2 ZERO HUNGER

PREVELANCE OF FOOD INSECURITY IN BOTSWANA 2018/19

STATISTICS BOTSWANA

Preface

This Stats brief presents the Food Insecurity Experience Scale (FIES) results from data collected in the Botswana Quarterly Multi Topic Household Survey of 2019/2020. Specifically, the results are from the data collected in the third quarter of 2019 (July to September 2019). The technical and graphical contents of the brief were derived from the Food and Agricultural Organisation (FAO) technical report on the FIES.

The survey was conducted mainly to produce labour force indicators. As a result, the main survey module was Employment and other modules were included on a rotational basis as per stakeholders' needs and developmental frameworks (Vision 2036, National Development Plans, and Sustainable Development Goals). During the aforementioned quarter, the survey included the FIES survey module to estimate the prevalence of food insecurity at moderate and severe levels in the targeted population. The representativeness of the data was limited to national and domain/Strata level (Cities/Towns, Urban Villages and Rural Areas) for the FIES module.

The results show that 50.8% (±3.9) of the population in Botswana was affected by moderate to severe food insecurity in the year 2018/2019, while 22.2% (±3.4) of the population was affected by severe food insecurity. Among the Cities/Towns, Urban Villages and Rural Areas the prevalence of moderate to severe food insecurity is estimated at 31.70% (±6.6), 46.60% (±6.0) and 65.50% (±5.9) respectively while the population experiencing severe food insecurity is 11.90% (±4.2), 17.50% (±4.5) and 33.10% (±6.4) for the same areas.
We hope the stakeholders find these results useful in informing policy formulation, review, and monitoring of the Agenda 2030 SDGs, targets and indicators.

I wish to thank the World Bank for providing technical support in the development of the electronic survey tools, and the Food and Agriculture Organization of the United Nations (FAO), who is custodian of the "Prevalence of Undernourishment (PoU)" and "Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)" SDG indicators, for leading FIES data analysis and the resultant capacity building. Finally, I would like to thank the respondents who provided invaluable information for the survey, and all the other stakeholders who contributed to the success of the survey.

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Statistician General
November 2020

Introduction

In September 2015, world leaders agreed on a global development agenda, the Agenda 2030 and its 17 sustainable Development Goals (SDGs), 169 targets and 230 (or more) indicators.

Botswana was among the 193 United Nations Member States that endorsed the 2030 Agenda for Sustainable Development. To show commitment and ensure success in implementing the Agenda 2030, Botswana developed a National Framework for Sustainable Development (NFSD) and the Botswana SDGs Roadmap. The global agenda is implemented through Botswana's Vision 2036, National Development Plan, and the District and Urban Development Plans. (Botswana SDGs Roadmap, 2017-2023).

The second of the 17 SDGs, Goal 2 aims to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. To achieve the goal (2) several targets have been set, the first one being Target 2.1: To end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round, By 2030. Several indicators are used to monitor progress on each target. **Target 2.1** is monitored through two (2) **Indicators, 2.1.1** and **2.1.2**; **Indicator 2.1.1** measures "Prevalence of Undernourishment" while **Indicator 2.1.2:** measures "Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale".

The Food Insecurity Experience Scale (FIES) measures the extent of food insecurity at the household or individual level. The indicator provides internationally comparable estimates of the proportion of the population facing moderate to severe difficulties in accessing food. (See the text box below for more details).

The FIES consists of eight brief questions regarding access to adequate food, and the questions are answered directly with a yes/no response. The FIES complements the existing food and nutrition security indicators such as Prevalence of Undernourishment (Under the same SDG target 2.1).

According to the FIES, with increasing severity, the quantity of food consumed decreases as portion sizes are reduced and meals are skipped. At its most severe level, people are forced to go without eating for a day or more.

The scale further reveals that the household's experience of food insecurity may be characterized by uncertainty and anxiety regarding food access and compromising the quality of the diet and having a less balanced and more monotonous diet.

Sustainable Development Goal 2

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Target 2.1

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

SDG indicator 2.1.2

Indicator 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale

This indicator provides internationally comparable estimates of the proportion of the population facing moderate or severe difficulties in accessing food. The Food Insecurity Experience Scale (FIES) produces a measure of the severity of food insecurity experienced by individuals or households, based on direct interviews. The indicator will measure progress towards **SDG Target 2.1.**

(**Source:** Transforming our world: the 2030 Agenda for Sustainable Development, https://sdgs. un.org/2030agenda; http://www.fao.org/sustainable-development-goals/indicators/212/en/ ; http://www.fao.org/sustainable-development-goals/goals/goal-2/en/)

Survey Methodology

Survey Design

The survey was designed to ensure that the data is representative at both the national and subnational level (Domain/Strata) to guide policy decisions. Since this is a household survey, only private dwellings were covered and Institutional dwellings such as prisons, hospitals, army barracks, hotels, etc., were not covered. The coverage was at national level guided by census districts (district and sub-districts) that Statistics Botswana normally follows in the selection of survey units.

Survey Sampling

The design followed a stratified two-stage sampling technique with probability proportional to size (PPS). The first stage involved sampling of primary sampling units (PSUs), Enumeration Areas (EAs) and sampling of households with systematic sampling in the second stage. The sampling procedure yielded a sample size of 270 EAs resulting in 3 240 households. These were selected with Probability Proportional to Size (PPS) method where Measure of size (MOS) is the number of households as enumerated from the 2011 Population & Housing Census.

Data Collection

Statistics Botswana conducted a Quarterly Multi-topic Survey (QMTS), which started in July – September 2019 as the first quarter.

Data was collected through an electronic questionnaire through the Computer Assisted Personal Interviews (CAPI) system. The CAPI system was used to reduce the time lag between field data collection and to ensure that the reports meet the quarterly schedules.

The survey questionnaire had twelve (12) modules, among them, the Food Insecurity Experience Scale (FIES) module. The FIES module, however, was part of the modules which are included in the survey on a rotational basis. As such data were collected in the first quarter only and will be collected again the following year.

As indicated in the survey sampling section above, data was collected from 3240 households in 270 EAs from each EA 12 households were selected and enumerated through face-to-face interviews. A 12-month reference (recall) period was used to account for potential seasonal differences in food insecurity across the year.

Data Analysis

The Food Insecurity Experience Scale (FIES) is a standardized, experience-based food security scale, developed by FAO. It is an experience-based metric of food insecurity severity that relies on people's direct responses to eight questions about their access to food. The eight questions (attached as Annexure 1) are administered to individuals or households.

For the purpose of this survey, the eight FIES questions were administered at household level. The questions targeted the head of household who responded on behalf of the household and the responses were capture in the CAPI system. The responses produced binary data ("yes"/"no").

The analysis was led by the FAO Food Security and Nutrition Statistics team, and details and figures in the methodology write up were drawn from the Technical Report produced by FAO. The binary data was analysed through the Rasch model, a one-parameter logistic model, following the Food Insecurity Experience Scale.

Figure 1: Food Insecurity Along A Continuum Of Severity

The probability of a respondent answering "yes" to an FIES item was modelled as the logistic function of the distance along the scale between the severity of the respondent's condition and the severity of the item (question).

The more severe a respondent's food insecurity status is, the higher the probability they will respond affirmatively. See the formula in the text box below.

The probability of receiving an affirmative answer to the jth question by the ith respondent in a sample is given by:

$$\mathbf{Prob(X_{i,j}=Yes)=} \frac{\mathbf{exp(a_i-b_j)}}{\mathbf{1+exp(a_i-b_j)}} \; \forall \; i,j,$$

where a_i and b_j represent, respectively, the position of the respondent and of the item on a one-dimensional scale of severity.

All the responses from the households were modelled along the food insecurity continuum of severity to show the extent of food insecurity from mild to severe.

In summary as depicted in **Figure 1,** the model seeks to establish the proportion of households who are uncertain regarding their ability to obtain food (Food Secure to Mild Food Insecurity); the proportion of those who compromise food quality or quantity, reduce the quantity and skip meals (Moderate Food Insecurity;) and those who have no food for a day or more (Severe Food Insecurity). The following section shows the results from the analysis process.

Summary of Results

The results show that at national level 50.8% of the population in Botswana was affected by moderate to severe food insecurity in 2018/19, while 22.2% of the population was affected by severe food insecurity only. This translates to 27% of the population being food secure that is having adequate access to food in both quality and quantity (**Figure 2**). Also see the explanation of food insecurity in **Figure 3** (Source FAO).
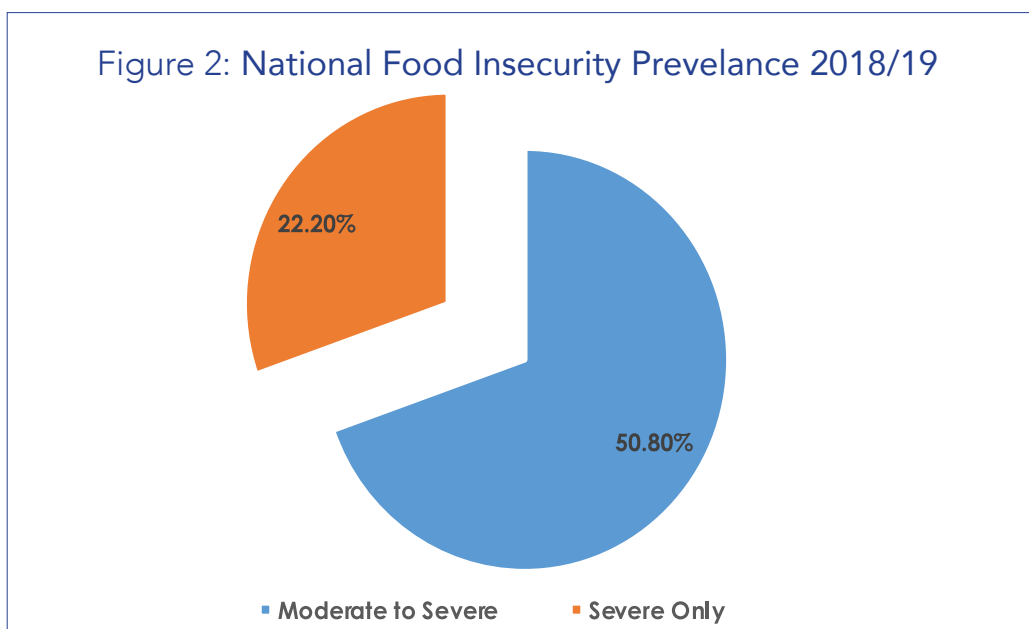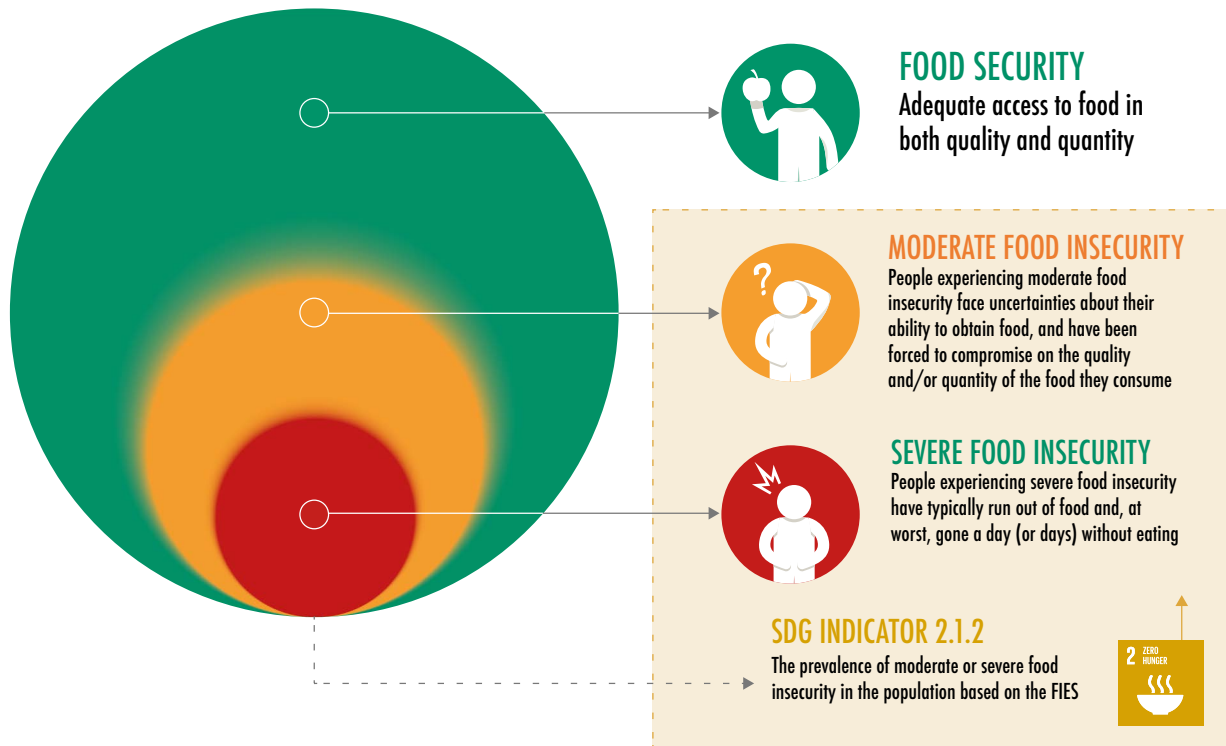

Figure 2: National Food Insecurity Prevelance 2018/19

22.20%

50.80%

■ Moderate to Severe   ■ Severe Only

Figure 3: Food Insecurity Levels

### EXPLANATION OF FOOD-INSECURITY SEVERITY LEVELS MEASURED BY THE FIES IN SDG INDICATOR 2.1.2

FOOD SECURITY
Adequate access to food in both quality and quantity

MODERATE FOOD INSECURITY
People experiencing moderate food insecurity face uncertainties about their ability to obtain food, and have been forced to compromise on the quality and/or quantity of the food they consume

SEVERE FOOD INSECURITY
People experiencing severe food insecurity have typically run out of food and, at worst, gone a day (or days) without eating

SDG INDICATOR 2.1.2
The prevalence of moderate or severe food insecurity in the population based on the FIES

SOURCE: FAO.

At the subnational level, the results show that among the Cities/Towns, Urban Villages and Rural Areas the proportion of population experiencing moderate to severe food insecurity was 31.70%, 46.60% and 65.50% respectively, while those experiencing severe food insecurity only was 11.90%, 17.50% and 33.10% for the same areas.

Table 1: Prevelance of Food Insecurity by Strata 2018/19

STRATA	Cases	Moderate + Severe	Severe
Cities &Towns	792	31.70%	11.90%
Urban Villages	1308	46.60%	17.50%
Rural Areas	1140	65.50%	33.10%
National	3240	50.80%	22.20%

Figure 4: Moderate and Severe Food Insecurity Prevelance 2018/19
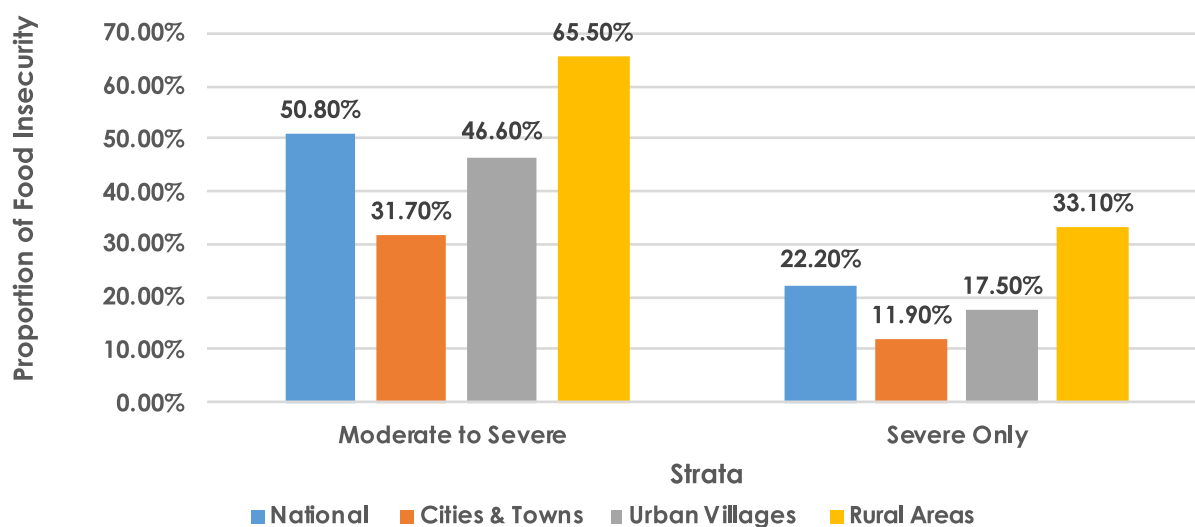
Conclusion

Following the release of these results (from QMTS Q3-2019) Statistics Botswana is planning to include the FIES module in the QMTS survey on an annual basis post COVID-19. This will ensure compliance to report on FIES on annual basis, as per the Sustainable Development Goals reporting frequency. The organisation is also working with FAO to produce Prevalence of Undernourishment (PoU) indicator using the BMTHS 2015/16 data. Because of the data requirements for producing PoU, the indicator will only be computed from Poverty surveys which are conducted at 5 year interval period.

It is hoped that internal stakeholders support the continued data collection and computation of the two indicators to timeously track progress in **Target 2.1:** To end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round, By 2030.

ANNEX 1: Food Insecurity Experience Scale (FIES) Questionnaire

[11] FOOD INSECURITY EXPERIENCE SCALE

E `$interview_started`

Who is responding?	SINGLE-SELECT: LINKED	F110000

I The respondent should be 12 years old or above, desirably the head of the household.

W1 `demographics[self.Value].D10004_age>=12`

M1 Warning! This person is too young to provide answers! Try to secure another respondent if possible!

STATIC TEXT

Now I would like to ask you some questions about your household's food consumption in the last 12 months. During the last 12 MONTHS, was there a time when...

1. ... you were worried your household would run out of food because of a lack of money or other resources?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110001
2. ... your household was unable to eat healthy and nutritious food because of a lack of money or other resources?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110002
3. ... your household ate only a few kinds of foods because of a lack of money or other resources?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110003
4. ... your household had to skip a meal because there was not enough money or other resources to get food?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110004
5. ... your household ate less than you thought they should because of a lack of money or other resources?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110005
6. ... your household ran out of food because of a lack of money or other resources?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110006
7. ... your household was hungry but did not eat because there was not enough money or other resources for food?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110007
8. ... your household went without eating for a whole day because of a lack of money or other resources?	SINGLE-SELECT 01 ◯ Yes 02 ◯ No 98 ◯ Don't know 99 ◯ Refused	F110008

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