or more female adults, no male adult (labeled as female adult only); and (4) households with children only, no adults (labeled as child no adult). Only differences across subgroups that are statistically significant at the 0.05 level are discussed in the narrative.

3.1 Household Characteristics

3.1.1 Demographics

Module C of the PBS captured information about size of households, number of females and children within a household, and the level of education achieved by the household. The data are presented in Table 8.

The data show that the average number of household members is 5.5 and that households with both male and female adults have significantly more people compared to female adult only households (5.9 and 3.7, respectively). Male adult only households have only two household members on average. The number of female adults varies depending on whether the household includes male and female adults or a female adult only (3.0 and 2.5, respectively) and the difference is statistically significant. On average, there is one child under 5 years of age per household and two between the ages of 5 and 17.

Regarding education, male and female adult households have higher levels of secondary education than male or female adult only households, for which primary or no education is more likely. It is interesting to note that female adult only households have higher levels of upper secondary education than male adult only households (8.0 percent vs. 1.7 percent) (Table 9).

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[29] FEWS NET and USAID. 2008.

Table 7. FTF FEEDBACK ZOI population-based indicators (11 indicators)

Feed the Future indicator	Baseline values						
	n (unweighted)	Baseline value	Std dev	95% CI	DEFF	Non-response rate[1]	Source
Prevalence of poverty: Percentage of people living on less than $1.25/day	**1,640**	**79.75**	**-**	**77.00-82.50**	**1.93**	**-**	**RALS**
M&F (both male and female adults)	1,376	79.33[a]	-	76.23-82.44	1.98	-	RALS
FNM (female adult[s] only)	212	85.98[a]	-	81.22-90.74	1.20	-	RALS
MNF (male adult[s] only)	51	59.94[a]	-	43.13-76.75	1.58	-	RALS
CNA (child no adults HHs)	1	-	-	-	-	-	RALS
Daily per capita income of USG targeted beneficiaries (2010 USD)	**1,640**	**1.19**	**2.02**	**1.06-1.32**	**1.75**	**-**	**RALS**
M&F (both male and female adults)	1,376	1.19[b]	1.93	1.04-1.33	1.94	-	RALS
FNM (female adult[s] only)	212	0.98[c]	2.07	0.64-1.32	1.43	-	RALS
MNF (male adult[s] only)	51	2.16[bc]	2.94	1.26-3.06	1.21	-	RALS
CNA (child no adults HHs)	1	-	-	-	-	-	RALS
Prevalence of underweight among children under 5 years of age	**1,114**	**13.28**	**-**	**10.41-16.15**	**2.01**	**22.42**	**FTF FEEDBACK PBS**
Male	529	17.65[d]	-	13.92-21.38	1.23	22.77	FTF FEEDBACK PBS
Female	585	9.63[d]	-	6.38-12.88	1.86	21.15	FTF FEEDBACK PBS
Prevalence of stunting among children under 5 years of age	**1,114**	**45.52**	**-**	**41.18-49.86**	**2.14**	**22.42**	**FTF FEEDBACK PBS**
Male	529	51.20[e]	-	44.83-57.57	2.08	22.77	FTF FEEDBACK PBS
Female	585	40.77[e]	-	35.54-46.00	1.74	21.15	FTF FEEDBACK PBS
Prevalence of wasting among children under 5 years of age	**1,114**	**2.68**	**-**	**1.48-3.89**	**1.56**	**22.42**	**FTF FEEDBACK PBS**
Male	529	4.06[f]	-	1.94-6.18	1.48	22.77	FTF FEEDBACK PBS
Female	585	1.53[f]	-	0.21-2.85	1.78	21.15	FTF FEEDBACK PBS

Table 7.   FTF FEEDBACK ZOI population-based indicators (11 indicators) (continued)

Feed the Future indicator	Baseline values						Source
	n (unweighted)	Baseline value	Std dev	95% CI	DEFF	Non-response rate[1]	
Prevalence of underweight women of reproductive age	**1,383**	**6.34**	**-**	**4.43-8.25**	**2.14**	**23.08**	**FTF FEEDBACK PBS**
Women's Empowerment in Agriculture Index	**1,325**	**0.80**	**-**	**-**	**-**	**-**	**FTF FEEDBACK PBS**
5DE Subindex	1,325	0.79	0.20	0.77-0.80	1.58	9.25	FTF FEEDBACK PBS
Gender Parity Index	1,045	0.89	0.15	0.88-0.91	1.60	19.86	FTF FEEDBACK PBS
Prevalence of households with moderate or severe hunger	**1,491**	**23.18**	**-**	**19.96-26.40**	**2.20**	**0.67**	**FTF FEEDBACK PBS**
M&F (both male and female adults)	1,280	21.45[g]	-	17.94-24.96	2.29	0.78	FTF FEEDBACK PBS
FNM (female adult[s] only)	167	30.98[g]	-	22.22-39.73	1.81	0.00	FTF FEEDBACK PBS
MNF (male adult[s] only)	43	32.58	-	17.14-48.01	1.32	0.00	FTF FEEDBACK PBS
CNA (child no adults HHs)	1	-	-	-	-	-	FTF FEEDBACK PBS
Prevalence of children 6-23 months receiving a minimum acceptable diet	**362**	**16.16**	**-**	**11.16-21.16**	**1.68**	**0.55**	**FTF FEEDBACK PBS**
Male	182	14.60	-	8.01-21.20	1.57	1.09	FTF FEEDBACK PBS
Female	180	17.68	-	10.10-25.26	1.82	0.00	FTF FEEDBACK PBS

Table 7. FTF FEEDBACK ZOI population-based indicators (11 indicators) (continued)

Feed the Future indicator	Baseline values						Source
	n (unweighted)	Baseline value	Std dev	95% CI	DEFF	Non-response rate[1]	
Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age	1,549	4.01	1.14	3.90-4.12	3.43	13.85	**FTF FEEDBACK PBS**
Prevalence of exclusive breastfeeding of children under 6 months of age^	^	^	-	^	^	^	**FTF FEEDBACK PBS**
Male^	^	^	-	^	^	^	FTF FEEDBACK PBS
Female^	^	^	-	^	^	^	FTF FEEDBACK PBS

[a-g] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across rows within each indicator.

^ = Results not statistically representative; n<30.

Source: See column.

[1] Nonresponse rate not applicable for RALS data.

Table 8.   Household demographics

	Household type				
	All households	**Male and female adults**	**Female adult only**	**Male adult only**	**Child no adult^**
	Mean (std dev)				
Number of household members	5.54 (2.68)	5.94[a] (2.60)	3.71[a] (2.03)	2.03[a] (1.20)	-
Number of females in household	2.84 (1.67)	2.97[b](1.67)	2.50[b] (1.40)	0.64[b] (0.83)	-
Number of children (0-5 years)	0.96 (0.87)	1.04[cd] (0.88)	0.58[c] (0.69)	0.34[d] (0.63)	-
Number of children (6-23 months)	0.23 (0.43)	0.25[ef] (0.46)	0.09[e] (0.26)	0.08[f] (0.25)	-
Number of children (5-17 years)	2.11 (1.74)	2.22[g] (1.79)	1.76[g] (1.44)	0.66[g] (0.82)	-
Number of children attending school (5-17 years)	1.08 (1.29)	1.14[h] (1.34)	0.91[h] (1.06)	0.25[h] (0.68)	-
n (unweighted)	**1,501**	**1,304**	**156**	**40**	**1**

a-h Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

^ = Results not statistically representative; n<30.

NOTE: Nonresponse rate is explained in the methods section.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 9.   Highest education level within the household

	Household type				
	All households	**Male and female adults**	**Female adult only**	**Male adult only**	**Child no adult^**
Education level	**%**				
Primary or none	58.81	55.13[ab]	77.88[a]	81.22[b]	-
Lower secondary (grades 8-9)	22.25	24.47[c]	9.48[c]	13.56	-
Upper secondary (grades 10-12)	15.97	17.70[d]	7.96[d]	1.66[d]	-
Above secondary	2.97	2.70	4.67	3.56	-
n (unweighted)	**1,501**	**1,304**	**156**	**40**	**1**

a-d Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

^ = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

3.1.2   Dwelling Characteristics

Information about housing construction materials, whether or not households have electricity, and type of fuels used for cooking was recorded in Module D of the PBS and is presented in the following tables.

According to the data (Table 10), nearly all households lack electricity, with less than 1 percent reporting electricity (0.9 percent). The average number of rooms per household is 2.7, which is slightly higher for male and female adult households (2.8) compared to female adult only (2.3) and male adult only (1.8 percent) households.

Table 10.   Dwelling characteristics

	Household type				
	All households	Male and female adults	Female adult only	Male adult only	Child no adult^
Mean number of rooms (Std dev)	2.66 (1.47)	2.75[a] (1.51)	2.28[a] (1.26)	1.80[a] (0.72)	-
% Households with electricity	0.89	0.75	2.08	0.00	-
n (unweighted)	**1,498**	**1,301**	**156**	**40**	**1**

[a]   Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

^   = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 11 presents information about housing construction materials. The most common type of roof material of surveyed households is thatch, vegetable matter, or sticks (65.8 percent). This type is more prevalent in male adult only households (85.8 percent) as compared to male and female adult households (64.3 percent). The second-most common roof material is corrugated metal (32.3 percent), more common in male and female adult households (33.8 percent) as compared to male adult only households (14.2 percent).

Table 11.   Housing construction materials

	Household type				
	All households	Male and female adults	Female adult only	Male adult only	Child no adult^
Roof			%		
Thatched/vegetable matter/sticks	65.79	64.30[a]	70.58	85.84[a]	-
Corrugated metal	32.27	33.75[b]	27.12	14.16[b]	-
Plastic sheeting	0.54	0.64	0.00	0.00	-
Tile	0.44	0.52	0.00	0.00	-
Mud/cow dung	0.41	0.45	0.24	0.00	-
Wood	0.22	0.15	0.73	0.00	-
Other	0.32	0.20[c]	1.32[c]	0.00	-
Wall					
Earth/mud	63.01	60.92[de]	72.40[d]	80.90[e]	-
Tile/bricks	29.51	31.65[fg]	19.73[f]	11.70[g]	-
Cement	6.21	6.14	7.41	3.56	-
Thatch/bamboo/reeds	0.64	0.61[h]	0.00[i]	3.84[hi]	-
Wood	0.62	0.67	0.46	0.00	-
Floor					
Earth/mud	82.48	81.59	86.06	91.63	-
Cement	16.33	17.08	13.70	7.32	-
Tile/bricks	1.19	1.33	0.24	1.05	-
Wood	0.00	0.00	0.00	0.00	-
n (unweighted)	**1,498**	**1,301**	**156**	**40**	**1**

[a-i]   Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

^   = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Also presented in Table 12 is information about dwelling materials used for walls and floors. Roughly two-thirds (63.0 percent) of houses use earth or mud for walls; although, households with male adults or female adults only are more likely to use this type of material (80.9 percent and 72.4 percent, respectively) as compared to male and female adult households (60.9 percent). Households with both male and female adults tend to use more tiles and bricks for walls (31.7 percent) than those households with male adults only (11.7 percent) or female adults only (19.7 percent). Less than 10 percent of all households use cement walls (6.2 percent). Similarly, the most common type of floor material is earth or mud (82.5 percent), followed by cement (16.3 percent).

Nearly all households rely on firewood as fuel (94.5 percent). A very small percentage of households supplement firewood with charcoal (5.3 percent) for cooking fuel (Table 12).

Table 12.   Main source of cooking fuel

	Household type				
	All households	**Male and female adults**	**Female adult only**	**Male adult only**	**Child no adult^**
Fuel type			%		
Firewood	94.47	94.94	92.22	90.38	-
Charcoal	5.31	4.82	7.51	9.62	-
Animal dung	0.15	0.17	0.00	0.00	-
Electricity	0.00	0.00[a]	0.27[a]	0.00	-
Piped or propane	0.00	0.00	0.00	0.00	-
Kerosene	0.00	0.00	0.00	0.00	-
Agriculture crop residue	0.00	0.00	0.00	0.00	-
n (unweighted)	**1,498**	**1,301**	**156**	**40**	**1**

[a] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

^ = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

3.1.3   Water and Sanitation

According to World Health Organization (WHO) standards, sources of improved drinking water include piped water to the house or yard, public taps or standpipes, boreholes, protected dug wells, and protected springs and rainwater collection.[30] Improved sanitation facilities include flush or pour-flush toilets connected to a piped sewer system, septic tanks or covered pit latrines, and composting toilets. Roughly three-quarters of all households surveyed use an improved water source (74.6 percent), but less than 1 percent (0.6 percent) have improved sanitation facilities excluding pit latrines, which are reported for 69.5 percent of households (Table 13).[31]

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[30] http://www.who.int/gho/phe/water_sanitation/en/index.html. Accessed May 3, 2013.

[31] Pit latrines with a slab are improved; those without a slab are unimproved. The PBS did not collect information on sanitation facilities to enable disaggregation by improved/unimproved pit latrines.

Table 13.   Households with improved water and sanitation facilities

	Household type				
	All households	**Male and female adults**	**Female adult only**	**Male adult only**	**Child no adult^**
	%				
Households using improved water source	74.60	73.91	78.21	78.15	-
Households using improved sanitation facilities (excluding pit latrines)[1]	0.64	0.59	0.78	1.40	-
Households using pit latrines	69.53	69.81	65.22	78.13	-
n (unweighted)	**1,498**	**1,301**	**156**	**40**	**1**

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

^ = Results not statistically representative; n<30.

[1] All pit latrines were excluded because the questionnaire did not differentiate between covered pit latrines with slab (improved) and uncovered pit latrines (not improved).

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

3.2   Household Consumption and Income

Household income information from the RALS was used to compute prevalence of poverty and per-capita income (rather than the proxy measure of per-capita expenditures).[32] This strategy was used to ensure that the results from the RALS are consistent with the way the government poverty statistics are computed. Table 14 reports data on indicators for prevalence of poverty, poverty gap, and household income, to be discussed in the subsections that follow.

3.2.1   Prevalence and Depth of Poverty in the ZOI

Data from the RALS were used to calculate the prevalence of poverty.

The Feed the Future prevalence of poverty indicator is defined as the percentage of people living on less than $1.25 per day at 2005 purchasing power parity (PPP). Table 14 shows that 79.8 percent of the population of the ZOI lives in poverty. Using the national moderate poverty line (corresponding to $1.03/day in 2005 PPP), the prevalence of moderate poverty in the ZOI is 74.0 percent. Using the national extreme poverty line (corresponding to $0.68/day in 2005 PPP), the prevalence of extreme poverty in the ZOI is 56.4 percent.

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[32] For a complete description and calculation of this indicator, please refer to Annex D.

Table 14.   Poverty and income indicators for the ZOI

Feed the Future indicator	n (unweighted)	Baseline value	Std dev	95% CI	DEFF
Prevalence of poverty: Percentage of people living on less than $1.25/day at 2005 purchasing power parity (PPP) level	1,640	79.75	-	77.00-82.50	1.93
M&F (both male and female adults)	1,376	79.33[a]	-	76.23-82.44	1.98
FNM (female adult[s] only)	212	85.98[a]	-	81.22-90.74	1.20
MNF (male adult[s] only)	51	59.94[a]	-	43.13-76.75	1.58
CNA (child no adults)^	1	-	-	-	-
Poverty gap at $1.25/day at 2005 PPP level	1,640	46.48	31.66	43.93-49.03	2.68
M&F (both male and female adults)	1,376	45.01[b]	31.83	42.04-47.98	3.03
FNM (female adult[s] only)	212	57.23[b]	27.94	52.63-61.84	1.46
MNF (male adult[s] only)	51	32.05[b]	32.41	21.80-42.30	1.29
CNA (child no adults)^	1	-	-	-	-
Prevalence of poverty at Zambian national poverty level (146,009 Zambian Kwacha/month at 2010 price levels, or $1.03/day at 2005 PPP level)	1,640	73.97	-	70.93-77.00	1.98
M&F (both male and female adults)	1,376	73.06[c]	-	69.49-76.64	2.18
FNM (female adult[s] only)	212	82.97[c]	-	77.44-88.51	1.39
MNF (male adult[s] only)	51	52.78[c]	-	48.93-70.29	1.65
CNA (child no adults)^	1	-	-	-	-
Poverty gap at $1.03/day at 2005 PPP level	1,640	39.95	31.75	37.37-4254	2.75
M&F (both male and female adults)	1,376	38.30[d]	31.84	35.27-41.32	3.13
FNM (female adult[s] only)	212	51.38[d]	28.65	46.61-56.15	1.48
MNF (male adult[s] only)	51	27.24[d]	30.59	17.99-36.50	1.18
CNA (child no adults HHs)^	1	-	-	-	-
Prevalence of extreme poverty at Zambian national poverty level (96,366 Zambian Kwacha/month at 2010 price levels, or $0.68/day at 2005 PPP level)	1,640	56.39	-	52.58-60.20	2.44
M&F (both male and female adults)	1,376	54.64[e]	-	50.20-59.08	2.68
FNM (female adult[s] only)	212	69.65[e]	-	62.45-76.86	1.57
MNF (male adult[s] only)	51	38.38[e]	-	23.44-53.33	1.27
CNA (child no adults)^	1	-	-	-	-
Poverty gap at $0.68/day at 2005 PPP level	1,640	26.36	29.78	23.84-28.87	2.96
M&F (both male and female adults)	1,376	24.61[f]	29.47	29.47-27.47	3.29
FNM (female adult[s] only)	212	37.59[fg]	29.06	32.61-42.57	1.57
MNF (male adult[s] only)	51	17.25[g]	25.95	9.47-25.04	1.16
CNA (child no adults HHs)^	1	-	-	-	-

Table 14.   Poverty and income indicators for the ZOI (continued)

Feed the Future indicator	n (unweighted)	Baseline value	Std dev	95% CI	DEFF
Daily per capita income of USG targeted beneficiaries (2010 USD)[l]	**1,640**	**1.19**	**2.02**	**1.06-1.32**	**1.75**
M&F (both male and female adults)	1,376	1.19[h]	1.93	1.04-1.33	1.94
FNM (female adult[s] only)	212	0.98[i]	2.07	0.64-1.32	1.43
MNF (male adult[s] only)	51	2.16[hi]	2.94	1.26-3.06	1.21
CNA (child no adults HHs)^	1	-	-	-	-

[a-i] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across rows within indicators.

^ = Results not statistically representative; n<30.

[l] Income was initially calculated in Zambian kwacha, and was deflated to 2010 levels using consumer price index (CPI) found on the World Bank website and converted to USD using the PPP conversion factor for private consumption for 2010 also from the World Bank website: http://data.worldbank.org/indicator/PA.NUS.PRVT.PP.

Source: RALS. April 2011-May 2012.

Female adult only households are more likely to be poorer than male adult only households and male and female adult households. The baseline value for female adult only households living on less than $1.25/day is 86.0 percent compared to 79.3 percent prevalence of poverty for male and female adult households and 59.9 percent of male adult only households. The prevalence of moderate poverty based on the national threshold ($1.03/day) and the prevalence of extreme poverty based on the national threshold ($0.68/day) reflect the same pattern with more poverty in female adult only households compared to other household types.

The poverty gap is the mean shortfall from the poverty line (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence.[33] The ZOI has a prevalence of poverty of 79.8 percent and a poverty gap of 46.5 percent (Table 14), which indicates that the average shortfall of the entire ZOI population from the $1.25 poverty line is $0.58 per person.[34]

3.2.2   Per Capita Income

Unlike most other Feed the Future countries, Zambia uses income rather than expenditure data to calculate prevalence of poverty. The RALS collected information about household income using the same set of questions as in the Zambia LCMS, which the government uses to estimate national income levels and poverty rates. These questions from the RALS about household incomes were used to compute prevalence of poverty and per-capita income (rather than the proxy measure of per-capita expenditures). This strategy was followed to ensure that the results from the survey were consistent with the way government poverty statistics are computed.

Female adult only households have the lowest daily per capita income ($0.98)[35] of all types of households, and lower income than male adult only households in particular ($2.16). Male adult only

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[33] The World Bank. 2013.

[34] This estimation is calculated as (poverty gap/prevalence of poverty)*poverty line.

[35] All income figures reported in 2010 USD.

households have higher incomes than households with both a male and female adult ($2.16 versus $1.19).

3.3　Household Hunger

The Household Hunger Scale (HHS) (Module F) is used to calculate prevalence of households with moderate or severe hunger. The HHS was developed by the USAID-funded Food and Nutrition Technical Assistance II Project (FANTA-2/FHI 360) in collaboration with the Food and Agriculture Organization (FAO) of the United Nations, and has been cross-culturally validated to allow comparison across different food-insecure contexts. The approach is based on the idea that the experience of food insecurity causes predictable reactions that can be captured through a survey and summarized in a scale. The HHS is used to assess, geographically target, monitor, and evaluate settings affected by substantial food insecurity. This indicator should always be measured at the same time each year, ideally at the most vulnerable time of year (right before the harvest, during the dry season, etc.).[36] The peak hunger season in Zambia ranges from May through July.[37] The PBS data collection was conducted from November 19 to December 6, 2012, which may be considered a more food-secure time of year. A decrease in the HHS score is a reflection of improved food security.

Approximately 23.2 percent of households report moderate or severe hunger (Table 7). Female adult only households have significantly higher household hunger prevalence (31.0) than male and female adult households (21.5 percent).

3.4　Nutrition

Modules H and I gather information on diet, height, weight, and age for children and women of reproductive age, and are based on standard indicators and questions. These modules are used to calculate the prevalence of stunting, wasting, and underweight among children under 5 years of age, the prevalence of children 0-5 months with exclusive breastfeeding, the prevalence of children 6-23 months receiving a minimum acceptable diet (MAD), the prevalence of underweight and overweight women of reproductive age, and the mean number of food groups consumed by women of reproductive age.

3.4.1　Child Nutritional Status

Anthropometry

This section reports three important anthropometric measurements of undernutrition among children under 5 years of age in the ZOI: stunting (height-for-age), wasting (weight-for-height), and underweight (weight-for-age). Each indicator is calculated by taking the number of anthropometric measurements of children under 5 in the sample divided by the total number of children under 5 in

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[36] Deitchler, M., et al. 2011.
[37] FEWS NET and USAID. 2008.

the sample for which there is measurement data available (e.g., height and weight data). Data presented in this section are disaggregated by sex of the child. Detailed analysis was also conducted by household type. In this sample, the number of children in male adult only households was small (n<30). As a result, these results are not statistically representative and data for this category are not reported in Table 15. During the PBS, only one "child no adult" household was interviewed; therefore, the results from this single case are not statistically representative, and data for this category are not reported.

Stunting is an indicator of linear growth retardation, most often due to a prolonged inadequate diet and poor health. Reducing the prevalence of stunting among children, particularly between 0 and 24 months of age, is important because linear growth deficits accrued early in life are associated with cognitive impairments, poor educational performance, and decreased work productivity among adults.

Stunting is a height-for-age measurement that is a reflection of chronic undernutrition. This indicator measures the percentage of children 0-59 months old exhibiting symptoms of stunting, as defined by a height-for-age Z-score that is more than two standard deviations below (-2 SD) the median of the 2006 WHO Child Growth Standard population.[38] This indicator measures the combined prevalence of moderate (< -2 SD and >= -3) and severe (<-3 SD) stunting. While stunting can be difficult to accurately measure among children 0-6 months, and most stunting occurs in the 9-23 month range, data for this indicator will be reported for all children under 5 years of age to capture the impact of interventions over time and align with DHS data.

The prevalence of moderate and severe stunting among children under 5 in the ZOI is 45.5 percent; 18.7 percent experience severe stunting (Table 15). Among children under 5 years, boys have significantly higher combined and severe stunting prevalence than girls. In male and female adult households, boys have significantly higher combined and severe stunting prevalence than girls and higher severe stunting in female adult only households. Girls in male and female adult households have a higher prevalence of severe stunting than girls in female adult only households (Table 15). Further analysis examining the relationship between households with overweight/obese women (using body mass index [BMI]) and stunting among children can be found in Section 3.4.2 on women's nutrition.

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[38] World Health Organization and United Nations Children's Fund. 2006.

Table 15. Nutritional status of children under 5 years

	Height-for-age (stunting)		Mean Z-score (SD)	% below – 3 SD	Weight-for-height (wasting)		Mean Z-score (SD)	% below – 3 SD	Weight-for-age (under/overweight)		Mean Z-score (SD)	Number of children
	% below - 3 SD	% below – 2 SD			% below – 2 SD	% above +2 SD			% below – 2 SD	% above +2 SD		
All children	**18.69**	**45.52**	**-1.81 (1.43)**	**0.47**	**2.68**	**0.60**	**0.20 (1.12)**	**2.40**	**13.28**	**4.40**	**-0.88 (1.05)**	**1,114**
Male children	22.84[a]	51.20[e]	-1.97[g] (1.51)	0.97[i]	4.06[k]	0.41	0.16 (1.20)	3.02	17.65[l]	3.32	-1.00[n] (1.10)	529
Female children	15.22[a]	40.77[e]	-1.68[g] (1.35)	0.06[i]	1.53[k]	0.76	0.24 (1.05)	1.88	9.63[l]	5.30	-0.79[n] (1.00)	585
Household type												
Male & female adults												
All children	18.92	46.17	-1.85 (1.38)	0.32	2.46	0.65	0.21 (1.10)	2.21	9.22	4.40	-0.90 (1.05)	1,039
Male children	22.98[b]	52.88[f]	-2.02[h] (1.43)	0.64[j]	3.47	0.45	0.16 (1.16)	2.90	17.74[m]	3.32	-1.02[o] (1.10)	491
Female children	15.64[bc]	40.73[f]	-1.71[h] (1.33)	0.07[j]	1.64	0.81	0.24 (1.06)	1.65	9.79[m]	5.28	-0.80[o] (1.00)	548
Female adult only												
All children	13.32	37.44	-1.45 (1.31)	0.00	3.45	0.00	0.26 (1.04)	0.00	13.35	5.04	-0.65 (0.83)	66
Male children	20.07[d]	36.35	-1.73 (1.14)	0.00	6.30	0.00	0.38 (1.07)	0.00	14.60	3.88	-0.71 (0.81)	34
Female children	5.14[cd]	38.76	-1.13 (1.45)	0.00	0.00	0.00	0.12 (0.96)	0.00	2.70	6.44	-.56 (0.84)	32
Male adult only^ (no data)												
Child no adult^ (no data)												

[a-o] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are between rows.

^ = Results not statistically representative, n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Stunting in the ZOI is less than the reported 2007 Eastern Province stunting prevalence from the 2007 Zambia DHS (45.5 percent versus 49.5 percent).[39] In addition, the average stunting prevalance reported in the PBS falls within the range of other East African national averages reported in the DHS between 2007 and 2011.[40] The stunting prevalence range in East Africa was between an estimated 32 percent in Zimbabwe (2010-11 DHS) to 58 percent in Burundi (2010 DHS).[41]

Wasting is an indicator of acute malnutrition. Children experiencing wasting are too thin for their height and have a much greater risk of dying than children who are not wasted. This indicator measures the percentage of children 0-59 months who are acutely malnourished, as defined by a weight-for-height Z-score more than two standard deviations below (-2 SD) the median of the 2006 WHO Child Growth Standard population.[42] This indicator measures the combined prevalence of moderate (< -2 SD and >= -3) and severe (<-3 SD) wasting.

Among children under 5, the prevalence of wasting is 2.7 and the prevalence of severe wasting is less than 1 percent (Table 15). Among all children under 5, boys (4.0 percent) have significantly higher wasting prevalence than do girls (1.5 percent).

Compared to other national data sources, wasting prevalence in the ZOI is lower than the reported wasting prevalence from the Zambia DHS (3.6 percent) for the Eastern Province.[43] In addition, the average wasting prevalance in the 2012 PBS is lower than other East African[44] national averages reported in the DHS between 2007 and 2011. The East African prevalence ranges from 3 percent (2010 Rwanda DHS) to 10 percent (2010 Zimbabwe DHS and 2011 Ethiopia DHS).[45] Further, it should be noted that because the survey was not conducted during the most food-insecure period or the rainy season, it may not have captured the higher wasting prevalence that might occur at other times of the year in this area.

Underweight measures weight-for-age and it is a reflection of acute and/or chronic undernutrition. This indicator measures the percentage of children 0-59 months who are underweight, as defined by a weight-for-age Z-score more than two standard deviations below (-2 SD) the median of the 2006 WHO Child Growth Standard population.[46] This indicator measures the combined prevalence of moderate (< -2SD and >= -3SD) and severe (< -3SD) underweight.

Among all children under 5, 13.3 percent are underweight and 2.4 percent are severely underweight (Table 15). Significant differences are found in underweight prevalence by sex of child. The

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[39] CSO et al. 2007.
[40] USAID/MEASURE DHS East African countries include Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.
[41] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.
[42] World Health Organization and United Nations Children's Fund. 2006.
[43] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.
[44] USAID/MEASURE DHS East African countries include Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.
[45] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.
[46] World Health Organization and United Nations Children's Fund. 2006.

underweight prevalence among boys is eight percentage points more than that of girls (17.7 percent for boys, 9.6 percent for girls). Further analysis by household type shows that among male and female adult households, boys have significantly higher moderate and severe underweight prevalence than girls (17.7 percent for boys and 9.8 percent for girls in male and female households) (Table 15).

Underweight prevalence recorded by the PBS is slightly higher than the reported Eastern Province prevalence of 12.7 percent in the 2007 DHS.[47] Furthermore, this lies within the range of other East African countries; underweight prevalence ranges from 10 percent in Zimbabwe (2010 DHS) to 29 percent in Burundi (2010 DHS).[48,49]

Infant and Young Child Feeding

Exclusive breastfeeding for the first 6 months of life provides children with significant health and nutrition benefits, including protection from gastrointestinal infections and reduced risk of mortality due to infectious disease. Exclusive breastfeeding means the infant received breast milk (including milk expressed or from a wet nurse) and may have received oral rehydration, vitamins, minerals and/or medicines, but did not receive any other food or liquid. This indicator measures the percentage of children 0-5 months of age who were exclusively breastfed during the day preceding the survey.

In the entire sample (n=23), the prevalence of exclusive breastfeeding of children under 6 months in the ZOI is 27.8 percent (Table 16), yet the sample size for this indicator is not statistically representative.[50]

Table 16.   Prevalence of exclusive breastfeeding of children under 6 months

	Baseline value (%)	n (unweighted)
All households^	27.80	23
Household type		
Male and female adults^	-	19
Female adult only^	-	2
Male adult only^	-	2
Child no adult^	-	-

^ The sample size is too small for comparison between household types.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

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[47] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.
[48] USAID/MEASURE DHS East African countries include Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.
[49] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.
[50] Information on sampling can be found in Section 2.4 of the report; limitations can be found in Section 2.5.

The prevalence of children 6-23 months receiving a MAD is an indicator that measures the proportion of children 6-23 months of age who receive a MAD apart from breastfeeding. This indicator measures both the minimum feeding frequency and minimum diet given to the child in the past 24 hours. Tabulation of the indicator requires data from the following components:

- Consumption of milk, or milk products;

- Dietary diversity (consumption of four or more food groups); and

- Frequency of feeding semi-solid/solid feeds and number of milk feeds (minimum times or more).

Consumption of milk is important in promotion of strong bones. Children who are breastfed meet the milk consumption requirement. Nonbreastfed children's diet should include at least two feedings of commercial infant, fresh, tinned, and/or powdered animal milk. Dietary diversity for children 6-23 months is defined as four or more food groups out of the following seven groups: (1) dairy products (infant formula, milk other than breast milk, cheese, and yogurt); (2) grains, roots, and tubers; (3) vitamin-A rich fruits and vegetables; (4) other fruits and vegetables; (5) eggs; (6) meat, fish, poultry, and organ meats; and (7) legumes and nuts. Minimum necessary feeding frequency varies by breastfed and nonbreastfed child. The minimum times for feeding breastfed children (not including breastfeeds) is at least twice a day for infants 6-8 months, and at least three times a day for children aged 9-23 months. For nonbreastfed children 6-23 months, the child should be fed four times or more.

Among breastfed children, a MAD is met if the child consumes four or more food groups and is fed the minimum number of times or more. For nonbreastfed children, MAD is met if a child receives the minimum standard of receiving milk feedings, four or more feedings of solid, semisolid, soft food groups and the minimum meal frequency or more (nonbreastfed children 6-23 months). Data are presented across the ZOI disaggregated by sex of child (Table 7), by gendered household type (Table 17), and by breastfeeding status (Table 18).

At the time of the baseline survey, 16.2 percent of children 6-23 months received a MAD (Table 17). Only households with children 6-23 months are included in this analysis. As a result, the sample sizes for female adult only and male adult only households were small (n<30) and values are not reported for these household type categories. The value for male and female adult households is similar to the overall MAD prevalence (Table 17).

Table 17.   Prevalence of children 6-23 months receiving a MAD

	Baseline value (%)	n (unweighted)
All households	16.16	362
Household type		
Male and female adults	15.89	341
Female adult only^	-	15
Male adult only^	-	3
Child no adult^	-	-

The sample size is too small for comparison between household types.

^ = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 18.   Components of MAD among children 6-23 months

	Baseline value (%)	n (unweighted)
Breastfed children 6-23 months		
Four or more food groups	34.83	302
Minimum times or more	55.64[a]	302
Minimum acceptable diet	18.46[b]	302
Nonbreastfed children 6-23 months		
Milk or milk products	22.98	57
Four or more food groups	44.00	57
Minimum times or more	35.07[a]	57
Minimum acceptable diet	3.70[b]	57
All children 6-23 months		
Breast milk, milk, or milk products	88.24	359
Four or more food groups	36.23	359
Minimum times or more	52.50	359
Minimum acceptable diet	16.20	359

[a-b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across rows.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

MAD was disaggregated by component and breastfeeding status (Table 18). Approximately 16.2 percent of children receive the MAD. Overall, a higher percentage of children receive the appropriate meal frequency (52.5 percent) than receive the appropriate dietary diversity (36.2 percent).

Among breastfed and nonbreastfed children age 6-23 months, there are significant differences in households' infant and young child feeding practices (Table 18). Breastfed children 6-23 months are significantly more likely to meet the minimum feeding frequency (55.6 percent) than nonbreastfed children (35.1 percent). In addition, less than a quarter (23.0 percent) of nonbreastfed children are able to meet the milk and milk product requirements. Breastfed children had significantly higher MAD scores than nonbreastfed children, at 18.5 percent and 3.7 percent, respectively.

3.4.2   Women's Nutrition

Measures of Nutritional Status

The prevalence of underweight and overweight women are both indicators that provide information about the extent to which women's diets meet their caloric requirements. Undernutrition among women of reproductive age is associated with increased morbidity and poor food security, and can result in adverse birth outcomes. Overnutrition, resulting in overweight or obesity, is associated with higher risk of hypertension, diabetes, and adverse maternal and neonatal outcomes. The Feed the Future indicator measures the percentage of nonpregnant women of reproductive age (15-49 years) who are underweight as defined by a BMI of less than 18.5 (BMI <18.5). Data on overweight women (BMI >25.0) are also presented. To calculate an individual's BMI, weight and height measurements are taken and the formula is as follows: BMI = weight (kg)/height (in meters) squared.

Table 19 shows the distribution of women's mean BMI and prevalence of BMI categories among respondents. Across all women surveyed, the mean BMI is 22.5, or normal weight. Approximately 75.4 percent of women are considered normal weight and there are more overweight/obese women than underweight women in the sample. Results from the PBS are similar to the 2007 Eastern Province data from the DHS (mean BMI 22.2, prevalence of normal BMI 79.0 percent).[51]

Table 19.   Women's body mass index

	Baseline value	n (unweighted)
Mean body mass index (BMI)	22.54	1,383
BMI categories	%	
< 17.0 (Moderate/severely underweight)	1.08	1,383
17.0-18.49 (Mildly underweight)	5.26	1,383
18.5-24.9 (Normal)	75.41	1,383
25.0-29.9 (Overweight)	15.80	1,383
≥ 30.0 (Obese)	2.45	1,383
<18.5 (Underweight)	6.34	1,383
18.5-24.9 (Normal)	75.41	1,383
≥ 25.0 (Overweight/obese)	18.25	1,383

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

In the ZOI, the combined underweight prevalence of women is 6.3 percent (Table 19); 5.3 percent are mildly underweight and 1.1 percent are moderately to severely underweight (Table 19). There are no significant differences between household types (Table 20). Women's mild and moderate/severe prevalence of underweight reported in the PBS is similar to the 2007 Eastern Province DHS data: 5.2 percent mild underweight; 1.4 percent moderate/severe underweight.[52]

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[51] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.
[52] Ibid, p. 38.

Table 20. Prevalence of underweight women

	Baseline value (%)	n (unweighted)
Any underweight	**6.34**	**1,383**
Household type		
Male and female adults	6.59	1,264
Female adult only	4.67	111
Male adult only^	-	7
Child no adult^	-	1

Not significantly different at the 0.05 level. Comparisons are across rows.

^ = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 21 shows the prevalence of households with underweight women and stunted children under 5, which is 2.1 percent. There is no significant difference by household type.

Table 21. Prevalence of households with underweight women and stunting in children under 5

	Baseline value (%)	n (unweighted)
All households	**2.05**	**736[1]**
Household type		
Male and female adults	2.15	688
Female adult only	1.03	44
Male adult only^	-	4
Child no adult^	-	-

[1] This subsample includes households with children under 5 and women of reproductive age for whom anthropometric measures were taken.

No differences across subgroups are statistically different at the 0.05 level.

^ = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

The combined prevalence of overweight and obese (BMI > 25) women in households is 18.3 percent in the ZOI (Table 22). Approximately 15.8 percent of women surveyed are overweight; 2.5 percent are obese (Table 19). There are no significant differences in the prevalence of overweight/obese women by household type.

Table 22.   Prevalence of overweight and obese women

	Baseline value (%)	n (unweighted)
Any overweight	**18.25**	**1,383**
Household type		
Male and female adults	17.90	1,264
Female adult only	22.31	111
Male adult only^	-	7
Child no adult^	-	1

No differences across subgroups are statistically different at the 0.05 level.

^ = Results not statistically representative, n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

The percentage of overweight women in the 2012 PBS is almost 4 percent higher than the 2007 Eastern Province DHS overweight prevalence (12.2 percent). Obesity prevalence among women in the 2012 PBS is slightly higher than the 2007 Eastern Province DHS (2.2 percent).[53] Increased economic growth from 2007 to 2012 may explain the slightly higher combined overweight prevalence in the 2012 PBS compared to the 2007 Eastern Province.

Further analysis compared the prevalence of households with overweight women and stunted children. It is important to note that height and weight measurements were taken from every consenting nonpregnant woman of reproductive age in the household; this did not necessarily include the mothers or caregivers of all children. The ZOI baseline prevalence of households with women who are overweight/obese and stunted children is 8.5 percent (Table 23). Male and female adult households are significantly more likely to have both overweight/obese women and stunted children than female adult only households. The significantly higher prevalence of combined overweight/obese women and stunted children in male and female adult households may not necessarily be reflective of the mother of the child, but rather of other, possibly older women (e.g., mother-in-laws) who may reside in the households.

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[53] Data abstracted from USAID/MEASURE STATCompiler; limited to DHS conducted from 2007-2012.

Table 23. Prevalence of households with overweight/obese women and stunting in children under 5

	Baseline value (%)	n (unweighted)
All households	**8.49**	**736[l]**
Household type		
Male and female adults	9.04[a]	688
Female adult only	2.48[a]	44
Male adult only^	-	4
Child no adult^	-	0

[a] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are between rows.

^ = Results not statistically representative, n<30.

[l] This subsample includes households with children under 5 and women of reproductive age for whom anthropometric measures were taken.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Women's Dietary Diversity Score

Women of reproductive age are at risk of multiple micronutrient deficiencies, which can jeopardize their health, their ability to care for their children, and their ability to participate in income-generating activities. This indicator is a validated proxy measure of the micronutrient adequacy of the diet and reports the mean number of food groups consumed in the previous day by women of reproductive age (15-49 years). To calculate this indicator, nine food groups are used: (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) organ meat; (5) eggs; (6) flesh food and small animal protein; (7) vitamin A-rich dark green leafy vegetables; (8) other vitamin A-rich vegetables and fruits; and 9) other fruits and vegetables. The mean number of food groups consumed by women of reproductive age is tabulated by averaging the number of food groups consumed (out of the nine food groups mentioned above) across all women of reproductive age in the sample.

At baseline, women of reproductive age consumed on average four out of nine food groups during the previous day (Table 24). The average number of food groups consumed by women did not differ by type of household.

Further analysis was conducted to identify which food groups are most frequently consumed (Table 25). Almost all women eat grain, roots, and tubers (99.5 percent), and an overwhelming majority eat other vitamin A-rich vegetables and fruits (89.9 percent). More than half of the respondents have diets rich in vitamin A (dark leafy greens) and protein (flesh foods and other small animal protein). Approximately 43.4 percent consume legumes and nuts. Less than 20 percent consume eggs (12.2 percent), dairy products (6.5 percent), and organ meat (3.5 percent).

Table 24. **Women's Dietary Diversity Score: Mean number of food groups consumed by WRA**

	Baseline value (mean)	n (unweighted)
All households	**4.01**	**1,549**
Household type		
Male and female adults	4.01	1,414
Female adult only	4.00	124
Male adult only ^	-	10
Child no adult ^	-	1

No differences across subgroups are statistically different at the 0.05 level.

^ = Results not statistically representative, n<30.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 25. **Percent of women consuming each food group daily**

	Baseline value (%)	n (unweighted)
Food group		
Grains, roots, and tubers	99.51	1,549
Legumes and nuts	43.37	1,549
Dairy products	6.50	1,549
Organ meat	3.50	1,549
Eggs	12.23	1,549
Flesh foods and other misc. small animal protein	54.30	1,549
Vitamin A-rich dark green leafy vegetables	57.61	1,549
Other vitamin A-rich vegetables and fruits	89.88	1,549
Other fruits and vegetables	33.98	1,549

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

The Women's Dietary Diversity Score was divided into quartiles and the average of the scores within the quartile calculated (Table 26). The breakdown by quartiles shows a fairly consistent pattern of increase from 1.8 in the lowest quartile to 5.2 in the highest quartile, increasing approximately by one food group per quartile.

Table 26. **Women's Dietary Diversity Score, by quartile**

	Women's Dietary Diversity Score			
	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Mean number of food groups consumed (Std dev)	1.83 (0.41)	2.86 (0.35)	3.62 (0.48)	5.19 (1.16)
n (total = 2,311)	**577**	**578**	**578**	**578**

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

3.5   Women's Empowerment

Women play a prominent role in agriculture, and because of the persistent economic constraints they face, women's empowerment is a main focus of Feed the Future. Empowering women is particularly important to achieving the Feed the Future objective of inclusive agriculture sector growth. The WEAI was developed to track the change in women's empowerment levels that occurs as a direct or indirect result of interventions under Feed the Future. For more information, the WEAI questionnaires and manual can be found online.[54]

3.5.1   WEAI Overview

The WEAI measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify and address the constraints that limit women's full engagement in the agriculture sector.[55]

For Zambia, the WEAI score is 0.80. The WEAI is composed of two subindices: the 5DE subindex measures the empowerment of women in five areas, and the GPI measures the relative empowerment of men and women within the household. The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI (both discussed in the following section). Thus, improvements in either the 5DE or GPI will increase the WEAI score. The total formula for the Index is: WEAI = 0.9 x 5DE + 0.1 x GPI.

The WEAI is an aggregate index reported at the ZOI level and is based on *individual*-level data on men and women in the same household, as well as data from women living in households with no adult male. The respondents are primary male/female decision-makers in the household. Refer to Annex D for further description of this indicator and explanation of the calculation. See Table 27 for the list and definition of WEAI indicators.

3.5.2   5DE

The 5DE subindex assesses whether women are empowered across the five domains examined in the WEAI. Each domain is weighted equally, as are each of the indicators within a domain. The five domains, their definitions under the WEAI, the corresponding 10 indicators, and their weights for the 5DE are shown in Table 27.

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[54] IFPRI. 2013.
[55] Alkire, S., Malapit, H., et al. 2013.

Table 27.   WEAI indicators

Domain (each weighted 1/5 of the 5DE subindex)	Definition of domain	Indicators	Weight of indicator in 5DE subindex
Production	Sole or joint decision-making over food and cash-crop farming, livestock, and fisheries, and autonomy in agricultural production	Input in productive decisions	1/10
		Autonomy in production	1/10
Resources	Ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit	Ownership of assets	1/15
		Purchase, sale, or transfer of assets	1/15
		Access to and decisions on credit	1/15
Income	Sole or joint control over income and expenditures	Control over use of income	1/5
Leadership	Membership in economic or social groups and comfort in speaking in public	Group member	1/10
		Speaking in public	1/10
Time	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload	1/10
		Leisure	1/10

The 5DE is a measure of empowerment rather than disempowerment. As such, the subindex describes women as "empowered" or "not yet empowered," rather than empowered and disempowered. A woman is defined as empowered in the five domains if she has adequate achievements[56] in 80 percent or more of the weighted indicators. Within the 5DE, the 80 percent threshold is also called the empowerment threshold. For women who are not yet empowered, the 5DE captures the percentage of indicators in which those women do have adequate achievement. The 5DE contributes 90 percent of the weight to the WEAI. The 5DE score ranges from zero to one, where higher values indicate greater empowerment.

The 5DE is calculated by first constructing the disempowerment index (M_0), and then converting M_0 to empowerment. The formula is 5DE = 1- M_0. The disempowerment index is constructed using a multidimensional methodology known as the Alkire Foster Method.[57] M_0 is calculated by multiplying the disempowered headcount (H) and the average inadequacy score (A). The disempowered headcount reflects the proportion of women who are not yet empowered. The average inadequacy score reflects the average percentage of indicators in which women who are not yet empowered did

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[56] Having "adequate achievement" means an individual scores above an adequacy cutoff established for each indicator.
[57] University of Oxford. 2013.

not yet achieve adequacy.[58] In sum, the 5DE is expressed as: $5DE = 1 - H \times A$. Of note, Table 28 reports H and A as percentages, but in the 5DE formula, the equivalent proportions are used.

Table 28 shows that the 5DE in Zambia is 0.79. As reflected in the formula above, this score is calculated with the percent of women in the survey who are not yet empowered (disempowered headcount - H), which is 59.7, and the average inadequacy score (A), which is 35.9 percent.[59]

The results presented in this section do not represent the levels of empowerment of all adult women in the population. These results only represent the status of primary decision-makers within the household.

Table 28.   Women's 5DE subindex

	Baseline value
5DE	0.79
Percent of women achieving empowerment (score of 0.80 or greater) (1-H_n)	40.28
Percent of women not achieving empowerment (score below 0.80) (H_n)	59.72
Average adequacy score for women not yet empowered (1-A)	64.13
Average inadequacy score for women not yet empowered (A)	35.87
n	1,325

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

In addition to examining the 5DE for the sample as a whole, 5DE scores were analyzed and compared by household type. As shown in Table 29, there are no statistically significant differences in 5DE scores by household type.

Table 29.   Women's 5DE score and household type

	Baseline value	SD	n (unweighted)
Household type			
Male and female adults	0.78	0.22	1,176
Female adult only	0.81	0.19	147

No significant differences by household type at the 0.05 level (comparisons are between rows).

NOTE: Two households did not have data for Module C, gendered household type, resulting in n=1,323 for the household type rows.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 30 reports the percentages of primary decision-making females who are not yet empowered and have inadequacy for the 10 indicators within each of the five domains of empowerment (i.e., the censored headcount). Refer to Annex D for descriptions of each of the 10 indicators including adequacy cutoffs. In Table 30, results are shown for all women from both household types who responded to the WEAI module in the survey. Women who score above the 80 percent empowerment threshold are not counted against the censored headcounts. To compute a censored headcount ratio for each indicator, the number of not-yet-empowered women who did not achieve

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[58] Alkire, S., Meinzein-Dick, R., et al. 2013.

[59] These are the results based on the calculations of this indicator, recognizing that most women in agriculture are subsistence farmers. For more information on the WEAI utilization by Feed the Future, visit the following site: http://feedthefuture.gov/article/release-womens-empowerment-agriculture-index. Retrieved May 20, 2013.

adequacy on that indicator is divided by the total number of women who responded. The censored headcounts illustrate the profile of inadequate achievements of the not yet empowered. Focusing on women who are not yet empowered is important because it emphasizes specific ways empowerment can be improved. By construction, improvements in the achievements of women who are already empowered do not increase the 5DE score, an important property of the subindex. Discussion of each indicator and domain follows Table 30.

Table 30. **Percent of women who are not yet empowered and who have inadequate achievement (censored headcount) in the 5DE indicators**

Domain	Indicator	Censored headcount[1] (n=1,325)
Production	Input in productive decisions	8.93
	Autonomy in production	17.87
Resources	Ownership of assets	15.40
	Purchase, sale, or transfer of assets	25.48
	Access to and decisions on credit	53.00
Income	Control over use of income	4.87
Leadership	Group member	23.06
	Speaking in public	25.03
Time	Workload	51.94
	Leisure	15.02

[1] The censored headcount ratio for a particular indicator is the number of not-yet-empowered women who did not achieve adequacy on that indicator divided by the total number of women who responded.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Production Domain

Input in Productive Decisions. Results shown in Table 30 indicate that among women in the ZOI, 8.9 percent are not yet empowered and have inadequate input into productive decisions.

Autonomy in Production. With respect to autonomy in production, 17.9 percent of women are not yet empowered and have inadequacy on the indicator.

Resources Domain

Ownership of Assets. Among women in the Zambia ZOI, 15.4 percent are not yet empowered and experience inadequacy in ownership of assets.

Purchase, Sale, or Transfer of Assets. The percentage of women who are not yet empowered and have inadequate achievement in terms of controlling the purchase, sale, or transfer of assets is 25.5 percent.

Access to and Decisions on Credit. The indicator tracking access to and decisions on credit shows the highest percentage of inadequacy among women, with 53.0 percent not yet empowered and not having adequate achievement.

Income

Control Over Use of Income. The percentage of women who are not yet empowered and lack adequacy in the control over the use of income is lowest (4.9 percent) compared to the other 5DE indicators.

Leadership Domain

Participation in Formal and Informal Groups. In the ZOI, the percentage of women who are both not yet empowered and experience inadequacy in the group membership indicator is 23.1 percent.

Speaking in Public. A slightly higher percentage of women (25.0 percent) are both not empowered and lack adequacy in the speaking in public indicator compared to the group membership indicator.

Time Allocation Domain

Workload. Compared to all other 5DE indicators, workload exhibits the second highest percentage of women who are both not yet empowered and experience inadequacy, at 51.9 percent.

Leisure Time. The percentage of women in the Zambia ZOI who are both not yet empowered and have inadequacy in leisure time is 15.0 percent.

3.5.3   Discussion of the 5DE Indicators by District

Table 31 reports the censored headcounts for the 10 indicators of 5DE, disaggregated by district. Censored headcounts are the percentages of primary decision-making women who are not yet empowered and are inadequate on a particular indicator. Results are shown for all women who responded to the WEAI module in the survey, in both male and female adult households and female adult only households. Discussion of each indicator and domain follows.

Production Domain

Input in Productive Decisions. Across the five districts in the ZOI, the censored headcount for input in productive decisions, or the percentage of women who are not yet empowered and are inadequate in the indicator, is lowest in Chipata (7.3 percent) and highest in Nyimba (12.0 percent), but the differences by district are not statistically significant.

Autonomy in Production. With respect to the autonomy in production indicator, Lundazi has the lowest percentage of women who are not yet empowered and are inadequate on the indicator (12.3 percent), but, as with input in productive decisions, the differences by district are not statistically significant.

Table 31. **Percent of women who are not yet empowered and who have inadequate achievement (censored headcounts) in the 5DE indicators by district[1]**

Feed the Future indicator		Chipata	Katete	Lundazi	Petauke	Nyimba	All districts
		Censored head-count	Censored head-count	Censored head-count	Censored head-count	Censored head-count	Censored head-count
Production	Input in productive decisions	7.32	7.97	10.39	9.13	11.96	8.93
	Autonomy in production	18.11	23.55	12.28	19.58	18.63	17.87
Resources	Ownership of assets	18.51[ab]	13.33	19.93[c]	10.45[a]	6.12[bc]	15.40
	Purchase, sale, or transfer of assets	29.31[abc]	18.26[ad]	34.16[def]	18.99[be]	15.20[cf]	25.48
	Access to and decisions on credit	55.63	47.56	55.05	52.01	50.85	53.00
Income	Control over use of income	4.87	6.62	3.90	4.61	5.17	4.87
Leadership	Group member	22.55	19.74	27.56	21.24	22.20	23.06
	Speaking in public	20.35	27.90	27.30	26.71	22.52	25.03
Time	Workload	53.11	43.94[a]	61.21[abc]	46.43[b]	49.83[c]	51.94
	Leisure	14.88[a]	9.92[b]	24.93[abcd]	7.97[c]	13.88[d]	15.02
n		**334**	**284**	**290**	**286**	**131**	**1,325**

[a-f] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns (within the same row).

[1] Censored headcounts are the percentage of women who are disempowered and have inadequate achievement in the indicator.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Resources Domain

Ownership of Assets. Table 31 shows that, regarding ownership of assets, the lowest censored headcount value is in Nyimba (6.1 percent), whereas the highest censored headcount value is in Lundazi (19.9 percent), and these districts are significantly different.

Purchase, Sale, or Transfer of Assets. The censored headcount for the purchase, sale, or transfer of assets indicator is lowest in Nyimba (15.2 percent) and highest in Lundazi (34.2 percent). Just more than one third of women in Lundazi district are not yet empowered and are inadequate on this indicator, significantly higher than three other districts in the ZOI (all but Chipata).

Access to and Decisions on Credit. Table 31 shows that censored headcounts are high across the five districts for the access to and decisions on credit indicator, ranging from 47.6 percent of women in Katete to 55.6 percent in Chipata. Overall, more than half (53.0 percent) of women in the ZOI are not yet empowered and are inadequate on this indicator, the indicator with the highest censored headcount values. There are no statistically significant differences across the districts.

Income Domain

Control Over Use of Income. With respect to the control over the use of income indicator, the censored headcounts are lowest in Lundazi (3.9 percent) and highest in Katete (6.6 percent). There are no statistically significant differences across the districts.

Leadership Domain

Participation in Formal and Informal Groups. The censored headcount for the group membership indicator is lowest in Katete (19.7 percent) and highest in Lundazi (27.6 percent). As with the prior two indicators, there are no significant differences across districts.

Speaking in Public. Across the five districts in the Zambia ZOI, the percentage of women who are not yet empowered and are inadequate in the speaking in public indicator is lowest in Chipata (20.4 percent) and highest in Katete (27.9 percent). Again, there are no significant differences across districts.

Time Allocation Domain

Workload. As with access to and decisions on credit, the censored headcounts for the workload indicator are high across the districts, ranging from 43.9 percent in Katete to 61.2 percent in Lundazi, a significant difference.

Leisure Time. With respect to the satisfaction with leisure time indicator, Table 31 shows that women's censored headcounts are lowest in Petauke (8.0 percent) and highest in Lundazi (24.9 percent). Women in Lundazi district are significantly more likely to be not yet empowered and inadequate in this indicator than women in all other districts in the ZOI.

3.5.4   GPI

The second subindex in the WEAI—the GPI—measures women's empowerment relative to that of men by comparing the 5DE profiles of women and men in the same households. A woman is assumed to achieve gender parity if her achievements in the five domains are at least as high as the man in her household. The GPI reflects the percentage of women who have achieved parity and, in cases of gender disparity, the average empowerment gap that women experience relative to their male counterparts.

The GPI is calculated by multiplying two factors. The first is the percent of women without gender parity (H_{GPI}), defined as women with lower achievements in the five domains than that of their male counterparts. Empowered women, meaning those who score above the empowerment threshold of the 5DE, are automatically counted as having parity with their male counterpart. The second factor is the average empowerment gap (I_{GPI}), which measures the average percentage shortfall in empowerment between women and men living in households without gender parity across all indicators. The GPI is calculated with the formula: $GPI = 1 - (H_{GPI} \times I_{GPI})$. The GPI ranges from zero to one, with higher values indicating greater gender parity.[60]

In Zambia, the GPI is 0.89, which is calculated with the formula above that is based on the percent of women without gender parity (54.1) and the average empowerment gap (19.6). Table 32 shows the breakdown of baseline values by the GPI variables.

Table 32.   GPI

	Baseline value
GPI	0.89
Percent of women achieving gender parity (1-H_{GPI})	45.94
Percent of women without gender parity (H_{GPI})	54.06
Average Empowerment Gap (I_{GPI})	19.57
n	925[1]

[1] The sample size for the GPI subindex (925) is lower than that reported in Table 29 (1,176) because the GPI requires both a male and a female Module G (WEAI) record from the Male and Female Adult (e.g., dual adult) households.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table 33 presents men's and women's censored headcounts, or the percentage not yet empowered and inadequate in the 10 indicators of 5DE. Note that, unlike Table 30, which showed percentages for all primary decision-making women in the survey, in Table 33, the percentages reported are based only on primary decision-making males and females in dual households, those households with both a male and a female adult.

Table 33 shows that, in the Zambia ZOI, men and women in dual households report significant differences in nine of the 10 5DE indicators. Significantly more women than men are not yet empowered and have inadequacy in all indicators except group membership.

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[60] Alkire, S., Meinzein-Dick, R. et al. 2013.

Table 33. **Percent of men and women who are not yet empowered and have inadequate achievement (censored headcount) in the 10 5DE indicators**

Domain	Indicator	Baseline values	
		Male censored headcount[1] (n=925)	Female censored headcount[2] (n=925)
Production	Input in productive decisions	2.92[a]	10.05[a]
	Autonomy in production	10.80[b]	18.36[b]
Resources	Ownership of assets	2.67[c]	17.15[c]
	Purchase, sale, or transfer of assets	5.62[d]	30.28[d]
	Access to and decisions on credit	20.98[e]	55.21[e]
Income	Control over use of income	1.44[f]	5.79[f]
Leadership	Group member	19.27	19.56
	Speaking in public	4.69[g]	24.73[g]
Time	Workload	24.12[h]	53.77[h]
	Leisure	8.48[i]	14.51[i]

[a-i] Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns. Comparison and estimates for men and women living in male and female adult households.

[1] Male censored headcounts are the percentage of men who are not yet empowered and have inadequate achievement in the indicator.

[2] Female censored headcounts are the percentage of women who are not yet empowered and have inadequate achievement in the indicator.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

4. Analysis of Findings

4.1 Analyses Requested by USAID/Zambia

Detailed analysis was conducted to examine the relationship between the severity of household hunger and women's achievement on the 10 5DE indicators of WEAI.[61] Households were categorized according to whether they reported "moderate to severe hunger" or "little to no hunger."

The percentage of women who have adequate achievements for each of the 5DE indicators is similar across categories of household hunger (Table 34). There is only one significant difference between households by hunger status: a higher percentage of women in households with moderate to severe hunger have adequate access to and decision-making ability on credit than women in households with little to no hunger.

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[61] Thresholds per each indicator as defined by WEAI standards.

Table 34.   Women's achievement on 5DE indicators of WEAI by severity of household hunger

	HHS categories	
	Moderate to severe hunger (n=257)	**Little to no hunger (n=1,059)**
5DE indicator	**(% women who have achieved empowerment in each category)**	
Input into productive decisions	90.44	90.66
Autonomy in production	80.74	78.70
Ownership of assets	85.07	84.19
Purchase, sale, or transfer of assets	71.08	72.87
Access to and decisions on credit	35.13[a]	24.13[a]
Control over use of income	95.20	94.99
Group member	79.01	72.66
Speaking in public	73.18	70.95
Workload	23.21	20.17
Leisure	76.36	82.91

[a] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Analysis was also conducted to determine the extent to which households with empowered women had better outcomes on selected Feed the Future ZOI indicators compared to women who are not yet empowered. There is no significant difference between households with empowered women and households with not yet empowered women for any of the indicators (Table 35).

Table 35.   Values for selected indicators according to women's empowerment status

ZOI indicator	Empowerment status			
	Empowered	**n**	**Not yet empowered**	**n**
Prevalence of underweight children under 5 years	12.05	401	13.73	640
Prevalence of stunted children under 5 years	44.66	401	45.86	640
Prevalence of wasted children under 5 years	1.65	401	3.55	640
Prevalence of underweight women	6.40	574	5.46	724
Prevalence of households with moderate or severe hunger	24.78	553	20.96	763
Women's Dietary Diversity Score: Mean number of food groups consumed by WRA	3.99(1.15)	633	4.03(1.12)	815

No differences across subgroups for any of the indicators in the table are statistically different at the 0.05 level.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Analysis was also conducted to determine the relationship between women's decision-making ability and selected Feed the Future indicators to determine whether women and children fare better when they live in households with a woman who has greater decision-making power. The results are presented in Table 36.

Table 36. Level of decision-making capacity, by selected indicator

ZOI indicator	Decision-making index[1]					
	Low (0-3 decisions)		Medium (4 decisions)		High (5 decisions)	
	% households	n	% households	n	% households	n
Prevalence of underweight children under 5 years of age	15.20	430	11.47	434	11.73	177
Prevalence of stunted children under 5 years of age	46.75	430	43.78	434	46.04	177
Prevalence of wasted children under 5 years of age	3.75	430	1.76	434	3.26	177
Prevalence of underweight women	5.82	483	4.68	546	8.30	269
Prevalence of households with moderate or severe hunger	20.70[a]	505	20.03[b]	575	32.09[ab]	236
	Mean	n	Mean	n	Mean	n
Women's Dietary Diversity Score: Mean number of food groups consumed by WRA	4.08 (1.09)	541	4.01 (1.15)	611	3.89 (1.17)	296

[1] Number of decision-making indicators in which women report joint or full control out of the following four categories: (1) input in production decisions, (2) access to and decisions on credit, (3) purchase sale or transfer of assets, and (4) control over use of income, autonomy in production.

[a,b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

The decision-making index was calculated as follows: each of the five decision-making indicators in the WEAI are scored such that one indicates the respondent achieved adequacy in the indicator (has adequate freedom to make decisions) and zero means she did not. The five items were summed and broken down into three categories: Low (respondent achieved adequacy in zero to three decision-making activities); Medium (respondent achieved adequacy in four decision-making activities); and High (respondent achieved adequacy in all five decision-making activities).

Similar to Table 35, data in Table 36 indicate that most of the indicators do not differ significantly across the decision-making categories of the primary female household. There is one exception, however. A greater percentage of households reported moderate to severe hunger where the primary female had adequate decision-making ability in all five 5DE decision indicators.[62]

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[62] The finding that household hunger is associated with greater decision-making (by the primary female) is possibly explained by women with greater decision-making ability residing in female adult only households.

5.   Summary and Conclusion

This document reports the findings of the Zambia PBS and the RALS that serve as ZOI baseline values for the USG Feed the Future initiative in Zambia.

Despite a positive GDP growth of 4.7 percent per year in the last decade and considerable agricultural potential, poverty and malnutrition are widespread in Zambia, particularly in rural areas. Rural poverty remains very high at 80 percent. Agriculture supports the livelihood of more than 70 percent of the population, however, agricultural productivity of staple crops has been stagnant because of inadequate infrastructure, small agricultural parcels, and low productivity and seasonal variability.

Despite strong economic growth, poverty remains a significant problem in Zambia because of a relatively high HIV/AIDS burden, low agricultural productivity, and market-distorting policies. Overall, the prevalence of poverty based on the $1.25/person/day at 2005 PPP level threshold in the ZOI is 79.8 percent. It is 74.0 percent based on the Zambian national threshold for moderate poverty set at $1.03/person/day at 2005 PPP level and 56.4 percent based on the national extreme poverty level of $0.68/person/day at 2005 PPP level. The poverty gap at $1.25/day is also very high at almost 46.5 percent while the poverty gap at $1.03/day is 40.0 percent.

Female adult only households are more likely to be poor than both male adult only households and male and female adult households. The baseline value for female adult only households living on less than $1.25/day is 86.0 percent while it is 59.9 percent for male adult only households and 79.3 for male and female adult households. The same trend is seen for the national extreme poverty line of $0.68, with significantly more female adult only households (69.7 percent) facing extreme poverty than male and female adult households (54.6 percent) or male adult only households (38.4 percent). In addition, female adult only households have the lowest daily per capita income ($0.98 in 2010 USD) compared to all household types.

Almost one-quarter of all interviewed households reported moderate to severe hunger based on the HHS, with the proportion significantly higher for households with adult females only (32.5 percent) compared to households with both male and female adults (21.5 percent). Within the ZOI, the prevalence of moderate and severe stunting among children under 5 is 45.5 percent; severe stunting is 18.7 percent. The prevalence of wasting is 2.7 percent, with wasting significantly more common among male children. Among all children under 5, 13.3 percent are moderately or severely underweight; 2.4 percent are severely underweight. The prevalence of all three anthropometric indicators is higher for male children than for female children. The prevalence of children 6-23 months with a MAD is 16.2 percent. The Women's Dietary Diversity Score is low, with women reporting an average consumption of only four out of nine total food groups. Approximately three-quarters of women (75.4 percent) are considered normal weight, while 6.3 percent are underweight.

As a measure of women's empowerment, the average 5DE index value is 0.79. Overall, 40.3 percent of women in the survey are considered to be empowered, defined as a 5DE score of 80 percent or

more. Analysis of men and women's censored headcounts, or the percentages not yet empowered and inadequate on the 10 indicators of 5DE (Table 33), reveals that significantly more women than men are disempowered and inadequate on nine of the 10 indicators of 5DE. Only with respect to group membership are there no significant differences between men and women. It should be noted, however, that these results do not represent the levels of empowerment of all adult women in the population. Rather, these results represent the status of primary decision-makers within the household.

Results from the PBS and RALS clearly indicate that efforts should be directed toward reducing poverty, reducing child malnutrition, and increasing women's economic opportunities in the ZOI, and in the district of Lundazi, in particular.

Appendix A. Values for Feed the Future Indicators, by District

Table A-1.   Values for Feed the Future indicators, by gendered household type and district[1]

Feed the Future indicator	District																			
	Chipata				Katete				Lundazi				Petauke				Nyimba			
	MFA	n	FNM	n	MFA	n	FNM	n	MFA	n	FNM	n	MFA	n	FNM	n	MFA	n	FNM	n
Prevalence of poverty: Percent of people living on less than $1.25/day^	73.5	329	88.2	57	78.1	293	87.2	54	77.8	309	79.6	42	91.3	136	-	-	85.9	309	87.2	41
Per capita income of USG targeted beneficiaries^	1.40	329	1.46	57	1.18	293	0.76	54	1.22	309	0.85	42	0.67	136	-	-	1.04	309	0.83	41
Prevalence of underweight children under 5^	9.75	248	-	-	16.69	226	-		14.38	257	-	-	13.31	210	-	-	14.15	98	-	-
Prevalence of stunted children under 5^	37.69	248	-	-	47.82	226	-		50.32	257	-	-	48.16	210	-	-	52.12	98	-	-
Prevalence of wasted children under 5^	3.04	248	-	-	3.33	226	-		3.62	257	-	-	0.21	210	-	-	0.15	98	-	-
Prevalence of underweight women^	11.32	300	5.33	44	4.93	281	-	-	6.54	305	-	-	2.05	261	-	-	6.26	117	-	-
Women's Empowerment in Agriculture Index^	0.80	294	-	-	0.80	256	-	-	0.76	261	-	-	0.83	258	-	-	0.80	116	-	-

Table A-1.   Values for Feed the Future indicators, by gendered household type and district (continued)

| Feed the Future indicator | District | | | | | | | | | | | | | | | | | | | |
| | Chipata | | | | Katete | | | | Lundazi | | | | Petauke | | | | Nyimba | | | |
	MFA	n	FNM	n	MFA	n	FNM	n	MFA	n	FNM	n	MFA	n	FNM	n	MFA	n	FNM	n
Prevalence of HH with moderate or severe hunger^	17.20	311	28.64	49	19.42	271	29.47	31	26.07	300	29.37	34	23.12	279	33.89	33	19.54	119	-	-
Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age	4.23	334	4.04	48	3.97	312	-	-	3.95	343	-	-	3.89	291	-	-	3.70	134	-	-

^ = Results not statistically representative; n<30.

[1] The district-level sample sizes for male adult only (MNF) and child only (CNA) households are too small; those categories of household type are not included.

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

Table A-2. Values for child nutrition by child's gender, by district

Feed the Future indicator	District																			
	Chipata				Katete				Lundazi				Petauke				Nyimba			
	Male	n	Female	n	Male	n	Female	n	Male	n	Female	n	Male	n	Female	n	Male	n	Female	n
Prevalence of underweight children under 5	10.81	124	8.47	153	20.78	119	13.17	117	22.74	128	8.12	148	17.10	106	8.89	112	11.87	52	14.09	55
Prevalence of stunted children under 5	46.89	124	32.13	153	46.54	119	2.84	117	51.33	128	45.47	148	57.99	106	40.92	112	57.71	52	45.22	55
Prevalence of wasted children under 5	4.32	124	1.71	153	3.38	119	13.17	117	7.76	128	1.98	148	0.84	106	0.00	112	0.00	52	0.26	55

Source: FTF FEEDBACK PBS. Nov-Dec 2012.

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Annex A. Survey Protocol – Zambia

Protocol for Zambia Baseline Survey Data Collection for Feed the Future FEEDBACK Project

A.1   Overview

Part of the monitoring and evaluation system for U.S. Government-supported food security activities is reporting on population-based indicators. These indicators are based on analysis of survey data. The United States Agency for International Development (USAID) Mission will report on 11 population-based indicators in the Feed the Future Zone of Influence (ZOI). In Zambia, the ZOI includes five districts within Eastern Province. Reporting for the Feed the Future indicators is for the entire ZOI.

Where possible, indicators will be estimated based on existing sources of data. Use of existing data sources will save time and reduce the cost of generating estimates for the indicators. These data sources must meet criteria to provide valid baseline estimates of indicators. The data sources must have collected the data in a recent time window (within the last 2 years), but prior to the start of Feed the Future activities. The data source must have used a sample size large enough to estimate indicator values with sufficient precision and power to measure change over time.

In the case of Zambia, the Feed the Future baseline survey will be designed as a complement to the Rural Agricultural and Livelihood survey (RALS) conducted by the Central Statistics Office (CSO), in collaboration with Indaba Agricultural Policy Research Institute (IAPRI)/Michigan State University (MSU). In particular, the RALS will provide the necessary income data. The RALS collects information about household income using the same set of questions as in the Zambia Living Conditions Monitoring Survey (LCMS), which the government uses to estimate national income levels and poverty rates. These questions from the RALS about household incomes will be used to compute prevalence of poverty and per-capita income (rather than the proxy measure of per-capita expenditures). This strategy will be followed to ensure that the results from the survey are consistent with the way that the government poverty statistics are computed. In addition, a combination of the RALS and Feed the Future baseline information will permit analysis of correlations between the nutrition, women's empowerment, and hunger scale from the Feed the Future baseline with the agricultural and income information available in the RALS.

Baseline surveys will be conducted for indicators that cannot be calculated with existing data sources. The Feed the Future ZOI baseline survey will collect data for Feed the Future population-based indicators: (1) Women's Empowerment in Agriculture Index (WEAI); (2) Prevalence of households with moderate or severe hunger (Household Hunger Scale); (3) Women's Dietary Diversity Score; (4) prevalence of underweight women (BMI); (5) prevalence of children 0-5 months exclusively breastfed; (6) percentage of children 6-23 months receiving a minimum acceptable diet

(MAD); (7) prevalence of underweight children; (8) prevalence of wasted children; and (9) prevalence of stunted children. Table A-1 lists the 13 Feed the Future indicators and the source of the data of each for the Z01.[63]

Table A-1. List of indicators

Feed the Future indicator	Feed the Future ZOI	
	Secondary analysis	Baseline survey
Prevalence of underweight children	No	Yes
Prevalence of poverty	Yes[a]	No
Prevalence of stunted children	No	Yes
Prevalence of wasted children	No	Yes
Prevalence of women with low BMI	No	Yes
Per capita income	Yes[a]	No
Women's Empowerment in Agriculture Index	No	Yes
Prevalence of households with moderate or severe hunger	No	Yes
Prevalence of children 6-23 months receiving a minimum acceptable diet	No	Yes
Women's Dietary Diversity Score	No	Yes
Prevalence of exclusive breastfeeding	No	Yes
Prevalence of anemia among children 6-59 months	NR	NR
Prevalence of anemia among women of reproductive age	NR	NR

[a] Provided from RALS survey, which collected household income for the same HH in the ZOI as the Feed the Future baseline survey. Note that the RALS uses the same modules to collect HH income as the LCMS, and is therefore consistent with national income and poverty estimates.

NR = Not reported by Feed the Future Zambia.

A.2 Sample Size Estimate for Feed the Future Baseline Survey

The ZOI in Zambia comprises the five districts, Chipata, Lundazi, Katete, Petauke, and Nyimba in Eastern Province. Table A-2 shows the sample design for five districts included in the RALS and by the Feed the Future baseline survey.

Table A-2. Survey sample design for the Zambia ZOI

District	Total[a]		RALS/FTF baseline sample		# HH sampled
	# SEAs	# Agricultural HH	# SEAs	# Agricultural HH	
Chipata	590	52,425	20	400	0.76
Katete	367	33,366	18	360	1.08
Lundazi	379	42,711	18	360	0.84
Nyimba	142	11,756	8	160	1.36
Petauke	467	43,180	18	360	0.83
5 districts	1,945	183,438	82	1,640	0.89

[a] 2000 Zambia Census of Population and Housing.

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[63] FTF Zambia will report on 11 of the 13 Feed the Future indicators.

Based on the strategy of combining the Feed the Future baseline with the results of the RALS, the sample size for the Feed the Future baseline survey will be determined by the households that were included in the five districts of the zone of influence in the RALS. That is, the same households interviewed in the districts of Chipata, Lundazi, Katete, Petauke, and Nyimba under the RALS will also be included in the Feed the Future baseline. A total of 1,640 households in these five districts were interviewed in the RALS.

The table below shows that this sample size is large enough to detect a change of 10 percent in the poverty rate, a change of 28 percent in underweight, and a change of 12 percent in stunting rate.

Table A-3. Required sample sizes for key Feed the Future population-based indicators

Indicator	Current value[a] %	Change to detect[b] %
Poverty rate	64.3	9.7
Underweight	14.6	28.1
Stunted[c]	45.4	11.5

[a] Feed the Future M&E Guidance Series, Volume 9: Target Setting for Reduction in Prevalence of Poverty, Underweight, and Stunting in Feed the Future Zones of Influence.

[b] Percent change that can be detected with a sample size of 1,640, assuming 95% confidence, 80% power, Deff = 2.

[c] From DHS 2007, average HH size is 4.8, and % population <5 years in rural areas = 20.6%, so on average each rural HH expected to have at least one <5 year old child.

A.3   Survey Design

The design of the Feed the Future ZOI consists of two basic components: questionnaire design and sample design. In Zambia, because the Feed the Future baseline survey is to be linked to the RALS sample, the sample design is determined by that of the RALS. The RALS sample design is based on that developed for the Post Harvest Survey (PHS). The PHS uses a two-stage sample design, where the first stage primary sampling unit (PSU) is one or more standard enumeration areas (SEAs) with a minimum of 30 agricultural households. The SEAs were defined for the 2000 Zambia Census. A total of 16,746 SEAs were defined for the 2000 Census, of which 12,202 are classified as rural. In the PHS, the sample frame comprises rural SEAs, and urban SEAs with at least 70 percent rural households (households that reported having any crop production, livestock production, poultry production, or fish farming). In order to improve sampling efficiency, the sampling frame was stratified geographically, by district. Furthermore, in order to ensure adequate representation for certain specific crops (sorghum, rice, cotton, Burley tobacco, Virginia tobacco, sunflower, soybeans, paprika), SEAs were also stratified on the basis of the prevalence of these crops within the SEA. At the second stage, a selection of households was stratified by farm size, number of livestock, and growing of the crops listed above. The overall sample for the RALS is 400 SEAs, with 20 households interviewed in each SEA, to give a total sample for the RALS of 8,000 households.

A.3.1   Questionnaire Design

The survey questionnaires have been developed from the Feed the Future baseline survey guidelines provided in Module 8 of the Feed the Future M&E Guidance series. In addition, the surveys are designed to conform to existing questionnaires such as the DHS, LSMS, and WEAI. Each of these questionnaires will include the informed consent statement, the household roster, dwelling characteristics module, and modules for indicators that cannot be calculated with existing data sources.

The questionnaire includes modules for indicators not covered by secondary data. The baseline survey will collect information to provide data to calculate the following indicators:

Feed the Future survey module	Description of indicator
F	Prevalence of households with moderate or severe hunger
G	Women's Empowerment in Agriculture Index
H	Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age
H	Women's BMI
I	Prevalence of underweight children
I	Prevalence of stunted children
I	Prevalence of wasted children
I	Exclusive breastfeeding
I	Prevalence of children 6-23 months receiving a minimum acceptable diet

The survey questionnaires will be translated into local languages (Nyanja and Chewa) during the enumerator training. During the pretest and training, any problems found in the translations will be corrected.

A.3.2   Sample Design

The sample size for the Feed the Future baseline was described in Section A-2. A total of 1,640 households in 80 SEAS in the five districts that comprise the ZOI will be targeted to be interviewed. The sampled households will be the same as those interviewed in the five districts of Eastern Province under the RALS, and the identification codes for SEAs and households will be the same as those used in the RALS, so that the household information from the two survey data sets can be merged using these as unique identification variables.

Data required for weighting of survey data will be collected throughout the sampling process. These data will include, but not be limited to: (1) standard enumeration area population sizes used for selection of SEAs, (2) population of strata, from which SEAs are drawn, (3) population of SEAs at time of listing, and (4) response rates at the household, women's, and men's level.

Weights will be calculated for households, women, men, and children in the sample. These weights will be provided from the RALS, except for nonresponse rates, which will be obtained directly from the survey results.

A.4   Fieldwork

The survey fieldwork is the part of the survey process where data are collected in the field. The Central Statistics Office (CSO) will conduct the fieldwork with technical assistance from the National Food and Nutrition Commission (NFNC); TANGO International; and its local partner in East Africa, Ronto Research Company, based in Kenya. The CSO will provide qualified field enumerators, including those who participated and performed well in the RALS survey. Ronto Research Company will facilitate the training of master trainers and enumerators, coordinate the activities in the field, and manage the quality control monitoring teams. The NFNC will provide a master trainer/quality control monitor with specialization in field techniques of measuring children and women. NFNC will also provide the necessary anthropometric measuring equipment.

Prior to fieldwork, the questionnaires will be pretested, once during the master training, and once during enumerator training, to discover issues with the instructions to interviewer or interviewee, wording of the questions, wording of response codes, order of questions, and skip patterns. Any problems found during the pretest will be corrected prior to the start of the survey.

Just prior to the fieldwork, there will be a 12-day training of interviewers and supervisors, including a one-day field test, to prepare them for conducting the interviews. The interviewers will receive instruction on how to initiate contact with a household, obtain informed consent, conduct the interview, and return to households that require call backs. Instructions will be given on the questionnaire content, including review of the questions and the response codes. Field team supervisors will be given additional training on how to supervise the interviewer teams, including making and tracking interview assignments, checking the quality of the interview process, and checking the quality of the data entered for each interview.

During the fieldwork, the field team supervisors will handle the day-to-day management of the field teams. A total of 15 survey teams will be deployed. The field team supervisors will be responsible to deploy the two enumerator subteams under their control, providing them each morning with a list of households for each enumerator team to interview. They will spot check interviews on an ongoing basis to ensure the quality of interviews and recording of responses on questionnaires, and to troubleshoot any problems encountered during the fieldwork. These supervisors will report to the Survey Coordinator, who will manage the overall survey process.

The total field team for the Feed the Future ZOI survey will consist of a total of 60 enumerators, split into 30 enumerator subteams comprising of one female interviewer and one male interviewer, 15 supervisors and four teams of quality control monitors, with two members per quality control monitoring team. The male/female enumerator teams are needed because the WEAI requires interviews of both the primary male and female members of the household. These enumerator subteams will interview respondents in the same household. The female interviewer will interview the primary female member of the household while the male interviewer interviews the primary male member of the household. For the other modules, the general strategy will be for the female interviewer to conduct the interview if the respondent is female, and the male interviewer will

conduct interviews with male respondents. For measurement of women and children, female interviewers will assist in the measurement and male interviewers will record information in the tablets. There will be a total of 15 field teams, made up of one supervisor, one member responsible for locating RALS households based on GPS coordinates, and two enumerator subteams, to make a total of six members per field team. Each of the two-person enumerator subteams will be trained to make anthropometric measurements of women and children, and will be provided with scales, stadiometers, and measuring boards.

The field team supervisors will be provided the list of households included in the RALS, broken down by SEA. Each of the 15 field team supervisors will be assigned separate lists of enumeration areas to visit. Only one field team will visit each SEA. It will take approximately 3 ½ days for each field team (comprising two enumeration teams) to complete one SEA. Within each SEA, the list of households will be provided to the field team supervisors, along with the geo-coordinates of the homesteads, provided from RALS. Each day, the field team supervisor will assign households to both of his/her enumeration teams. The supervisor and the fifth member of the field team will be provided with GPS devices (provided by IAPRI) to locate homesteads of selected households based on the provided geo-coordinates. These two individuals will use the GPS devices to locate all the households to be interviewed at the beginning of the first day in each SEA. If a different household resides in the home, (not the household that was interviewed in the RALS) the fifth member of the field team will attempt to locate the original household, if they are close enough to be reached by the team. If the households have moved permanently, or cannot be interviewed during the time the team is in the SEA, they will be counted as a nonrespondent household. After locating all the households in the SEA, the supervisor and the fifth field team member will help the enumeration teams to find their assigned households over the course of the fieldwork. They will also conduct spot checks of interviews to ensure that interviews are being conducted appropriately. The fifth field team member will also help the enumerator teams to move the scales, stadiometers, and measuring boards among the households.

After each interview, the enumeration teams will record into daily control sheets: ID information for households interviewed, all of the modules that have been completed for the household, whether a revisit is/was required, the number of women and children measured.

At the end of each field day, the field team supervisors, with the help of the fifth team member, will verify, and record into daily control sheets, the ID information of households by each of the two enumerator teams under the control of the supervisor, whether the information in the tablets has been reviewed by the supervisor, accepted by the supervisor, and the total number of complete and incomplete interviews for the day.

The four 2-person quality control monitoring teams provide higher-level support to the field teams. The members of these quality control monitoring teams are also the master trainers, so they will have been provided with more extensive training on how to conduct interviews, how to measure women and children, how to use tablets, and how to back up and transfer data files from the tablets. Each of the quality control teams has their own transport, and is assigned to support three or four

field teams. They will visit each of their assigned field teams on a regular basis. On these visits, they will observe interviews as they are conducted by interviewers and conduct spot checks of households that have already been interviewed. These spot return visits will be to ensure that the households actually were interviewed, that all the modules were actually administered, and that all women and children in the appropriate age categories were actually measured. They will also review the daily control sheets of the enumerator teams and the field team supervisors to ensure that they are properly filled out.

A.5   Data Management

Data collected in interviews will be recorded directly into tablets provided by Westat. The software used for managing the interviews on the tablets is Open Data Kit (ODK). The questionnaire for Zambia (see Annex B) will be loaded onto all the tablets to be used by the enumerators. Data will be entered directly into the tablets during the interviews. At the end of each day in the field, each field team supervisor will make a backup of the data on each tablet by making a copy of the data files directly onto the tablet. Each supervisor will also make backups of all tablets in the team onto their tablet using "NFC tapping" procedure. Details of this procedure are provided in the enumerator and supervisor training manuals.

The field team supervisors will be responsible for uploading the data to the Westat server whenever they have access to Internet. Each field team will have a Wi-Fi hotspot that can be used to connect the tablets to the Internet via mobile phone connections. These Wi-Fi hotspots are battery operated and rechargeable, and can provide connectivity to up to five devices simultaneously. Each day when the teams have network access, the field team supervisors will upload the data from the tablets of all the (4) field team members onto the Westat server, where the data from all the field teams will be aggregated and updated over the course of the fieldwork.

Each field team will be provided with multi-socket splitters to fit into vehicle cigarette lighters, along with USB adapters. This equipment will be used to charge the tablets and the Wi-Fi hotspots from the team vehicles, as the teams travel or in the evenings. Each vehicle will have a total of five tablets and one Wi-Fi hotspot to recharge. The teams will be able to charge the equipment in the evening when they are staying in locations where electricity is available.

During the fieldwork, data quality will be maintained in several ways. The data entry software on the tablet computers has programmed checks for variable ranges, skip patterns, and consistency. In the field, the supervisor will check each questionnaire closely for completeness, consistency, range checks, and skip patterns. The team leader will also check a subset of questionnaires in the same manner. The fieldwork will be planned so that all the field teams are within close proximity during the initial days of the fieldwork, and the teams will all stay at the same location in the evening. In this way, problems that arise during the first days of fieldwork can be shared and resolved with the entire field team.

As the data are being uploaded onto the Westat server, Westat data management staff will run data quality programs that incorporate the data quality checks on the tablet computers, the checks done by field staff, and other general checks. These data quality programs will include range checks, checks of skip patterns, consistency checks, and completeness checks done by the tablet computer software and the field editors and supervisors. The programs check for completeness by listing whether all expected questionnaires per SEA have been received, result of the interview (complete, incomplete, etc.), percent of modules that have been completed (by module), and percent of missing data for select variables, such as age and gender of respondents. Distributions will be generated for the gender type of the household and age distribution (for women, men, and children). All of these data will be analyzed by Westat data management staff to identify data quality problems that must be addressed by the field. In addition to producing detailed reports by enumerator, the programs will produce general summary reports that can be used for general data quality control.

Reports based on these data quality programs will be uploaded to a secure Westat FTP site that can be accessed by TANGO and in Zambia by survey management staff at CSO, quality control monitoring teams, and field team supervisors. TANGO and CSO staff will review data quality issues identified by Westat and will independently review the reports for any other data quality issues. Any issues identified independently by TANGO or CSO will be reported back to Westat to inform future data quality analysis. Issues identified independently by TANGO will be reported to CSO management staff. CSO will inform the quality control monitoring team and field supervisors of key general issues found and issues directly related to the teams. CSO will determine if the deficiencies require field visits to teams for discussion and retraining. Quality control monitoring teams will conduct these field visits and report back to CSO on the results of these visits. CSO will inform TANGO and Westat of any key issues that arise from these field visits.

A.6   Analysis and Reporting

The analysis and reporting process for each survey will be completed one month after the completion of data entry and cleaning for that survey. The Feed the Future ZOI survey requires reporting on the indicators not available from the secondary sources. These indicators are to be reported at the level of the ZOI. Table A-1 provides the shell table for reporting these indicators.

A.7   Institutional Review Board Approval

FTF FEEDBACK has submitted the general plan for Feed the Future population-based surveys to the Westat institutional review board (IRB). This has approval on the condition that the local IRB requirements are met. FTF FEEDBACK has submitted an application for approval to the Zambia IRB. Approval was received on October 30, 2012, and authorization from the Ministry of Health was received on November 13, 2012.

A.8   Survey Work Plan

Activity	Dates of activity	Sep 1	Sep 2	Sep 3	Sep 4	Oct 1	Oct 2	Oct 3	Oct 4	Nov 1	Nov 2	Nov 3	Nov 4	Dec 1	Dec 2	Dec 3	Dec 4	Jan 1	Jan 2	Jan 3	Jan 4
Administrative																					
Initial draft of training manual	Oct 8																				
Acquire GPS units and SEA maps	Sep 21				✓																
Finalize MOU with CSO HQ	Sep 21				✓																
Arrange work permits for RONTO staff	Sep 21				✓																
Finalize vehicle hire contract for enumeration teams and supervisory teams	Sep 30				✓																
Work on various contract (CSO subagreement, Ronto)	Sep 15-Oct 12				✓																
Questionnaire and manual design	Sep 15-Oct 12				✓																
Printing																					
Print instruction manuals (and questionnaires if necessary to substitute for tablets	Oct. 14						✓														
Training																					
Recruit master trainers: CSO-2/RONTO-4/national food and nutrition commision-2	Oct 10						✓														
Preliminary version of questionnaire available on tablets for training	October 13																				
Master Trainers Training 1 (5 days) – Instrument vetting, training on use of tablets	Oct 15-19							✓													
Questionnaire pretesting with master trainers	Oct 20							✓													
Questionnaire review after pretest	Oct 21							✓													
Enumerator training in Eastern Province (10 days)	Oct 26 – Nov 4								✓	✓											
Field practice and review (2 days)	Nov 5-6									✓											
Submission of last-minute changes to questionnaire to Westat for modification on tablets	Nov 5																				
Final tablet version of questionnaire available on Westat server to be downloaded onto tablets in Zambia	Nov 7																				
Final selection of enumerators, supervisors and supervisor training (2 days)	Nov 8										✓										
Field Operations																					
Deployment of enumerators	Nov 10										✓										
Data collection	Nov 11-Dec 5										✓	✓	✓	✓							
Field check of survey instruments for completeness and quality	Nov 11-Dec 5										✓	✓	✓	✓							
Listing & data collection supervision	Nov 11-Dec 5										✓	✓	✓	✓							
Hand over data to FEEDBACK	Dec 6										✓	✓	✓	✓							
Data cleaning, computing indicators and preparation of descriptive narrative to Enter into FTFMS	Dec 6 – Jan 25																				

Annex B. Zambia Survey Questionnaire

MODULE A. Household identification cover sheet

Household Identification	Code	Interview details	Code
A01. Household Identification		**A17**. Name/code of enumerator:	
A02. Cluster number		**A18**. Date of first visit (dd/mm/yyyy):	/ /
A03. Village		**A19**. Date of second visit (dd/mm/yyyy):	/ /
A04. County		**A20.** Reason for second visit:	
A05. District		**A21.** Final outcome of interview (enter code)	
A06. Region		**A22**. Name/code of supervisor:	
A07. Household cell phone number:		**xx.** Signature of supervisor:	
A08. GPS Coordinates of household		**A23.** Name/code of data entry operator:	
A09. Type of household:		**A24**. Date of data entry(dd/mm/yyyy)::	/ /
A10. Primary Respondent Name and ID (from Module C)			
A11. Secondary Respondent Name and ID (from Module C)			

A09 HOUSEHOLD TYPE
Male and female adult - household contains at least one male and one female adult ≥ 18 years old........... 1
Female adult only - household contains at least one female adult and no male adults ≥ 18 years old.......... 2
Male adult only - household contains at least one male adult and no female adults ≥ 18 years old 3
Child only - household contains no adults ≥ 18 years old 4

The **primary and secondary respondents** are those who self-identify as the primary male and female (or female only) members responsible for the decision-making, both social and economic, within the household. In Male and Female Adult Households, they are usually the husband and wife; however they can also be other household members as long as they are aged 18 and over. In Female Adult Only households, there will only be a primary respondent -- the principal female decision-maker aged 18 or older. Primary and secondary respondents do not need to be noted for Male Adult Only and Child Only Households, and Module G WEAI should not be applied in Male Adult Only and Child Only Households.

A22
OUTCOME OF INTERVIEW
Complete..................................... 1
Incomplete................................. 2
Absent.. 3
Refused....................................... 4
Could not locate 5

MODULE B. Informed consent

Informed Consent: *It is necessary to introduce the household to the survey and obtain the consent of all prospective respondents to participate. If a prospective respondent (e.g., a woman of reproductive age) is not present at the beginning of the interview, be sure to return to this page and obtain consent before interviewing him or her. Ask to speak with a responsible adult in the household.*

Thank you for the opportunity to speak with you. We are a research team from Central Statistics Office of Government of Zambia. We are conducting a survey to learn about agriculture, food security, food consumption, nutrition and wellbeing of households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, dwelling characteristics, household expenditures and assets, food consumption and nutrition of women and children. The survey includes questions about the household generally, and questions about individuals within your household, if applicable. These questions in total will take approximately 2-3 hours to complete and your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or to skip any questions you do not want to answer. Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a data base, we will destroy all information such as your name which will link these responses to you.

Do you have any questions about the survey or what I have said? If in the future you have any questions regarding survey and the interview, or concerns or complaints we welcome you to contact Central Statistics Office by contacting 1 253 468. We will leave one copy of this form for you so that you will have record of this contact information and about the study.

Ask the following consent questions of <u>all</u> prospective respondents. As applicable, have the person check and sign the consent box below.

NOTE: DIFFERENT COUNTRIES WILL HAVE DIFFERENT AGES BY WHICH INDIVIDUALS CAN GIVE INFORMED CONSENT. IN SOME COUNTRIES, AN ADOLESCENT UNDER 18 YEARS OLD IS NOT ABLE TO GIVE

INFORMED CONSENT ALONE; CONSENT OF HER CAREGIVER MAY ALSO BE REQUIRED. THE AGE AT WHICH CAREGIVER CONSENT IS NO LONGER NECESSARY SHOULD BE IDENTIFIED AS PART OF THE ETHICAL REVIEW/INSTITUTIONAL REVIEW BOARD (IRB) PROCESS."

You may be assigned a household that is headed by a minor (< 18 years of age in Zambia). The steps for obtaining participation of a minor household head in the interview is as follows:

- Obtain permission from the adult, guardian, or care taker to speak to the child;
- Explain the research to the child and obtain his/her informed assent;
- Explain the research to the parent, guardian, or care taker and obtain his/her informed consent.

Thus you first have to ask permission of the child(ren)'s parent, guardian, or care taker before speaking with the child household members. If you encounter a household that appears to be comprised of children, ask if anyone who lives in the household is ≥ 18 years of age. If the answer is yes, follow the standard procedures (above) for interviewing that adult head of household. If the answer is no, ask if there is a parent, guardian, or care taker who could be contacted. Do not ask the children any other questions or discuss the survey at this time.

<u>No Parent, Guardian, or Care Taker</u>. If there is no parent, guardian, or care taker, end the interview. Select "Survey Terminated by Participant" on the second screen. This will take you to the "Post Interview Details" section. In response to question A21 *Final Outcome of Interview*, select the option for "ineligible – child-headed household for which consent could not be obtained."

<u>Parent, Guardian, or Care Taker Available.</u> If the child identifies a parent, guardian, or care taker, attempt to contact that person. This may require calling the person; traveling to the parent, guardian, or care taker's home (if in or near the cluster); or returning to the household when the parent, guardian, or care taker is next expected to visit the household.

If you are unable to contact or meet the parent, guardian, or care taker, follow the procedures described above for concluding and classifying the interview as ineligible.

If you are able to contact or meet the parent, guardian, or care taker, read the informed consent statement, and ask if the guardian approves for the minor to participate in the interview.

If the parent/guardian/care taker agrees to let you speak with the minor, then greet the minor head of household and read the informed consent statement and ask the minor if they agree to participate.

If the minor assents to participate in the survey, have the minor sign or mark his/her assent on the printed informed consent sheet. If the minor does not assent to participate in the survey, the survey is terminated (as described above when there is no parent/guardian/care taker).

1. Who is the main male adult (18 years or older) decision-maker in the household? <NAME>, do you agree to participate in the survey?
2. Who is the main female adult decision-maker in the household? <NAME>, do you agree to participate in the survey? Are you under 50 years old? If so, do you agree to be weighed and measured? Do you have children under 5 years of age? If so, do you also agree to have your children weighed and measured?
3. Are there other females 15 to 49 years old in the household? <NAME>, do you agree to participate in of the survey and be weighed and measured? Do you have children under 5 years of age? If so, do you also agree to have your children weighed and measured?
4. Are there any mothers or caregivers of children under five in the household with whom I have not yet spoken? *<NAME>,* do you agree to participate in the survey and have the children weighed and measured?

MODULE B. Informed consent signature page

Name	Consent to participate in survey (Check one box)		Signature or mark
	YES	NO	

MODULE B.   Informed consent duplicate signature page

Duplicate to leave with the household

Thank you for the opportunity to speak with you. We are a research team from Central Statistics Office. We are conducting a survey to learn about agriculture, food security, food consumption, nutrition and wellbeing of households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, dwelling characteristics, and assets, food consumption and nutrition of women and children. The survey includes questions about the household generally, and questions about individuals within your household, if applicable. These questions in total will take approximately 2-3 hours to complete and your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or to skip any questions you do not want to answer. Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a data base, we will destroy all information such as your name which will link these responses to you.

If in the future you have any questions regarding survey and the interview, or concerns or complaints we welcome you to contact Central Statistics Office, by calling (number). This is your copy of the consent signature page so that you will have record of this contact information and about the study.

Name	Consent to participate in survey (Check one box)		Signature or mark
	YES	NO	

MODULE C.   Household roster and demographics

Enumerator: Ask these questions about all household members. Ask the primary or secondary respondent, whoever is most knowledgeable about the age, completed education, and other characteristics of household members.

First, we would like to ask you about each member of your household. Let me tell you a little bit about what we mean by household. For our purposes today, members of a household are adults or children that live together and eat from the 'same pot', including servants, lodgers, and agricultural laborers. Household members include anyone who has lived in your house for at least 6 of the last 12 months, but does not include anyone who lives here but eats separately. Newborn children less than 6 months old and anyone who has joined the household less than 6 months ago but has the intention of staying for a longer period of time are also considered members of the household. Please do not include anyone who died recently, even if he or she lived here more than 6 months in last 12 months, nor anyone who left the household less than 6 months ago with the intention of being away from the household for a longer period of time or permanently (this includes either leaving through marriage, or servants, lodgers, and agricultural laborers have left.)

Please list the names of everyone considered to be a member of this household, starting with the main male **(or female, if no adult male)** decision maker: **LIST THE NAMES OF ALL HOUSEHOLD MEMBERS. THEN ASK:** Does anyone else live here even if they are not at home now? These may include children in school or household members at work. **IF 'YES,' COMPLETE THE LISTING. THEN, COLLECT THE REMAINING COLUMNS OF INFORMATION FOR EACH MEMBER, ONE PERSON AT A TIME.**

MODULE C.   Household roster and demographics (continued)

Household identification (*in data file, each module must be matched with the HH ID*) ☐ ☐ ☐ ☐ ☐

I D C O D E	Name of household member? [start with primary respondent, continue with the secondary respondent, if applicable, and other members]	What is [NAME's] sex? 1 = M 2 = F	What is [NAME's] relationship to the primary respondent?	What is [NAME's] age? (in years)* If <3, skip C05-08	Can [NAME] read and write?	Is [NAME] currently attending school? 1 = Yes 2 = No	Has [NAME] ever attended school? 1= Yes 2= No	What is the highest grade of education completed by [NAME]?
	C01	C02	C03	C04	C05	C06	C07	C08
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								

C03: Relationship to primary respondent		C05: Literacy	C08: Education level
Primary respondent 1	Nephew/niece of spouse 9	Cannot read and write 1	Less than P1 (or no school) 1
Spouse/partner 2	Cousin of primary respondent 10	Can sign (write) only 2	Primary level 1-3 2
Son/daughter 3	Brother/sister-in-law 11	Can read only 3	Primary level 4-6 3
Son/daughter-in-law 4	Mother/father-in-law 12	Can read and write 4	Secondary 1-4 4
Grandson/granddaughter 5	Cousin of primary respondent's		Tertiary after O-level 5
Mother/Father 6	spouse 13		Secondary 5-6 6
Brother/sister 7	Other relative 14		University or above 7
Nephew/niece 8	Servant/Maid 15		Technical or vocational 8
	Laborer 16		Adult literacy only (no formal education) 9
	Other relationship 17		Koranic/religious only (no formal education) 10
			Don't know (DK)/Non response (NR)/
			Not applicable (NA) 98

*Note, it is not necessary to collect age in months for children under 5 years of age. All children under 6 years of age will be screened and their age in months will be determined in Module I to identify those to whom the child feeding and anthropometry modules apply. All children identified as under 6 years of age in the household roster are screened to ensure those under 60 months are accurately captured for anthropometry and anemia, if applicable.

MODULE D.   Dwelling characteristics

Household identification (*in data file, each module must be matched with the HH ID*) ☐ ☐ ☐ ☐ ☐

Enumerator: Ask the person primarily responsible for food preparation

	Response	Response codes
D01.ENUMERATOR: OBSERVE (DO NOT ASK) Roof top material (outer covering):		**D01:Type of roof** Tile ....1 Thatched/vegetable matter/ Wood ....2 Sticks ....5 Corrugated meta ....3 Mud/cow dung ....6 Plastic sheeting ....4 Other 7
D02.ENUMERATOR: OBSERVE (DO NOT ASK) Floor material:		**D02:Type of floor** Earth/mud ....1 Wood ....4 Concrete/flag stone/cement ....2 Other ....5 Tile/bricks 3
D03.ENUMERATOR: OBSERVE (DO NOT ASK) Exterior Walls:		**D03: Type of walls** Earth/mud ....1 Wood ....4 Concrete/flag stone/cement ....2 Thatch/bamboo/reeds ....5 Tile/bricks 3
D04. How many rooms are there in this dwelling? (Do not count bathrooms, hallways, garage, toilet, cellar, kitchen)		
D05. What is the main type of toilets your household uses?		**Code 05: Type of toilet** Flush, shared ....1 Community toilet ....5 Flush, private ....2 Pan / bucket ....6 Ventilated improved pit latrine (VIP) ....3 No toilet ....7 Pit latrine ....4 Other 8
D06. What is the main source of drinking water for your household?		**D06:Drinking water source** Piped into dwelling ....1 Rain water collection ....7 Piped into plot/yard ....2 Unprotected dug well/springs ....8 Public tap (someone else's private tap) ....3 River/ponds/streams ....9 Tube well/borehole ....4 Tankers-truck/vendor ....10 Protected dug well ....5 Bottled water ....11 Protected spring ....6 Other (specify) 12
D07. Does this household have electricity?		Yes = 1 No = 2
D08. What is the main source of cooking fuel for your household?		**D07: Cooking fuel** Electricity ....1 Firewood ....5 Piped or liquid propane gas (biogas) ....2 Animal dung ....6 Kerosene ....3 Agricultural crop residue ....7 Charcoal ....4 Other 8

MODULE E.   Household hunger scale

Household identification (*in data file, each module must be matched with the HH ID*) ☐☐☐☐☐

Enumerator: Ask of the person responsible for Household Food Preparation.

No.	Question	Response	Response code
F01	In the past 30 days was there ever no food to eat of any kind in your house because of lack of resources to get food?		Yes = 1 2 = No >>F03
F02	How often did this happen in the past 30 days?		1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 =Often (more than 10 times
F03	In the past 30 days did you or any household member go to sleep at night hungry because there was not enough food?		Yes = 1 2 = No>>F05
F04	How often did this happen in the past 30 days?		1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 = Often (more than10 times
F05	In the past 30 days did you or any household member go a whole day and night without eating anything at all because there was not enough food?		Yes = 1 2 = No >>end of module
F06	How often did this happen in the past 30 days?		1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 = Often (more than 10 times)

MODULE F. Women's Empowerment in Agriculture Index

NOTE: The information in Module G1 can be captured in different ways; however there must be a way to a) identify the proper individual within the household to be asked the survey, b) link this individual from the module to the household roster, c) code the outcome of the interview, especially if the individual is not available, to distinguish this from missing data, d) record who else in the household was present during the interview. This instrument must be adapted for country context including translations into local languages when appropriate.

Enumerator: This questionnaire should be administered separately to the primary and secondary respondents identified in the household roster (Section C) of the household level questionnaire. You should complete this coversheet for each individual identified in the "selection section" even if the individual is not available to be interviewed for reporting purposes.

Please double check to ensure:
- *You have completed the roster section of the household questionnaire to identify the correct primary and/or secondary respondent(s);*
- *You have noted the household ID and individual ID correctly for the person you are about to interview;*
- *You have gained informed consent for the individual in the household questionnaire;*
- *You have sought to interview the individual in private or where other members of the household cannot overhear or contribute answers.*
- *Do not attempt to make responses between the primary and secondary respondent the same—it is ok for them to be different.*

MODULE G.   Individual identification

	Code			Code
G1.01. Household Identification:..............................	⬜⬜⬜⬜⬜		**G1.05.** Outcome of interview	⬜
G1.02. Name of respondent currently being interviewed (ID Code from roster in Section C Household Roster): **Surname, First name: ....**	⬜⬜		**G1.06.** Ability to be interviewed alone:	⬜
G1.03. Sex of respondent**:** Male ....1 Female 2	⬜		**G05** Completed .... 1 Incomplete... 2 Absent .... 3 Refused .... 4 Could not locate 5	**G06** Alone.. 1 With adult females present................................. 2 With adult males present .... 3 With adults mixed sex present .... 4 With children present... 5 With adults mixed sex and children present....... 6
G1.04. Type of household Male and female adult ....1 Female adult only 2	⬜			

MODULE G1. Role in household decision-making around production and income generation

Household identification (in data file, each submodule (G2-G6) must be linked with HH and respondent ID)

Respondent ID Code

Activity code	Activity description	Did you (singular) participate in [ACTIVITY] in the past 12 months (that is during the last [one/two] cropping seasons)? Yes.........1 No...........2 >> next activity **G2.01**	How much input did you have in making decisions about [ACTIVITY]? **G2.02**	How much input did you have in decisions on the use of income generated from [ACTIVITY] **G2.03**
A	Food crop farming: crops that are grown primarily for household food consumption			
B	Cash crop farming: crops that are grown primary for sale in the market			
C	Livestock raising			
D	Non-farm economic activities: Small business, self-employment, buy-and-sell			
E	Wage and salary employment: in-kind or monetary work both agriculture and other wage work			
F	Fishing or fishpond culture			

G2.02/G2.03: Input into decision-making

No input 1
Input into very few decisions 2
Input into some decisions..................... 3
Input into most decisions...................... 4
Input into all decisions 5
No decision made................................. 6

MODULE G2.　　Access to productive capital

Productive Capital		Does anyone in your household currently have any [ITEM]? Yes .....1 No ....2 >> next item	How many of [ITEM] does your household currently have?	Who would you say owns most of the [ITEM]?	Who would you say can decide whether to sell [ITEM] most of the time?	Who would you say can decide whether to give away [ITEM] most of the time?	Who would you say can decide to mortgage or rent out [ITEM] most of the time?	Who contributes most to decisions regarding a new purchase of [ITEM]?
Productive Capital		**G3.01a**	**G3.01b**	**G3.02**	**G3.03**	**G3.04**	**G3.05**	**G3.06**
A	Agricultural land (pieces/plots)							
B	Large livestock (oxen, cattle)							
C	Small livestock (goats, pigs, sheep)							
D	Chickens, Ducks, Turkeys, Pigeons							
E	Fish pond or fishing equipment							
F	Farm equipment (non-mechanized)							
G	Farm equipment (mechanized)							
H	Nonfarm business equipment							
I	House (and other structures)							
J	Large consumer durables (fridge, TV, sofa)							
K	Small consumer durables (radio, cookware)							
L	Cell phone							
M	Other land not used for agricultural purposes (pieces, residential or commercial land)							
N	Means of transportation (bicycle, motorcycle, car)							

G3.02-G3.06: Decision-making and control over productive capital

Self 1
Partner/Spouse 2
Self and partner/spouse jointly 3
Other household member........................ 4

Self and other household member(s) ...5
Partner/Spouse and other household member(s) 6
Someone (or group of people) outside the household 7

Self and other outside people.............. 8
Partner/Spouse and other outside people 9
Self, partner/spouse and other outside people 10
Cannot be sold 11

MODULE G2.   Access to credit (continued)

	Lending sources	Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months?	Who made the decision to borrow from [SOURCE]?	Who makes the decision about what to do with the money/ item borrow from [SOURCE]?
Lending source names		**G3.07**	**G3.08**	**G3.09**
A	Non-governmental organization (NGO)/ Religious organization			
B	Informal lender			
C	Formal lender (bank/financial institution)			
D	Friends or relatives			
E	Group based micro-finance or lending including VSLAs / SACCOs/ merry-go-rounds/Chilumba			

G3.07 Taken loans
Yes, cash 1
Yes, in-kind 2
Yes, cash and in-kind.........3
No.......................................4 >> G3.11A
Don't know ....5 >> G3.11A

G3.08/G3.09: Decision-making and control over credit
Self..1
Partner/Spouse..2
Self and partner/spouse jointly 3
Other household member 4
Self and other household member(s) 5
Partner/Spouse and other household member(s) 6
Someone (or group of people) outside the household 7
Self and other outside people 8
Partner/Spouse and other outside people 9
Self, partner/spouse and other outside people........................10

MODULE G3. Individual leadership and influence in the community

No.	Question	Response	Response codes
G4.01	Do you feel comfortable speaking up in public to help decide on infrastructure (like small wells, roads, water supplies) to be built in your community?		No, not at all comfortable ....1 Yes, but with a great deal of difficulty...........2 Yes, but with a little difficulty ....3 Yes, fairly comfortable...................................4 Yes, very comfortable....................................5
G4.02	Do you feel comfortable speaking up in public to ensure proper payment of wages for public works or other similar programs?		
G4.03	Do you feel comfortable speaking up in public to protest the misbehavior of authorities or elected officials?		

MODULE G3.   Group membership and influence in the group (continued)

	Group membership	Is there a [GROUP] in your community? Yes......1 No ......2 >> next group	Are you an active member of this [GROUP]? Yes .....1 No ......2 >> **G4.07**
	Group Categories	**G4.04**	**G4.05**
A	Agricultural / livestock/ fisheries producer's group (including marketing groups)		
B	Water users' group		
C	Forest users' group		
D	Credit or microfinance group (including SACCOs/merry-go-rounds/ VSLAs)		
E	Mutual help or insurance group (including burial societies)		
F	Trade and business association		
G	Civic groups (improving community) or charitable group (helping others)		
H	Local government		
I	Religious group		
J	Other women's group (only if it does not fit into one of the other categories)		
K	Other (specify)		

MODULE G4.   Decision-making

		G5.01	G5.02
	ENUMERATOR: Ask G5.01 for all categories of activities before asking G5.02. Do not ask G5.02 if G5.01 response is 1 and respondent is male OR G5.01 response is 2 and respondent is female. *If household does not engage in that particular activity, enter 98 and proceed to next activity.*	When decisions are made regarding the following aspects of household life, who is it that normally takes the decision?	To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to? Ask only if G5.01 is 1 and respondent is female, G5.01 is 2 and respondent is male, or G5.01 is 3-7.
A	Getting inputs for agricultural production		
B	The types of crops to grow for agricultural production		
C	Taking crops to the market (or not)		
D	Livestock raising		
E	Your own (singular) wage or salary employment		
F	Major household expenditures (such as a large appliance for the house like refrigerator)		
G	Minor household expenditures (such as food for daily consumption or other household needs)		
		G5.01: Who makes decision Main male or husband ....1 Main female or wife ....2 Husband and wife jointly ....3 Someone else in the household ....4 Jointly with someone else inside the household ....5 Jointly with someone else outside the household ....6 Someone outside the household/other ....7 Household does not engage in activity/Decision not made 98	**G5.02: Extent of participation in decision-making** Not at all ....1 Small extent...2 Medium extent...3 To a high extent...4

MODULE G4.   Motivation for decision-making (continued)

		My actions in [ASPECT] are partly because I will get in trouble with someone if I act differently. [READ OPTIONS: **Always True, Somewhat True, Not Very True, or Never True]**	Regarding [ASPECT] I do what I do so others don't think poorly of me. [READ OPTIONS: **Always True, Somewhat True, Not Very True, or Never True]**	Regarding [ASPECT] I do what I do because I personally think it is the right thing to do. [READ OPTIONS: **Always True, Somewhat True, Not Very True, or Never True]**
ENUMERATOR: This set of questions is very important. I am going to give you some reasons why you act as you do in the aspects of household life I just mentioned. You might have several reasons for doing what you do and there is no right or wrong answer. Please tell me how true it would be to say: *[If household does not engage in that particular activity, enter 98 and proceed to next activity.]*				
		G5.03	G5.04	G5.05
A	Getting inputs for agricultural production			
B	The types of crops to grow for agricultural production			
C	Taking crops to the market (or not)			
D	Livestock raising			

G5.03/G5.04/G5.05: Motivation for activity

Never true...1
Not very true...2
Somewhat true 3
Always true...4
Household does not engage in activity/Decision not made 98

MODULE G5.   Time allocation

Enumerator: **G6.01:** *Please record a log of the activities for the individual in the last complete 24 hours (starting yesterday morning at 4 am, finishing 3:59 am of the current day). The time intervals are marked in 15 min intervals and <u>one to two activities can be marked for each time period</u> by drawing a line through that activity. If two activities are marked, they should be distinguished with a P for the primary activity and S for the secondary activity written next to the lines. Please administer using the protocol in the enumeration manual.*

		Night		Morning				Day						
	Activity	4	5	6	7	8	9	10	11	12	13	14	15	
A	Sleeping and resting													
B	Eating and drinking													
C	Personal care													
D	School (also homework)													
E	Work as employed													
F	Own business work													
G	Farming/livestock/fishing													
J	Shopping/getting service (incl health services)													
K	Weaving, sewing, textile care													
L	Cooking													
M	Domestic work (incl fetching wood and water)													
N	Care for children/adults/elderly													
P	Travelling and communiting													
Q	Watching TV/listening to radio/reading													
T	Exercising													
U	Social activities and hobbies													
W	Religious activities													
X	Other, specify…													

MODULE G5.   Time allocation (continued)

	Activity				Evening		Night							
		16	17	18	19	20	21	22	23	24	1	2	3	
A	Sleeping and resting													
B	Eating and drinking													
C	Personal care													
D	School (also homework)													
E	Work as employed													
F	Own business work													
G	Farming/livestock/fishing													
J	Shopping/getting service (incl health services)													
K	Weaving, sewing, textile care													
L	Cooking													
M	Domestic work (incl fetching wood and water)													
N	Care for children/adults/elderly													
P	Travelling and commuting													
Q	Watching TV/listening to radio/reading													
T	Exercising													
U	Social activities and hobbies													
W	Religious activities													
X	Other, specify													

No.	Question	Response	Response options/Instructions
G6.02	How satisfied are you with your available time for leisure activities like visiting neighbors, watching TV, listening to the radio, seeing movies or doing sports?		READ: Please give your opinion on a scale of 1 to 10. 1 means you are not satisfied and 10 means you are very satisfied. If you are neither satisfied or dissatisfied this would be in the middle or 5 on the scale.

MODULE H.   Women's anthropometry and dietary diversity

Household identification (*in data file, each respondent must be matched with the HH ID*) ☐☐☐☐☐☐

Enumerator Instructions: Ask these questions of each woman of reproductive age (15-49 years) in the household. Check to see if EACH women has given consent to be interviewed in Module B. If a woman has not yet given consent, return to Module B and gain her consent before proceeding. You should carry duplicate copies of this module in case there are more than 5 women of reproductive age in the household.

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
H01	WOMAN'S ID CODE FROM THE HOUSEHOLD ROSTER		☐☐	☐☐	☐☐	☐☐	☐☐
H02	In what month and year were you born?	IF MONTH IS NOT KNOWN, ENTER '98' IF YEAR IS NOT KNOWN, ENTER '9998'	☐☐ Month Year ☐☐☐☐	☐☐ Month Year ☐☐☐☐	☐☐ Month Year ☐☐☐☐	☐☐ Month Year ☐☐☐☐	☐☐ Month Year ☐☐☐☐
H03	Please tell me how old you are. What was your age at your last birthday? RECORD AGE IN COMPLETED YEARS	IF RESPONDENT CANNOT REMEMBER HOW OLD SHE IS, ENTER '98' AND ASK QUESTION H04. IF RESPONDENT KNOWS HER AGE >> H05	☐☐ Years	☐☐ Years	☐☐ Years	☐☐ Years	☐☐ Years

MODULE H.   Women's anthropometry and dietary diversity (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
H04	Are you between the ages of 15 and 49 years old?	1 = Yes 2 = No >> end module 9 = Don't know >> end module					
H05	CHECK H02, H03 AND H04 (IF APPLICABLE): IS THE RESPONDENT BETWEEN THE AGES OF 15 AND 49 YEARS? IF THE INFORMATION IN H02, H03, AND H04 CONFLICTS, DETERMINE WHICH IS MOST ACCURATE.	1 = Yes 2 = No >> end module					
	WOMEN'S NUTRITIONAL STATUS						
H06	Are you currently pregnant?	1 = Yes >> skip to H09 2 = No 9=Don't know					
H07	WEIGHT IN KILOGRAMS: WEIGH THE WOMAN		Kg ☐☐.☐	Kg ☐☐.☐	Kg ☐☐.☐	Kg ☐☐.☐	Kg ☐☐.☐
H08	HEIGHT IN CENTIMETERS: MEASURE THE WOMAN		Cm ☐☐☐.☐	Cm ☐☐☐.☐	Cm ☐☐☐.☐	Cm ☐☐☐.☐	Cm ☐☐☐.☐

MODULE H.   Women's anthropometry and dietary diversity (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
	WOMEN'S DIETARY DIVERSITY						
	Please describe everything that you ate yesterday during the day or night, whether at home or outside the home. **A)** Think about when you first woke up yesterday. Did you eat anything at that time? IF YES: Please tell me everything you ate at that time. PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE, THEN CONTINUE TO PART B. IF NO, CONTINUE TO PART B. **B)** What did you do after that? Did you eat anything at that time? IF YES: Please tell me everything you ate at that time. PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE. REPEAT QUESTION B ABOVE UNTIL RESPONDENT SAYS SHE WENT TO SLEEP UNTIL THE NEXT DAY. IF RESPONDENT MENTIONS MIXED DISHES LIKE A PORRIDGE, SAUCE, OR STEW, PROBE: **C)** What ingredients were in that [mixed dish]? PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE. AS THE RESPONDENT RECALLS FOODS, UNDERLINE THE CORRESPONDING FOOD AND ENTER '1' IN THE COLUMN NEXT TO THE FOOD GROUP. IF THE FOOD IS NOT LISTED IN ANY OF THE FOOD GROUPS BELOW, WRITE THE FOOD IN THE BOX LABELED 'OTHER FOODS.' IF FOODS ARE USED IN SMALL AMOUNTS FOR SEASONING OR AS A CONDIMENT, INCLUDE THEM UNDER THE CONDIMENTS FOOD GROUP. ONCE THE RESPONDENT FINISHES RECALLING FOODS EATEN, READ EACH FOOD GROUP WHERE '1' WAS NOT ENTERED, ASK THE FOLLOWING QUESTION AND ENTER '1' IF RESPONDENT SAYS YES, '0' IF NO, AND '9' IF DON'T KNOW. Yesterday during the day or night, did you drink/eat any [food group items]?						
	OTHER FOODS: PLEASE WRITE DOWN OTHER FOODS TO THE RIGHT OF THIS BOX THAT RESPONDENT MENTIONED BUT ARE NOT IN THE LIST BELOW. THIS WILL ALLOW THE SURVEY SUPERVISOR OR OTHER KNOWLEDGEABLE INDIVIDUAL TO CLASSIFY THE FOOD LATER.		WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:
H14	Food made from grains, such as bread, rice, noodles, porridge, Nsima, Tobwa, Samp	1 = Yes 2 = No 9 = Don't Know					

MODULE H. Women's anthropometry and dietary diversity (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
H15	Pumpkin, carrots, squash, or sweet potatoes (batanje/maungo)that are yellow or orange inside	1 = Yes 2 = No 9 = Don't Know					
H16	White potatoes, white yams, manioc, cassava (Chinangwa, Nyumbula, Vikhau), or any other foods made from roots	1 = Yes 2 = No 9 = Don't Know					
H17	Any dark green leafy vegetables such as Munkwani, Gwada, Matepo a nyemba	1 = Yes 2 = No 9 = Don't Know					
H18	Ripe mangoes (mango, paw paw)	1 = Yes 2 = No 9 = Don't Know					
H19	Any other fruits or vegetables (banana, ntochi, guava, amapela)	1 = Yes 2 = No 9 = Don't Know					
H20	Liver, kidney, heart, or other organ meats (Vamkati)	1 = Yes 2 = No 9 = Don't Know					
H21	Any meat, such as beef, pork, lamb, goat, chicken, or duck (Nyama, mbeba)	1 = Yes 2 = No 9 = Don't Know					
H22	Eggs (Mandanda)	1 = Yes 2 = No 9 = Don't Know					

MODULE H.   Women's anthropometry and dietary diversity (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
H23	Fresh or dried fish, shellfish, or seafood (Nsomba, Kapenta)	1 = Yes 2 = No 9 = Don't Know					
H24	Any foods made from beans, peas, lentils, nuts, or seeds (Chipele, chipondwa)	1 = Yes 2 = No 9 = Don't Know					
H25	Cheese, yogurt, or other milk products (sour milk)	1 = Yes 2 = No 9 = Don't Know					
H26	Any oil, fats, or butter, or foods made with any of these (Saladi)	1 = Yes 2 = No 9 = Don't Know					
H27	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits (sugar, keke, switi, bisikiti, uchi)	1 = Yes 2 = No 9 = Don't Know					
H28	Condiments for flavor, such as chilies, spices, herbs, or fish powder (Mpili-mpili, sabora, curry)	1 = Yes 2 = No 9 = Don't Know					
H29	Grubs, snails, or insects (Vinkubala, Inswa, Ntete, Fulufute)	1 = Yes 2 = No 9 = Don't Know					
H30	Foods made with red palm oil, red palm nut, or red palm nut pulp sauce (Chinkondya)	1 = Yes 2 = No 9 = Don't Know					

MODULE I. Child anthropometry and anemia and infant and young child feeding

Household identification (*in data file, each respondent must be matched with the HH ID*) ☐☐☐☐☐☐

Enumerator Instructions: Ask these questions of the primary caregiver of each child aged 0–59 months in the household. Check to see if EACH caregiver has given consent to be interviewed in Module B. If a caregiver has not yet given consent, return to Module B and gain caregiver consent before proceeding. You should carry duplicate copies of this module in case there are more than 5 children 0-59 months old in the household.

No.	Question	Response codes	Child 1	Child 2	Child 3	Child 4	Child 5
I01	CAREGIVER'S ID CODE FROM THE HOUSEHOLD ROSTER		☐☐	☐☐	☐☐	☐☐	☐☐
I02	CHILD'S ID CODE FROM THE HOUSEHOLD ROSTER		☐☐	☐☐	☐☐	☐☐	☐☐
I03	What is [child's name]'s sex?	0 = Male 1 = Female					
I04	I would like to ask you some question about [child's name]. In what month and year was [child's name] born? What is [his/her] birthday? IF THE RESPONDENT DOES NOT KNOW THE EXACT BIRTHDATE ASK: Does [child's name] have a health/vaccination card with the birth date recorded? IF THE HEALTH/VACCINATION CARD IS SHOWN AND THE RESPONDENT CONFIRMS THE INFORMATION IS CORRECT, RECORD THE DATE OF BIRTH AS DOCUMENTED ON THE CARD.		☐☐ Day ☐☐ Month ☐☐☐☐ Year	☐☐ Day ☐☐ Month ☐☐☐☐ Year	☐☐ Day ☐☐ Month ☐☐☐☐ Year	☐☐ Day ☐☐ Month ☐☐☐☐ Year	☐☐ Day ☐☐ Month ☐☐☐☐ Year
I05	How old was [child's name] at [his/her] last birthday? RECORD AGE IN COMPLETED YEARS		☐ Years	☐ Years	☐ Years	☐ Years	☐ Years

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
I06	How many months old is [child's name]? RECORD AGE IN COMPLETED MONTHS		☐☐ Months	☐☐ Months	☐☐ Months	☐☐ Months	☐☐ Months
I07	CHECK I04, I05, AND I06 TO VERIFY CONSISTENCY A) IS THE YEAR RECORDED IN I04 CONSISTENT WITH THE AGE IN YEARS RECORDED IN I05? B) ARE YEAR AND MONTH OF BIRTH RECORDED IN I04 CONSISTENT WITH AGE IN MONTHS RECORDED IN I06? IF THE ANSWER TO A OR B IS 'NO,' RESOLVE ANY INCONSISTENCIES. IF THE BIRTHDATE WAS RECORDED ON A HEALTH CARD, THIS MAY BE USED AS THE CORRECT DATA SOURCE.	1 = Yes 2 = No 1 = Yes 2 = No					
I08	CHECK I06. IS THE CHILD UNDER 60 MONTHS?	1 = Yes 2 = No >> end module 9 = Don't know >> end module					
I09	DOES CHILD HAVE EDEMA?	1 = Yes 2 = No					
I10	WEIGHT IN KILOGRAMS: WEIGH THE CHILD		☐☐.☐ Kg	☐☐.☐ Kg	☐☐.☐ Kg	☐☐.☐ Kg	☐☐.☐ Kg

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
	STUNTING						
I11	CHILDREN UNDER 24 MONTHS SHOULD BE MEASURED LYING DOWN; CHILDREN 24 MONTHS OR OLDER SHOULD BE MEASURED STANDING UP. HEIGHT IN CENTIMETERS: MEASURE THE CHILD		☐☐☐.☐ cm	☐☐☐.☐ cm	☐☐☐.☐ cm	☐☐☐.☐ cm	☐☐☐.☐ cm
	EXCLUSIVE BREASTFEEDING AND MINIMUM ACCEPTABLE DIET						
I12	CHECK QUESTION I05. IS THE CHILD UNDER 2 YEARS OF AGE?	1 = Yes 2 = No >> end module					
I13	Has [child's name] ever been breastfed?	1 = Yes 2 = No >> skip to I18 9 = Don't Know >> skip to I18					
I14	Was [child's name] breastfed yesterday during the day or at night?	1 = Yes >> skip to I19 2 = No 9 = Don't Know					
I15	Sometimes babies are fed breast milk in different ways, for example by spoon, cup, or bottle. This can happen when the mother cannot always be with her baby. Sometimes babies are breastfed by another woman or given breast milk from another woman by spoon, cup, bottle, or some other way. This can happen if a mother cannot breastfeed her own baby. Did [child's name] consume breast milk in any of these ways yesterday during the day or at night?	1 = Yes 2 = No 9 = Don't Know					

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
I16	Now I would like to ask you about some medicines and vitamins that are sometimes given to infants. Was [child's name] given any vitamin drops or other medicines as drops yesterday during the day or at night?	1 = Yes 2 = No 9 = Don't Know					
I17	Was [child's name] given rehydration solution (Madzi a moyo) yesterday during the day or at night?	1 = Yes 2 = No 9 = Don't Know					
	READ THE QUESTIONS BELOW. READ THE LIST OF LIQUIDS ONE BY ONE AND MARK YES OR NO, ACCORDINGLY. Next I would like to ask you about some liquids that [child's name] may have had yesterday during the day or at night. Did [child's name] have any [item from list]?: READ THE LIST OF LIQUIDS STARTING WITH 'PLAIN WATER.'						
I18	Plain water?	1 = Yes 2 = No 9 = Don't Know					
I19	Infant formula (mukaka wa ana wa ma tini)?	1 = Yes 2 = No >> skip to I24 9 = Don't Know>> skip to I24					
I20	How many times yesterday during the day or at night did [child's name] consume any formula?	98 = Don't know	☐☐ Times	☐☐ Times	☐☐ Times	☐☐ Times	☐☐ Times
I21	Did [child's name] have any milk such as tinned, powdered, or fresh animal milk?	1 = Yes 2 = No >> skip to I26 9 = Don't Know >> skip to I26					

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
I22	How many times yesterday during the day or at night did [child's name] consume any milk?	98 = Don't know	☐☐ Times	☐☐ Times	☐☐ Times	☐☐ Times	☐☐ Times
I23	Did [child's name] have any juice or juice drinks?	1 = Yes 2 = No 9 = Don't Know					
I24	Clear broth?	1 = Yes 2 = No 9 = Don't Know					
I25	Yogurt?	1 = Yes 2 = No >> skip to I30 9 = Don't Know>> skip to I30					
I26	How many times yesterday during the day or at night did [child's name] consume any yogurt?	98 = Don't know	☐☐ Times	☐☐ Times	☐☐ Times	☐☐ Times	☐☐ Times
I27	Did [child's name] have any thin porridge?	1 = Yes 2 = No 9 = Don't Know					
I28	Any other liquids such as tobwa?	1 = Yes 2 = No 9 = Don't Know					
I29	Any other liquids?	1 = Yes 2 = No 9 = Don't Know					

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
	Please describe everything that [child's name] ate yesterday during the day or night, whether at home or outside the home. A) Think about when [child's name] first woke up yesterday. Did [child's name] eat anything at that time? IF YES: Please tell me everything [child's name] ate at that time. PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE. THEN CONTINUE TO PART B). IF NO, CONTINUE TO PART B). B) What did [child's name] do after that? Did [child's name] eat anything at that time? IF YES: Please tell me everything [child's name] ate at that time. PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE. REPEAT QUESTION B) UNTIL THE RESPONDENT SAYS THE CHILD WENT TO SLEEP UNTIL THE NEXT DAY. IF RESPONDENT MENTIONS MIXED DISHES LIKE A PORRIDGE, SAUCE, OR STEW, PROBE: C) What ingredients were in that [mixed dish]? PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE AS THE RESPONDENT RECALLS FOODS, UNDERLINE THE CORRESPONDING FOOD AND ENTER '1' IN THE RESPONSE BOX NEXT TO THE FOOD GROUP. IF THE FOOD IS NOT LISTED IN ANY OF THE FOOD GROUPS BELOW, WRITE THE FOOD IN THE BOX LABELED 'OTHER FOODS.' IF FOODS ARE USED IN SMALL AMOUNTS FOR SEASONING OR AS A CONDIMENT, INCLUDE THEM UNDER THE CONDIMENTS FOOD GROUP. ONCE THE RESPONDENT FINISHES RECALLING FOODS EATEN, READ EACH FOOD GROUP WHERE '1' WAS NOT ENTERED IN THE RESPONSE BOX, ASK THE FOLLOWING QUESTION AND ENTER '1' IF RESPONDENT SAYS YES, '0' IF NO, AND '9' IF DON'T KNOW: Yesterday, during the day or night, did [child's name] drink/eat any [food group items]?						
	OTHER FOODS: PLEASE WRITE DOWN OTHER FOODS (TO THE RIGHT OF THIS BOX) THAT RESPONDENT MENTIONED BUT ARE NOT IN THE LIST BELOW. THIS WILL ALLOW THE SURVEY SUPERVISOR OR OTHER KNOWLEDGEABLE INDIVIDUAL TO CLASSIFY THE FOOD LATER.		WRITE FOODS MENTIONED HERE:	WRITE FOODS MENTIONED HERE:	WRITE FOODS MENTIONED HERE:	WRITE FOODS MENTIONED HERE:	WRITE FOODS MENTIONED HERE:
I30	Food made from grains, such as bread, rice, noodles, porridge, Nsima, Tobwa, Samp	1 = Yes 2 = No 9 = Don't Know					
I31	Pumpkin, carrots, squash, or sweet potatoes (batanje/maungo) that are yellow or orange inside	1 = Yes 2 = No 9 = Don't Know					

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
I32	White potatoes, white yams, manioc, cassava, (Chinangwa, Nyumbula, Vikhau) or any other foods made from roots	1 = Yes 2 = No 9 = Don't Know					
I33	Any dark green leafy vegetables such as Munkwani, Gwada, Matepo a nyemba	1 = Yes 2 = No 9 = Don't Know					
I34	Ripe mangoes, ripe papayas (mango, paw paw)	1 = Yes 2 = No 9 = Don't Know					
I35	Any other fruits or vegetables (banana, ntochi, guava, amapela)	1 = Yes 2 = No 9 = Don't Know					
I36	Liver, kidney, heart, or other organ meats (Vamkati)	1 = Yes 2 = No 9 = Don't Know					
I37	Any meat, such as beef, pork, lamb, goat, chicken, or duck (Nyama, mbeba)	1 = Yes 2 = No 9 = Don't Know					
I38	Eggs (Mandanda)	1 = Yes 2 = No 9 = Don't Know					
I39	Fresh or dried fish, shellfish, or seafood (Nsomba, Kapenta)	1 = Yes 2 = No 9 = Don't Know					
I40	Any foods made from beans, peas, lentils, nuts, or seeds such as (Chipele, chipondwa)	1 = Yes 2 = No 9 = Don't Know					

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
I41	Cheese, yogurt, or other milk products (sour milk)	1 = Yes 2 = No 9 = Don't Know					
I42	Any oil, fats, or butter, or foods made with any of these (Saladi)	1 = Yes 2 = No 9 = Don't Know					
I43	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits (sugar, keke, switi, bisikiti, uchi)	1 = Yes 2 = No 9 = Don't Know					
I44	Condiments for flavor, such as chilies, spices, herbs, or fish powder (Mpili-mpili, sabora, curry)	1 = Yes 2 = No 9 = Don't Know					
I45	Grubs, snails or insects (Vinkubala, Inswa, Ntete, Fulufute)	1 = Yes 2 = No 9 = Don't Know					
I46	Foods made with red palm oil, red palm nut, or red palm nut pulp sauce (Chinkondya)	1 = Yes 2 = No 9 = Don't Know					
	CHECK CATEGORIES 33-49	If all 'no' >> go to I50 If at least one 'yes' or all 'DK' >> I51					

MODULE I. Child anthropometry and anemia and infant and young child feeding (continued)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
I47	Did [child's name] eat any solid, semi-solid, or soft foods yesterday during the day or at night? IF 'YES' PROBE: What kind of solid, semi-solid, or soft foods did [child's name] eat?	1 = Yes >> go back to I33–I49 and record foods eaten. Then continue with I51. 2 = No >> end module 9 = Don't Know >> end module					
I48	How many times did [child's name] eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?	98 = Don't Know	Times	Times	Times	Times	Times

Enumerator Team Daily Control Sheet

Date   _____

Supervisor Code   _____

Enumerator 1 Code   _____

Enumerator 2 Code   _____

District Code   _____

Cluster Code   _____

Ward Code	Village Name	SEA Code	HH Code	HH head name	# visit to HH 1=1st visit 2=2nd visit 2=3rd visit	Sections completed (tick completed)								# women measured	# children measured
						A	B	C	D	F	G	H	I		

Instructions: Each day, the enumerator team will receive fill out the top section of this form. The supervisor will assign households for each supervisor to visit each day. The first 5 columns of the table will be provided to the enumerator team by the supervisor. Initially, 3 households will be assigned for each day. If any substitutions must be made, they can be added to the table. Code the number of the visit to the HH in the 6th column. If households are revisited on later date, enter the information about the revisit on the form for the date of date of the revisit. Tick all sections completed in the 7th – 14th columns. Record the number of women measured in the 15th column, and the number of children measured in the last column.

Supervisor Daily Control Sheet

Date   _____
Supervisor Code: _____
Cluster Code: _____

Enumerator team	HH head names assigned	SEA code	HH code	Modules completed *Enter the date that each module was completed (use form for date of first interview)*								Reviewed by Supervisor *0=No* *1=Yes*	Accepted *0=No* *1=Yes*
				A	B	C	D	F	G	H	I		
Team 1													
Team 2													

Total number interviews accepted

	Number
Complete *(all modules are completed)*	
Incomplete	

Annex C. Weight Calculation

C.1   Design Weight

Sample design for the PBS baseline follows that of the Rural Agricultural and Livelihood Survey (RALS) and Post-Harvest Surveys (PHS). In Zambia, the sample is a two-stage stratified cluster sample. Sampling weights were calculated based on the probability of selection at each stage and for each cluster. There are three categories (A, B, and C) of households in sample clusters based on farm size. According to the sampling design for PHS data,[64] the probability of selection of sample households in each category within a sample cluster can be expressed as:

$$p_{shi=} \frac{m_h \times N_{hi}}{N_h} \times \frac{n_{shi}}{N_{shi}}$$

where:

p_{shi} =   probability of selection for the sample households in Category *s* (A, B, or C) within the i-th sample cluster in district (stratum) *h*.

m_h =   number of sample clusters selected in district *h*.

N_{hi} =   total number of agricultural households in the frame for the i-th sample cluster in district *h*.

N_i =   total number of agricultural households in the frame in district *h*.

n_{shi} =   number of sample agricultural households selected in Category *s* from the listing for the i-th sample cluster in district *h*.

N_{shi} =   total number of households in Category *s* from the listing for the i-th sample cluster in district *h*.

The design weight is equal to the inverse of the probability of selection. Therefore the corresponding design weight for the sample households in stratification Category *s* would be calculated as follows:

$$W_{shi} = \frac{1}{p_{shi}} = \frac{N_h}{m_h \times N_{hi}} \times \frac{N_{shi}}{n_{shi}}$$

where:

W_{shi} =   design weight for the sample households in Category *s* within the i-th selected cluster in district *h*.

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[64] Recommendations on Sample Design for Post-Harvest Surveys in Zambia Based on the 2000 Census. David J Megill. Working Paper No. 11. Food Security Research Project. Lusaka, Zambia. February 2004.

C.2   Sampling Weight

The sampling weight was calculated with the design weight corrected for nonresponse for each of the selected clusters. Response rates were calculated at cluster level as ratios of the number of interviewed units over the number of eligible units, where units could be household or individual (woman, child, male decision-maker, or female decision-maker).

The household sampling weight was calculated by dividing the household design weight by the household response rate. The individual sampling weight was calculated by dividing the household sampling weight by the individual response rate.

For Zambia, design weights were corrected for nonresponse in each stratification category for each sample cluster.

Annex D. Indicator Descriptions and Calculations

INDICATOR TITLE: Prevalence of Poverty: Percent of people living on less than $1.25/day* (R)

*The MDGs define this level as those living in—extreme poverty. Although we do not use the word—extreme in this title, we are referring to the same measure used by the UN for the MDGs.

DEFINITION:

This indicator measures Millennium Development Goal Target 1a. Halving extreme poverty refers to the period 1990 to 2015. The applicable poverty line has been updated to $1.25 per person per day, converted into local currency at 2005 Purchasing Power Parity (PPP) exchange rates. The use of PPP exchange rates ensures that the poverty line applied in each country has the same real value. Measurement is based on the value of average daily consumption expenditure per person, where food and other items that a household consumes out of its own production are counted as if the household purchased those items at market prices. For example, all members of a household of four people are counted as poor if its average daily consumption expenditures are less than $5 per day at 2005 PPP after adjusting for local inflation since 2005. The poverty rate is estimated by dividing the measured number of poor people in a sample of households by the total population in the households in the sample.

Data for this indicator must be collected using the Consumption Expenditure methodology of the Living Standards Measurement Survey (LSMS). Missions are encouraged to use the LSMS Integrated Survey in Agriculture Consumption Expenditure module, which has been incorporated in the Feed the Future M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Indicators. Feed the Future will collect consumption-expenditure data in order to calculate prevalence of poverty for this indicator, as well as per capita expenditures to be used as a proxy for income. Expenditures are used instead of income because of the difficulty in accurately measuring income and because expenditure data are less prone to error, easier to recall and are more stable over time than income data.

RATIONALE:

This measures the first goal of the Feed the Future Initiative as well as a Millennium Development Goal. It is the purpose of the Feed the Future Initiative. All objectives, program elements, and projects are designed to reduce poverty.

UNIT:	*DISAGGREGATE BY:*
Percent	Gendered Household type: Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Male and Female Adults (M&F), Child no Adults (CNA)
1. Percentage of people from sample living on <$1.25/day	
2. Total population of people in ZOI	
TYPE:	*DIRECTION OF CHANGE:*
Impact	Lower is better
DATA SOURCE:	

MDG database for national level; Population-based surveys conducted by the M&E contractor in the Feed the Future ZOI.

INDICATOR TITLE: Per capita expenditures (as a proxy for income) of USG targeted beneficiaries (R)

DEFINITION:

This indicator will measure the expenditures of rural households as a proxy for income, based on the assumption that increased expenditures is strongly correlated to increased income. Data for this indicator must be collected using the Consumption Expenditure methodology of the Living Standards Measurement Survey (LSMS). Missions are encouraged to use the LSMS Integrated Survey in Agriculture Consumption Expenditure module, which has been incorporated in the Feed the Future M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future ZOI Indicators. Feed the Future will collect consumption-expenditure data in order to calculate prevalence of poverty as well as per capita expenditures to be used as a proxy for income.

This indicator is a proxy instead of measuring income directly because of the difficulty in accurately measuring income. Expenditures are used instead of income because of the difficulty in accurately measuring income and because expenditure data are less prone to error, easier to recall, and are more stable over time than income data.

RATIONALE:

There is a relationship between increased incomes and improved food security, reduced poverty, and improved nutrition. The usefulness of an income proxy methodology derives from the importance of a change in household income and its impact on the overarching Feed the Future goal of reducing poverty and hunger. Thus, measurement of household income (through this proxy) is one logical choice for monitoring the effects of policies and programs oriented toward accomplishing this goal.

UNIT:	*DISAGGREGATE BY:*
U.S. Dollar	Gendered Household type: Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Male and Female Adults (M&F), Child No Adults (CNA)
Please enter these two data points:	
1. Average per capita expenditures (in USD) of sample	
2. Total population in ZOI	
TYPE:	*DIRECTION OF CHANGE:*
Outcome	Higher is better

DATA SOURCE:

Population-based surveys conducted by M&E contractor in the Feed the Future zone of influence or UN for national level.

INDICATOR TITLE: Prevalence of underweight children under 5 years of age (R)

DEFINITION:

Underweight is a weight-for-age measurement. Underweight is a reflection of acute and/or chronic undernutrition. This indicator measures the percentage of children 0-59 months who are underweight, as defined by a weight for age Z score < -2. Although different levels of severity of underweight can be measured, this indicator measures the prevalence of all underweight, i.e., both moderate and severe underweight combined.

The numerator for this indicator is the total number of children 0-59 months in the sample with a weight for age Z score < -2. The denominator is the total number of children 0-59 months in the sample with weight for age Z score data.

RATIONALE:

Reducing the prevalence of underweight children under 5 is the goal of the Feed the Future Initiative. The prevalence of underweight children is also an indicator to monitor the Millennium Development Goal 1.8 —Halving the number of people who are hungry. Monitoring the prevalence of underweight children 0-59 months therefore allows USAID and its partners to show the contribution of Feed the Future programs to the Millennium Development Goal.

UNIT:	*DISAGGREGATE BY:*
1. Percent of children 0-59 months of age in the sample who are underweight	Sex: Male, Female
2. Total population of children 0-59 months of age in ZOI	

TYPE:	*DIRECTION OF CHANGE:*
Impact	Lower is better

DATA SOURCE:

Population-based survey and official DHS data (see notes below).

INDICATOR TITLE: Prevalence of stunted children under 5 years of age (R)

DEFINITION:

Stunting is a height-for-age measurement that is a reflection of chronic undernutrition. This indicator measures the percentage of children 0-59 months who are stunted, as defined by a height-for-age Z score < -2. Although different levels of severity of stunting can be measured, this indicator measures the prevalence of all stunting, i.e., both moderate and severe stunting combined. While stunting is difficult to measure in children 0-6 months, and most stunting occurs in the -9-23 month range (1,000 days), this indicator data will still be reported for all children under 5 to capture the impact of interventions over time and align with DHS data.

The numerator for this indicator is the total number of children 0-59 months in the sample with a height-for-age Z score < -2. The denominator is the total number of children 0-59 months in the sample with height-for-age Z score data.

RATIONALE:

Stunted, wasted, and underweight children under 5 years of age are the three major nutritional indicators. Stunting is an indicator of linear growth retardation, most often due to prolonged exposure to an inadequate diet and poor health. Reducing the prevalence of stunting among children, particularly 0-23 months, is important because linear growth deficits accrued early in life are associated with cognitive impairments, poor educational performance, and decreased work productivity among adults. Better nutrition leads to increased cognitive and physical abilities, thus improving individual productivity in general, including improved agricultural productivity.

UNIT: *DISAGGREGATE BY:*

1. Percent of children 0-59 months of age in the sample who   Sex: Male, Female
are stunted

2. Total population of children 0-59 months of age in ZOI

TYPE: *DIRECTION OF CHANGE:*Lower is better

Impact

DATA SOURCE:

Population-based survey and official DHS data (see notes below).

INDICATOR TITLE: Prevalence of wasted children under 5 years of age (R)

DEFINITION:

This indicator measures the percentage of children 0-59 months who are acutely malnourished, as defined by a weight-for-height Z score < -2. Although different levels of severity of wasting can be measured, this indicator measures the prevalence of all wasting, i.e., both moderate and severe wasting combined.

The numerator for the indicator is the total number of children 0-59 months in the sample with a weight-for-height Z score < -2. The denominator is the total number of children 0-59 months in the sample with weight-for-height Z score data.

RATIONALE:

Stunted, wasted, and underweight children under 5 years of age are the three major nutritional indicators. Wasting is an indicator of acute malnutrition. Children who are wasted are too thin for their height, and have a much greater risk of dying than children who are not wasted.

UNIT:	*DISAGGREGATE BY:*
1. Percent of children 0-59 months of age in the sample who are wasted	Sex: Male, Female
2. Total population of children 0-59 months of age in ZOI	

TYPE:	*DIRECTION OF CHANGE:*
Impact	Lower is better

DATA SOURCE:

Population-based survey and official DHS data (see notes below).

INDICATOR TITLE: Prevalence of underweight women (R)

DEFINITION:

This indicator measures the percentage of non-pregnant women of reproductive age (15-49 years) who are underweight, as defined by a body mass index (BMI) < 18.5. To calculate an individual's BMI, weight and height data are needed: BMI = weight (in kg) ' height (in meters) squared.

The numerator for this indicator is the number of non-pregnant women 15-49 years in the sample with a BMI < 18.5. The denominator for this indicator is the number of non-pregnant women 15-49 years in the sample with BMI data.

RATIONALE:

This indicator provides information about the extent to which women's diets meet their caloric requirements. Adequate energy in the diet is necessary to support the continuing growth of adolescent girls' and women's ability to provide optimal care for their children and participate fully in income-generating activities. Undernutrition among women of reproductive age is associated with increased morbidity, poor food security, and can result in adverse birth outcomes in future pregnancies. Improvements in women's nutritional status are expected to improve women's work productivity, which may also have benefits for agricultural production, linking the two strategic objectives of Feed the Future.

UNIT: *DISAGGREGATE BY:*

1. Percent of women of reproductive age in the sample who are   None
underweight

2. Total population of women of reproductive age in ZOI

TYPE: *DIRECTION OF CHANGE:*

Impact   Lower is better

DATA SOURCE:

Population-based survey and official DHS data (see notes below).

INDICATOR TITLE: Women's Empowerment in Agriculture Index Score (R)

DEFINITION: The Women's Empowerment in Agriculture Index (WEAI) measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify and address the constraints that hinder women's full engagement in the agriculture sector. The WEAI is composed of two subindices; the Five Domains of Empowerment (5DE) subindex measures the empowerment of women in five areas; and the Gender Parity Index (GPI) measures the average level of equality in empowerment of men and women within the household. The WEAI is an aggregate index reported at the ZOI level and is based on individual-level data on men and women within the same households and data on women living in households with no adult male.

The 5DE subindex assesses whether women are empowered across the five domains examined in the WEAI. Each domain is weighted equally, as are each of the indicators within a domain. The five domains, their definitions under the WEAI, the corresponding indicators, and their weights for the 5DE are:

Domain (each weighted 1/5 of 5DE subindex)	Definition of domain	Indicators	Weight of indicator in 5DE subindex
Production	Sole or joint decision-making over food and cash-crop farming, livestock, fisheries, and autonomy in agricultural production	Input in productive decisions	1/10
		Autonomy in production	1/10
Resources	Ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit	Ownership of assets	1/15
		Purchase, sale or transfer of assets	1/15
		Access to and decisions on credit	1/15
Income	Sole or joint control over income and expenditures	Control over use of income	1/5
Leadership	Membership in economic or social groups and comfort in speaking in public	Group member	1/10
		Speaking in public	1/10
Time	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload	1/10
		Leisure	1/10

The 5DE is a measure of empowerment. A woman is defined as empowered in the 5DE if she reaches the threshold of empowerment in 80 percent or more of the weighted indicators. For not yet empowered women, the 5DE also shows the percentage of indicators in which those women meet the threshold of empowerment. The 5DE contributes 90 percent of the weight to the WEAI.

The GPI reflects the percentage of women who are as empowered as the men in their households. It is a relative equality measure that demonstrates the equality in 5DE profiles between the primary adult male and female in each household. In most cases, these are husband and wife, but they can be the primary male and female decision-maker regardless of their relationship to each other. For households that have not achieved gender parity, the GPI shows the gap that needs to be closed for women to reach the same level of empowerment as men. By definition, households without a primary adult male are excluded from this measure, and thus the aggregate WEAI uses the mean GPI value of dual-adult households. The GPI contributes 10 percent of the weight to the WEAI.

The 5DE score ranges from zero to one, where higher values indicate greater empowerment. It is constructed using a robust multidimensional methodology known as the Alkire Foster Method (see http://www.ophi.org.uk/research/multidimensional-poverty/alkire-foster-method/ for information on the method). The score has two components. First, it reflects the percentage of women who are empowered (He). Second, it reflects the percentage of domains in which those women who are not yet empowered (Hn) still have adequate achievements (Aa). The 5DE formula is: $5DE = \{He + (Hn \times Aa)\}$, where $He + Hn = 100\%$ and $0 < Aa < 100\%$.

The GPI also ranges from zero to one, with higher values indicating greater gender parity, and is constructed with two factors. First, it shows the percentage of women whose empowerment scores are lower than the men's in the household (HwgP). Second, the GPI shows the percentage shortfall in empowerment scores (IGPI) for those women who do not have gender parity. The overall formula is the product of these two numbers, following the Foster Greer Thorbecke poverty gap measure: $GPI = \{1 - (Hwgp \times IGPI)\}$.

The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI. Thus, improvements in either the 5DE or GPI will increase the WEAI. The total WEAI score $= 0.9\{He + (Hn \times Aa)\} + 0.1\{1 - (HGPI \times IGPI)\}$.

RATIONALE:

Feed the Future supports the inclusion of poorer and more economically vulnerable populations in economic growth strategies in the agriculture sector in order to have a transformational effect on regional economies and restructure local production, distribution, and consumption patterns for long-term, sustainable development. Because women play a prominent role in agriculture and due to the persistent economic constraints they face, women's empowerment is a main focus of Feed the Future. Empowering women is particularly important to achieving the Feed the Future objective of inclusive agriculture sector growth. The WEAI was developed to track the change in women's empowerment levels that occurs as a direct or indirect result of interventions under Feed the Future.

UNIT:	*DISAGGREGATE BY:*
1. Score for 5DE subindex	None
2. Score for GPI index	
3. Total population in ZOI	
TYPE:	*DIRECTION OF CHANGE:*
Impact	Higher is better

DATA SOURCE:

Population-based surveys conducted by an M&E contractor in the Feed the Future ZOI.

INDICATOR TITLE: 3.1.9.1-3 and 4.7-4 Prevalence of households with moderate or severe hunger (RiA)

DEFINITION:

This indicator measures the percentage of households experiencing moderate or severe hunger, as indicated by a score of two or more on the household hunger scale (HHS). To collect data for this indicator, respondents are asked about the frequency with which three events were experienced by household members in the last four weeks: (1) no food at all in the house, (2) went to bed hungry, and (3) went all day and night without eating. For each question, four responses are possible (never, rarely, sometimes, or often), which are collapsed into the following three responses: never (value=0), rarely or sometimes, (value=1), often (value=2). Values for the three questions are summed for each household, producing a HHS score ranging from 0 to 6.

The numerator for this indicator is the total number of households in the sample with a score of two or more on the HHS. The denominator is the total number of households in the sample with HHS data.

RATIONALE:

Measurement of household hunger provides a tool to monitor global progress of USG supported food security initiatives. A decrease in household hunger is also a reflection of improved household resilience. The indicator has been validated to be meaningful for crosscultural use using data sets from seven diverse sites.

UNIT:	*DISAGGREGATE BY:*
1. Percent of households in sample with moderate to severe hunger	Gendered Household type: Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Male and Female Adults (M&F), Child No Adults (CNA)
2. Total population of households in ZOI	
TYPE:	*DIRECTION OF CHANGE:*
Impact	Lower is better

DATA SOURCE:

Population-based survey and official DHS data (see notes below). USAID/W will work to get these HHS questions incorporated into the DHS in applicable countries. Then, the DHS will also be able to show this data at the national level.

INDICATOR TITLE: Prevalence of children 6-23 months receiving a minimum acceptable diet (RiA)

DEFINITION:

This indicator measures the proportion of children 6-23 months of age who receive a minimum acceptable diet (MAD), apart from breast milk. The MAD indicator measures both the minimum feeding frequency and minimum dietary diversity, as appropriate for various age groups. If a child meets the minimum feeding frequency and minimum dietary diversity for their age group and breastfeeding status, then they are considered to receive a MAD.

Tabulation of the indicator requires that data on breastfeeding, dietary diversity, number of semi-solid/solid feeds and number of milk feeds be collected for children 6-23 months the day preceding the survey. The indicator is calculated from the following two fractions:

1. Breastfed children 6-23 months of age in the sample who had at least the minimum dietary diversity and the minimum meal frequency during the previous day/Breastfed children 6-23 months of age in the sample with MAD component data and

2. Non-breastfed children 6-23 months of age who received at least two milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day/ Non-breastfed children 6-23 months of age in the sample with MAD component data

Minimum dietary diversity for breastfed children 6-23 months is defined as four or more food groups out of the following seven food groups (refer to the WHO IYCF operational guidance document cited below):

1. Grains, roots, and tubers

2. Legumes and nuts

3. Dairy products (milk, yogurt, cheese)

4. Flesh foods (meat, fish, poultry and liver/organ meats)

5. Eggs

6. Vitamin-A rich fruits and vegetables

7. Other fruits and vegetables

Minimum meal frequency for breastfed children is defined as two or more feedings of solid, semi-solid, or soft food for children 6-8 months, and three or more feedings of solid, semi-solid, or soft food for children 9-23 months.

For the MAD indicator, minimum dietary diversity for non-breastfed children is defined as four or more food groups out of the following six food groups:

1. Grains, roots, and tubers

2. Legumes and nuts

3. Flesh foods (meat, fish, poultry and liver/organ meats)

4. Eggs

5. Vitamin-A rich fruits and vegetables

6. Other fruits and vegetables

Minimum meal frequency for non-breastfed children is defined as four or more feedings of solid, semi-solid, soft food, or milk feeds for children 6-23 months. For non-breastfed children to receive a MAD, at least two of these feedings must be milk feeds.

RATIONALE:

Appropriate feeding of children 6-23 months is multidimensional. The MAD diet indicator combines standards of dietary diversity (a proxy for nutrient density) and feeding frequency (a proxy for energy density) by breastfeeding status; and thus provides a useful way to track progress while simultaneously improving the key quality and quantity dimensions of children's diets.

UNIT:	*DISAGGREGATE BY:*
1. Percent of children 6-23 months in sample receiving a MAD	Sex: Male, Female
2. Total population of children 6-23 months in the ZOI	

INDICATOR TITLE: 3.1.9.1-2 Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age (S)

DEFINITION:

This validated indicator aims to measure the micronutrient adequacy of the diet and reports the mean number of food groups consumed in the previous day by women of reproductive age (15-49 years). To calculate this indicator, nine food groups are used:

1. Grains, roots, and tubers; 2. Legumes and nuts; 3. Dairy products (milk, yogurt, cheese); 4. Organ meat; 5. Eggs;

6. Flesh foods and other misc. small animal protein; 7. Vitamin A dark green leafy vegetables; 8. Other Vitamin A rich vegetables and fruits; 9. Other fruits and vegetables

The *Mean number of food groups consumed by women of reproductive age* indicator is tabulated by averaging the number of food groups consumed (out of the nine food groups above) across all women of reproductive age in the sample with data on dietary diversity.

RATIONALE:

Women of reproductive age are at risk for multiple micronutrient deficiencies, which can jeopardize their health and ability to care for their children and participate in income-generating activities. Maternal micronutrient deficiencies during lactation can directly impact child growth and development, but the potential consequences of maternal micronutrient deficiencies are especially severe during pregnancy, when there is the greatest opportunity for nutrient deficiencies to cause long term, irreversible development consequences for the child in-utero. Dietary diversity (assessed here as the number of food groups consumed) is a key dimension of a high quality diet with adequate micronutrient content; and thus, important to ensuring the health and nutrition of both women and their children.

UNIT:	*DISAGGREGATE BY:*
Number	Location: Urban, Rural
1. Mean number of food groups consumed by women 15-49 years in the sample	
2. Total population of women of reproductive age (15-49 years) in the ZOI	

TYPE:	*DIRECTION OF CHANGE:*
Outcome	Higher is better

DATA SOURCE:

Population-based survey and official DHS data (see notes below).

INDICATOR TITLE: 3.1.9-4 and 3.1.9.1-4 Prevalence of exclusive breastfeeding of children under 6 months of age (RiA)

DEFINITION:

This indicator measures the percentage of children 0-5 months of age who were exclusively breastfed during the day preceding the survey. Exclusive breastfeeding means that the infant received breast milk (including milk expressed or from a wet nurse) and may have received ORS, vitamins, minerals and/or medicines, but did not receive any other food or liquid.

The numerator for this indicator is the total number of children 0-5 months in the sample exclusively breastfed on the day and night preceding the survey. The denominator is the total number of children 0-5 months in the sample with exclusive breastfeeding data.

RATIONALE:

Exclusive breastfeeding for 6 months provides children with significant health and nutrition benefits, including protection from gastrointestinal infections and reduced risk of mortality, due to infectious disease.

UNIT:	*DISAGGREGATE BY:*
Please enter these two data points:	Sex: Male, Female
1. Percent of children 0-5 months of age in sample who are exclusively breastfed	
2. Total population of children 0-5 months of age c in ZOI	

TYPE: OUTPUT/OUTCOME	*DIRECTION OF CHANGE:*
Outcome	Higher is better

DATA SOURCE:

Population-based survey and official DHS data (see notes below).