Comprehensive Food Security and Nutrition Survey

Monrovia, Liberia

Government of Liberia

August 2018

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WFP World Food Programme

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FOREWORD

Chronic food insecurity is a grave concern in Liberia largely due to poverty, unsustainable livelihoods, low agricultural production and productivity, land constraints and gender inequalities.

Household food insecurity remains a persistent challenge in Liberia where 41% of households were food insecure in 2010, 49% in 2012, 16% in 2015 and 18% in 2018. Though the situation has improved since 2015, high numbers of Liberians continue to suffer from hunger and under-nutrition, the consequences of which severely hamper social and economic development. Currently, about 20% households are consuming diets deprived of the most needed nutrients found in animal products, legumes, vegetables and fruits. Poor diets are intrinsically linked with poverty. According to Household Income and Expenditure Survey (HIES) 2016, 50.9% of households in Liberia are living in poverty. Households are highly dependent on food markets, which are often inaccessible during the rainy season or lean period. Household food expenditure is extremely high (60% of total income) compared with spending on education, health and other necessities.

Stunting or chronic malnutrition remains a persistent public health concern in Liberia. The Comprehensive Food Security and Nutrition Survey (CFSNS) 2018 estimate that 35.5% of children under five years are stunted similar to the 2012 prevalence of 35.0%. The prevalence is particularly high in Grand Bassa with 41%, followed by Maryland with (38.6%) and Lofa counties with 37% (on average). Inadequate diet diversity, poor care and feeding practices, poor sanitation and illness are the main drivers. The situation is worrying because chronic malnutrition or stunting in young children causes irreversible brain damage and prevents individuals from realizing their physical and intellectual potential, thus hindering economic development.

The Government of Liberia and its developmental partners emphasize support for food and nutrition security as reflected in the Pro Poor Agenda for Prosperity and Development (PAPD) and National Agriculture Investment Plan (NAIP II). Efforts are also being made towards achieving the targets of the Sustainable Development Goal by 2030 and enhancing the quality of basic services including agriculture and rural infrastructure. But there needs to be further emphasis on ensuring Government supported projects and programmes clearly focus on and dedicate resources to improving the nutritional status of the population.

This report outlines several recommendations for policy and programmatic actions to mitigate the prevailing circumstances. Every sector has a role to play. The stakeholders are especially keen to enhance the capacity of youth, women, smallholder farmers, rural and urban poor and landless families to increase agricultural income and household food supply from own production. It is vital to focus on improving sanitation, health and education, as well as nutrition education for optimal care and breastfeeding practices of young children. It is also very important for stakeholders to ensure support for assessment and analysis for accurate and timely information to act quickly and appropriately when there are problems or when problems are suspected.

In appreciation of the efforts of all stakeholders, we hope this survey will increase focus on food and nutrition security and actions to improve the wellbeing of Liberians, especially the urban and rural poor.

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LIST OF ACRONYMS

AFL	Armed Forces of Liberia
AfT	Agenda for Transformation
CAADP	Comprehensive African Agriculture Development Programme
CARI	Consolidated Approach for Reporting Food Security Indicators
CBL	Central Bank of Liberia
CFSNS	Comprehensive Food Security and Nutrition Survey
EA	Enumeration Area
EFSA	Emergency Food Security Assessment
ENA	Emergency Nutrition Assessment
EU	European Union
EVD	Ebola Virus Disease
FAO	Food and Agriculture Organization
FAPS	Food and Agriculture Policy and Strategy
FCS	Food Consumption Score
FSNSC	Food Security and Nutrition Steering Committee
GAM	Global Acute Malnutrition
HDI	Human Development Index
HIES	Household Income and Expenditure Survey
INGO	International Non-Governmental Organization
IYCF	Infant and Young Child Feeding
LASIP	Liberia Agriculture Sector Investment Plan
LATA	Liberia Agriculture Transformation Agenda
LDHS	Liberia Demography and Health Survey
LIS	Liberia Immigration Services
LISGIS	Liberia Institute of Statistics and Geo-Information Services
LNP	Liberia National Police
LNRCS	Liberia National Red Cross Society
MAM	Moderate Acute Malnutrition
MFDP	Ministry of Finance and Development Planning
MoA	Ministry of Agriculture
MoH	Ministry of Health
NAIP	National Agriculture Investment Plan
ORS	Oral Rehydration Salt
PAPD	Pro Poor Agenda for Prosperity and Development

PRS	Poverty Reduction Strategy
SAM	Severe Acute Malnutrition
SDGs	Sustainable Development Goals
SMART	Standardized Monitoring and Assessment for Relief and Transition
SPSS	Statistical Package for Social Sciences
SUN	Scaling Up Nutrition
UN	United Nations
UNDAF	United Nations Development Agenda Framework
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNMIL	United Nations Mission in Liberia
USAID	United States Agency for International Development
VAM	Vulnerability Analysis and Mapping
WFP	World Food Programme
WHO	World Health Organization

EXECUTIVE SUMMARY

The Comprehensive Food Security and Nutrition Survey (CFSNS) is a national assessment that is undertaken periodically to inform the food security, health and nutrition status of the population. The 2018 version is coming after a long lapse due to the Ebola health emergency of 2014/2015. The last CFSNS took place in 2012, following earlier ones in 2006, 2008, and 2010.

Liberia has domesticated the 17 Sustainable Development Goals (SDGs). Some of the national priorities considered in the domestication and implementation of the SDGs are the transformation of the agriculture sector. This focuses on the empowerment of smallholder farmers to promote productivity, inclusive economic growth, and investment in nutrition programs and interventions as part of the Scaling Up Nutrition (SUN) initiative. Further, the country completed its National Zero Hunger Strategic Review in May 2017. The review highlighted strategies for the actualization of zero hunger in Liberia by the year 2030 as articulated in the SDGs.

The country has developed its second generation of the Liberia Agriculture Sector Investment Plan (LASIP) called National Agriculture Investment Program (NAIP) II. Additionally, the United Nations (UN) is in the process of developing a new development agenda, the United Nations Development Agenda Framework (UNDAF) covering 2019-2023.

The Comprehensive Food Security and Nutrition Survey 2018, as a baseline assessment for the country's set national and global targets to gauge the food and nutrition situation in the country and provide data for major food security and nutrition indicators both for the government and its partners. The survey provides national statistics that will inform key decision-making processes for food security, agriculture, nutrition, health and related sectors currently and in the future programming.

Summary methodology

The CFSNS 2018 employed a combination of cross-sectional, descriptive and retrospective approaches involving qualitative and quantitative techniques.

Objectives of the survey

The overall objective of the Comprehensive Food Security and Nutrition Survey (CFSNS) is to provide information on current levels of food security, vulnerability to food security and the nutritional status of children under five years. The findings from this survey informs Government national plans and policies and supports the planning and operational/programmatic decision-making processes of development partners to assist vulnerable populations in Liberia.

Specific objectives

The CFSNS 2018 sought to achieve the following specific objectives:

1. To identify the underlying causes and risk factors of food insecurity and malnutrition and their potential impact on the most vulnerable;
2. To determine the nutritional status of vulnerable groups (children aged 6 – 59 months and non-pregnant women of reproductive age (15-49 years old);
3. To provide an analysis of food markets and their functioning;
4. To identify the medium to long-term response options for addressing food insecurity and malnutrition and the targeting criteria.

Target population

The CFSNS 2018 targeted all persons living in the household in the enumeration areas (EAs) at the time of the survey. Children under five and women of reproductive age (15-49 years) in the selected households were targeted.

Sampling design

A two-stage cluster sampling technique was used to derive the sample size for the survey. A total of 480 primary clusters and 64 reserved clusters (30 primary clusters and 4 reserved clusters per geographical units) were selected from sixteen (16) geographical divisions composed of the 15 counties plus Greater Monrovia derived from the subdivision of Montserrado County into Rural Montserrado and Greater Monrovia which is the urban area. A total of 12, 405 households and 9, 142 children under five (0-59 months) were targeted. A total of 12, 271 households and 8,742 children were reached.

The clusters were selected using ENA for Standardized Monitoring and Assessment of Relief and Transitions (SMART) 2011 based on EAs developed by Liberia Institute for Statistics and Geo-Information Services (LISGIS). In each EA, 26 households were randomly selected after exhaustively listing all the households.

Field work, data collection tools and procedure

A total of 80 trained data collectors organized into 8 teams were deployed in the field on March 5, 2018. Data collection lasted from March 5 to May 23, 2018. Prior to the deployment and commencement of the data collection process, a week-long training was held with the enumerators discussing the content of the tools, use of hand-held tablets/smart phones and procedure for the administration of the survey instrument. The data was collected using mobile phones through a face-to-face medium.

Data cleaning, analysis procedure and technique

Data cleaning was conducted using Excel, ENA and SPSS. During the cleaning process, data was checked for consistencies, logical values/issues and missing values. Issues identified were clarified and corrected. Where necessary, enumerators and respondents were contacted for clarification. Data for the food security component, the Infant and Young Child Feeding (IYCF) practices and the minimum dietary diversity for women were analyzed using SPSS while anthropometric data for children was analyzed using ENA.

The results of the primary data for the food security indicators were further analyzed based on the Consolidated Approach for Reporting Indicators of Food Security (CARI). The CARI is a WFP method used to report and analyse food insecurity status within a population.

The primary data analysis was complemented by secondary data analysis. A general review of food security and nutrition literature in Liberia was undertaken.

Previous CFSNSs and other assessments that were designed with an objective of monitoring and evaluating the food security and nutrition situation of the country were reviewed. The process also benefited from other national documents such as the 2013 Liberia Demographic and Health Survey Report (LDHS) and the Liberia Household Income and Expenditure Surveys (HIES 2014 & 2016).

KEY FINDINGS

Demographics and household composition of respondents

The survey reached a total of 12,271 households composed of 66% male and 34% female as household heads. Two out of every five (42%) respondents were married, while approximately one out of every three (31%) were in cohabiting relationship. One out of every six (16%) were single, 4% were divorced/separated while 7% were widows/widowers.

Classification of food security

Overall, 18% of households in Liberia are food insecure (16% moderately food insecure and 2% severely food insecure). The overall proportion of food insecure households is slightly higher than that identified by EFSA 2015 (16%) but representative of the severely food insecure households identified by both surveys remain the same (2%). Additionally, nearly half of the assessed households (42%) are marginally food secure, which increases the level of vulnerability among the population as, depending on the response mechanism of these household, any shock could drift them into food insecure category. Food insecurity is highest in Maryland (35%) followed by Bomi (29%), Nimba (25%), River Cess (24%) and River Gee counties (24%). Food insecurity disproportionally affects rural areas (23%) than the urban setting (11%).

Food availability

The amount of food available to a household or an area (community, district or region) is a summation of domestic production, reserves, commercial imports and food aids. These food availability indicators were considered to estimate the availability of food. Only 19% of the assessed households are engaged in fisheries or fish production. Of the 19% engaged in fisheries, River Cess (39%) and Grand Bassa (33%) are the two counties mostly involved with the practice. Fewer households in Liberia own livestock, with chickens being the only livestock owned by most households (9 chickens per households on average).

Rice is a main staple food in the country. The local agricultural production is low meeting only 35% of the national rice consumption requirements. There is a rice importation of 65% to meet the consumption requirements deficit.

Two out of every three households (66%) lack access to farmland. Households in Lofa have the most access to farmland (67%), followed by River Cess (61%), Nimba and River Gee (58%) and Grand Gedeh (55%) counties.

More than two-thirds (68%) of those who have access to farm land do not have title deeds and 15% are reportedly squatters. Sixty-four percent of the farming households grew rice while 60% cultivated cassava. Fewer households have vegetable gardens (30%), with Bong (56%) and Lofa (54%) counties accounting for the majority.

Food access

Food access describes both the physical and economic ability of households to acquire adequate amount of food regularly. Access to food has been dwindling over the periods amidst high prices of food and basic commodities, as well as reducing purchasing power parity. The country's inflation rate has jumped from 8.8% in 2016 to 12.4% in 2017. The Liberia dollar has continued to experience a steep depreciation against the US dollar, which stood at 1 USD to 152.56 LRD in July 2018, a variance of 57.1% compared to the same period in 2017. The exchange rate is a key predictor of prices of basic goods and services in Liberia, and has rippling effects on the purchasing power of the population. On average, domestic prices of rice rose by 11% in April 2018 as compared to the same period in 2017 and considerably 58% higher than same period in 2013.

Moreover, fuel prices have risen on average by 30% in most of domestic markets, with fuel prices increasing as high as by 52% in Foya District, Lofa County in April 2018 as compared to April 2017. Palm oil and charcoal prices have also increased by 18% in the last one year. Consequently, the larger portion of households' expenditures (60%) goes to food; and 40% of all assessed households spent more than 65% of their budget on food.

Food utilization

Food utilization intones the intra-household use of accessed food and the individual ability to absorb and use nutrients generated from the food. Food consumption score (FSC) measures the frequency of consumption of the different food groups by the household over a week's period. Twenty percent of the assessed households have inadequate food consumption score (11.7% categorized as borderline and a further 8.3% being poor). Of the 20%, those affected the most are in Maryland (40%), Bomi (33%) and River Gee (30%) counties.

However, Greater Monrovia has more than 90% of the assessed households with acceptable diet. Household dietary diversity (a 24-hour recall of food group consumption) shows poor intake of diversified food groups in River Gee (34%), Grand Kru (31%) and in Maryland (26%) counties.

The consumption of three macro and micro nutrients (protein, vitamin A and iron) were further analyzed. Nationally, 69.2%, 74.5% and 45.3% of the assessed household's members reportedly consumed iron, protein and vitamin A, respectively.

Shocks and coping strategies

Overall, 34% of assessed households experienced one or more shocks over the 12 months preceding the survey. Major shocks reported by the 34% include temporary illness of household members (15%); death of household members (15%); chronic illness of household members (13%) and price fluctuation (13%). Households employed different coping strategies to deal with food shortages and other hardships. Diet-related coping strategies were applied by 7% of the households. The pattern, quantity, frequency and main consumers of foods were adjusted to handle the shortage of food. On the other hand, 34% of households used livelihood coping strategies (adjustment in or disposal of livelihoods or productive assets).

Of the 34% that employed this strategy, 15% used stress coping strategy, 10% used emergency coping strategy and 9% used crisis coping strategy.

HEALTH & NUTRITION

Children access to vaccines and supplements

Children's access to vitamin A supplement is relatively high, with 71.3% of children having received the supplement. The supplement enhances children's resistance to diseases and reduces childhood mortality. Micronutrient powder coverage is low, as only 16% of children received micronutrients the last 6 months preceding the survey. Micronutrient powder contains a single dose of minerals and vitamins that are often used to mitigate nutritional deficiencies in children, pregnant women and lactating mothers.

Coverage for measles vaccines is high among children. Nationally, 93% of children received measles vaccines. The coverage is highest in Nimba and Grand Gedeh counties (95%), followed by Rural Montserrado and Greater Monrovia, Maryland and Margibi counties at 94%.

The coverage of de-worming is high as well. Approximately 4 out of every 5 children received de-worming tablets in the last 6 months.

Ownership and use of mosquito nets (malaria prevention)

Slightly less than half of the assessed households (49%) own a mosquito net. Of the households that reported having nets, a high proportion (92%) reported that their children slept under mosquito net the night before the survey. Lofa, Rural Montserrado and Greater Monrovia counties reported the highest proportion of households (94%) whose children slept under mosquito nets the night before the survey.

Child illnesses and care

The incidence of diarrhea and acute respiratory infections was assessed among children. Majority of the children (86%) reportedly did not experience diarrhea in the last two weeks preceding the survey as opposed to 11% who experienced diarrhea. Three percent of the respondents could not recall if their children had experience diarrhea.

A little over half (54%) of those who suffered from diarrhea, received Oral Rehydration Salt (ORS) from the sachet, while 7% received home-made sugar-salt water fluid. Similarly, 79% of the children did not suffer from cough in the last two weeks preceding the survey. Seventy-four percent (74%) of children who experienced cough received treatment. The preferred source of treatment for children suffering from cough was health facility (74.5%) followed by drug store/pharmacy (22.7%).

Prevalence of acute malnutrition

Nationally, 4.8% of children are thin for their height (Global Acute Malnutrition/GAM), out of which 3.4% are classified as suffering moderate acute malnutrition (MAM) and 1.4% affected by severe acute malnutrition (SAM). Additionally, 15% of children are underweight (light for their age), which could reflect short or long term nutritional issues.

Of the 15%, 11.3% is moderately underweight while 3.7% is severely underweight. At the same time, overweight/obesity affects 3.7% of children, with 0.8% of them severely overweight.

Prevalence of chronic malnutrition

The national prevalence level for stunting is at 35.5%, while moderate and severe stunting are at 22% and 13.5%, respectively. This prevalence level is higher than the LDHS 2013 (32%) but similar to the findings of 2012 CFSNS (35.57%). The stunting levels are lower in 2018 (35.5%) in comparison to the 2008 CFSNS (36.1%) and the 2006 CFSNS (39%) findings. Stunting remains a major public health concern in Liberia with prevalence levels above the acceptable WHO standard of <20%.


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1. INTRODUCTION

1.1 Background to the Survey

1. The CFSNS is a national wide assessment periodically implemented by the Government of Liberia with strong support from humanitarian and development partners. The partners in the food security and nutrition sector/cluster include but not limited to UN agencies, International Non-Governmental Organizations (INGOs), USAID, EU, etc.
2. The CFSNS is a baseline assessment that gauges the food and nutrition situation in the country and provides baseline data for major food and nutrition security indicators both for the government and development partners.
3. The survey delivers on the food security monitoring system articulated in the Food and Nutrition Strategy which emphasizes the necessity for regular monitoring of the food security and nutrition situation given the vulnerability of Liberia to external and internal shocks.
4. The first post-war CFSNS was conducted in 2006, and subsequently in 2008, 2010 and 2012. But due to the Ebola outbreak in 2014, the 2014 CFSNS did not hold. A food security (Emergency Food Security Assessment/EFSA) and a SMART nutrition survey were conducted in 2015 and 2016 respectively to help provide some insight into the food security and nutrition status of the country.
5. The Government of Liberia's implementation of the second five-year Poverty Reduction Strategy (PRS II), also known as the Agenda for Transformation (AfT), which was implemented from July 2012 to July 2017, provided the roadmap for the country's transition from recovery and reconstruction (2003 – 2011) to inclusive growth and wealth creation (2011 – 2030).
6. The current government is concluding the development agenda named and styled 'Pro Poor Agenda for Development and Prosperity' (PADP). The PADP will articulate the development strategies and plans for the government over the next six years, of which food security and nutrition are expected to be some of the priorities.
7. On the same note, the Government has embarked on the process of domesticating the 17 Sustainable Development Goals (SDGs, through the SDGs Secretariat, coordinated by the Ministry of Finance and Development Planning (MFDP). Some of the emerging priorities in the SDG domestication and implementation plan include agricultural transformation focusing on empowerment of smallholder farmers to promote inclusive economic growth, investment in nutrition programmes and interventions as part of the Scaling Up Nutrition (SUN) initiative.
8. Despite steady progress in the development of economic, health and other key development strategies, food insecurity, malnutrition and weak health infrastructures, need urgent attention, as Liberia continues to recover from the Ebola Viral Disease (EVD).
9. In October 2015, the President of Liberia chaired a high-level Inter-Ministerial Task Force established to deal with pertinent Agricultural and Agri-business issues. The objective of the Task Force was to devise a strategy to reduce Liberia's vulnerability to external shocks by diversifying the economy and promoting inclusive growth. The Liberia Agricultural Transformation Agenda (LATA) was the response to this identified need. LATA builds on previous agriculture investment plans such as the Liberia Agriculture Sector Investment Program (LASIP) and is informed by the National Food Security and Nutrition Strategy (NFSNS), the Food and Agriculture Policy and Strategy (FAPS), and other regional and inter-governmental commitments towards transformative and sustainable agriculture in Africa, such as the Malabo Declaration (African Union, 2014).

10. Very soon, the Government, through the Ministry of Agriculture, will release the second generation of its agricultural development plan (LASIP II) in which food and nutrition security is the first component. LATA is now a component of LASIP II and not a standalone document or plan.
11. In addition, the country completed the National Zero Hunger Strategic Review which highlighted strategies for the actualization of zero hunger in Liberia by the year 2030 as highlighted in the Sustainable Development Goal Two (SDG 2).
12. Concurrently, the UN is also planning to develop a new United Nations Development Agenda Framework (UNDAF) covering 2019-2023 as a major instrument that will complement the government's new national development strategy implementation efforts. In the UNDAF 2013-2017, which has been extended to December 2018, it is noted that paucity of official statistics, measurements of progress and indicators to demonstrate achievements is a challenge.
13. The Government of Liberia (GoL) intends to update food security and nutrition baseline statistics in 2018 to serve as a benchmark for the implementation of LATA (that focus on improved agriculture and food security as a cornerstone for development). The updated statistics will also benchmark for the implementation of the UNDAF with regard to basic food security and nutrition statistics while also providing measurements to gauge progress since 2012 when a countrywide survey was last conducted.
14. The CFSNS 2018 is intended to underpin GoL's development efforts with solid baseline food security and nutrition data to measure the leap from recovery to resilient and sustainable development.

1.2 Context Analysis

1.2.1 Demographics

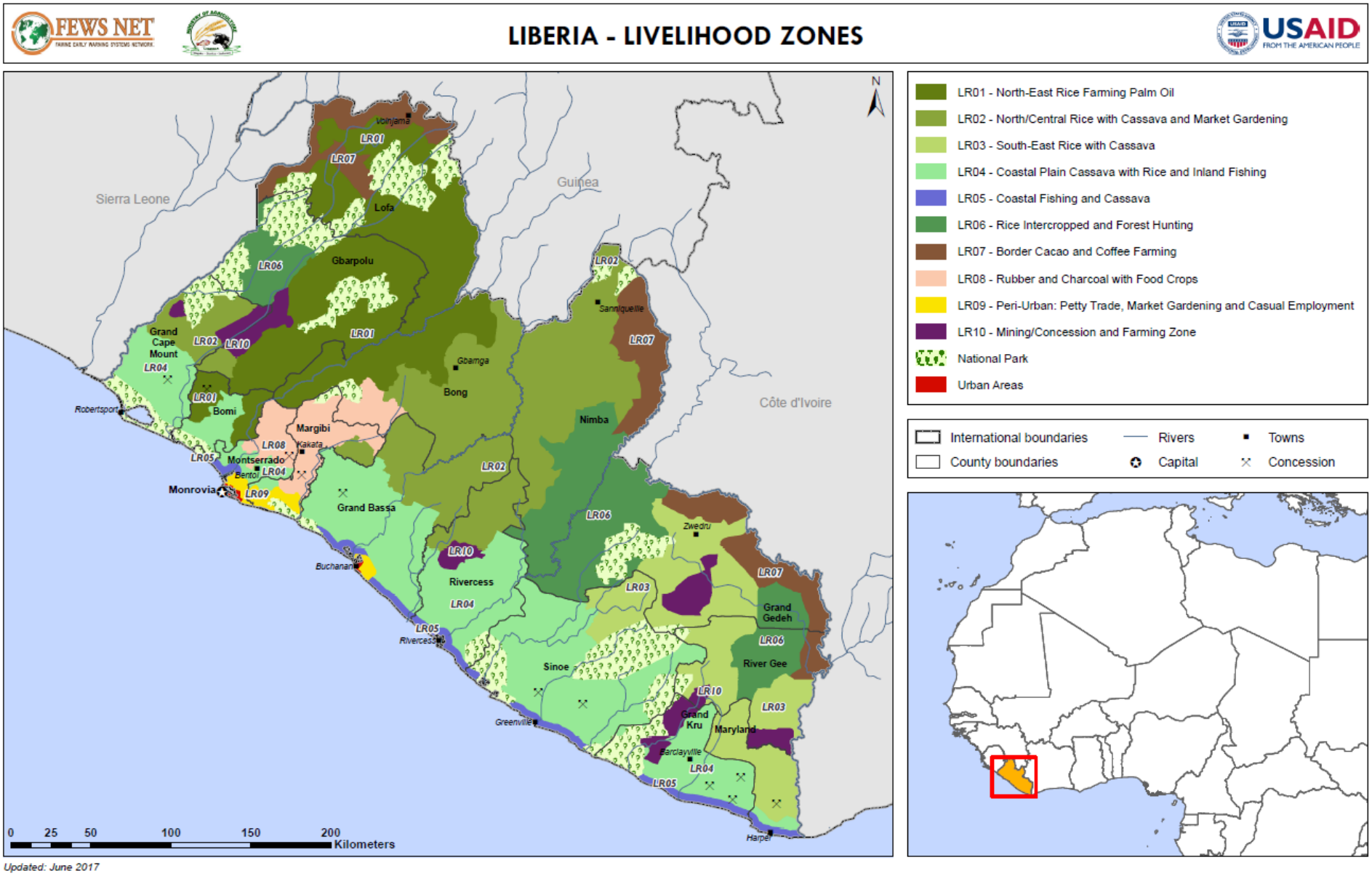
Liberia is Africa's oldest republic situated in the coastal western part of Africa. It is bordered by Ivory Coast on the East, Guinea in the North, Sierra Leone on the West and the Atlantic Ocean to the South. It has approximately 111,369 km^2 and 4.2 million land area and population respectively. The population comprises of both the descendants of settlers from America and indigenous peoples. It also accommodates a significant number of foreigners with a notable number of the Lebanese community, many of whom were born in the country (Ministry of Agriculture (MoA) *et al.*, 2010). The Lebanese community plays an essential role in the economy of the country, through the importation of rice and other basic commodities (Ministry of Agriculture (MoA) *et al.*, 2010).

The country is divided into 15 administrative and political units known as counties. The counties are further subdivided into about 66 districts and clans (Liberia Institute of Statistics and Geo-Information Services (LISGIS), 2008). In addition, Liberia has 10 livelihood zones (Map 1) with two geographically conspicuous kinds of livelihood zones being rice dominant and cassava dominant (FEWSNET, 2017).

Liberia has a rainy and dry season a year. The rainy season runs from April 15 to October 15, with the heaviest rainfall experienced in June, July and September; the dry season commences October 15 and ends April 15 (Liberia CFSNS, 2010)[1]. Typical shocks that mainly affect the country include high prices for staple food, communicable diseases, erratic rainfall, excessive rainfall and crop pests such as grasshoppers and groundhogs (FEWSNET, 2017). Some parts of the country still face high prevalence of food insecurity due to structural issues and the prolonged effects of the Ebola epidemic (FEWSNET, 2017).

[1] It is important to note that though this is the official seasons' duration in Liberia, due to climate change, some variations in the duration (start and end time) in the seasons are being experienced.

Map 1: Livelihood Zones of Liberia



Updated: June 2017

1.2.2 The Political Context

Liberia is a unitary state with a republican form of government. The government is made up of three arms; the executive, the legislative and the judiciary. The President serves as the head of the Executive Branch of government, Head of State of the Republic of Liberia, and the Commander-In-Chief of the Armed Forces of Liberia (AFL). The President is elected for a period of six years along with a vice president and can serve for not more than two terms.

The county experienced an insurgency that turned into a civil strife between 1989 and 2003 and came to an end because of the Comprehensive Peace Accord (CPA) reached in Accra, Ghana in 2003. This civil war greatly affected the country and stalled its growth and development in every sphere, with agriculture in general and the food and nutrition security sector being no exception. The war destroyed the basic socio-economic, cultural and political fabrics of the society. It uprooted farming populations, leaving their farms and livestock derelict. Buildings, including hospitals, schools and power facilities, were looted, burned and destroyed. Water and sanitation systems fell into unimaginable disrepair and were rendered useless. Roads and bridges were ruined and made impassable. The war displaced more than a million people and around 400,000 were reported killed (Grundy and Edgerton, 2002).

The country has continued to enjoy relative political stability since the cessation of the war in 2003, with strong support from its regional and international partners through the presence of United Nations Mission in Liberia (UNMIL). The country has had three presidential and legislative elections between 2005 and 2017.

A democratically elected government was inaugurated in 2006. Since then the country has witnessed two successive democratic transitions, in 2012 and in 2018. The relative peace and tranquility in the country provide an opportunity that could be harnessed for improvement in the food and nutrition sector. Indicators for agriculture in general and food and nutrition security, tend to flourish during peace and development. The government and its development partners made some efforts in the direction of improving the sector, but significant gaps still exist as these efforts were inadequate and disorganized. The support received by the sector from the government was small and interventions in the sector were poorly coordinated. Improvements in key agriculture and food and nutrition indicators still fall short of internationally acceptable standards, and of meeting the needs of the population. For instance, even though the prevalence of food insecurity reduced from 50% in 2006 to 41% in 2010, it remains high, and has unfortunately seen an increase to 49% and 51.2% in 2012 and 2016, respectively (CFSNS 2012 & HIES 2016).

The government of Liberia from 2003 committed to a number of regional frameworks intended to spur growth and development in the agricultural and food security sector and in turn contribute to economic growth and the reduction of poverty.

Notable among these frameworks is the Comprehensive African Agriculture Development Programme (CAADP) that was crafted by the African heads of states in 2003 in Maputo, Mozambique. Among other things, the CAADP framework calls for government budgetary allocation to the agriculture sector of 10% annually to affect a 6% annual growth in the sector. Regrettably, except for 2010/2011 when it committed 2.01% to the agriculture sector, the government has committed less than 2% to the sector for every other fiscal period.

1.2.3 The Economic & Social Context

The Liberian economy depends significantly on agricultural, fisheries, and forest products/exports, together constituting approximately one-third of Gross Domestic Product (Table 1).

Table 1: Liberia Gross Domestic Product (GDP) by Sector (In Millions of US Dollars, %)

Sector	2015	(%)	2016	(%)	2017	(%)	2018[3]	(%)
Agriculture & Fisheries	218.2	(24.3)	232.2	(26.3)	236.3	(26.1)	242.5	(25.8)
Forestry	94.8	(10.6)	94.8	(10.7)	87.2	(9.6)	83.7	(8.9)
Mining & Panning	103.5	(11.5)	69.3	(7.9)	89.3	(9.9)	92	(9.8)
Manufacturing	63.5	(7.1)	60.2	(6.8)	61	(6.7)	62	(6.6)
Services	416.4	(46.5)	425.1	(48.2)	429.4	(47.5)	434.5	(46.3)
Real GDP	896.4	(100.0)	882.1	(100.0)	904.1	(100.0)	939.4	(100.0)

Note to table 1: [3] 2018 figure is a projection

Source: Central Bank of Liberia 2017 Annual Report

The country continues to recover from the effects of the global economic meltdown begun in 2008 and the Ebola crisis in 2014 and 2015. Real GDP is said to have grown by 2.5% in 2017, following negative growth of 1.6% seen in 2016. This expansion of the economy is credited to increase in the mining and panning sector, as well as in the manufacturing sector (Central Bank of Liberia, 2017). The country's inflation rate remains in the double digits at 12.4% in 2017, up by 3.6 percentage points as compared to the same period in 2016. The rising inflation rate is explained by the depreciation of the Liberian dollar, the rise in the average price of petroleum products on the global market, and the government policy on prices of petroleum products.

The possibility to reduce inflation will largely depend on increased domestic food production, improved access to markets, the behaviour of international oil and food prices, and infrastructural developments such as roads and energy supply (Central Bank of Liberia, 2017).

Similarly, consumer price index, a core determinant of the inflation rate, recorded a significantly high weighted average of 38.1% for food and non-alcoholic beverages for the period 2017, with the month of January recording a high of 11.4% and the month of July recording a low of 3.8% for the period (Central Bank of Liberia, 2017).

Agriculture continues to command few credit/loan opportunities from commercial banks in Liberia. Loans to the sector by commercial banks in November 2017, stood at just 5.4% of their total loan portfolio, representing a decline from 7% of their total loan portfolio in 2016. Access to loans is a strong facilitating factor in the expansion and commercialization of the agricultural sector in any given economy. Developments in the agriculture sector is important to supporting food and nutrition security. The relative lack of access to commercial loans in Liberia remains a major constraint and a concern for many people in the agriculture sector.

The importation and exportation of basic goods and services affects the income and expenditure pattern and capacity of the country and the people. Liberia imports more goods and services than it exports. While the ratio of the value of imports to exports has reduced over the last few years, Liberian imports value was more than twice that of its exports value (Table 2). This affects economic variables including foreign exchange, prices and inflation rate, to name a few. This in turn affects the capacity of the government to implement developmental activities, as well as affect individuals in terms of their purchasing power and quality of life. For a country like Liberia that imports more than 60% of its staple food, it makes the population vulnerable to food insecurity and malnutrition in times of price increase and fluctuation on the world market.

Table 2: Liberia Export and Import Values 2015-2017 (in Millions of USD)

Period	Export	Import
2015	283.3	1,551.4
2016	279.3	1,201.2
2017	388.8	1,018

Source: Central Bank of Liberia 2017 Annual Report

Liberia is rich in natural resources, but it remains underdeveloped and poor. The country has significant deposits of minerals such as gold and diamond, vast forest reserves, iron ores and fertile soil, but poor management of these resources and corruption have left majority of its population poverty-stricken.

The 2016 Human Development Index (UNDP, 2016) report places Liberia in the Low Human Development category, at 177 out of 188 countries. The HDI uses the indicators of life expectancy, expected years of schooling, mean year of schooling, and gross national income per capital to determine the country's level of development.

The quality of education in Liberia is generally poor. Schools have limited resources, including qualified and trained teachers, laboratory equipment and reagents, libraries, etc. Most of the active workforce between the ages of 15 and 60 lack adequate education for technical or well-paid jobs that could provide them substantial and sustainable income and livelihood.

According to the LDHS 2013 only 6.8% of Liberians have attained first degree, while 33.5% have acquired at least senior high education. The statistics for first degree favours men (7.7%) compared to women (5.8%), as well as urban (9.7%) compared to rural areas (1.4%). This exposes majority of the population, especially in the urban areas, to poverty, food insecurity and malnutrition, since they often rely on casual and menial works to earn income to purchase food and other necessities.

1.2.4 Health

Liberia as a country has made tremendous achievements on numerous health and nutrition indicators, including substantial reduction of the under-5 child mortality by two thirds by 2015 (MDG4), and general improvements in human resources development and health infrastructure. Nevertheless, the overall health and nutrition system of the country is still considered extremely poor, contributing to high rates of malnutrition, communicable diseases, and mortality. The LDHS 2013 reports the malnutrition levels of children as 32% for stunting, 6% for wasting, 15% for underweight and 3% for overweight. Also, 55% of children (0-6 months) were exclusively breastfed while 44% of children were breastfed until their second birth day (Liberia Institute of Statistics and Geo-Information Services (LISGIS) *et al.*, 2014).

Communicable diseases are prevalent in the country, with malaria being the leading cause of out-patient morbidity. This is also coupled with diarrhea and acute respiratory infections (Murphy, Erickson and Tubman, 2016). Malaria poses the most significant threat to public health as it has the highest mortality rate and is particularly worrisome to infants, pregnant mothers and their unborn children (World Health Organization, 2017).

Access to safe drinking water still remains a challenge for many households. The situation is worse in rural areas as compared to urban areas. Most households in the rural areas (23.4% and 28.4% in the rainy and dry seasons, respectively) use surface water (river, streams and creeks) as their main sources of drinking water (Liberia Institute of Statistics and Geo-Information Services (LISGIS) *et al.*, 2014). Access to safe drinking water is a key factor in reduction of water-borne diseases.

Floods and storms also play an important role in the prevalence of infectious diseases, which can impact the body's utilization of nutrients and overall nutritional status. Most of the communicable disease epidemics have been strongly associated with rainfall making them most prevalent during the rainy season (World Health Organization, 2017). Projected increases in rainfall and floods, combined with poor access to health facilities, poor hygienic practices, and lack of access to safe drinking water will cause increasing susceptibility to disease outbreaks of malaria, cholera, and diarrheal diseases, with the highest threat in rural areas (World Health Organization, 2017).

1.2.5 Security & Safety (state of the security)

Security situation in Liberia is relatively stable and safe. There are no alarming internal and external aggressions that threaten its peace and stability. However, there are issues of human rights violations and other security concerns that need to be monitored and engaged with, such as the drawdown and final departure of UNMIL, the issue of gender-based violence, and the limited presence of security officers in some parts of the country.

After a successful peaceful election in 2017, that witnessed a democratic transition from one elected government to another for the first time in over 70 years, Liberia is poised to strengthen its security apparatuses before the final departure of UNMIL at the end of March 2018. The country's human rights institutions, procedures and processes are being revised and revamped.

The capacity of security forces, including the Armed Forces of Liberia (AFL), Liberia National Police (LNP), and Liberia Immigration Services (LIS) among others, is increasing and these institutions are actively playing independent roles in the maintenance of peace in the country and abroad, as manifested by the involvement of the AFL in the UN peace keeping mission in Mali.

Peace and security promotes food and nutrition security. Conversely, conflicts and insecurity undermine food and nutrition. With Liberia continuing to enjoy peace in a safe and secure environment this could provide government, partners and the people the opportunities to remain engaged and begin processes and interventions that can germinate and sustain food and nutrition security in the country.

1.2.6 Urbanization

Globally, about 54% of the world population resides in urban areas (United Nations, 2017). Cities play a crucial role in a country's development, seen as key drivers of economic growth and development (Overman and Venables, 2005). However, there are important consequences of unchecked urbanization for global and local food systems, as well as for global trends in food security, nutrition and poverty (FAO *et al.*, 2017). The rapid growth of cities has led to the establishment of informal settlements often lacking in basic amenities such as safe drinking water, toilet/sewerage systems, drainage systems and other infrastructure. In addition, urban households typically rely much more heavily than their rural counterparts on markets as their primary source of food. As a result, there exists a large body of urban inhabitants who are vulnerable to unstable income, fluctuating market prices, and unsanitary and unsafe environments, all factors contributing to high risk of urban poverty, food insecurity and malnutrition.

Liberia is no exception when it comes to the risks of urbanization. According to UN Habitat (Wang *et al.*, 2017) the lopsided rate of urbanization in Liberia has engendered significant challenges, which could impede national development. If unchecked population growth in cities is not well addressed, it's likely to create significant social, health, infrastructure and management challenges for the country.

1.2.7 Hazards, Risk and Vulnerability

Natural hazards are a key risk factor in Liberia. Climate change poses a critical threat to Liberia, especially to public health, the agriculture sector, and its coastal zone (World Bank, 2016). Heavy rains, flooding in coastal cities especially Monrovia, and pests causing devastation on agricultural production in some parts of the country, are some examples of natural hazards facing Liberia. Some of these hazards can negatively impact infrastructure and the distribution of food, consequently affecting household's access to food. In addition, the destruction or loss of household assets (physical, social, human, and/or financial) frequently accompanying a natural disaster can push already vulnerable households deeper into poverty and food insecurity.

1.2.8 Cross-cutting issues (gender, youth, etc.)

Women, men and the youths play different, but important and interrelated, roles in the realization of food and nutrition security. The composition of the population and how the different segments of the populations are recognized and involved in the processes for the attainment of food and nutrition security is important. According to the 2016 Liberia Household Income and Expenditure Survey (HIES), women make up 51.1% of the population of Liberia compared to men at 48.9% (Liberia Institute of Statistics and Geo-Information Services (LISGIS), 2017). Also, 44.5%, 52.6% and 49.1% of the population are below 14 years, between 15 and 64 years and 18 years and older, respectively. The capacity of the youths and the potentials of women need to be tapped along with that of the men to ensure the attainment and sustainability of food and nutrition security.

1.3 Scope of the Survey

The CFSNS 2018 covered all 15 political subdivisions/counties of Liberia. One of the political subdivisions/counties (Montserrado) was subdivided into Greater Monrovia and Rural Montserrado. Monrovia is the capital city of Liberia which has seen a population surge of over a million people after the war with diverse ways of life and approaches and access to basic services distinct from other parts of the country; as such keeping it attached to Montserrado and doing an analysis could possibly reflect a situation that is not representative of the rest of the county.

The scope of the survey included an assessment food security, agriculture, nutrition and health indicators at the individual and household levels, as well as basic demographic data. The food security and agriculture assessment included food consumption pattern of households, labour migration, housing and facilities, agriculture, income and livelihood sources and access to credit, household expenditure, shocks and humanitarian and development assistance. For nutrition and health, the assessment covered health and common childhood illnesses, water and sanitation, infant and young child feeding practices, minimum dietary diversity for women and anthropometric measurement for children and women. Children under five (0-59 months) were covered, but anthropometric measurements are done only for children 6-59 months.

1.4 Limitations of the Survey

Some of the main limitations of the project include the followings:

1. The assessment did not collect data on child mortality as would have been done for most nutritional assessment. It is anticipated that data on child mortality will be included in the LDHS 2018.
2. The assessment could not ideally compare findings with findings of the previous food security surveys given the difference in methodology/criteria used to analyse the data and he periodicity/ seasonality of the survey (period in which surveys were conducted). However, attempts were made to present some comparison as indicative trends of the food security and nutrition status.

1.5 Organization of the report

This report is organized into six main sections. Section 1 is the Introduction and covers background information, analysis of the context, the scope and limitations of the survey. Section 2 covers the Methodology. The Methodology explains the basic procedures undertaken in the organization and facilitation of the survey. It covers the survey design, goal and specific objectives of the survey, sampling design, data collection and analysis procedures. Section 3 is the presentation and interpretation of key findings. It delineates key findings and their interpretations using both descriptive and inferential statistics including tables and graphs. Section 4 is outlines the conclusions and recommendations.

This section provides a summary of the key findings and advances recommendations based on the findings and best practices and internationally acceptable standards to improve the food security and nutrition status of the country. The report also contains an executive summary that provides a synopsis of the content of the report.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2. METHODOLOGY

2.1 Survey Design

The CFSNS was conducted using a combination of cross-sectional, descriptive and retrospective approaches, involving quantitative and qualitative techniques. The assessment did not only focus on the identification of the areas that are food and nutrition insecure, but it further attempts to find the best ways of targeting assistance to worse-off households in the identified areas. The survey includes a quantitative component conducted through household interviews and a qualitative component conducted through focus group discussion.

2.2 Goal of the Survey

The 2018 CFSNS aims to inform future GoL national development plans and policies, as well as support development partners planning and operational/programmatic decisions to assist vulnerable populations and update food security and nutrition information that will underpin the measurement of progress in the implementation of NAIP and extended UNDAF 2013-18.

2.3 Specific Objectives of the Survey

The specific objectives for this survey were to:

- Update the profiles of food insecure and vulnerable people and their livelihoods;
- Identify the underlying causes and risk factors of food insecurity and malnutrition and their potential impact on the most vulnerable;
- Determine the prevalence of nutritional status of vulnerable groups (children aged 6 – 59 months and non-pregnant women of reproductive age (15-49 years old);
- Establish the linkage between household food security and nutritional status of children in Liberia;
- Provide an analysis of food markets and their functioning;
- Identify the medium to long term response options to address food insecurity and malnutrition and the targeting criteria;
- Develop a standard tool for actors to continuously monitor key food security and nutrition indicators annually for reporting to Government;
- Ensure that data collected is accessible to relevant actors;
- Identify key indicators that could be measured through a Food Security Monitoring System; and
- Provide policy and institutional analysis of food and nutrition security to identify gaps and measures of improvement.

2.4 Target Population

The assessment covered all persons living in a household within the enumeration areas that were selected through a random sampling process. Specific attention was given to children under five years, women of reproductive age (15-49 years), and pregnant women and lactating mothers in the selected households.

2.5 Sampling Design

A two-stage cluster sampling methodology was performed to derive the sample size for the household survey. In the first stage, primary sampling units (PSU) were selected in each of the sixteen (16) geographical divisions composed of the 15 counties plus Greater Monrovia (Table 3). The Greater Monrovia is derived from the subdivision of Montserrado County into Rural Montserrado and Greater Monrovia. At this level, 30 clusters per geographical division were selected,

summing up to a total of 480 primary clusters/enumeration areas (EAs). Four reserved clusters per geographical division/EA were selected. These reserved clusters were to be activated in full if 10%, or 3 of the 30 primary clusters, could not be reached after all efforts had been exhausted. The clusters were selected using ENA for SMART 2011 based on enumeration areas (EAs) developed by Liberia Institute for Statistics and Geo-Information Services (LISGIS). At the second stage, 26 households were randomly selected in each cluster/EA after exhaustively listing all the households in the particular EA. In total, 9,142 children under five (0-59 months) and 12,405 households were targeted in the assessment (Table 3). The sample size was determined based on the technical guidance produced by WFP and UNICEF (WFP and UNICEF, 2016).

Table 3: Sample Size per County/Geographical Division

Counties	Estimated prevalence of stunting (%)[1]	Design Effect[4]	Desired precision (%)[2]	Sample size in number of children	Mean size of household[3]	Proportion of under-five aged children (%)1	Rate of non-response (%)[4]	Sample size in number of household	No. of clusters	No. of households per Cluster/EA
Bomi	33.1	1.6	5	556	5	17	3	765	30	26
Bong	34.7	1.5	5	569	5	17	5	766	30	26
Gbarpolu	25.1	1.8	5	566	5	17	5	779	30	26
Grand Bassa	36.1	1.5	5	579	5	17	3	780	30	26
Grand Cape Mount	28.5	1.7	5	579	5	17	2	773	30	26
Grand Gedeh	31.4	1.6	5	577	5	17	3	777	30	26
Grand Kru	31.4	1.6	5	577	5	17	3	777	30	26
Lofa	28.5	1.7	5	579	5	17	2	773	30	26
Margibi	31.4	1.6	5	577	5	17	3	777	30	26
Maryland	33.4	1.5	5	558	5	17	5	768	30	26
Greater Monrovia	27.1	1.7	5	562	5	17	5	773	30	26
Rural Montserrado	27.1	1.7	5	562	5	17	5	773	30	26
Nimba	36.4	1.5	5	581	5	17	3	783	30	26
River Cess	35.4	1.5	5	574	5	17	4	781	30	26
River Gee	42.6	2	6	568	5	17	5	782	30	26
Sinoe	31.5	1.6	5	578	5	17	3	778	30	26
National				**9,142**				**12,405**	**480**	

Notes to table 3

[1] Prevalence of stunting in Liberia LDHS, 2013 (Liberia Institute of Statistics and Geo-Information Services (LISGIS) *et al.*, 2014)

[2,3,4] Soured from the Joint Approach for Nutrition and Food Security Assessments (JANFSA 2016) technical guidance (WFP and UNICEF, 2016)

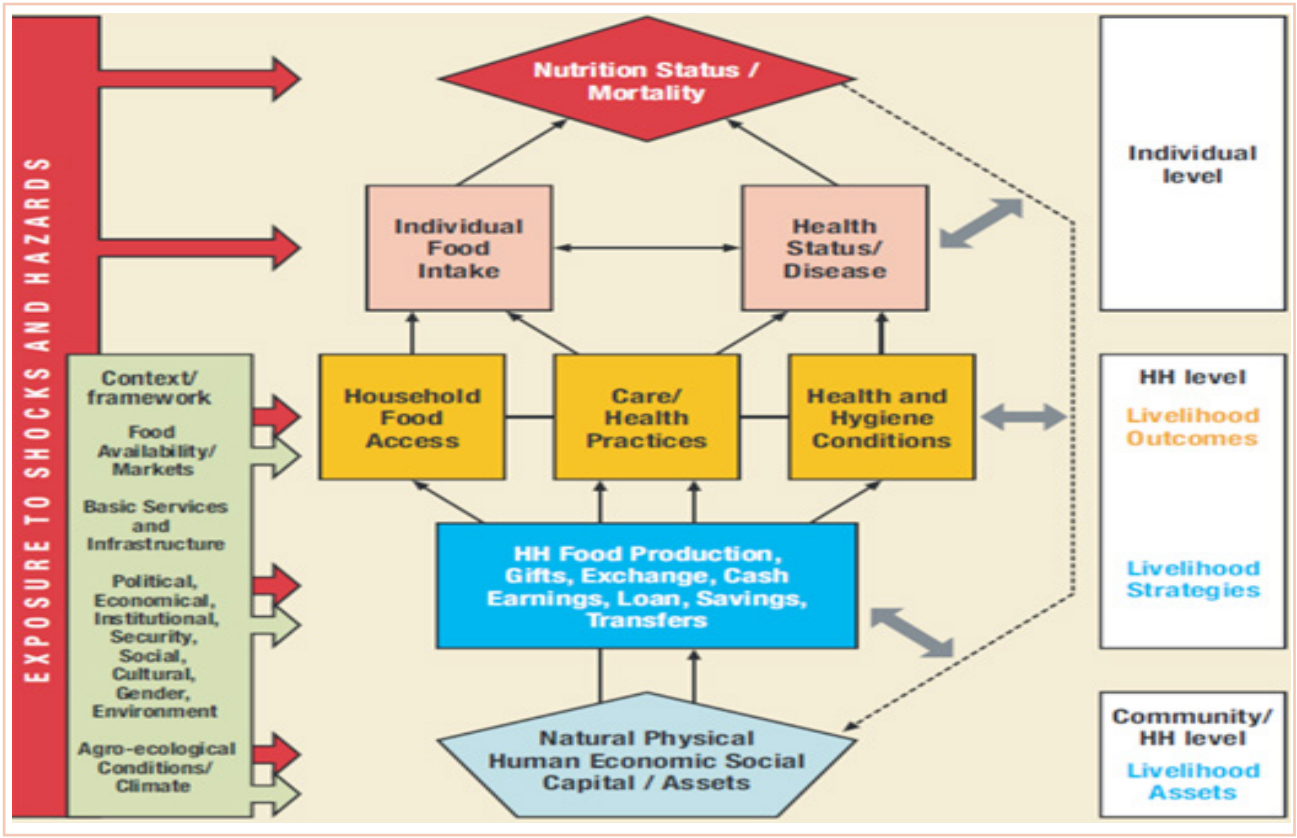
The household survey sampling design was intended to provide representative data at county level and for urban and rural areas separately. The sample size of the analysis was calculated using the nutrition indicators and the Emergency Nutrition Assessment for SMART 2011 (ACF and USAID, 2012). The software is one of the recommended software for the calculation of sample size, particularly in the case of anthropometric data.

The qualitative data was collected through focus group discussions (FGD). The focus group discussions were conducted with a cross section of the EA/community leadership that included in many instances town chief, women leader, youth president/representative, elders, principals/ teaches, the officer in charge of health facility. Both purposive and convenient sampling techniques were used in reaching the community leaders. One FGD was conducted per community. The FGD data was cleaned in Excel and analyzed using both Excel and SPSS.

2.6 Conceptual Framework

The Food and Nutrition Security Conceptual Framework was used for the CFSNS, which is a combination of UNICEF's Conceptual Framework of Under nutrition and the Food Insecurity and Sustainable Livelihoods framework (Figure 1). Consequently, the conceptual framework is used in the report to provide clear linkages among different components of food security, livelihoods, shocks and hazards, and contextual factors and how they relate to nutrition and nutrition-related mortality, care and health.

Figure 1: Conceptual Framework adopted for Survey



Source: Comprehensive Food Security and Vulnerability Analysis Guidelines, (World Food programme, 2009).

2.7 Recruitment and training of data collectors

The national coordination team led by Ministry of Agriculture and LISGIS mobilized a total of 104 potential enumerators that were trained over a 6-day period from January 15-20, 2018. The purpose of the training was to ensure that the team understood the objectives of the survey, the survey methods, sampling strategy, use of data collection tools, roles and responsibilities in data collection. Participants reviewed every survey question for appropriateness, clarity and value of the information provided for the baseline survey. The tool was pilot tested at the end of the training and feedbacks were incorporated.

At the end of the training 80 trainees were selected based on their performance and hired to participate in the data collection exercise. The rest of the 24 trainees were placed on a standby as reserves if any of those recruited were unable to engage and/or complete the data collection. The 80 enumerators were organized in eight (8) teams consisting of ten (10) persons.

Each team consisted of 1 team leader, 5 food security data collectors and 4 nutrition data collectors. Two-day refresher training was held for the 80 selected data collectors on the 22nd and 23rd of February, 2018 as a result of three weeks' delay in deployment.

2.8 Field Work and Data Collection Tools and Procedure

Field work commenced on March 5, 2018, with the deployment of the enumerators organized into 8 teams. The data was collected over a two-month period beginning March 5 and ending May 15, 2018.

The quantitative household survey was administered using smart phones/tablets in a face-to-face interview. Team leaders/field supervisors were trained in data back-up procedures and mobile data collection training was integrated into the enumerator training and field testing. The monitoring team, including staff from MoH, LISGIS, MoA, UNICEF, FAO, and WFP, plus the two consultants (WFP), supervised and monitored field data collection for the entire data collection period.

On entering the community and completing the community entry process, the team leader implemented randomize sampling technique that involved taking a count of houses in the community, identifying the households in these houses/structure, listing them and using a mobile application to select 26 households to participate in the quantitative household survey.

The qualitative data was collected by the team leaders using focus group discussions. Two focus group discussions (one for the men and the other for women) were conducted in each cluster/EA. Each focus group discussion consisted of 6 participants/respondents.

Quality control measures were developed and put in place throughout the process of data collection and analysis. As a beginning point, a number of control measures/constraints/limits were installed during the development of the electronic questionnaire on the smart phones/tablets to prevent and/or minimize errors during data collection.

Moreover, field team leaders/supervisors reviewed completed questionnaires of their team members at the end of each day to ensure that all information recorded in the questionnaires was internally consistent.

In addition, quality control teams re-interviewed a selected sub sample of households to validate information recorded in the original interviews.

They also checked a sample of the reported non-response cases to verify the reasons for non-response. Performance of individual team members was continuously monitored throughout the fieldwork.

The primary data collection was preceded and complemented by a detailed literature review. Relevant food security and nutrition data from previous CFSNSs and other assessments were reviewed along with other national documents, such as the Liberia Demographic and Health Survey Report (LDHS 2013), the Household Income and Expenditure Survey (HIES 2014 & 2016). The review informed the context and provided information for comparative analysis where applicable.

The survey protocol was conducted with the permission from the Ministry of Agriculture, Ministry of Health and LISGIS. Furthermore, prior to each interview, verbal informed consent was obtained from the respondent, who was an adult member of the household.

2.9 Data Cleaning and Analysis Procedure and Techniques

Data cleaning was conducted immediately upon completion of the data collection, in preparation for analysis. The dataset for the food security component of the household survey was cleaned using the SPSS data analysis software. During the cleaning process, data were checked for consistencies, logical values/issues and missing values. Issues identified were clarified and corrected. Where necessary, enumerators and respondents were contacted for clarification. The dataset for the nutrition component of the household survey was cleaned using ENA software and applying SMART methodology, which excludes z-scores judged to be unfeasible and most likely due to measurement errors. It examines the data and automatically flags values outside the expected WHO standard ranges. Values flagged outsides these ranges were recorded, reviewed and checked against those on the electronic data form and corrected where feasible.

The food security data was analyzed in SPSS based on the Consolidated Approach for Reporting Indicators of Food Security (CARI), which creates a food security console. The food security console draws on a range of indicators including the food consumption score, livelihood coping strategies and food's share of household expenditure. Households were classified into four food security categories, food secure, marginally food secure, moderately food insecure and severely food insecure (Table 4).

Table 4: Description of the CARI categories

Food Security Index	Description	Food Secure/Food Insecure
Food Secure	Able to meet essential food and non-food needs without engaging in atypical coping strategies.	Food Secure
Marginally Food Secure	Has minimally adequate food consumption without engaging in irreversible coping strategies; unable to afford some essential nonfood expenditures.	
Moderately Food Insecure	Has significant food consumption gaps, OR marginally able to meet minimum food needs only with irreversible coping strategies.	Food Insecure
Severely Food Insecure	Has extreme food consumption gaps, OR has extreme loss of livelihood assets will lead to food consumption gaps, or worse.	

The nutrition data, on the other hand, was analyzed using ENA and later exported to SPSS and merged with the food security data set for comparative analysis with the food security data. The analysis was done to investigate any association between the food security and nutrition indicators.

The community focus group discussion data was cleaned using Excel. During the cleaning process, the data was screened for illogical sentences and missing data. It was then organized by themes and coded where needed. The data were analyzed using Excel and SPSS using the themes and coded variables to produce frequency and cross tabulation tables.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3. PRESENTATION AND INTERPRETATION OF KEY FINDINGS

3.1 Food security classifications: how many and where are the people food insecure?

3.1.1 Food security classifications based on CARI analysis

CARI is the Consolidated Approach for Reporting Food Security Indicators. It is an endeavor of the World Food Programme (WFP) developed in 2014 and is used to estimate food insecurity within the target population.

The approach is built on food security console that support the reporting and combining of food security indicators in a systematic and transparent way. CARI classifies households in one of four descriptive groups: food secure, marginally food secure, moderately food insecure and severely food insecure (Table 5).

Table 5: Food Security Console

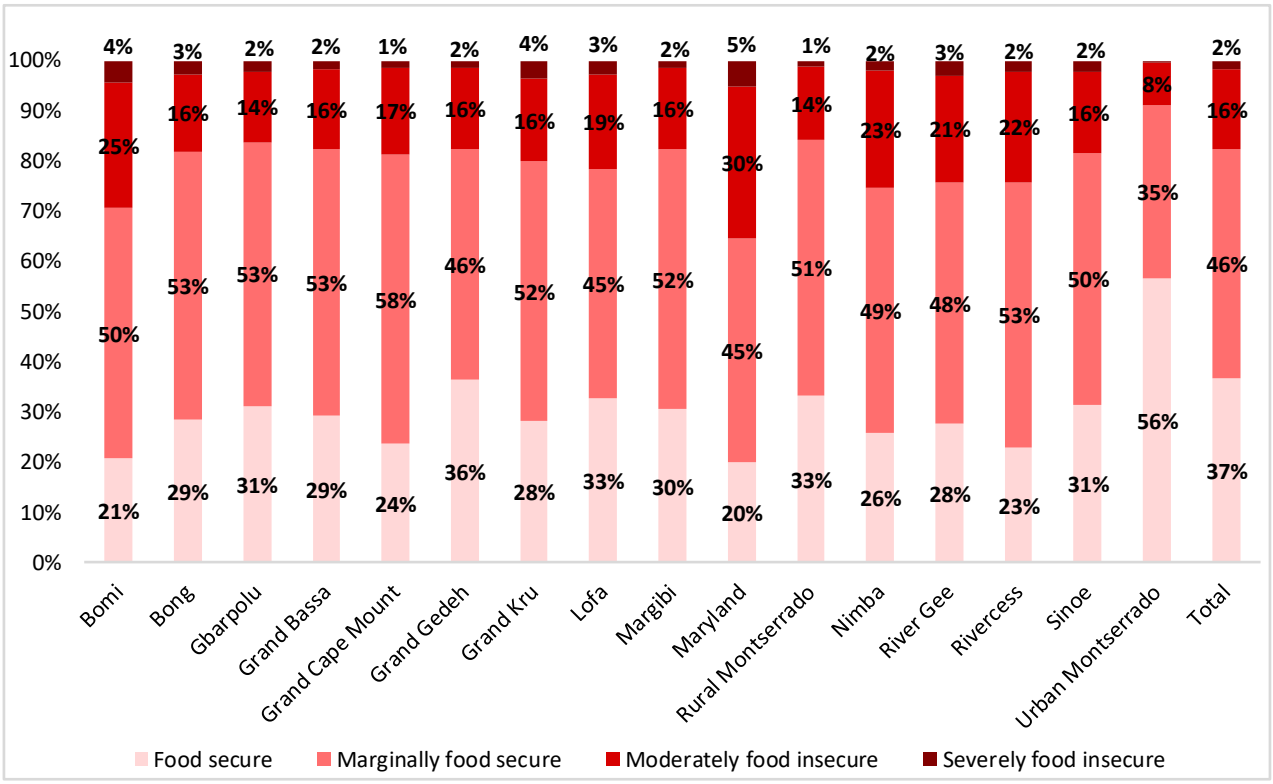
	Food secure	Marginally food secure	Moderately food secure	Severely food insecure
Food Security Index	Able to meet essential food and non-food needs without engaging in atypical coping strategies	Has minimum adequate food consumption without engaging in irreversible coping strategies; unable to afford some essential non-food expenditures	Has significant food consumption gaps, OR marginally able to meet minimum food needs only with irreversible coping strategies	Has extreme food consumption gaps OR has extreme loss of livelihood assets will lead to food consumption gaps, or worse

Source: Consolidated Approach for Reporting Indicators of Food Security (CARI) (World Food Programme, 2015)

3.1.2 Estimates of food insecure population and their distribution

Overall, 18% of households in Liberia are food insecure (16% moderately food insecure and 2% severely food insecure) (Figure 2). This is higher than the proportion identified by EFSA 2015 (16%) but representative of the severely food insecure households identified by both surveys (2%). Additionally, nearly half of the assessed households (46%) are marginally food secured, which increases the level of vulnerability among the population as, depending on the response mechanism of these household, any shock could drift them into food insecure category.

Figure 2: Distribution of Food Insecurity by county, Liberia, 2018

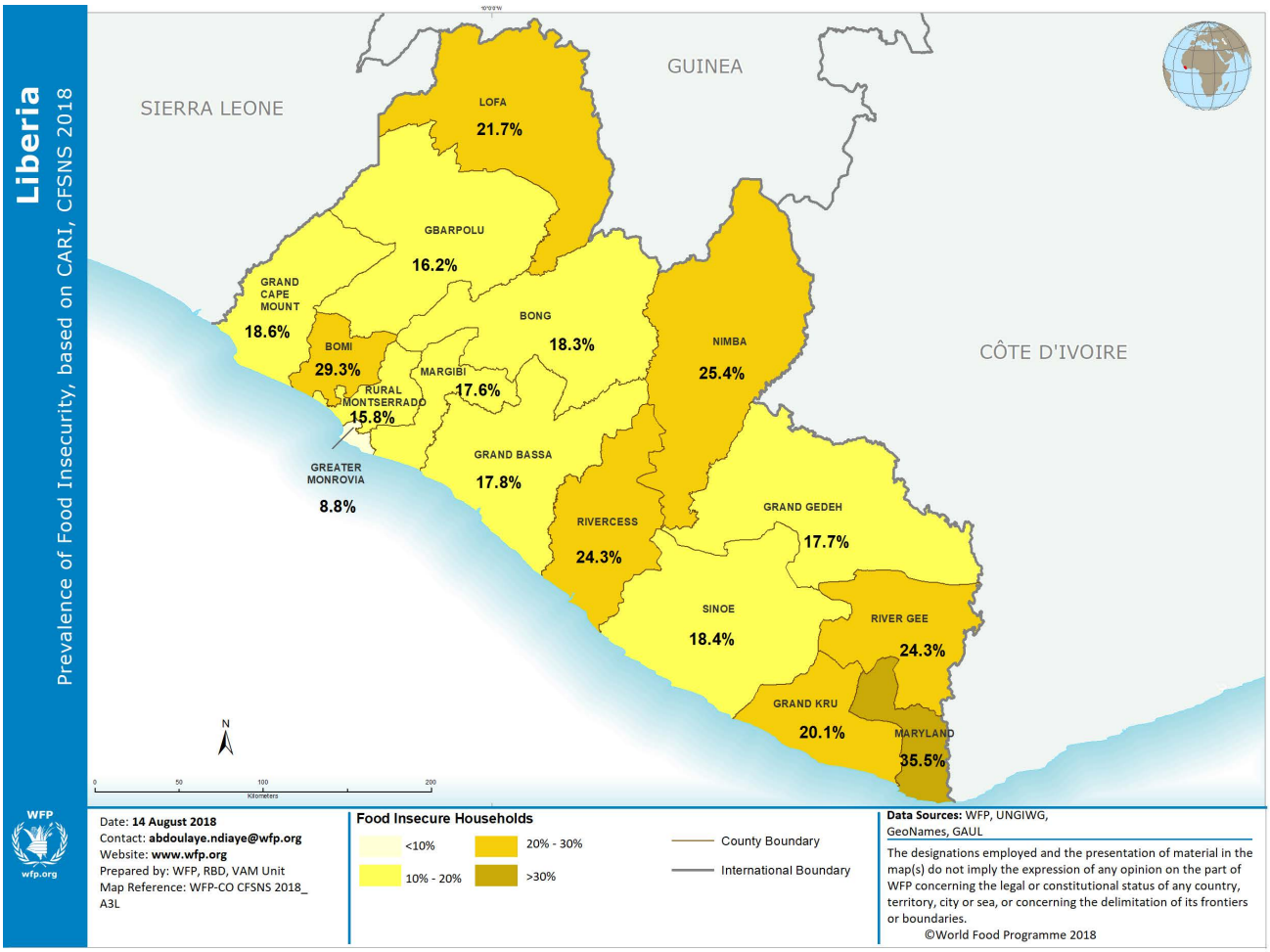


3.1.3 Geographic Distribution of Food Insecure Households

Every county in Liberia is affected by some level of food insecurity. Food insecurity is distributed across the country at different rates. Some counties are more affected than others. The trend of the distribution is also changing, and counties that were previously food secure are gradually becoming food insecure. For example, in Nimba county located in central region, food insecurity increased from 11% in 2012 to 25% in 2018. This trend was suggested by the 2012 CFSNS that states “food insecurity is moving towards the central region of Liberia”.

Food insecurity is highest in Maryland (35%) followed by Bomi (29%), Nimba (25%), River Cess (24%) and River Gee (24%), Lofa (22%), Grand Kru (20%), Bong, Grand Bassa (18%) and Grand Cape Mount (18%) counties. Food insecurity disproportionally affects rural areas (23%) than the urban setting (11%). Greater Monrovia division on the other hand recorded the lowest food insecurity prevalence (8.8%) (Map 2).

Map 2: Prevalence of food insecurity by county, Liberia, 2018



Many factors account for the level of food insecurity in Liberia. Low agricultural activities and production of staple food and marketable quantities, distance away from point of importation of commercial rice and condiments, bad road conditions and other environmental and seasonal factors, depreciation of the Liberian dollars against the US dollars, as well as rise in the prices of basic commodities and corresponding reduction of purchasing power of households are among key variables that serve as underlying factors for food insecurity.

Due to low agricultural activities and production, an estimated 81% of households depend on the market as their primary source of food. A review of the Liberia Market Information statistics shows that there is an unprecedented rise in the prices of basic commodities and services, with the price of the nation's staple food having increased by as much as 19% in some parts of the country.

Similar spikes in prices are also experienced in fuel prices and transportation fares that serve as major determinants of the prices of basic commodities, particularly in the rural areas, or counties that are far away from the ports of entry. The exchange rate proportionally affects prices. It has been steadily increasing and has witnessed an alarming 57.1% change in April 2018 as compared to the same period in 2017.

3.1.4 Food Insecurity by Characteristics of the Household and Head of Households

The survey sought to explore household vulnerability to food insecurity by identifying key characteristics of the household and the head of households. In Liberia, and in most instances, the daily upkeep and sustenance of a household is the responsibilities of the head of the head of household. An understanding of the status of the head of households will largely explain the status of the household.

3.1.4.1 Household Size and Food Insecurity

Generally, household size doesn't show any effects of food insecurity compared to other household characteristics. However, slight differences were observed among households with different size relative to food insecurity. Household size larger than 7 (≥7 members) were observed to be slightly food insecure (19%) than those between 5-6 (18%) and those less than or equal to 4 (16%).

3.1.4.2 Household Status and Food Insecurity

Given the current context where Liberia has been playing host to some refugees from Cote d'Ivoire and Sierra Leone (some of whom are still in country despite the repatriation and resettlement exercises), the survey sought to understand the level of food insecurity among households that were hosting refugees (meaning Liberian households inhabiting refugee), households that were composed of refugees and those that were native (Liberian households not hosting refugees).

The survey reveals that households hosting refugees were most food insecure (45%), followed at a distance by those composed of refugees from neighbouring country (18%) and native households (17%). Households hosting refugees are disproportionally affected due to the stress placed on food and incomes of their hosts.

3.1.4.3 Sex of Head of Household and Food Insecurity

The survey attempted to establish if there were any variations in food security status of households based on the sex of the head of household. The findings indicate that female-headed households (19%) are slightly more susceptible to food insecurity compared to their male (17%) counterparts.

It was observed that female-headed households tend to be slightly more affected due to disparities in job opportunities and income between males and females. In Liberia, there is still, unemployment rate is slightly higher for female (4.1%) than the male (3.4%) (Liberia Institute of Statistics and Geo-Information Services, 2010).

3.1.4.4 Age and Food Insecurity

The heads of households were aged between 16 and 99 years with a mean age of 42 years. Distribution of age categories among the sample population showed that 12% of the household heads were between 21-30 years.

Households that were headed by an elderly person (>60 years) had higher food insecurity levels (21%) compared to households headed by the middle-aged persons (18%) and young persons (17%).

3.1.4.5 Marital Status and Food Insecurity

The marital status of head of households and the distribution of food insecurity was assessed. Food insecurity was noticeably higher in households headed by widow/widowers (24%) and divorced/separated (24%) than respondents in other living arrangement. On the other hand, single-headed households recorded the least levels of food insecurity (13%) followed by those cohabiting (17%) and those married (19%). Most single-headed households do not usually have dependents to cater for can fend food for their daily consumption (whether something from purchase, gift or family members or friends).

3.1.4.6 Education and Food Insecurity

Education is one of the vital pillars of economic development in any country; further, it is one of the most important proxies of an individual's earnings. For that reason, education exhibits an important role in human capital development. Results from the community discussion indicate that the levels of formal education are attributed to the availability of schools in the different communities where the assessment was conducted. While the majority of the assessed communities have schools available, most of these schools are below elementary level with few schools available from high school and upwards. Unfortunately, the dialogue on availability of high schools and above in the country seems to be narrowly focused on urban and peri-urban schools at the expense of rural schools.

School attendance is hinged upon the availability of schools, so where there is no school, attendance and education achievement tend to suffer. Greater Monrovia has the highest number of communities with schools (23 out of the 30 visited), followed by Margibi (16 out of 30) and Rural Montserrado (14 out of 30). Additionally, the results show that female headed households are more disproportionally affected (39%) than their male counterparts (22%). Learning conditions in rural areas make schooling difficult because of the long distances children have to travel to the nearest schools, with a total of 26 communities out of 673 indicating that children have to walk for long hours in order to get to the nearest school. Also, communities reported the limited number of teachers in their schools as major impediment for quality education, as some schools have just one teacher causing children to sometimes go for a week or more without lessons in instances where the teacher is sick or had to go for trainings. These factors bear negative consequences with regard to the quality of education provided to the students.

Households headed by individuals with little or no formal education are more vulnerable to food insecurity while the opposite is true for households headed by someone who has attended a technical institute and above. The 2018 CFSNS demonstrates a higher percentage of the household heads (28%) with no form of formal education. Of these households, 24% were notably food insecure (21% moderately food insecure and 3% severely food insecure).

3.1.4.7 Income Earning and Food Insecurity

Assessed households were asked whether they were earning an income or not. It was revealed that households that have heads who do not have an income showed signs of vulnerability to food insecurity. Household heads who were not earning income were slightly more food insecure (21%) than those who were earning income (18%). This means economically active heads are likely to have extra money for food; hence, they are likely to diversify their foods while the reverse tendency applies to households whose heads were not earning any income.

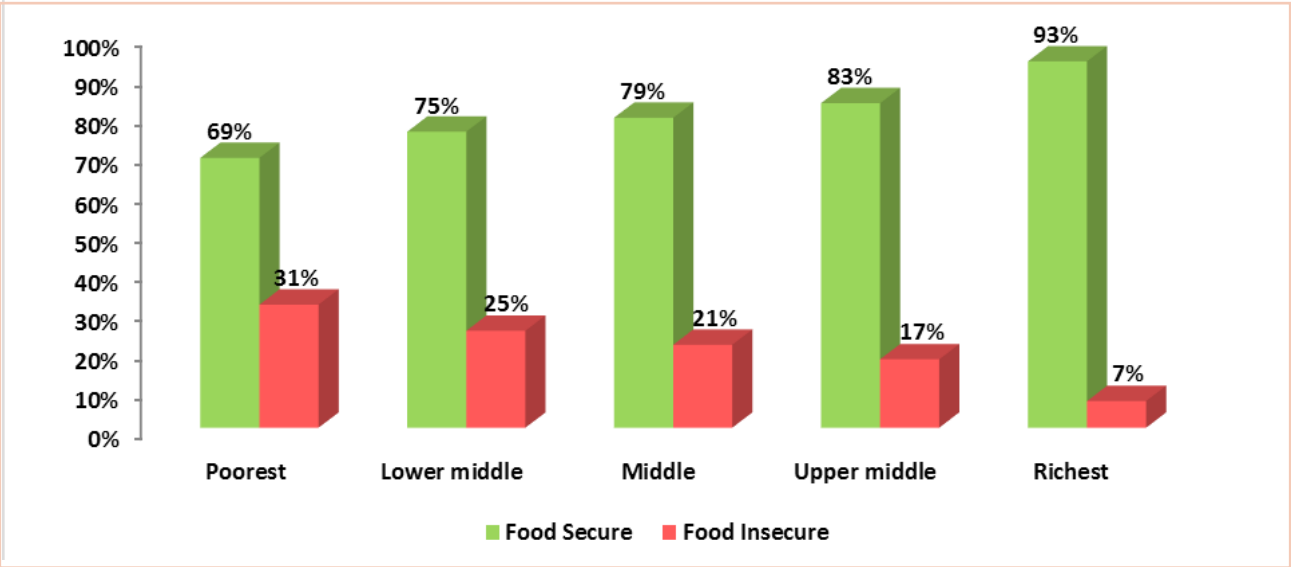
3.1.4.8 Wealth Index

The food security situation in Liberia can be attributed to the levels of poverty in the country. Irrespective of whether households are in rural and urban areas, or are engaged in farming or other activities, as wealth improves, so does diet and their food security situation.

The wealth index is a composite indicator based on ownership of certain assets and the presence of improved living conditions, which are considered to be proxies of wealth. For the CFSNS, three indices were used to calculate the wealth index. These include types of household assets owned, types of sanitation facilities used and main components of dwelling homes (it does not matter whether the homes/houses were rented or owned). Households were ranked according to the wealth index and then divided into quintiles, which are used for comparisons of relative wealth between groups.

There is a relationship between the wealth quintiles and food security situation among households. In the poorest wealth quintile, the proportion of households who are food insecure is highest with 31% compared with 7% in the wealthiest index (Figure 3). There are noted significant disparities in wealth between the urban and rural dwellers across the country. Households in the poorest wealth quintile are disproportionately located in rural areas (23%) as compared to urban areas (2%). Slightly more than half (58%) of the households in the richest wealth quintile are located in the urban areas. Household heads and members in the urban areas are likely to be holding skilled and salaried jobs as compared to their counterparts in the rural areas.

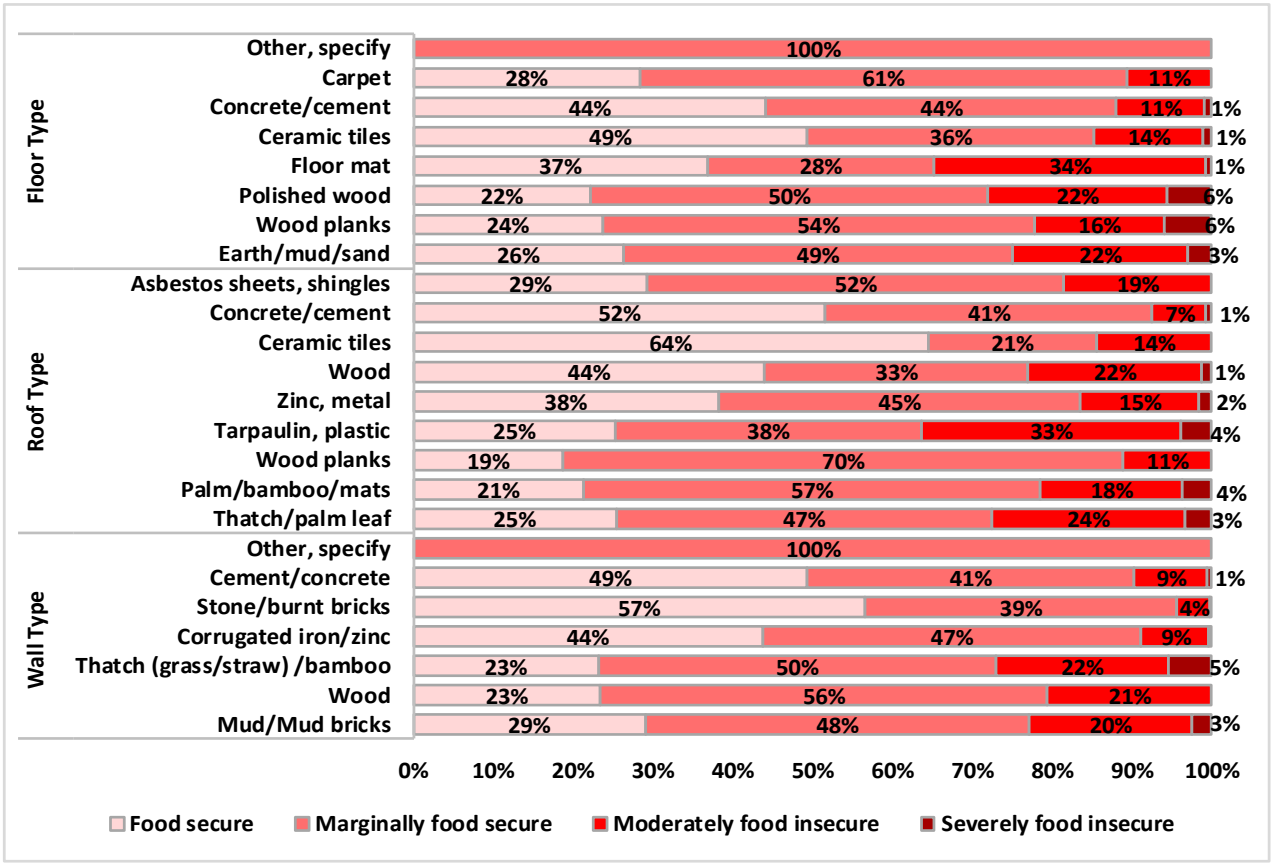
Figure 3: Food Insecurity by Wealth Index, Liberia, 2018



3.1.4.9 Major Components of Dwelling Structures of Households

During the survey, respondents were asked about the main components used to construct their homes. In addition, enumerators observed the physical structures as much as they could see. Physical structures of dwelling homes across the country are mainly constructed from mud and mud bricks (59%) followed by cement/concrete structures (32%). Majority of homes constructed with mud and bricks were reported in River Gee (94%), River Cess (93%) and Grand Kru (93%) counties. Households that reside in poorly built structures are more food insecure compared to households in structures built with concrete. Twenty-three percent of households living in structures built with mud/mud brick are food insecure compared to 10% of those in structures built with concrete/ cement. Similarly, 37% of households living in structures roofed with tarpaulin are food insecure compared to 18% of those who live in structures roofed with zinc/metal (Figure 4).

Figure 4: Food Insecurity by Dwelling Structure Type of Household, Liberia, 2018



3.2 Food Availability

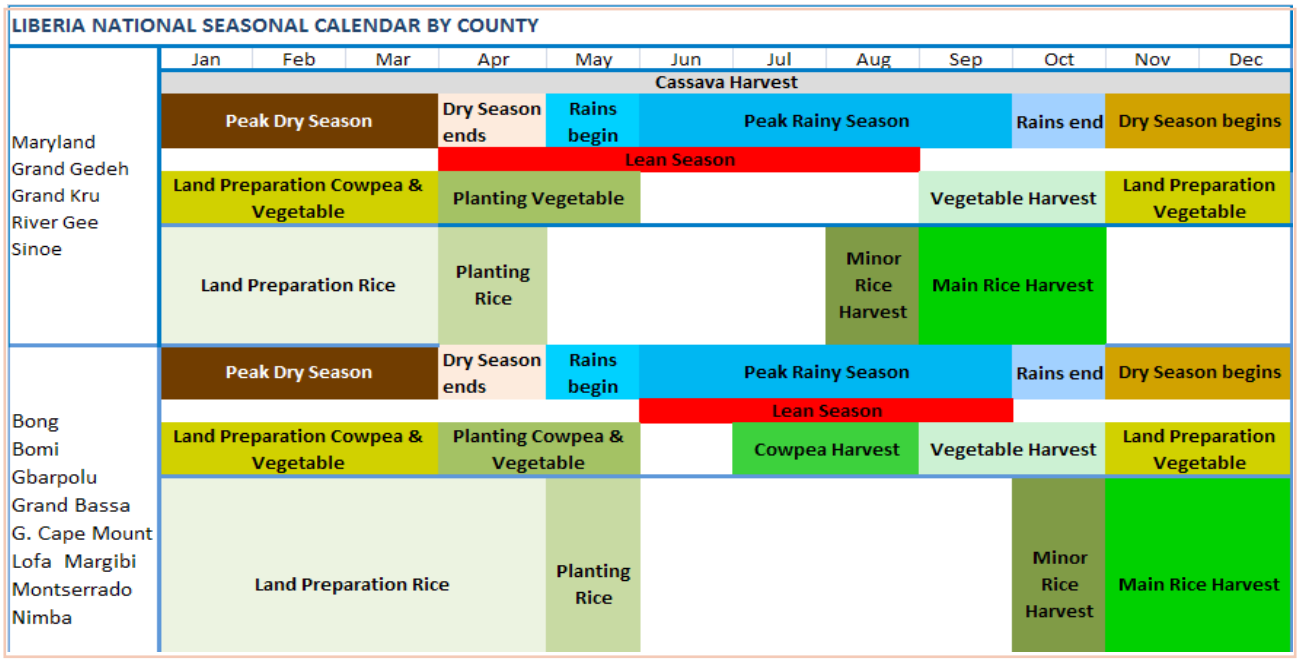
This section will look at amount of food physically available to the households by analyzing crop production, livestock, and fisheries; post-harvest agricultural assets, availability of vegetable gardens and the different roles men and women play in agriculture.

3.2.1 Agriculture, Livestock and Fisheries

3.2.1.1 Crop Production

The Liberia cropping seasonal calendar provides information on the activities that are conducted in the different seasons and when households are likely to have food available and unavailable. The agriculture season in Liberia is mainly rain fed. Generally, each crop has a peak cultivation season that occurs once a year. Variation exists from region to region as to when the period starts and ends, or when it peaks. The South Eastern parts of the country commence their cropping season earlier; they initiate land preparation in January-March and in April they start the planting. The pre-harvest period is expected around mid-July to August with the main harvest period around September to October. The North Western counties have a shorter lean rain season and a delayed harvest period, which commences from November up until December (Figure 5).

Figure 5: Liberia Cropping Seasonal Calendar, Liberia, 2018



Farming is done at a small scale and mainly for household consumption. About 34% of households have access to farmlands as compared to 66% without access. The majority of the farm holders (67%) are in Lofa County and the least are in Greater Monrovia (1%). Of those that have access to farm lands, 68% do not have title deeds to the pieces of land but claim as family plot, while 15% indicated that they were squatters. In the interiors of the country most households rely on communal land.

The absence of title deeds in many instances, however, does not affect smallholder farmers using communal or family plots, and is not a major factor in low productivity and production in households' agricultural activities, which are usually intended for household consumption.

Of the households that practiced farming in the cropping season of 2017, most cultivated an average of 2 acres, and the majority grew cereals/staples composed of rice (64%) and cassava (60%), followed by a variety of vegetables such as a pepper (50%), bitter balls (44%), okra and green leaves (30%) often used as soup kinds.

The rice produced in Liberia is predominantly upland rice, using mostly slash-and-burn or subsistence farming practices. Majority (60%) of the households across the country planted their rice uplands with exception of households in Greater Monrovia whose rice farmlands are in swamplands. Many households engaged in agriculture cultivated more than one crop in 2017. Nearly half of the households (47%) produced both cassava and rice. Nevertheless, there are some households (22%) that only relied on rice production while 16% does similarly for cassava.

On account of the low production of the nation's staple food, rice, there is a rice deficit at national level. As a way of bridging the deficit, the country has resorted to rice importation (65%), which contribute to heavy reliance on markets as a source of food for many households.

The majority of households (97%) reported using unimproved seeds while about 60% used local seeds.

A small number of households (4%) used some form of fertilizer (chemical 3% and organic 1%). At the same time there were also a small number of households that used pesticides and herbicides (2%).

The limited access to improved seeds, herbicides and fertilizers is likely to limit the amount of harvest to be expected by the households and expose the crops to pests.

The use of unimproved seeds is justified by main source of local seeds, which was reported to be from own production by 46% of the households. While households that had indicated the use of improved seed, 46% of these households had bought the seeds from the market.

3.2.1.2 Livestock

According to the survey results, livestock ownership is very limited in Liberia (Table 6). On average, households did not own cows, which may contribute to limited availability of and access to milk, a particularly nutrient-dense food item for both adults and children. The lack of milk in the household diet is also confirmed by the results of the dietary diversity module. Small ruminants like goats and sheep are more common in Liberian households than cattle; however, ownership is still considered low. On average, households own one goat. By contrast, chickens were owned by majority of the households, with an average of nine per household.

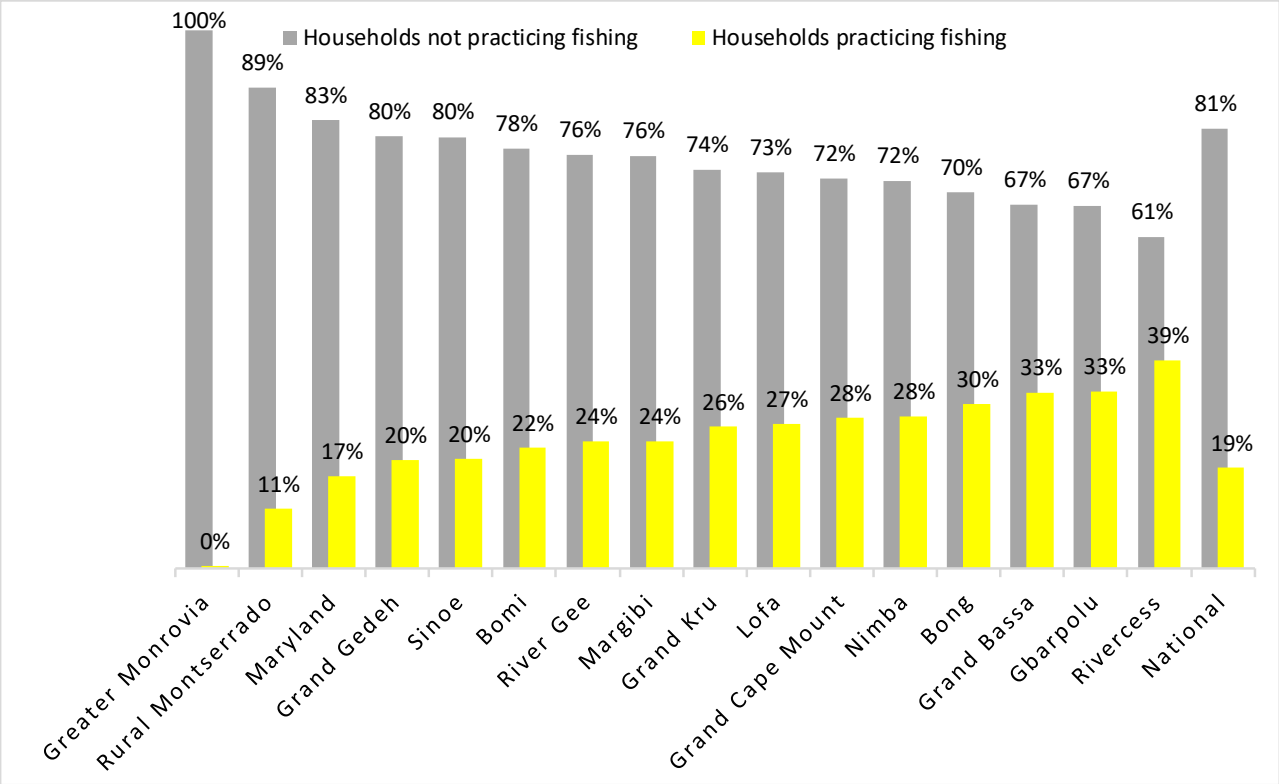
Table 6: Distribution of Livestock per Household by County, Liberia, 2018

	Cattle	Goats	Sheep	Pigs	Chickens	Ducks
County	**Average number of animals per household**					
Bomi	0	0	0	0	7	1
Bong	0	0	0	0	9	1
Gbarpolu	0	0	0	0	11	1
Grand Bassa	0	0	0	0	8	0
Grand Cape Mount	0	1	1	0	8	1
Grand Gedeh	0	2	1	0	10	1
Grand Kru	1	2	0	0	7	0
Lofa	0	1	1	0	10	1
Margibi	0	0	0	0	9	1
Maryland	0	1	0	0	7	0
Rural Montserrado	0	0	0	0	8	0
Nimba	0	2	1	1	8	1
River Gee	0	2	1	0	9	1
River Cess	0	1	0	0	8	1
Sinoe	0	2	1	0	9	1
Greater Monrovia	0	0	0	1	13	1
Total	**0**	**1**	**0**	**0**	**9**	**1**

3.2.1.3 Fisheries

Fishing is likely to increase the sources of food for households and can positively impact the food security situation of the households. Fish serves as a noteworthy source of animal protein in Liberia; however, most households (81%) do not practice fishing. Almost three quarters of the households that practiced fishing sourced their fish from creeks or streams, with a higher proportion of these households located in River Cess (39%) followed by Gbarpolu (33%) and Grand Bassa (33%) counties (Figure 6).

Figure 6: Distribution of Households Practicing Fishing by County, Liberia, 2018



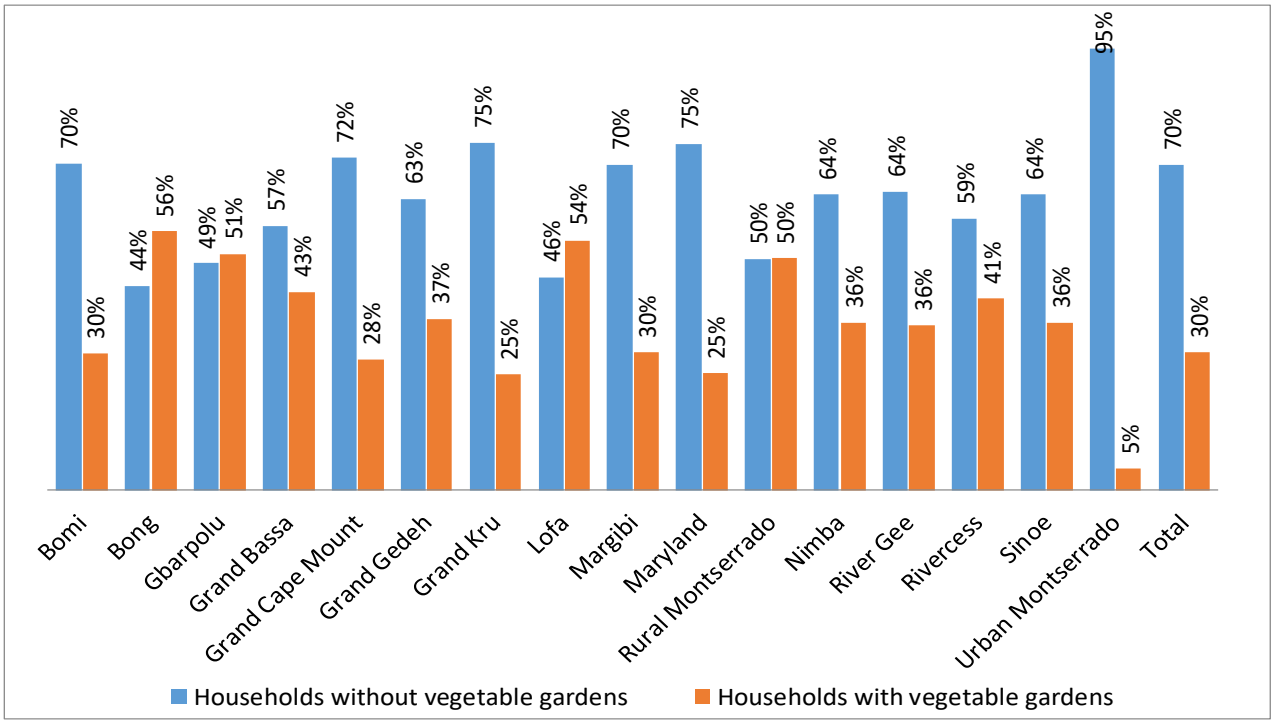
3.2.2 Post-Harvest Agricultural Assets

The assessment investigated if communities had post-harvest equipment and if households had access to the equipment. While there might be enough cassava production at household level, high pre-and post-harvest losses coupled with crude processing techniques contributes to overall low output. This is evident in the assessment, which found few households with post-harvest agriculture assets. Availability of drying floors was limited in most towns, with only 13% of the households indicating availability of a drying floor in their village/towns. Slightly more than half (57%) of the households with drying floor in their towns reported having access to these floors. There are limited storage facilities across the country, with only 6% of communities reporting having storage facilities. Slightly more than one-third (36%) of households in those communities reported having access to these facilities. Further, rice mills were reported by 24% of the communities, and 64% of the accessed households being able to access the rice mills.

3.2.3 Availability of Vegetable Gardens

In order to supplement the farm produce, 30% of the assessed households had a vegetable garden. Most of the households that had vegetable gardens were located in Bong (56%) and Lofa counties (54%), while the lowest proportion was seen in Greater Monrovia County (5%) (Figure 7). A major constraint reported by households in urban areas such as Greater Monrovia was lack of land. Having a vegetable garden is likely to increase household consumption of fruit and vegetables, thereby improving the nutrient content of their diet.

Figure 7: Availability of Vegetable Gardens in Households by County, Liberia, 2018



3.2.4 Different Roles of Women, Men, Girls and Boys in Agriculture

Communities indicated that men, women, boys, girls and children regularly perform certain tasks in agricultural production. They reported that men and boys are usually involved with spots, brushing, felling trees, burning, clearing and fencing. Women, girls and children were involved with scratching, weeding, harvesting, and cooking. It is however important to note that communities did not indicate that these roles are strictly assigned to any specific group of persons, but rather these tasks are interchangeably done by all individuals.

For example, in the case of the South East counties, women are likely to engage in brushing, felling trees, burning, clearing and fencing because men are also engaged in gold mining and some hunting. On average, one child below the age of 18 was involved in household farming activities and this picture was also similar among males and females above the age of 18.

3.3 Food Access

This section discusses households' access to food. Households' access to food is defined by the physical and economic ability of household to acquire adequate amount of food regularly. In this section, we will look at the exchange rate, the prices of rice, fuel and other essential commodities; terms of trade, market availability, household food expenditure and sources of food. These are basic determinants of households' access to food.

3.3.1 Markets in Liberia

The Liberian markets have been volatile in terms of prices of basic goods and services over the period 2015-2018. Some of the key indicators that have bearing on food security are discussed in this section as below.

3.3.1.1 Exchange Rate

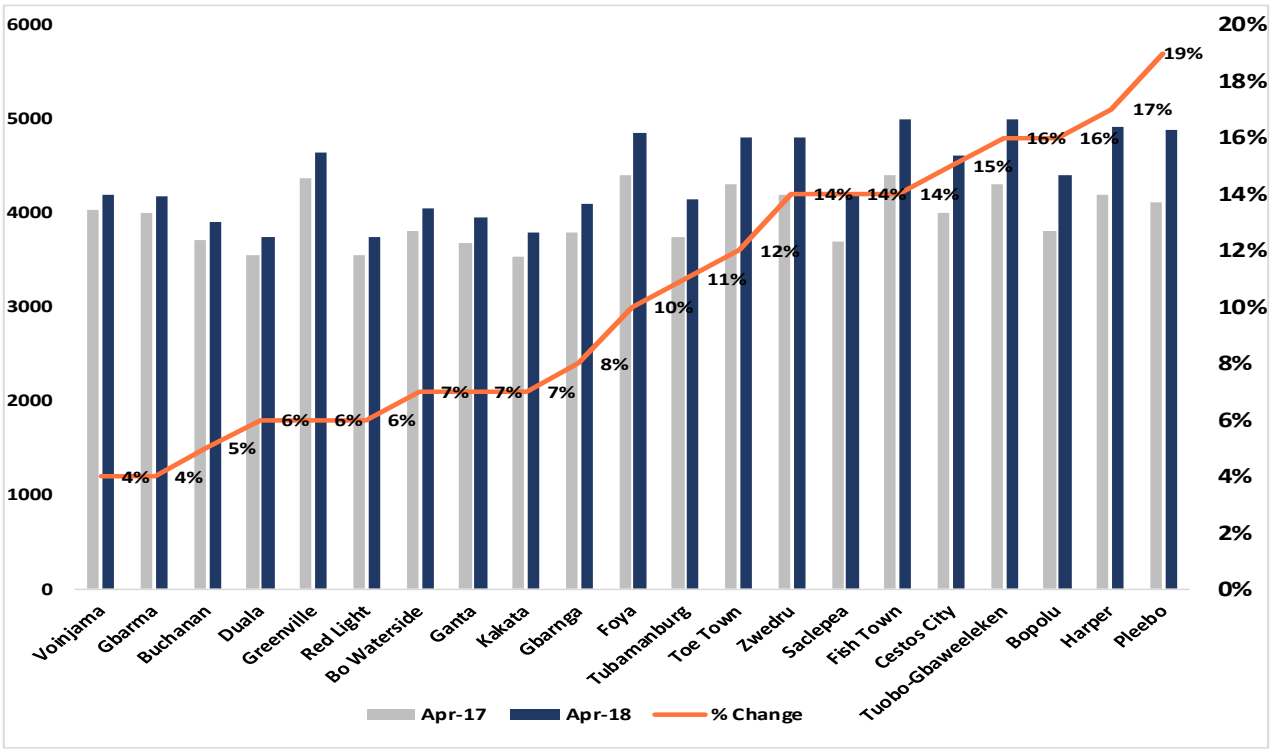
Liberia uses dual currency, the Liberian Dollars (LRD) and the United States Dollars (USD). The Liberian dollar is increasingly depreciating against the US dollar. The nominal exchange rate in the month of July 2018 was 1 USD: 152.56 LRD. There is a 57.1% change in the exchange rate compared to the same period last year. According to WFP data Viz website, Liberia is being considered a hotspot because the current exchange rate is 2 standard deviations above its 5 year-average. The US dollars is a major determinant of the prices of basic goods and services. As the US dollar appreciates against the Liberia dollars, the prices of basic goods and services increase, usually in a dramatic manner that seriously impedes households' ability to access adequate quantity of food.

3.3.1.2 Rice Price

Prices of most food items have been steadily increasing, and currently domestic prices are substantially higher than pre-Ebola levels.

The Central Bank annual report (2017) highlights an increase from single digit (8.8%) in 2016 to double digits (12.4%) in 2017 (Central Bank of Liberia, 2017). Moreover, despite the relatively stable global rice price increase, domestic rice prices are spiking, with the prices of imported rice having risen as high as 19% in Pleebo market, 17% in Harper market and 16% in both Bopolu and Tuobo-Gbaweeleken markets in the last one year (Figure 8). Overall, in the month of April, the average domestic retail prices of rice were 11% higher than the same period in 2017 and considerably higher (58%) than the same period in 2013. Traders expect further rises in food prices towards the lean season (demand shifting to imports) as price of fuel continue to increase.

Figure 8: Nominal Price Changes for a 50Kg bag of imported rice-April 2017-April 2018, Liberia, 2018



A review of the Liberia market information System (LMIS) for the period of April 2018 shows that the south-eastern parts of the country, represented by Fish Town, Harper, Pleebo and Zwedru are the most unstable places to buy rice, which in turn tends to heighten food insecurity amongst the households that rely on these markets. The central belt of the country represented by Red Light, Duala, Ganta, Kakata and Gbarnga markets shows relative price stability for rice in 2018.

3.3.1.3 Domestic Fuel Prices

Fuel prices have also increased by at least 30% in majority of the domestic markets—with prices extremely higher in markets far from Monrovia. Foya market in Lofa county reported increase in domestic fuel, a 52% rise in April 2018 compared to April 2017. Both markets, Kakata in Margibi County and Barclayville in Grand Kru County reported a 46% increase in percentage change compared to the same period last year. This is likely to increase the cost of transportation for food and other basic commodities.

3.3.1.4 Prices of other Basic Commodities

In addition, prices of some basic commodities such as palm oil and charcoal have both faced an average percentage increase of 18% in the last year. Reasons associated with these increases are depreciating local currency against the US dollars, increased costs of transport due to fuel price increase, low production and the high inflation rate.

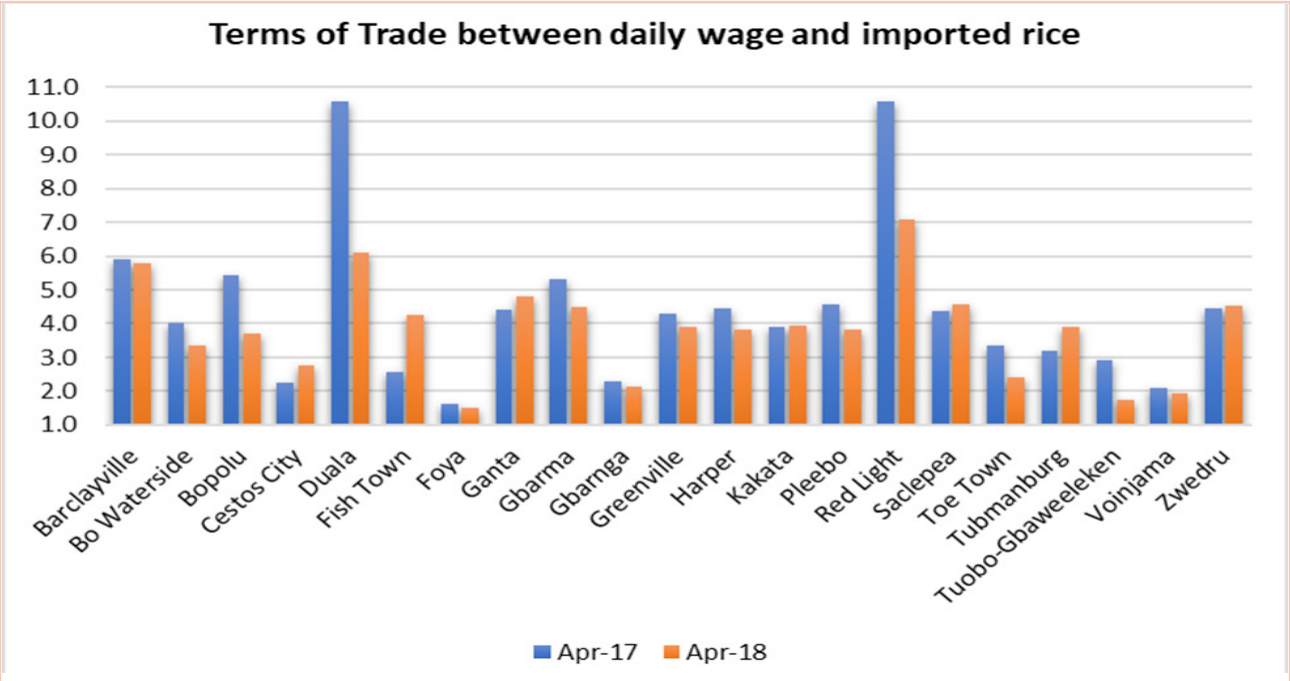
3.3.1.5 Declining Terms of Trade for Casual Labourers in Main Markets of Liberia

The terms of trade (ToT) reported here reflect the amount of rice in kilograms that households may purchase in exchange for earnings from their daily work either in construction (Red Light, Duala and Buchanan markets) or in agriculture (currently, planting which is primarily undertaken by women), which is projected in the rest of the markets. According to the assessment, labour – rice terms of exchange have declined in all major markets across the country. For example, in Bopolu, one-day casual labour would buy 5.4 kg of rice in April 2017; while in April 2018, it could buy just 3.7 kg of rice (Figure 9).

Since Duala and Red Light markets are in the capital city of Monrovia, the ToTs mainly focus on construction labour and not agricultural labour.

The ToT in these markets was more exacerbated than that seen in the rural markets. In either of these markets, one-day casual labour would buy 10.6 kg of rice in April 2017, but in April 2018, it can only afford the labourer 6.1 kg of rice.

Figure 9: Terms of Trade between Daily Wage and Imported Rice (kgs)



Source: A review of the Liberia Market Information Statistics, April 2018, LISGIS

3.3.1.6 Market Availability in Liberia

The assessed communities across the country indicated irregularity of markets, with the exception of Nimba and Greater Monrovia counties. Trading within the different counties is active with seven counties that have more than ten communities indicating availability of daily markets. Majority of these markets sell mostly produce from their farms or gardens, which is mostly starches, greens and fruits. The rest of the counties have scarcity of daily markets or weekly markets. Unavailability of daily and weekly markets is likely to limit majority of the communities' dietary diversity. Most of the wholesalers in the southeast parts of the country and some households were already hoarding food stuffs in their warehouses, in preparation of the rainy season since majority of the roads will be impassable during this period. These wholesalers and traders are likely to wait and release their stocks during the rainy season with inflated prices due to high demand of the limited products. Unfortunately, many communities reside far from the nearest markets, and this makes them less likely to buy fresh, perishable foods because they visit the markets less often.

3.3.2 Household Food Expenditure

The food expenditure share is an indicator of food security. It is widely believed that poor households are likely to have a large food expenditure share compared to wealthier households.

Because their incomes are small, poor households usually predominantly direct their incomes towards food in the first instance before other non-food items. This observation is referred to as the Engel's law. The law clearly highlights the exponential relationship between income's rise within a household and the increase in food expenditure.

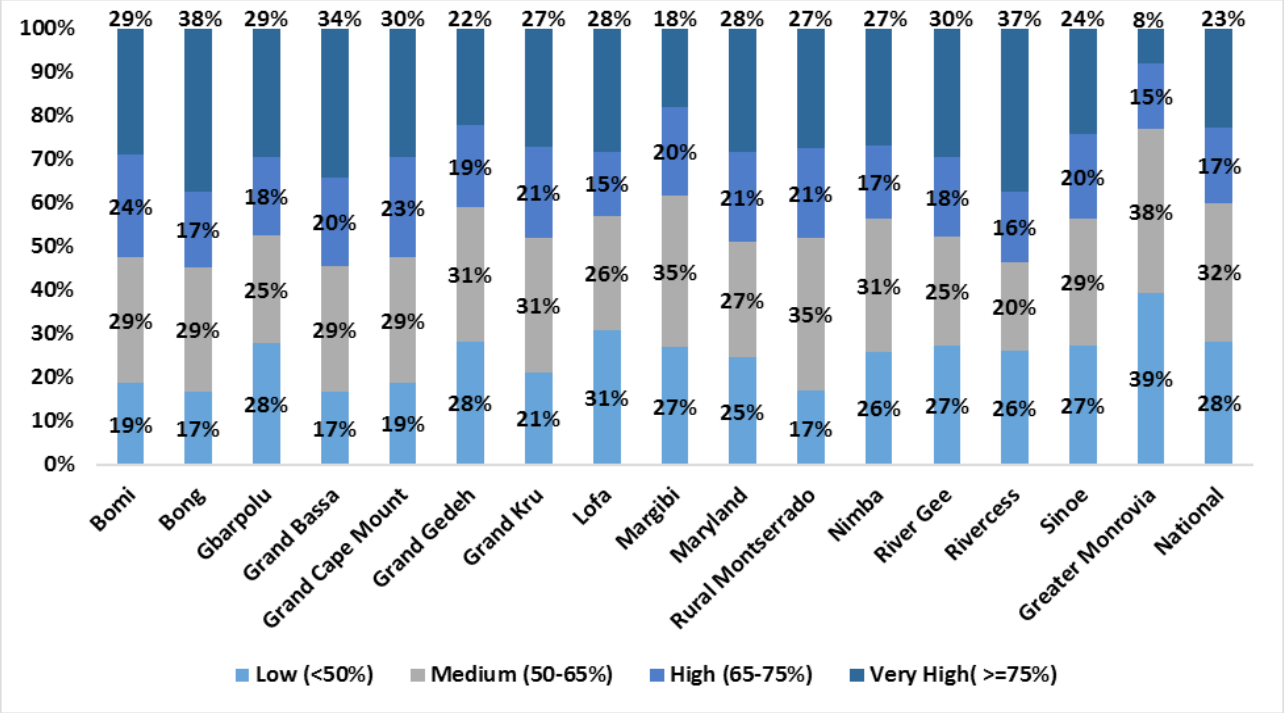
The findings reveal that 40% of the assessed households spent 65% and above of their incomes on foods. The highest number of households (55%) spending 65% and above of their income on food was seen in Bong county, followed by River Cess and Grand Bassa counties (both 54%) and Bomi County (53%). The least number of households with high and very high expenditure share (pending 65% or more of their income on food) were located in the large urban areas like Greater Monrovia with 23% and Margibi with 38% (Figure 10).

Households spending high to very high percentage of their incomes on food are more vulnerable to food insecurity as they are left with minimum disposable income for other non-food related needs.

There is a steady increase in the number of households that have a high food expenditure share since 2015. In 2015, 25% of the assessed households were spending more than 65% on food. This is largely attributed to the depreciating local currency against the US dollars, increased costs of transport because of fuel price increase.

Considering the lean season, food stocks are likely to be exhausted, leading to increase in the prices of food and basic commodities, as well as decreased terms of trade, resulting in an increase in the number of food insecure households and the rates of malnutrition.

Figure 10: Distribution of Household Food Expenditure by County, Liberia, 2018



3.3.3 Food Expenditure Share by Wealth Quintile

Forty four percent of households in the richest wealth quintile are located in the low food expenditure category followed by 38% who are located in the medium category. And households with food expenditure share 65% and above are mainly located in the lower middle (42%) and poorest (39%) categories (Table 7). This finding conforms to the Engel's law which states households within the richest category have a low food expenditure share compared to households within the poorest category who have the highest number of households with a high and very high food expenditure share.

The households within the poor category are already resources constrained thus an increase in the prices of food commodities is likely to increase their share on food items or resorting to coping strategies of buying the less preferred food of which most of these households are likely to be employing already.

Table 7: Wealth Index by Food Expenditure Share, Liberia, 2018

Food Expenditure Share	Wealth Index Quintiles				
	Poorest	Lower middle	Middle	Upper middle	Richest
Low	8.9%	10.1%	16.1%	19.9%	44.9%
Medium	10.2%	12.1%	17.1%	21.7%	38.9%
High	14.4%	17.0%	20.5%	22.1%	26.1%
Very High	25.0%	25.4%	21.4%	15.8%	12.4%
National	**13.9%**	**15.4%**	**18.4%**	**19.9%**	**32.4%**

In addition, food secure households hardly spent more than 65% on food expenditure, and the opposite is true for households that are food insecure (Table 8).

Table 8: Food Security Console by Household Food Expenditure Share, Liberia, 2018

Food Expenditure Share	Food Security Console			
	Food secure	Marginally food secure	Moderately food insecure	Severely food insecure
Low	67.1%	23.2%	9.8%	0.0%
Medium	54.7%	35.8%	9.1%	0.4%
High	0.0%	79.3%	19.2%	1.5%
Very High	0.0%	63.6%	30.1%	6.3%
National	**36.3%**	**46.1%**	**15.8%**	**1.8%**

3.3.4 Sources of Food

This section describes the relative importance of specific food sources (such as own production, market purchases, gifts, etc.) amongst the population. As a note, sources of food as an indicator are not reflective of the quantities of food consumed by the households. The assessment found that a greater proportion of households (81%) rely on markets as a source of food compared to the other sources of food. The highest number of households relying on markets are located in Greater Monrovia (96%), Margibi (87%) followed by Rural Montserrado (84%). Nationally, the second most prominent source of food is own production, seated at a distant 11%, and gifts from friends and relatives at 4%.

With increased income from petty trade, households are able to diversify their diet (more staple and non-staple foods) and purchase nonfood items. Own production is reportedly higher in food insecure households as compared to their food secure counterparts. In addition, gifts from friends and relatives are an accepted coping option employed by food insecure households. Consequently, about 8% of severely food insecure households rely on gifts as a source of food.

3.4 Food Utilization

Food utilization is an important component of food security and an embodiment of the end process of the availability and access to food. It can influence and can be influenced by several factors including food consumption, the environment and physiological processes. This section will discuss food consumption, intake of macro and micro nutrients, dietary diversity, access to health facilities and cultural taboos affecting nutrition.

3.4.1 Food Consumption and Dietary Diversity

Food consumption score(FCS) is a score calculated based on a seven-day recall period using the frequency of consumption (in days) of different food groups consumed by a household. Households are classified into three Food Consumption Groups (FCG) based on the following scores: Poor Food Consumption (FCS≤28); Borderline Food Consumption (28.5≤FCS≤42); and Acceptable Food Consumption (FCS>42)[2]. Those with poor and borderline food consumption are together described as having inadequate food consumption.

[2] In the case of Liberia, thresholds that cater for high consumption of oil were used.

Most of the assessed households recalled eating two meals per day for both children and adults at 52% and 64%, respectively. Quality and quantity remains the biggest impediment to some of the assessed household. Households that frequently consume a wide variety of foods (from different food groups) are likely to be more food secure than households that rely only on less diversified foods.

The 2018 CFSNS reveals that of the surveyed households, 20% have inadequate food consumption score (11.7% categorized as borderline and 8.3% being poor). On average, Liberian households consumed starches 7 days in the week before the survey; meat 6 days; and vegetables and oil 5 days in the past week. By contrast, consumption of dairy and pulses was found to be very low, with the average household consuming each food type on just one day in the past week. Fruit consumption was also found to be low, with the average household consuming fruit on just two days in the past week.

When disaggregated by household consumption pattern, the most notable difference between households with acceptable food consumption and those with borderline or poor consumption was in meat intake – on average households with acceptable food consumption ate meat 7 days in the past week, while households with borderline and poor consumption ate it 3 days and 1 day respectively in the past week (Table 9). Households with borderline and poor food consumption patterns also tended to eat no pulses or dairy (compared to 1 day in the past week in households with acceptable food consumption), and on average ate vegetables only 4 days in the past week and fruits on just 1 day in the past week (compared to 5 days and 2 days in the past week respectively in households with acceptable food consumption).

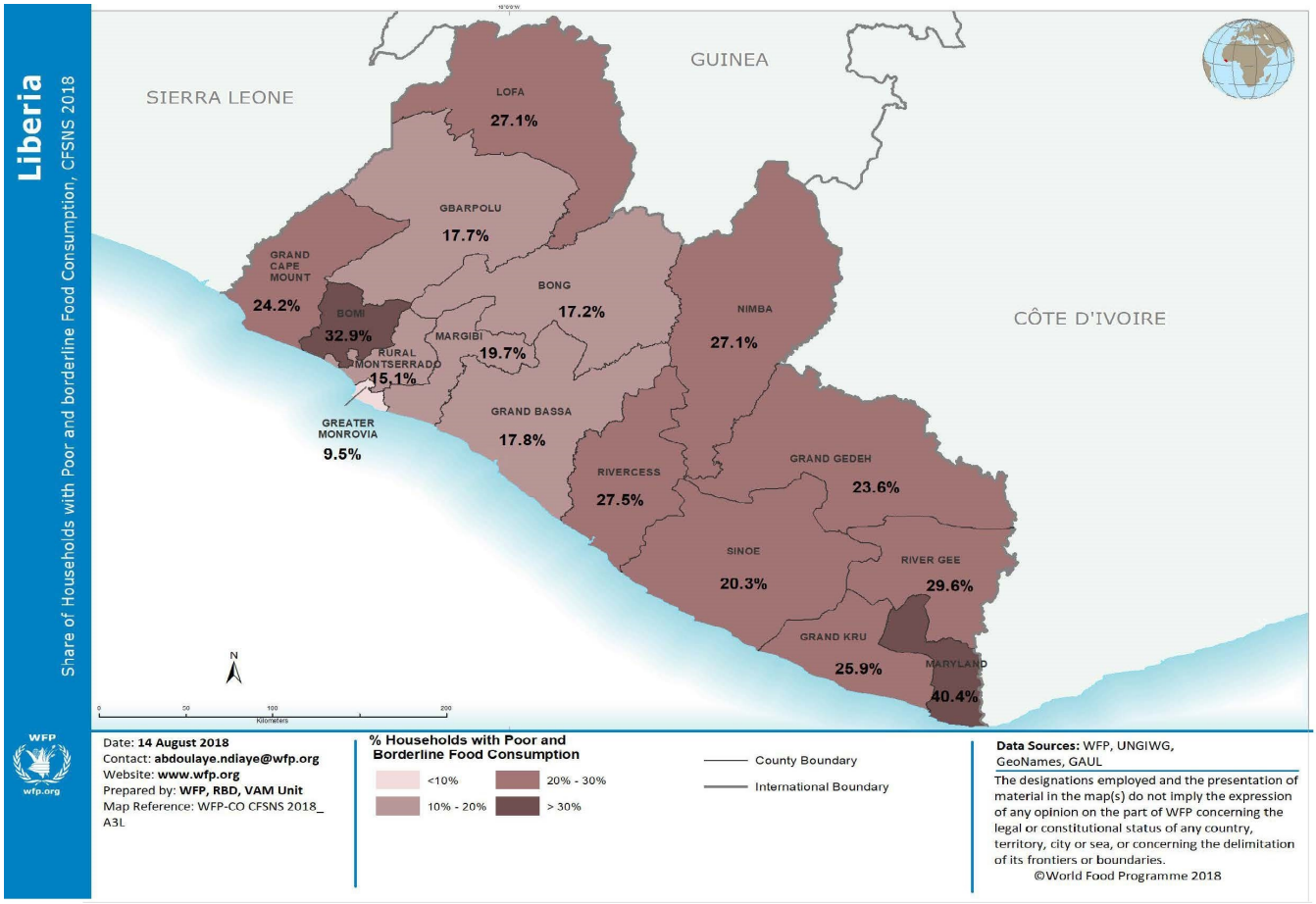
Table 9: Food Consumption Score by Food Groups, Liberia, 2018

Food Consumption score	Starches	Pulses	Vegetables	Fruits	Meat	Diary	Oil	Sugar
Acceptable	7	1	5	2	7	1	6	2
Borderline	7	0	4	1	3	0	4	0
Poor	6	0	4	1	1	0	4	0
National	**7**	**1**	**5**	**2**	**6**	**1**	**5**	**1**

The highest proportions of households with inadequate food intake were reported in Maryland (40%), Bomi (33%) and River Gee (30%) counties (Map 3).

Maryland (16%) and River Cess (15%) reported the highest proportions of households in the poor food consumption category. By contrast, Greater Monrovia has more than 90% of the assessed households with acceptable diet. This observation could be attributed to the types of income sources in Monrovia as the majority of the household heads have reliable, salaried jobs, as well as greater access to a variety of produce and products in the markets. Markets in other counties and rural markets have a less diversified consignment of food products; consequently, this can limit the consumption patterns of these households.

Map 3: Distribution of Food Consumption Score by County, Liberia, 2018



Household dietary diversity score (HDDS) is a reflection of the number of different food groups consumed by a household or individual over a given period of time. The CFSNS 2018 used a 24-hour recall period to assess the consumption of 12 different food groups by the households. Findings pointed out that majority of households (56%) in Liberia had diversified food consumption (i.e. consumption of more than four food groups) in the last 24 hours before the survey.

However, 18% and 26% of the assessed households had low and medium diversity in their diets, respectively. High prevalence of poor intake of diversified food groups is evident in River Gee (34%), Grand Kru (31%) and in Maryland (26%) counties.

3.4.2 Macro and Micronutrient Consumption

Macro and micro nutrients are essential vitamins and minerals needed by the body for its proper functioning. Most of the vitamins and minerals are available in the food we eat, depending on the type and combination of the food making up our diet. The survey assesses the intake of three macro and micronutrients as explained in the following sections.

3.4.2.1 Food Consumption Score Nutrition (FCS-N)

The Food Consumption Score Nutritional Quality Analysis (FCS-N) is a tool used in the survey to understand the nutrient gaps at household level.

The analysis fills the gap at household level and attempts to improve the link between household food access, consumption and nutritional outcomes. The analysis investigated the consumption of three key macro- and micronutrients – protein, vitamin A and iron – which is computed from the food consumption data (7-day recall period).

The FCS-N analysis found a high proportion of households (75%) that consumed foods rich in proteins, not surprising since the average Liberian household reported eating meat 6 out of the past 7 days. Interestingly, there is high consumption of iron products in Liberia that is attributed to the fact that most households especially in the rural areas consume large quantities of "bush meat" because there is little livestock raring in Liberia hence people rely on bush meat as source of iron.

However, the results found widespread low Vitamin A consumption among the most food insecure households, raising some cause for concern. About 45% of the assessed households have a low daily consumption of foods rich in Vitamin A. Despite the availability of green leafy vegetables most households are not consuming them daily. Vitamin A foods are essential for growth and development especially in young children and also for the immune system.

Table 10: Household Food Consumption Score Nutrition (FCS-N) by County, Liberia, 2018

	Heme-Iron Category			Protein Category			Vitamin A Category		
	0 days	1-6 days	7 days	0 days	1-6 days	7 days	0 days	1-6 days	7 days
County					Percent				
Bomi	8.7	37.6	53.7	6.2	35.8	58.0	6.2	71.4	22.4
Bong	8.5	26.3	65.3	4.4	23.7	71.9	1.7	52.1	46.2
Gbarpolu	7.3	27.4	65.2	2.1	27.4	70.5	.5	67.8	31.7
Grand Bassa	8.0	24.7	67.3	3.7	22.5	73.8	2.5	62.0	35.5
Grand Cape Mount	9.9	25.4	64.7	4.1	27.1	68.8	2.8	46.9	50.3
Grand Gedeh	4.5	33.9	61.5	2.2	29.1	68.7	3.4	72.5	24.1
Grand Kru	6.9	25.4	67.8	5.1	25.0	69.9	18.0	57.2	24.8
Lofa	13.4	32.1	54.5	7.8	31.8	60.3	5.4	43.7	50.9
Margibi	4.0	22.9	73.1	2.7	19.8	77.5	3.9	64.6	31.4
Maryland	8.3	43.7	48.1	4.8	40.8	54.4	13.0	67.5	19.6
Rural Montserrado	10.0	15.6	74.3	5.6	14.1	80.3	1.7	53.2	45.1
Nimba	9.4	26.3	64.3	7.0	26.4	66.6	7.1	58.1	34.8
River Gee	5.8	33.6	60.6	4.9	31.4	63.7	13.0	53.7	33.2
River Cess	13.7	24.9	61.4	9.4	26.8	63.8	5.4	52.0	42.6
Sinoe	3.4	22.8	73.8	2.9	19.2	78.0	7.4	70.1	22.4
Greater Monrovia	7.2	10.7	82.1	2.9	8.4	88.7	.4	33.4	66.2
National	**8.1**	**22.7**	**69.2**	**4.4**	**21.1**	**74.5**	**3.9**	**50.8**	**45.3**

Despite generally considerable consumption of these three key macro and micronutrients nationally, there are pockets of households that are failing to consume the three key macro- and micronutrients. For example, in Lofa, Rural Montserrado and River Cess counties, 13%, 10% and 14% of households, respectively, have not consumed iron in the past 7 days (Table 10). Lofa (8%), Nimba (7%) and River Cess (9%) also have the highest number of households who never consumed proteins. High proportions of households that did not consume Vitamin A foods in the past 7 days were located in Grand Kru (18%), Maryland and River Cess counties (13% each). Food insecure households have a less balanced diet. Hence majority of them consume a lopsided diet with mainly staples- rice and tubers, few days on meat and vegetable consumptions. Table 10 shows that inadequacy of macro and micronutrients in proteins were extremely evident in households that are food insecure with 99% (81% in the moderately food insecure category and 19% in the severely food insecure category). A diet of this type is clearly lacking in sufficient nutrition and people in those households would be expected to suffer from micronutrient deficiencies. As seen in Table 10, 69.2% of the assessed households ate iron rich diet during the week before the survey, while 74.5% consumed a diet with protein-rich and 45.3% with Vitamin A rich sources.

3.4.3 Health Facilities

Healthcare is not equally accessible across the country, with households in urban areas often able to choose from a variety of healthcare facilities (private and public), while households in rural areas struggle to have access at all. A total of 473 communities representing 70.3% of the 673 communities assessed through the community focus group discussion do not have a functioning clinic. Grand Bassa (92.5%), Bong (90.7%), Bomi (88.7%), River Cess (86.4%), Rural Montserrado (82.5%) and Grand Cape Mount (79.2%) are counties with highest number of communities without functioning clinic (Table 11). Of the communities that have functional clinics, majority of these clinics receive their supplies and support from the Government. Counties with larger urban areas like Greater Monrovia, Margibi and Maryland have a fair share of the medicinal supplies and support from the private sector or donors. Thus, this is likely to lead to lower access to proper medication and an increased distance one has to travel in search for proper medication, which, when combined with cost, disproportionately affects poor households.

Further, this can lead people to resort to traditional healers/medication or “black baggers”, unlicensed people who sell medicines on the streets, compromising the quality of the drugs and proper administration of medication.

The geographical distribution of clinics has led most communities to travel for more than an hour to the nearest available clinic, but there are also communities that travel more than three hours to the nearest health centre, most of which are located in River Cess and River Gee counties.

The reason as to the long hours of travelling to the nearest clinic in these counties is attributed to poor and inaccessible motorable roads– indeed, the highest numbers of communities that did not have access to roads were found in River Cess and River Gee – meaning there are likely to be issues with transportation to the nearest clinic leaving people to walk for longer distance. Unfortunately, the inaccessibility and impassibility of these roads will further be exacerbated during the rainy season, further increasing the number of hours travelled or even forcing people not to visit health facilities.

Table 11: Distribution of Functional Clinics by County, Liberia, 2018

Geographical Unit	Availability of a functioning clinic in the community		Total
	Yes	No	
Bomi	4	35	39
	10.30%	89.70%	100.00%
Bong	4	39	43
	9.30%	90.70%	100.00%
Gbarpolu	11	35	46
	23.90%	76.10%	100.00%
Grand Bassa	3	37	40
	7.50%	92.50%	100.00%
Grand Cape Mount	10	38	48
	20.80%	79.20%	100.00%
Grand Gedeh	18	28	46
	39.10%	60.90%	100.00%
Grand Kru	18	19	37
	48.60%	51.40%	100.00%
Lofa	18	22	40
	45.00%	55.00%	100.00%
Margibi	18	26	44
	40.90%	59.10%	100.00%
Maryland	16	30	46
	34.80%	65.20%	100.00%
Rural Montserrado	7	33	40
	17.50%	82.50%	100.00%
Nimba	11	31	42
	26.20%	73.80%	100.00%
River Gee	10	31	41
	24.40%	75.60%	100.00%
River Cess	6	38	44
	13.60%	86.40%	100.00%
Sinoe	21	23	44
	47.70%	52.30%	100.00%
Greater Monrovia	25	8	33
	75.80%	24.20%	100.00%
Total	**200**	**473**	**673**
	29.70%	**70.30%**	**100.00%**

3.4.4 Water Sanitation and Hygiene (WASH)

Water, Sanitation and Hygiene (WASH) is an important determinant of health and speaks to the dignity and fulfilment of the rights of the population. The three concepts are closely intertwined and all carry direct implications for the transmission of food- and water-borne diseases, which can lead to diarrheal disease and increased risk of malnutrition due to restricted absorption of nutrients by the body.

For example, households and communities with poor sanitation facilities and greater reliance on unsafe water facilities are more at risk of water-borne diseases especially during the rainy season when the improperly disposed stool is likely to be washed into creeks/streams and unprotected wells where the poor communities or households collect water for domestic use. As such, the status of WASH at household and community levels has serious implications on the nutrition status of the population, particularly children under five, as their immune system is not formidable enough to withstand and combat some of the diseases associated with lack or limited access to adequate sanitation and safe drinking water.

3.4.4.1 Sources of water and time taken to water source

Overall, more than half of the assessed households (58.5%) rely on protected wells with hand pumps, while 13% of the assessed households rely solely on unprotected water sources (river/creek/stream) and 7% that depend on unprotected wells and springs. By urban/rural locality, 23% of rural households rely on unprotected water sources (river/creek/stream) compared to just 1.2% of urban households; while by county, bigger disparities are seen, with a large proportion of households in River Cess (48%), Grand Bassa (42%), Sinoe (34%), Gbarpolu (22%) and Bong (21%) counties relying on rivers/creeks/streams as their primary source of domestic water.

Obtaining household water from unprotected sources predisposes these households to acute diarrheal illnesses. Often, if these cases are not handled well they are likely to lead to chronic diarrhea, which is linked to chronic malnutrition.

About 21% of the households spend a substantial amount of time walking to fetch water on a daily basis, thus reducing their time to engage in other activities. About 21% of the assessed households spend more that 15- 20 minutes going to and fro to fetch water. Most time spent fetching water was experienced by households in Grand Kru (23%), Lofa (25%), River Cess (22%) and Nimba (20%) counties. These households spent more than 15- 20 minutes of their time fetching water.

3.4.4.2 Sanitation

About 38% of the households do not have access to adequate and appropriate toilets, while about 5% use traditional pit latrines that are not covered. Out of the 38% of the households that do not have access to toilet facilities, 77% are located in River Cess county followed by Grand Bassa and Gbarpolu counties with 73% and 71%, respectively. Bomi, Sinoe and Bong counties had 68%, 67% and 62% of households that did not have access to toilet facilities, respectively.

Access to improved sanitation is limited and poor amongst households in rural settings, with more than half of the assessed households who live in the rural areas (58.7%) without access to toilets, while only 13% of the urban dwellers lack access to toilets. Such conditions are likely to make individuals susceptible to poor food utilization.

3.4.4.3 Disposal of faecal waste

Most of the diseases that affect human beings including children under five can be prevented or minimized if basis hygiene and sanitation rules and practices are observed. Diseases such as diarrhea, typhoid, malaria, etc. can be prevented or minimized if basic hygiene and sanitation practices are followed.

Respondents were asked how they disposed of their children stools. Thirty-two percent indicated that they threw it into garbage the last time their children passed stool, 25% put/rinsed it into toilet, while 17% buried the stool. Another 12% would put/rinse the stool into drain/ditch. It was also identified that open defecation or improper disposal of children's stool is practiced, as 7% of respondents revealed that the stool was left in the open.

3.4.5 Cultural beliefs and practices (cultural taboos) that affect nutrition

Culture plays a strong role in terms of food security through its influence on who eats "what" and "when" and what is considered acceptable for consumption. Commonly practiced cultural norms among some communities in Liberia deprive certain members of the household of consumption certain foods.

These restrictions, usually called taboos, prohibit a person or a group of people from eating certain food or doing certain things. These taboos were mostly applied in River Cess, Grand Cape Mount, Nimba and Bong counties. Greater Monrovia, Maryland, Margibi and Grand Bassa counties reported very little or no such cultural beliefs.

It was observed that these cultural restrictions did not only apply to women and children, but to all genders and age groups with the exception of Bomi county (restrictions apply to women and children), Margibi county (restrictions apply to women only), and Sinoe county (restrictions apply to only children). These limitations are likely to lead to inadequate consumption, or expose certain members of the household to nutrient gaps.

Such practices often result in inadequate diet for the affected. Consequently, malnutrition and consumption of inadequate diet at household or individual level can occur even when food is available, especially when that particular food is perceived by the society or culture as wrong food for a particular group of people.

3.5 Shocks and Coping Strategies

Shocks are inevitabilities that will always occur, particularly in this precarious world of ours when things are getting relatively unpredictable by the day. Households often experience shock that affect their livelihood, incomes, purchasing, and consequently their food security status and malnutrition level. In an attempt to resolve or mitigate the impacts of these shocks, households apply several mechanisms. This section discusses the sources of livelihood, the major shocks experienced by the households and the types of coping strategies employed by them.

Table 12: Distribution of Income Sources by County, Liberia, 2018

County	Sources of Income								
	Agriculture & crop sales	Livestock and livestock sales	Palm wine/ Palm oil/ rubber tapping	Casual labour	Skilled/ salaried labour/ Pension	Sale of natural resources	Petty trading	Remittances /kinship	Others
	Percent								
Bomi	24	0	6	8	8	23	20	8	3
Bong	31	0	16	6	10	8	21	4	4
Gbarpolu	29	0	7	6	6	27	20	3	2
Grand Bassa	26	0	12	7	12	15	23	3	3
Grand Cape Mount	26	0	5	5	11	21	22	7	3
Grand Gedeh	29	1	3	9	12	14	23	7	3
Grand Kru	27	1	7	5	14	22	16	5	2
Lofa	45	0	11	5	9	5	15	6	2
Margibi	14	0	7	13	17	9	29	5	4
Maryland	27	0	9	11	14	8	22	4	4
Rural Montserrado	20	0	5	5	17	16	28	5	5
Nimba	41	1	11	5	11	5	19	5	3
River Gee	33	1	7	5	9	22	15	6	1
River Cess	39	0	12	4	8	18	13	5	1
Sinoe	25	0	5	10	13	18	23	3	3
Greater Monrovia	1	0	0	6	39	0	40	10	5
National	**23**	**0**	**7**	**6**	**19**	**9**	**26**	**6**	**3**

3.5.1 Sources of livelihood

Household livelihood strategies are often complex and include many different sources of income. During the survey, households were asked about their sources of livelihood/income. The findings reveal that the primary sources of income for most households in Liberia are petty trading (reported by 26% of households) and subsistence farming (23%), with only 19% of households reporting their primary source of income as salaried labour (Table 12). Petty trading as the primary source of income increases for households in Greater Monrovia (40%), Margibi (29%) and Rural Montserrrado (28%).

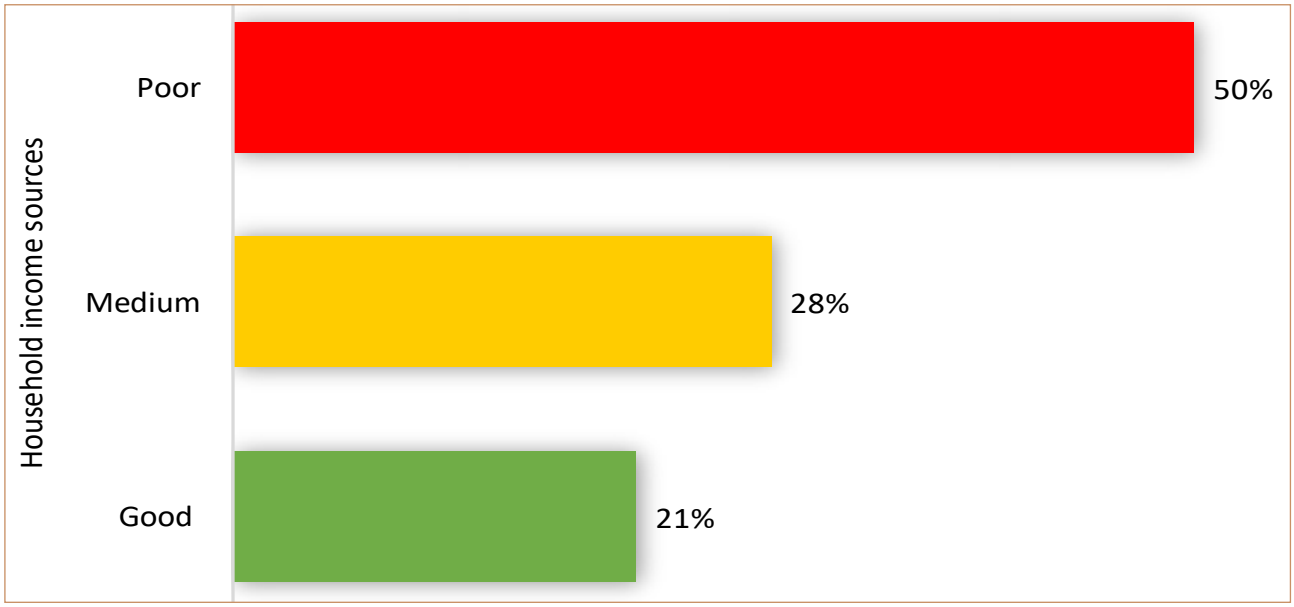
Petty trading is mostly employed in counties that are largely urban areas and that are practicing less of agriculture and crop sales. This could be due to lack or limited established livelihoods in these areas because of the urban bias, thus predisposing these households to unemployment vulnerabilities.

Across Liberia, and particularly in rural areas, farming is an important livelihood activity and a primary income-generating activity through crop sales and agricultural labour opportunities. Agriculture and crop sales were identified as the primary source of income for 45% of households in Lofa, 41% in Nimba, 39% in River Cess, 33% in River Gee and 31% in Bong counties (table 12). The proportion of households that received income from agriculture and crop sales was lowest in the large urban areas such as Margibi (14%) and Greater Monrovia (1%), with the main reasons being lack of land for farming and engagement in other activities such a salaried work.

The reliability and sustainability of households' incomes were assessed. These factors affect food security status of households as their income/livelihood sources influence their access to food. These factors were then used to categorize the households' income sources as poor, medium and good, depending on how sustainable and reliable their incomes sources are. Approximately 51% of the households have unreliable and unsustainable income sources[3], while about one quarter (28%) of these households have reliable sources of income, namely salaried and skilled labour (Figure 11).

The households that have poor and unreliable income sources are likely to further strain their purchasing power, especially for households that rely heavily on markets as their main source of food and income. Majority has attained a level of income that would not afford a better livelihood protection; consequently, many of these households are likely to remain close to the survival threshold. This is likely to negatively affect and drive these households to continue depending on constrained livelihood opportunities characterized by high usage of coping mechanisms including the asset stripping coping strategies.

Figure 11: Distribution of Households by Security of Livelihood/Income Options, Liberia, 2018



Broadly, households residing in the rural areas tend to rely on income sources that are unreliable and unsuitable, especially the selling of natural resources (charcoal burning, wood sales, fishing, etc.), with approximately 80% participating in poor to medium unreliable and unsustainable income sources, compared to 71% of urban households.

[3] These are households that relied mostly on natural resources (which include charcoal burning and wood sales).

3.5.2 Shocks

During the assessment, the households were asked whether they experienced any shocks that hindered them from attaining enough food for the households. In the face of idiosyncratic shocks such as food price fluctuations, loss of household member, chronic ailment of household member etc, households are likely to engage food or non-food based coping strategies or a combination of both in order to bridge the vulnerability.

It is assumed that, when households are poor, they have no buffer to protect them against shocks such as climatic events, food price rises and illness or death of a household member. This makes some of these households more susceptible to food insecurity and malnutrition or will lead the households into employing asset depletion on irreversible coping strategies, which might further expose them to future shocks.

About 34% of the households experienced some sort of shocks in the past 12 months prior to the assessment (Table 13).

Out of the 34% households that experienced shocks, household member temporarily ill or injured and death of other household member were the highest shocks reported, both at 15%, followed by household members chronically ill (13%) and price fluctuations (13%).

Table 13: Distribution of Households' Experience of Shocks by County, Liberia, 2018

County	Percent of household that did not experience any shocks/difficulties in the last 12 months	Percent of household that experienced any shocks/difficulties in the last 12 months
Bomi	70.0	30.0
Bong	57.3	42.7
Gbarpolu	61.0	39.0
Grand Bassa	60.6	39.4
Grand Cape Mount	65.8	34.2
Grand Gedeh	61.4	38.6
Grand Kru	74.6	25.4
Lofa	59.2	40.8
Margibi	70.3	29.7
Maryland	63.3	36.7
Rural Montserrado	58.1	41.9
Nimba	64.2	35.8
River Gee	72.9	27.1
River Cess	63.5	36.5
Sinoe	68.3	31.7
Greater Monrovia	72.0	28.0
National	**66.0**	**34.0**

Nimba County recorded the highest percentage of households with temporarily ill or injured household member (19%); it was also one of the counties that had a high record of households that had household members with a chronic ailment (16%). The highest figure of chronic ailment was reported in Grand Kru county at 17%.

The time and money needed to respond to these worsening health crises drains the household budget, leaving little money for essential expenditures, such as nutrition and medical care. Further, there is a decrease in the human capital who participate in different activities such as labour or reduction in the household income, further exposing these household to food insecurity or negative coping strategies.

An increase in the price of food commodities (13%) was one of the main shocks reported across the country. Liberia is vulnerable to food prices because majority of its food products are imported. Further, poor road networks, particularly during the rainy season, have led retailers and traders to increase their food prices. This road inaccessibility is especially evident in the south-eastern region, but is a challenge all around the country and, compounded with lack of transport and inadequate storage facilities, hinders in-country food distribution particularly during the rainy season and in rural Liberia. In addition, counties that rely mainly on markets as a source of food are more at risk of high food prices as a shock these include Greater Monrovia, Rural Montserrado and Margibi. In addition, majority of the households in these counties have little purchasing power since more than half of the assessed household heavily rely on poor and unsustainable income sources.

3.5.3 Coping strategies employed by the food insecure households

As a way to deal with shocks or food shortages, households often resort to different coping strategies in order to ease the shortfalls. In addition, different types of shocks sometimes negatively affect household's food security status. Food insecurity further puts households and communities vulnerable to disasters and weakens their capacity to restore to the normal life. Food insecure households reportedly exhibited a range of coping techniques that reflects their vulnerability.

3.5.4 Food consumption-related coping strategies

The Reduced Coping Strategy Index (rCSI) is used to assess the level of stress faced by a household due to a food shortage. The proxy indicator helps to understand how households cope when facing food shortages. The index is measured by combining the frequency and gravity of the diet-related coping mechanisms/behaviours households are engaging in. It is calculated using the five standard strategies using a 7-day recall period. The assessment noted that households that experienced food shortages often use three groups of consumption coping strategies to deal with food shortages.

Rationing or managing the shortfall strategies:

- Limited portion size at meal times;
- Reduced the number of meals consumed in a day/skip meals;
- Restricted consumption of adults so small children can eat.

Dietary changes:

- Rely on less expensive food.

Increasing short term household availability of funds:

- Borrow food from a friend or relative.

At national level, majority of the households (93%) did not employ reduced coping strategies, leaving only 7% of the assessed household employing reduced coping strategies. Out of the 7% households that were employing reduced coping strategies, 6.3% engaged in medium coping and the remaining 0.7% exhibited high coping strategies or behaviours. The most commonly reported diet-related coping strategies used by those using reduced coping strategies were: reliance on less preferred or less expensive food (used on average 2.5 days in the week prior to the survey) followed by reduced portion size (employed 1.8 times/days in a week), and reducing the number of meals eaten per day (used 1.5 days). Grand Gedeh, Gbarpolu and Grand Bassa are the counties with the highest number of households engaging in high coping strategies though with low figures with 2.8%, 2.4% and 2.2% respectively.

Food secure households are not using as many and as severe coping strategies as compared to their food insecure counterparts. About 1.4% of households that are severely food insecure are not applying or are applying low coping strategies, while a slightly higher proportion of households (8.3%) that are applying high coping strategies are severely food insecure (Table 14).

Table 14: Distribution of Reduced Coping Strategy Index by Food Insecurity, Liberia, 2018

	Food Security Console			
Coping Strategy	Food secure	Marginally food secure	Moderately food insecure	Severely food insecure
None to low coping	38.6%	44.8%	15.2%	1.4%
Medium coping	11.9%	56.5%	25.0%	6.5%
High coping	12.2%	55.5%	24.1%	8.3%
National	**36.7%**	**45.6%**	**15.9%**	**1.8%**

3.5.5 Livelihood coping strategies

As a way of understanding the long-term coping strategies/behaviours of households, the survey probed the types of livelihood coping strategies employed by the different households. The module was contextualized to meet the ways in which Liberians cope. The chosen strategies are associated with a level of severity from none, to stress, to crisis, to emergency. The module is composed of ten coping strategies; four stress strategies, three crisis strategies and three emergency strategies. Further, the different households are categorized according to the severity of strategies engaged, meaning the higher the phase, the more severe and longer-term are the negative consequences.

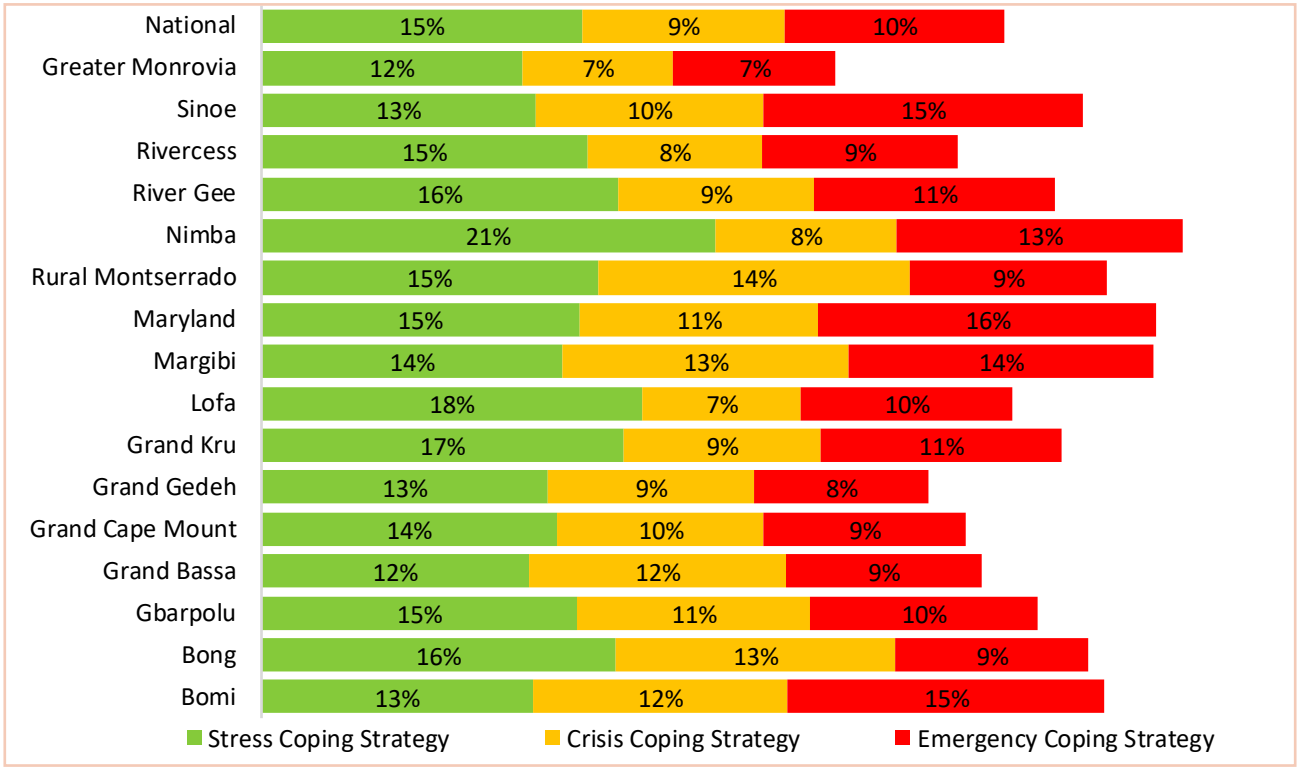
- **Stress strategies** indicate a reduced ability to deal with future shocks as the result of a current reduction in resources or increase in debts. (See Table 15 for details).
- **Crisis strategies** are often associated with the direct reduction of future productivity.
- **Emergency strategies** also affect future productivity, but are more difficult to reverse or more dramatic in nature than crisis strategies.

Table 15: Types of Livelihood Coping Strategies, Liberia, 2018

Livelihood coping strategy index	Livelihood coping strategy	Percentage of households employing the strategies
Not adopting coping strategies	None	**66%**
Stress	Sold household assets/goods	**15%**
	Spent savings	
	Sold more animals (non-productive) than usual	
	Borrowed money/food	
Crisis	Reduced non-food expenses on health and education	**9%**
	Withdrew children from school	
	Sold productive assets or means of transport	
Emergency	Sold last female animals	**10%**
	Begging	
	Sold house or land	

More households (34%) reported using livelihood coping strategies as compared to reduced coping capacities (7%). The heavy reliance on livelihood coping strategies could be an indication that majority of the households are increasingly struggling to meet their food needs. About 66% of the households are not employing any coping strategies, leaving 34% of the households engaging in some form of livelihood coping strategies with 15% engaging in stress coping strategies, followed by 10% employing emergency coping strategies and the remaining 9% using crisis coping mechanisms.

Figure 12: Households' Livelihood Coping Strategy, Liberia, 2018



In the face of food shortages households in the rural areas were likely to engage in crisis and emergency strategies compared to households in the rural areas. About 11% of the rural population engage in emergency coping strategies compared to 9% in the urban areas, the same is true for crisis coping strategies however with little variance with 10% of rural households and 9% of urban households employing crisis strategies (Figure 12).

3.5.6 Labour Migration

As a way of coping, diversifying and acquiring jobs, young adults, children above 14 years, and some children younger than 14 years, migrated to other areas in search of greener pastures. Out of the households that indicated that they have children who migrated in search of work, the highest labour migration is among boys above 14 years (86%) compared to 14% of girls within the same age group. Unfortunately, there were reported migrations of children below the age of 14 with 3.3% of girls and 7.8% of boys migrating in search of work.

The highest migrations of boys below 14 years of age were in Grand Bassa (24%) followed by Gbarpolu (17%). The same counties also recorded the highest number of households with girls below 14 years of age who migrated in search of labour.

Migration as a coping strategy is also applied across the country; Margibi and Grand Bassa have the highest number of households reporting migration of family member within the same district/ county in search for work. Greater Monrovia, Grand Bassa, Grand Gedeh and Rural Montserrado reported the highest (60%) migrations within the county.

Some of the households preferred their family members to travel outside the county in search of labour. These households were mostly located in Gbarpolu, Bong and Maryland counties with 58%, 55% and 47%, respectively.

The least labour migration outside of the county was reported by households in Greater Monrovia county. This could be attributed to the urban bias since Greater Monrovia is where the capital city is located.

Lastly, labour migrations outside the country were popular within the border counties of River Gee and Lofa counties with both registering 18% of households reporting family members' migration outside the country.

Of the households that reported labour migration, 63% did not receive any form of remittances in the six months preceding the assessment. However, the remaining 38% acknowledged some form of external assistance in the form of remittances. The highest form of remittances was in the form of cash (56%) and food (26%). Remittances were also in the form of medication, reported by 15% of the households. This could be an indication that the health system in the country is struggling to meet the needs of the population hence households tend to source medication from other countries, counties and districts. In addition, the highest form of remittances was registered in the urban households as compared to their rural counterparts.

3.6 Livelihood Zones and Food Insecurity

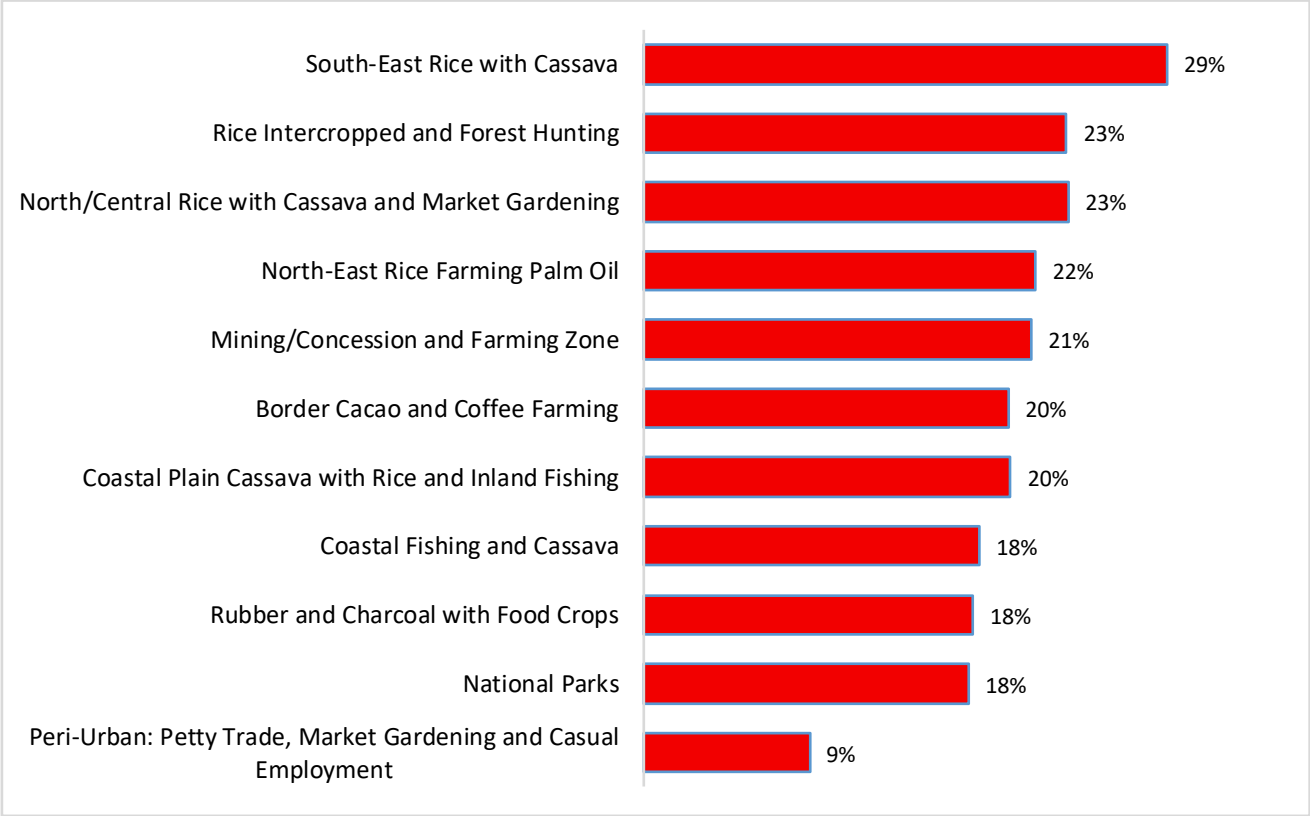
Besides analyzing data at county level, rural and urban areas, analysis was also conducted at the level of agro-ecological/livelihood zones. In these homogenous agro ecological zones, people share mostly the same pattern of livelihood that can include how households obtain food and sources of income. This helps to further understand the issues of food security beyond county borders, as food insecurity often cuts across factors far beyond county/geographical boundaries. This section will focus on the food security situation, coping strategies, expenditure share, sources of food and the wealth index of households located in the different livelihood zones.

3.6.1 Food Insecurity by Livelihood Zones

Majority of the food insecure households are located in the South-East rice with cassava zone[4](29%), followed by Rice intercropped and forest hunting and North/Central rice with cassava and market gardening with both 23% of their households being food insecure. The least food insecure households are in the Peri-Urban: petty trade, market, gardening and casual employment zone[5] with about (9%) of its households being good insecure (Figure 13). The most food insecure livelihood zone is characterized by heavy reliance on rice farming which is rain fed, thus these populations are likely to be vulnerable to climate variations since the rains are sometimes erratic.

While on the other hand, the least food insecure zone has a variety of activities that can be used to access food. These include selling of vegetables and chickens. There are also opportunities for casual labour (mostly construction related) and petty trade through farm/garden produce, fish, charcoal and many other items. Due to little farming conducted in this zone, there is heavy reliance on markets as a source of food. Consequently, households in this zone are vulnerable to the shock of high food prices. Since the livelihood zone depends on Duala and Red Light markets, these households are likely to suffer from unfavourable terms of trade (ToT).

Figure 13: Distribution of Livelihood Zones by Food Insecurity, Liberia, 2018



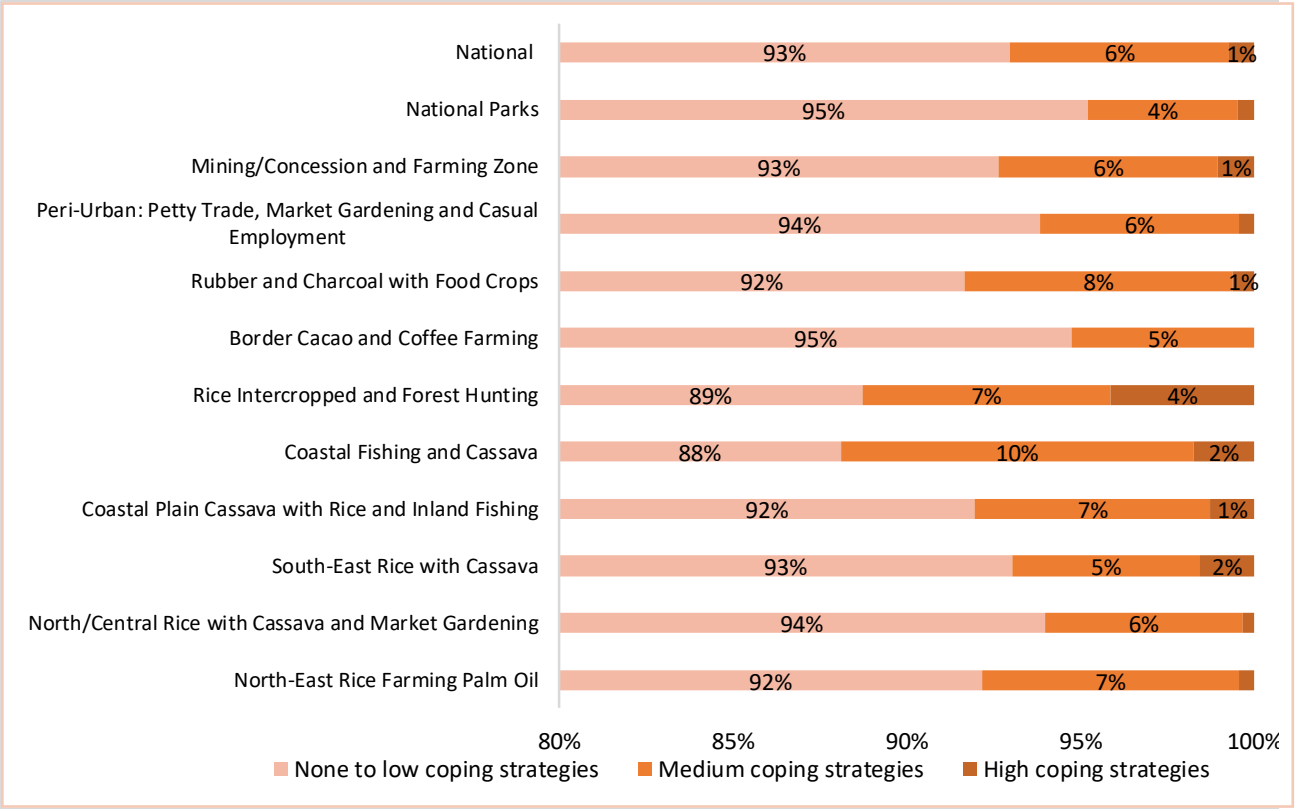
3.6.2 Coping Strategies

Just like in the different counties, households in the different livelihood zones also applied different coping strategies to mitigate food insecurity. Medium to high consumption related coping strategies were mostly common in Coastal Fishing and Cassava and Rice Intercropped and Forest Hunting zones with 12% and 11% households, respectively (Figure 14).

[4] This zone falls in Maryland, River Gee, Grand Gedeh Counties and the northern reaches of Sinoe County.

[5] This zone covers much of the population who are within the Monrovia urban district but outside the city proper

Figure 14: Distribution of Coping Strategies by Livelihood Zone, Liberia, 2018



3.6.3 Livelihood coping strategies

Emergency coping strategies are mainly used by 10% of the assessed livelihood zones. Out of the 10% of livelihood zones that used emergency coping strategies, 14% were being employed in the Rubber and Charcoal with Food Crops zone, followed by North/Central Rice with Cassava and Market Gardening, South-East Rice with Cassava, Coastal Plain Cassava with Rice and Inland Fishing and Coastal Fishing and Cassava all with 12% (Table 16).

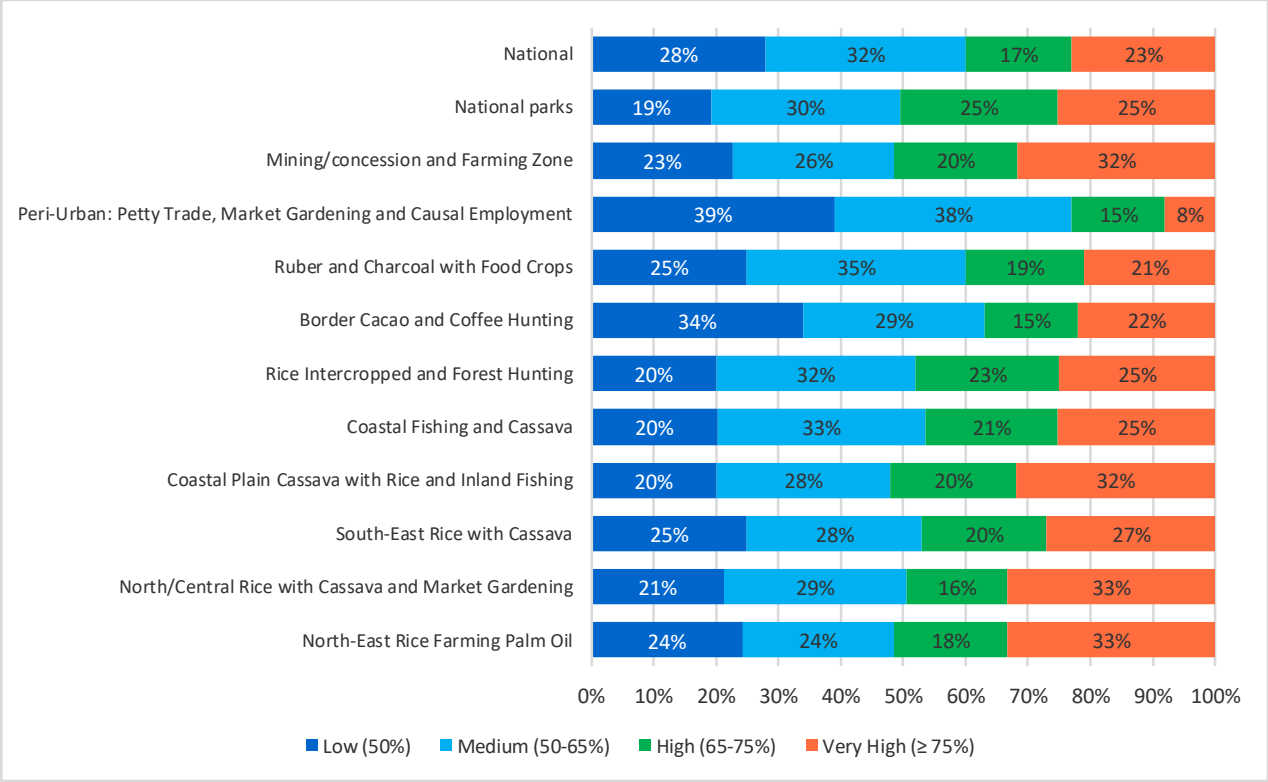
Table 16: Distribution of Asset Depletion by Livelihood Zones, Liberia, 2018

Summary of assets depletion				
Livelihood Zones	**No strategies**	**Stress strategies**	**Crisis strategies**	**Emergency strategies**
North-East Rice Farming Palm Oil	64.2	14.7	10.8	10.3
North/Central Rice with Cassava and Market Gardening	62.5	18.9	6.9	11.8
South-East Rice with Cassava	66.1	13.2	9.2	11.5
Coastal Plain Cassava with Rice and Inland Fishing	63.8	12.9	11.8	11.5
Coastal Fishing and Cassava	63.7	14.5	10.1	11.7
Rice Intercropped and Forest Hunting	65.5	20.4	6.0	8.0
Border Cacao and Coffee Farming	64.1	16.5	9.3	10.0
Rubber and Charcoal with Food Crops	50.8	17.9	17.8	13.5
Peri-Urban: Petty Trade, Market Gardening and Casual Employment	73.1	12.1	7.0	7.7
Mining/Concession and Farming Zone	66.5	15.7	8.0	9.7
National Parks	65.3	12.3	13.4	9.0
National	**65.9**	**14.7**	**9.3**	**10.1**

3.6.4 Food Expenditure share

The highest number of households that have a food expenditure share of 75% or more (Very High) are located in North-East Rice Farming Palm Oil and North/Central Rice with Cassava and Market Gardening with both at 33% followed by Coastal Plain Cassava with Rice and Inland Fishing and Mining/Concession and Farming Zone with both 32% of the assessed households spending more than 75% of their total expenditure on food (Figure 15).

Figure 15: Distribution of Household Food Expenditure Share by Livelihood Zones, Liberia, 2018



3.6.5 Sources of food

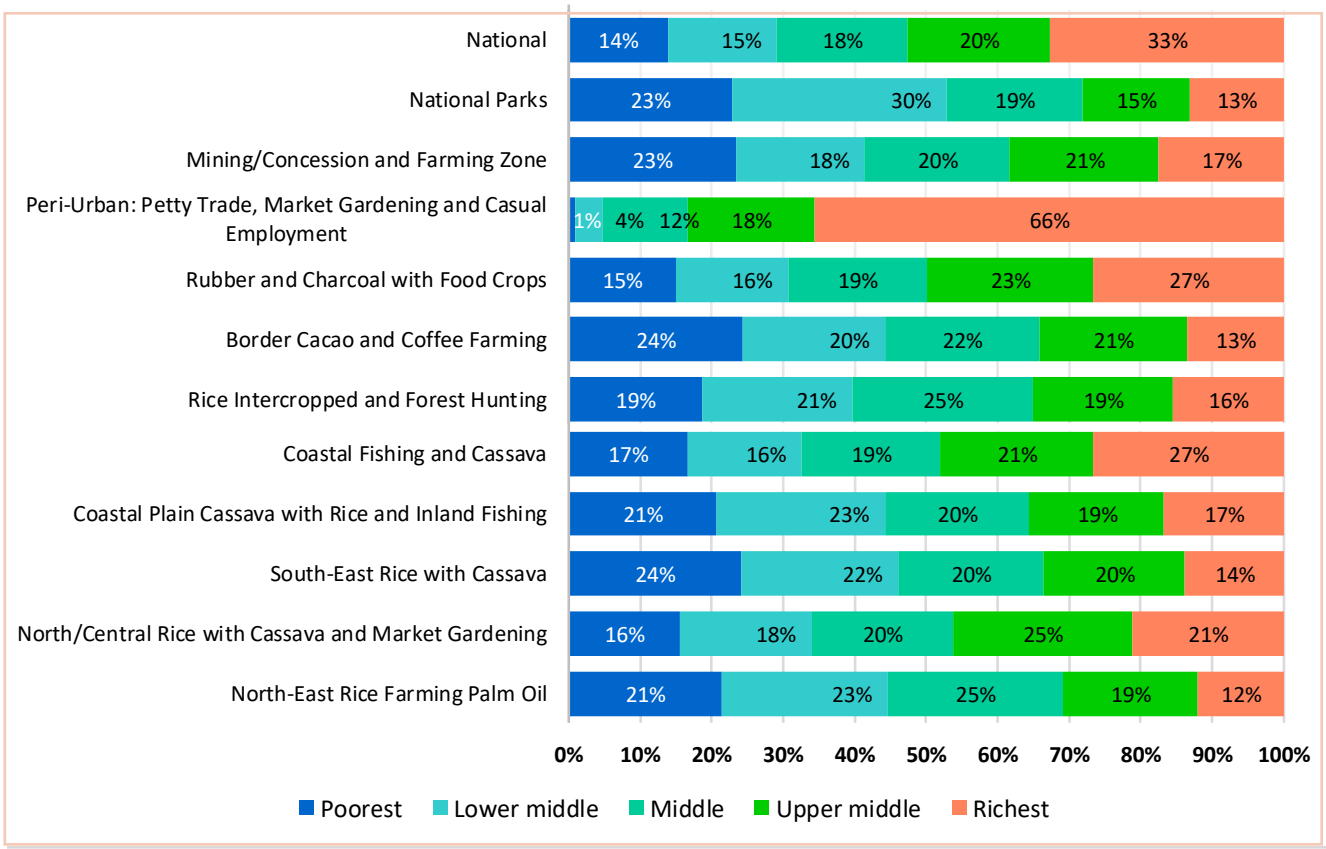
There is heavy reliance on markets as sources of food. About 81% of households source their foods from the markets, while own production caters for an 8th of the food sources.

About 96% of the households that rely on markets are located in the Peri-Urban: Petty Trade, Market Gardening and Casual Employment zones followed by 83% in the Coastal Fishing and Cassava zone. Own production as source of food is predominantly used in Border Cacao and Coffee Farming (24%) followed by North-East Rice Farming Palm Oil zone (19%).

3.6.6 Wealth Index

The poorest households are located in the South-East Rice with Cassava zone and Border Cacao and Coffee Farming with both 24% followed by households in the national parks and Mining/ Concession and Farming Zone with both 23% (Figure 16).

Figure 16: Distribution of Livelihood Zones by Wealth Index, Liberia, 2018



3.7 Health and Nutrition

3.7.1 Children's access to vaccines and supplements

Children under 5 years are susceptible to many childhood illnesses due to low immunity, as their immune system is still developing and not yet sophisticated to adequately prevent attacks from pathogens and recover from its consequences. Efforts to boost and support the immunity of children to prevent common but serious childhood illnesses are major public health initiatives aimed at reducing child mortality.

Vaccines are available at health centers, and mothers are encouraged to take their children for routine vaccination for the period of nine months to receive essential vaccines for major childhood illnesses like tuberculosis, whooping cough, measles, etc.

This effort is supported by routine immunization campaigns conducted through the Expanded Program for Immunization (EPI) by the Ministry of Health to realize this objective.

3.7.1.1 Vitamin A Supplement

During the survey, mothers or caregivers were asked if their children between the ages of 6 and 59 months have received Vitamin A Supplement. Vitamin A supplement enhances children's resistance to diseases associated with Vitamin A deficiency and reduces childhood mortality.

Of the 8,063 children on whom data was collected for this question, 71.3% were reported to have received Vitamin Capsule (Table 17). Approximately, 3 out of every 4 children in all counties with the exception of Grand Gedeh and Gbarpolu where the coverage is a little bit lower have received Vitamin A Supplement. The coverage of Vitamin A is highest in Rural Montserrado (76%) followed by Sinoe (74%). On the other hand, the lowest coverage is recorded in Gbarpolu and Grand Gedeh with 69% each.

3.7.1.2 Micronutrient Powder

Micronutrients are single dose packets of vitamins and minerals in powder form that can be used with any ready-to-eat semi-solid food. It supplements vitamin and mineral deficiency and helps prevent anaemia and other mineral and vitamin related deficiencies. UNICEF and the Ministry of Health provide micronutrients to women and children periodically.

During the survey, respondents were asked whether their children have received micronutrient powder (supplement in the last 6 months prior to the survey). Results are indicative of low micronutrient coverage among children in Liberia. Out of the 8,063 children, only 16% (1325 children) were reported to have received micronutrient powder. Nimba and Grand Gedeh counties reported the highest number, where nearly 1 out every five children were reported to have received the supplement (Table 17).

Table 17: Distribution of Children by Receipt of Vitamin A supplement, Liberia, 2018

County	Received Vitamin A	Micronutrient Powder (supplement)	Measles vaccination	De-worming tablets
	Percentage of children < 5years who received Vitamin A supplement			
Bomi	73	16	92	85
Bong	71	17	93	81
Gbarpolu	69	16	92	78
Grand Bassa	70	15	91	76
Grand Cape Mount	73	14	93	76
Grand Gedeh	69	19	95	78
Grand Kru	70	18	90	74
Lofa	72	16	93	75
Margibi	70	17	94	78
Maryland	73	18	94	74
Rural Montserrado	76	18	94	83
Nimba	71	19	95	78
River Gee	72	15	92	80
River Cess	70	16	92	78
Sinoe	74	16	92	81
Greater Monrovia	72	14	94	76
National	**71**	**16**	**93**	**78**

3.7.1.3 Measles Vaccination Coverage

Measles is a serious respiratory disease caused by the Rubella virus. It causes rash and fever and is very contagious. The disease is one of the most debilitating childhood diseases and can be deadly in some instances. It usually poses one of the serious public health challenges for poor countries. Measles vaccine is provided at health centers and during mass campaigns to children 9 and 59 months as a public health intervention to prevent the disease.

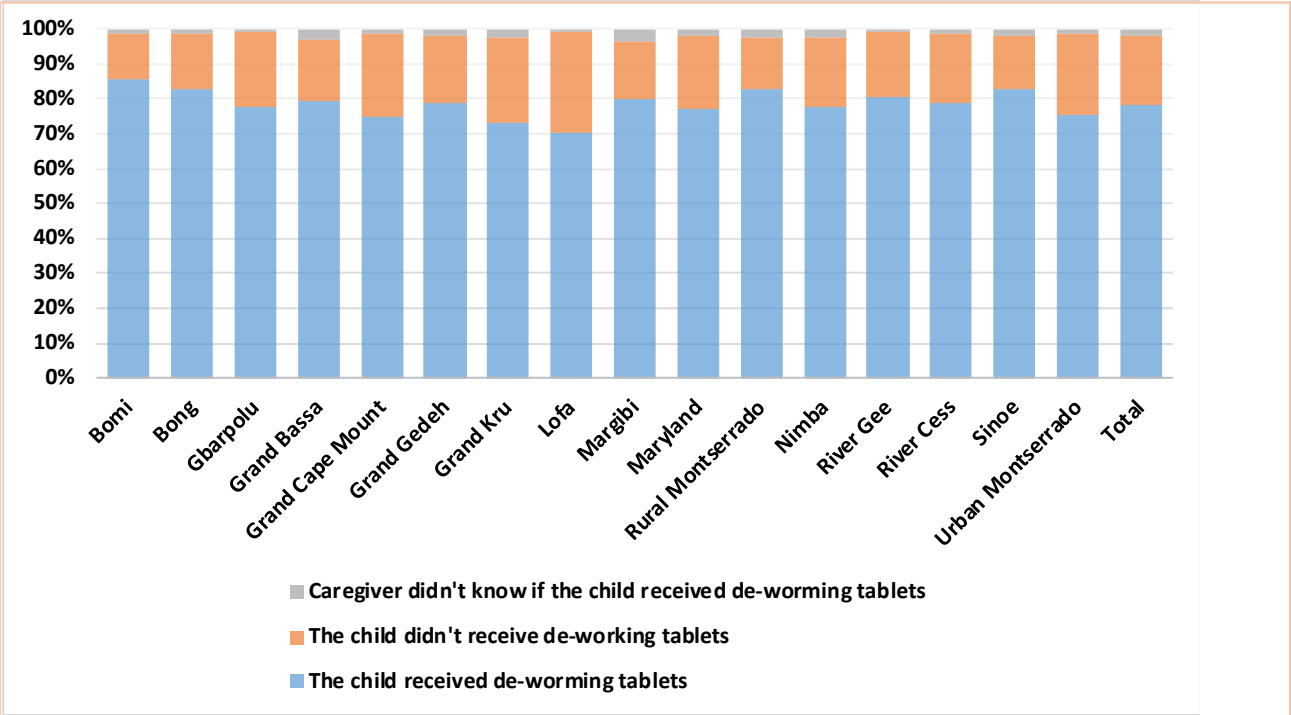
Coverage for measles vaccines is significantly high among children. All counties have attained at least 90% coverage. Nationally, 93% of children (n=7731) were reported to have received measles vaccines. In other words, 4 out of every 5 children had received measles vaccine prior to the survey. The coverage is highest in Nimba and Grand Gedeh with 95% coverage, followed by Rural and Greater Monrovia, Maryland and Margibi counties at 94%.

3.7.1.4 De-worming Coverage

Worm infestation is an underlying cause for malnutrition in young children. It affects the full utilization of nutrients and promotes vulnerability to illnesses in children. Children under five years are extremely susceptible to deficiencies induced by worm infestation. It inhibits absorption of vitamin A and increase malnutrition and anaemia. Deworming is usually a part of immunization campaigns conducted by the Ministry of Health as a public health intervention to prevent and treat the infestation. Deworming tablets are given to children between 12 and 59 months. Deworming increases the absorption of iron and other nutrients that improve the child's physical and mental wellbeing.

Approximately 4 out of every 5 children received Deworming tables. Deworming coverage is highest in Bomi county where 85% of children covered for de-worming (n=5378) reported to have received worm tablets in the last 6 months. Bomi is followed by Rural Montserrado (83%), Sinoe (81%), Bong (81%) and River Gee (80%) counties. The least coverage was recorded in Maryland and Grand Kru counties with 74% coverage each (Figure 17).

Figure 17: Distribution of Receipt of De-worming Tablets by County, Liberia, 2018



3.7.1.5 Ownership and use of Mosquito Nets

Malaria is a deadly childhood disease and 70% of all malaria deaths occur in children under five. Despite a reported decline in the number of malaria deaths in children under five, the disease remains a major killer of children under five and takes the life of a child every two minutes (World Health Organization, 2017). An effective means to control and prevent malaria cases and deaths is the use of vector control. The World Health Organization recommends the use of the long-lasting insecticide nets (LLIN) along with effective behaviour change communication to control and prevent malaria.

The survey explored the ownership and use of mosquito nets the night before the survey in households with children under five. There are slightly less households with mosquito nets (49%) as compared to households without nets (51%). The ownership of nets is highest in Lofa (62%) followed by Bong (58%), Rural Montserrado (57% and Greater Monrovia (55%) counties. Bomi and Grand Gedeh counties have equal number of households with and without nets (Table 18).

Table 18: Distribution of households by ownership of mosquito nets at county level, Liberia, 2018

County	Percent of Households with any mosquito net that can be used while sleeping			Total
	No mosquito net available	mosquito net available	Don't Know if there's a mosquito net in the household	
Bomi	242	242	2	486
Bong	210	293	1	504
Gbarpolu	283	249	4	536
Grand Bassa	288	246	6	540
Grand Cape Mount	303	234	1	538
Grand Gedeh	243	245	3	491
Grand Kru	284	254	1	539
Lofa	194	319	1	514
Margibi	304	226	3	533
Maryland	304	249	2	555
Rural Montserrado	188	253	1	442
Nimba	298	281	3	582
River Gee	267	257	0	524
River Cess	554	408	2	964
Sinoe	268	225	3	496
Greater Monrovia	202	255	3	460
Total	**4432**	**4236**	**36**	**8704**

Of the households that reported having nets, a high proportion (92%) reported that their children slept under mosquito net the night before the survey.

Lofa, Rural and Greater Monrovia counties reported the highest number of households (94% each) whose children slept under mosquito nets the night before the survey.

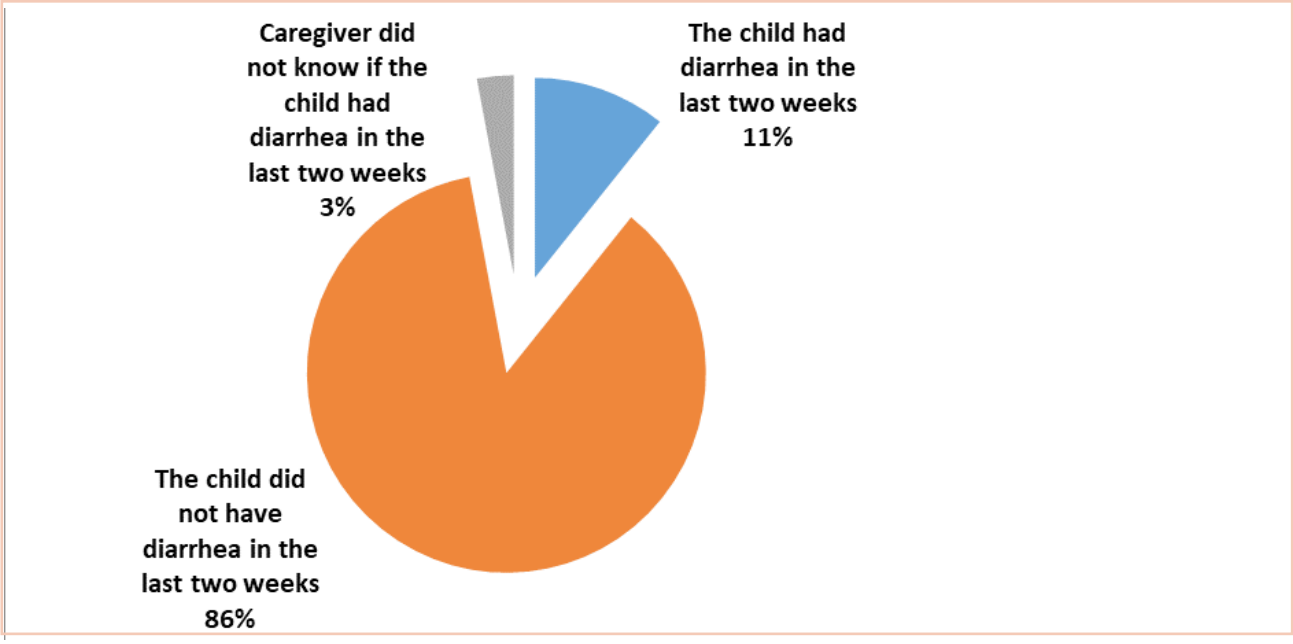
Approximately, nine out of every ten households in all counties/geographical units reported their children sleeping under mosquito net the night before the survey. Grand Bassa county however reported the least percentage of children (89%) that slept under net. Sinoe (90%), Nimba (91%), Maryland (91%), Grand Kru (91%) and Bong (90%) counties are also below the national average (92%) in the use of mosquito nets among young children.

3.7.2 Child Illnesses and Care

The survey assessed the incidence of two childhood diseases (diarrhea and acute respiratory infection). Diarrhea and acute respiratory infection (ARI) are two disease conditions that commonly affect children under five. They can become deadly if appropriate and timely response are not provided. For instance, diarrhea can lead to dehydration and death if not treated timely. Diarrhea is the second leading cause of death in children under five and accounts for 525, 000 deaths in children less than five each year (WHO 2017). It is also a leading cause of malnutrition in children under five years old due to its depletion of essential nutrients from the body.

During the survey, respondents were asked if their children between the ages of 0-59 months experienced diarrhea in the last two weeks before the survey. Those that affirmed their children suffering from diarrhea were asked about the actions they took in response. The results of the survey indicate that diarrhea was not common among children the last two weeks before the survey. Out of the 8704 children that were included for this question, 86% did not experience any episode of diarrhea during the reference period, 3% could not recall if it ever occurred, while only 11% affirmed that their children had had diarrhea (Figure 18).

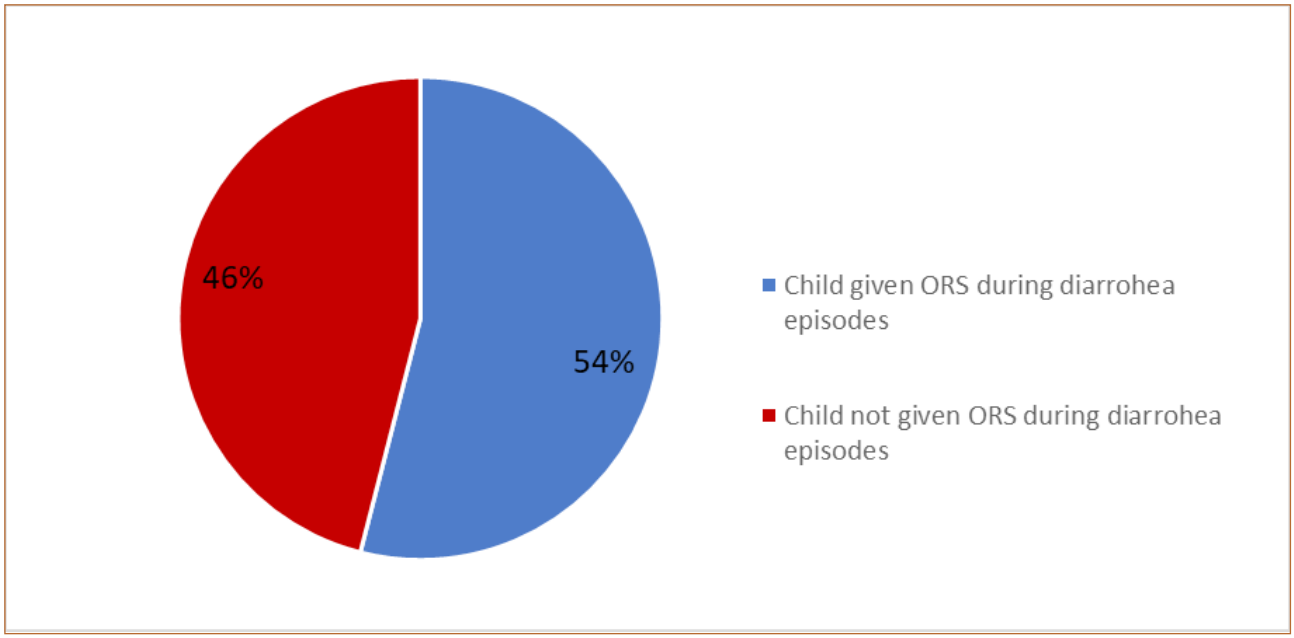
Figure 18: Distribution of the experience of diarrhea cases by children, Liberia, 2018



River Gee county has the highest proportion of children (89%) that did not suffer from diarrhea during the reference period. River Gee was followed by Bong (88%), Gbarpolu (88%), Grand Kru (88%), and Greater Monrovia counties (88%). Bomi (84%), Maryland (83%), Nimba (85%) and Sinoe (84%) counties were slightly below national average of children who did not experience diarrhea (86%).

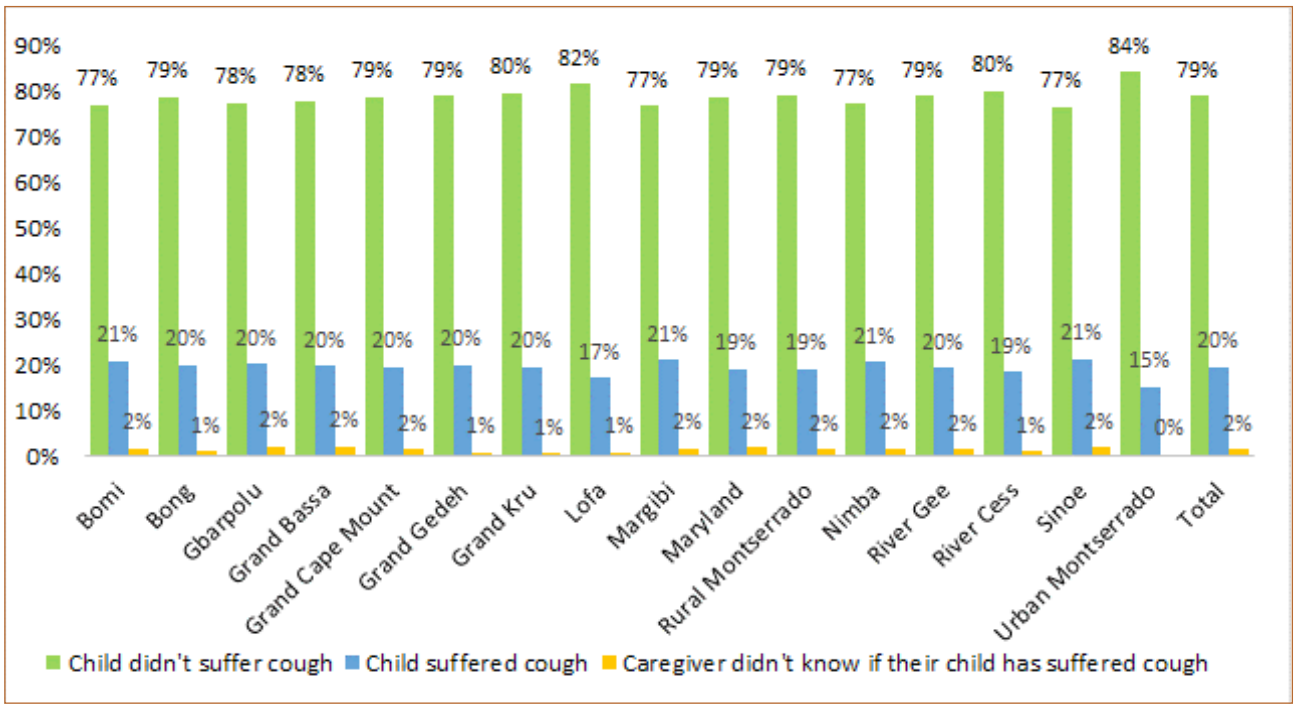
A little over half of those who suffered diarrhea (54%) were reported to have received ORS from the sachet during the episode, while 7% also received home-made sugar-salt water fluid (Figure 19).

Figure 19: Distribution of ORS use during Diarrhea Episode, Liberia, 2018



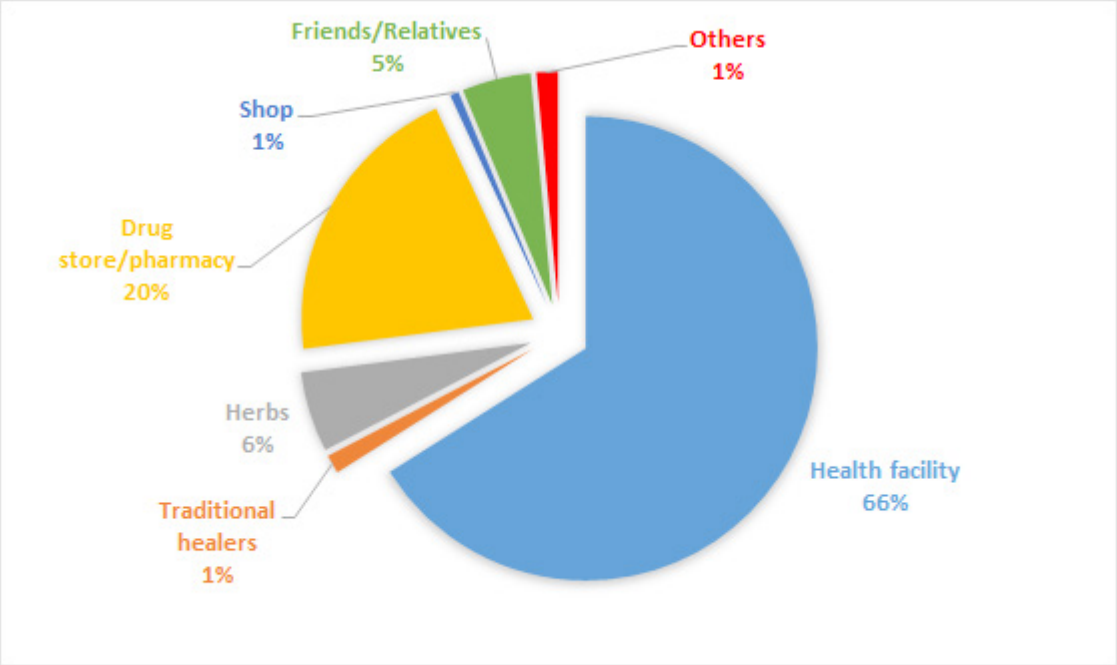
In like manner, majority of children included covered under the section (8704) did not experience cough during the last two weeks before the survey. Nationally, 79% of the children did not suffer from cough during the reference period (Figure 20). Bomi (21%) and Nimba (21%) counties recorded the highest percentage of children who suffered from cough the last two weeks before the survey. Seventy-four percent (74%) of children who experienced cough were reported to have received treatment. However, it is still alarming to note that 26% of such children did not received treatment. Cough and its associated symptoms could lead to complications if no treatment is sought for it.

Figure 20: Distribution of children who suffered from cough two weeks before the survey, by county, Liberia, 2018



The preferred source of treatment for children suffering from cough was health facility (66.2%) followed by drug store/pharmacy (20.2%). There are still indications in the communities that parents/care givers seek treatment from traditional healers/herbalists, as 6.9 % of respondents also sought treatment from these sources (Figure 21).

Figure 21: Distribution of children by treatment seeking, Liberia, 2018



3.7.3 Nutritional Status of Children and Women of Reproductive Age (15-49)

In all households, a total of 8008 children between the ages of 6 and 59 months were measured. Measurements were taken on height, weight and Mid Upper Arm Circumference (MUAC). Key nutritional indices namely; weight for age, height/length for age, weight for height were calculated. The boy to girl's ratio is almost evenly distributed, with boys (50.9%) slightly more than girls (49.1%). Children between the ages of 30-41 months constitute the greatest number (24.6%) followed by those in the range of 42-53 (24%) and 18-29 months (23%) (Table 19).

Table 19: Distribution of Children Measured by Age and Gender, Liberia, 2018

Age category	Boys		Girls		Total	
Age (months)	No.	%	No.	%	No.	%
6-17	862	50.8	834	49.2	1696	21.2
18-29	952	51.8	887	48.2	1839	23
30-41	1022	52	945	48	1967	24.6
42-53	954	49.7	966	50.3	1920	24
54-59	287	49	299	51	586	7.3
Total	**4077**	**50.9**	**3931**	**49.1**	**8008**	**100**

3.7.3.1 Prevalence of Acute Malnutrition

Acute malnutrition is an indication of current nutritional situation of the population. It indicates the effects of a combination of factors that affect the weight of the child over a short period of time including illnesses, the utilization of food, water and sanitation and other public health issues. The calculation of nutrition indices was done using the WHO 2006 reference standard (WHO, 2006)

3.7.3.1.1 Prevalence of Wasting/Thinness (Weight for Height)

One of the determinants of acute malnutrition is wasting/thinness measured using the weight-for-height index. It is represented in the prevalence of Global Acute Malnutrition (GAM), combination of moderate and severe malnutrition. Global acute Malnutrition was determined as a weight for height (<-2 z-score and/or oedema. Moderate acute Malnutrition (MAM) was determined as (<-2 z-score and >= -3 z-score, no oedema) and severe Acute Malnutrition (SAM) was determined as <-3 z-score and/or oedema.

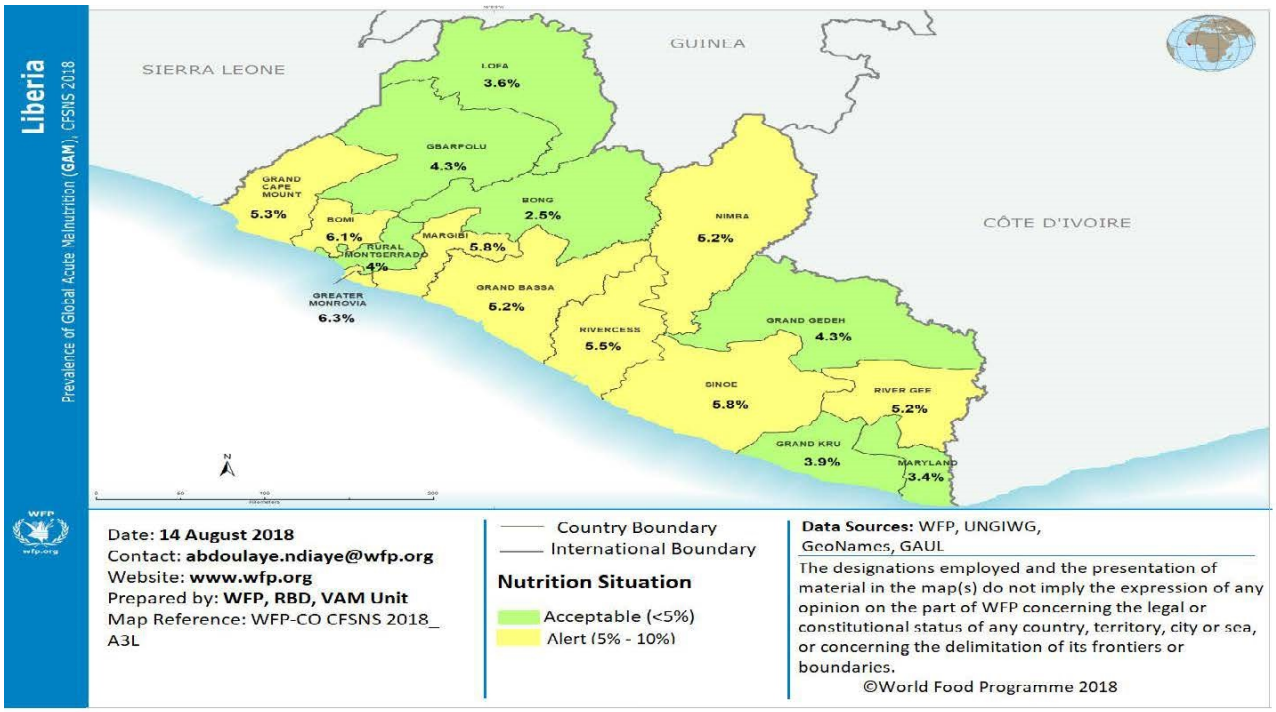
The national prevalence for GAM is at 4.80%; while those for MAM and SAM are at 3.40% and 1.40%, respectively (table 20). This means 4.8% of the children are wasted or thin for their age. The national prevalence for GAM by WHO Standard is low and acceptable. This finding resonates with previous findings of the CFSNS 2008 (4.9%). The LDHS 2013 also identified a medium prevalence (6%) of GAM among children. Some reasons to explain the low prevalence of GAM amidst heightened poverty and food insecurity is the preferment of children in the households for food at the expense of adult during hunger and other stressed period and low morbidity.

Table 20: Prevalence of acute malnutrition by county based on weight-for-height z-scores and/or oedema, Liberia, 2018

Geographical Unit	Number	GAM (<-2 z-score and/or oedema)	MAM (<-2 z-score and≥ -3 z-score, no oedema)	SAM <-3 z-score and/or oedema)
		Percent		
Bomi	393	6.10	3.30	2.80
Bong	512	2.50	2.50	0.00
Gbarpolu	536	4.30	2.80	1.50
Grand Bassa	543	5.20	3.70	1.50
Grand Cape Mount	495	5.30	4.00	1.20
Grand Gedeh	442	4.30	3.80	0.50
Grand Kru	487	3.90	2.30	1.60
Lofa	533	3.60	2.80	0.80
Margibi	537	5.80	4.70	1.10
Maryland	614	3.40	2.40	1.00
Nimba	594	5.20	3.50	1.70
River Cess	530	5.50	4.20	1.30
River Gee	459	5.20	3.30	2.00
Rural Montserrado	425	4.00	3.30	0.70
Sinoe	500	5.80	4.20	1.60
Greater Monrovia	383	6.30	4.70	1.60
National	**8003**	**4.80**	**3.40**	**1.40**

The prevalence of GAM at county level slightly varies. The prevalence is highest in Greater Monrovia (6.30%) followed by Bomi (6.10%). Seven other counties (Grand Bassa, Grand Cape Mount, Margibi, Nimba, River Cess, River Gee and Sinoe) also have prevalence of 5% and above, placing them in the Medium or Poor Category (5-9%) on the WHO prevalence scale for GAM (Map 4).

Map 4: Map of the prevalence of global acute malnutrition (GAM), Liberia, 2018



The remaining counties/geographical units of Bong, Gbarpolu, Grand Gedeh, Grand Kru, Lofa, Maryland and Rural Montserrado have low or acceptable GAM prevalence (<5%) (Figure 25). Bong has the lowest GAM prevalence (2.50%) followed by Maryland (3.40%), Lofa (3.60%) and Grand Kru (3.90%) counties. Bomi (2.80% and River Gee (2.00%) have the highest SAM prevalence as compared to other counties. Bong recorded zero prevalence of SAM among children measured.

3.7.3.1.1 Prevalence of ACUTE MALNUTRITION BY MUAC MEASUREMENT

Table 21: Prevalence of acute malnutrition among children under five years by county based on Mid Upper Arm Circumference and/or oedema, Liberia, 2018

Geographical Unit	Number	GAM (MUAC<125mm and/or Oedema)	MAM (MUAC <125mm to MUAC ≥ 115 mm and/ no Oedema)	MAM (MUAC <115 and/Or Oedema)
		Percent		
Bomi	393	5.8	4.8	1.0
Bong	512	2.7	2.1	0.6
Gbarpolu	536	3.7	2.8	0.9
Grand Bassa	543	5.7	3.5	2.2
Grand Cape Mount	495	4.0	3.4	0.6
Grand Gedeh	442	2.3	1.2	1.
Grand Kru	487	2.5	2.2	0.2
Lofa	533	1.5	1.3	0.5
Margibi	537	3.5	2.2	1.3
Maryland	614	6.1	4.2	1.9
Nimba	594	3.0	2.5	0.5
River Cess	530	2.7	1.1	1.5
River Gee	459	2.4	1.7	0.7
Rural Montserrado	425	4.0	3.5	0.5
Sinoe	500	5.4	3.2	2.2
Greater Monrovia	383	1.3	1.3	0
National	**8003**	**3.6**	**2.6**	**1.0**

The national prevalence for GAM in children under five years based on MUAC measurement is at 3.6%; while those for MAM and SAM are at 2.6% and 1.0%, respectively (table 21). The prevalence of GAM based on MUAC was highest in Maryland county (6.0%) and lowest in Greater Monrovia county (1.3%).

3.7.3.1.2 Prevalence of Underweight (Weight for Age)

Underweight is a composite indicator that reflects acute weight loss, stunting, or both. Data for a total of 7,992 out of the 8008 children were used to calculate this indicator.

Table 22: Distribution of Prevalence of Underweight based on Weight -for-age Z-score, Liberia, 2018

Geographical Unit	Number	Prevalence of Underweight (<-2 Z-Score and/or Oedema)	Prevalence of Moderate Underweight (<-2 Z-Score and ≥ -3 Z-Score, no Oedema)	Prevalence of Severe Underweight (<-3 Z-Score and/or Oedema)
			Percent	
Bomi	395	18.50	13.20	5.30
Bong	513	13.50	10.70	2.70
Gbarpolu	537	12.70	10.10	2.60
Grand Bassa	540	16.30	11.30	5.00
Grand Cape Mount	495	18.60	14.50	4.00
Grand Gedeh	443	12.20	7.90	4.30
Grand Kru	489	12.90	9.60	3.30
Lofa	533	13.10	11.30	1.90
Margibi	536	17.90	14.20	3.70
Maryland	616	16.70	11.90	4.90
Nimba	596	14.40	11.40	3.00
River Cess	529	15.30	11.70	3.60
River Gee	458	11.10	8.30	2.80
Rural Montserrado	425	16.00	11.30	4.70
Sinoe	499	16.60	12.00	4.60
Urban Montserrado	384	14.10	10.40	3.60
National	**7992**	**15.00**	**11.30**	**3.70**

The national prevalence of underweight was estimated at 15.0% (Table 22), while moderate underweight and severe underweight stands at 11.3% and 3.7%, respectively. The national prevalence of 15.0% means the situation is neither low nor high. However, it is relatively skewed towards getting high (10-20%).

Map 5: Distribution of the Prevalence of Underweight, Liberia, 2018

Nine Counties-Grand Cape Mount (18.6%), Bomi (18.5%), Margibi (17.9%), Maryland (16.7%), Sinoe (16.6%), Grand Bassa (16.3%), Rural Montserrado (16.0%), Sinoe (16.0%) and River Cess (15.0%) have prevalence above national average (15.0%) (Map 5). Grand Cape Mount, Bomi and Margibi are very close to high prevalence compared to the other counties. River Gee (11.1%) recorded the lowest prevalence estimate.

3.7.3.1.3 Prevalence of Overweight based on weight for height z-scores

Overweight indicates excess weight for height and points to childhood obesity. Childhood obesity is a contributing factor for adult obesity. Obesity generally leads to high risks of non-communicable diseases including diabetes and heart-related diseases.

Table 23: Distribution of the prevalence of overweight based on weight for height z-score by county, Liberia, 2018

Geographical Unit	Sample Size	Prevalence Of Overweight (Whz> 2)	Prevalence Of Severe Overweight (Whz> 3)
	Number	Percent	
Bomi	393	3.10	0.80
Bong	512	1.60	0.20
Gbarpolu	536	3.00	0.20
Grand Bassa	543	1.70	0.00
Grand Cape Mount	495	1.20	0.20
Grand Gedeh	442	2.00	0.50
Grand Kru	487	2.10	1.00
Lofa	533	5.10	0.90
Margibi	537	3.70	1.30
Maryland	614	3.60	0.80
Nimba	594	2.70	1.00
River Cess	530	2.50	0.90
River Gee	459	3.90	0.40
Rural Montserrado	425	3.10	1.20
Sinoe	500	2.60	0.80
Urban Montserrado	383	3.70	1.60
National	**8003**	**2.90**	**0.80**

On the national scene, 2.9% of children are estimated to be overweight, while 0.8% is severely overweight. Overweight is relatively highest in Lofa (5.1%) as compared to the rest of the counties. The situation, on the other hand, is relatively lowest in Grand Cape Mount County (1.2%) as compared to the other counties (Table 23).

3.7.3.2 Prevalence of Chronic Malnutrition (Stunting)

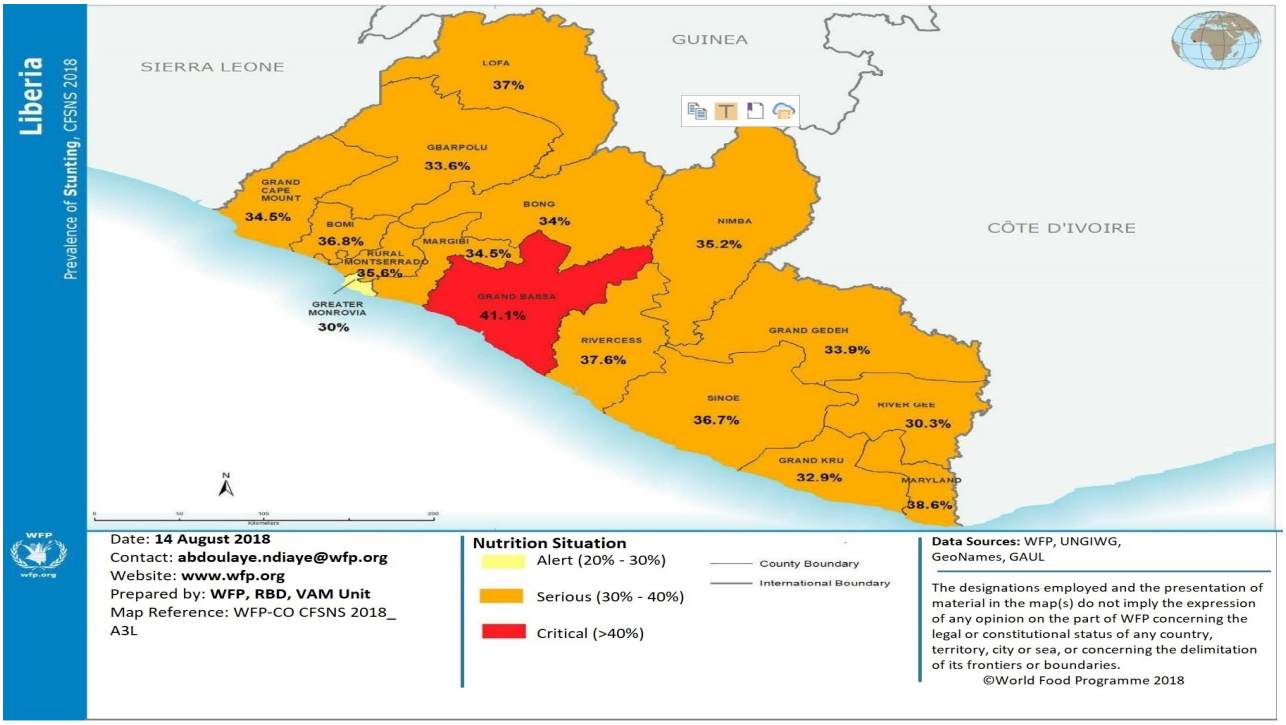
Stunting portrays chronic malnutrition among children in the population. Its long-term nature indicates that there is a persistent nutritional and health problem among the population that has not been addressed over time. It reflects the summed effects of under-nutrition and infections before and after birth. Conditions of chronic malnutrition develop over time and takes time to address compared to acute malnutrition.

Table 24: Prevalence of Chronic Malnutrition (Stunting) by County based on height-for-age Z-Score, Liberia, 2018

Geographical Unit	Sample Size	Prevalence of Stunting (<-2 Z-Score and/or Oedema)	Prevalence of Moderate Stunting (<-2 Z-Score and ≥ -3 Z-Score, no Oedema)	Prevalence of Severe Stunting (<-3 Z-Score and/or Oedema)
			Percent	
Bomi	394	36.80	20.60	16.20
Bong	512	34.00	21.30	12.70
Gbarpolu	535	33.60	25.40	8.20
Grand Bassa	542	41.10	27.70	13.50
Grand Cape Mount	495	34.50	21.60	12.90
Grand Gedeh	443	33.90	21.20	12.60
Grand Kru	487	32.90	18.70	14.20
Lofa	532	37.00	21.80	15.20
Margibi	537	34.50	23.10	11.40
Maryland	612	38.60	22.50	16.00
Nimba	594	35.20	20.90	14.30
River Cess	526	37.60	23.20	14.40
River Gee	456	30.30	19.10	11.20
Rural Montserrado	424	35.60	21.50	14.20
Sinoe	499	36.70	23.20	13.40
Greater Monrovia	383	30.00	20.10	9.90
National	**8008**	**35.50**	**22.00**	**13.50**

The national prevalence level for stunting is 35.5%, while moderate and severe stunting are at 22% and 13.5%, respectively (table 24). This prevalence level is slightly lower than 2008 CFSNS estimate (36.1%), the same as 2012 CFSNS (35.57%) but higher than LDHS 2013 estimate (32%). Stunting in Liberia has been a major public health concern for a long time. Its prevalence level has been above acceptable WHO standard (< 20%) starting with the 2006 CFSNS (39%).

Map 6: Distribution of the Prevalence of Stunting, Liberia, 2018



All counties, with the exception of Grand Bassa (which has a very high prevalence of 41.1%) have high prevalence of chronic malnutrition (stunting) ranging from 32.9% to 38.6%. The prevalence is highest in Grand Bassa (41.1%), followed by Maryland (38%), River Cess (37%), Bomi (36.8%), Sinoe (36.7%), Rural Montserrado and Nimba counties at 35% each (Map 6).

3.7.4 Nutritional Status of Women of Reproductive Age (15-49 years)

The nutritional status of women of reproductive age (WRA) was determined using the MUAC measurement. This measurement was done for all women between the ages of 15 and 49 years.

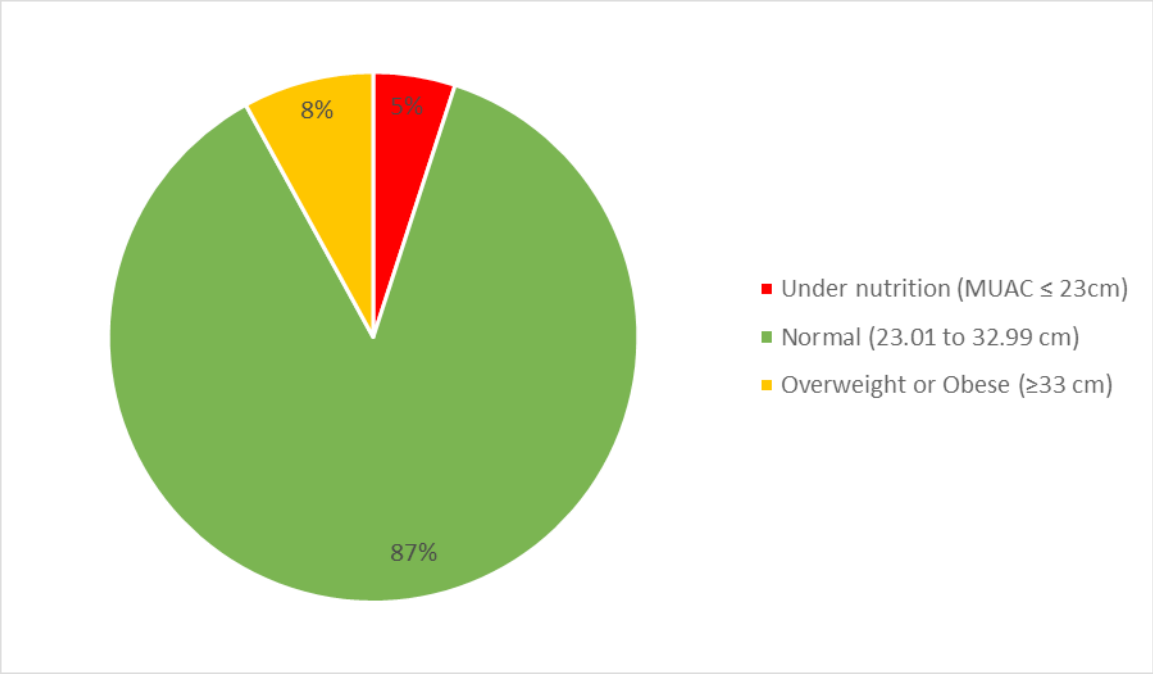
There is no agreed universal standard for a MUAC cut-off point for adults. Cut-off points for adults are usually determined at country level based on its context and support services available, as well as using some international and regional comparison. The Ministry of health has identified a MUAC of 16 cm as criteria for admission of adults (particularly pregnant women and lactating mothers) into supplementary feeding programs (Ministry of Health, 2017). However, criteria for admission are usually much lower than and different from criteria for identification of malnutrition cases.

Despite these voids in terms of global cut-off points, a number of studies have been conducted to facilitate the establishment of global cut-off points for MUAC. Some of the studies conducted through meta-analysis have come up with suggested cut-off points between 23 cm and 25.5 cm (Tang *et al.*, 2016).

The CFSNS 2018 uses a common measurement of a MUAC ≤ 23 to estimate malnutrition (under nutrition) in women of reproductive age. Further, a cut-off point was also used to identify a MUAC measurement suggestive of overweight/obesity. In line with some best practices, a MUAC of ≥ 33 cm was set to identify women who could possibly be overweight or obese. Thus, a MUAC in the range of 23.01 to 32.99 was considered normal.

Out of the 1519 women assessed, 5% were underweight or malnourished; 8% were obese and 87% had normal MUAC measurement (Figure 22).

Figure 22: Nutritional Status of Women of Reproductive Age Based on MUAC, Liberia, 2018



3.7.5 Infant and Young Child Feeding Practices (6-23 Months)

3.7.5.1 Exclusive breastfeeding practices (0-6 months)

The World Health Organization (WHO) recommends exclusive breastfeeding (only breast milk-no other fluid or solid food) for the first 6 months of their life. The first six months of the infants' life is a crucial period that goes a long way in influencing their growth and development. Their immune system is weak or at least still in its early development, and as such are much more vulnerable to diseases/infections. Exclusive breastfeeding provides nutrients that help to strengthen the infants' immunity and prevent their exposure to pathogens that could penetrate their system through the eating of other foods.

Out of the 1421 children between the ages of 0-6 months surveyed, 51% were exclusively breastfed (figure 30). However, 49% of the infants did not exclusively receive breast milk. The children who are not exclusively breastfed miss out on the known benefits of exclusive breastfeeding during the period of the infants' growth and development. Exclusive breastfeeding is highest in River Cess county (56%) and lowest in Grand Gedeh county (47%) (Table 25).

Table 25: Exclusive Breast Feeding status of children 0 to 6 months old by county, Liberia, 2018

County	Number of children 0 – 6 months old	Percent Exclusively Breastfed
Bomi	89	51%
Bong	83	48%
Gbarpolu	100	50%
Grand Bassa	84	51%
Grand Cape Mount	101	50%
Grand Gedeh	92	47%
Grand Kru	76	49%
Lofa	52	48%
Margibi	88	50%
Maryland	87	49%
Rural Montserrado	70	53%
Nimba	93	51%
River Gee	95	51%
River Cess	188	56%
Sinoe	69	49%
Greater Monrovia	53	51%
National	**1420**	**51%**

3.7.5.2 Complementary feeding (6-23 months)

Complementary feeding is the transition from exclusive breastfeeding to complementary foods (solid or semi-solid foods) that is expected to be initiated from 6 months of age, this is because milk alone is no longer sufficient. The key indicators included are introduction of solid, semi-solid and soft foods at 6-8 months of age, minimum dietary diversity, minimum meal frequency and minimum acceptable diet. Unfortunately, the status of complementary feeding in Liberia is distressing. This scenario indicates that a larger proportion of the 6-23 months' age group is not receiving the recommended quality and quantity of feeds.

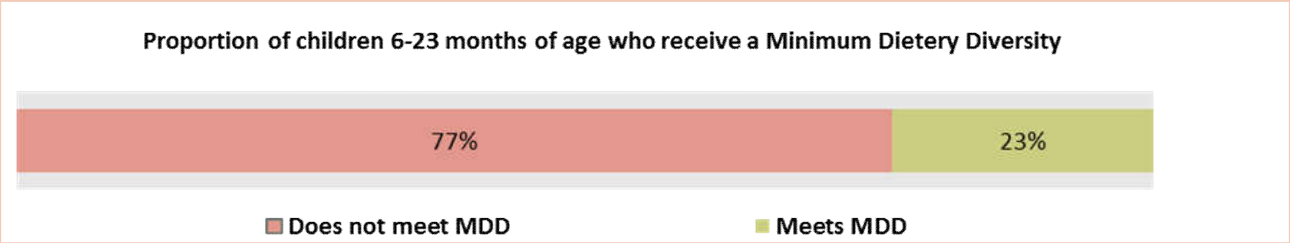
3.7.5.3 Introduction to semi solids

WHO advises that care givers can commence complementary foods (solid or semi-solid foods) at six months to supplement the breast milk. Approximately 53% of children aged 6-11 months in Liberia were fed solid/semi-solid foods with the highest prevalence observed in Nimba (65%) and lowest in Maryland (41%) counties.

3.7.5.4 Minimum Dietary Diversity (MDD)

Minimum dietary diversity describes the proportion of children 6-23 months of age who receive foods from 4 or more out of 7 food groups in the previous day preceding the survey. The seven food groups include (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) flesh foods; (5) eggs; (6) vitamin-A rich fruits and vegetables; (7) other fruits and vegetables.

Figure 23: Distribution of children by minimum dietary diversity, Liberia, 2018



The proportion of children 6 to 23 months who received at least four food groups a day preceding the assessment was only 23% (Figure 23), indicating the poor diversity of complimentary foods provided to majority of children 6 to 23 months. The lowest proportion of children who did not meet the MDD was reported in Grand Bassa County (68%) while the highest proportion was in Maryland and Grand Cape Mount counties with (88%) each (Figure 24).

3.7.5.5 Minimum meal frequency (MMF)

This indicator captures proportion of breastfed and non-breastfed children 6 to 23 months of age who receive solid, semi-solid, or soft foods the minimum number of times or more. Meal frequency is considered a proxy for energy intake from foods other than breast milk. About 61% of the assessed children meet the minimum meal frequency. However, the remaining 39% of the children did not receive the WHO recommended MMF. The highest prevalence of children who did not meet the MMF are observed in Margibi county (57%) followed by Bomi county with (50%) (Figure 25).

Figure 24: Distribution of children who did not meet the minimum meal frequency by county, Liberia, 2018

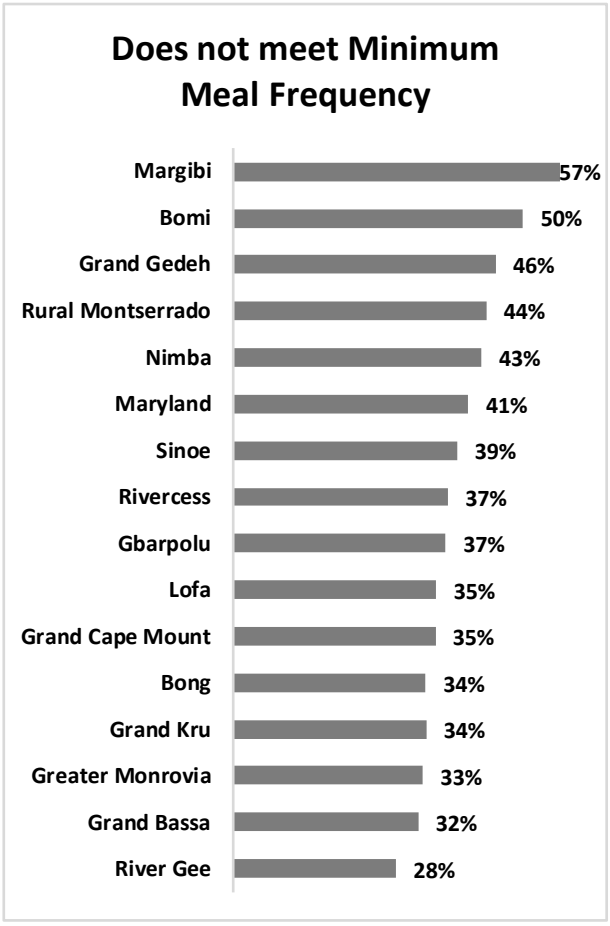
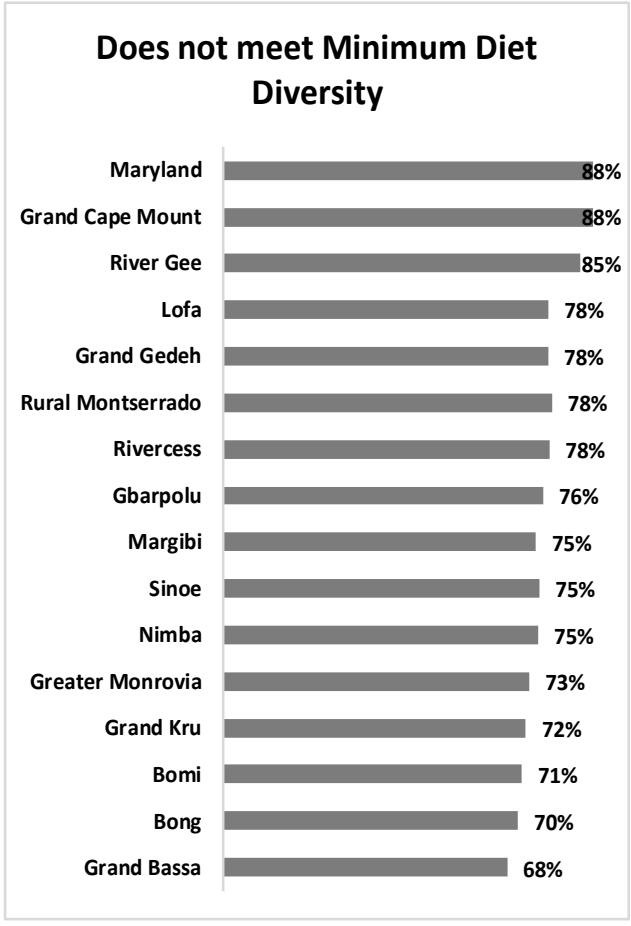


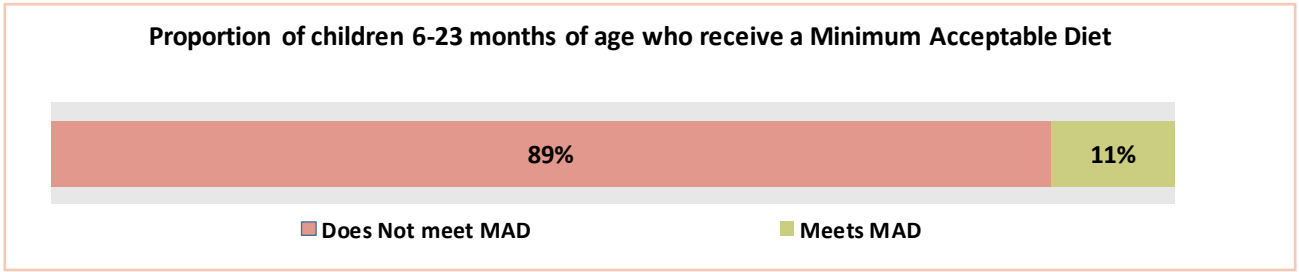
Figure 25: Distribution of children who did not meet minimum dietary diversity by county, Liberia, 2018



3.7.5.6 Minimum Acceptable Diet (MAD)

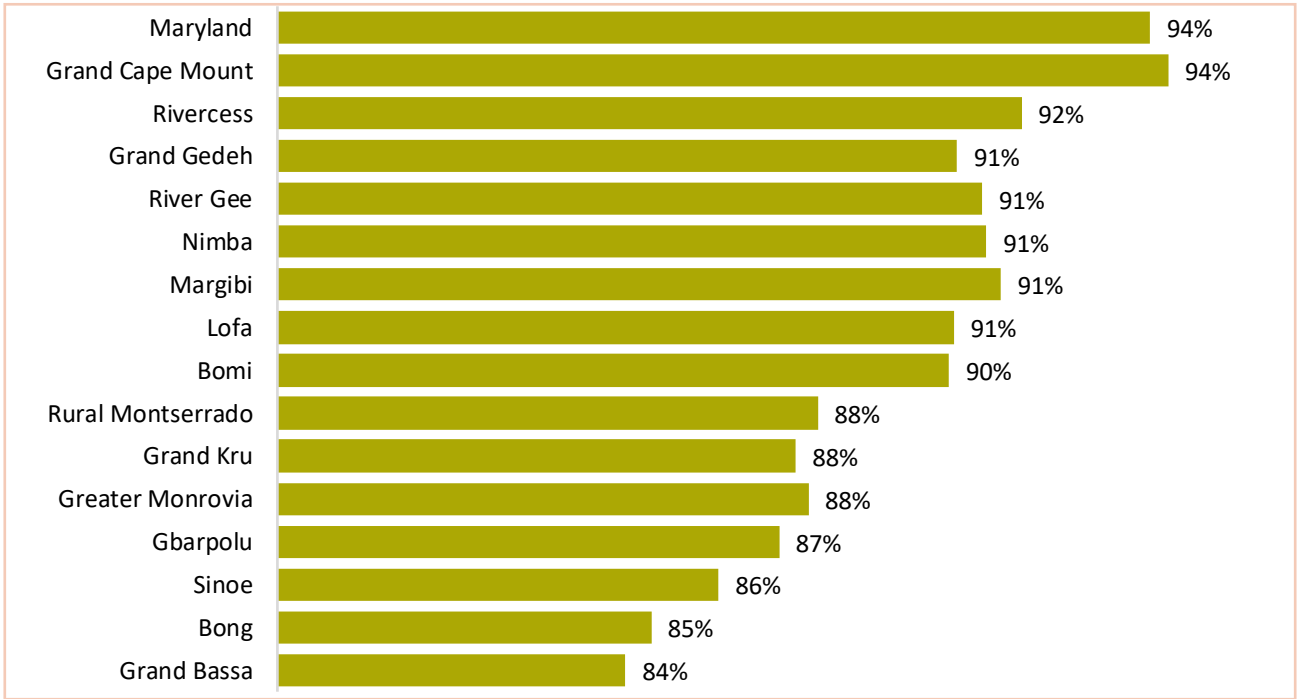
According to WHO and WFP Minimum Acceptable Diet (MAD) is a summary indicator for IYCF practices among children 6 – 23 months. Consequently, a child is categorized as consuming a Minimum Acceptable Diet if s/he meets both (1) the minimum diet diversity and (2) the minimum meal frequency. It is important to note that the complementary feeding period is a vital for child growth. If a child experiences nutrient deficiencies accompanied by illnesses during this phase of growth and development it is likely to contribute globally to higher rates of under nutrition among children less than 5 years.

Figure 26: Distribution of children by minimum acceptable diet, Liberia, 2018



The composite shows a worrying picture with 89% of the assessed children not consuming or meeting the minimum acceptable diet, leaving only a small proportion of 11% who meet the minimum acceptable diet (Figure 26). The highest prevalence is observed in both Grand Cape Mount and Maryland counties with both (94%) followed by River Cess county with (92%) of children not meeting MAD (Figure 27).

Figure 27: Distribution of children not meeting minimum acceptable diet by county, Liberia, 2018



The low meal frequency and dietary diversity among children 6 to 23 months signify a deficit in the kilocalorie consumption of this age group which is likely to negatively impact on their growth and development; hence, the need to promote and support appropriate infant and young child feeding cannot be overemphasized.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4. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

There are 18% food insecure households in Liberia with 16% moderately food insecure and 2% severely food insecure. This represents a slight deterioration in the food security situation in the country compared to the last survey that was conducted in 2015 (Liberia Food Security Cluster, 2015) where 16% of the assessed households were food insecure (15% moderately food insecure and 1.8% severely food insecure). The highest numbers of food insecure households are located in Maryland, Bomi, Nimba, River Gee and River Cess counties. Thus need for further monitoring and attention.

One of the contributing factors to food insecurity is the economic constraints. High prices are limiting and restricting households' access to food, as well as predisposing them to potential food insecurity. The sharp increases in food and fuel prices are attributed to depreciation of the local currency (Liberian dollar) against the US dollars. Prices of most food items have been steadily increasing, and currently domestic prices are substantially higher than pre-Ebola levels. The Central Bank annual report (Central Bank of Liberia, 2017) highlights an increase from single digits in 2016 of 8.8% to double digits in 2017 of 12.4%. Moreover, prices on local markets have continued to rise sharply. Domestic rice (staple food) prices are spiking, with the prices of imported rice having risen as high as 19% in Pleebo market in Maryland county. Overall, in the month of April, the average domestic retail prices of rice were 11% higher than the same period in 2017. In addition, fuel prices are also on the rise by at least 30% in majority of the domestic markets—with prices extremely higher in markets far from Monrovia. Foya market, in Lofa county reported the increase in domestic fuel a 52% increase in April 2018 compared to April 2017.

Unstable and high fuel and food prices, unreliable and unsustainable income sources, poor access to markets due to inaccessible roads and unavailability of markets all contribute to reductions in household's access and availability of food and purchasing power. Hence for households to cope with declining incomes many households have been forced to change their consumption patterns and reduce expenditures on health, education and non-food items. While some households employ extreme strategies, such as begging or sale of livestock to access food. Several households have reduced expenditures on food with consequent declines in the quality and quantity of their food intake.

Some of these coping mechanisms generally increase risk of malnutrition both of micronutrient deficiencies and in severe cases of overall energy deficiency. Further these coping strategies have left some of the households shifting from diverse diets that are rich in micronutrients to ones that are largely constituting of starchy staples as a response to declines in income and food insecurity.

About 19% of the assessed households are depending on constrained livelihood opportunities characterized by high usage of coping mechanisms including the emergency coping strategies exacerbating the food security situation of these households. Households that are food insecure run the risk of falling into more severe forms of emergency coping strategies and further deepening their food insecurity in the future. This calls for sustained monitoring, especially of those households that are marginally food insecure category.

High labour migration was reported within the country. It is clear that rural transformation is critical in developing and creating decent jobs, raising income and achieving food security and nutrition objectives in the long-term, especially for the youth (that seem to be migrating more than the other age groups) and women. Consequently, more work is needed to create the conditions for sustainable investment in infrastructure and development in rural areas.

While the causes of food insecurity are more easily noticeable and usually follow clear patterns related to food access, malnutrition has different causes across time and space, making it more difficult to understand. The plurality of causes of malnutrition therefore warrants a multi-sectoral response in the form of assessments, analysis, recommendations and action.

While there have been encouraging overall improvements in GAM, it is clear from the data that stunting still lags behind. Stunting increased slightly between 2012 and 2018; delay in improving hygiene is particularly worrisome especially in Grand Bassa and River Cess counties in light of the knowledge that poor health and malnutrition form a vicious circle. Poor hygiene promotes disease, especially in environments where children have weak immune systems because of inadequate diets, while disease results in loss of appetite and poor nutrient absorption, thereby increasing malnutrition.

In addition, the barrier to improved nutrition status is not necessarily lack of economic access or government poverty reduction programmes, but rather limited understanding of good dietary and nutrition practices. However, in some poor households, malnourished children face the additional barriers of economic and social access.

The national prevalence for GAM is at 4.8%; while those for MAM and SAM are at 3.4% and 1.4%, respectively. This finding resonates with previous findings of the CFSNS 2008 (4.9%). Some reasons to explain the low prevalence of GAM amidst heightened poverty and food insecurity is the prioritization of children in the households for food at the expense of adult during hunger and other stressed periods.

Risk of malnutrition is further exacerbated due to dietary energy supply falls below the minimum dietary energy requirement. This is most likely to transpire if some of the severe coping mechanisms are employed among households that are unable to afford enough food or are unaware of the nutritional benefits of the different foods. Poor dietary diversity coupled with a reduction in health, education and other basic necessities expenditures compromise the food intake. In addition, poor hygiene practices such as open defecation or improper disposal of children's stool can exacerbate the risk of malnutrition in young children. This an indication of the important role of non-food factors in causing malnutrition.

Liberia as a country is also facing the double burden of malnutrition which is characterized by the simultaneity of under nutrition along with overweight and obesity. The issue of quality of food is of particular importance in regard to the "double burden" which is becoming a public health issue of concern in African countries including Liberia.

There is a steady increase in the number of children who are overweight from 3.0% in 2013 (LDHS) to 3.7% currently. Obesity generally leads to high risks of non-communicable diseases including diabetes and heart-related diseases. On the national scene, 2.9% of children are estimated to be overweight, while 0.8% is severely overweight. Overweight is relatively highest in Lofa (5.1%) as compared to the rest of the counties. The situation, on the other hand, is relatively lowest in Grand Cape Mount County (1.2%) as compared to counties.

4.2 Recommendations

Naturally, the reforms required to improve food and nutrition security comprise both environmental and infrastructural changes as well as changes to individual behavioural and management practices.

Monitoring System

Liberia lacks a food security and nutrition monitoring system (FSNMS). FSNMS can play an important role in identifying, analyzing, and addressing food security and nutrition challenges through policy and program solutions. FSNMS provides necessary and timely information to decision makers for building sound policies and programs. There is need to reengage the different stakeholders and for a monitoring system. This would also assist in conducting seasonal trends analysis.

Collaboration and Commitment

There is need to continue building on the already existing partnership between the government and the UN agencies.

It is recommended that food security and nutrition be actively promoted by the Government of Liberia, with the support of the UN system in Liberia especially WFP, UNICEF and FAO and development partners and civil society organizations that are stakeholders in the food security and nutrition activities.

Activities such as the SUN (Scaling up Nutrition) movement and the UN REACH initiative should be fully supported. It is vital that a Food and Nutrition Security Commission be established at the national level, to coordinate activities within this sector.

Capacity Building

Ministry of Agriculture and Health in collaboration with UNICEF, WFP and FAO need to facilitate capacity building workshops in order to sensitize the different food security and nutrition stakeholders on potential interventions for improving food security in the country. This should not be an activity at central level, but it should include the different counties.

Agriculture

Well-designed and targeted poverty reduction/alleviation programmes can have a core role in achieving this objective.

As a way of addressing food availability issues: The government needs to provide secure land tenure and equitable access to resources to the different populations that do not have access to farming land.

As most of the livelihoods of the rural poor are based on agricultural activities, improving the agriculture sector is a main priority. Ministry of Agriculture and development partners should encourage agricultural investments in infrastructure such as rural roads and markets to increase spatial integration, and encouraging increased participation in agro processing extension services by the private sector. In addition, further establishment of partnerships with the private sector to provide smallholder farmers with agricultural input availability and use, farmer training, access to and use of improved crop varieties and the reduction of post-harvest losses.

The ministry of agriculture and FAO should encourage the unemployed population especially the young people to engage in agriculture. This can serve both as source of livelihood through (labour) and as away on increasing food availability.

Access: there is need to encourage livestock production, this will likely benefit households' food security and nutrition outcomes.

Markets

The Government of Liberia and development partners need to improve availability of markets. This can be addressed by linking farmers to markets (through improved access to infrastructure, financing and information). Consequently, if markets are available and performing well they can serve as food reserves for households that do not have stock reserves from own production.

Economic Crisis

Inflation and price increase of basic commodities should be monitored since there has been a 57.1% change in the exchange rate compared to the same period last year. Thus there is need for constant monitoring.

Education

Ministry of education and its developing partners should construct and upgrade schools, especially the rural schools. There are risks of losing potential as a result of low attendance, linked to unavailability of teachers or qualified teachers, poor infrastructure and long walking distances to school. If ignored it is likely to lead to a vicious cycle of poverty among the affected households. Development of rural schools can be used as an incentive for children to attend school; this can be combined with school feeding mechanisms.

Nutrition

There is need to plan and ensure that comprehensive and multi-sectoral interventions are put in place to address the multidimensional underlying causes of under nutrition through improved food security, health status and access to care response to the nutritional challenges in the country:

Nutrition education targeting mainly women in order to improve optimal child care practices in coordination with the women groups or church committees etc. This should be done with the Ministry of Health in collaboration UNICEF and WHO.

As a way of managing a vicious cycle of malnutrition at household level, there is need to curb and prevent stunting. For households and individuals that are not consuming enough macro and micro nutrients, food fortification and blending can be implemented to improve the quality and quantity of nutrients in foods. This intervention should is particularly recommended for children below the age of two years which is the “window of opportunity” to prevent malnutrition. Government policies can be structured to support such fortification programs.

Programs targeting infants and young children should promote good nutrition practices for optimal growth and development, such as exclusive and continuous breastfeeding with timely, nutritiously adequate and safe complementary feeding, which offer protection from under- and over-nutrition that can progress into adult-onset chronic diseases.

In order to reduce the levels of malnutrition in children, it is recommended that the nutrition implementing partners ascertain the importance of good dietary diversity. One way in which malnutrition may be tackled is to diversify the diets of the affected individuals or populations through an improved production and consumption of vegetables and fruit at the household level. Improved dietary diversity can be through introducing “kitchen gardens” at household levels. This approach can be used as both an income generating activity and a source of nutrients for the households or individuals.

There is need to promote hygiene practices, prevention of malaria campaigns and serious public investments in road networks and health care infrastructures to increase communities’ access to health-care facilities, especially in places like Grand Bassa county.

As a way of further understanding the chronic nature of the food security and nutrition in Liberia there is need to do a further study that investigates factors underlying persistent malnutrition in Liberia through the Integrated Food and Nutrition Security Causal Analysis (IFANSCA).

Nutrition education programs like community-based interventions targeting school-aged children and adults can emphasize the selection of safe and nutrient-dense foods and help individuals make optimal, healthy food choices.

Assessment of the cost of a nutritious diet can help policy-makers identify the populations most at risk of malnutrition because of limited economic access, enabling the design of responses to assist these people. The minimum cost of diet (CoD) method provides a means of evaluating the economic accessibility of a nutritious diet.

Intensify health and nutrition information, education and communication by using various channels – mass media, village loudspeakers, village events, etc. – to address not only mothers and caregivers, but also village and religious leaders, fathers and other family members, adolescents, teachers, extension workers and community service providers.

Poverty

Concerted efforts are urgently needed to tackle the root causes of poverty, particularly in rural agricultural areas.

Modalities

There is need to identify a potential way of improving the resilience of the different communities. It is also important to examine how assistance modalities can support urban livelihoods, such as artisans and unskilled labourers, as they often face economic hardship during lean periods.

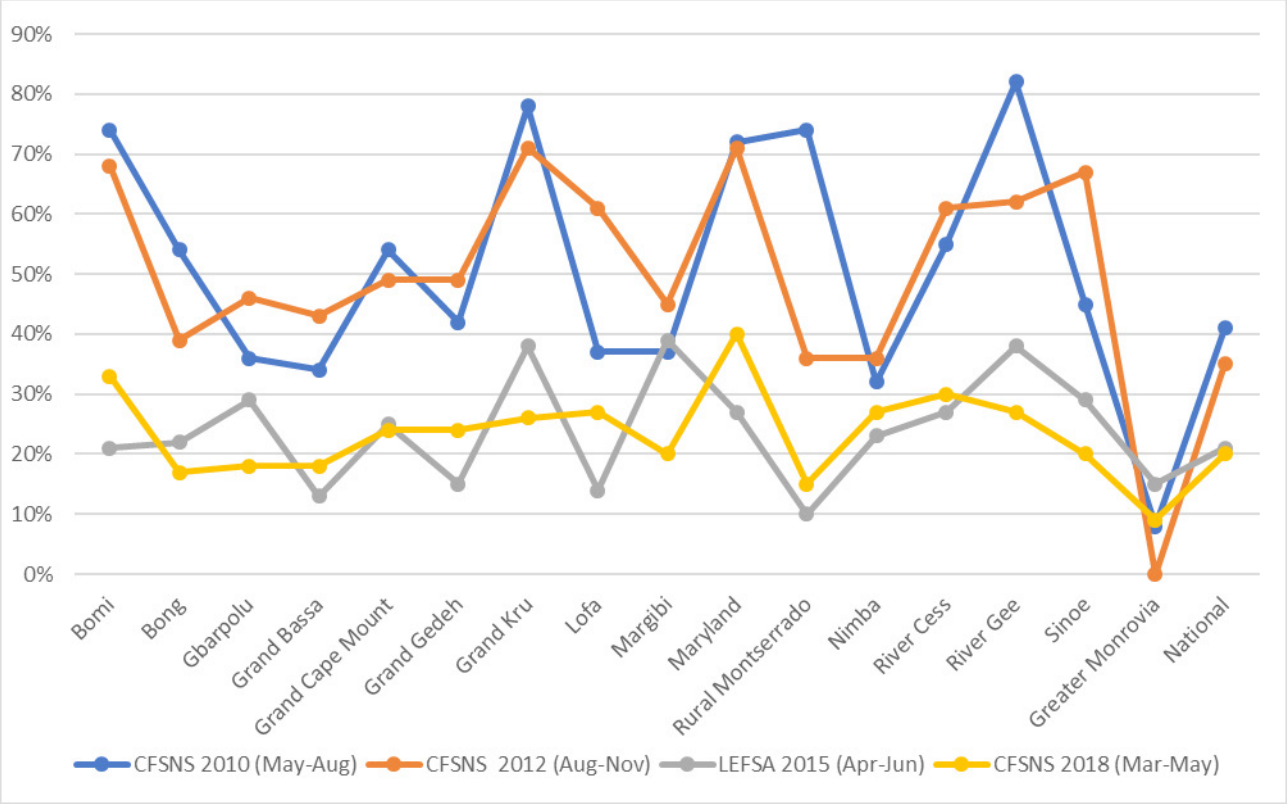
APPENDIX

Appendix 1: Indicative Trends Analysis of Food Insecurity (2010-2018)

Indicative Trends Analysis

This section attempts to provide an analysis of the trends of food security in Liberia by county using data from 2010 to 2018. It is important to note that the analysis is only intended to show the relative positions as per the periods/times the survey was conducted. It is not intended to draw a conclusive comparison between and among the various surveys as these surveys were conducted using different approaches and at different times. However, it will provide us some information about the food security situation of a county as and when the survey was conducted so that one may see the relative trends in the county between times irrespective of the approach or timing.

Figure 28: Food Insecurity Trends in Liberia, 2010-2018



In 2010 and 2012, the food insecurity status of households was analyzed using only the food consumption score, but the surveys were conducted at different times as indicated in the figure 27. On the other hand, LFSA 2015 and CFSNS 2018 were analyzed using the CARI console. Keen observations of the results of the different surveys show how vulnerable some counties have been to food insecurity over time irrespective of the approach and timing. For instance, River Gee county was the most food insecure county in 2010 (82%) and that situation did not significantly change in 2012 when it was the 5th most food insecure county (62%). In 2015 it was one of two counties the second most food insecure (38%) and the 4th in 2018 (27%). This is also true for other counties like Bomi, Grand Kru, River Cess and Maryland counties.

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