

FEED THE FUTURE
INDICATORS FOR UPPER
WEST REGION, GHANA 2015

DISTRICT BASELINE ESTIMATES

USAID-METSS

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List of Acronyms

5DE	Five Domains of Empowerment
BMI	Body Mass Index
CDC	Center for Disease Control
DANIDA	Danish International Development Agency
DRIC-UCC	Directorate of Research, Innovation & Consultancy-University of Ghana
EA	Enumeration Area
EU	European Union
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agricultural Organization
FHI360	Family Health International 360
FTF	Feed the Future
GHS	Ghana Health Service/Ghanaian cedi
GIZ	Gesellschaft für Internationale Zusammenarbeit
GLSS6	Ghana Living Standards Survey 6
GoG	Government of Ghana
GPI	Gender Parity Index
GSS	Ghana Statistical Service
HHS	Household Hunger Scale
IMF	International Monetary Fund
IPs	Implementing Partners
JICA	Japan International Cooperation Agency
KSU	Kansas State University
LSMS	Living Standards Measurement Survey
MDD-W	Women's Minimum Dietary Diversity
MDG	Millennium Development Goals
METSS	Monitoring Evaluation and Technical Support Services
MoFA	Ministry of Food and Agriculture
PBS	Population Based Survey
PPP	Purchasing Power Parity
PSU	Primary Sampling Unit

SD	Standard Deviation
SSU	Secondary Sampling Unit
UCC	University of Cape Coast
UNDP	United Nations Development Program
UNICEF	United Nations Children’s Emergency Fund
USAID	United States Agency for International Development
USD	United States Dollar
USDA	United States Department of Agriculture
USG	United States Government
WDDS	Women’s Dietary Diversity Score
WEAI	Women’s Empowerment in Agriculture Index
WHO	World Health Organization
ZOI	Zone of Influence

Introduction and Background

In 2009, the U.S. Government launched its Feed the Future (FTF) Initiative in response to pressing global hunger and food security challenges. The Feed the Future initiative aims to sustainably reduce global hunger and poverty. The initiative tackles their root causes and employs proven strategies for achieving large scale and lasting impacts (<http://www.feedthefuture.gov>). It encourages improved agricultural productivity by supporting better government response to anticipated climate change, improved women's and children's nutrition, and enhanced economic development through gender equity and regional balance. Improvements in the livelihoods of participating households are measured by their economic wellbeing; hunger and dietary diversity; women and children anthropometry; and women's empowerment (Zereyesus et al. 2016).

In Ghana, the initiative started in mid-2011 in Northern Region, Upper East Region, Upper West Region, and selected areas in Brong Ahafo Region lying above the Latitude 8°N. This area, referred to as the USAID Zone of Influence (ZOI), was selected because of the relatively higher incidences of poverty, malnutrition, and stunting among children aged less than five years compared to the rest of the country (Zereyesus et al. 2016).

Feed the Future seeks to bring about positive changes in the economic, food security and nutritional status in the ZOI in Ghanaian households. By implementing activities in northern Ghana where prevalence of poverty, underweight, and stunting among children below five years of age are higher than the national average, USAID aims to bring significant changes in the population. USAID|Ghana has already engaged some Implementing Partners (IPs) to execute activities in the Feed the Future ZOI. The IP's undertake activities to contribute to the achievement of the high level Feed the Future indicators at the goal and first level objectives. These indicators are: prevalence of stunted, wasted and underweight children under five years of age; prevalence of underweight women; prevalence of poverty (percent of people living on less than \$1.25/day); daily per capita expenditure (as a proxy for income) in U.S. Government (USG) assisted areas; and Women's Empowerment in Agriculture Index (USAID 2014)

USAID leads the execution of the Feed the Future Initiative by leveraging the resources and capabilities of other U.S. Government agencies to achieve the Initiative's objectives. Some of the U.S. Government agencies involved in the Feed the Future Initiative are the Department of State, Peace Corps, Millennium Challenge Corporation, Department of Treasury, U.S. Trade Representative, Overseas Private Investment Corporation, U.S. African Development Foundation, and the U.S. Department of Agriculture. USAID|Ghana is also working closely with the Government of Ghana (GoG), local non-governmental organizations, private sector organizations, and international development partners (World Bank, World Health Organization (WHO), the International Monetary Fund (IMF), the German Organization for International Cooperation (GIZ - Gesellschaft für Internationale Zusammenarbeit), the Danish International Development Agency (DANIDA), European Union (EU) Micro Project, and the Japan

International Cooperation Agency (JICA)) to efficiently achieve the objectives of the Feed the Future Initiative by avoiding duplications in efforts and activities. To monitor the Initiative's activities in the ZOI at the household level, it became important to collect district level data.

Purpose of Report

This report is designed to provide point estimates of the Feed the Future indicators at the district level for the Feed the Future ZOI. The document provides information that could be used to assess progress of Feed the Future interventions, primarily aimed at achieving its poverty reduction and food security enhancement objectives at the district level where the relevant indicators have not been adequately analyzed and reported before. District level reports are prepared for all the districts in the four regions involved in the Feed the Future initiative. This report focuses on districts in Upper West Region.

Profile of Upper West Region

Upper West Region occupies 18,746 square kilometers, equivalent to 12.7 percent of the total land area of Ghana. This region shares borders to the north with Burkina Faso, to the south with Northern Region, to the west with Côte d'Ivoire and with Upper East to the east (GoG 2016). Upper West Region has 11 districts of which two were recently created i.e. Nandom and Daffiama Bussie. According to the 2010 Population and Housing Census, Upper West Region has a population of 702,110 of which 48.6 percent are male and 51.4 percent are females, and a total of 587,457 (83.7 percent) people live in rural areas (GSS 2013).

In Upper West Region, the social structure is based on chieftaincy which is a respected institution and core of the community (GSS 2013). There are two major ethnic groups in the region that comprise more than three-quarters of the population in Upper West Region. These ethnic groups are Mole-Dagbani with 66.1 percent and Grusi that accounts for 27.8 percent (GSS 2013). With regards to language, Dagaare, Sissali, Wale and Lobi are the major languages of the region of which the first three are an inheritance from a patrilineal system and Lobi from matrilineal system (GSS 2013).

People from this region perform spinning, weaving and smock designing. They produce musical instruments such as the xylophone and are involved in pottery, blacksmithing and carving. Upper West Region has tourist attractions such as the Wa Na's Palace and Dondoli Sudamic (Larabanga) Mosque, the Jirapa Naa's Palace, the all-stone Gothic art church in Nandom and the Community Hippo Sanctuary located at Wechiau. Other attractions include the Gwollu Slave Defence Wall, slave site caves, and George Ekem Ferguson's tomb (GoG 2016).

Just like the other three northern regions, Upper West has only one rainy season followed by a prolonged dry season. The rainy season lasts from April to October with an average annual rainfall of approximately 115 cm and the dry season starts on November and ends in March (GSS 2013). Temperatures in this region reach their maximum (40°C) at the end of the dry season,

and the minimum the first months of the dry season (20°C) (GoG 2016). Soils vary across Upper West region, some of the type of soils found include the approximate FAO classification system: fluvisols, arenosols, lixisols and vertisols (MoFA n.d.). Given these climatic conditions, shea, baobab, *dawadawa* and neem are predominant trees in this region which are used to provide fuel for domestic and as material for houses' construction (GSS 2013).

Upper West is an agrarian region where 84,931 households are engaged in agricultural activities (GSS 2013). According to 2010 Population and Housing Census, 95.7 percent of the households were involved in crop farming activities, 63.7 percent on livestock rearing, 1.9 percent in tree growing and 0.1 percent in fish farming. In general, a farmer from Upper West Region is a peasant farmer with approximately 25 acres for farming; their output will be used for subsistence or commercial purposes (GSS 2013). In general, maize and rice are the most cultivated crops, however, soybean cultivation has started to be adopted for use as a cash crop (Zereyesus et al. 2016).

As is typical for all the northern regions, livestock (small and large ruminant livestock production) are integrated into the farming systems – a practice known as mixed farming. Additionally, guinea fowl and chicken production is common. With regards to large livestock, they often serve multiple purposes for smallholder producers such as food, draft power and even as wealth reserve, credit collateral and insurance against financial risks. Furthermore, smallholders take advantage of the residues of livestock activities such as manure which is applied to the soil to enhance its fertility (Zereyesus et al. 2016).

This document is organized into eight sections, this background section (Section 1), a survey methods section (Section 2), and household demographics and dwelling characteristics (Section 3). The following four sections are devoted to each of the principal indicator groups: Household Economic Status; Hunger and Dietary Intake; Health Status of Women and Children; Women's Empowerment in Agriculture. The last section (Section 8) provides the summary and conclusions.

Survey Method

Survey Design

The practical demand for representative district level data has been the main driving force for the collection of the district level data and analysis. To meet this demand, the interim PBS 2015 was framed to allow collection of representative samples at the district level. This was done by calculating the required sample of households using the prevalence of poverty indicator as the primary survey design indicator. Other indicators are not considered as design indicators at the district level due to the required large number of sample sizes and the ensuing high cost implications. This implies that individual level indicators such as stunting and wasting, will only be included in the analyses and reported if statistically reliable number of observations are available in the data.

In order to arrive at the effective sample size at the district level, standard sample size calculation was adopted. A two stage sampling design was followed with the designation of the Enumeration Area (EA) as the Primary Sampling Units (PSU) and the households as the Secondary Sampling Units (SSU). The following assumptions were made with respect to the variables used to determine the sample size:

1. A poverty prevalence rate of 20 percent at the household level (this mean value of the poverty indicator is estimated based on the average Feed the Future 2015 target using 2012 baseline values)
2. A 10 percent margin of error
3. A design effect of 2.37 (based on the ZOI Deff)
4. Significance level of 95 percent
5. A 5 percent non-response rate

With the forgoing assumptions, the computational formula used in determining the district level required sample size for the poverty indicator is given by equation 2 as follows:

$$N = Deff \frac{(Z_{\alpha/2})^2 (p(1-p))}{M^2} \quad (1)$$

where N is the sample size, $Deff$ is the design effect, $Z_{\alpha/2}$ is the Z value (1.96 for 95% confidence level), p is the proportion of poverty and M is the proportion margin of error. The mean value of M for the poverty indicator is estimated based on the average Feed the Future 2015 target. Based on the assumptions, and using equation 1, the sample size was calculated to be 150 as shown in Table I.

Table 1: Effective Sample Sizes for Poverty Indicator in each District

Design Indicator	Mean	Margin of Error (M)	DEFF	Nominal N	5 % Non-Response Inflation Rate	Effective N
Poverty	0.20	0.10	2.37	143	7	150

Source: District Level Survey Data, Ghana 2015

Survey Implementation

The survey field work was conducted by the Directorate of Research, Innovation and Consultancy of the University of Cape Coast (DRIC-UCC) supported by Kansas State University (KSU) and USAID- METSS staff. Listing and respondent verification support were provided by the GSS. District assembly representatives and staff facilitated community entry for enumerators, improving household participation and response rates.

As mentioned in the survey design section, the implementation of the district level data collection was coordinated together with the interim PBS 2015 data collection exercise. Since the sampling design was at the ZOI level and not at the district level, the allocation of households in each district is not uniform. While some districts have been allocated with more than 150 households, others have been allocated with less than 150 households. The implementation strategy of the district level data collection is to ensure that at least 150 households are allocated in each district. Thus, once the baseline households were interviewed, non-baseline households were added, if needed, to ensure that at least 150 households were interviewed in each district. However, there will be districts that have more than 150 households because of the sampling design for the interim PBS 2015. The sample sizes in each of the district, the actual responses and the response rates, is shown in Table 2. The list of districts shown is based on the recent administrative classification and shows a total of 11 districts.

Table 2: Sample Size, Sample Responses, and Response Rate by District

District	Sample Size	Responses	Response Rates
Daffiama Bussie	^	20	^
Jirapa	150	146	97.3
Lambussie-Karni	150	140	93.3
Lawra	150	95	63.3
Nadowli-Kaleo	150	115	76.7
Nandom	^	53	^
Sissala East	150	143	95.3
Sissala West	150	153	102.0
Wa East	150	148	98.7
Wa Municipal	150	144	96.0
Wa West	150	150	100.0

^ Data not available for newly formed or newly split districts.

Source: District Level Survey Data, Ghana 2015

Challenges and Limitations

The problem of household head's names differing from their official names on record, encountered in 2012, remained a challenge in the 2015 verification process for the 2012 households. Although this was not a problem for the new districts, this problem re-emerged because the corrected names collected during the 2012 baseline survey did not become the official names in the Ghana Statistical Service's records and these records were the ones used for the listing and verification of households. Enumerators ended up using multiple identification characteristics to confirm or re-confirm household identities, delaying the commencement of interviews and putting pressure on enumerators. Also, not all households had been verified because there were instances where households had moved away from the community or where people had died. In fact, one enumeration team walked into the funeral of a household head who had died the day before its arrival. These uncomfortable situations were addressed as respectfully and gracefully as possible.

The electricity problem identified during the 2012 survey remained a challenge during 2015. Cognizant of this challenge, the management team provided extra computers to supervisors as well as cash so that they could bring computers with depleted power to neighboring towns to be recharged and returned to enumerators. As a final backstop to the power problem, enumerators were provided with copies of the paper questionnaires to use in case their computer failed and they could not get access to another computer.

There are a couple challenges worth noting regarding the survey implementation. First, the sampling of non-baseline households followed a simple random sampling rather than a two stage sampling. Because of the difference in the sampling approach between the baseline and non-baseline households, it is not possible to safely apply sampling weights while reporting estimates. Because of this, the district report is prepared without the application of sampling weights. Second, the listing of households in the field for the purpose of sampling was implemented using 'old' districts' administrative classification. This has imposed shortage of sample size for those newly formed districts as well those districts that are split in to two. The low and irregular number of households reported in Table 2 are as a result of such limitations.

Household Demographics and Dwelling Characteristics

Household Demographics

Table 3 presents demographic characteristics in Upper West Region by district. The sub-population categories correspond to disaggregates for the Feed the Future indicators, which encompassed children by specific age range and women of reproductive age (15 to 49 years old). The average household size is approximately 6 people per household. The range of household's size is between 4.7 in Sissala East to 8.0 in Nandom District. The estimated population in the Upper West Districts for adult females ranges from 48.5 percent in Wa East District to 56.9 percent in Jirapa District. Children between the ages of 5 to 17 years comprise majority of the children. All the households in Upper West have approximately at least two children in this age group.

Table 3: Household Size and Age Distribution by District

District	Size	Child < 2 years	Child 0 to 4 years	Child 5 to 17 years	Adult ¹ Females	Percent of Adult Females	n ²
Daffiama Bussie	^	^	^	^	^	^	^
Nandom	8.0	0.2	0.6	2.5	2.5	53.3	53
Wa West	5.2	0.2	0.8	2.2	1.3	56.3	150
Wa Municipal	5.3	0.2	0.7	2.0	1.5	55.3	144
Wa East	5.8	0.4	0.8	2.4	1.3	48.5	148
Sissala East	4.7	0.2	0.7	1.7	1.2	49.6	143
Nadowli	5.3	0.2	0.6	2.0	1.4	56.1	115
Jirapa	5.9	0.7	1.0	2.1	1.5	56.9	146
Sissala West	5.9	0.4	1.0	2.3	1.5	55.6	153
Lambussie Karni	5.0	0.3	0.9	1.7	1.3	48.9	140
Lawra	5.9	0.3	0.7	2.1	1.7	56.0	95
Upper West Region	5.5	0.3	0.8	2.0	1.5	53.9	1,287

[^] Results not statistically reliable, n<30.

¹ An adult is defined as an individual age 18 or older. Females age 15-17 are of reproductive age, but are not considered adults by this definition.

² Sample n is the unweighted count of all households that responded the survey.

Source: District Level Survey Data, Ghana 2015

Table 4 presents the distribution of adult respondents by their educational level and district. Approximately three-quarters of the household members (78.3 percent on average) have received no formal education. The districts with rates of no formal education less than 70 percent are only Lawra and Nandom. Wa East has the highest rate (93 percent) of members who do not have any formal education. The regional average of household member who attained secondary education is 13.8 percent. The district with the lowest rate of secondary educational attainment is Wa East (2.6 percent) and Lawra is the district with the highest rate of secondary educational attainment (21.1 percent).

Table 4: Adult Educational Attainment by District

District	Adult's Educational Attainment			n
	No education	Primary Level	Secondary Level	
Daffiama Bussie	^	^	^	^
Jirapa	75.0	7.8	17.1	140
Lambussie Karni	75.5	5.6	18.9	135
Lawra	68.5	10.5	21.1	95
Nadowli	81.1	9.3	9.6	114
Nandom	65.7	15.1	19.2	53
Sissala East	73.5	11.2	15.3	133
Sissala West	83.0	8.1	9.0	148
Wa East	93.0	4.4	2.6	143
Wa Municipal	75.7	6.6	17.7	144
Wa West	83.0	5.7	11.4	148
Upper West Region	78.3	7.9	13.8	1,253

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015.

Household Dwelling Characteristics

Table 5 shows dwelling characteristics of households in Upper West Region by district. The characteristics of the households are evaluated based on sources of water, energy, waste disposal, cooking fuel source, and number of people per sleep room.

Table 5 shows that in Upper West Region 95.5 percent of the households have access to improved water sources. Lambussie Karni District has the lowest rate (82.7 percent) of households with access to improved water sources and all the households in Sissala East and Sissala West Districts affirm to have improved water sources. The percent of households with improved sanitation is below 50 percent except for Nandom District (53.7 percent) and Lawra District (53.8 percent). Wa West District has the lowest rate of households with improved sanitation (6.9 percent).

The average number of persons per sleeping room in Upper West Region is 2 persons. The only district with more than two persons per sleep room is Nandom. Sissala East is the district with the lowest number of persons per sleep room with 1.5 persons. Almost all households (93.8 percent) use solid sources of fuel for cooking which includes charcoal, wood, crop residues and/or animal waste. In Upper West Region 61.1 percent of the households have electricity. The access to electricity ranges from 35.2 percent in Nandom District to 92.2 percent in Sissala West District.

Table 5: Dwelling Characteristics by District

District	Water Source ¹	n	Sanitation ²	n	Persons per Sleep Room ³		Solid Fuel ⁴	n	Electricity	n
						N				
Daffiama	^	^	^	^	^	^	^	^	^	^
Bussie										
Jirapa	93.4	137	16.1	137	1.9	137	94.0	134	51.8	137
Lambussie	82.7	133	22.9	131	2.0	133	91.7	133	44.4	133
Karni										
Lawra	96.8	93	53.8	93	2.5	93	89.4	94	46.8	94
Nadowli	99.1	112	19.6	112	1.9	112	98.2	112	53.6	112
Nandom	94.4	54	53.7	54	3.1	53	98.1	54	35.2	54
Sissala East	100.0	109	16.5	109	1.5	109	93.5	108	87.2	109
Sissala West	100.0	141	10.6	141	2.1	141	95.0	141	92.2	141
Wa East	96.2	131	12.2	131	2.1	130	93.1	131	64.1	131
Wa										
Municipal	94.9	138	20.3	138	2.0	139	88.5	139	77.0	139
Wa West	97.9	145	6.9	144	1.7	145	97.9	145	41.4	145
Upper West	95.5	1,193	20.1	1,190	2.0	1,192	93.8	1,191	61.1	1,195
Region										

[^] Results not statistically reliable, n<30.

¹ Improved water sources include *piped water into the dwelling, piped water into the yard, a public tap/standpipe, a tube well/borehole, a protected dug well, a protected spring, and rainwater* (WHO and UNICEF 2009). The proportion of the population with sustainable access to an improved water source is the 2015 Millennium Development Goals (MDG) indicator #30 (UNDP 2003); however, as in most major international survey programs, the measure reported here reflects only access to an improved water source, and not the sustainability of that access.

² Improved sanitation facilities are those that separate human excreta from human contact and include the categories *flush to piped sewer system, flush to septic tank, flush/pour flush to pit, composting toilet, ventilated improved pit latrine, and a pit latrine with a slab*. Because shared and public facilities are often less hygienic than private facilities, shared or public sanitation facilities are not counted as improved (WHO and UNICEF 2009). The proportion of the population with access to improved sanitation is the 2015 MDG indicator #31 (UNDP 2003).

³ The average number of persons per sleeping room is a common indicator of crowding (UNDP 2003).

⁴ Solid fuel is defined as *charcoal, wood, animal dung, and agriculture crop residue*. The proportion of the population using solid fuels is MDG indicator #29 (UNDP 2003). The *other* and *no food cooked in household* categories are removed from percentages.

Source: District Level Survey Data, Ghana 2015

Household Economic Status Indicators

Household economic status is measured by per capita household expenditures and the prevalence of poverty, using the consumption expenditure method. The Household Consumption Expenditure modules of the population-based survey questionnaire were used to collect the data necessary to calculate the per capita expenditures and prevalence of poverty indicators. These modules are similar to those in the Living Standards Measurement Survey (LSMS) of the World Bank. The modules collect information on households' consumption expenditure on various food and non-food items as a proxy for household income. Deaton (2008) has argued that expenditure data are less prone to error, easier to recall in survey situations, and more stable over time than income data. These observations are valid and using expenditures as a proxy for income may be fairly accurate for poor people because the income elasticity of consumption is near unity. However, the effectiveness of the proxy deteriorates as incomes increase and the income elasticity of consumption ceases to be unity. After estimating total household expenditure on an annual basis, it is converted into a daily and per capita basis by dividing by 365 days and then by the number of household members.

Daily Per Capita Expenditure in 2010 USD Constant Prices

The indicator developed to provide the primary information on household economic well-being in the report is the average daily per capita expenditure¹ expressed in 2010 U.S. dollars (USD) after adjusting for the 2005 Purchasing Power Parity (PPP)². Table 6 presents the average household daily per capita expenditure for all districts in Upper West Region. The average household daily per capita expenditure is \$4.77. The lowest average household daily per capita expenditure stands at \$2.44 in Daffiama Bussie District followed by \$3.28 in Nadowli District and \$3.91 in Jirapa District. The highest average household daily per capita expenditure stands at \$7.96 in Sissala East District, followed by \$6.29 in Lawra District and \$6.04 in Lambussie Karni District.

¹ Note that expenditure data are not collected at the individual level but rather at the household level; individual's per capita expenditures are then derived by dividing total household expenditures by the number of household members.

² Adjustments are made according to PPP conversions. These conversions are established by the World Bank to allow currencies to be compared across countries in terms of how much an individual can buy in a specific country. The \$1.25 in 2005 PPP means that \$1.25 could buy the same amount of goods in another country as \$1.25 could in the United States in 2005.

Table 6: Mean Daily Per Capita Expenditure (in 2010 USD) by District

District	Per Capita Expenditure	n
Daffiama Bussie ¹	2.44	20
Jirapa	3.91	136
Lambussie Karni	6.04	135
Lawra	6.29	94
Nadowli	3.28	114
Nandom	2.77	51
Sissala East	7.96	123
Sissala West	4.18	146
Wa East	3.92	144
Wa Municipal	4.81	142
Wa West	4.29	146
Upper West Region	4.77	1,251

¹ Results not statistically reliable, n < 30.

Source: District Level Survey Data, Ghana 2015

Prevalence and Depth of Poverty

International Poverty Line

The international poverty line of \$1.25 USD in 2005 PPP represents extreme poverty and is used to estimate the prevalence of poverty and the depth of poverty (World Bank 2011). The prevalence of poverty, sometimes called the poverty headcount ratio, is measured by determining the proportion of households living below an established poverty threshold. For this study, the poverty threshold is set at \$1.25 in 2005 PPP. Depth of poverty, or poverty gap index, measures the extent to which those households classified as poor fall below the poverty line (World Bank 2011).

Table 7 presents the overall poverty prevalence estimates at the \$1.25 per day (2005 PPP) threshold and the overall depth of poverty for the districts in Upper West Region. Maps representing the geographical distribution of poverty prevalence and depth of poverty rates by district are presented in the Appendix.

The prevalence of poverty is relatively the highest in Daffiama Bussie District with 35 percent of households falling below the \$1.25 poverty line. The prevalence rate in Wa Municipal District is the lowest (14.8 percent) and this district also has the lowest poverty depth, at 4.4 percent. Upper West Region has poverty prevalence of 25.2 percent and a regional average poverty depth of 8.4 percent.

Table 7: Poverty at the \$1.25 (2005 PPP) by District

District	Prevalence of Poverty ¹		Depth of Poverty ²	
	Percent Population	n	Percent of Poverty Line	n
Daffiama Bussie ³	35.0	20	9.3	20
Jirapa	33.1	136	10.6	136
Lambussie Karni	25.2	135	7.9	135
Lawra	24.5	94	6.8	94
Nadowli	29.8	114	9.2	114
Nandom	29.4	51	11.3	51
Sissala East	22.0	123	8.2	123
Sissala West	21.2	146	8.4	146
Wa East	26.4	144	8.9	144
Wa Municipal	14.8	142	4.4	142
Wa West	26.7	146	9.7	146
Upper West Region	25.2	1,231	8.4	1,231

¹ The prevalence of poverty is the percentage of households living below the national poverty line. Poverty prevalence is sometimes referred to as the poverty incidence or poverty headcount ratio.

² The depth of poverty, or poverty gap, is the average consumption shortfall multiplied by the prevalence of poverty.

³ Results not statistically reliable, n < 30. For poverty prevalence and depth, districts with n < 30 were considered for possible future case analysis.

Source: District Level Survey Data, Ghana 2015

National Poverty Line

National poverty lines for Ghana are based on the Ghana Living Standards Survey 6 (GLSS6), which was conducted in 2012/2013 by the Ghana Statistical Service (2012). It makes use of a consumption-based standard of living measure as is the practice in many country statistics services. An absolute poverty line can be defined as that value of consumption necessary to satisfy minimum subsistence needs. In the case of food consumption, nutritional requirements in terms of daily calorie intake can be used as a guide. GSS (2014) calculated the average expenditure of the food consumption basket for the bottom 50 percent of individuals ranked by the standard of living measure, and derived the amount of calories in this basket. The price of one calorie was then calculated by dividing the adult equivalent expenditure of the food basket by the amount of adult equivalent calories provided by the basket. This calorie price was representative of the price paid by a typical household in the bottom 50 percent. This price was then multiplied by 2,900 calories, which was used to calculate the poverty lines for the 2012/13 survey. Expenditure on non-food consumption, determined by household whose total food expenditure was at or near the level of the extreme poverty line (10 percent of individuals below and above the line), was added to the poverty line.

Two nutritionally-based national poverty lines are:

- The national extreme poverty line: This is the lower poverty line of GHS 792.05 per adult equivalent per year. It corresponds to GHS 2.17 per day per adult equivalent expenditure. It focuses on what is needed to meet the nutritional requirements of household members. Individuals whose total expenditure falls below this line are considered to be in extreme poverty. They are unable to purchase or consume enough food to supply them with the

minimum daily per-capita energy requirement for a good healthy life. If they allocated their entire budget to food, they would not be able to meet their minimum nutrition requirements (which Ghana selected to be 2,900 calories). These are also the individuals who do not have enough resources to consume or purchase both adequate food and non-food items and are forced to sacrifice food items to obtain essential non-food items. placed this line as 27 percent of the mean consumption level in 2012/13.

- The national absolute poverty line: This is the upper poverty line of GHS 1,314 per adult equivalent per year was also established. This corresponds to GHS 3.60 per day per adult equivalent expenditure. This line incorporates both essential food and non-food consumption. Individuals consuming above this level may be considered able to purchase enough food to meet their nutritional requirements and their basic non-food needs. This line is 45 percent of the mean consumption level in 2012/13.

The estimates of the prevalence of poverty and depth of poverty based on the absolute national poverty line are shown in Table 8. The poverty prevalence rates at the national absolute poverty line are, on average, twice as high as the poverty prevalence rates at the \$1.25 international poverty line. The percentage of households below the GHS3.60 daily per capita expenditure threshold ranges from 46.3 percent in Sissala East District to 70 percent in Daffiama Bussie District. Some of the districts with the lowest rates of prevalence of poverty are Lambussie Karni (48.1 percent) and Wa Municipal (50 percent). The depth of poverty for Upper West Region averages 25.0 percent of the national absolute poverty line. It ranges from 20.5 percent in Sissala East District to 32.1 percent in Daffiama Bussie District. The same districts with the lowest prevalence of poverty possess the lowest depth of poverty rates, that is, Wa Municipal (20.8 percent), Lambussie Karni (21.5 percent).

Table 8: Poverty at the National Absolute Threshold of GHS 3.60 (2012/13) by District

District	Prevalence of Poverty ¹		Depth of Poverty ²	
	Percent Population	n	Percent of Poverty Line	n
Daffiama Bussie ³	70.0	20	32.1	20
Jirapa	64.0	136	29.8	136
Lambussie Karni	48.1	135	21.5	134
Lawra	55.3	94	23.6	94
Nadowli	66.7	114	31.4	114
Nandom	66.7	51	30.8	51
Sissala East	46.3	123	20.5	123
Sissala West	52.1	146	23.7	146
Wa East	55.6	144	25.1	144
Wa Municipal	50.0	142	20.8	142
Wa West	52.7	146	25.5	146
Upper West Region	55.1	1,231	25.0	1,230

¹ The prevalence of poverty is the percentage of households living below the national poverty line. Poverty prevalence is sometimes referred to as the poverty incidence or poverty headcount ratio.

² The depth of poverty, or poverty gap, is the average consumption shortfall multiplied by the prevalence of poverty.

³ Results not statistically reliable, n < 30. For poverty prevalence and depth, districts with n < 30 were considered for possible future case analysis.

Source: District Level Survey Data, Ghana 2015

Extreme National Poverty Line

The estimates of the prevalence of poverty and depth of poverty based on the extreme national poverty lines, i.e., 2.17 GHS per adult per day measured in 2012/13, are shown in Table 9. The rates based on the national poverty lines generally seem to give higher estimates compared to rates based on the international poverty lines. The ranking of districts by prevalence rates is similar to that based on the international poverty line.

Table 9: Poverty at the National Extreme Threshold of GHS 2.17 (2012/13) by District

District	Prevalence of Poverty ¹		Depth of Poverty ²	
	Percent Population	n	Percent of Poverty Line	n
Daffiama Bussie ³	45.0	20	12.9	20
Jirapa	36.8	136	14.7	136
Lambussie Karni	28.9	135	10.7	134
Lawra	28.7	94	10.3	94
Nadowli	41.2	114	14.8	114
Nandom	39.2	51	16.2	51
Sissala East	25.2	123	10.7	123
Sissala West	30.1	146	11.4	146
Wa East	33.3	144	12.4	144
Wa Municipal	25.4	142	7.6	142
Wa West	34.2	146	13.3	146
Upper West Region	32.1	1,231	12.0	1,230

¹ The prevalence of poverty is the percentage of households living below the national poverty line. Poverty prevalence is sometimes referred to as the poverty incidence or poverty headcount ratio.

² The depth of poverty, or poverty gap, is the average consumption shortfall multiplied by the prevalence of poverty.

³ Results not statistically reliable, n < 30. For poverty prevalence and depth, districts with n < 30 were considered for possible future case analysis.

Source: District Level Survey Data, Ghana 2015

The prevalence of poverty at the national extreme poverty threshold of GHS2.17 daily per adult equivalent expenditure is 32.1 in Upper West. The lowest prevalence rate of poverty is recorded in Sissala East District with 25.2 percent of the households falling below the poverty line of GHS 2.17 per adult per day; and the highest prevalence of poverty is recorded in Daffiama Bussie District with 45 percent of the households falling below this national poverty line. Districts with prevalence of poverty above the regional average are Daffiama Bussie (45 percent), Jirapa (36.8 percent), Nadowli (41.2 percent), Nandom (39.2 percent), Wa East (33.3 percent) and Wa West (34.2 percent).

The depth of poverty based on the national extreme threshold is 12 percent in Upper West Region. The depth of poverty ranges from 7.6 percent in Wa Municipal District to as high as 16.2 percent in Nandom District. Districts with depth of poverty above the regional average are Daffiama Bussie (12.9 percent), Jirapa (14.7 percent), Nadowli (14.8 percent), Nandom (16.2 percent), Wa West (13.3 percent) and Wa East (12.4 percent).

Hunger and Dietary Diversity Indicators

Household Hunger Scale

The Household Hunger Scale (HHS) is used to calculate the prevalence of households experiencing 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 United Nations Food and Agriculture Organization. It has been cross-culturally validated to allow comparison across different food-insecure contexts. The HHS is used to assess, geographically target, monitor, and evaluate settings affected by substantial food insecurity. The HHS is used to estimate the percentage of households affected by three different severities of household hunger: little to no household hunger (HHS score 0-1); moderate household hunger (HHS score 2-3); and severe household hunger (HHS score 4-6). The HHS should be measured at the same time each year, and ideally at the most vulnerable time of year (such as right before the harvest or during the dry season) (Deitchler, et al. 2011)³.

The results for households with moderate to severe hunger are presented in Table 10. The prevalence of moderate to severe hunger averages 33.6 percent. It ranges from 19.3 percent in Sissala West District to 42.4 percent in Wa West District. Districts with rates below the regional average include: Jirapa, Nandom, Sissala East, Sissala West, and Wa Municipal.

Table 10: Percentage of Households with Moderate to Severe Hunger by District

District	Moderate to Severe hunger (%)	n
Daffiama Bussie	^	^
Jirapa	32.8	134
Lambussie Karni	39.6	134
Lawra	38.5	96
Nadowli	40.9	115
Nandom	27.3	55
Sissala East	27	115
Sissala West	19.3	145
Wa East	36	136
Wa Municipal	31.5	143
Wa West	42.4	144
Upper West Region	33.6	1,217

^ Results not statistically reliable, n<30.
Source: District Level Survey Data, Ghana 2015

³ For further description of the household hunger indicator and its calculation, please refer to Feed the Future (2014) Indicator Handbook, available at <http://feedthefuture.gov/resource/feed-future-handbook-indicator-definitions>.

Dietary Diversity in Women

Two indicators are used to measure women’s dietary diversity: Women’s Dietary Diversity Score (WDDS) and Women’s Minimum Dietary Diversity (MDD-W). The WDDS is based on nine food groups: (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. A woman’s score is based on the sum of different food groups consumed in the 24 hours prior to the interview. The mean of this count across respondents produces the average WDDS. The WDDS is an indicator of the micronutrient adequacy of women’s diets based on the diversity of the diet (FAO 2011).

Women’s Minimum Dietary Diversity (MDD-W) represents the proportion of women consuming a minimum of five food groups out of the possible ten food groups based on their dietary intake within the 24 hours preceding the survey interview (FAO and FHI 360 2016). Table 11 represents the differences between the food groups for WDDS and MDD-W.

Table 11: Differences in Food Groups between WDDS and MDD-W

WDDS	MDD-W
Group 1: Starchy staple	Group 1: All starchy staple foods
Group 2: Legumes, nuts and seeds	Group 2: Beans and peas Group 3: Nuts and Seeds
Group 3: Milk and milk products	Group 4: Dairy
Group 4: Meat and Fish	Group 5: Flesh Foods
Group 5: Organ Meat	
Group 6: Eggs	Group 6: Eggs
Group 7: Dark green leafy vegetables	Group 7: Vitamin A-rich dark green leafy vegetables
Group 8: Other Vitamin A-rich vegetables and fruits	Group 8: Other Vitamin A-rich vegetables and fruits
Group 9: Other vegetables and fruits	Group 9: Other vegetables Group 10: Other fruit

Adapted from FAO 2011 and FAO and FHI 360 2016

Women’s Dietary Diversity Score

The mean and median values for Women’s Dietary Diversity Score (WDDS) by district for women of reproductive age are presented in Table 12. The mean WDDS across the districts averages 3.5 food groups. It ranges between 2.9 in Nadowli District to 4.1 in Wa Municipal District. The median averages 3.0 food groups. The districts with WDDS less than the regional average are Jirapa, Lambussie Karni, Nadowli, Sissala East, Sissala West, and Wa East.

Table 12: Women's Dietary Diversity Score by District

District	Mean	Median	n
Daffiama Bussie	^	^	^
Jirapa	3.4	3.0	133
Lambussie Karni	3.3	3.0	124
Lawra	3.7	4.0	113
Nadowli	2.9	3.0	82
Nandom	3.8	4.0	66
Sissala East	3.4	3.0	119
Sissala West	3.2	3.0	158
Wa East	3.4	3.0	125
Wa Municipal	4.1	4.0	138
Wa West	3.5	3.0	126
Upper West Region	3.5	3.0	1,184

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

Women's Minimum Dietary Diversity

Table 13 shows the percentage of women of reproductive age who have achieved the Minimum Dietary Diversity threshold in the districts of Upper West Region. The table shows that in most districts Women's Minimum Dietary Diversity (MDD-W) is below 50 percent with the exception of Wa Municipal District (60.1 percent). The MDD-W in Upper West Region averages 38.8 percent and ranges from 25.9 percent in Sissala West District to 60.1 percent in Wa Municipal District.

Table 13: Women's Minimum Dietary Diversity by District

District	Percent of women	n
Daffiama Bussie	^	^
Jirapa	42.9	133
Lambussie Karni	29.0	124
Lawra	41.6	113
Nadowli	29.3	82
Nandom	48.5	66
Sissala East	34.5	119
Sissala West	25.9	158
Wa East	41.6	125
Wa Municipal	60.1	138
Wa West	36.5	126
Upper West Region	38.8	1,184

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

Health Status of Women and Children

The nutritional status of children and women are measured by four indicators, three indicators for children and one for women. The three anthropometric measurements used for children measures the prevalence of stunted, wasted and underweight children under 5 years old. Standardized Z-scores for these measurements have been developed in reference to a healthy population of children, which took into account age and gender. If the Z-score of the measurements are below -2 standard deviations (<-2 SD) of the median z-score measurement for the reference group, then a child is considered as stunted, wasted and underweight, respectively. Severe stunting, wasting or underweight are associated with measurement below – -3 standard deviations (<-3 SD). A mean Z-score of less than 0 (i.e., a negative value for stunting, wasting, or underweight) suggests that the distribution of an index has shifted downward and, on average, children in the population are less well-nourished than the reference group (WHO 2006). The Appendix 2 has maps presenting the geographical distribution of stunted, wasted and underweight children by district.

Stunted Children

Stunting, or height-for-age, 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 age 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 as adults (Black, et al. 2008, Victora, et al. 2008). Table 14 presents the prevalence rates of stunted (<-2SD) and severely stunted (<-3SD) children ages 0 to 59 months residing in Upper West Region. The district with the highest prevalence of stunting is Nadowli (25 percent) and Lawra District has the lowest rate (14.3 percent). Severe stunting averages 8.9 percent and it ranges from 4.3 percent in Lawra District to 14.4 percent in Sissala West District.

Table 14: Prevalence of Stunting among Children under 5 Years Old by District

District	% Stunted (<-2 SD)	% Severely Stunted (<-3 SD)	Mean Z Score	n
Daffiama Bussie	^	^	^	^
Jirapa	21.5	10.8	-0.8	65
Lambussie Karni	22.6	7.5	-0.6	106
Lawra	14.3	4.3	-0.7	70
Nadowli	25.0	10.7	-1.0	56
Nandom	^	^	^	^
Sissala East	23.0	6.6	-0.8	61
Sissala West	21.6	14.4	-0.7	111
Wa East	22.9	8.4	-0.6	83
Wa Municipal	15.9	6.8	-0.2	44
Wa West	23.1	6.2	-0.6	65
Upper West Region	21.6	8.9	-0.7	661

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

Wasted Children

Wasting, or low weight- for-height, is an indicator of acute malnutrition. Children who are malnourished face a higher risk of mortality than well-nourished children (ICF Macro 2010). This indicator also provides the prevalence rate for children with a high weight-for-height measurement, and are considered overweight and obese.

Table 15 presents the mean Z-scores for children 0-59 months, along with the percentage of children who are acutely malnourished (<-2SD), severely wasted (<-3SD), overweight (>2SD) and obese (>3SD). The rate of wasting ranges between 2.9 percent in Wa West District to 16.7 percent in Wa Municipal District. Severe wasting rates range from zero percent in Wa West District to 11.9 percent in Wa Municipal District. Overweight cases range from 1 percent to 6.6 percent. Four out of ten districts have a rate of zero obese children; the remaining five districts have rates of obesity ranging from 1.2 percent to 3.3 percent.

Table 15: Prevalence of Wasting among Children under 5 Years Old by District

District	% Wasted (<-2 SD)	% Severely Wasted (<-3 SD)	% Overweight (>+2 SD)	% Obese (>+3 SD)	Mean Z Score	n
Daffiama Bussie	^	^	^	^	^	^
Jirapa	6.6	1.6	4.9	0.0	-0.3	61
Lambussie Karni	12.1	8.1	1.0	0.0	-0.5	99
Lawra	12.9	8.6	2.9	1.4	-0.7	70
Nadowli	9.1	5.5	5.5	0.0	-0.2	55
Nandom	^	^	^	^	^	^
Sissala East	16.4	3.3	6.6	3.3	-0.5	61
Sissala West	12.8	5.5	3.7	1.8	-0.3	109
Wa East	8.6	4.9	3.7	1.2	-0.4	81
Wa Municipal	16.7	11.9	4.8	0.0	-0.6	42
Wa West	2.9	0.0	2.9	2.9	-0.1	68
Upper West Region	10.3	5.2	3.5	1.2	-0.4	646

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

Underweight Children

Underweight, or weight-for-age, is a reflection of acute and/or chronic undernutrition. This indicator measures the percentage of children 0-59 months who are underweight (<-2SD) and severely underweight (<-3SD) are presented along in Table 16 with their mean Z-scores.

Upper West Region presents an average rate of underweight children of 12.2 percent. Four districts –Jirapa, Lambussie Karni, Lawra, and Sissala East are above the regional average rate. The districts with underweight prevalence around 7 percent are Nadowli, Wa East, and Wa West. The rates of severely underweight children range from zero in Wa East District to 6.8 percent in Wa Municipal District.

Table 16: Prevalence of Underweight among Children under 5 Years Old by District

District	% Underweight (<-2 SD)	% Severely Underweight (<-3 SD)	Mean Z Score	n
Daffiama Bussie	^	^	^	^
Jirapa	16.4	3.3	-0.8	65
Lambussie Karni	13.9	5.9	-0.6	106
Lawra	17.1	2.9	-0.7	70
Nadowli	7.1	1.8	-1.0	56
Nandom	^	^	^	^
Sissala East	13.1	4.9	-0.8	61
Sissala West	11.9	3.7	-0.7	111
Wa East	7.3	0.0	-0.6	83
Wa Municipal	11.4	6.8	-0.2	44
Wa West	7.6	3.0	-0.6	65
Upper West Region	12.2	3.4	-0.7	661

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015.

Anthropometry for Women of Reproductive Age

An individual's health can be assessed by her Body Mass Index (BMI), which is a simple, unobtrusive and inexpensive anthropometric measure. BMI is defined as the ratio of an individual's weight in kilograms to her height in meters squared (kg/m^2) (WHO 2014, CDC 2014). BMI is a reliable measure of body composition and it is used widely in health screenings of adults to identify potential health problems associated with body weight. An individual can be classified into four different body mass composition categories based on their BMI score: (1) underweight ($\text{BMI} < 18.5$); (2) normal weight ($18.5 \leq \text{BMI} < 25.0$); (3) overweight ($25.0 \leq \text{BMI} < 30.0$); and (4) obese ($\text{BMI} \geq 30.0$). Table 17 provides estimates for all non-pregnant women age 15-49 years for each district.

In Upper West Region, the average BMI of women is 22.2, which falls in the range of normal weight. On average, 12.3 percent of women are underweight, 67.6 percent fall in normal weight, 16.0 percent are overweight and only 4.1 percent of them are obese. The BMI for all districts ranges from 21.2 in Wa East District to 23.4 in Lawra District. The prevalence of underweight women ranges from 5.1 percent in Nadowli District to 20.1 percent in Sissala West District. With regards to normal weight, Lawra District has the lowest prevalence of women with normal weight (58.2 percent) and Wa East District has the highest rate of women with normal weight (82.2 percent). The prevalence of overweight women in Lawra District is the highest at 25.5 percent. Only four districts have overweight rates below the regional average of 16 percent. Obesity rates are zero in Jirapa District and Wa East District. The district with the highest rate of obesity was Nandom (9.5 percent).

Table 17: Prevalence of Underweight, Normal Weight, Overweight, and Obese Women by District

District	Mean BMI	Body Mass Index (BMI) Category (%)				n
		Under-weight	Normal Weight	Over-weight	Obese	
Daffiama Bussie	^	^	^	^	^	^
Jirapa	21.6	12.6	70.9	16.5	0.0	127
Lambussie Karni	22.9	6.4	72.5	15.6	5.5	109
Lawra	23.4	8.2	58.2	25.5	8.2	98
Nadowli	22.7	5.1	78.5	12.7	3.8	79
Nandom	22.6	14.3	63.5	12.7	9.5	63
Sissala East	21.4	17.8	68.2	11.2	2.8	107
Sissala West	21.6	20.1	61.1	16.8	2.0	149
Wa East	21.2	9.4	82.2	8.4	0.0	107
Wa Municipal	22.8	11.4	65.9	16.3	6.5	123
Wa West	22.5	12.9	61.3	19.35	6.5	124
Upper West Region	22.2	12.3	67.6	16.0	4.1	1,086

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 015

Women's Empowerment in Agriculture

Women play a prominent role in agriculture. Yet they face persistent economic and social constraints. Women's empowerment is a main focus of Feed the Future in order to achieve its objectives of inclusive agriculture sector growth and improved nutritional status. The WEAI is comprised of two weighted sub-indexes developed by Alkire et al. (2013): 5 Domains Empowerment Index (5DE) and Gender Parity Index (GPI). The 5DE examines the five domains of empowerment: production, resources, income, leadership and time. The GPI compares the empowerment of women to the empowerment of their male counterpart in the household. Data collected in this district level survey allows for calculation of the ten individual empowerment indicators in the 5DE for both primary adult female and adult men decision markers⁴. This section presents the results from these empowerment indicators of the 5DE.

The *Production* domain assesses the ability of individuals to provide input and autonomously make decisions about agricultural production. The *Resources* domain reflects individuals' control over and access to productive resources. The *Income* domain monitors individuals' ability to direct the financial resources derived from agricultural production or other sources. The *Leadership* domain reflects individuals' social capital and comfort speaking in public within their community. The *Time* domain reflects individuals' workload and satisfaction with leisure time (Zereyesus et al. 2016). This section presents the district results for these five domains.

Results for the resource domain are presented in Table 18. The production domain includes activities in food and cash crop farming, livestock rearing, fishing, to nonfarm economic activities such as wage and salaried employment. The income domain addresses if there is a sole or joint control over income and expenditure.

Table 18 gives the percentage of women who perceive they have input in decision making, autonomy in production, and control over the use of income. On average, 83.2 percent of women in Upper West Region are adequate in decision making for agricultural production decisions in contrast with 91.6 percent of men. For women, Lambussie Karni District has the lowest rate (75.0 percent) and Nadowli District has the highest rate (92.7 percent). For men, Sissala East District has the lowest rate (84.6 percent) and Nadowli District has the highest rate (98.2 percent). Furthermore, in this subdomain men have higher rates along all the districts of Upper West Region.

Almost fifty-seven percent of women and 74.7 percent of men in Upper West Region perceive to have autonomy in production. Along all the districts men present higher rates of autonomy in production than women. Sissala East District has the highest rate for women (83.1 percent) and the highest rate for men (92.2 percent). Lawra is the district with the lowest rate

⁴ The primary adult decision-makers are individuals age 18 or older who are self-identified as the primary male or female decision-maker during the collection of the household roster. These primary decision-makers in the households may not be representative of the entire female and male populations in the surveyed area.

of adequacy on autonomy in production for both women and men, 36.7 percent and 58.5 percent, respectively.

With regards to women perceiving themselves as having control over use of income, the average for Upper West Region is 45.2 percent with the lowest rate in Nandom District (30.6 percent) and the highest rate in Jirapa District (55.4 percent). In control over the use of income, men have higher rates than women in Upper West Region. The average rate for men is 83.5 percent which exceeds the women's average rate (45.2 percent). The male's rates for income control range from 73.2 percent in Wa Municipal District to 92.8 percent in Wa East District.

Table 18: Production and Income Domains by District

District	Input in Production Decision				Autonomy in Production				Control over Use of Household Income			
	Women	n	Men	n	Women	n	Men	n	Women	n	Men	n
Daffiama Bussie	^	^	^	^	^	^	^	^	^	^	^	^
Jirapa	79.8	89	89.7	78	60.0	85	70.3	64	55.4	92	80.2	81
Lambussie Karni	75.0	80	88.2	76	50.0	60	68.4	57	51.2	84	92.2	77
Lawra	85.9	71	88.9	54	36.7	49	58.5	41	52.6	76	79.7	59
Nadowli	92.7	55	98.2	56	61.8	55	87.5	56	54.5	55	80.4	56
Nandom	80.9	47	93.3	45	^	^	^	^	30.6	49	87.0	46
Sissala East	79.1	67	84.6	52	83.1	65	92.2	51	34.3	67	86.5	52
Sissala West	75.5	94	90.8	65	46.1	89	63.9	61	51.1	94	73.8	65
Wa East	90.4	83	96.4	83	46.2	78	84.1	82	42.2	83	92.8	83
Wa Municipal	85.1	87	93.5	62	55.9	93	70.6	68	42.1	95	73.2	71
Wa West	87.1	101	92.1	76	70.1	97	76.5	68	38.3	115	88.9	81
Upper West Region	83.2	774	91.6	647	56.7	671	74.7	548	45.2	810	83.5	671

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

Results for the resources domain are in Table 19. The resource domain includes three indicators: Asset ownership, decision making power over productive resources such as land, livestock, agricultural equipment, consumer durables and credit or loans; and access to credit. On average, 72.1 percent of women perceive to have asset ownership in contrast with 95.7 percent for men. For the women's case, Daffiama Bussie District presents the highest rate (83.9 percent) and Wa East District presents the lowest rate (64.3 percent). For the men's case, Lambussie Karni District has the highest rate (98.7 percent) and Nandom District has the lowest rate (88.9 percent).

With reference to purchase, sale or transfer of assets, the average rate for women is 75.2 percent and for men 87.9 percent. For the women's case, four districts are below the average; these districts are: Lambussie Karni (74.4 percent), Lawra (74.6 percent), Sissala East (63.6 percent) and Wa Municipal (64.1 percent). With reference to credit access perception, the rates remain low for both male and female rates remain low. The average rate of women who perceived to have access to credit is 19.1 percent and in men's case, it is 20.2 percent. For both women and men, Nandom District has the lowest rate in this domain (1.7 percent and 3.3 percent, respectively) and Sissala East District has the highest rate (34.3 percent and 46.2 percent, respectively). For both, women and men, six districts are below their respective regional average

in credit access; these districts are: Jirapa, Lambussie Karni, Lawra, Nandom, Wa Municipal, and Wa West. The districts where women's perception of credit access exceeds men's perception of credit access are Nadowli and Jirapa.

Table 19: Resources Domain by District

District	Asset Ownership				Right to Purchase, Sale or Transfer of Assets				Access to and Decision on Credit			
	Women	n	Men	n	Women	n	Men	n	Women	n	Men	n
Daffiama Bussie	83.9	31	^	^	^	^	^	^	29.0	31	^	^
Jirapa	77.5	213	95.1	81	78.3	207	88.0	75	16.8	167	16.2	68
Lambussie Karni	75.9	166	98.7	76	74.4	168	82.9	76	12.8	125	15.0	60
Lawra	76.9	143	98.3	60	74.6	138	82.1	56	12.6	103	16.3	43
Nadowli	66.3	172	94.7	57	81.5	168	93.0	57	27.9	165	25.0	56
Nandom	65.3	95	88.9	45	78.0	91	83.7	43	1.7	59	3.3	30
Sissala East	71.4	105	^	^	63.6	107	^	^	34.3	172	46.2	52
Sissala West	72.7	183	98.0	51	76.6	184	90.2	51	25.7	202	25.9	58
Wa East	64.3	207	93.6	78	85.5	207	97.4	78	22.3	224	25.3	83
Wa Municipal	67.0	209	98.6	69	64.1	206	85.3	68	13.6	176	15.8	57
Wa West	72.0	218	95.1	82	75.7	214	88.8	80	13.9	187	13.2	68
Upper West Region	72.1	1,742	95.7	599	75.2	1,690	87.9	584	19.1	1,611	20.2	575

Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

The leadership domain defines membership in economic or social groups such as agriculture producers', water users, credit or microfinance, mutual help, trade, local government, civic and religious groups. It also defines the level of comfort when speaking in public on issues affecting their communities. Results for the leadership domain are summarized in Table 20.

With regards to the group membership sub-domain, women's average regional rate exceeds men's regional average rate (78 percent for women and 76.3 percent for men). Therefore, it is not a surprise that women exceed men in six out of ten districts which have enough sample size for the analysis. Sissala West District has the lowest rate for group membership (53.9 percent for women and 63.9 percent for men) and Nandom District has the highest rate for women (91.1 percent) and Wa Municipal District has the highest rate for men (86.4 percent). In the case of women, Jirapa, Lawra, Nandom, Sissala East, Wa East and Wa Municipal Districts are above the women's regional average. For men, Lambussie Karni, Lawra, Nandom, Sissala East, Wa East, and Wa Municipal Districts are above the men's regional average.

An average of 68.8 percent of women in the region perceive they achieve adequacy in expressing their views on community issues; on the other hand, 92.6 percent of men perceive to have adequacy in speaking in public. In the women's case, from less than half (49.4 percent) in Sissala West District to 85.1 percent in Nadowli District achieve adequacy in publicly expressing themselves on community matters. In men's case, the district with the lowest rate in public speaking domain was Nandom with 88.4 percent, and Sissala East is the district with the highest

rate (100 percent). Five districts are below the regional women's achievement rate. These districts are: Lambussie Karni, Lawra, Sissala West, Wa East, and Wa West.

Table 20: Leadership Domain by District

District	Group Membership				Public Speaking			
	Women	n	Men	n	Women	n	Women	n
Daffiama Bussie	^	^	^	^	^	^	^	^
Jirapa	82.8	87	69.6	69	76.5	85	93.6	78
Lambussie Karni	76.6	77	80.0	70	66.2	74	93.0	71
Lawra	82.5	63	78.4	51	65.2	69	94.5	55
Nadowli	67.9	56	66.1	56	85.1	47	90.9	55
Nandom	91.1	45	79.5	39	81.1	37	88.4	43
Sissala East	86.4	59	81.8	44	77.3	66	100.0	51
Sissala West	53.9	89	63.9	61	49.4	85	88.7	62
Wa East	78.7	75	83.3	78	53.1	64	89.5	76
Wa Municipal	88.9	81	86.4	59	73.0	63	93.8	48
Wa West	71.6	88	74.2	62	61.0	82	93.1	58
Upper West Region	78.0	720	76.3	589	68.8	672	92.6	672

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

The time domain is comprised of two indicators workload and leisure time. Table 21 represents the adequacy level for workload and available leisure time. Workload is measured by determining the time allocation to various activities including: Sleeping, personal care, working at a business, farming, watching television, social and activities and hobbies and domestic work.

Table 21: Time Domain by District

District	Satisfaction with Workload				Satisfaction with Leisure Time			
	Women	n	Men	n	Women	n	Men	n
Daffiama Bussie	^	^	^	^	^	^	^	^
Jirapa	56.8	74	72.9	59	66.7	96	64.7	85
Lambussie Karni	73.9	69	82.0	61	76.7	86	74.4	78
Lawra	68.3	63	84.3	51	86.3	80	81.0	63
Nadowli	53.2	47	90.7	43	74.1	58	82.1	56
Nandom	66.7	39	85.3	34	89.8	49	86.4	44
Sissala East	48.9	45	75.0	44	70.6	68	60.8	51
Sissala West	61.6	73	75.9	54	42.4	92	43.3	67
Wa East	46.2	65	74.6	63	86.4	81	84.3	83
Wa Municipal	86.8	76	88.2	51	86.5	96	95.6	68
Wa West	84.3	89	90.5	63	66.1	112	79.0	81
Upper West Region	64.7	640	81.9	523	74.6	818	75.2	676

^ Results not statistically reliable, n<30.

Source: District Level Survey Data, Ghana 2015

An average of 74.6 percent of women in the region perceive enjoying adequate leisure time compared to men whose regional rate is 75.2 percent. However, women exceed men in this sub-domain in six out of ten districts which have enough sample size for the analysis. Leisure time rates range from 42.4 percent in Sissala West District to 89.8 percent in Nandom District for women. For men, leisure time ranges from 43.3 percent in Sissala West District to 95.6

percent in Wa Municipal District. With regards to the workload sub-domain, 64.7 percent of women achieved adequacy compared to men whose rate is 81.9 percent. The district with the lowest workload rate is Wa East District (46.2 percent) and Wa Municipal District has the highest rate (86.8 percent) for women. For men, Jirapa is the district with the lowest rate (72.9 percent) and Nadowli is the district with the highest rate (90.7 percent).

Summary and Conclusions

The focus of this district-level assessment is to provide a frame of reference to track the performance of initiatives to reduce poverty and hunger and improve health and nutrition in Upper West Region, which is part of the study area for Feed the Future Initiative in Ghana. The total number of households involved in this study was 1,287. The study assessed indicators from four major groups: (1) household economic status; (2) hunger and diet diversity; (3) health status of women and children; and (4) women's empowerment. The major findings from this study include:

- The average household is approximately 6 members.
- The estimated population in the districts of Upper West Region for adult females ranges from 48.5 percent in Wa East District to 56.9 percent Jirapa District.
- Approximately three-quarters of the adults in the household do not have formal education, 7.9 percent attained primary education and 13.8 percent attained secondary education as their highest level of education.
- On average, almost 96 percent of the households have access to improved water source but only 20.1 percent have access to improved sanitation. In Sissala East and Sissala West all the households have access to improved water sources. In Wa West District only 6.9 percent of the households have access to sanitation, which is the lowest rate of access to sanitation across districts in Upper West Region.
- More than half of the households have access to electricity. The lowest access rate to electricity is 35.2 percent in Nandom, and the highest is 92.2 percent in Sissala West District.
- About ninety-four percent of the households use solid sources of fuel for cooking.
- The average number of persons per sleeping room in this region is 2 persons. The average number of persons per sleeping room is around 3 persons in Nandom District.
- The average household per capita daily expenditure expressed in 2010 U.S. dollars (USD) is \$4.77 and it ranges from \$2.44 in Daffiama Bussie to \$7.96 in Sissala East District.
- Approximately a quarter of the households fall below the \$1.25 poverty line. The prevalence of poverty ranges from 14.8 percent in Wa Municipal District which also has the lowest depth of poverty at 4.4 percent to 35.0 percent in Daffiama Bussie District.
- The average depth of poverty stands at 8.4 percent of the \$1.25 poverty line. Nandom District has the highest rate of depth of poverty at 11.3 percent.
- Using the national absolute poverty line, the percentage of households below the GHS 3.60 daily per capita expenditure threshold is 55.1 percent and the depth of poverty stands at 25 percent. Sissala East District has the lowest prevalence and depth of poverty at 46.3 percent and 20.5 percent, respectively. Daffiama Bussie District has

- the highest prevalence and depth of poverty at 70 percent and 32.1 percent, respectively.
- At the national extreme poverty threshold of GHS 2.17 daily per adult equivalent expenditure, the prevalence of poverty stands at 32.1 percent. Again, Sissala East and Daffiama Bussie happen to be the districts with the lowest and highest prevalence of poverty at 25.2 percent and 45 percent, respectively.
 - The depth of poverty is at 12 percent of the national extreme threshold of GHS 2.17. It ranges from 7.6 percent in Wa Municipal to 16.2 percent in Nandom District.
 - Approximately a third of the households in Upper West Region present moderate to severe hunger. Furthermore, the study shows that districts with the highest prevalence of poverty are among those districts with the highest prevalence of moderate to severe hunger.
 - On average, the women of reproductive age consume 3.5 out of the nine food groups of the WDDS indicator. Nadowli District has the lowest score across Upper West Region with 2.9 food groups out of the nine. Wa Municipal has the highest score across this region with 4.1 food groups out of the nine.
 - Almost forty percent of the women of reproductive age achieve the Minimum Dietary Diversity threshold. The MDD-W is the lowest in Sissala West District at 25.9 percent and the highest in Wa Municipal District at 60.1 percent which is the district with the highest WDDS in the region.
 - Less than a quarter of children under 5 years old present linear growth retardation also known as stunting. The highest rate of stunting is 25 percent in Nadowli and the lowest is 14.3 percent in Lawra District. Almost ten percent of the children are severely stunted in Upper West Region.
 - Around ten percent of children under 5 years old present acute malnutrition also known as wasting; and almost five percent of the children are severely wasted in Upper West Region. The lowest rate of wasted children is 2.9 percent in Wa West and this district has a rate of zero severe wasting. Wa Municipal District has the highest rate of wasting and severely wasted children at 16.7 percent and 11.9 percent, respectively. Overweight and obese rates are below five percent in Upper West Region. Jirapa, Lambussie Karni, Nadowli and Wa Municipal do not have obese children.
 - Approximately twelve percent of children reflect acute and/or chronic undernutrition also known as underweight. The highest rate of underweight children is 17.1 in Lawra District and the lowest is 7.1 percent in Nadowli District. Less than five percent of the children in this region suffer from severely underweight with Wa East District as the only district with a rate of zero severe underweight children.
 - The Body Mass Index (BMI) of women in Upper West Region is 22.2. The BMI across districts remains similar. Approximately 12 percent of women are underweight; Nadowli District has the lowest rate of underweight women at 5.1 percent and Sissala West has the highest rate at 20.1 percent. Around two-thirds of the women in Upper West region have normal weight. Sixteen percent of women are overweight, the

- highest rate of overweight women is 25.5 percent in Lawra District and the lowest is 8.4 percent in Wa East District. Less than five percent of women are obese; Jirapa and Wa East are districts free of obesity in women.
- Women indicate being adequate eight out of the ten subdomains of the 5DE. Then, about 83 percent of women perceive themselves as having input in decision making. Around three-quarters of women in Upper West Region perceive themselves as having asset ownership; to have right to make a decision to purchase, sale, or transfer assets; participate in a community organization; and perceive themselves as enjoying adequate leisure time. Almost 70 percent of the women feel comfortable voicing their opinion in community matters, about 65 percent of them achieve adequacy in workload, and approximately 57 percent of women perceive adequacy in autonomy in production. The two sub-domains women least perceive themselves as achieving adequacy are control over use of income (just 45.2 percent) and access and decision on credit (only 19.1 percent).
 - With regards to men, they indicate being adequate in nine out of the ten sub-domains; the exception is access and decision on credit sub-domain where both men and women have low rates. In general, men exceed women in all the sub-domains except group membership; 78 percent of women and 76.3 percent of men achieve adequacy in this sub-domain. Furthermore, women exceed men in six out of ten districts in group membership sub-domain.

The indicators in this report are structured to provide a frame of reference to assess and evaluate the impact of current and future initiatives' outcomes and their contributions in achieving the stated objectives of the Feed the Future programs in Ghana's Northern regions. These benchmark results also may enable implementing partners to identify factors that influence these indicator results and can contribute to effective evaluation of project performance in current and planned interventions.

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Appendix I

Table A.I provides the major findings of the principal indicators and some household demographic and dwelling characteristics in Upper West Region. The table provides the overall regional averages for the indicators. District level results are also presented for the districts that exhibit the minimum and maximum values for these indicators and these values are in parentheses.

A.I Summary of Key Findings in Upper West Region

Characteristic	Upper West Region	District – Min. Value	District – Max. Value	n
Demographics				
Household Size	5.5	Sissala East (4.7)	Nandom (8.0)	1,287
<i>Adult's educational attainment (%)</i>				
No Education	78.3	Nandom (65.7)	Wa East (93.0)	1,253
Primary	7.9	Wa East (4.4)	Nandom (15.1)	1,253
Secondary	13.8	Wa East (2.6)	Lawra (21.1)	1,253
Dwelling				
Water Source (%)	95.5	Lambussie Karni (82.7)	Sissala East and Sissala West (100)	1,193
Sanitation (%)	20.1	Wa West (6.9)	Lawra (53.8)	1,190
Persons per Sleep Room	2.0	Sissala East (1.5)	Nandom (3.1)	1,192
Solid Fuel (%)	93.8	Wa Municipal (88.5)	Nadowli (98.2)	1,191
Electricity (%)	61.1	Nandom (35.2)	Sissala West (92.2)	1,195
Economic Status				
Daily per capita expenditure (in 2010 USD)	4.77	Daffiama B. (2.44)	Sissala East (7.96)	1,251
Prevalence of poverty (\$1.25 2005 PPP)	25.2	Wa Municipal (14.8)	Daffiama B. (35.0)	1,231
Depth of poverty (\$1.25 2005 PPP)	8.4	Wa Municipal (4.4)	Nandom (11.3)	1,231
Prevalence of poverty (GHS 3.60)	55.1	Sissala East (46.3)	Daffiama B. (70.0)	1,231
Depth of poverty (GHS 3.60)	25.0	Sissala East (20.5)	Daffiama B. (32.1)	1,230
Prevalence of poverty (GHS 2.17)	32.1	Sissala East (25.2)	Daffiama B. (45.0)	1,231
Depth of Poverty (GHS 2.17)	12.0	Wa Municipal (7.6)	Nandom (16.2)	1,230
Hunger and Dietary diversity				
Prevalence of Severe to Moderate Hunger (%)	33.6	Sissala West (19.3)	Wa West (42.4)	1,217
Women's Dietary Diversity Score	3.5	Nadowli (2.9)	Wa Municipal (4.1)	1,184
Women's Minimum Dietary Diversity (%)	38.8	Sissala West (25.9)	Wa Municipal (60.1)	1,184
Health Status of Children (%)				
Stunting	21.6	Lawra (14.3)	Nadowli (25.0)	661
Wasting	10.3	Wa West (2.9)	Wa Municipal (16.7)	646
Underweight	12.2	Nadowli (7.1)	Lawra (17.1)	661

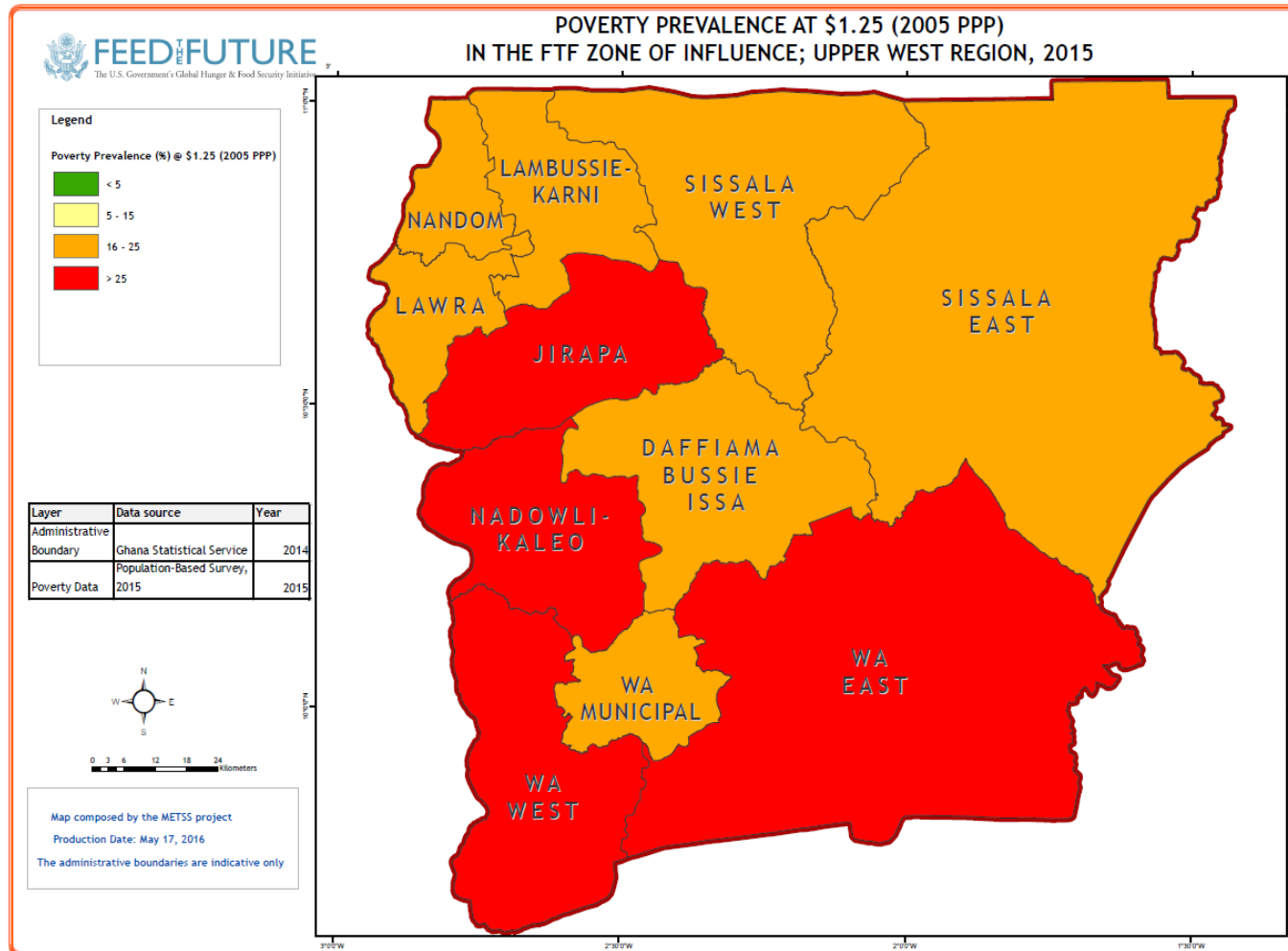
A.I Summary of Key Findings in Upper West Region (cont'd)

Characteristic	Upper West Region	District – Min Value	District – Max Value	n
Anthropometry for Women of Reproductive Age				
BMI	22.2	Wa East (21.2)	Lawra (23.4)	1,086
Underweight (%)	12.3	Nadowli (5.1)	Sissala West (20.1)	1,086
Normal Weight (%)	67.6	Lawra (58.2)	Wa East (82.2)	1,086
Overweight (%)	16.0	Wa East (8.4)	Lawra (25.5)	1,086
Obese (%)	4.1	Jirapa and Wa East (0.0)	Nandom (9.5)	1,086
Women's Empowerment in Agriculture Index (%)				
<i>Production</i>				
Input Decision Making	83.2	Lambussie Karni (75.0)	Nadowli (92.7)	774
Autonomy in Production	56.7	Lawra (36.7)	Sissala East (83.1)	671
<i>Income</i>				
Control over Use of Income	45.2	Nandom (30.6)	Jirapa (55.4)	810
<i>Resources</i>				
Asset Ownership	72.1	Wa East (64.3)	Daffiama Bussie (83.9)	1,742
Purchase, Sale or Transfer of Assets	75.2	Sissala East (63.6)	Wa East (85.5)	1,690
Access and Decision to Credit	19.1	Nandom (1.7)	Sissala East (34.3)	1,611
<i>Leadership</i>				
Public Speaking	68.8	Sissala West (49.4)	Nadowli (85.1)	672
Group Membership	78.0	Sissala West (53.9)	Nandom (91.1)	720
<i>Time</i>				
Leisure Time	74.6	Sissala West (42.4)	Nandom (89.8)	818
Work Load	64.7	Wa East (46.2)	Wa Municipal (86.8)	640

Source: District Level Survey Data, Ghana 2015

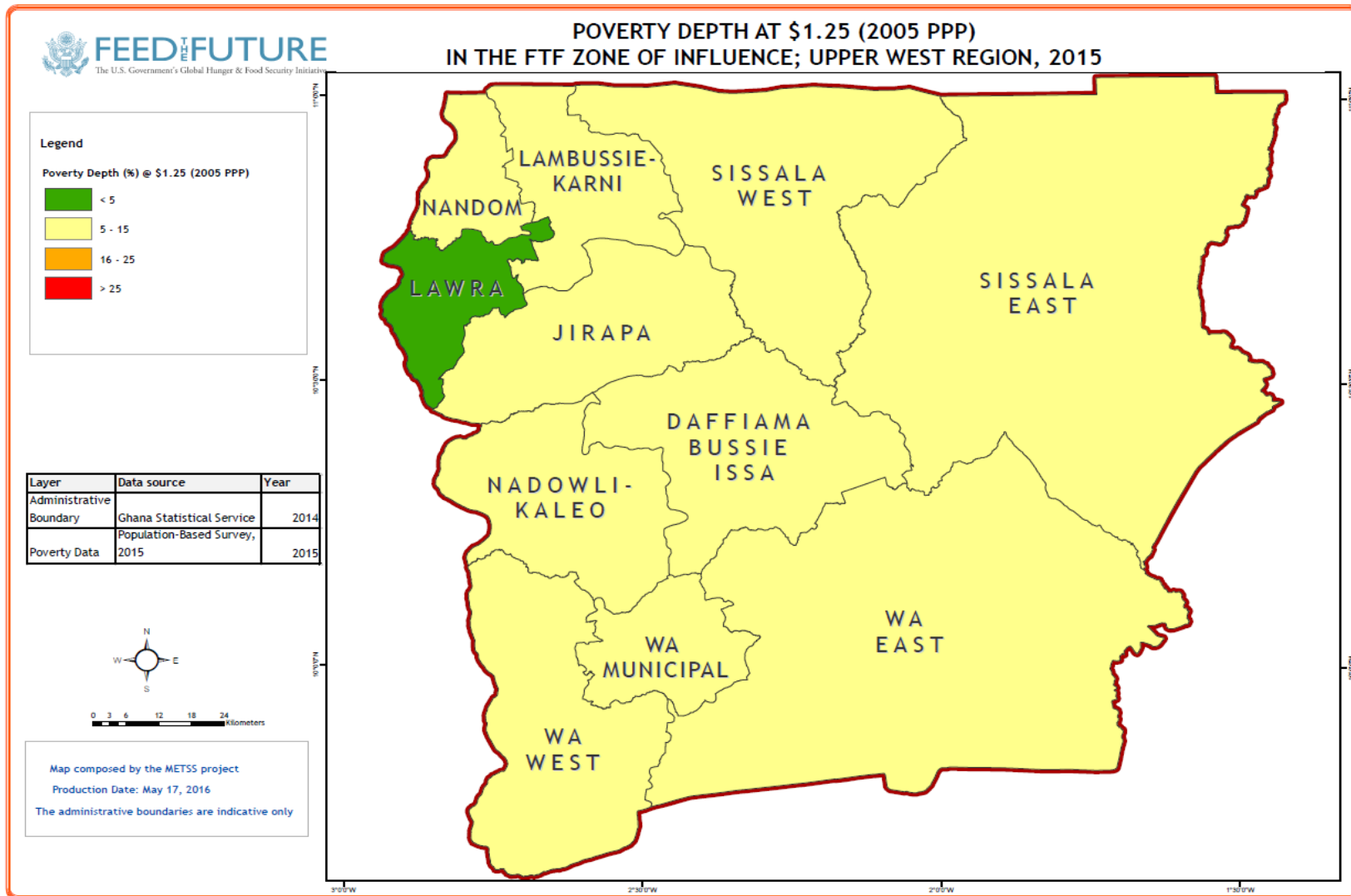
Appendix 2: Geographical Distribution of Poverty and Children's Health Status

Figure 1: Poverty Prevalence at \$1.25 (2005 PPP) by District



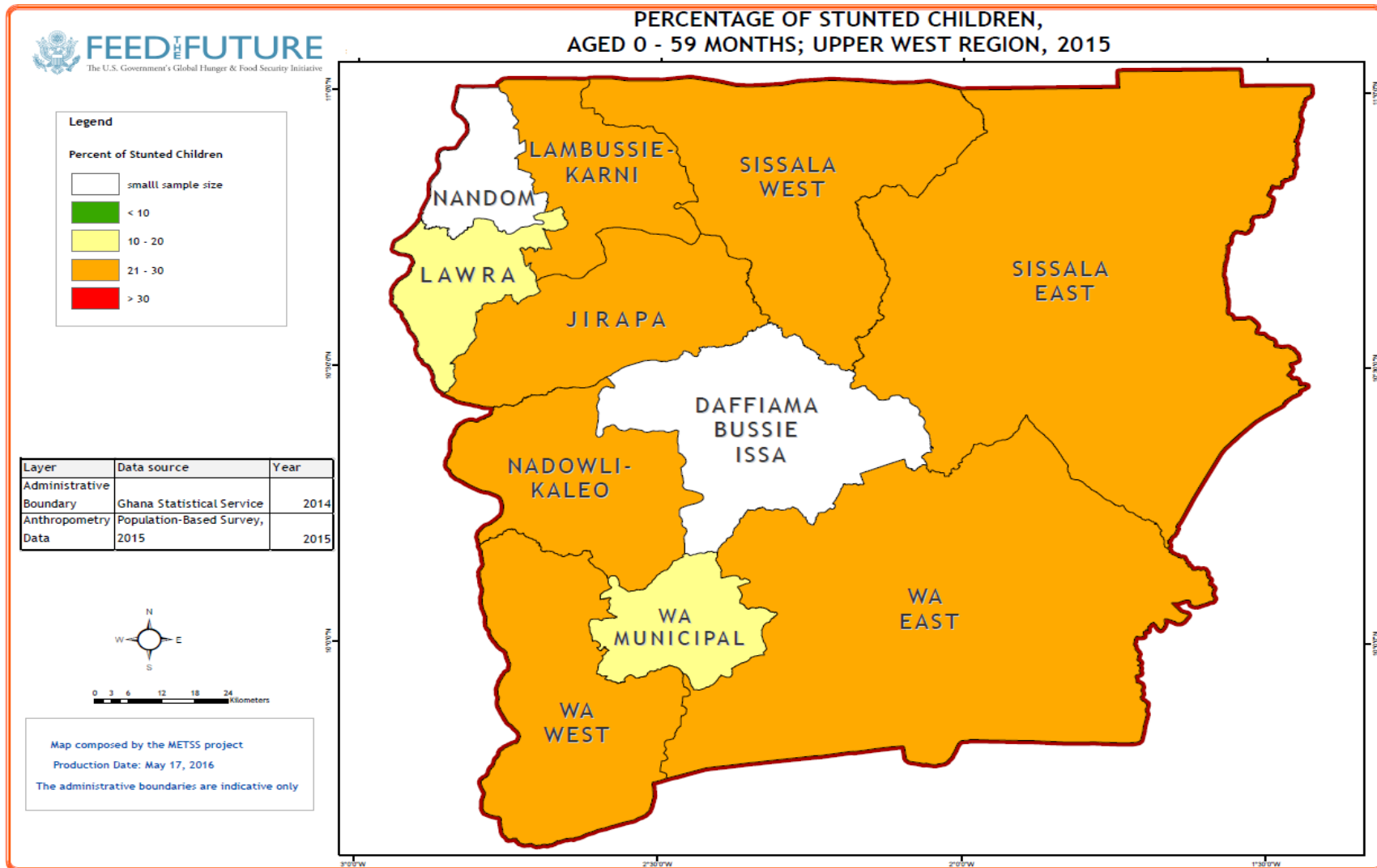
Source: District Level Survey Data, Ghana 2015

Figure 2: Poverty Depth at \$1.25 (2005 PPP) by District



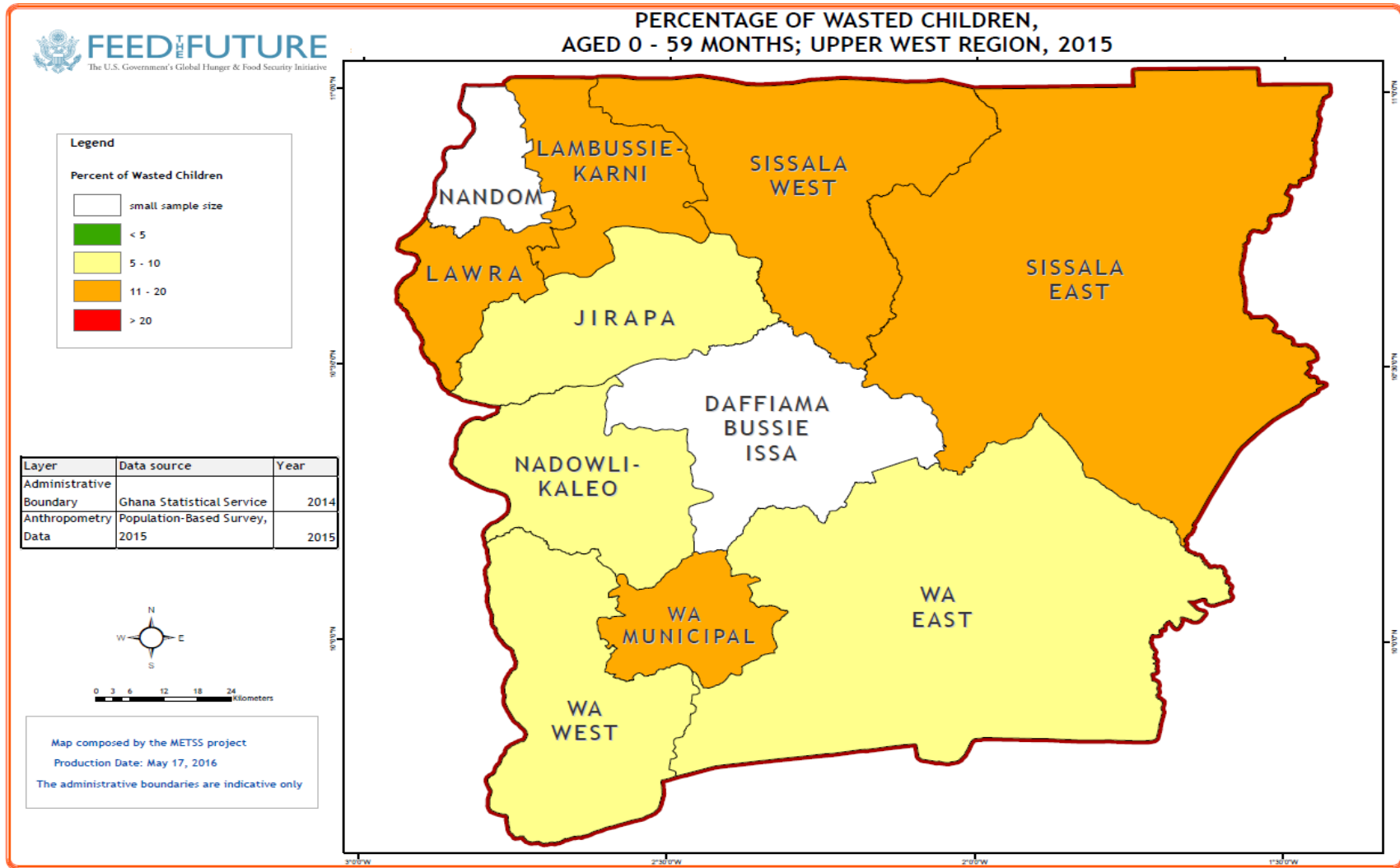
Source: District Level Survey Data, Ghana 2015

Figure 3: Percentage of Stunted Children (0-59 months) by District



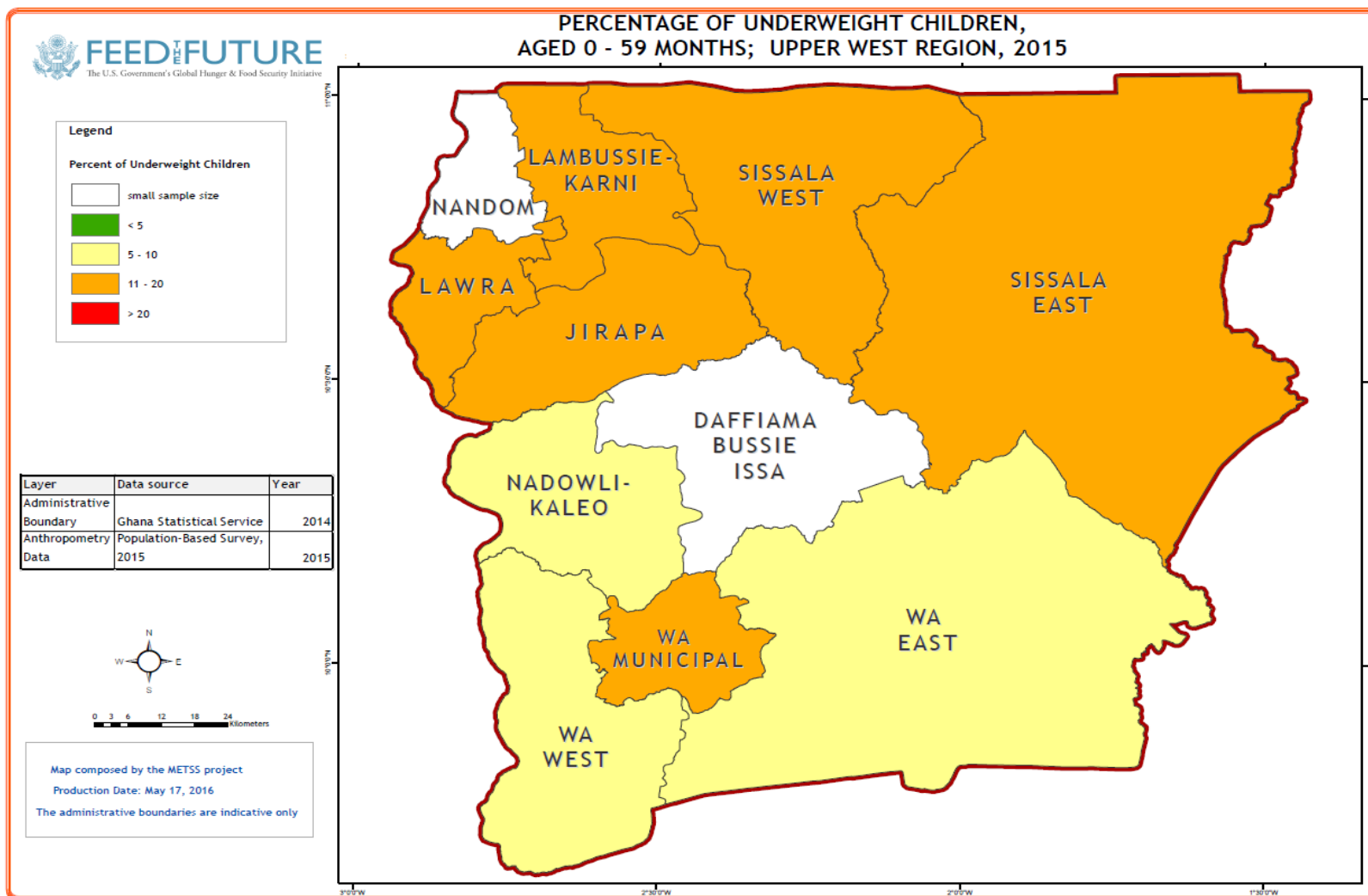
Source: District Level Survey Data, Ghana 2015

Figure 4: Percentage of Wasted Children (0-59 months) by District



Source: District Level Survey Data, Ghana 2015

Figure 5: Percentage of Underweight Children (0-59 months) by District



Source: District Level Survey Data, Ghana 2015