

# National Food and Nutrition Security Survey

# NORTH WEST PROVINCE REPORT



## National Food and Nutrition Security Survey North West Province Report

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# List of Abbreviations

<b>BMI</b>	Body Mass Index
<b>CAPI</b>	Computer Assisted Personal Interviewing
<b>CI</b>	Confidence Interval
<b>CSI</b>	Coping Strategy Index
<b>GBV</b>	Gender-Based Violence
<b>GDP</b>	Gross Domestic Product
<b>DAFF</b>	Department of Agriculture, Forestry and Fisheries
<b>DALRRD</b>	Department of Land Reform and Rural Development
<b>DDS</b>	Dietary Diversity Score
<b>DOH</b>	Department of Health
<b>DSD</b>	Department of Social Development
<b>FCS</b>	Food Consumption Score
<b>FGDs</b>	Focus Group Discussions
<b>FNS</b>	Food and Nutrition Security
<b>GAM</b>	Global Acute Malnutrition
<b>GHS</b>	General Household Survey
<b>HDDS</b>	Household Dietary Diversity Score
<b>HEA</b>	Household Economy Approach
<b>HFIAP</b>	Household Food Insecurity Access Prevalence
<b>HFIAS</b>	Household Food Insecurity Access Scale
<b>HHS</b>	Household Hunger Scale
<b>HSRC</b>	Human Sciences Research Council
<b>IFSNP</b>	Integrated Food Security and Nutrition Programme
<b>JMP</b>	Joint Monitoring Programme
<b>Kg/Ha</b>	Kilogram Per Hectare
<b>LHZ</b>	Livelihood Zones
<b>MAHFP</b>	Months of Adequate Household Food Provisioning
<b>NFERP</b>	National Food Emergency Relief Programme
<b>NFNSS</b>	National Food and Nutrition Security Survey
<b>NIDS</b>	National Income Dynamic Survey
<b>NISIS</b>	Nation Integrated Social Information System
<b>RDP</b>	Reconstruction and Development Programme
<b>RVAA</b>	Regional Vulnerability Assessment and Analysis

<b>SADC</b>	Southern African Development Community
<b>SAL</b>	Small Area Layers
<b>SAS</b>	Statistical Analyses Systems
<b>SALDRU</b>	Southern Africa Labour Development Research Unit
<b>SANHANES</b>	South African National Health and Nutrition Examination Survey
<b>SAVAC</b>	South Africa Vulnerability Assessment Committee
<b>SOP</b>	Standard Operation Procedure
<b>Stats SA</b>	Statistics South Africa
<b>TLU</b>	Tropical Livestock Units
<b>UNICEF</b>	United Nations International Children's Emergency Fund
<b>VIP</b>	Ventilated Improved Pit
<b>WASH</b>	Water, Sanitation and Hygiene
<b>WFP</b>	World Food Programme
<b>WHO</b>	World Health Organization
<b>WHR</b>	Waist-to-Hip Ratio
<b>ZAOCG</b>	Highveld Border Open Mixed Income Livelihood Zone
<b>ZANWC</b>	Western Open Access Cattle and Game Farming Livelihood Zone
<b>ZAHMI</b>	Highveld Open Access Mixed Income Livelihood Zone



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- HSRC staff who endeavoured to ensure that the study is a success
- Experts for sharing their knowledge with the research team and data collectors.

### Disclaimer

This report is based on the empirical evidence collected from selected Small Area Layers (SALs) within the four districts of the Northwest Province. SAL is the smallest geographical unit usually allocated to a single enumerator during census enumeration. In other words, it constitutes a small piece of land for an enumerator to cover to administer a questionnaire during a census or study (Statistics South Africa). Each of the SALs in this survey had 35 visiting points (households). The results provide a baseline assessment of the status quo of food and nutrition security in the province. The data was collected during COVID-19 lockdown around November-December 2021. This greatly influenced and changed the picture from what would ordinarily obtain under a normal situation. Whilst this research project has benefited from the valuable insights and input of a Technical Advisory Group (TAG) that provided comments and reviewed the final research report, the ultimate responsibility for the contents therein (including but not limited to unintentional errors, inaccuracies, or omissions) rests with the authors and researchers involved. Users of this research should exercise their judgment and discretion when interpreting the findings and recommendations presented herein.

# Executive Summary

Food and nutrition security is one of the fundamental strategic imperatives of the government of South Africa. The right to access sufficient food is firmly entrenched in the Constitution of the Republic of South Africa (Sections 27, 28, and 35). Many policies, programmes, and intervention measures such as social grant systems (which include child support, school feeding schemes, farmer support programmes) have been developed and implemented to help improve the food and nutrition security situation at household level in the country. These programmes are reflected in the National Policy on Food and Nutrition Security in 2014 and, subsequently, the National Food and Nutrition Security Policy Implementation Plan (2018-2023). Despite these efforts, food insecurity is still a reality and a major concern for several millions of people in South Africa. Strong evidence exists that there are households in South Africa that go to bed on empty stomachs, and others that only eat once or twice a day. In addition, South Africa is reported to be going through a nutrition transition characterised by the double burden of malnutrition (manifesting through stunting and wasting) and overweight due to the consumption of a nutrient poor diet. This is in sharp contrast to the fact that South Africa is food secure at a national level. The concentration and distribution of these households across the various districts within the province that are experiencing food insecurity and malnutrition need to be established as this has been a cause for concern for the Department of Agriculture, Land Reform, and Rural Development (DALRRD) as well as the membership of the South African Vulnerability Assessment Committee (SAVAC) which is comprised of various sectors.

To develop intervention measures that are well targeted and address the root causes of household food and nutrition insecurity, current data at lower geographic levels and contextually relevant scientific evidence are crucial. Accordingly, the DALRRD commissioned a National Food and Nutrition Security Survey (NFNSS) aimed at providing baseline data on the state of food and nutrition security across districts and livelihood zones in South Africa. Further, the survey sought to investigate the link between food security and nutrition as well as assessing the impacts of COVID-19 on household food and nutrition survey (FNS). National surveys on food and nutrition security are needed as they inform the government and policymakers about the actual status of food and nutrition insecurity in a country. This provincial report provides the first ever full-scale baseline assessment of the Food and Nutrition Security Survey (NFNSS) conducted in all four districts of the North West Province. The survey adopted the SAVAC-endorsed methodological framework for measuring food insecurity and assessing vulnerability. The framework combines qualitative and quantitative research dimensions to enhance methodological and data triangulation. Broadly, the framework adopts the food and nutrition security continuum, and the Household Economy Approach (HEA).

Out of the targeted 3 430 visiting points (VPs), 88.7% were found to be valid. Out of these valid VPs, 60.4% were successfully realised. This came from a total of 2 074 people who were interviewed. When weighted, this total represented 2 726 793 South Africans of 18 years of age and older living in the North West Province.

To measure the various aspects of food and nutrition security, a list of internationally recognized food security indicators was used, including the Household Food Insecurity Access Score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and the Household Dietary Diversity Score (DDS). The results indicated that many households were food insecure in the Province. The HFIAS showed that about a quarter (25.5%) of households were food secure, with the remaining 81.9% of households being food insecure. Of those who are food insecure, 25.9% of the households experienced severe levels of food insecurity. The HHS showed that 69.9% of households experienced little to no hunger, while 21.2% and 9.8% of households experienced moderate and severe hunger, respectively. The FCS and HDDS showed that over 76% and 44%, respectively, consumed an acceptable number of food groups across all the districts. The FCS indicated that 21.3% of households consumed poor diets, while 33.9% consumed borderline diets. However, the households mostly consumed nutrient-poor

food groups such as cereals, condiments, sugars, oils/fats; there was limited consumption of nutrient-rich food groups such as fruits, pulses, nuts, eggs, fish and seafood.

The levels of food insecurity varied across districts. Severe food insecurity was more prevalent in the Dr Kenneth Kaunda District where 34% of the households were severely food insecure, and 13% experienced severe hunger as determined by HFIAS and HHS, respectively. Dr Kenneth Kaunda also had the highest prevalence of low dietary diversity (10%). Additionally, households from Dr Ruth Segomotsi Mompoti District had poor diet and the lowest dietary diversity, with 27% and 5% of the households found to have consumed poor diets and low dietary diversity, respectively. This was followed by Dr Ruth Segomotsi Mompoti and Ngaka Modiri Molema, while Bojanala had the lowest proportion of households experiencing severe food insecurity (22%). Severe food insecurity was more prevalent among all age groups household heads, and among the households from Dr Kenneth Kaunda, Dr Ruth Segomotsi Mompoti, and Ngaka Modiri Molema districts.

A number of demographic and socioeconomic factors, including gender, age of the household head/acting head, access to irrigation, water sources, sanitation, social grants, household size, markets, level of education of the household head/acting head, and involvement in agricultural production, have been found to significantly influence the food security of households. Overall, the findings demonstrated a strong correlation between social benefits, educational attainment, and employment, which led to better food security outcomes. As an example, the proportion of food-secure households increased significantly as education levels also increased, only 18% of households headed by people with no education were food secure, compared to 50.8% of households headed by people with tertiary qualifications. Farming activities played a significant role, suggesting that dealing with food insecurity in a province such as North West Province is dependent on agricultural activities as well as the expansion of social protection measures (such as social grants) and creating employment opportunities.

Results further show that 82.3% of young children under 2 years old have ever been breastfed. The provincial prevalence of overall stunting, wasting, and underweight in children 0–5 years old, is 32.9%, 4.8%, and 15.0%, respectively, compared to 40.6%, 4.4% and 13.4% in 2012. These results indicate that the proportion of children experiencing chronic undernutrition has decreased, while those who suffer from acute undernutrition has been relatively stable over the past 10 years. Over the same time period, the combined prevalence of overweight and obesity in adult females has increased slightly from 54.0% to 59.3%, while that of adult males has increased more substantially from 16.3% to 24.1%. Severe stunting (24.5%), severe wasting (2.6%), and severe underweight (10.7%) were found to be more prevalent in the Dr. Ruth Segomotsi Mompoti District than in any other district. However, the prevalence of stunting is higher in the Ngaka Modiri District, at 52.8%. Except for stunting, the measures of children's nutrition were typically unrelated to the level of food security in households, demonstrating that both households with and without food insecurity had the same nutritional outcomes. Indicators of adult nutrition and food security, however, were significantly correlated.

The results also showed that the COVID-19 pandemic, and the lockdown measures introduced to curb its spread, led to serious disruptions of food supply chains and production systems. The increase in food prices was the biggest shock experienced across all four districts in the North West Province. The highest shocks were experienced in Bojanala, Dr Kenneth Kaunda, and Ngaka Modiri Molema districts with 66%, 64%, and 62%, respectively. Dr Ruth Segomotsi Mompoti District had the highest percentage (44.9%) of households who were sometimes worried about their food running out before they can get money to buy some more food. Dr Ruth Segomotsi Mompoti (46.1%) and Bojanala (33.6%) districts also had the highest percentage of households who reported that their food often runs out and they did not have money to buy more.

Several recommendations have been proposed, and these revolve around strategies to:

- increase incomes of households,
- create employment,
- ensure water security to adapt to the changing climate,
- enhance food safety,
- invest in post-harvest agro-processing and intrinsic land access,
- establish food banks,
- promote domestic food production,

- improve awareness of micro- and macro-nutrient consumption interventions, and
- implement full-scale nutrition-sensitive programmes.

**Table A:** North West Food and Nutrition Security situation based on selected indicators

DISTRICTS	FOOD SECURITY INDICATORS (%)											
	Household Food Insecurity Access Scale (HFIAS)			Household Hunger Scale (HHS)			Household Dietary Diversity Score (HDDS)			Food Consumption Score (FCS)		
	Food Secure	Mild/Moderate	Severe	Little/No	Moderate	Severe	Highest	Medium	Lowest	Acceptable	Borderline	Poor
Bojanala	27.0	50.0	22.0	74.0	17.0	10.0	82.0	13.0	5.0	48.0	33.0	19.0
Dr Kenneth Kaunda	20.0	46.0	34.0	59.0	28.0	13.0	67.0	22.0	10.0	51.0	26.0	22.0
Dr Ruth Segomotsi Mompoti	22.0	50.0	29.0	64.0	25.0	10.0	77.0	18.0	5.0	37.0	36.0	27.0
Ngaka Modiri Molema	28.0	46.0	26.0	69.0	23.0	8.0	73.0	21.0	6.0	40.0	38.0	22.0
Province	25.5	56.0	25.9	69.9	21.2	9.8	76.8	17.1	6.1	44.8	33.9	21.3

DISTRICTS	NUTRITION INDICATORS (%)											
	STUNTING			WASTING			UNDERWEIGHT			ADULT BMI		
	All	Moderate	Severe	All	Moderate	Severe	All	Moderate	Severe	Underweight	Overweight	Obese
Bojanala	18.1	11.9	6.3	5.6	2.9	2.6	7.6	4.5	3.0	9.1	19.4	27.4
Dr Kenneth Kaunda	40.2	19.1	21.1	1.3	0.0	1.3	16.5	14.6	1.9	8.0	19.7	29.6
Dr Ruth Segomotsi Mompoti	46.2	21.7	24.5	8.2	5.5	2.6	33.2	22.5	10.7	22.7	15.9	30.0
Ngaka Modiri	52.8	30.1	22.7	3.9	3.3	0.6	15.4	9.9	5.5	10.4	19.2	23.2
Province	32.9	17.8	15.1	4.8	2.8	2.1	15.0	10.6	4.4	10.7	19.0	27.5

**Legend**

Food Secure,			0.0 - 9.9%
Little/ No Hunger,	Severe/	Mild/	10.0 - 19.9%
Highest,	Poor	Moderate/	20.0 - 29.9%
Acceptable		Borderline	30.0 - 39.9%
			40.0 - 49.9%
			50.0% +

Food security is widely defined as ‘a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO, 1996). It is one of the strategic imperatives for South Africa. This is expressed in the Constitution, government policy documents, and development plans (e.g., the National Development Plan). The right to have access to sufficient food by all citizens is enshrined in the Constitution of the country. To translate this right into action, government approved the National Policy on Food and Nutrition Security in 2014. Since then, the National Food Security plan has been developed but not fully implemented. However, despite this solid legislative, constitutional, and policy framework for food and nutrition security initiatives, a significant proportion of South Africa’s population faces food and nutrition challenges. These challenges include hunger, micronutrient deficiencies, stunting, wasting and obesity. While there is sufficient food to feed everyone in South Africa through domestic food production and food imports, some families and individuals go to bed with empty stomachs (Stats SA, 2019). It has been previously estimated that 13.7 million people have very limited or insufficient access to food in South Africa (Stats SA, 2021). According to recent estimates, the number of people who have insufficient and extremely insufficient access to food increased by 843 080 from 13.7 million to 14.4 million in 2021.

Food security is a multi-dimensional concept<sup>1</sup>, which needs to be addressed within the context of various issues in South Africa. These include land reform, employment, agricultural productivity, adequate responses to hazards and shocks, as well as economic activities. This requires planning that is adequate, efficient, and effective in addressing the country’s vulnerability to food insecurity. Such planning needs to be supported by up-to-date data at lower geographic levels and scientific evidence that is contextually relevant to the realities facing various communities and households in the country. Large-scale surveys, such as the NFNSS, can generate such data and evidence, given its focus on generating data that is representative at the district levels. The NFNSS survey intends to address the following objectives:

1. To provide a baseline assessment of the food and nutrition security situation at households in the respective livelihood zones in Northwest Province, in terms of:
  - a. Availability: to determine food availability at household level.
  - b. Access: to determine food access at household level.
  - c. Food utilisation: to determine individual food consumption within the household and compile anthropometric measurements.
  - d. Food stabilisation: to assess household food stability with respect to the food supply, price changes, shocks, and the coping mechanisms.
2. To analyse the link between food security and nutrition and explore reasons for people’s vulnerability.
3. To assess the impact of COVID-19 on food security and nutrition at household level in South Africa.
4. To make recommendations for planning and targeting of interventions for food and nutrition security.

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<sup>1</sup> The four dimensions of food security that are commonly identified are food availability, food access, food utilisation, and stability. These dimensions are hierarchical, with availability necessary but not sufficient to ensure access, while access is, in turn, necessary but not sufficient for effective utilisation (Barrett, 2010).

The state of food and nutrition vulnerability in South Africa has been exacerbated by both the economic hardships, which are a result of the high rate of unemployment, and the outbreak of COVID-19 with the associated control measures implemented by the government to contain its spread. As an intervention, the Department of Agriculture Land Reform and Rural Development (DALRRD) has in the past developed and implemented various programmes that are intended to cushion communities from the vulnerability and devastating effects of hunger and poverty. There is, therefore, a need to systematically determine if these government programmes and interventions are having the desired impact of protecting households from exposure to food insecurity. To do this, the DALRRD commissioned a nationwide food security and nutrition survey. The survey seeks to develop a deeper understanding of the state of food security and hunger at household level. Its ultimate objective is to develop targeted programmes and intervention measures that address prevalent problems and is, therefore, likely to yield impactful results.

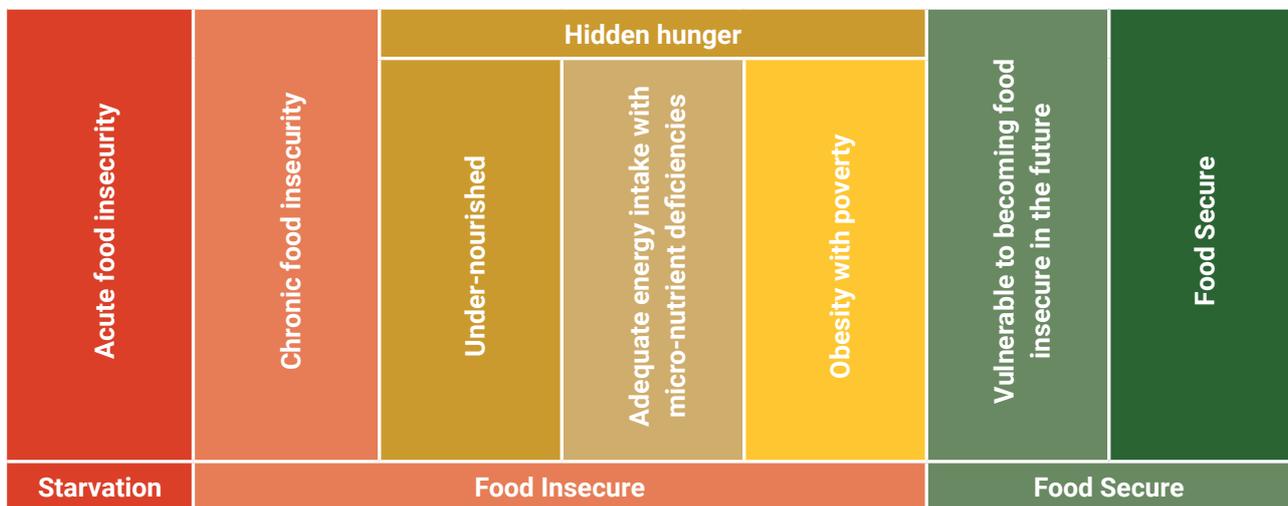
The DALRRD provides the secretariat for, and chairs, the South African Vulnerability Assessment Committee (SAVAC). The committee exists as a multi-stakeholder forum for organising the development and maintenance of a well-coordinated information system for classifying, measuring, monitoring, and forecasting food insecurity and vulnerability levels in the country. Prior to the National Food and Nutrition Security Survey, SAVAC conducted baseline assessments to determine the *status quo* of livelihoods, food, and nutrition security in localised geographical areas for informed planning and targeting of interventions. The initial baseline assessments were conducted in 19 of the 119 Livelihood Zones of South Africa (Ngidi et al., 2016). However, for the information system to be fully functional, there was a realisation of the need to undertake a national baseline against which the national vulnerability forecasts and monitoring surveys can be based.

In this regard, the national report provides the first ever full-scale baseline assessment of the National Food and Nutrition Security Survey conducted in all the districts across the nine provinces of South Africa. This report provides the results from of the Northwest Provincial survey. The survey seeks to outline the first step towards the development of a multi-dimensional index to assess countries' vulnerability to food insecurity across all the four food security dimensions. It supplements the South Africa Demographic and Health Survey (SADHS) by updating the provincial level data that it present. A notable deviation of this report from the General Household Surveys (GHS) is that GHS has been covering approximately 32 000 households annually since 2002 and it does not include nutrition indicators. It only focusses on the experience of hunger and access to food. In most countries, food and nutritional security assessments provide estimates which are representative at administrative levels such as province, districts, and sub-district or by rural/ urban divide, or for both rural and urban as defined by the livelihood zones.

The survey adopted the SAVAC endorsed a methodological framework for measuring food insecurity and vulnerability. The framework combines qualitative and quantitative research dimensions to enhance methodological and data triangulation. Broadly, the framework adopts the food security continuum and the Household Economy Approach (HEA).

## 3.1 Food Security Continuum

The food security continuum builds on the iterative understanding of food insecurity as a phenomenon. It brings convergence to the economic, social, environmental, and political aspects of food insecurity and, by focusing on individual and household experiences. Figure 1 provides an overview of the food security continuum.



**Figure 1:** Food Security Continuum (Hendriks, 2016)

A set of indicators to monitor food security and nutrition were considered, among which were HFIAS, HHS, DDS, and anthropometric measurements to determine the number of households that are food insecure and using various categorisations in the Food Security Continuum.

## 3.2 Indicators of Food and Nutrition Security Measurement

The household food and nutrition security (FNS) levels were measured using different indicators. The multi-dimensional nature of FNS makes it difficult to adequately capture all its dimensions using only one indicator. There is currently no perfect single indicator of FNS and, instead, several complementary indicators - each focusing on one or more of the four dimensions of FNS (i.e., availability, access, utilization or nutrition, and stability) - exist (Hendriks et al., 2016). The food availability dimension refers to the availability of sufficient quantities of food of appropriate quality, supplied through domestic production, imports or donations. The focus of this report is limited to food production activities. Food access is about households or individuals having adequate resources to acquire, in a socially acceptable manner, appropriate foods for a nutritious diet. The food utilization pillar refers to households' capacity to choose, store, prepare, distribute and consume food in ways that provide appropriate nutritional absorption for all household members. This dimension, therefore, focuses on how households use the food through adequate diets, clean water, sanitation, and health care to reach a state of nutritional well-being where all members' physiological needs are met.

The food stability pillar points to the fact that to be food secure, a population, household, or individual must have access to adequate food at all times. They should not risk losing access to food due to sudden shocks such as an economic or climatic crisis or cyclical events. Studies that have investigated the correlations among the different FNS indicators in South Africa and internationally have found that correlations among different FNS indicators vary from relatively weak across FNS dimensions (those comparing indicators of the different FNS dimensions), to relatively strong within FNS dimensions (comparing indicators of the same dimension). It is, thus, important that a suite of FNS indicators be reported to adequately monitor the different dimensions of FNS. In acknowledging that there isn't a single ideal, widely accepted measure that encompasses all aspects of food insecurity, the framework suggested the use of standardized and acceptable indicators for measuring food and nutrition. Through the food security continuum, an array of indicator tools was used, and these were complemented with the HEA, as indicated in Table 1.

**Table 1:** Tools that were used for both the quantitative and qualitative methods

	Baseline Assessment Indicators	Tools	Instrument: Section	
<b>Food Security Continuum</b>	Availability	<ul style="list-style-type: none"> <li>• Production</li> <li>• Post-Harvest</li> </ul>	6	<b>Household Economic Approach</b>
	Access	<ul style="list-style-type: none"> <li>• Hunger Scale (12months)</li> <li>• Hunger Scale (4Weeks)</li> <li>• HFIAS</li> </ul>	7 A, B, C, D 9	
	Stability	<ul style="list-style-type: none"> <li>• Food expenditure</li> <li>• Key Informant Interviews</li> <li>• Shocks</li> </ul>	8, 11, 12	
	Utilisation	<ul style="list-style-type: none"> <li>• HDD</li> <li>• Anthropometry Measurements</li> </ul>	Individual Nutrition Questionnaire	
<p>**HEA: 1) Food Security Livelihood Zoning 2) Wealth Breakdowns 3) Livelihood Strategies 4) Problem Specification 5) Analysis of Coping Strategies 6) Projected Outcomes.</p>				

### 3.3 Household Economy Approach (HEA)

The second approach has been the livelihoods-based vulnerability assessment system referred to as the Household Economy Approach (HEA), commonly used in many Southern African Developing Community (SADC) countries. This approach provides an understanding of how people make a living (livelihood systems), a forecast analysis for food security and livelihood outcomes in the context of a dynamic environment and is necessary for planning and targeting of interventions. Data captured in this approach is based on the use of rapid appraisal methods and semi-structured interviews to determine wealth breakdown and livelihood strategies in different areas. This is a qualitative dimension of the food security and nutrition assessment in which key informant interviews and focus group discussions were used in different livelihood zones.

## 4.1 Study design and sampling for the household survey

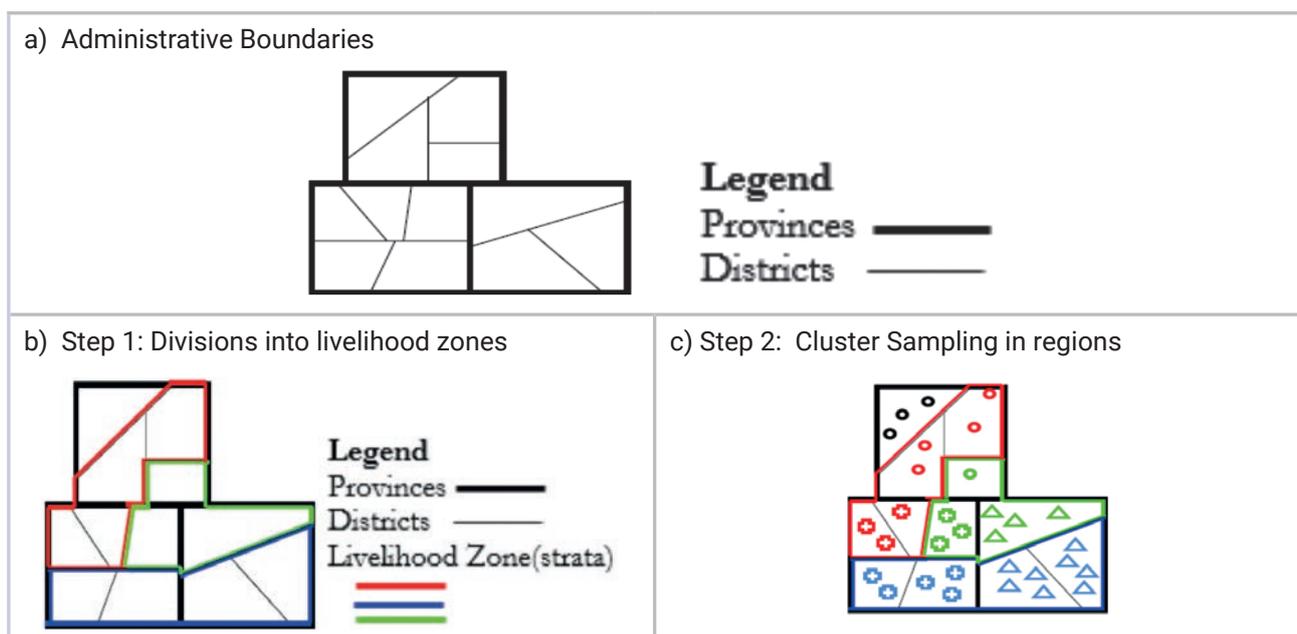
The study design was cross-sectional and sought to provide representative and precise information at the household level. The first stage of the two-stage cluster sampling design is the selection of SALs or clusters in each district using PPS (Probability Proportional to Size). In this province, we selected a total of 98 SALs. The second stage was a simple random selection of households within each selected SAL/Cluster, and for this study, we selected 35 households per SAL. Then in each household, we selected an average of 3 persons (household head, mother/caregiver, and child under 5 years old).

As for the HEA, qualitative information was gathered in the form of focus group discussions and key informant interviews in the selected open-access livelihood zones of Northwest Province. A livelihood zone is an area within which people broadly share the same pattern of livelihood, including options for obtaining food and income and market opportunities.

## 4.2 Determination of the geographical area (strata) for household sample design

Often food security and nutrition indicators per geographical area e.g., district, is used as a basis for drawing the sample for the study. However, food and nutrition insecurity may vary across the country, given the heterogeneity across the livelihood zones (LHZ).

Administratively, North West Province is divided into 4 districts, and 23 local municipalities (mixed urban and rural). In this study, the smallest geographic unit is the small area layer (SAL) composed of 30 households sampled. Given the heterogeneity in livelihoods within regions, the province has 3 Open Access Livelihood Zones that have people living in them. The LHZ strata can cover several districts or cross over several provinces. This means a district will not necessarily have all the livelihood zones. A GIS function was used to overlay the administrative boundaries with the livelihood zones (as illustrated in Figure 2).



**Figure 2:** Schematic representation of the overlay of administrative boundaries and LHZ.

Stratification by administrative boundary and livelihood zones serves two functions:

- i First, administrative boundaries rarely correspond with household characteristics related to food insecurity and thus, estimates for administrative aggregations are likely to mask meaningful differences between sub-groups.
- ii Second, defining sub-groups for stratification using criteria related to vulnerability or food insecurity improves the precision of both sub-group and overall food security estimates.

For district level estimates, the strata of investigation are the 3 districts, with clusters/ SALs distributed across livelihood zones within districts. In this study, given the resource and time constraints, the focus was on the district strata.

## 4.3 Eligibility

### 4.3.1 Participant inclusion criteria

- Randomly selected households within the defined geographic area of survey coverage.
- All children under 5 years of age at the time of data collection who live in selected households are eligible for the survey, on condition that their parent or caregiver gave consent for participation. Parents or caregivers provided individual dietary information related to the child, and children participated in anthropometry measurements.
- Mothers/ primary caregivers of the children in the household were eligible if they were included in the survey sample and gave consent for data collection.

### 4.3.2 Participant exclusion criteria

- Households not currently living in the defined geographic area, or consent for participation was denied by the adult household member approached by the survey team.
- Individuals in selected households are ineligible if consent for individual participation is denied.
- Children were ineligible for anthropometric measurement if they had a disability, which prevents accurate weight or height measurements from being taken.
- Children above 5 years of age.
- Adults who are not the head of the household or those who are not responsible for food preparation or not the primary caregiver / biological mother of the children aged under 5 years.

## 4.4 Sample size estimation

Not every member of the community is anticipated to participate in major surveys such the NFNSS. Only a select few are chosen to represent the sample of the entire population. These are referred to as the survey's sample size and must be of an acceptable size. The estimated sample size was intended to inform the survey process of monitoring significant changes in South Africa's food and nutritional security over time, specifically between cycles of food and nutritional security. Also, this sample was not intended to provide accurate estimates of the prevalence of food insecurity and malnutrition at lower levels of government operations such as municipalities and wards. The primary goal was to obtain the status of food insecurity and malnutrition at district level by collecting data, which included anthropometric measures to assess the levels of food security and nutrition, and analyse the link between food security and nutrition. The sample design was based on estimated prevalence of food security outcome indicators described in Section 3.2. This was regarded adequate to determine the appropriate sample size that enables the identification of the relationship between the nutritional status of children and the degree of food security in households. The Standardised Monitoring and Assessment of Relief and Transitions (SMART) technique was used to increase accuracy in the calculation of the primary outcome indicators. Basically, the sample size went through a step-by-step approach to take into account indicators for both nutrition and food security.

Two different samples, based on both food and nutritional security indicators, were calculated using the following criterion:

- If there was a small difference in the nutrition sample size and food security derived sample sizes, the higher sample size was taken, and both food security and nutrition indicators were assessed in all sampled households.

To ensure that the appropriate sample size was covered, extra clusters per strata were added to substitute inaccessible areas, insecurity, or rejection of some original clusters. Likewise, households within each cluster were reserved to compensate for non-response or refusal. The inaccessible areas were replaced by the cluster with the same characteristics. This approach was adopted to ensure unbiased selection and to maintain the precision of the study outcomes.

#### 4.4.1 Determining sample size for the food security survey

The sample size estimation sought to provide statistically representative and precise information on food security at the district level. The required sample size for each stratum (district) was determined using the formula presented below and food security indicators provided in Table 2 and recommended parameters listed in Appendix 5. Due to the variety of indicators that might be used to quantify food security, a percentage of 50% was taken into consideration in order to obtain the greatest sample necessary for the analysis of various indicators of food security at the district level. In doing this following were taken into consideration:

$$n = \frac{Z^2 p(1-p)}{E^2 \times Deff}$$

- 95% degree of confidence (Z Score=1.96);
- P is the prevalence of food insecurity measures for each province; if missing, we assume a P of 50%, which will yield the required sample size which is desired for analysis of multiple indicators of food security at varying prevalence (p);
- Deff: A design effect 1.5 to adequately address effects of intra-cluster correlation;
- 7-10% minimum desired precision (MOE) or maximum tolerable error (from other studies in sub-Saharan Africa and budgetary constraints on sample size);
- 80% statistical power;
- Household response rate SANHANES (2013) - varies across provinces.

**Table 2: Food Security Indicators**

Parameters for food security	Value	Value	Value
Estimated Prevalence of food insecurity (%)	50%	50%	50%
± Desired precision	5%	6.5%	7%
Design Effect ( <i>if applicable</i> )	1.5	1.5	1.5
% Non-response Households	15%	15%	15%
% Confidence interval	95%	95%	95%
% Power	80%	80%	80%
<b>Households per district (strata)</b>	<b>678</b>	<b>401</b>	<b>346</b>
<b>TOTAL SAMPLE</b>	<b>35 256</b>	<b>20 852</b>	<b>17992</b>

A sample of 401 households per stratum (district) provides the required estimate of food insecurity of 50% (SANHNAES 2013), with a 6.5% precision around the estimate, assuming a 15% household non-response rate, and a design effect of 1.5 with 95% confidence level and 80% power. This has been adopted for North West Province with an expected calculated average of 480 households per district (Table 2). A lower precision e.g., 7%, recommended for lower geographies, yields 346 households per region. The 6.5 % precision was informed

by budgetary constraints on sample size and the fact that the recommended precision range between 2-10% for higher geographies (e.g. province, district) and at least 20% for lower geographies (livelihoods).

#### 4.4.2 Determining sample for nutritional indicators survey

The sample was not intended to provide an estimate of malnutrition at the lower stratum e.g. municipal and ward levels. The objective was to demonstrate the connection between nutrition and food security. According to assumed estimates, a sample of 106 children under the age of five for each stratum i.e. district divided by 366 households would yield the necessary estimate of stunting of 21.5% with 10% margin of error around the estimate of assuming a 21% non-response rate. A design effect of 1.5%, a 95% confidence level and an 80% power were taken into consideration (SANHANNES, 2013). (See formula in Box 1 and parameters in Appendix 5 & 6). Due to budgetary restrictions and the fact that the study was mainly interested in relationships between malnutrition and household food security informed the selection of 10% margin. The recommended precision ranged between 2-10% for higher geographies (e.g., province), and between 10-20% for lower geographies (municipalities).

**Table 3: Parameters for nutritional indicators**

Parameters for Anthropometry	Value*	Value
Estimated Prevalence of stunting (%)	21.5%	21.5%
± Desired precision (MOE)	9%	10%
Power	80%	80%
Confidence Interval	95%	95%
Design Effect ( <i>if applicable</i> )	1.5	1.5
Children to be included	131	106
Average HH Size	3.7	3.7
% Children under-5	11%	11%
% Non-response Households	21%	21%
Households to be included	452	366
Strata (Districts)	52	52
<b>Total households for the study</b>	<b>3430</b>	
* SANHANES (Shisana et.al 2013) Appendix Table 1		

This survey was conducted in 98 SALs, across 4 districts in the province. Within each SAL, a random sample of 30 visiting points was identified. One household was to be selected at each visiting point. This yielded a total sample size of 3430 households (Table 3). Once a household was selected, specific household members were eligible to participate in the survey (as per the inclusion and exclusion criteria set, refer to 4.3). These include the head of the household and / or the person responsible for food procurement and food preparation, as well as the biological mother of any children under the age of 5 years and all children between the ages of 0-5 years. We had estimated that, on average each household will yield 3 people. The total sample was thus 3 430. The survey managed to get 300 children in the province.

### 4.4.3 Sampling procedure: selecting clusters

The representativeness of the sample also depends on the sample structure, including the selection of clusters and households within clusters. Clusters or SALs within districts were selected using PPS (Probability Proportional to Size) which measures the size of the number of households in each SAL. To ensure results could be reported at district or livelihood zones, the SALs were distributed across the livelihood zones within each district. The survey followed the World Food Program’s (WFP) Technical Guideline, which establishes a cluster based on SALs (i.e., the number of households that survey teams can safely visit in a single day), and the number of clusters with the specified number of households in each cluster for each indicator. Most configurations typically have 20 to 30 clusters per stratum (Technical Guideline, WFP - see Appendix I). In this province, the study used 35 households per cluster or (SAL).

#### 4.4.3.1 Household response rate

Out of the targeted 3 430 visiting points (VPs), 88.7% were valid (Table 4). Out of these valid VPs, 60.4% of them (2 074) were realised or interviewed, while the refusals accounted for 6.3%. Absent or ‘other’ constituted 22%. Those who were ineligible to participate, such as those who were incapacitated, underage and lacked an adult’s consent, absent from home for the length of the study, and those who were barred from taking part because of COVID-19 exposure, were classified as “Other.” Bojanala had the largest percentage of realizations, at 63.5%, while Dr. Ruth Segomotsi Mompati had the lowest, at 56.2%.

**Table 4:** Household response rate by district

District	Total VPs	Valid VPs		Interviewed		Refused		Absent/Other	
	n	n	%	n	%	n	%	n	%
Bojanala	875	786	89.8	556	63.5	67	7.7	163	18.6
Dr Kenneth Kaunda	840	790	94.2	498	59.3	73	8.7	219	26.2
Dr Ruth Segomotsi Mompati	875	748	85.5	492	56.2	25	2.9	231	26.4
Ngaka Modiri Molema	840	722	86	528	62.9	51	6.1	143	17
<b>Total</b>	<b>3430</b>	<b>3046</b>	<b>88.7</b>	<b>2074</b>	<b>60.4</b>	<b>216</b>	<b>6.3</b>	<b>756</b>	<b>22</b>

The characteristics of the household heads and members of households from the realized VPs are shown in Table 5. These has been further split by local municipalities due to low numbers of household heads.

**Table 5:** Characteristics of the sample for household heads and members by local municipality

Municipality	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
City of Matlosana	10.9	[9.7-12.4]	227	10.6	[9.9-11.3]	856
Ditsobotla	3.3	[2.6-4.1]	68	3.4	[3.0-3.8]	273
Greater Taung	12.3	[10.9-13.8]	255	12.9	[12.2-13.7]	1,044
Kagisano/Molopo	5.3	[4.4-6.4]	110	5.6	[5.1-6.1]	451
Kgetlengrivier	1.5	[1.1-2.2]	32	1.4	[1.2-1.7]	113
Lekwa-Teemane	3.4	[2.7-4.2]	70	3.5	[3.1-3.9]	283
Madibeng	7.2	[6.1-8.4]	149	5.6	[5.2-6.2]	456
Mafikeng	12.1	[10.8-13.6]	251	12.7	[12.0-13.4]	1,024
Mamusa	2.7	[2.1-3.5]	57	4.1	[3.7-4.5]	330
Maquassi Hills	3.9	[3.1-4.8]	80	3.9	[3.5-4.4]	319
Moretele	4.5	[3.7-5.5]	93	4.2	[3.8-4.6]	337
Moses Kotane	8.3	[7.2-9.6]	173	8.6	[8.0-9.2]	694
Ramotshere Moiloa	4.4	[3.6-5.4]	92	3.9	[3.5-4.4]	319
Ratlou	2	[1.5-2.7]	41	1.8	[1.6-2.2]	149
Rustenburg	5.3	[4.4-6.3]	109	4.7	[4.2-5.1]	377
Tlokwe City Council	3.8	[3.1-4.7]	79	3.5	[3.1-3.9]	280
Tswaing	3.7	[2.9-4.6]	76	4.2	[3.8-4.7]	340
Ventersdorp	5.4	[4.5-6.5]	112	5.4	[4.9-5.9]	434
<b>Total</b>	<b>100.0</b>		<b>2,074</b>	<b>100.0</b>		<b>8,079</b>

#### 4.4.3.2 Delimitation of the Household Economic Approach

Three open access livelihood zones were selected for the qualitative analysis of the study. These zones lie across all districts in the province. These livelihoods are open access, and most households are involved in farming and use other sources of income such as casual labour, small business, grants, and salaried employment to complement their livelihood needs. Ten communities/ villages were selected from each livelihood zone and thirty-six focus group discussions were conducted in each livelihood zone. The discussions were based on determinants of wealth, sources of food, and income and expenditure as stipulated by the key informants and focus group participants from various livelihood zones.

## 4.5 Field data collection

A training session guided by an operational manual for data collectors came before the actual data collection process began. The manual included the procedures and steps for collecting data from the households and the HEA focus group discussion within the chosen livelihood zones. To maintain uniformity and systematic inquiry throughout the data collection activities, the training's main goal was to lay out the standard process for the fieldwork. The procedure will make sure that the fieldwork is rigorous, consistent, and follows the highest ethical standards. The Standard Operating Guidelines for data gathering in the COVID-19 environment,

ethics, as well as a more comprehensive governance framework and team structure, were some of the major initiatives emphasized during the training. (Refer to Operational Manual Annexure.)

#### **4.5.1 COVID-19 safety procedures and protocols**

The survey's preliminary phase was carried out when the COVID-19 pandemic was at its peak. As a result, a COVID-19 Standard Operation Procedure (SOP) was developed to ensure compliance with a set of laws, norms, values, and principles established to lower the exposure and infection risks for study participants and data collectors. Before being trained and thereafter collecting data, each data collector undertook COVID-19 assessment. A thermometer and hand sanitizers were provided to each data collection team for use while out in the field. Complete adherence to COVID-19 preventive, precautions and standards was maintained throughout the whole data collecting process.

#### **4.5.2 Structured household questionnaire administration**

This component constituted the quantitative dimension of food and nutrition security. This approach employed a survey which involved structured household questionnaire administration in the five districts. A total of 71 Small Area Layer (SALs) with a total of 2 485 households in each visiting point were pre-selected for the survey using Geographic Information Systems with maps developed and used for identification of the selected households. A combined set of questionnaires with both food security and nutrition indicators was administered within a household.

In each household, the head of the household was targeted as a respondent on household food security status, whilst the care giver or the mother was targeted as a respondent for individual nutrition questions for adults and children within the household. The food utilisation dimension involved anthropometric measurements such as height, weight, etc., (see Table 1). Data collection was done using tablets that were linked to the central server, where data was deposited through real-time streaming that took place under strict supervision.

- There was rigorous training on the data collection instruments i.e., Household Questionnaire, looking at all the dimensions of food security and the questions which related to the food security and nutrition indicators thereof.
- The nutrition section of the household questionnaire followed the SMART standard procedure. Some of the key indicators pertain to Anthropometric measurements and MUAC, as well as the individual household set of questions.

#### **4.5.3 HEA Data collection**

Discussions were undertaken with community representatives (key informants) to develop wealth breakdown for the selected community or study area. A grouping of people based on local definitions of wealth and a quantification of assets within communities was the major focus. This process disaggregated the community population and households into common 'access' groups, which allowed key informants to isolate important differences in households' assets, capital, vulnerabilities to different shocks and to estimate numbers of people who will be affected by different changes. Key informants from each communities managed to identify participants for each wealth group based on the wealth characteristics which were established based on the local definition of wealth. Community leaders assisted with organising 4-6 people from each wealth group from different households. At least half of the participants or groups were women. The approach identified a typical household size of each wealth group and quantified available household food and income sources to caloric measurement (8800KJ/person/day) and income equivalent to meet household needs for the whole year. The 8800KJ/person/day is used as a survival threshold.

Some of the salient HEA steps articulated to field workers during the training included:

- Broader understanding of livelihood strategies;
- Problem specification and understanding of the coping strategies.

## 4.6 HEA Sampled Livelihood Zones

### 4.6.1 North West Open Access Cattle and Game Farming (ZAOCG) of Dr Kenneth Kaunda, Moses Kotane, Bojanala, Ngaka Molema, and Dr Ruth Mompati districts

This livelihood zone covers a number of districts, including Dr Kenneth Kaunda, Moses Kotane, Bojanala, Ngaka Molema, and Dr Ruth Mompati. It covers an area of 586,000ha in North West Province. It is a dry, very sparsely populated area with considerable resources of wild game. Tenure is traditional and domestic stock tends to be kept on the periphery. Livestock - consisting of cattle, goats, and sheep - is the basis of the economy, with other sources of income such as petty trading, casual labour, and grants playing an important role for households. Water and good pasture are scarce and good access to the two is essential for production.

The vegetation consists of bush scrub and grassland. It has poor to fertile sandy to loam soils, and the topography is generally flat and characterised by lowlands. The main features close to and within the zone are mines in Rustenburg and forest reserves. The population is largely made up of Xhosa people. Because of its proximity to some urban centres, earthen dams, mines, and private farms, households also obtain income from remittances, petty trading, and casual labour.

The average population density ranges from 3.2 to 4 people per km squared;

- Livestock holdings not limited by population density; and
- Livelihoods augmented by other income sources such as remittances, trading, grants, and casual or formal labour.

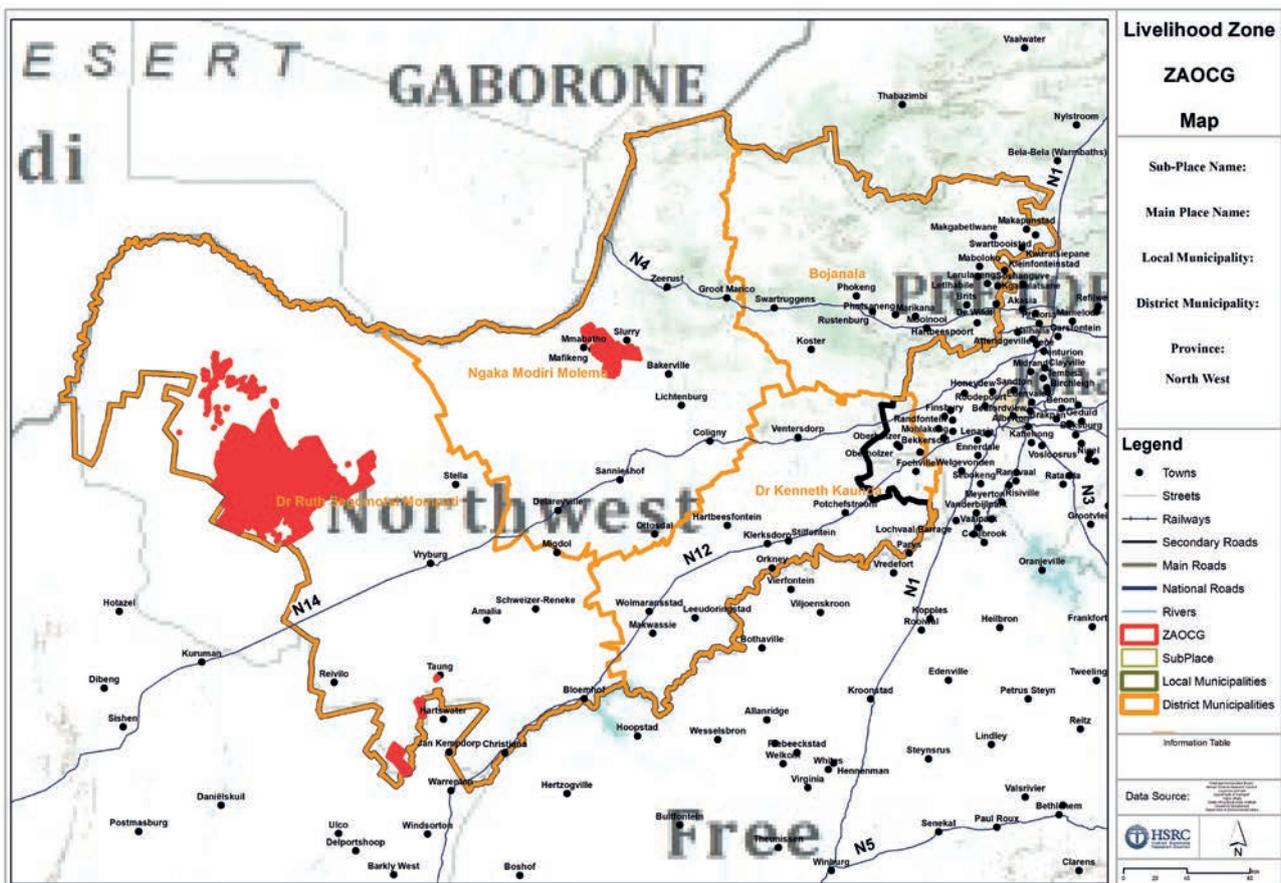


Figure 2a: Map of ZAOCG Livelihood Zone

Most of the zone receives rainfall ranging from 250 to 350mm per annum. The temperature ranges from -1°C to 37°C. Loam to sandy soils characterize the zone and the land capability is classified as a 'moderate potential agricultural area' characterized by food deficits. The main crops that are grown for food are maize, cow peas, groundnuts, beans, and vegetables.



**Figure 3:** Provincial Location of ZAOCG Livelihood zone location

Wealthier households keep cattle, goats, sheep, and pigs, which make use of the extensive grazing in the surrounding open-access areas. Households also depend on both formal and informal cash transfers.

#### **4.6.2 North West Open Access Cattle Crops ZANWC of Bojanala, Dr Ruth Segomotsi Mompoti, and Ngaka Modiri Molema districts**

This livelihood zone covers a number of districts including Bojanala, Dr. Ruth Segomotsi Mompoti, and Ngaka Modiri Molema. It covers an area of 1,160,200ha in North West Province. It lies close to the northern provincial boundary and the Botswana border. It is dry, and rainfall is unreliable, while summers can be very hot. However, some extensive crops are grown, and cattle are also kept. The zone has the N4 corridor (and the accompanying railway) and remittances from relatives working in the mines or major centres in Gauteng are key, as are grants and trading. Livestock, consisting of cattle, goats, and sheep, are the basis of the economy, with other sources of income such as petty trading, casual labour, and grants playing an important role for households. Water and good pasture are scarce, and good access to the two is essential for production. The vegetation consists of valley bush shrubs and grasslands. It has poor sandy soils, the fairly flat shallow valleys, mountains, and lowlands with mixed soil types dominated by red soils. The population is largely made up of Tswana people.

The average population density ranges from 10 to 100 people per km<sup>2</sup>;

- Livestock holdings is limited by population density; and
- Livelihoods augmented by other income sources such as remittances, trading, grants, and casual or formal labour.

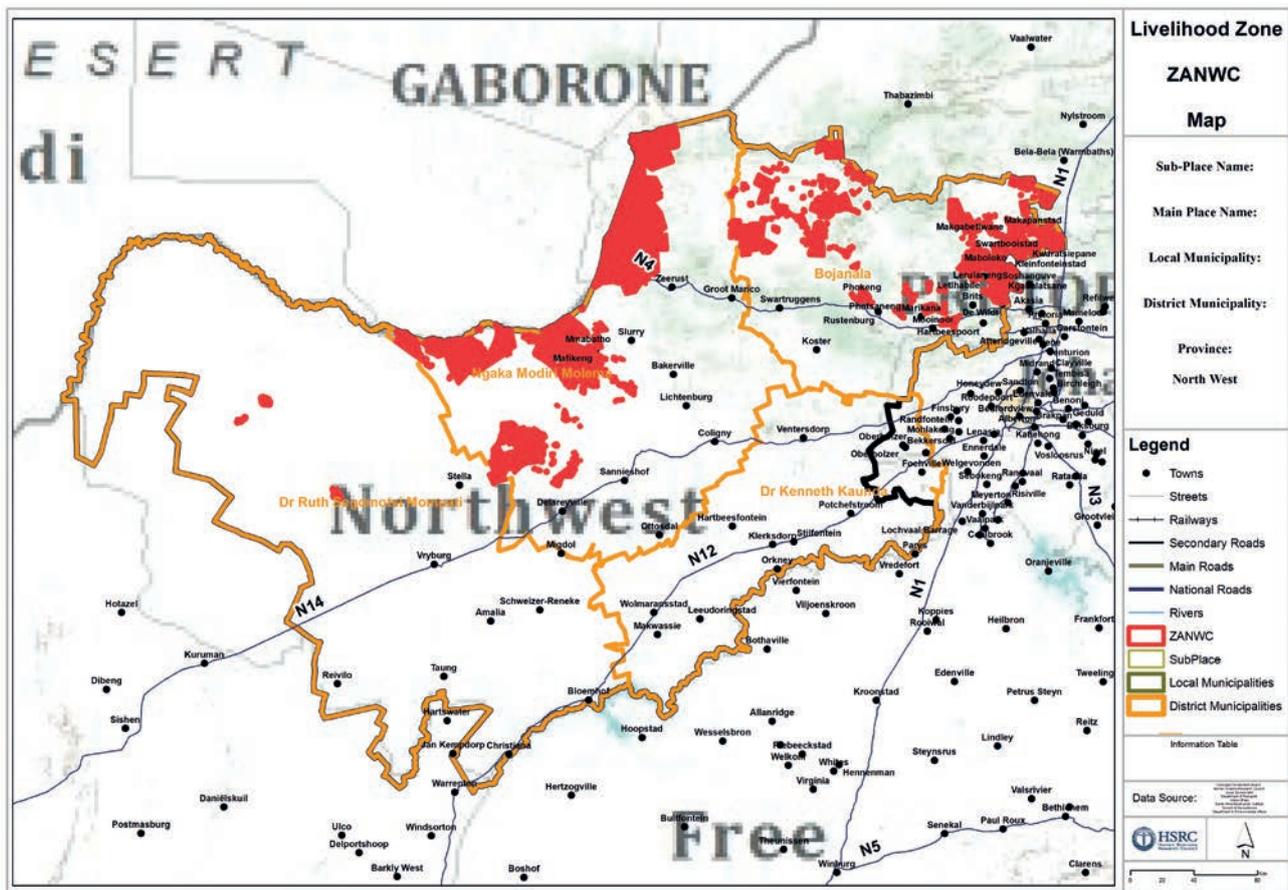


Figure 4: Map of ZANWC Livelihood Zone

Most of the zone receives 250 to 700mm of rainfall. The temperature ranges from 22°C to 34°C in summer and 2°C to 20°C in winter. The main crops that are grown for food are maize, beans, and vegetables, and also stone fruits, but not for commercial purposes. Moisture availability is considered 'slight' and the land capability in the zone is classified as 'marginal potential arable', due to its low rainfall and soils. Wealthier households keep cattle, sheep, and goats, which make use of the extensive grazing in the surrounding veld.



Figure 5: ZANWC Livelihood Zone location

### 4.6.3 Coastal Open Access Non-Crop Income (ZAKOL) of Dr Ruth Mompoti District

This livelihood zone covers several districts, including Francis Baard, John Taolo Gaetsewe, and Dr Ruth Mompoti. It covers an area of 575,400ha in North West Province and 1,013,800ha of land in Northern Cape Province. It is a very sparsely populated rural zone, with low and uneven rainfall. It has hot summers and is cold at night for winters, which are typically quite brief. Livestock, consisting of cattle, goats, and sheep are the basis of the economy, with other sources of income such as petty trading, casual labour, and grants playing an important role for households. Water and good pasture are scarce and good access to the two is essential for production.

The vegetation consists of bush scrub and grassland. It has poor to fertile sandy to loam soils, and the topography is generally flat and characterised by lowlands. The main features close to and within the zone are the Vaal River and forest reserves. The population is largely made up of Xhosa and Tswana people. Because of its proximity to some urban centres, including Kimberly, Klerksdorp, mines, and private farms, households also obtain income from remittances, petty trading, and casual labour.

The average population density ranges from 3.2 to 4 people per km<sup>2</sup>;

- Livestock holdings not limited by population density; and
- Livelihoods augmented by other income sources such as remittances, trading, grants and casual or formal labour.

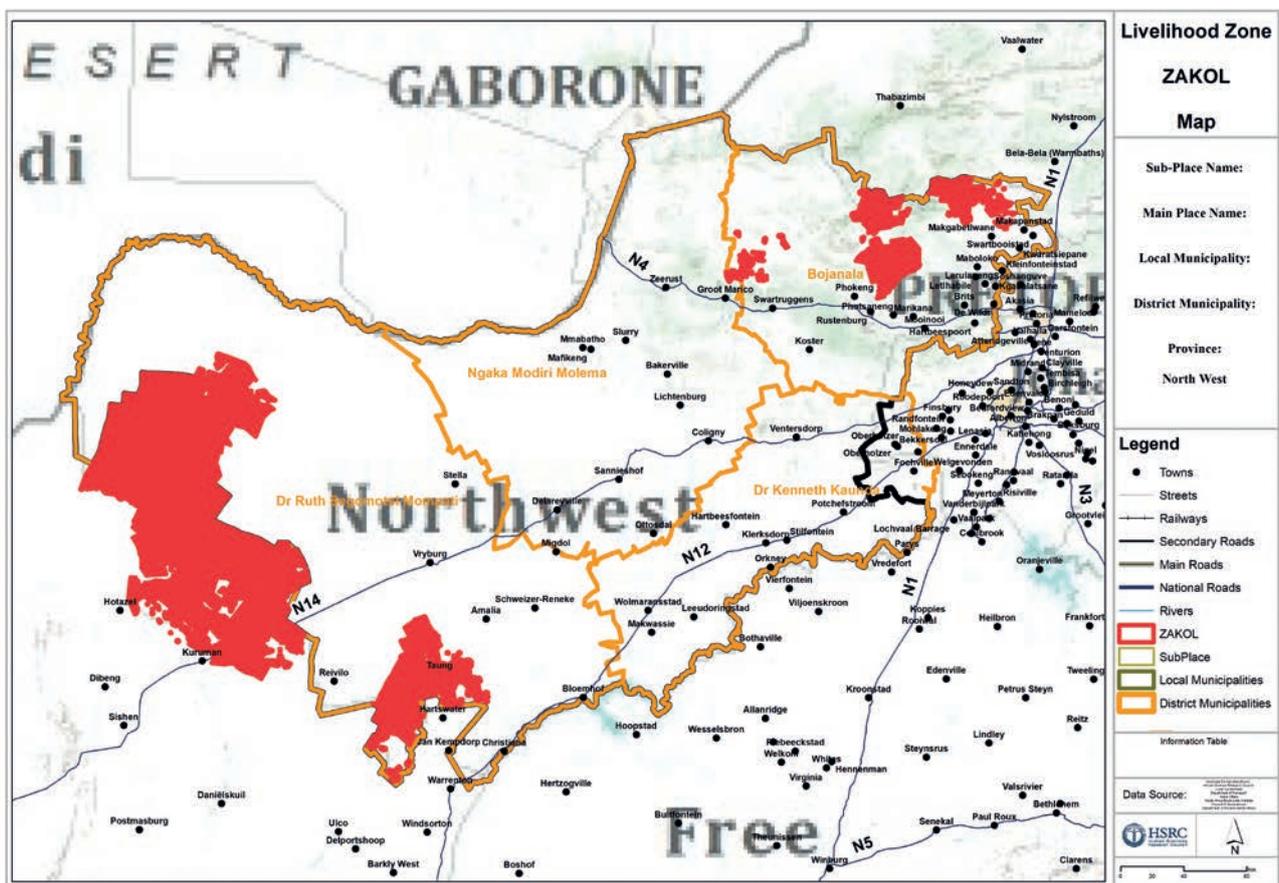


Figure 6: Map of ZAKOL Livelihood Zone

Most of the zone receives rainfall ranging from 250 to 450mm per annum. The temperature ranges from 17°C to 37°C. Loam to sandy soils characterize the zone and the land capability is classified as a 'high potential agricultural area'. The main crops that are grown for food are maize, beans, potatoes, and vegetables. Wealthier households keep cattle, goats, sheep, and pigs, which make use of the extensive grazing in the surrounding open-access areas. Households also depend on both formal and informal cash transfers.



**Figure 7:** ZAKOL Livelihood Zone location

## 4.7 Data management, Weighting and Analysis

### 4.7.1 Data management

A database reflecting the quantitative survey questionnaire was designed by joining different projects/ forms using the REDCap. REDCap was the preferred technology because the application allows for data collection where there is no internet service (e.g., no Wi-Fi or cellular service) or where there is unreliable internet service. The data was captured/collected electronically using CAPI (Computer Assisted Personal Interviewing) technology using tablets.



The data was transmitted to the central database. Once all the data was collected, it was downloaded and converted into Statistical Analyses Systems (SAS) and Statistical Package for Social Scientist (SPSS) for further manipulation. Data management included data-cleaning exercises. Data was checked and edited for logical consistency, for permitted range checks, for reliability on derived variables, and for filter instructions. Data with wrong small area layer (SAL) numbers was also cleaned.

Due to the COVID-19 pandemic, HSRC researchers could not do physical back checks, but extensive telephonic back checks were undertaken in the provinces. A total of more than 15% back checks were undertaken to validate the methodology and fill in the missing gaps in the data.

Captured data and validated data that contains 3 429 cases and 3 622 variables was converted to (SPSS) for descriptive analyses and exploration of data quality. Verified and cleaned data was further converted to Stata and SAS for further detailed exploratory analyses, cross-tabulations, weighting, and analyses.

### 4.7.2 Data weighting

The data was weighted to take into account of the fact that not all participants covered in the survey had an equal chance of being selected. The weighting reflected the relative selection probabilities of the individual at the three main stages of selection: visiting point (address), household, and individual. To ensure the representativity of non-responses and smaller groups, weights needed to be applied.

SAL base weights were appropriately adjusted to incorporate non-response at an SAL level. Households within SAL also had a base weight as they were sampled a priori. However, not all sample households were available or agreed to participate. Thus, the household base weights were further adjusted using a non-response correction factor of the ratio of sampled households divided by realised households. Sampled individuals within a household had a weight computed as the ratio of the number of eligible household members and the targeted individuals in the household. The final sample individual weight was computed as the product of the weights from SAL, household, and individual.

The survey is a national survey and thus, the results should be generalisable to the entire population. The sample was then benchmarked to the population of the province. These benchmark variables for persons and district of the respondent in the household were selected due to their reliability and validity. The marginal totals for the benchmark variables were obtained from the North West Province 2021 mid-year population estimates as published by Statistics South Africa. The estimated South African population was, therefore, used as the target population. Person and household weights were benchmarked using the Stata survey commands.

A total of 2 074 people were interviewed in this province. When weighted, this total represents 2,726,793 South Africans living in the North West Province of 18 years and older.

The final data set (unweighted and weighted) is disaggregated by key demographic variables of household heads (Tables 6, 7, and 8).

**Table 6:** District weighted and unweighted N's for household heads

District	Unweighted N	Weighted N
Bojanala	556	1 352 973
Dr Kenneth Kaunda	498	35 224
Dr Ruth Segomotsi Mompati	492	272 281
Ngaka Modiri Molema	528	566 315
<b>Total</b>	<b>2 074</b>	<b>2 726 793</b>

**Table 7:** Gender weighted and unweighted N's for household heads

Gender	Unweighted N	Weighted N
Male	1 015	1 337360
Female	1 059	1 389 433
<b>Total</b>	<b>2 074</b>	<b>2 726 793</b>

**Table 8:** Age groups weighted and unweighted N's for household heads

Age groups	Unweighted N	Weighted N
18-24	78	414 157
25-34	236	728 453
35-44	361	618 266
45-54	426	415 636
55-64	467	291 022
65+	504	244 348
No Answer	2	14 910
<b>Total</b>	<b>2 074</b>	<b>2 726 793</b>

### 4.7.3 Data analysis

As a preliminary step to drawing conclusions from the gathered data, descriptive statistical analyses were carried out. The cross-tabulations and response proportions were obtained using the Stata and SPSS software tools. In order to make sure that the estimates of the food and nutrition survey variables were in line with the general population of the North West Province, weighted population estimates, benchmarked to the 2021 mid-year provided by Statistics South Africa (StatsSA) were performed. A weighted data analyses was conducted, accounting for the multi-level sample design and compensating for non-responses.

## 5.1 Demographics of the respondents

### 5.1.1 Characteristics of the household heads and members

Table 9 shows the characteristics of household heads and members from the households that were realised. More than half (51.1%) of household heads were males. Black African population group accounted for 97.3%, while those between aged 65 years and older constituted 24.3%. In terms of marital status, those who were single accounted for 40.8%. Bojanala recorded the highest percentage with 26.8%, while Dr Ruth Segomotsi Mompoti accounted for the least proportion with 23.7%. With regards to household members, more than half (53.2%) of household heads were females and the majority were children aged 0 to 14 years old, with 30.6%. Three out of four household members were single. Dr Ruth Segomotsi Mompoti and Ngaka Modiri Molema districts have 26.1% of household members each, while Dr Kenneth Kaunda has the least with 23.4%.

**Table 9:** Characteristics of the sample for household heads and members

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
<b>Sex</b>						
Male	51.1	[48.9-53.2]	1,059	46.8	[45.7-47.9]	3,763
Female	48.9	[46.8-51.1]	1,015	53.2	[52.1-54.3]	4,276
<b>Total</b>	<b>100.0</b>		<b>2,074</b>	<b>100.0</b>		<b>8,039</b>
<b>Population group</b>						
Black African	97.3	[96.5-97.9]	2,017	97.7	[97.3-98.0]	7,871
White	1.4	[0.9-1.9]	28	0.8	[0.7-1.1]	67
Coloured	1.0	[0.6-1.5]	20	1.2	[0.9-1.4]	93
Indian/Asian	0.4	[0.2-0.8]	9	0.3	[0.2-0.5]	26
<b>Total</b>	<b>100.0</b>		<b>2,074</b>	<b>100.0</b>		<b>8,057</b>
<b>Age group</b>						
0-14	-	-	-	30.6	[29.6-31.7]	2,408
18-24 (15-24 for HH Members)	3.8	[3.0-4.7]	78	18.6	[17.8-19.5]	1,465
25-34	11.4	[10.1-12.8]	236	14.1	[13.4-14.9]	1,111
35-44	17.4	[15.8-19.1]	361	10.8	[10.1-11.5]	848
45-54	20.6	[18.9-22.4]	426	9.5	[8.9-10.2]	748
55-64	22.5	[20.8-24.4]	467	8.5	[7.9-9.1]	666
65+	24.3	[22.5-26.2]	504	7.8	[7.2-8.4]	615
<b>Total</b>	<b>100.0</b>		<b>2,072</b>	<b>100.0</b>		<b>7,861</b>

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
<b>Marital status</b>						
Married/Living together	36.4	[34.4-38.5]	750	18.4	[17.5-19.2]	1,466
Divorced/Widowed/Separated	22.7	[21.0-24.6]	468	6.6	[6.1-7.2]	530
Single	40.8	[38.7-43.0]	841	75	[74.0-75.9]	5,988
<b>Total</b>	<b>100.0</b>		<b>2,059</b>	<b>100.0</b>		<b>7,984</b>
<b>District</b>						
Bojanala	26.8	[24.9-28.8]	556	24.5	[23.5-25.4]	1,977
Ngaka Modiri Molema	25.5	[23.6-27.4]	528	26.1	[25.1-27.0]	2,105
Dr Ruth Segomotsi Mompati	23.7	[21.9-25.6]	492	26.1	[25.1-27.1]	2,108
Dr Kenneth Kaunda	24.0	[22.2-25.9]	498	23.4	[22.5-24.3]	1,889
<b>Total</b>	<b>100.0</b>		<b>2,074</b>	<b>100.0</b>		<b>8,079</b>

\*CI - Confidence Interval: Subtotals for the Province are not always equal due to non-response or missing data"

### 5.1.2 Education attainment of household heads

The level of education held by the household heads is highlighted in Table 10. 38.9% of the population had completed secondary school, while 25.5% had earned matriculated degrees. The percentage of household heads without a high school diploma was greater among the older age groups—65 and older and 55 to 64 years old—with 37.2% and 22.8%, respectively. The largest proportion of household heads with tertiary degrees (9.8%) was seen in Ngaka Modiri Molema.

**Table 10:** Educational attainment of household heads by sex, age, and district

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>Sex</b>										
Male	9.8	[7.3-13.1]	16.3	[11.1-23.1]	37.4	[32.2-42.9]	27.6	[22.0-34.0]	8.9	[6.2-12.8]
Female	10.5	[8.0-13.7]	18.0	[14.2-22.4]	40.5	[34.6-46.8]	23.3	[18.9-28.4]	7.7	[5.1-11.5]
<b>Total</b>	<b>10.2</b>	<b>[8.0-12.8]</b>	<b>17.1</b>	<b>[13.2-21.9]</b>	<b>38.9</b>	<b>[34.8-43.3]</b>	<b>25.5</b>	<b>[21.6-29.9]</b>	<b>8.3</b>	<b>[6.1-11.2]</b>
<b>Age group</b>										
18-24	2.3	[0.5-10.7]	15.6	[3.9-45.4]	38	[20.0-60.0]	34	[17.7-55.4]	10.1	[4.3-21.9]
25-34	2.2	[0.9-5.2]	5.6	[2.9-10.6]	53.5	[42.5-64.1]	28.8	[21.3-37.6]	9.9	[5.6-16.9]
35-44	7.7	[3.5-16.1]	8.6	[4.7-15.4]	43.4	[35.4-51.9]	30.1	[23.9-37.0]	10.2	[6.4-15.7]
45-54	11.8	[8.1-16.8]	26.5	[19.8-34.4]	27.9	[22.4-34.3]	25.7	[20.2-32.2]	8.1	[5.0-12.9]
55-64	22.8	[16.8-30.2]	39.4	[32.3-46.8]	25.4	[19.1-32.9]	8.8	[6.0-12.6]	3.7	[1.8-7.3]
65+	37.2	[29.9-45.1]	34.4	[28.5-40.8]	22.5	[17.2-28.9]	3.7	[1.6-8.4]	2.2	[0.8-5.6]
<b>Total</b>	<b>10.2</b>	<b>[8.1-12.9]</b>	<b>17.2</b>	<b>[13.3-22.0]</b>	<b>39.2</b>	<b>[34.9-43.6]</b>	<b>25.1</b>	<b>[21.2-29.4]</b>	<b>8.4</b>	<b>[6.2-11.3]</b>
<b>District</b>										
Bojanala	7.2	[4.2-12.1]	12.9	[9.6-17.1]	42.5	[37.1-48.2]	28.7	[23.2-34.8]	8.7	[5.5-13.4]

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Ngaka Modiri Molema	12.4	[9.0-16.8]	24.3	[12.5-41.8]	31.3	[22.0-42.4]	22.3	[12.9-35.5]	9.8	[5.3-17.4]
Dr Ruth Segomotsi Mompoti	15.1	[10.8-20.8]	24.8	[20.7-29.5]	36.2	[30.2-42.6]	21.2	[15.0-28.9]	2.7	[1.3-5.4]
Dr Kenneth Kaunda	12.8	[8.6-18.7]	16.7	[12.2-22.5]	38.8	[31.8-46.3]	22.9	[17.2-29.8]	8.8	[5.4-13.9]
<b>Total</b>	<b>10.2</b>	<b>[8.0-12.8]</b>	<b>17.1</b>	<b>[13.2-21.9]</b>	<b>38.9</b>	<b>[34.8-43.3]</b>	<b>25.5</b>	<b>[21.6-29.9]</b>	<b>8.3</b>	<b>[6.1-11.2]</b>

### 5.1.3 Education attainment of household members

The results also show the education attainment by the household members aged 7 years and older. Secondary school education accounted for 35.1%, followed by those with primary school education with 31.5%. The older household members, those aged 65 years and older and those aged 55 years to 64 years, had higher percentages of no schooling, with 35.0% and 22.0%, respectively. When considering those aged 20 years and older, 11.1% of household members did not have any form of schooling, while 26.6% had matric education. Table 11 below shows this disaggregation.

**Table 11:** Educational attainment of household members by sex, age, and district

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>Sex</b>										
Male	7.8	[6.9-8.8]	32.7	[31.0-34.4]	35.2	[33.5-36.9]	19.4	[18.0-20.9]	4.9	[4.2-5.7]
Female	8.5	[7.6-9.4]	30.6	[29.1-32.1]	35.1	[33.6-36.7]	20.8	[19.5-22.2]	5.1	[4.4-5.8]
<b>Total</b>	<b>8.2</b>	<b>[7.5-8.9]</b>	<b>31.5</b>	<b>[30.4-32.7]</b>	<b>35.1</b>	<b>[34.0-36.3]</b>	<b>20.2</b>	<b>[19.2-21.2]</b>	<b>5.0</b>	<b>[4.5-5.5]</b>
<b>Age group</b>										
7-14	2.0	[1.4-3.0]	84.6	[82.5-86.4]	12.8	[11.1-14.7]	0.5	[0.3-1.1]	0.1	[0.0-0.6]
15-24	1.2	[0.7-1.9]	9.6	[8.2-11.2]	55.5	[52.9-58.0]	29.8	[27.5-32.2]	3.9	[3.1-5.1]
25-34	2.3	[1.6-3.4]	8.8	[7.3-10.7]	42.1	[39.2-45.1]	35.8	[33.0-38.7]	10.9	[9.2-12.9]
35-44	4.0	[2.8-5.5]	14.1	[11.9-16.6]	43.6	[40.3-47.0]	31.5	[28.4-34.7]	6.9	[5.3-8.8]
45-54	12.4	[10.2-15.0]	25.2	[22.1-28.5]	31.8	[28.5-35.3]	23.5	[20.6-26.7]	7.2	[5.5-9.3]
55-64	22.0	[19.0-25.3]	37.4	[33.7-41.2]	27.7	[24.4-31.3]	8.3	[6.4-10.7]	4.6	[3.2-6.5]
65+	35.0	[31.2-38.9]	38.0	[34.2-42.0]	21.9	[18.7-25.4]	3.1	[1.9-4.8]	2.0	[1.2-3.6]
<b>Total</b>	<b>8.2</b>	<b>[7.5-8.8]</b>	<b>31.6</b>	<b>[30.4-32.7]</b>	<b>35.2</b>	<b>[34.0-36.3]</b>	<b>20.1</b>	<b>[19.2-21.1]</b>	<b>5.0</b>	<b>[4.5-5.5]</b>
<b>District</b>										
Bojanala	5.2	[4.2-6.4]	27.3	[25.1-29.5]	36.7	[34.4-39.0]	24.6	[22.5-26.7]	6.3	[5.2-7.6]
Ngaka Modiri Molema	7.9	[6.8-9.3]	30.5	[28.4-32.7]	32.1	[30.0-34.4]	22.9	[21.0-24.9]	6.5	[5.4-7.8]

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Dr Ruth Segomotsi Mompoti	10.1	[8.8-11.7]	37.5	[35.2-39.8]	34.3	[32.1-36.6]	15.7	[14.0-17.5]	2.4	[1.8-3.3]
Dr Kenneth Kaunda	9.4	[8.1-11.0]	30.8	[28.6-33.2]	37.9	[35.6-40.4]	17.3	[15.5-19.2]	4.5	[3.6-5.7]
<b>Total</b>	<b>8.2</b>	<b>[7.5-8.8]</b>	<b>31.6</b>	<b>[30.4-32.7]</b>	<b>35.2</b>	<b>[34.0-36.3]</b>	<b>20.1</b>	<b>[19.2-21.1]</b>	<b>5.0</b>	<b>[4.5-5.5]</b>

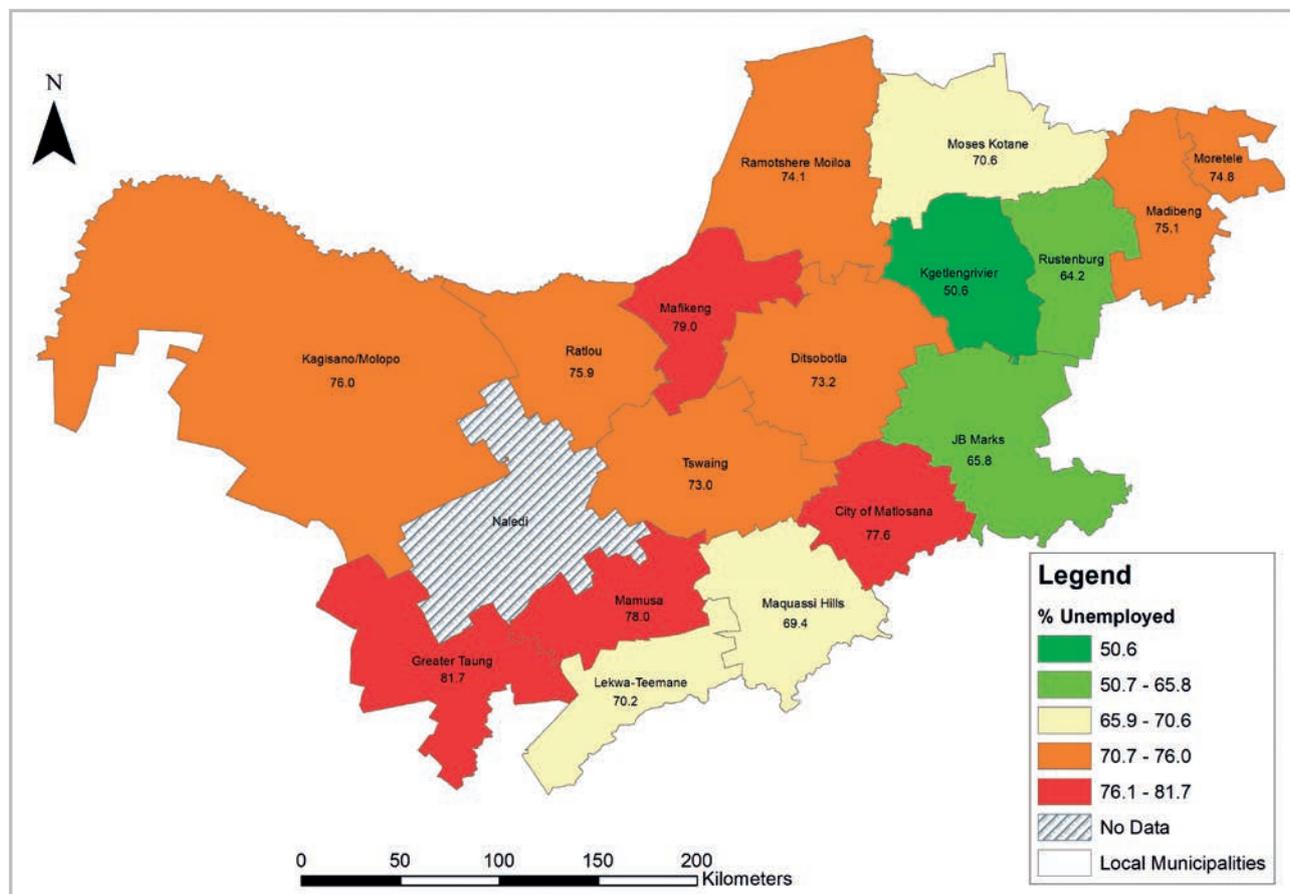
### 5.1.4 Employment Status

Table 12 shows that among the household heads and members who were economically active, 56.0% and 73.7%, respectively, were unemployed. A higher proportion (75.1%) of female household heads were unemployed compared to their male counterparts, with 39.3%. For household members, a similar pattern exists. About 80% of female household members were unemployed, compared to 66.5% of males. Among the youth, those aged 34 years and younger, the unemployment rate was 54.3% and 82.1% for household heads and members, respectively. Those aged between 55 and 64 years old had the highest unemployment rate of 70.5% and 75.8% for household heads and members, respectively. The highest unemployment rate for household heads and members was reported in Dr Ruth Segomotsi Mompoti, with 61.7% and 76.9%, respectively.

**Table 12:** Employment status of household heads by sex, age, and district

	Household heads				Household members			
	Employed		Unemployed		Employed		Unemployed	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>Sex</b>								
Male	60.7	[50.1-70.5]	39.3	[29.5-49.9]	33.5	[31.5-35.6]	66.5	[64.4-68.5]
Female	24.9	[19.8-30.8]	75.1	[69.2-80.2]	20.0	[18.5-21.7]	80.0	[78.3-81.5]
<b>Total</b>	<b>44.0</b>	<b>[36.1-52.2]</b>	<b>56.0</b>	<b>[47.8-63.9]</b>	<b>26.3</b>	<b>[25.0-27.6]</b>	<b>73.7</b>	<b>[72.4-75.0]</b>
<b>Age group</b>								
18-24 (15 -24 for HH Members)	37.4	[16.5-64.4]	62.6	[35.6-83.5]	7.1	[5.9-8.6]	92.9	[91.4-94.1]
25-34	50.4	[40.8-60.0]	49.6	[40.0-59.2]	32.0	[29.3-34.9]	68.0	[65.1-70.7]
35-44	47.0	[37.9-56.3]	53.0	[43.7-62.1]	40.0	[36.7-43.4]	60.0	[56.6-63.3]
45-54	46.0	[36.6-55.6]	54.0	[44.4-63.4]	40.8	[37.2-44.5]	59.2	[55.5-62.8]
55-64	29.5	[22.8-37.1]	70.5	[62.9-77.2]	24.2	[21.0-27.7]	75.8	[72.3-79.0]
<b>Total</b>	<b>44.1</b>	<b>[36.2-52.3]</b>	<b>55.9</b>	<b>[47.7-63.8]</b>	<b>26.3</b>	<b>[25.0-27.6]</b>	<b>73.7</b>	<b>[72.4-75.0]</b>
<b>District</b>								
Bojanala	40.7	[32.1-50.0]	59.3	[50.0-67.9]	30.3	[27.7-33.1]	69.7	[66.9-72.3]
Ngaka Modiri Molema	54.6	[31.0-76.3]	45.4	[23.7-69.0]	24.1	[21.7-26.5]	75.9	[73.5-78.3]
Dr Ruth Segomotsi Mompoti	38.3	[23.2-56.0]	61.7	[44.0-76.8]	23.1	[20.8-25.6]	76.9	[74.4-79.2]
Dr Kenneth Kaunda	43.6	[35.6-52.0]	56.4	[48.0-64.4]	27.9	[25.3-30.8]	72.1	[69.2-74.7]
<b>Total</b>	<b>44.0</b>	<b>[36.1-52.2]</b>	<b>56.0</b>	<b>[47.8-63.9]</b>	<b>26.3</b>	<b>[25.0-27.6]</b>	<b>73.7</b>	<b>[72.4-75.0]</b>

At local municipality level, the following local municipalities: City of Matlosana, Greater Taung, Mafikeng, and Mamusa fell under the highest band (75.1% to 80.9%) of unemployed household members (Figure 8). Kgetlengrivier local municipality was under the lowest band, with 50.8% of household members being unemployed.



**Figure 8:** Employment status of household members by local municipality

### 5.1.5 Household income

Table 13 shows household income disaggregated by household head sex, age, and district. The highest percentage (35.8%) was recorded among households which recorded between R1 501 and R3 000, followed by those that had no income or earned less than R1 500, with 24.9%. Male-headed households had a significantly higher percentage (17.7%) of household income of more than R6 000, compared to female-headed ones with 10.6%. Households headed by those aged from 25 to 34 years olds had the highest percentage of household income of more than R6 000 with 17.2%. Dr Kenneth Kaunda had the highest percentage (32.1%) of households which had no income or earned less than R1 500. The difference between the four districts across all four income bands was not significant based on the confidence intervals.

**Table 13:** Household income by sex, age, and district

	No income or <R1500		R1501-R3000		R3001-R4500		R4501-R6000		>R6000	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>Sex</b>										
Male	23.3	[20.3-26.6]	32.1	[28.1-36.3]	17.4	[15.0-20.2]	9.5	[7.7-11.9]	17.7	[14.6-21.3]
Female	26.6	[22.9-30.6]	39.9	[36.1-43.7]	16.0	[13.2-19.3]	6.9	[5.1-9.3]	10.6	[8.4-13.2]
<b>Total</b>	<b>24.9</b>	<b>[22.2-27.7]</b>	<b>35.8</b>	<b>[32.7-39.1]</b>	<b>16.8</b>	<b>[14.8-18.9]</b>	<b>8.3</b>	<b>[6.8-10.1]</b>	<b>14.3</b>	<b>[11.9-17.0]</b>
<b>Age group</b>										
18-24	52.8	[39.7-65.5]	23.3	[13.7-36.8]	13.5	[6.0-27.4]	5.8	[1.3-21.9]	4.6	[1.7-11.8]
25-34	33.8	[26.8-41.7]	29.1	[20.7-39.2]	13	[8.3-19.7]	6.9	[4.1-11.5]	17.2	[12.3-23.5]
35-44	34.4	[28.5-40.9]	26.4	[21.1-32.4]	15.3	[11.8-19.6]	7.8	[5.3-11.4]	16.1	[11.9-21.6]
45-54	33.8	[28.3-39.8]	25.8	[21.5-30.7]	14.7	[11.3-19.0]	9.0	[6.2-12.8]	16.7	[11.7-23.2]
55-64	20.5	[16.8-24.7]	41.4	[36.1-46.9]	15.1	[11.4-19.6]	9.0	[6.5-12.3]	14	[10.2-19.0]
65+	5.5	[3.4-8.7]	51.1	[45.1-57.0]	23.5	[19.6-28.0]	8.6	[6.0-12.2]	11.3	[8.1-15.5]
<b>Total</b>	<b>24.8</b>	<b>[22.1-27.6]</b>	<b>35.9</b>	<b>[32.7-39.1]</b>	<b>16.8</b>	<b>[14.9-18.9]</b>	<b>8.3</b>	<b>[6.8-10.1]</b>	<b>14.3</b>	<b>[11.9-17.0]</b>
<b>District</b>										
Bojanala	23.7	[19.6-28.4]	35.6	[30.1-41.4]	15.7	[12.8-19.2]	8.3	[5.9-11.7]	16.7	[12.7-21.5]
Ngaka Modiri Molema	24.4	[20.7-28.5]	38.5	[33.7-43.5]	14	[11.3-17.3]	7.8	[5.3-11.3]	15.3	[10.9-21.2]
Dr Ruth Segomotsi Mompoti	19.9	[14.8-26.2]	39.1	[33.5-45.0]	24.4	[20.0-29.3]	7.9	[6.0-10.3]	8.8	[6.1-12.4]
Dr Kenneth Kaunda	32.1	[25.8-39.1]	30.8	[26.3-35.8]	17.9	[13.9-22.9]	9.1	[6.4-12.7]	10.0	[7.5-13.3]
<b>Total</b>	<b>24.9</b>	<b>[22.2-27.7]</b>	<b>35.8</b>	<b>[32.7-39.1]</b>	<b>16.8</b>	<b>[14.8-18.9]</b>	<b>8.3</b>	<b>[6.8-10.1]</b>	<b>14.3</b>	<b>[11.9-17.0]</b>

Figure 9 shows that Greater Taung and Kagisano/Molopo local municipalities fell under the highest band (42.0% to 46.5%) of household members who had social welfare grants as source of income. Kgetlengrivier local municipality recorded least percentages of household members who had social welfare grants as source of income, as they were under the least band of 24.8%.

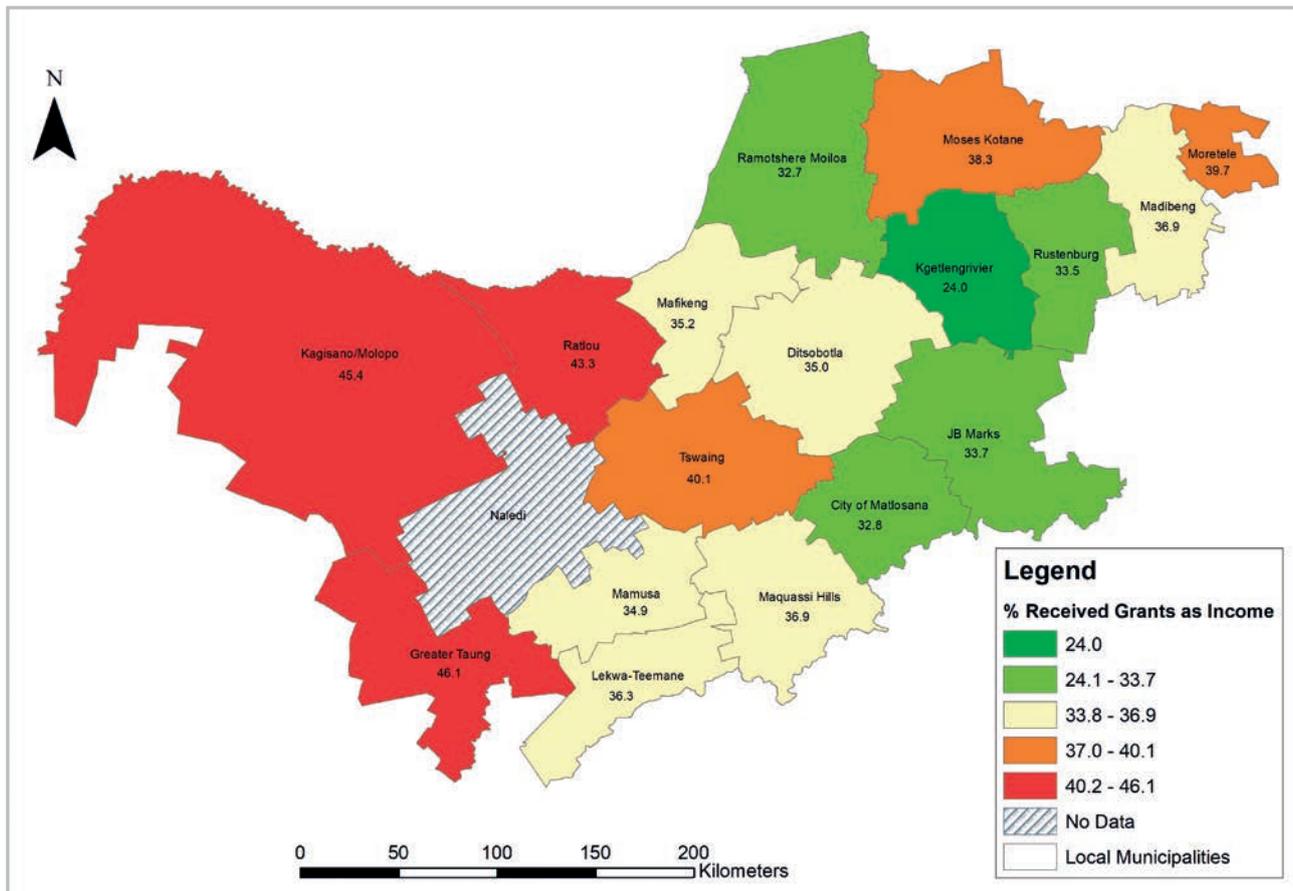


Figure 9: Social welfare grants as a source of income of household members by local municipality

### 5.1.6 Sources of income

Table 14 shows that the majority of household heads and members relied on social welfare grants (including old age grant) as their source of income with 34.5% and 36.9%, respectively. About a third (33.3%) of household heads reported salaries and wages as their source of income.

Table 14: Sources of income of household heads and members

	Household heads	Household members
Source of income	%	%
Social welfare grants (including old age grant)	34.3	36.9
Salaries and wages	33.3	14.2
Net profit from business or professional practice/ activities or commercial farming	5.6	2.3
Other	3.7	3
Alimony, maintenance, and similar allowances from divorced spouse, family members, etc., living elsewhere	1.5	0.6
Regular allowances/remittances received from non-Household members	1.2	0.5
Regular receipts from a pension from previous employment and pension from annuity funds	0.9	0.6

	Household heads	Household members
Source of income	%	%
Income from letting of fixed property	0.4	0.2
Income from small-scale farming	0.3	0.3
Interest received and/or accrued on deposits, loans, savings certificates	0.1	0.1
Income from share trading	0.0	0.0
Dividends on shares (e.g. unit trusts)	0.0	0.0
Royalties	0.0	0.0

Further breakdown of social welfare grants as a source of income of household heads and members by sex, age, and district is explored in Table 15. Significantly, more female household heads (50.5%) relied on social welfare grants as a source of income compared to their male counterparts, with only 18.7% reporting social welfare grants as their source of income. A similar scenario is noticed at household member's level as there were significantly more females (43.8%) who relied on social welfare grants as a source of income, compared to their male counterparts with only 29.3%. Dr Ruth Segomotsi Mompati had the highest proportion (43.0%) of household heads and (42.8%) of household members who relied on social welfare grants as their source of income. It is worth noting, though, that the differences between the four districts were not significant based on confidence intervals.

**Table 15:** Social welfare grants as a source of income of household heads and members by sex, age, and district

	Household heads who had social welfare grants as source of income			Household members who had social welfare grants as source of income		
	%	95% CI	n	%	95% CI	n
<b>Sex</b>						
Male	18.7	[14.4-23.8]	1,050	29.3	[27.9-30.8]	3,723
Female	50.5	[43.6-57.4]	1,011	43.8	[42.4-45.3]	4,240
<b>Total</b>	<b>34.3</b>	<b>[29.2-39.8]</b>	<b>2,061</b>	<b>37.1</b>	<b>[36.0-38.1]</b>	<b>7,963</b>
<b>Age group</b>						
0-14	-	-	-	36.3	[34.4-38.3]	2,390
18-24 (15-24 for HH Members)	15.2	[8.2-26.5]	77	25.6	[23.4-27.9]	1,459
25-34	30.1	[21.3-40.5]	235	28.7	[26.1-31.5]	1,104
35-44	25.2	[18.7-33.1]	358	29.2	[26.2-32.3]	843
45-54	30.5	[23.4-38.5]	422	28.7	[25.6-32.1]	742
55-64	47.4	[40.3-54.6]	465	51.5	[47.7-55.3]	664
65+	91.0	[86.8-93.9]	502	90.0	[87.4-92.2]	613
<b>Total</b>	<b>34.1</b>	<b>[29.0-39.6]</b>	<b>2,059</b>	<b>37.2</b>	<b>[36.2-38.3]</b>	<b>7,815</b>

	Household heads who had social welfare grants as source of income			Household members who had social welfare grants as source of income		
	%	95% CI	n	%	95% CI	n
<b>District</b>						
Bojanala	33.3	[27.2-40.0]	553	36.3	[34.2-38.4]	1,957
Ngaka Modiri Molema	27.3	[15.1-44.2]	523	35.6	[33.5-37.6]	2,084
Dr Ruth Segomotsi Mompati	43	[31.8-55.1]	491	42.8	[40.7-45.0]	2,087
Dr Kenneth Kaunda	39.5	[32.6-46.9]	494	33.1	[31.0-35.3]	1,865
<b>Total</b>	<b>34.3</b>	<b>[29.2-39.8]</b>	<b>2,061</b>	<b>37.1</b>	<b>[36.0-38.1]</b>	<b>7,993</b>

Table 16 shows household heads and members who reported receiving any social grant(s) during the 12 months preceding the survey by sex, age, and district. Similar trends were noticed, in those who reported social welfare grants as their source of income. Majority of elderly household heads (90.8%) and members (91.1%) received a social grant in the last 12 months prior to the survey. Two out of five (42.4%) children aged 14 and younger received a social grant in the year preceding to the survey. Dr Ruth Segomotsi Mompati had the highest percentage of (45.8%) of household heads and (43.7%) of household members who had received social grants during the 12 months preceding the survey.

**Table 16:** Household heads and members reported receiving any social grant(s) during 12 months prior to survey by sex, age, and district

	Household heads received social welfare grants a year prior survey			Household members received social welfare grants a year prior survey		
	%	95% CI	n	%	95% CI	n
<b>Sex</b>						
Male	19.2	[14.8-24.5]	1,058	32.7	[31.2-34.2]	3,739
Female	54.0	[45.8-62.0]	1,009	47.3	[45.8-48.8]	4,255
<b>Total</b>	<b>36.2</b>	<b>[30.4-42.4]</b>	<b>2,067</b>	<b>40.5</b>	<b>[39.4-41.6]</b>	<b>7,994</b>
<b>Age group</b>						
0-14	-	-	-	42.4	[40.4-44.4]	2,391
18-24 (15-24 for HH Members)	20.5	[9.6-38.6]	77	28.8	[26.6-31.2]	1,463
25-34	29.7	[20.7-40.5]	235	31.3	[28.6-34.0]	1,107
35-44	29.8	[23.2-37.5]	360	32.0	[28.9-35.2]	847
45-54	29.9	[24.0-36.7]	424	30.9	[27.7-34.3]	745
55-64	49.8	[42.6-57.0]	465	53.5	[49.7-57.2]	664
65+	90.8	[84.9-94.6]	504	91.1	[88.5-93.1]	615
<b>Total</b>	<b>36.0</b>	<b>[30.3-42.2]</b>	<b>2,065</b>	<b>40.8</b>	<b>[39.7-41.9]</b>	<b>7,832</b>

	Household heads received social welfare grants a year prior survey			Household members received social welfare grants a year prior survey		
	%	95% CI	n	%	95% CI	n
<b>District</b>						
Bojanala	34.5	[26.9-42.9]	554	39.3	[34.9-43.9]	1,975
Ngaka Modiri Molema	30.3	[16.7-48.5]	525	39.9	[35.9-44.0]	2,102
Dr Ruth Segomotsi Mompati	45.8	[35.2-56.7]	491	43.7	[39.0-48.5]	2,096
Dr Kenneth Kaunda	41.9	[34.6-49.5]	497	39.9	[36.1-43.8]	1,892
<b>Total</b>	<b>36.2</b>	<b>[30.4-42.4]</b>	<b>2,067</b>	<b>40.1</b>	<b>[37.7-42.6]</b>	<b>8,065</b>

In terms of grant type, child support grant constituted 41.3% and 55.9% for household heads and members, respectively (Table 17). The second dominant grant type was the old age grant which accounted for 33.5% of household heads, and 25.6% of household members. Social relief distress recorded by 33.0% and 20.4% of household heads and members, respectively.

**Table 17:** Social grant type received by household heads and members during 12 months prior to the survey

Grant type	Household heads (%)	Household members (%)
Child support	41.3	55.9
Old age	33.5	25.6
Social relief distress	33.0	20.4
Disability	5.7	3.8
Foster care	0.8	1.3
Care dependency	0.6	0.9
Grant-in-aid	0.4	0.2
War veterans	0.0	0.0

Table 18 shows household heads and members who reported receiving social relief during the 12 months prior to the survey. A quarter of household heads reported receiving social relief during the 12 months prior to the survey, while only 16.2% of household members were reported to have received social relief. Those aged 18 to 24 years old had the highest proportion (37.3%) of household heads who received social relief during the 12 months prior to the survey, while household members aged 35 to 44 years old had the highest proportion, with 26.1%. Dr Kenneth Kaunda had the lowest percentage (18.1%) of household heads who received social relief during the year prior to the survey, which was lower than the provincial average of 25.1%.

**Table 18:** Household heads and members reported receiving social relief during 12 months prior to survey by sex, age, and district

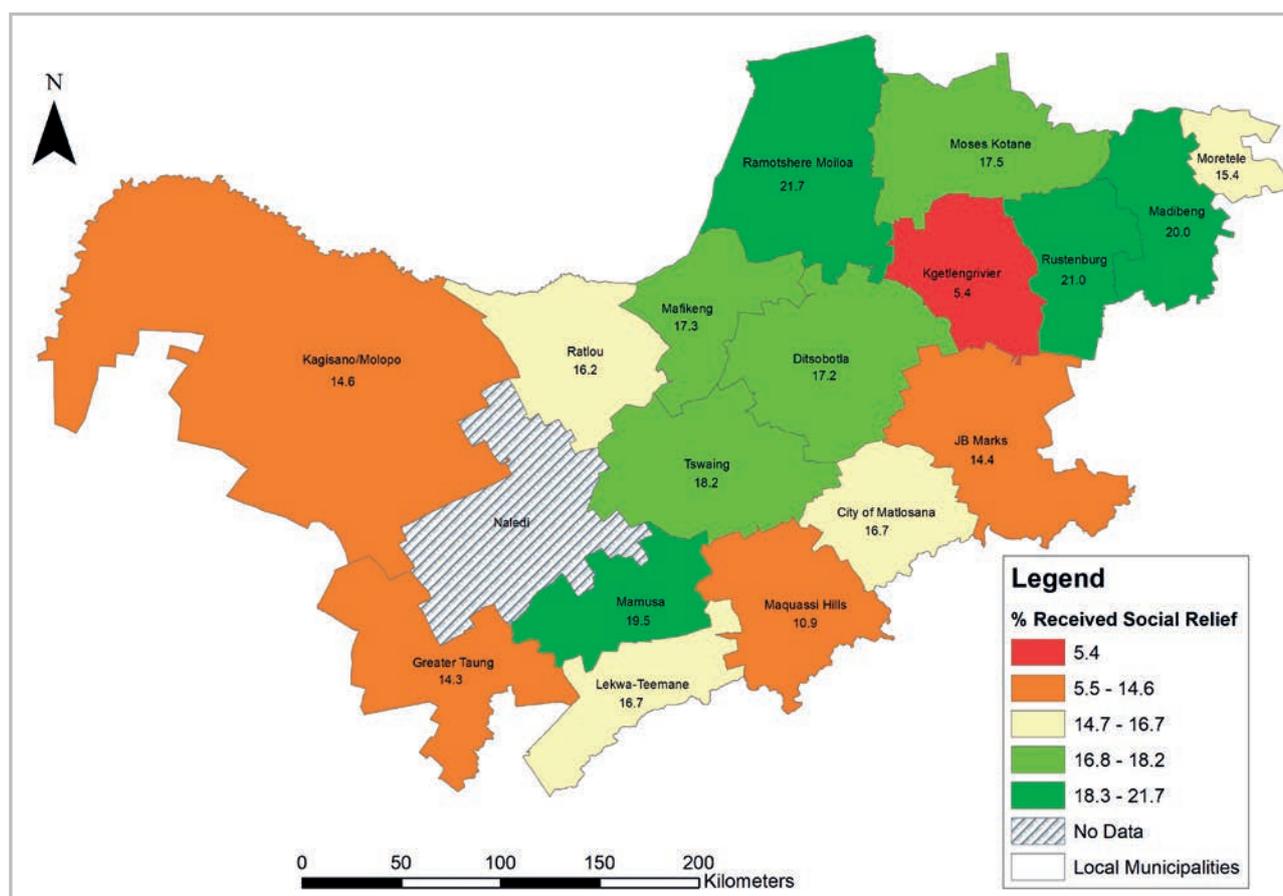
	Household heads received social relief a year prior survey			Household members received social relief a year prior survey		
	%	95% CI	n	%	95% CI	n
<b>Sex</b>						
Male	19.0	[12.7-27.5]	1,058	15.0	[13.9-16.1]	3,742
Female	31.4	[26.9-36.3]	1,010	17.3	[16.2-18.5]	4,257
<b>Total</b>	<b>25.1</b>	<b>[20.1-30.8]</b>	<b>2,068</b>	<b>16.2</b>	<b>[15.4-17.0]</b>	<b>7,999</b>
<b>Age group</b>						
0-14	-	-	-	5.6	[4.7-6.6]	2,389
18-24 (15 -24 for HH Members)	37.3	[19.3-59.7]	77	21.1	[19.1-23.3]	1,465
25-34	26.7	[18.5-36.8]	235	25.7	[23.2-28.3]	1,107
35-44	26.6	[20.2-34.1]	359	26.1	[23.2-29.2]	847
45-54	25.4	[18.9-33.3]	425	25.5	[22.5-28.7]	746
55-64	16.2	[10.4-24.4]	466	13.2	[10.9-16.0]	665
65+	7.2	[4.7-10.9]	504	8.3	[6.4-10.7]	615
<b>Total</b>	<b>25.2</b>	<b>[20.2-30.9]</b>	<b>2,066</b>	<b>16.3</b>	<b>[15.5-17.1]</b>	<b>7,834</b>
<b>District</b>						
Bojanala	29.7	[22.4-38.2]	556	17.6	[16.0-19.3]	1,973
Ngaka Modiri Molema	20.8	[10.9-36.0]	524	17.9	[16.4-19.6]	2,090
Dr Ruth Segomotsi Mompati	24.7	[18.3-32.4]	491	15.3	[13.8-16.9]	2,085
Dr Kenneth Kaunda	18.1	[13.0-24.5]	497	14.7	[12.5-15.7]	1,888
<b>Total</b>	<b>25.1</b>	<b>[20.1-30.8]</b>	<b>2,068</b>	<b>16.8</b>	<b>[15.5-17.1]</b>	<b>8,036</b>

The COVID-19 social relief grant was the dominant social relief type for both household heads and members, with 58.5% and 67.2%, respectively (Table 19). Cash was the second most dominant grant, with 53.9% of household heads, and 48.4% of household members reported having received it. Food accounted for around 3% of both household heads and members.

**Table 19:** Social relief type received by household heads and members during the 12 months prior to survey

Social Relief Type	Household heads (%)	Household members (%)
COVID-19	58.5	67.2
Cash	53.9	48.4
Food	3.4	3.6
Clothes	0.6	0.2
Other	0.1	0.4
Blankets	0.0	0.0

Figure 10 shows that Kgetlengrivier, Maquassi Hills, and Tlokwe City Council local municipalities were under the lowest band (5.3% to 8,5%) of household members who received social relief during the year preceding the survey. Ramotshere Moiloa and Rustenburg local municipalities fell under the highest band of 19.8% to 21.5%.



**Figure 10:** Household members who received any social relief during 12 months prior to survey by the local municipality

Further breakdown of the COVID-19 grant received by household members indicates that there was no gender difference as male and female members who received this social relief grant accounted for around 69% each (Table 20). Those aged 15 to 24 years old had the highest proportion, with 77.3%, followed by those aged 35 to 44 years old, with 76.2%. Dr Ruth Segomotsi Mompati had the highest percentage (76.5%) of household

members who received COVID-19 social relief grant the 12 months prior to the survey. Bojanala had the lowest proportion of household members who received COVID-19 social relief grant, with 64.2%.

**Table 20:** Household members reported receiving COVID-19 grant during 12 months prior to survey by sex, age, and district

	Yes		No		Total
	%	95% CI	%	95% CI	n
<b>Sex</b>					
Male	69.6	[65.7-73.2]	30.4	[26.8-34.3]	576
Female	69.1	[65.7-72.3]	30.9	[27.7-34.3]	754
<b>Total</b>	<b>69.3</b>	<b>[66.8-71.7]</b>	<b>30.7</b>	<b>[28.3-33.2]</b>	<b>1,330</b>
<b>Age group</b>					
0-14	37.0	[29.3-45.3]	63.0	[54.7-70.7]	138
15-24	77.3	[72.3-81.6]	22.7	[18.4-27.7]	308
25-34	74.7	[69.3-79.3]	25.3	[20.7-30.7]	288
35-44	76.2	[70.3-81.2]	23.8	[18.8-29.7]	231
45-54	74.9	[68.3-80.5]	25.1	[19.5-31.7]	195
55-64	72.8	[62.9-80.9]	27.2	[19.1-37.1]	92
65+	19.3	[11.0-31.6]	80.7	[68.4-89.0]	57
<b>Total</b>	<b>69.1</b>	<b>[66.5-71.5]</b>	<b>30.9</b>	<b>[28.5-33.5]</b>	<b>1,309</b>
<b>District</b>					
Bojanala	64.2	[59.1-69.1]	35.8	[30.9-40.9]	358
Ngaka Modiri Molema	70.2	[65.4-74.5]	29.8	[25.5-34.6]	382
Dr Ruth Segomotsi Mompati	76.5	[71.6-80.8]	23.5	[19.2-28.4]	328
Dr Kenneth Kaunda	65.9	[60.1-71.3]	34.1	[28.7-39.9]	270
<b>Total</b>	<b>69.3</b>	<b>[66.8-71.7]</b>	<b>30.7</b>	<b>[28.3-33.2]</b>	<b>1,338</b>

### 5.1.7 Discussion

It is always important to give context of the demographic characteristics of the current study population in relation to other recent nationally representative surveys. For those aged 20 years and older, 9.8% of household members did not have any form of schooling compared to 3.9% in 2020 while 27.9% had matric education compared to 33.9% in 2020 (StatsSA, 2021).

The unemployment rate for household heads and members who were economically active from the current study was 56.0% and 72.9% which is higher than the provincial official unemployment rate from the third quarter of the Quarterly Labour Force Survey in 2021 which was 35.7% (QLFS, 2021).

According to the General Household Survey, a larger percentage of households reported grants compared to salaries as a source of income in North West (54.1% versus 51.8%) in 2020. A similar pattern is noticed in the current study as majority of household heads and members relied social welfare grants (including old age grant) as their source of income with 34.5% and 36.9% respectively followed by those who relied on salaries with 33.3% and 14.2% for household heads and members respectively. The provincial average of 40.3% of household members reported receiving social grant is slightly higher than North West provincial average for household population of 34.6% and 37.0% in 2016 and 2020 respectively (SADHS, 2016; StatsSA,

2021). In terms of grant type, child support grant was the most common type of grant with 41.3% and 55.9% for household heads and members respectively. Although this was also the case in 2016, the percentage of the household population that received child grant in this province was lower with 24.3% (SADHS, 2016). Unsurprisingly, children and elderly were more likely than other age groups to receive any type of grants. In terms of COVID-19 grant, 67% of household members were reported having received this grant in North West in the current study. This is higher than the provincial average of 1.7% of individuals who accessed the COVID-19 grants in 2020 (StatsSA, 2021). The reason behind this might be due to the fact that the grant was being gradually rolled out as the pandemic was progressing. In addition, for 2020 statistics, only those aged 18 years and older were counted whereas all household members were included in the current study.

## 5.2 Dwellings and services

### 5.2.1 Housing types

Findings from North West Province show that the most common dwelling type occupied by households in the North West was described as a formal dwelling/house or brick/concrete block structure on a separate stand or yard, or on a farm (87.9%) (Table 21). The second most common dwelling type was an informal dwelling/shack not in a backyard (6.1%). About 3.9% of the households reported living in informal dwellings/shacks in the backyard.

**Table 21:** Types of dwellings occupied by households

Dwelling types (n=2008)	Number (n)	Percentage (%)
Formal dwelling/ House or brick/concrete block structure on a separate stand or yard or on a farm	1,803	87.9
Informal dwelling/Shack not in backyard, e.g., on an informal/squatter settlement or on a farm	103	6.1
Informal dwelling/Shack in backyard	64	3.9
Formal dwelling /House/ Flat/Room in backyard	16	0.9
Traditional dwelling/Hut/Structure made of traditional materials	10	0.5
Other	6	0.4
Room/Apartment on a property or an apartment in a larger dwelling, servants quarters/granny	4	0.3
Flat or apartment in a block of flats	2	0.1

## 5.3 Access to water service

### 5.3.1 Households main source of drinking water

Table 22 shows that the predominant source of drinking water in North West Province was tap water in the yard, making up 40.4% of all water sources (Table 24). Public/communal taps (16.1%) were the second most common drinking water source for households. Only 12.5% of the households had access to tap water inside the dwelling (Table 24). Boreholes accounted for 13.2% of all water sources. About 3.5% of the households' main source of drinking water was from water vendors (Table 22).

**Table 22:** Main source of drinking water

Main source of drinking water (n=2064)	Number (n)	Percentage (%)
Piped (tap) water in yard	848	40.4
Public/communal tap	385	16.0
Piped (tap) water in dwelling/house	267	12.5
Borehole in yard	187	9.2
Neighbour's tap	143	7.8
Borehole outside yard	66	4.2
Water vendor (charge involved)	53	3.5
Other	50	3.1
Watercarrier/tanker	54	2.8
Rainwater tank in the yard	7	0.3
Flowing water/stream/river	2	0.2
Well	2	0.2

Table 23 shows the main source of drinking water by the sex of household head and district. Our results show no statistical relationship between the sex of the household head and the main source of drinking water. Dr Kenneth Kaunda District (56.2%) had the highest proportion of households using a tap in the yard as the main source of drinking water, followed by Bojanala (44.9%) and Ngaka Modiri Molema District (29.5%). Dr Kenneth Kaunda District has the highest proportion of households using tap water inside the dwelling, while Dr Ruth Segomotsi Mompoti had the least (4.6%). Dr Ruth Segomotsi Mompoti (48.1%) leads with the proportion of the households using drinking water from the public/communal taps, followed by Ngaka Modiri Molema (19%), and Dr Kenneth Kaunda (12.6%).

**Table 23:** Households main source of water by sex of household head and districts

		Household head sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Piped (tap) water in dwelling/ house	%	12.6	12.4	10.2	12.8	4.6	23.7
	95% CI	[9.4-16.6]	[8.9-17.0]	[6.4-15.9]	[7.1-21.9]	[2.7-7.8]	[15.8-33.9]
Piped (tap) water in yard	%	38.5	42.6	44.9	29.5	21.1	56.2
	95% CI	[31.3-46.2]	[35.5-49.9]	[33.8-56.5]	[19.6-41.8]	[11.7-34.9]	[42.8-68.7]
Borehole in yard	%	10.8	7.4	9	13.1	14.5	0.6
	95% CI	[7.1-16.1]	[5.1-10.8]	[5.0-15.7]	[8.5-19.8]	[8.9-22.8]	[0.1-2.6]
Rainwater tank in yard	%	0.5	0	0.2	0.6	0.5	0
	95% CI	[0.2-1.3]	[0.0-0.3]	[0.0-1.3]	[0.2-1.7]	[0.1-2.3]	
Neighbours tap	%	7.9	7.6	9.4	10.3	5.4	1.7
	95% CI	[5.4-11.5]	[5.3-10.9]	[5.7-15.0]	[5.9-17.4]	[3.3-8.8]	[0.7-4.0]
Public/ communal tap	%	16.6	15.1	7.5	19	48.1	12.6
	95% CI	[12.1-22.5]	[10.7-20.8]	[3.8-14.2]	[11.0-30.8]	[35.4-61.1]	[4.5-30.7]
Watercarrier/ tanker	%	2.8	2.9	3	2.6	0.6	4.2
	95% CI	[1.4-5.2]	[1.6-5.4]	[1.4-6.3]	[1.2-5.4]	[0.1-2.8]	[0.9-18.2]
Water vendor (charge involved)	%	3	3.9	5.1	4.1	0.6	0.2
	95% CI	[1.7-5.4]	[2.5-6.1]	[2.8-9.1]	[2.2-7.7]	[0.2-1.8]	[0.0-1.2]
Borehole outside yard	%	4.2	4.2	6.3	2.8	3.8	0.5
	95% CI	[2.2-7.7]	[2.5-6.9]	[3.3-11.5]	[1.4-5.3]	[1.6-8.4]	[0.1-3.2]
Flowing water/ stream/river	%	0	0.4	0.4	0	0	0
	95% CI		[0.1-1.5]	[0.1-1.4]			
Well	%	0.1	0.2	0.2	0.2	0	0
	95% CI	[0.0-0.7]	[0.0-1.7]	[0.0-1.7]	[0.0-1.6]		
Other	%	3	3.2	3.8	5	0.6	0.4
	95% CI	[1.8-5.1]	[1.8-5.6]	[2.0-7.2]	[2.4-10.2]	[0.2-1.9]	[0.1-1.4]
<b>Total (n)</b>		<b>1,054</b>	<b>1,008</b>	<b>553</b>	<b>525</b>	<b>492</b>	<b>494</b>

Based on the WHO & UNICEF Joint Monitoring Programme (JMP) definition, water sources were categorized into improved and unimproved. Improved drinking water sources include piped water (in dwelling and yard or plot), public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater collection. This study's results show that 99.7% of the households in North West Province were using improved water sources. Ref: (WHO and UNICEF, 2017) Close to 60% of households reported that they were supplied with water by the municipality (Figure 11). About a quarter (21.9%) were not supplied with water by the scheme.

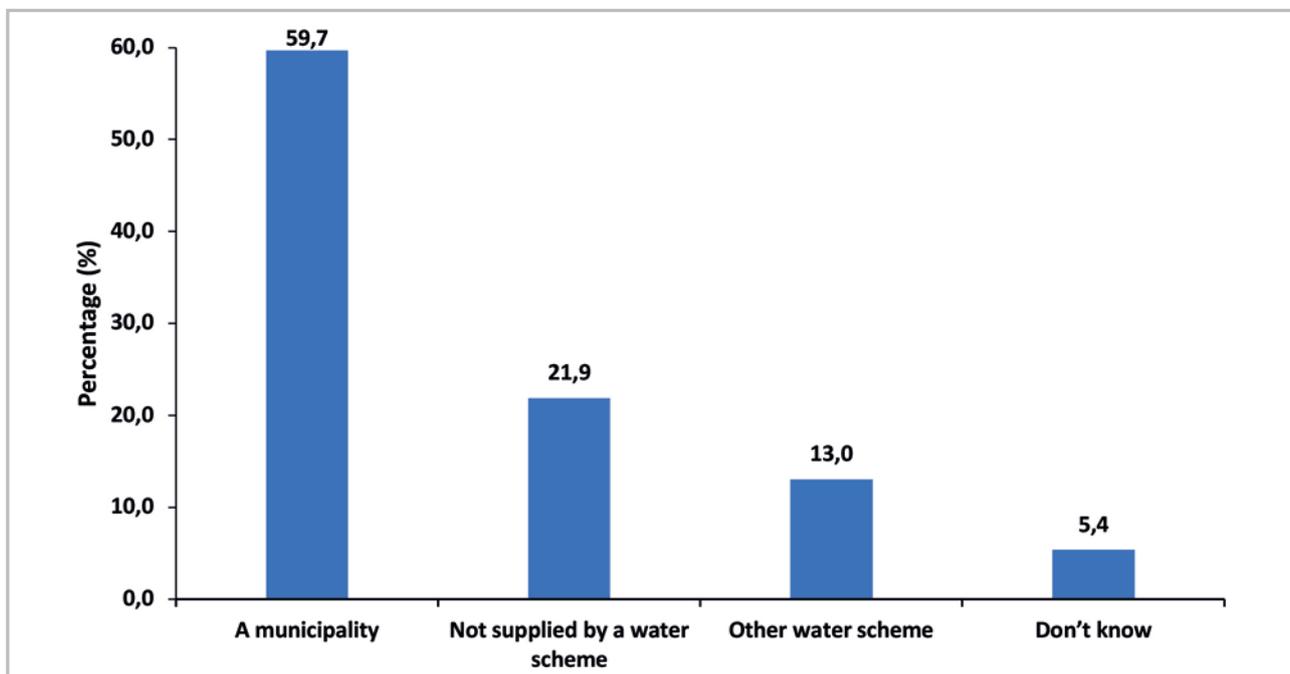


Figure 11: Water supply-North West Province

### 5.3.2 Payment for water services

Of those households that reported the municipality as the supplier of their main source of drinking water, only 28.1% of households paid for it (Figure 12). A comparison of the payment of water services by the district showed that the Dr Ruth Mompati District had the highest proportion of the households that did not pay (Figure 13). Dr Kenneth Kaunda District had a good breakdown between those who paid (42.7%) and those who did not pay.

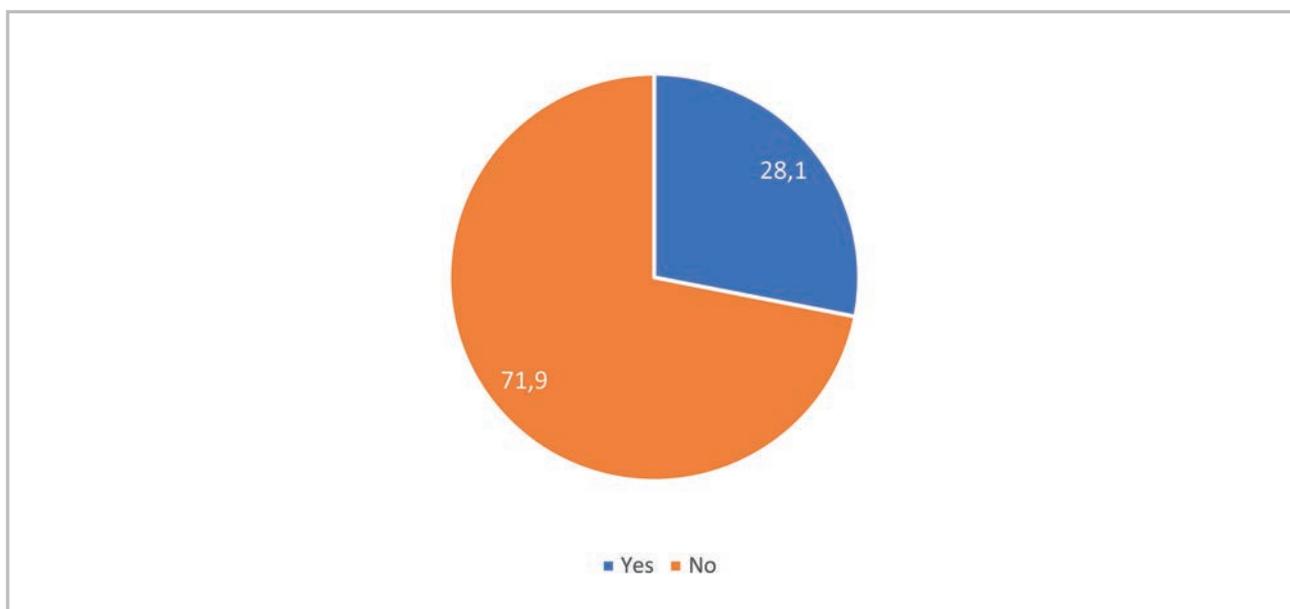
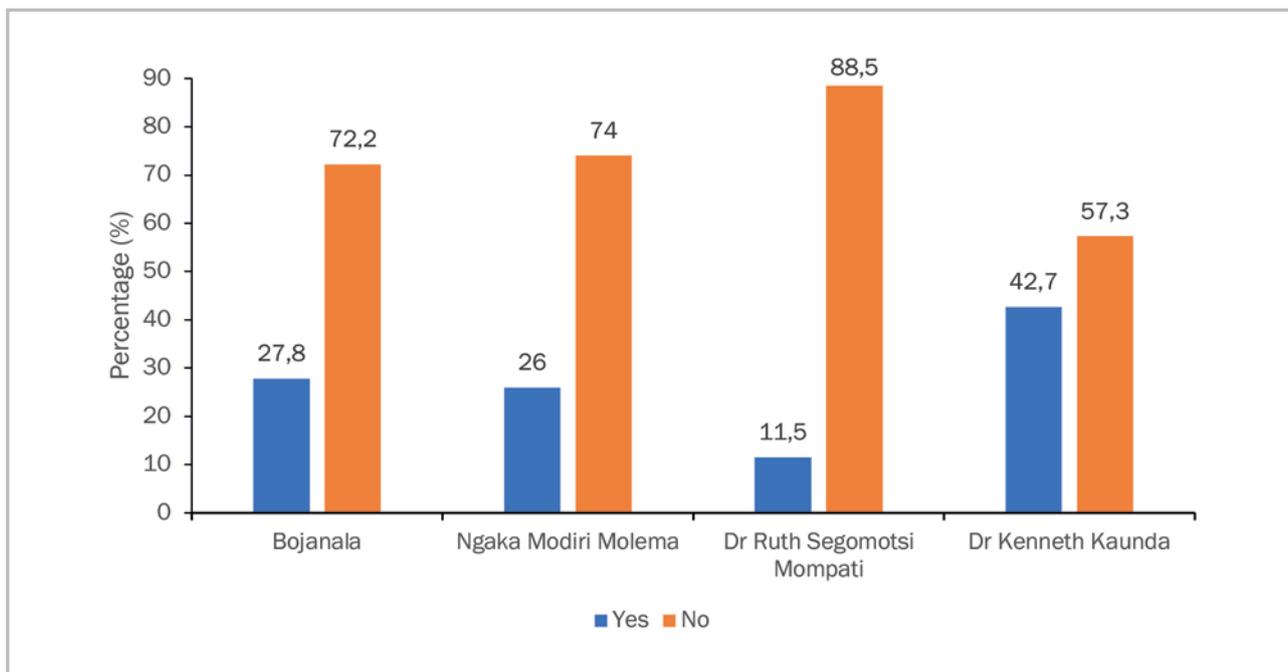


Figure 12: Payment of water services



**Figure 13:** Payment of water services by district

## 5.4 Sanitation and hygiene

Table 26 shows the types of toilet facilities used by the North West Province households. Pit latrine/toilets with a ventilation pipe were the most common toilet facility used by the households, accounting for 30.5% of all toilet types (Table 24). Twenty-nine percent of households used flush toilets connected to public sewerage. Around 28% of the households reported using pit latrine/toilet without a ventilation pipe. Flush toilets connected to a septic or conservancy tank were used by 5.9% of the households.

**Table 24:** Type of toilet facility used by households

Type of toilet facility (n=2034)	Number (n)	Percentage (%)
Pit latrine/toilet with a ventilation pipe	625	30.5
Flush toilet connected to a public sewerage	704	29.0
Pit latrine/toilet without a ventilation pipe	470	28.0
Flush toilet connected to a septic or conservancy tank	112	5.9
Open defecation (e.g. no facilities, field, bush)	40	1.9
Pour flush toilet connected to a septic tank (or septage pit)	29	1.5
Chemical toilet	21	1.5
Other	21	0.9
Ecological Sanitation Systems (e.g., urine diversion)	8	0.5
Bucket toilet (collected by municipality)	3	0.2
Bucket toilet (emptied by household)	1	0.0

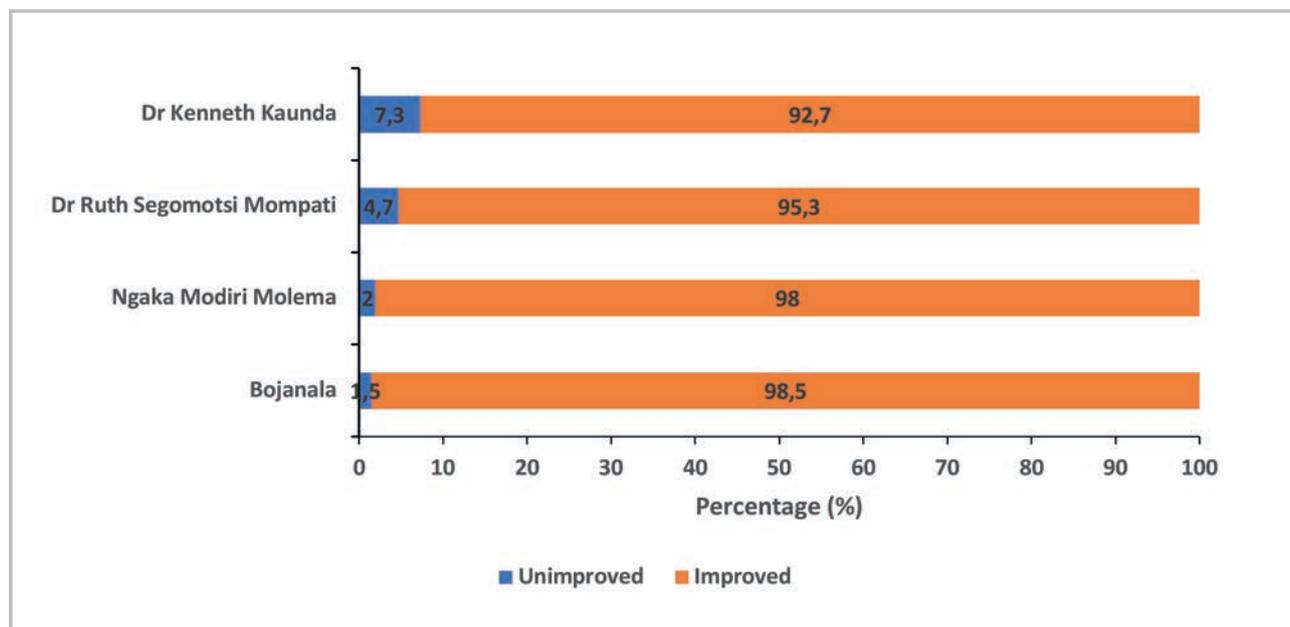
Dr Kenneth Kaunda (68.7%) had the highest proportion of households using flush toilets connected to a public sewerage system (Table 25). The highest proportion of households practising open defecation (5.7%) was in Dr Kenneth Kaunda District. Dr Ruth Segomotsi Mompoti (54.6%) had the highest proportion of households using pit latrine/toilet with ventilation pipe, while Dr Kenneth Kaunda (6.4%) had the least. Regarding pit latrine/toilet without ventilation pipe, Bojanala takes the lead, with 37%.

**Table 25:** Type of toilet facility used by the households by sex of the household head and district

		Sex of household head		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Flush toilet connected to a public sewerage system	%	26.6	31.7	20	25.2	14.6	68.7
	95% CI	[19.4-35.3]	[23.3-41.5]	[10.3-35.1]	[14.1-40.9]	[6.4-30.2]	[49.2-83.3]
Flush toilet connected to a septic or conservancy tank	%	7	4.8	6.5	6.4	5.4	4
	95% CI	[4.8-10.0]	[3.5-6.5]	[3.8-10.8]	[4.1-9.7]	[3.1-9.3]	[2.6-6.2]
Pour flush toilet connected to a septic tank (or septage pit)	%	1.6	1.5	1.6	2.2	1.2	0.7
	95% CI	[0.9-3.0]	[0.7-2.9]	[0.8-3.4]	[1.0-4.7]	[0.5-3.0]	[0.2-2.7]
Chemical toilet	%	1.5	1.5	2.6	0.3	1.1	0.2
	95% CI	[0.6-3.8]	[0.5-4.1]	[0.9-7.4]	[0.0-1.8]	[0.2-5.1]	[0.0-1.7]
Pit latrine/toilet with ventilation a pipe	%	31.2	29.8	29.9	37.2	54.6	6.4
	95% CI	[25.6-37.6]	[23.7-36.6]	[22.2-39.0]	[26.3-49.5]	[41.8-66.8]	[2.0-18.9]
Pit latrine/toilet without a ventilation pipe	%	28.2	27.7	37	26.8	17.6	12.6
	95% CI	[22.8-34.3]	[21.5-35.0]	[28.5-46.3]	[18.9-36.6]	[12.3-24.6]	[4.7-29.4]
Bucket toilet (collected by municipality)	%	0.2	0.2	0.3	0	0.2	0
	95% CI	[0.0-0.9]	[0.0-1.1]	[0.1-1.2]		[0.0-1.7]	
Bucket toilet (emptied by household)	%	0.1	0	0	0.1	0	0
	95% CI	[0.0-0.5]			[0.0-1.0]		
Ecological Sanitation Systems (e.g. urine diversion)	%	0.8	0.3	0.9	0	0.7	0
	95% CI	[0.2-2.7]	[0.1-1.5]	[0.2-4.4]		[0.2-3.4]	

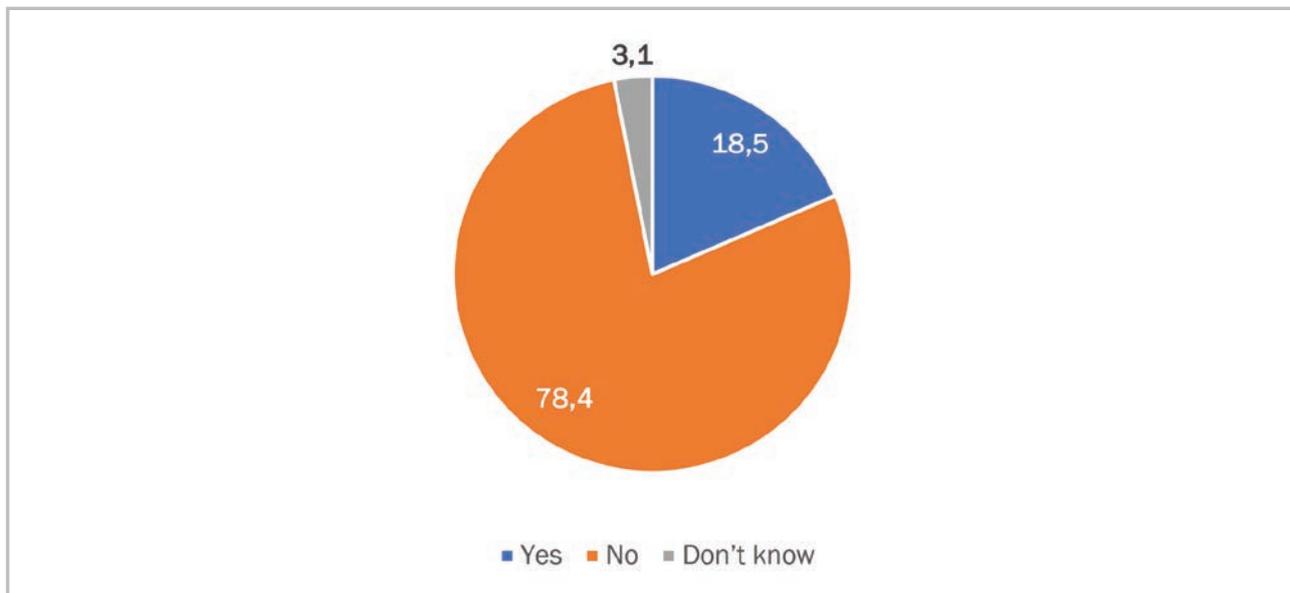
		Sex of household head		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Open defecation (e.g. no facilities, field, bush)	%	2	1.7	0.4	1.2	3.3	5.7
	95% CI	[0.8-4.8]	[0.5-6.4]	[0.1-1.7]	[0.2-8.1]	[1.3-8.4]	[0.9-28.8]
Other	%	0.9	0.9	0.7	0.7	1.1	1.7
	95% CI	[0.4-1.9]	[0.4-2.1]	[0.3-1.8]	[0.2-2.0]	[0.3-4.2]	[0.5-5.0]
<b>Total (n)</b>		<b>1,038</b>	<b>994</b>	<b>544</b>	<b>516</b>	<b>487</b>	<b>487</b>

Types of toilet facilities used by households were further divided into improved and unimproved, based on the WHO & UNICEF Joint Monitoring Programme (JMP) definition. Improved toilets include flushed or flushed to septic tanks, piped sewer systems, pit latrines, VIP latrines, and pit latrines with slabs. Meanwhile, unimproved toilets consist of shared facilities or none (bush or field); flush toilets or pour-flush toilets that go elsewhere (not to septic tanks or pit latrines); pit latrines without slabs; bucket systems; and hanging toilets ref (WHO and UNICEF,2017). The majority of the households in North West Province were using improved toilets. Bojanala District had the highest proportion of households using improved toilets (98.5%) ref (WHO and UNICEF, 2017), followed by Ngaka Modiri Molema (98%) (Figure 14). Dr Kenneth Kaunda (92.7%) had the lowest proportion of households using improved water sources.

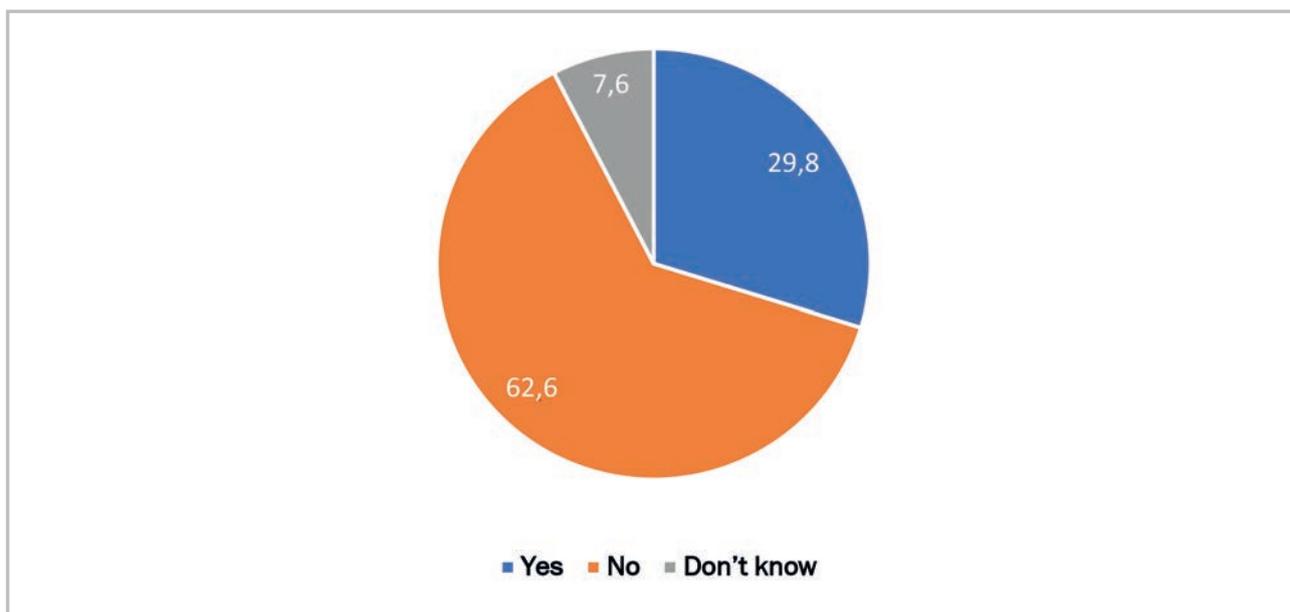


**Figure 14:** Improved and unimproved toilet types

Figure 14 shows that most households (78.4%) do not pay for sewage, and only 18.5% indicated that they paid, and 3.1% reported that they do not know if the house is paying for sewerage . When asked whether the households receive free sanitation as part of the South African Government’s free basic services policy, about 78.4 % indicated they were not (Figure 15). Only 18.5% of the households were receiving free sanitation services.



**Figure 15:** Proportion of households paying for public sewerage (n=1 380)



**Figure 16:** Proportion of households receiving free sanitation services (n=703)

The results show no statistically significant relationship between the sex of the household head and access to free sanitation services (Table 26). Dr Kenneth Kaunda District had the highest proportion of households receiving free sanitation services (44.9 %), while Bojanala District (13.5 %) had the least (Table 28).

**Table 26:** Households receiving free sanitation by sex of the household head and district

	Yes		No		Don't know		Total (n)
	%	95% CI	%	95% CI	%	95% CI	
<b>Household head sex</b>							
Male	29	[20.7-39.0]	63.4	[53.8-72.0]	7.7	[4.7-12.2]	332
Female	30.5	[22.8-39.4]	61.9	[52.3-70.7]	7.6	[4.6-12.2]	371
<b>District</b>							
Bojanala	13.5	[5.9-28.3]	74.5	[56.6-86.8]	12	[6.8-20.1]	114
Ngaka Modiri Molema	25.7	[12.1-46.6]	66.5	[47.7-81.2]	7.8	[4.3-13.8]	138
Dr Ruth Segomotsi Mompoti	28	[22.1-34.7]	72	[65.3-77.9]	0		80
Dr Kenneth Kaunda	44.9	[36.4-53.7]	49.9	[41.8-58.0]	5.2	[2.8-9.5]	371

### 5.4.1 Refuse removal

Table 27 shows rubbish disposal methods used by households in North West Province. One-third of the households use their own refuse dump to dispose of their rubbish (Table 29). About 29.7% of the households indicated that local authority/private companies removed their rubbish at least once a week. Households that indicated that they leave their rubbish lying anywhere made up 13.7% of their households in North West Province. Few households reported using communal refuse dump to dispose of their rubbish.

**Table 27:** Households rubbish disposal

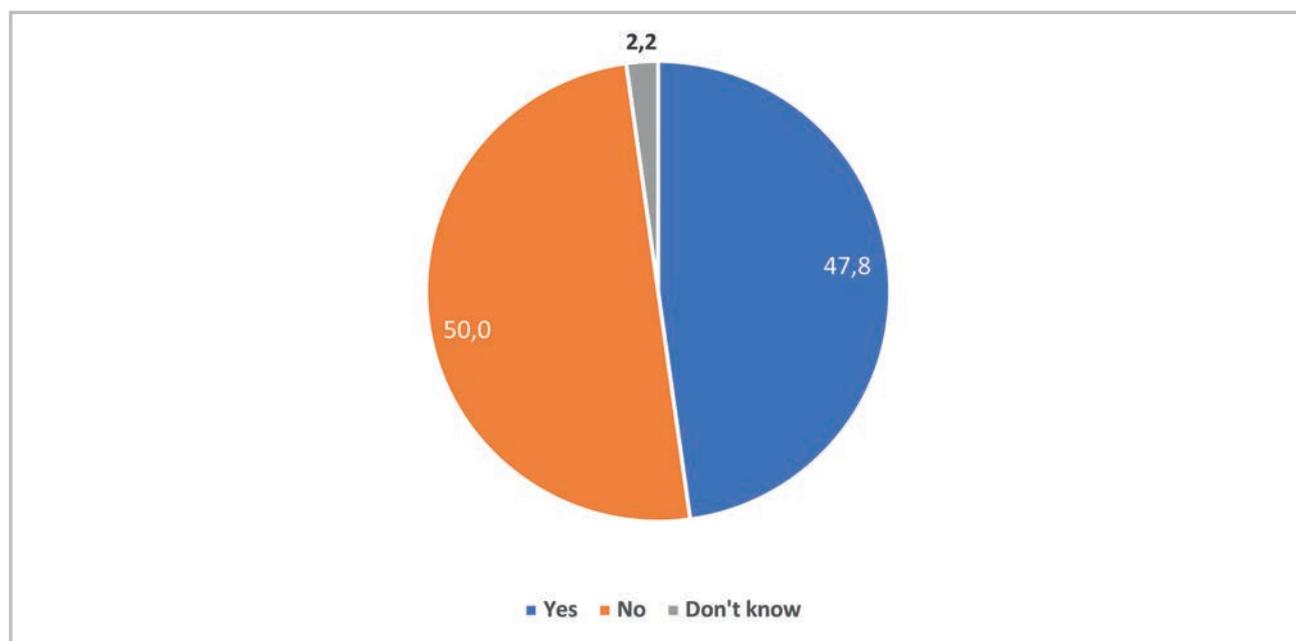
Rubbish disposal method (n=2005)	Number (n)	Percentage (%)
Own refuse dump	716	33.2
Removed by local authority/private company at least once a week	585	29.7
Dump or leave rubbish anywhere	271	13.7
Removed by community members, contracted by municipality at least once a week	122	7.6
Communal refuse dump	146	6.9
Other	103	5.5
Removed by local authority/private company less often than once a week	35	1.8
Removed by community members at least once a week	10	0.7
Communal container/central collection point	14	0.6
Removed by community members, contracted by municipality less than once a week	2	0.2
Removed by community members, less often than once a week	1	0.1

Table 28 shows that a higher proportion of male-headed households use their own refuse dump to dispose of their rubbish. Dr Kenneth Kaunda (53.1%) had the highest proportion of the households whose rubbish is removed by local authority/private company at least once a week, while Ngaka Modiri Molema had the lowest (4.1%). Regarding households using their own refuse dumps, Ngaka Modiri Molema District (61.9%) takes the lead, followed by Dr Ruth Segomotsi Mompoti (53.1%). Dr Ruth Segomotsi Mompoti (20.8%) had the highest proportion of households who leave their rubbish everywhere, while Bojanala (12.3%) and Dr Kenneth Kaunda (12.4%) had the least. Nearly half of the households indicated that they were receiving free refuse removal services (Figure 17).

**Table 28:** Households rubbish disposal methods by sex of the household head and district

		Sex of household head		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Removed by local authority/private company at least once a week	%	26.9	32.9	38.2	4.1	12.2	53.1
	95% CI	[20.3-34.9]	[25.2-41.6]	[27.4-50.2]	[1.6-10.0]	[4.5-29.2]	[36.0-69.4]
Removed by local authority/private company less often than once a week	%	1.8	1.8	2.3	0.5	0.8	2.8
	95% CI	[1.0-3.3]	[0.8-3.8]	[1.1-4.8]	[0.1-1.9]	[0.2-3.5]	[1.2-6.2]
Removed by community members, contracted by municipality at least once a week	%	8.2	6.9	11.9	2.4	0.6	7.6
	95% CI	[4.8-13.8]	[4.7-10.1]	[6.8-19.8]	[0.4-12.6]	[0.1-2.7]	[4.6-12.4]
Removed by community members, contracted by municipality less than once a week	%	0.1	0.2	0.4	0	0	0
	95% CI	[0.0-1.1]	[0.0-1.6]	[0.1-1.5]			
Removed by community members at least once a week	%	0.6	0.8	1.2	0.1	0	0.5
	95% CI	[0.2-2.0]	[0.3-2.3]	[0.4-3.9]	[0.0-1.0]		[0.1-2.3]
Removed by community members, less often than once a week	%	0.2	0	0.2	0	0	0
	95% CI	[0.0-1.1]		[0.0-1.2]			

		Sex of household head		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Moppati	Dr Kenneth Kaunda
Communal refuse dump	%	7	6.8	4.8	8.6	5	11.6
	95% CI	[4.3-11.1]	[4.7-9.8]	[2.0-11.1]	[5.3-13.7]	[3.3-7.6]	[5.5-22.7]
Communal container/central collection point	%	0.6	0.6	0.4	0.7	0.4	1.2
	95% CI	[0.3-1.5]	[0.3-1.5]	[0.1-1.6]	[0.3-1.9]	[0.1-1.4]	[0.4-4.0]
Own refuse dump	%	35.3	30.7	22.8	61.9	53.1	9.6
	95% CI	[28.5-42.8]	[24.6-37.6]	[15.6-32.0]	[52.5-70.4]	[41.4-64.4]	[3.4-24.6]
Dump or leave rubbish anywhere	%	13.6	13.9	12.3	13.9	20.8	12.4
	95% CI	[10.4-17.6]	[9.9-19.0]	[7.7-19.0]	[9.3-20.3]	[13.9-29.9]	[5.3-26.6]
Other	%	5.5	5.4	5.6	7.8	7.1	1.1
	95% CI	[3.9-7.8]	[3.5-8.3]	[3.3-9.2]	[4.9-12.2]	[4.2-11.7]	[0.4-2.9]
<b>Total (n)</b>		<b>1,035</b>	<b>968</b>	<b>536</b>	<b>509</b>	<b>479</b>	<b>481</b>

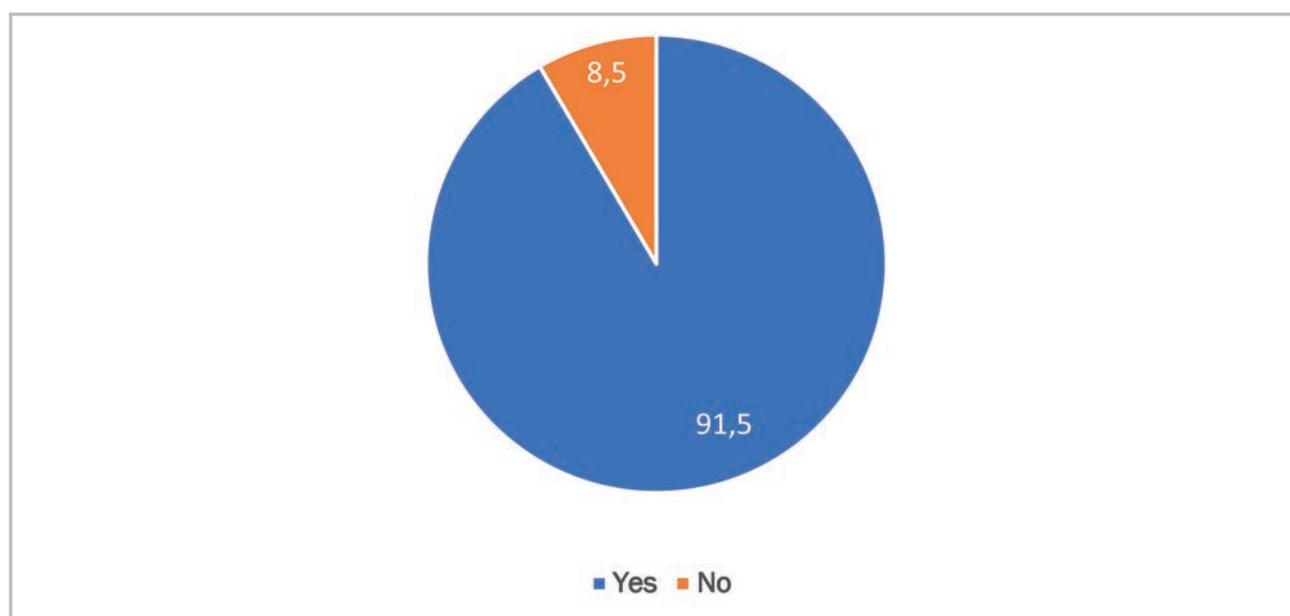


**Figure 17:** Proportion of households receiving free refuse removal services (n=754)

## 5.5 Energy

### 5.5.1 Access to electricity

Figure 18 shows that the majority (91.5%) of the households indicated they had electricity access in North West Province. Of the households that indicated they had access to electricity, 97.6% were connected to the main electricity supply. Our results show no statistically significant relationship between the sex of the household head and access to electricity. Table 29 shows that Bojanala (93.7%) and Ngaka Modiri Molema (93.6%) had the highest proportion of households with electricity access. Dr Kenneth Kaunda had the lowest proportion of households with access to electricity at 82.4%.

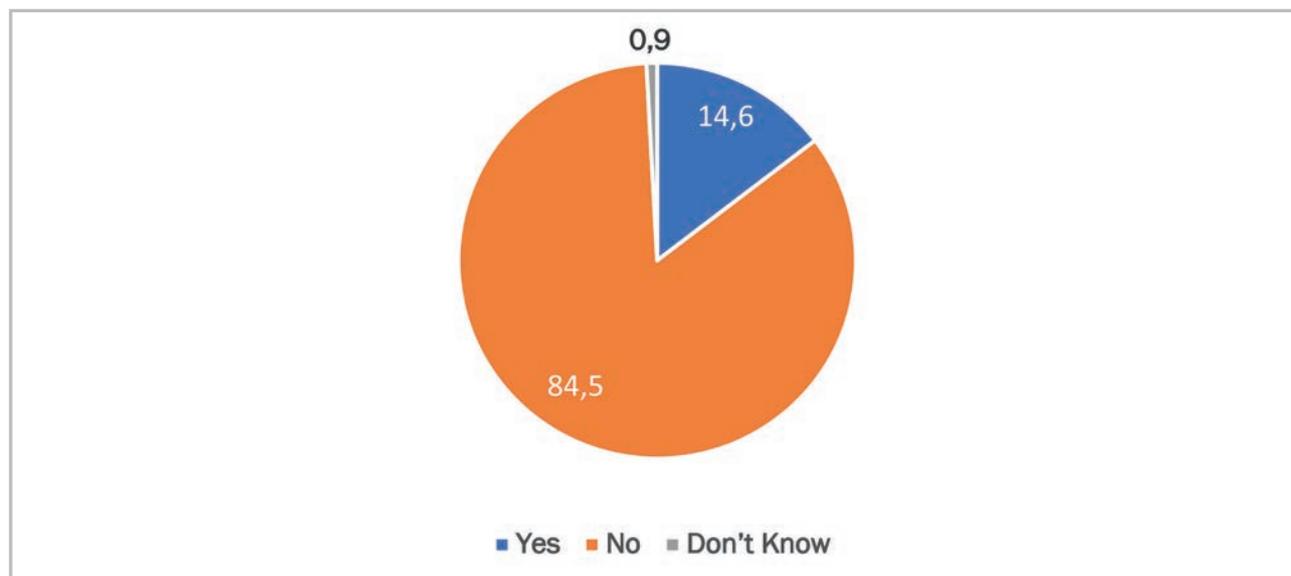


**Figure 18:** Proportion of households with access to electricity

**Table 29:** Access to electricity by household head sex and district

	Yes		No		Total (n)
	%	95% CI	%	95% CI	
<b>Household head sex</b>					
Male	91.1	[86.5-94.2]	8.9	[5.8-13.5]	1,054
Female	92.2	[87.2-95.3]	7.8	[4.7-12.8]	1,007
<b>District</b>					
Bojanala	93.7	[87.7-96.9]	6.3	[3.1-12.3]	553
Ngaka Modiri Molema	93.6	[88.9-96.4]	6.4	[3.6-11.1]	524
Dr Ruth Segomotsi Mompati	92	[86.2-95.5]	8	[4.5-13.8]	491
Dr Kenneth Kaunda	82.4	[62.2-93.0]	17.6	[7.0-37.8]	495

Figure 19 shows that only 14.6% of the households in North West Province indicated that they were receiving free electricity as part of the Free Basic Electricity Programme (FBE). Under this programme, qualifying households receive 50 kWh per month.



**Figure 19:** Proportion of households receiving free electricity

Table 30 shows households receiving free electricity by the sex of the household head and district. More female-headed households (16.2%) reported receiving free electricity. Dr Kenneth Kaunda (20.4%) had the highest proportion of households receiving free electricity, followed by Dr Ruth Segomotsi Mompoti (18.3%), while Ngaka Modiri Molema had the least (5.9%) (Table 30).

**Table 30:** Households receiving free electricity by sex of the household head and district

	Yes		No		Don't know		Total (n)
	%	95% CI	%	95% CI	%	95% CI	
<b>Household head sex</b>							
Male	13.1	[9.6-17.6]	85.8	[81.4-89.3]	1.1	[0.6-2.3]	962
Female	16.2	[12.6-20.6]	83.2	[78.7-86.9]	0.6	[0.3-1.3]	932
<b>District</b>							
Bojanala	16.1	[10.6-23.7]	83	[75.6-88.5]	0.9	[0.3-2.2]	522
Ngaka Modiri Molema	5.9	[4.0-8.4]	93.7	[90.9-95.7]	0.4	[0.1-1.7]	494
Dr Ruth Segomotsi Mompoti	18.3	[12.6-25.8]	80.5	[73.0-86.3]	1.2	[0.4-3.5]	448
Dr Kenneth Kaunda	20.4	[14.8-27.6]	78.3	[71.4-83.9]	1.3	[0.6-2.5]	431

## 5.5.2 Energy sources for cooking, lighting, water heating, and space heating

Energy sources were categorized into cooking, lighting, water heating, and space heating (Table 31). Our result shows that electricity from the mains (89.7%) was the main energy source for the majority of the households in North West Province. Wood (5.9%) was the second most used energy source for cooking. Other sources of energy, such as coal, paraffin, animal dung, and gas, were the main source of energy for less than 5% of the households (Table 31). Table 32 shows that Dr Kenneth Kaunda (91.5%) had the highest proportion of households whose main source of energy for cooking was electricity from the mains, closely followed by Bojanala District (90.9%). Ngaka Modiri Molema (9.1%) had the highest proportion of households whose main source of energy for cooking was wood.

**Table 31:** Household's main source of energy for cooking, lighting, water heating, and space heating

	Cooking	Lighting	Water heating	Space heating
	%	%	%	%
Electricity from mains	89.7	98.7	84.1	62.4
Candles		0.5		
Wood	5.9	0.3	5.4	4.6
Gas	1.9		0.6	0.3
Paraffin	1.7	0.1	1.2	0.3
Other sources of electricity (e.g., Generator)	0.5	0.2	0.6	0.3
Other	0.1	0.2	0.1	0.1
Coal	0.1		0.2	0.4
Animal dung	0.1			
None			7.8	31.7
Solar energy			0.1	

**Table 32:** Source of energy for cooking by sex of the household head and district

		Household head sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Electricity from mains	%	88.8	90.7	90.9	86.8	88.2	91.5
	95% CI	[84.3-92.2]	[87.7-93.0]	[85.0-94.6]	[78.4-92.2]	[81.7-92.6]	[87.0-94.6]
Other source of electricity (e.g., Generator)	%	0.5	0.5	0.6	0.4	1.1	0.2
	95% CI	[0.2-1.5]	[0.2-1.4]	[0.2-1.7]	[0.1-1.4]	[0.4-2.8]	[0.0-1.4]
Gas	%	2.6	1.2	1.5	2.6	1.5	2.6
	95% CI	[1.6-4.2]	[0.7-2.3]	[0.7-3.2]	[1.4-4.8]	[0.5-4.1]	[1.3-5.0]
Paraffin	%	1.4	1.9	1.6	0.7	0.3	4.3
	95% CI	[0.6-3.4]	[1.0-3.7]	[0.4-6.2]	[0.2-2.0]	[0.0-2.2]	[2.1-8.5]

		Household head sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Wood	%	6.3	5.5	5.4	9.1	8.4	1
	95% CI	[3.8-10.1]	[3.5-8.5]	[2.7-10.5]	[4.3-18.2]	[5.0-13.8]	[0.3-3.3]
Coal	%	0.2	0	0	0.2	0	0.2
	95% CI	[0.0-0.6]			[0.0-1.4]		[0.0-1.5]
Animal dung	%	0.1	0	0	0.2	0	0
	95% CI	[0.0-0.7]			[0.0-1.4]		
Other, specify	%	0.1	0.1	0	0.2	0.2	0.2
	95% CI	[0.0-0.5]	[0.0-0.5]		[0.0-1.1]	[0.0-1.3]	[0.0-1.3]
None	%	0	0.1	0	0	0.3	0
	95% CI		[0.0-0.5]			[0.0-1.7]	
<b>Total (n)</b>		<b>958</b>	<b>929</b>	<b>519</b>	<b>492</b>	<b>446</b>	<b>431</b>

Electricity from the mains was the most common energy source for households in the North West, accounting for 98.7% of energy sources used for lighting (Table 33). Few households reported using candles (0.5%) as their main energy source for lighting. In terms of water heating, the majority of the household's main energy source was electricity from mains (98.7%). About 7.8% of the households did not use anything for water heating. The third most common energy source for water heating was wood (5.4%). Dr Kenneth Kaunda (89.5%) had the highest proportion of households using electricity from the mains, and Dr Ruth Segomotsi Mompoti (76.3%) had the least (Table 35). However, Dr Ruth Segomotsi Mompoti (8.2%) leads with the proportion of households using wood as the main energy source for water heating, closely followed by Ngaka Modiri Molema (7.4%). Dr Ruth Segomotsi Mompoti (14.6%) had the highest proportion of households not using anything for water heating, while Dr Kenneth Kaunda (1.4%) had the lowest.

**Table 33:** Source of energy for water heating by sex of the household head and district

		Head of household sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Electricity from mains	%	83.4	84.8	84.9	82.6	76.3	89.5
	95% CI	[78.8-87.2]	[80.4-88.4]	[77.7-90.1]	[73.0-89.4]	[72.2-80.0]	[85.0-92.7]
Other source of electricity (e.g., Generator)	%	0.3	0.9	0.4	0.4	0.2	1.6
	95% CI	[0.1-0.7]	[0.4-2.0]	[0.1-1.8]	[0.1-1.6]	[0.0-1.3]	[0.8-3.2]
Gas	%	1.1	0.1	0.4	0.8	0.4	1.1
	95% CI	[0.5-2.3]	[0.0-0.5]	[0.1-2.5]	[0.3-2.1]	[0.1-1.7]	[0.4-3.1]
Paraffin	%	1.1	1.4	0.9	0.6	0.2	4
	95% CI	[0.5-2.7]	[0.7-2.7]	[0.2-4.4]	[0.2-1.9]	[0.0-1.1]	[1.9-8.3]

		Head of household sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Wood	%	6	4.8	4.8	7.4	8.2	2.2
	95% CI	[3.6-9.9]	[2.8-8.1]	[1.9-11.5]	[3.1-16.8]	[4.8-13.8]	[0.7-6.4]
Coal	%	0.1	0.2	0.2	0.2	0	0
	95% CI	[0.0-0.7]	[0.0-1.6]	[0.0-1.5]	[0.0-1.4]		
Solar energy	%	0.1	0.2	0	0.5	0	0
	95% CI	[0.0-0.6]	[0.0-1.2]		[0.1-3.5]		
Other	%	0.1	0.1	0	0.2	0	0.2
	95% CI	[0.0-0.5]	[0.0-0.5]		[0.0-1.1]		[0.0-1.3]
None	%	7.9	7.5	8.3	7.2	14.6	1.4
	95% CI	[5.6-11.0]	[5.0-11.3]	[4.7-14.2]	[4.0-12.7]	[10.8-19.6]	[0.6-3.7]
<b>Total (n)</b>		<b>950</b>	<b>920</b>	<b>515</b>	<b>488</b>	<b>440</b>	<b>428</b>

The predominant energy source for space heating was electricity from the mains (62.4%) (Table 34). Nearly one-third (31.7%) of the households did not use anything for space heating. Wood was used by 4.6% of the households for space heating. Bojanala District (67.7%) had the highest proportion of households using electricity from the mains, followed by Dr Kenneth Kaunda (62.2%) for space heating (Table 34). Dr Ruth Segomotsi Mompoti District (40%) has the highest proportion of households not using anything for space heating, while Bojanala had the lowest (26.1%).

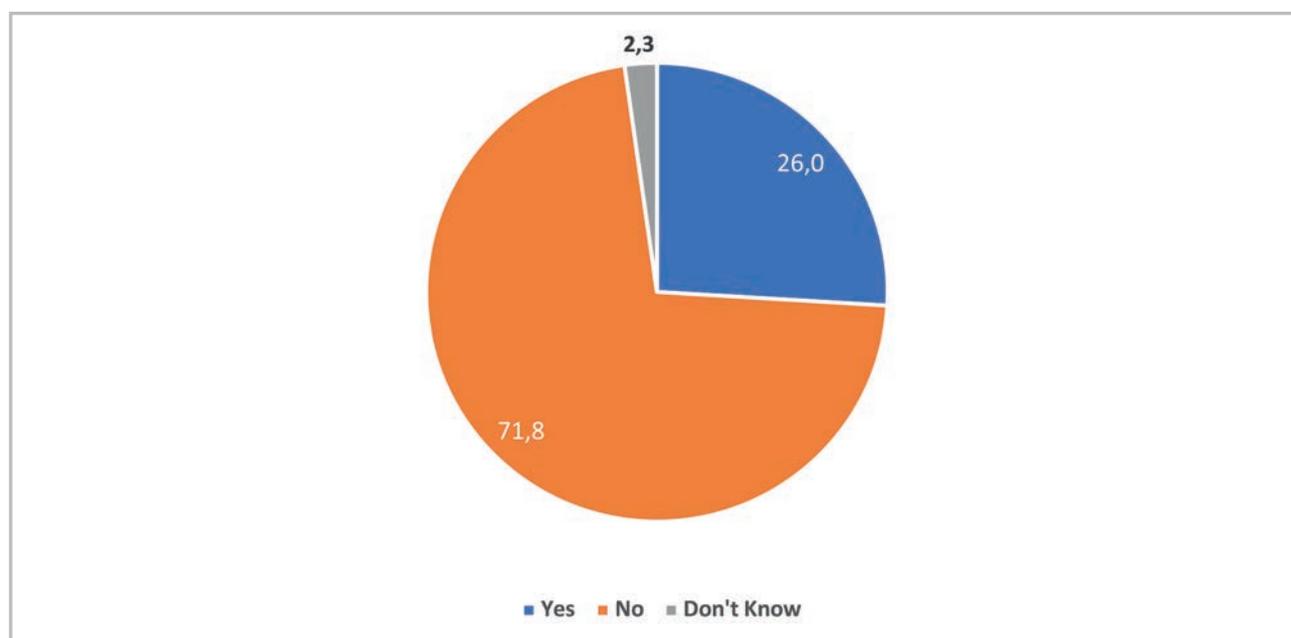
**Table 34:** Main source of energy for space heating by sex of the household head and district

		Household head sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Electricity from mains	%	62.2	62.5	67.7	57.3	51.2	62.2
	95% CI	[55.2-68.8]	[55.3-69.2]	[55.1-78.1]	[48.2-66.0]	[43.9-58.4]	[51.6-71.8]
Other sources of electricity (e.g. generator)	%	0.2	0.4	0.4	0.2	0.4	0
	95% CI	[0.0-1.2]	[0.1-1.4]	[0.1-1.6]	[0.0-1.4]	[0.1-1.6]	
Gas	%	0.5	0	0.2	0.2	0.2	0.7
	95% CI	[0.2-1.4]	[0.0-0.4]	[0.0-1.3]	[0.0-1.5]	[0.0-1.3]	[0.2-3.2]
Paraffin	%	0.1	0.5	0.2	0.2	0.2	0.8
	95% CI	[0.0-0.4]	[0.2-1.3]	[0.0-1.2]	[0.0-1.4]	[0.0-1.5]	[0.3-2.2]
Wood	%	5.1	4.2	4.8	4.9	7.8	1
	95% CI	[3.4-7.6]	[2.6-6.6]	[2.6-8.8]	[2.2-10.6]	[4.9-12.2]	[0.3-3.4]
Coal	%	0.5	0.3	0.4	0.2	0.2	0.6
	95% CI	[0.2-1.4]	[0.0-1.8]	[0.1-1.7]	[0.0-1.2]	[0.0-1.5]	[0.1-4.0]

		Household head sex		District			
		Male	Female	Bojanala	Ngaka Modiri Molema	Dr Ruth Segomotsi Mompoti	Dr Kenneth Kaunda
Other	%	0	0.2	0.2	0	0	0.2
	95% CI		[0.1-1.1]	[0.0-1.3]			[0.0-1.4]
None	%	31.4	31.9	26.1	36.9	40	34.4
	95% CI	[25.3-38.3]	[25.8-38.6]	[16.7-38.2]	[30.2-44.3]	[33.9-46.5]	[24.6-45.9]
<b>Total (n)</b>		<b>928</b>	<b>906</b>	<b>508</b>	<b>481</b>	<b>440</b>	<b>406</b>

## 5.6 Indigent households

In response to the question 'Is this household registered on the indigent register with a local municipality?', more than two-thirds (71.8%) of the households responded 'no' (Figure 20). About 2.3% did not know if the household was registered.



**Figure 20:** Proportion of the household registered as indigent

A high proportion of households registered as indigent were female-headed (27.8%) (Table 35). Dr Kenneth Kaunda (29.3%) had the highest proportion of households registered as indigent, followed closely by Bojanala (27.7%) and Dr Ruth Segomotsi Mompati (26.4%).

**Table 35:** Households registered as indigent by sex of the household head and district

	Yes		No		Don't Know		Total (n)
	%	95% CI	%	95% CI	%	95% CI	
<b>Household head sex</b>							
Male	24.3	[19.0-30.5]	72.9	[67.0-78.1]	2.8	[1.7-4.5]	1,056
Female	27.8	[23.3-32.8]	70.6	[65.6-75.1]	1.7	[1.0-2.8]	1,005
<b>District</b>							
Bojanala	27.7	[19.5-37.7]	70.2	[60.7-78.1]	2.2	[1.1-4.2]	554
Ngaka Modiri Molema	19.6	[14.3-26.3]	77.8	[71.4-83.1]	2.6	[1.8-3.8]	523
Dr Ruth Segomotsi Mompati	26.4	[17.9-37.1]	71.4	[61.5-79.7]	2.2	[1.2-3.9]	492
Dr Kenneth Kaunda	29.3	[22.2-37.7]	68.5	[60.1-75.9]	2.1	[1.0-4.3]	494

### 6.1 Agriculture and Production Systems

The food availability dimension, which is the emphasis of this section, aims to explain how food is generated throughout different households in the province. The majority of African households produce their own crops, fruits, vegetables, and livestock in order to feed their families because agriculture serves as their main source of food. Findings from the HEA focus group discussions indicate that agricultural production and value chains have a critical role in household food and nutrition security. Figure 21 below depicts a seasonal calendar developed from the group discussions by participants of the Focus Group Discussions.

Activity	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Rainfall					Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Land preparation (maize)					Orange	Orange	Orange					
Ploughing & planting (maize)							Green	Green	Green			
Weeding (maize)									Purple	Purple	Purple	
Green consumption									Yellow	Yellow	Yellow	Yellow
Dry harvest & threshing	Olive	Olive	Olive	Olive								
Crop sales				Purple								
Land preparation (Vegetables)							Orange	Orange	Orange			
Ploughing & planting (Vegetables)								Green	Green	Green		
Weeding (Vegetables)									Purple	Purple	Purple	
Harvesting (vegetables)	Olive	Olive										
Employment (domestic work, farm work, forestry)		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	
Employment (EPWP, CWP)	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Food Purchases	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan
Food aid (Food parcels)						Black						
Mining	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey
Milk production						Blue	Blue	Blue	Blue	Blue	Blue	Blue
Livestock sales	Red			Red	Red			Red	Red	Red	Red	Red
Heat and Births				Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple
Labour migration										Light Blue	Light Blue	
Health (influenza, diarrhoea)			Green	Green	Green		Green	Green			Green	
Hunting /Fishing							Brown	Brown	Brown	Brown	Brown	Brown
Hunger season					Light Green	Light Green	Light Green					

Figure 21: Seasonal calendar

In a normal year, the rain season starts from September to February and is characterised by land preparation, planting, and weeding. Much of the rural life in the zone is still determined by agricultural seasons, although this has been augmented by formal employment, mining, and social grants, which are all year-round contributors to people's livelihoods. Livelihoods information is organised temporally by consumption year, which begins with the start of the main dry harvest and runs through to just before the next year's main dry harvest. In this zone, the main dry harvest begins in April, so the consumption year begins that month and runs up until the end of the following March. The livelihood strategies presented in this document also apply to a particular year, one that is neither very good nor bad, but is 'typical' or occurs frequently.

The main season for farming begins with land preparation in August and then proceeds throughout the spring, followed by ploughing and planting from October to December, depending on the timing of the rains. Weeding (a period of intense activity) takes place from December to February, with the green harvest starting in December and finishing in March. Dry harvesting takes place from April to July. Crops usually are sold, if that is possible, in July. Vegetables follow a slightly different pattern, with land preparation beginning in October and ending in December, overlapping with ploughing, and planting from November to January, weeding from December to February, and harvesting in April and May.

### **6.1.1 Household access to land**

When it comes to land rights, South Africa has a dual system that consists of statute law enshrined in the Constitution and customary law enshrined mostly in patrilineal tribal traditions and practices (Toulmin, 2008). Overall, access to land by households in the North West Province is relatively high (Figure 22). At least 65% of the households in the three districts have access to land. Dr Kenneth Kaunda is the only district with limited access to land, with only 47% of the households having access to land. Bojanala District is the largest district in the province, covering almost 44% of the North West Province. It is also the most populated province in the area. The higher number of households with access to land in Ngaka Modiri Molema District Municipality may be ascribed to the fact that the municipality is mostly rural, with at least 198 villages. There has also been success in land reform cases in the area, with 85% of the 130 land claims being resettled by the government. The primary economic sectors in Ngaka Modiri Molema District municipality are agriculture and mining, with Mahikeng, Tswaing, and Ditsobotla local municipalities being predominantly cropping areas. Some of the largest herds of cattle are found in the area, hence it is named the Texas of South Africa.

Similarly, in Bojanala District, mining and agriculture are the primary sectors in the area. The minerals mined are mostly the Platinum Group Metals, and Bojanala District houses the most PGM's reserves in the Country. Within the district municipality, agriculture is mostly practised in Madibeng and Khetleng River local municipalities. The agricultural economic sector in the area is dualistic, with subsistence agriculture mainly practised on communal land.

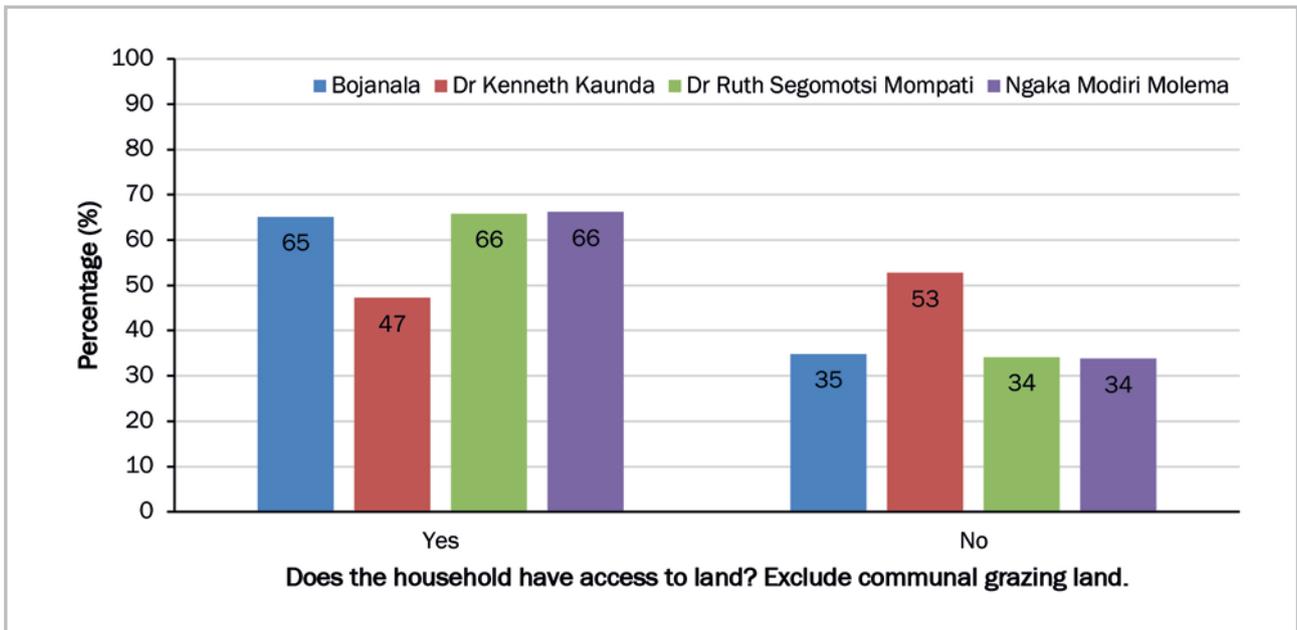


Figure 22: Household access to land in the North West Province

Disaggregated by gender, both female- and male-headed households were, on average, having access to land. However, this is more pronounced among females in Ngaka Modiri Molema (57%) and Dr Ruth Segomotsi Mompoti (55%). The higher number of females having access to land might be ascribed to the migration of males looking for work in other districts and provinces. It should be noted that in Bojanala District, both genders have equal access to land.

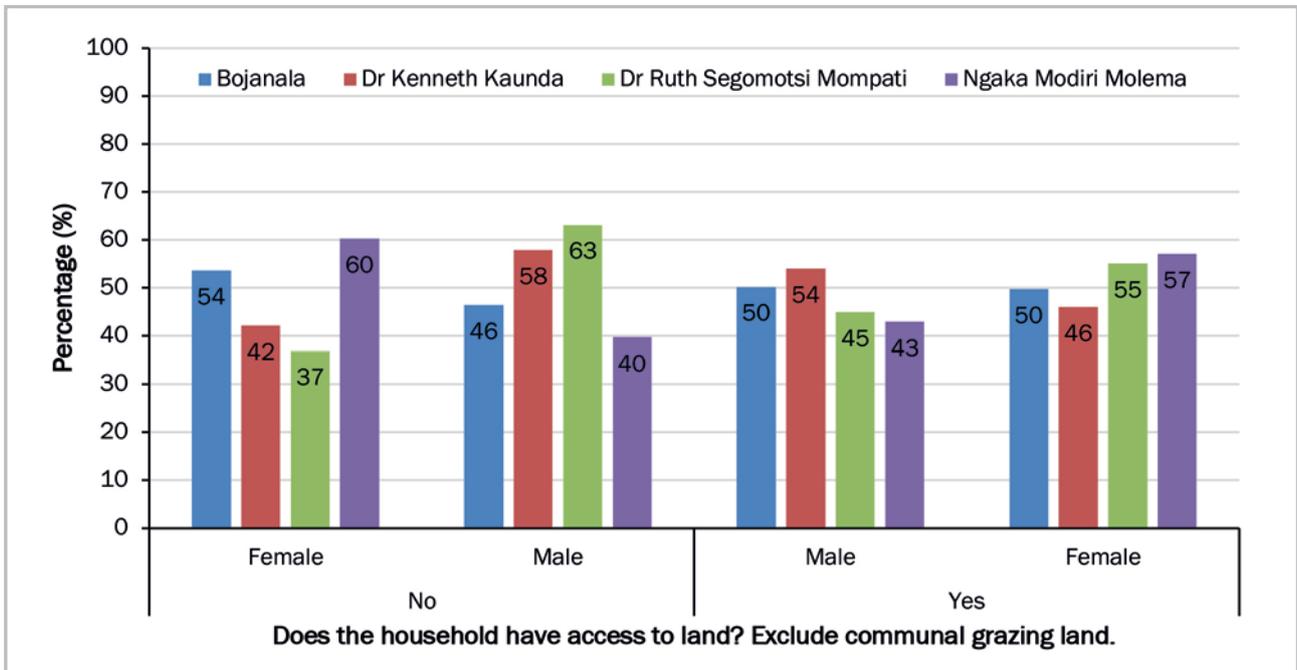


Figure 23: Land access disaggregated according to household head sex in the North West Province

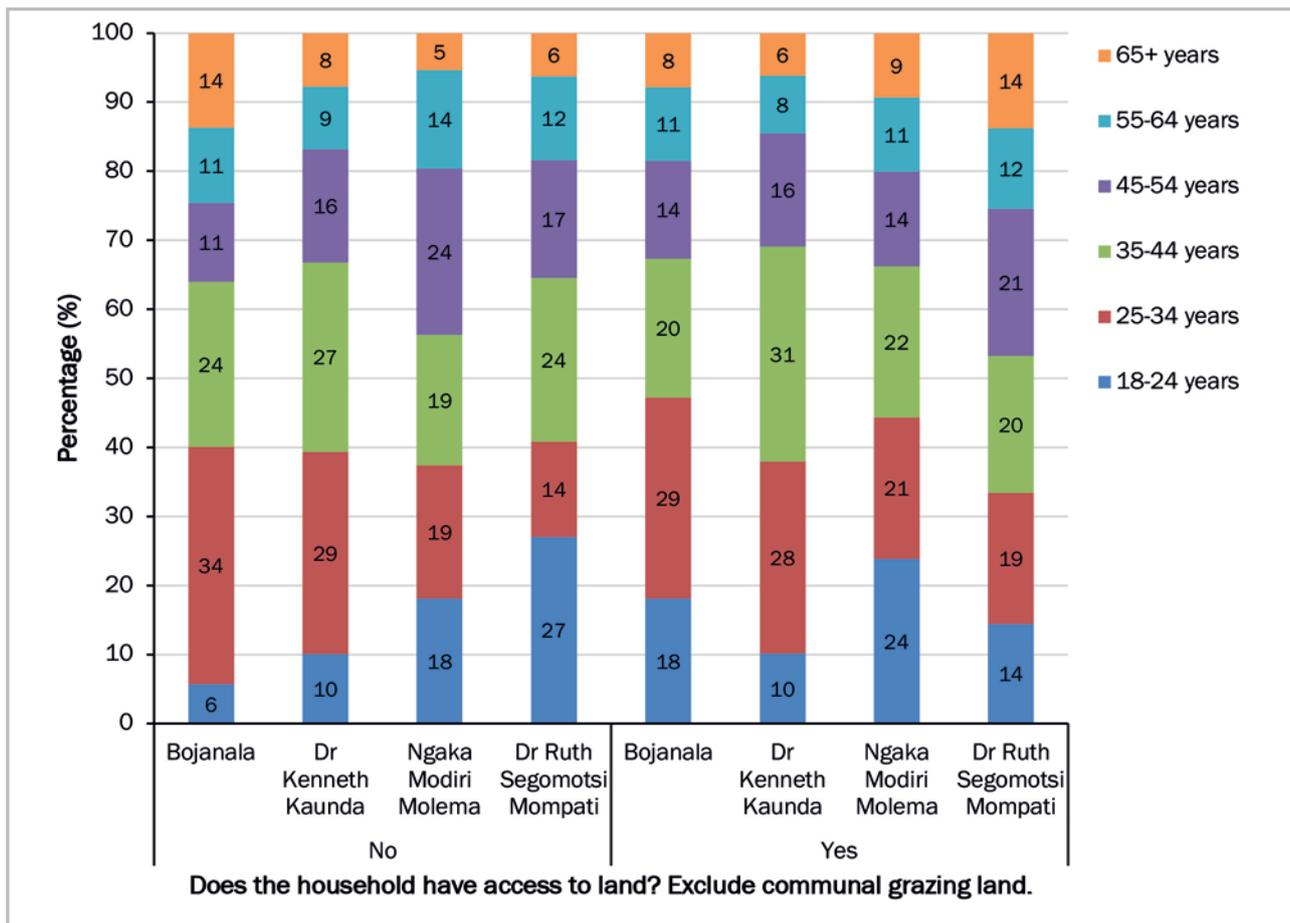


Figure 24: Access to land disaggregated according to age

Land access varied disproportionately according to the different age categories, as shown in Figure 24. Almost entirely, all the respondents in the 18-24 years age category have very limited access to land and across the four districts. In the 18-24 years category, only Ngaka Modiri Molema households have the highest percentage (24%) of youth with access to land. As expected, access to land increased with age; hence in all the districts, the age group between 25-44 years have the highest percentage of access to land.

### 6.1.2 Land tenure system

Results from the household survey show that of the land they have access to, most households have ownership rights (Figure 25), with both Bojanala and Dr Kenneth Kaunda households at the forefront with 83%, followed by Dr Ruth Segomotsi on 82%. However, the size of the land owned ranged from zero to a quarter of a hectare (0-0.25ha), as similarly reported from HEA focus group discussions held within the province. This result indicates that the majority of the reported landowners used the land merely for residential purposes and not enough for agriculture production purposes (Figure 26). There is, however, a small percentage of households who reside on the land which they are renting. Ownership of the land in this context is a mainly small area for dwelling, with very limited backyard farming or gardening.

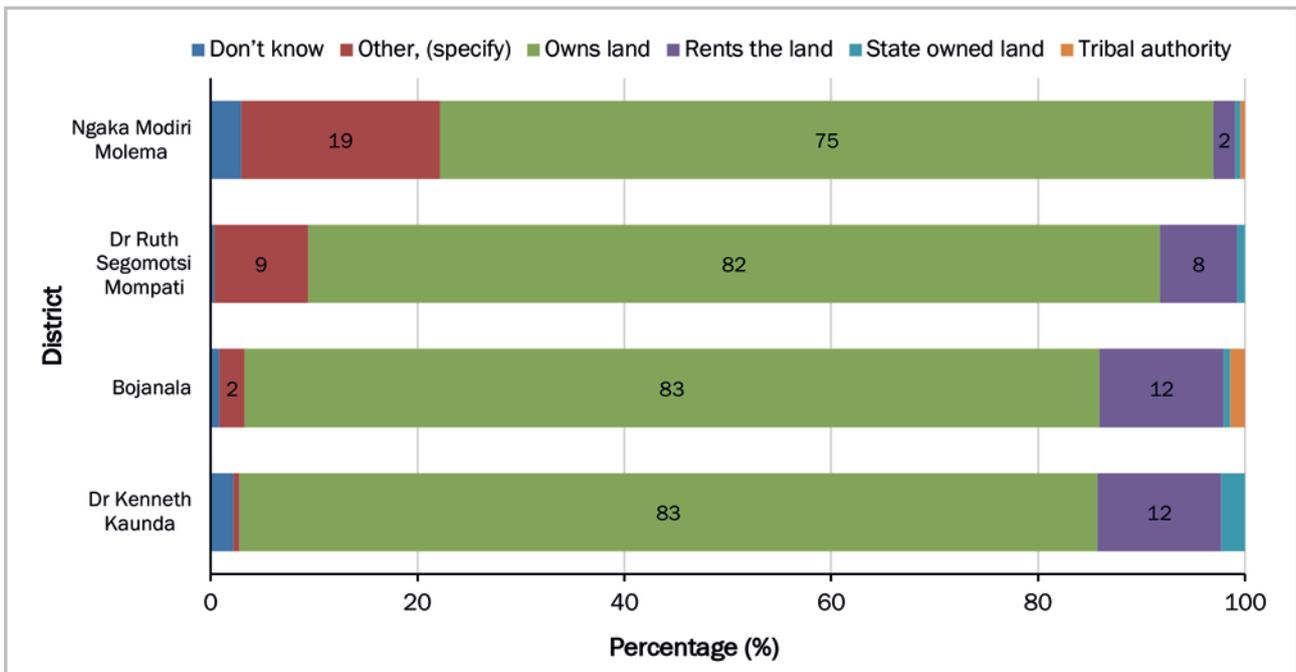


Figure 25: Land tenure in the North West Province

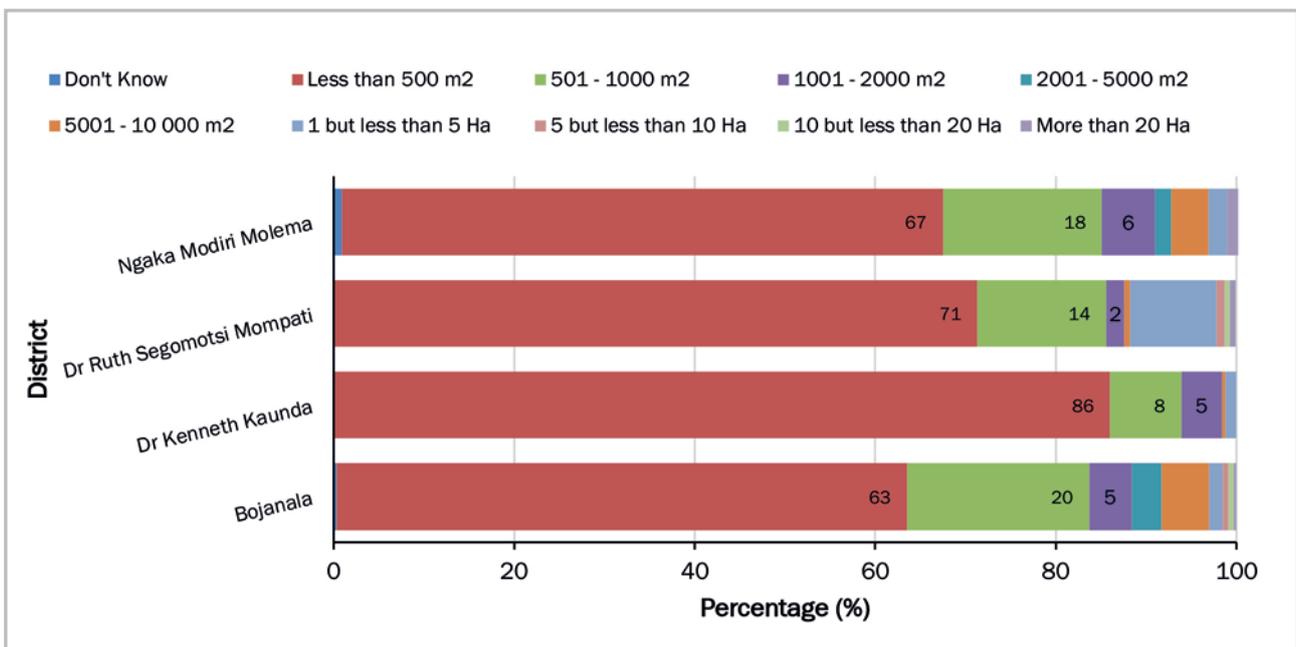


Figure 26: The approximated agricultural land size accessed by households in the North West Province

### 6.1.3 Use of land for food production and other agricultural products

Within the province, at least 30% of the households in both Dr Kenneth Kaunda and Dr Ruth Segomotsi Mompoti districts use the land for food production and other agricultural purposes. However, the average land size allocated for agriculture production is very small, as shown in the above figure. Therefore, the land that was regarded as 'owned' was primarily meant for residential purposes with very limited backyard farming. It should be noted that North West Province has a high proportion of mining activities (mostly PGM's and Gold) and commercial farming; that as well influences the low level of involvement, in subsistence farming since the residents can get access through purchasing the agricultural products at factory prices/lower prices from the local farms.

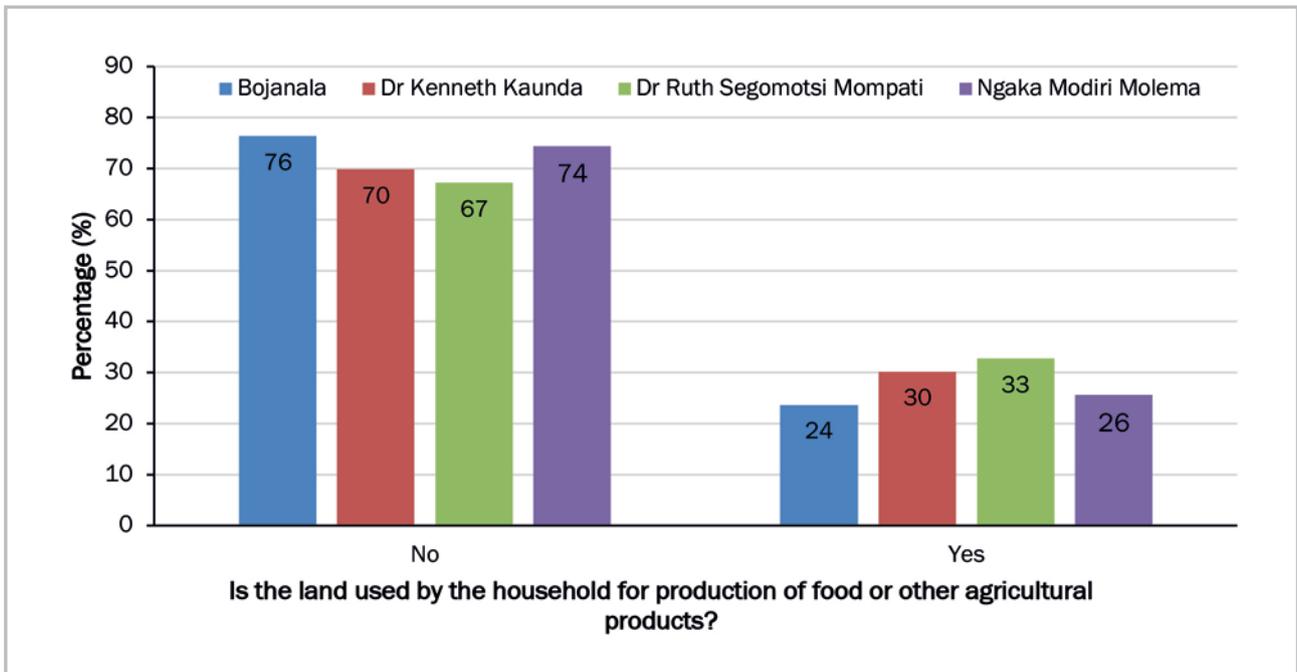


Figure 27: Land use for food and other agricultural production in the North West Province

#### 6.1.4 Crop and livestock production

Figure 28 shows that households in the North West Province practice animal farming on a smaller scale. With percentage values of 37 and 30%, respectively, Dr. Ruth Segomotsi and Ngaka Modiri Molema districts have the greatest level of livestock production. The highest levels of stock farming in these has earned them the nickname Texas of South Africa. The area's high concentration of mining operations may be reason behind households' poor engagement in agricultural production.

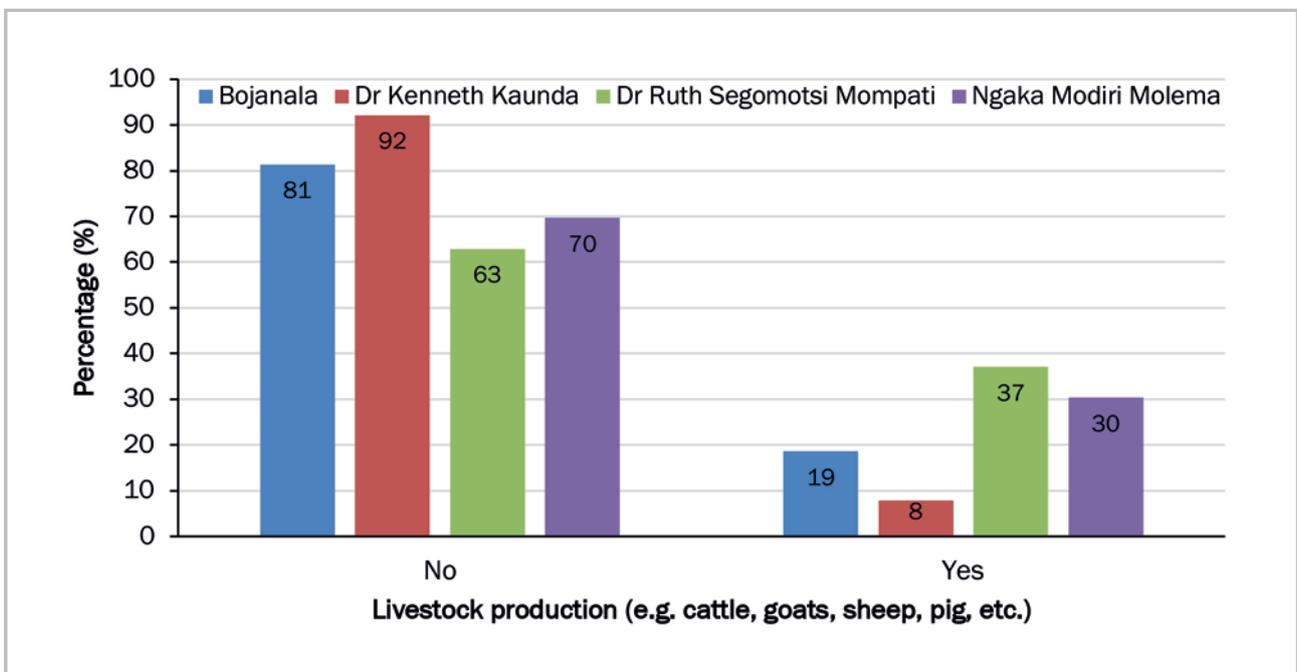


Figure 28: Livestock production by district in the North West Province

Generally, poultry production is practised by a fairly average number of households in the North West Province. The results indicated that slightly above 45% of the households in Ngaka Modiri Molema and Dr Ruth Segomotsi Mompoti were involved in poultry production. The least level of poultry production was reported in Dr Kenneth Kaunda District, with 22% of the households engaged in poultry production (Figure 29). The fairly low level of poultry production might be ascribed to the high concentration of mining activities in the province.

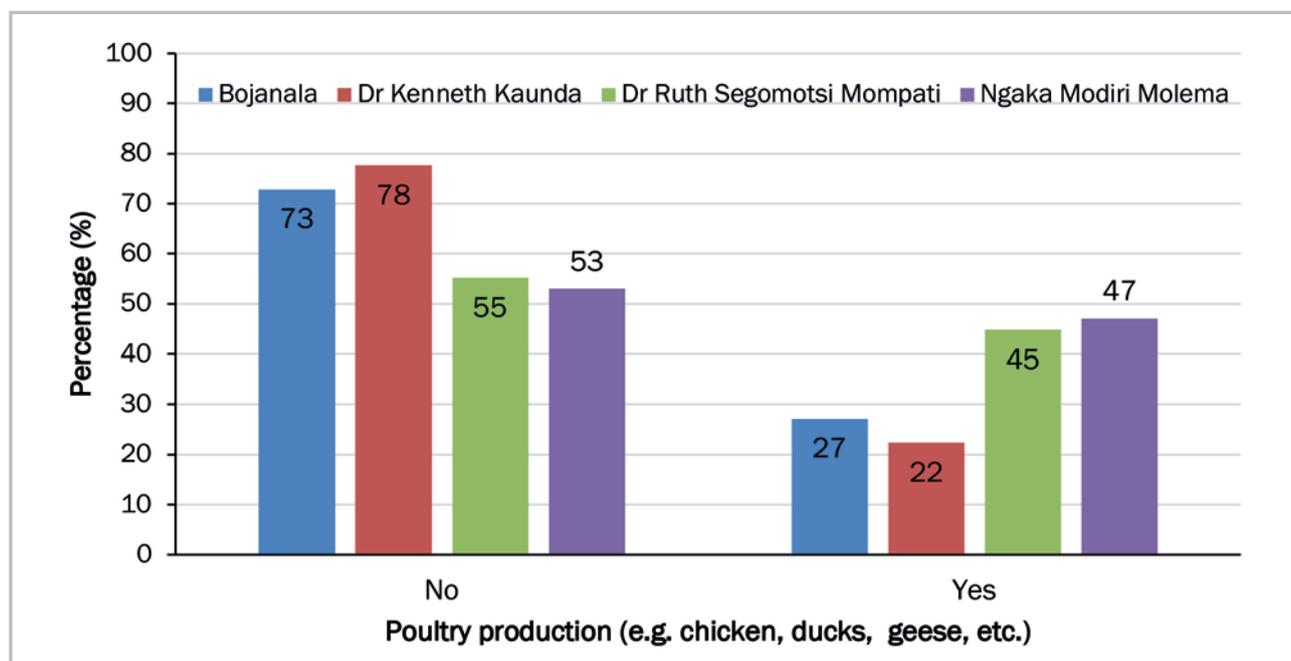


Figure 29: Poultry production by district

Almost 11% of households in each districts in the North West Province reported participating in agricultural production, which is a very low ratio (Figure 30). This was expressed during HEA focus groups revealed that cropping was the least common activity in their region. Despite this, Bojanala recorded the highest involvement rate, with up to 32% of households engaged in agricultural production. Even though the North West has a generally favorable climate for crop production, household participation has been concluded to be low.

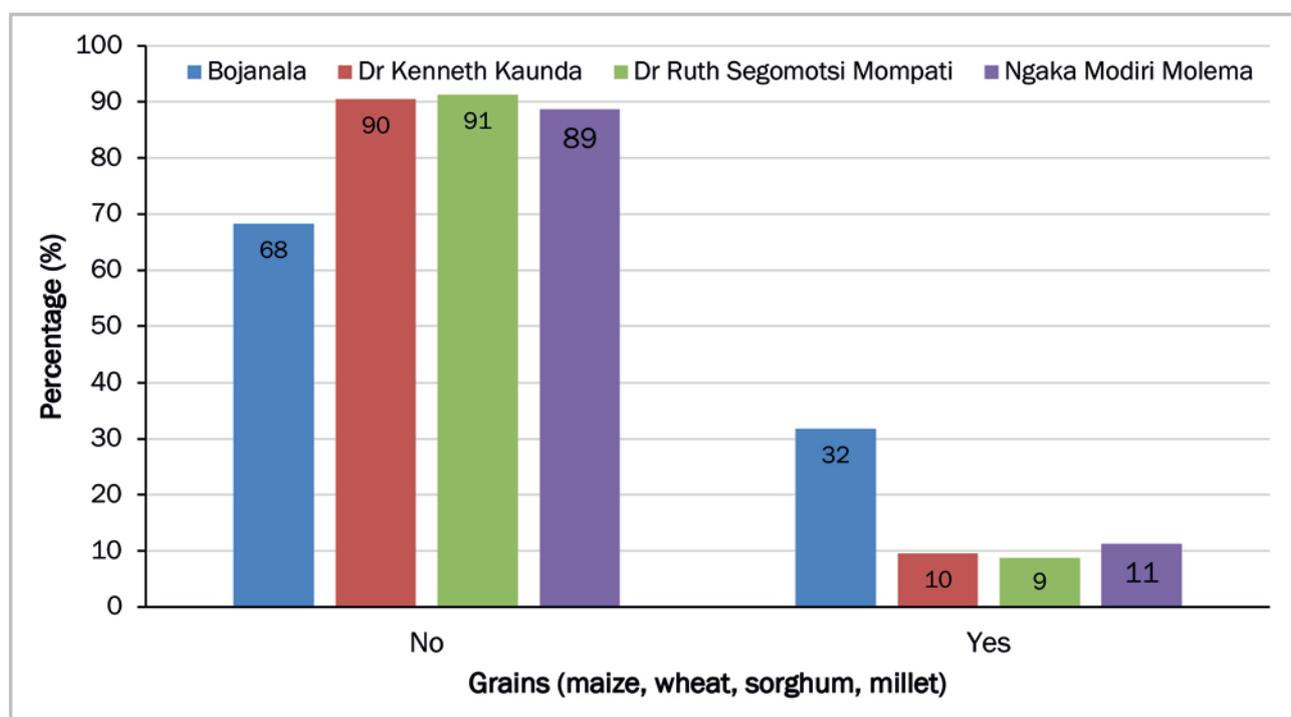
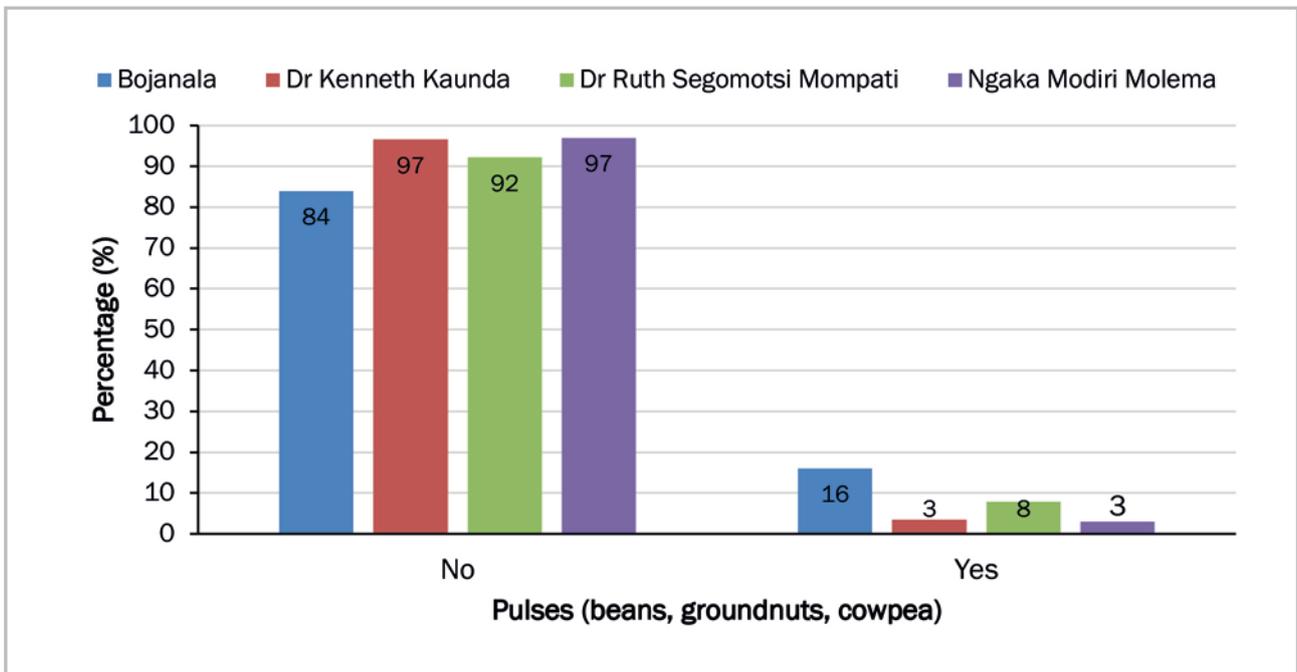
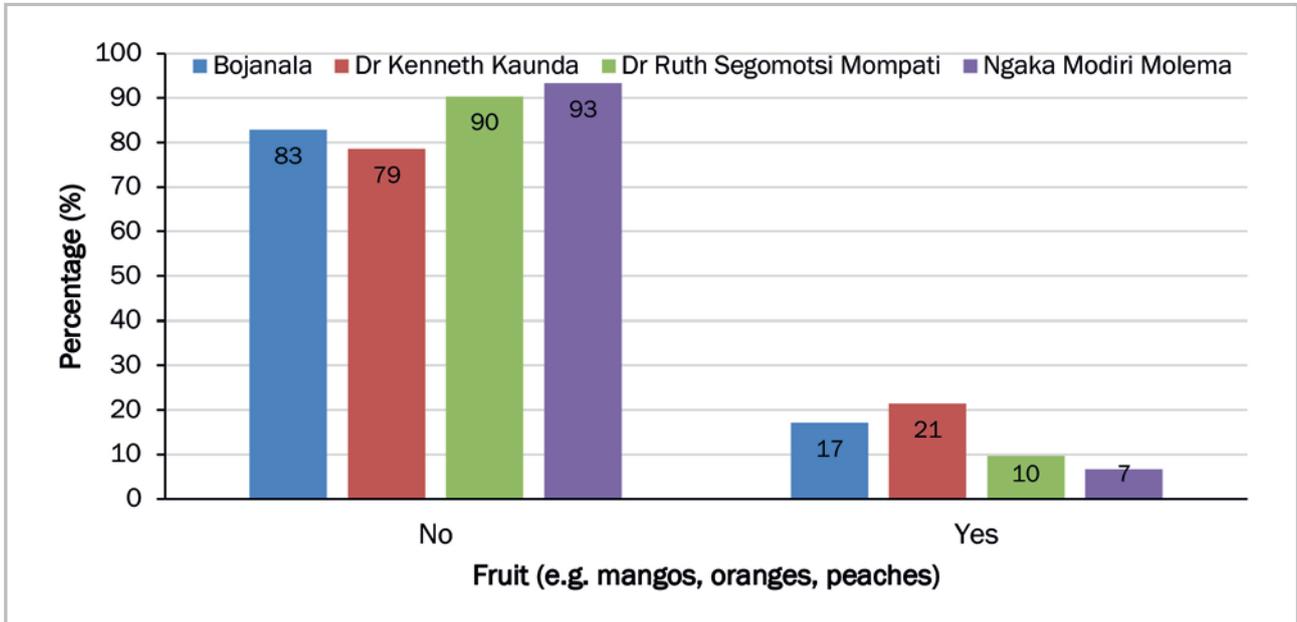


Figure 30: Household involvement in crop production in the North West Province.



**Figure 31:** Pulses Production by district in the North West Province

The production of pulses was reported to be least practised by most households in North West Province within all four districts (Figure 31). More than 90% of the households in Dr Ruth Segomotsi Mompoti, Dr Kenneth Kaunda and Ngaka Modiri Molema districts do not produce pulses; 84% of the households in Bojanala also reported not to be engaged in the production of pulses. Pulses thrive well in poor soil conditions and poor rainfall areas, and the North West has good summer rainfalls and good arable land, hence the low level of pulse production.



**Figure 32:** Household fruit production

Fruit production was reported to be extremely low in all the districts in the North West Province. The highest engagement in fruit production has been at most 21% in Dr Kenneth Kaunda. The low involvement of households might be ascribed to large commercial farms in the area, and mining activities.

### 6.1.5 Major crops grown

All three districts produce maize (33.3%), except for Dr Ruth Segomotsi Mompati District Municipality. It should be noted that maize is a staple food in South Africa, and the North West Province is part of the Maize Triangle, a high yield maize area; that is why all the districts practise maize production, except for Dr Ruth Segomotsi Mompati. It should be noted that in Dr Ruth Segomotsi, agriculture is not widely practised, and the greatest economic contributor is finance, community services, and the trading sector; hence very limited maize is reported to be planted by the households who participated in the survey.

## 6.2 Wealth Breakdown, Food and Income Sources

Wealth breakdown is the process by which people within a livelihood zone are grouped together using local definitions of wealth and the quantification of their assets. The wealth breakdowns are used to identify the poorest households or those that are most vulnerable to projected shocks. Criteria was generated by communities and are, therefore, credible and locally relevant sources of information on vulnerability. The level of division depended on how the community viewed their society, and the purpose of the analysis. The wealth group, in this case, is a group of households within the same community, who share similar capacities to exploit the different food and income options within a particular livelihood zone. It disaggregated the population into common 'access' groups, which allowed researchers to see important differences in household vulnerabilities to different shocks, and to estimate the number of people who will be affected by different changes.

The emerging results from the Wealth Breakdown baseline analysis from the HEA focus group discussions indicate that the majority of the households in the North West Province fall within the 'poor' and 'very poor' categories. This result is a red flag with regards to government interventions that need to be tailor-made for this province. The analysis showed that geography plays a critical role in determining a household's options for obtaining food and income. However, it is not the only factor that determines the pattern of livelihoods. While geography tends to define a household's options for obtaining food and income, the ability to exploit those options and to survive in a crisis is determined largely by wealth. In other words, what people have by way of land, capital, and livestock, together with their educational status and access to political and social networks, determines the ways in which they are able to get food and cash, as well as the ways in which they will respond to sudden or long-term change.

This section provides the analysis of wealth, food, and income sources in the three livelihood zones in the province. The analysis focused on factors that determine how well-off community members might be based on prevailing livelihood assets. The wealth breakdown is the analysis which entails grouping households based on wealth and assets. The investigation of differences between households is central to building a meaningful analysis of food security and vulnerability to different hazards.

### 6.2.1 North West Open Access Cattle and Game Farming (ZAOCG) of Dr Kenneth Kaunda, Moses Kotane, Bojanala, Ngaka Molema, and Dr Ruth Mompati districts

Wealth in this area is determined by four factors:

1. Employment, a product of education and good social connections.
2. Ownership of a business, such as a spaza shop or bakkie or taxi.
3. Land holding; and
4. Household livestock ownership.

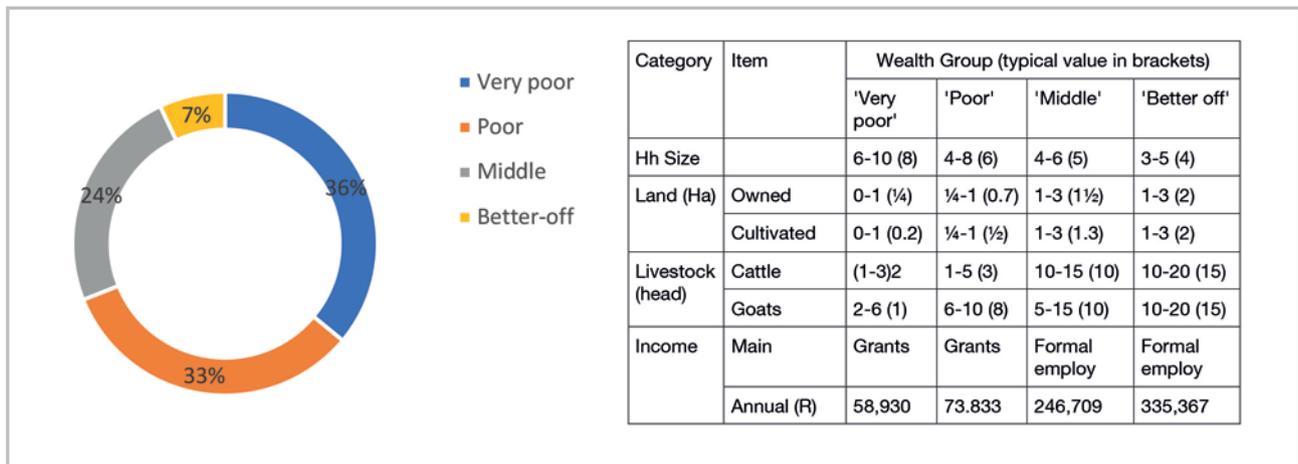


Figure 33: Wealth breakdown in the ZAOCG Livelihood Zone

Land holdings increase with wealth, but not as exponentially as the factors listed above (0.1ha for the poorest against 2ha for the wealthiest). The wealthiest households, described as the 'better-off', are those with permanent work, a salary, and have business opportunities. They have an average annual income of R335,367 compared to the R58,930 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with an average annual income of R246,709 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 69% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock products.

'Better-off' households can develop slightly more land and produce crops for sale, using savings from their other income sources to afford inputs (including labour). Similarly, they derive a small cash benefit from their animals. Middle households also sell crops and livestock or livestock products. During the COVID-19 lockdown restrictions, the 'poor' and 'very poor' households are the ones who suffer the most impacts of food insecurity.

Livestock holdings also increase substantially with wealth. Cattle are considered more as determinants of wealth; wealthier households do keep them, while they may not keep any small stock – although, on average, they do keep more goats than poorer households.

### 6.2.2 North Western Open Access Cattle Crops ZANWC of Bojanala, Dr Ruth Segomotsi, Mompati, and Ngaka Modiri Molema districts

Wealth in this livelihood zone is determined primarily by three factors:

1. Employment, a product education and good social connections;
2. Ownership of a business, such as a spaza shop, bakkie or taxi; and
3. Livestock ownership, especially cattle.

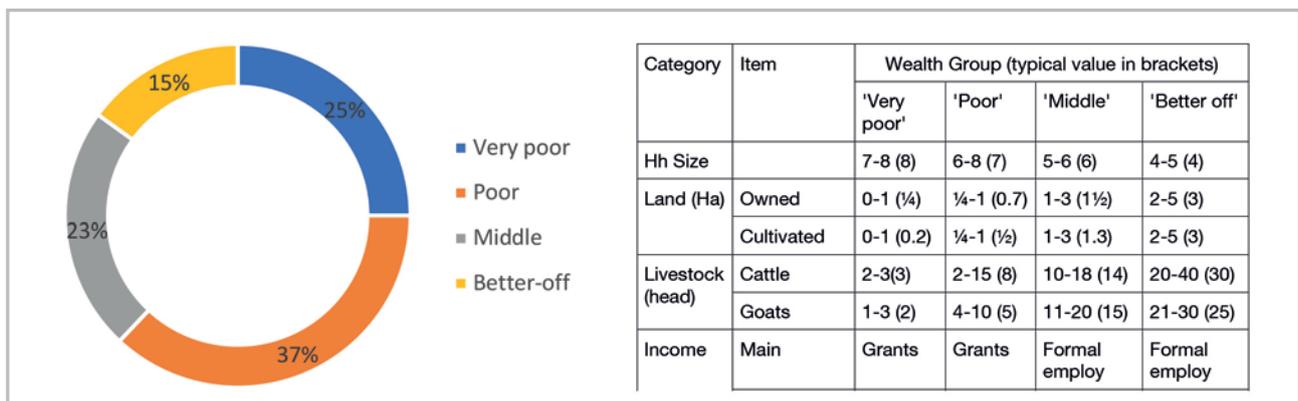


Figure 34: Wealth breakdown in the North Western Open Access Cattle and Crops Livelihood Zone (ZANWC)

Land holdings increase with wealth but not as exponentially as the factors listed above (0.1ha for the poorest against 3ha for the wealthiest). Since farming in this zone is important and this requires resources and capital, the amounts of land owned and cultivated vary with wealth. 'Better-off' households lever their fixed incomes and assets to develop more land and cultivate farms that are eight times larger than those of 'very poor' households.

The wealthiest households, described as the 'better-off', are those with permanent work, a salary, and have business opportunities. They have an average annual income of R386,284 compared to less than R5,000 per month of the 'very poor' households who struggle to meet their daily food and non-food needs. The results indicate income disparities among the 'poor' and 'better-off' households in the livelihood zone. Households that have lower-paying or less permanent formal employment and some business opportunities with an average annual income of R139,760 are referred to as the 'middle'. Those who depend primarily on grants are described as the 'poor' and 'very poor'; collectively, they are about 62% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock.

'Better-off' households can develop slightly more land and produce crops for sale, using savings from their other income sources to afford inputs (including labour). Similarly, they derive a small cash benefit from their animals. Middle households also sell crops and livestock, or livestock products. During the COVID-19 lockdown restrictions, the 'poor' and 'very poor' households are the ones who suffered the most impacts of food insecurity.

During interviews, key informants in the villages tended to use larger household sizes compared with those from other surveys, such as the census. This was possibly due to key informants referring to family units rather than the stricter definition of household. These family units will certainly share some resources, including grants such as pensions and child grants, cultivated land (shared in terms of labour required and production) or the proceeds from casual labour. They are, therefore, used in the ensuing calculations on sources of food and income - these can be scaled to the appropriate household size from the census.

### 6.2.3 Coastal Open Access Non-Crop Income (ZAKOL) of Dr Ruth Mompati District

Wealth in this livelihood zone is determined by four factors:

1. Employment, a product education, and good social connections;
2. Ownership of a business, such as a spaza shop, bakkie or taxi;
3. Land holding; and
4. Livestock ownership, especially cattle.

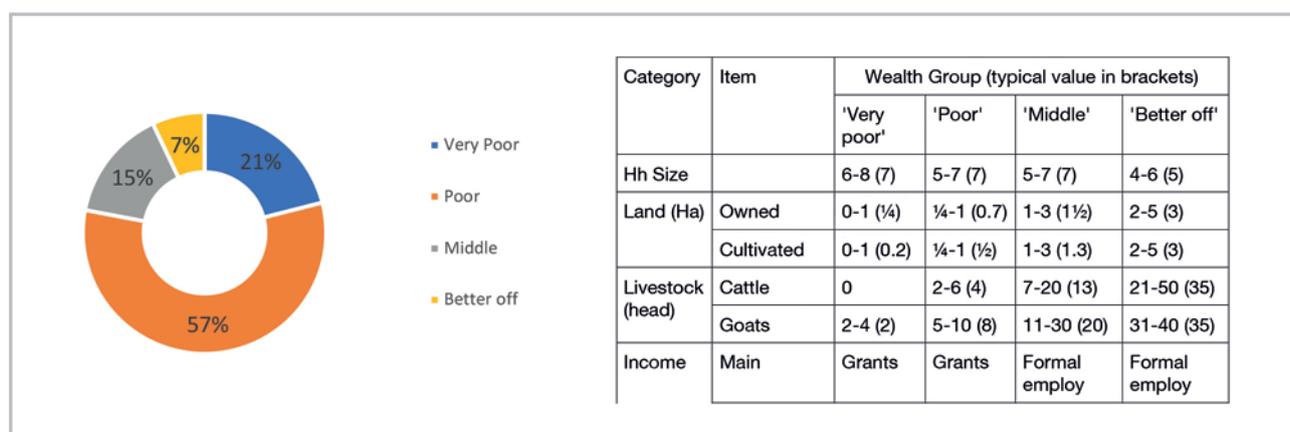


Figure 35: Wealth breakdown in the Livelihood Zone (ZAHMI)

The wealthiest households, described as the 'better-off', are those with permanent work, a salary, and an average income of almost half a million. Households that have lower-paying or less permanent work, which when averaged over the year, is approximately R15,000 per month, are referred to as the 'middle'. The 'better-off' households have an annual income of R1,408,723 compared to the very poor households (R22,285). Those

who depend primarily on grants are described as the 'poor' and 'very poor'; collectively, they are almost four-fifths of households. The 'very poor' and 'poor' supplement their grant income from casual labour and other sources.

Land in this zone is good for farming and the population density is high, resulting in pressure on what is a finite resource. Households with more wealth are thus able to secure more land and cultivate farms that are up to fifteen times larger than those of the poorest households.

Livestock holdings also increase substantially with wealth. Cattle are considered more as determinants of wealth; wealthier households do keep them, while they may not keep any small stock - although on average, they do keep more goats than poorer households.

#### 6.2.4 Source of food and income in ZAOCG of Dr Kenneth Kaunda, Moses Kotane, Bojanala, Ngaka Molema, and Dr Ruth Mompati districts

Sources of food are expressed in terms of contribution to the minimum human food energy needs, which is 8,800 kJ/person/day. Wealthier households may consume considerably more than this, for example 12,144 kJ/person/day, which is 138% of minimum food needs. Some of this consumption may be wasted, for example when food is thrown away or incompletely eaten. Even the poorest households may consume slightly more than the minimum requirement, for example 111%, or 9,768 kJ/person/day. Figure 36 was generated from HEA focus group discussions spreadsheet data depicting sources of food for households within the ZAOCG livelihood zone in North West Province. Crop production contributed about 1% and 2% of the food sources for the 'very poor' and 'poor' wealth groups, respectively. Food purchases contributed about 67% and 78% of the food needs for the middle and better-off households, respectively. Despite the good rainfall and fertile soils, purchases still made up a significant portion of people's sources of food. The contribution to food energy from non-staple food purchases *increased* steadily from 28% to 44% across the wealth groups. The 'very poor' and 'poor' households also accessed food from food aid from both state and non-state actors implementing various safety net programmes. The 'very poor' and 'poor' households could hardly cover their basic food and livelihoods needs in normal times, leaving little financial ability to invest in their children's needs, such as education. About 85% and 88% of the 'very poor' and 'poor' households' food needs were drastically affected by COVID-19 restrictions, leaving them vulnerable to food insecurity.

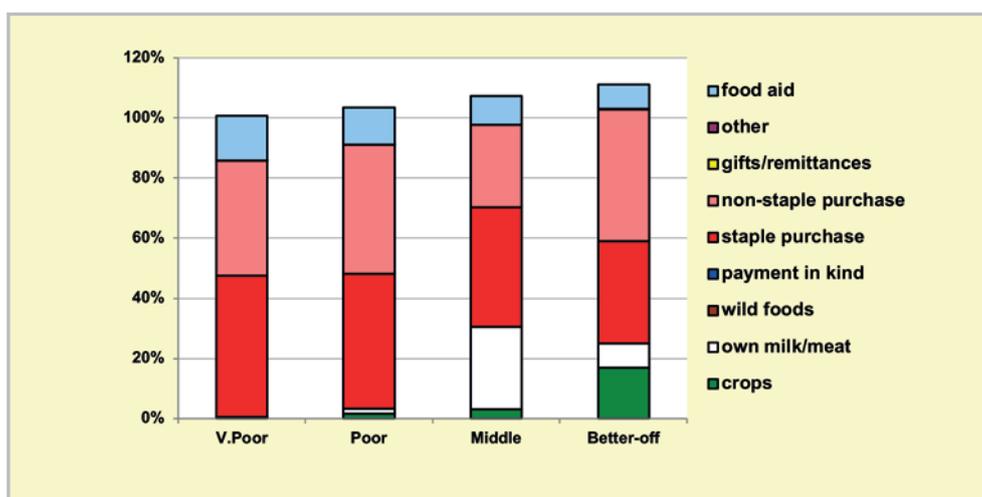
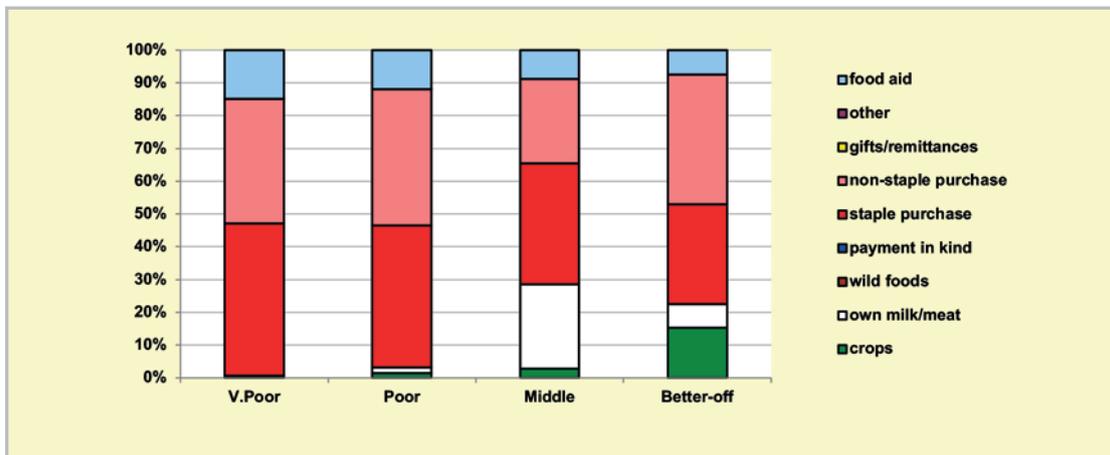


Figure 36: Sources of food in ZAOCG (expressed as percentage of minimum average food energy needs) for each wealth group

Wealthier households have the capital for inputs and hired labour, ensuring their crops are planted and weeded in time, as well as being protected from pests. 'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (8% to 28%); this was usually from cow milk and occasional slaughter for meat. Dairy production in this zone is not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) is milked for consumption.

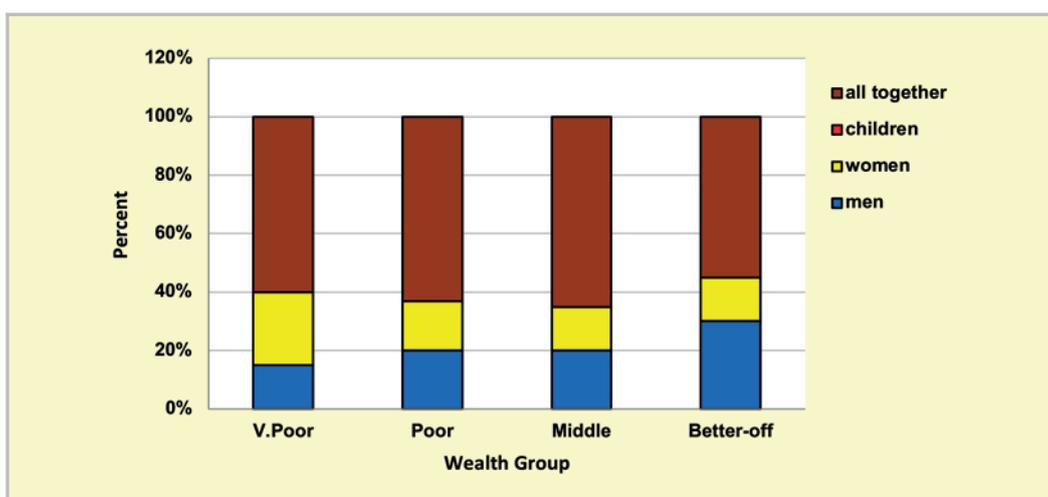


**Figure 37:** Sources of food in ZABOL (expressed as percentage of overall total food energy needs) for each wealth group

The poorest households' children received additional food from school lunches, which is the official food assistance. Some wealthier households tend to send their children to fee-paying schools that did not offer meals.

### 6.2.5 Gender analysis of who produces food in ZAOCG of Dr Kenneth Kaunda, Moses Kotane, Bojanala, Ngaka Molema, and Dr Ruth Mompati districts

Policymakers recognize that youths and women represent a vast human resource potential in development, with its own specific problems, concerns, needs, and aspirations. They need to be promoted to ensure their participation, equity, and equality in all development programmes. Gender and social status play an important role in determining access to food and cash, and responses to shocks and change. 'Poor' female-headed households with little land may work for 'better-off' households to get money to buy food; the 'better-off' may use profits from agriculture and employment as capital to engage in trade and business enterprises. In the event of a crisis, such as the COVID-19 lockdowns, 'poor' and 'better-off' households are affected differently. The lockdowns meant that 'poor' households lost opportunities to hire out their labour and obtain income for their daily needs, whereas the 'better-off' households managed to use their savings to cushion their households from food insecurity. Therefore, different wealth groups warrant separate examination for relevant policy options to improve their household welfare.



**Figure 38:** Gender breakdown of who produces food in the zone for each wealth group

The findings showed that both men and women made substantial contributions to the production of food. All wealth categories combined have a share of this around 60%. Women appear to make a considerable contribution to food production across all wealth levels, ranging from 15% among “better-off” households to 25% among very impoverished ones. Youth involvement in development and gender mainstreaming, however, continue to face obstacles and new problems. They include gender-based violence (GBV), HIV and AIDS, low young engagement in development initiatives, rising environmental degradation, climate change, and extreme poverty. There are still many difficulties for women, such as the responsibility of caring for others, which limits their ability to work effectively. Also, they have limited access to markets, knowledge, inputs, and extension services. As a result, addressing the gender gap in development, including agriculture, could raise the scale of economic activities, crop production, boost agricultural yield, overall GDP, and a significant proportion of people out of poverty. Further, there has been a general inadequacy among all the gender structures at all levels to maintain a collective and sustained response to gender and youth empowerment issues.

### 6.2.6 Sources of cash income in ZAOCG of Dr Kenneth Kaunda, Moses Kotane, Bojanala, Ngaka Molema, and Dr Ruth Mompati districts

Cash incomes varied considerably across wealth groups, with the ‘better-off’ earning R206,111 per annum, six times as much as the ‘very poor’, who earned only R36,753 per annum. Figure 39 below shows this distribution - it must be noted that the bars in the figure are not quartiles, they represent wealth groups and wealth groups are *not* distributed evenly (see Figure 39).

The main sources of cash incomes in the zone are livestock sales and employment - for the ‘middle’ and ‘better-off’ - and cash grants and hiring out of local labour, for the ‘poor’ and ‘very poor’. This is in keeping with most surveys that ask for the main livelihood source.

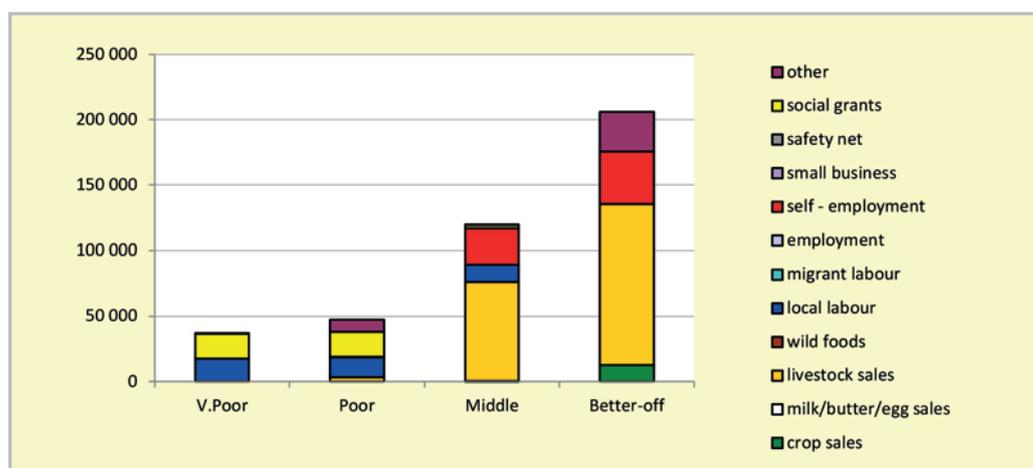
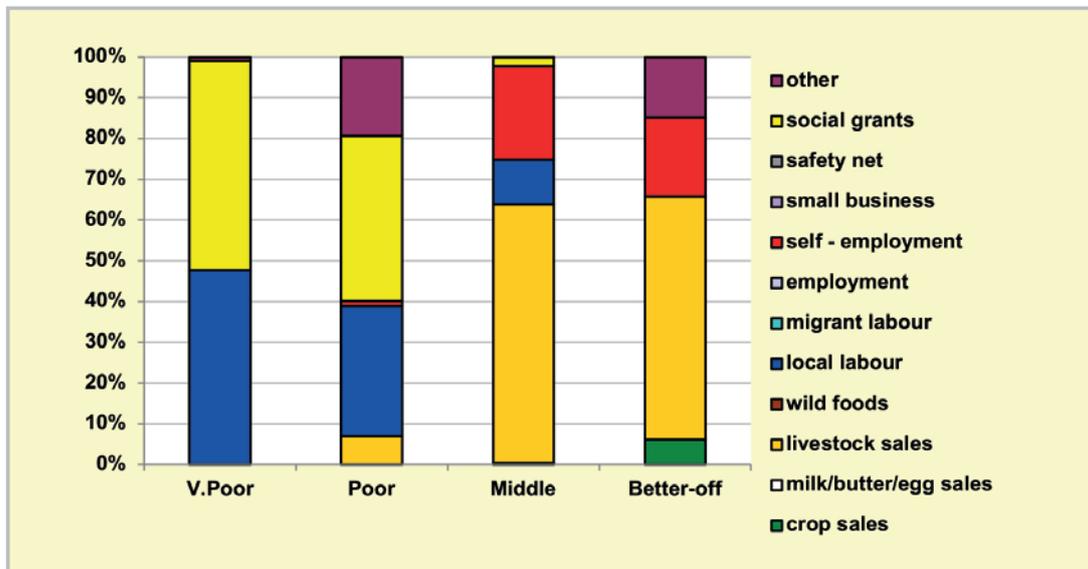


Figure 39: Sources of annual cash income by wealth group in ZAOCG

However, the point of this enquiry was to gain an understanding of how *all* livelihood sources come together to make up an income. This is essential because it enables practitioners to link a hazard (such as a price change) to outcomes and enables other users to see potential areas of intervention. By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 40.



**Figure 40:** Sources of annual cash income as a percentage of total, by wealth group in ZAOCG

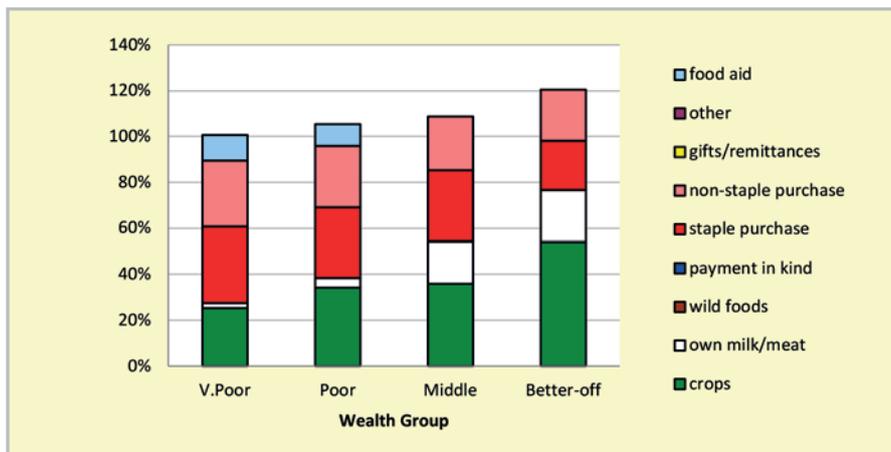
For the ‘very poor’ and ‘poor’, grants made up 50% and 40% of total cash income, respectively; the remainder was from casual labour (mostly domestic work, agricultural piece work, construction jobs) and self-employment (collecting natural products for sale, weaving, making bricks, etc.). The ‘poor’ earn small amounts of income through livestock sales (usually goats), gifts/ remittances, and employment. This, coupled with a small income from the formal sector, was what distinguishes their livelihoods from that of the ‘very poor’. The analysis showed that poor households would lose up to half of their income sources due to COVID-19 lockdowns and any movement restrictions in the area. Income from casual labour would not be available during the pandemic lockdowns, leading to a worsening food security situation for the ‘very poor’ and ‘poor’ households who comprise of the majority of the population in this area.

The ‘middle’ and ‘better-off’ gain their cash from a formal wage or salary for the better part of their income. Some ‘middle’ households may have a member that works seasonally on the commercial farms, but earnings typically amount to almost R126,000 per annum, while the ‘better-off’ earn around R168,000 per annum. ‘Middle’ and ‘better-off’ households also gain a little cash from grants (for example, pensions and fostering are not means-tested and the probability of a household having a pensioner in it is about one in two). The ‘middle’ and ‘better-off’ wealth groups also have employment opportunities and businesses which contribute to their improved livelihood and welfare. These well-off households were able to cushion their food availability and access even during lockdowns as they can buy in bulk and store during any unforeseen event or crisis.

The earnings from livestock products are very low for the ‘very poor’ and ‘poor’ households, which is lost productivity. This is very significant among ‘middle’ and ‘better-off’ households (R75,766 and R122,662, respectively). The number of cows that are milked compared with those likely to be lactating is low and this is due to a few factors: lack of economic incentives for milking, lack of time by the cattle-owners (because they are full-time employed), and minimal herd management.

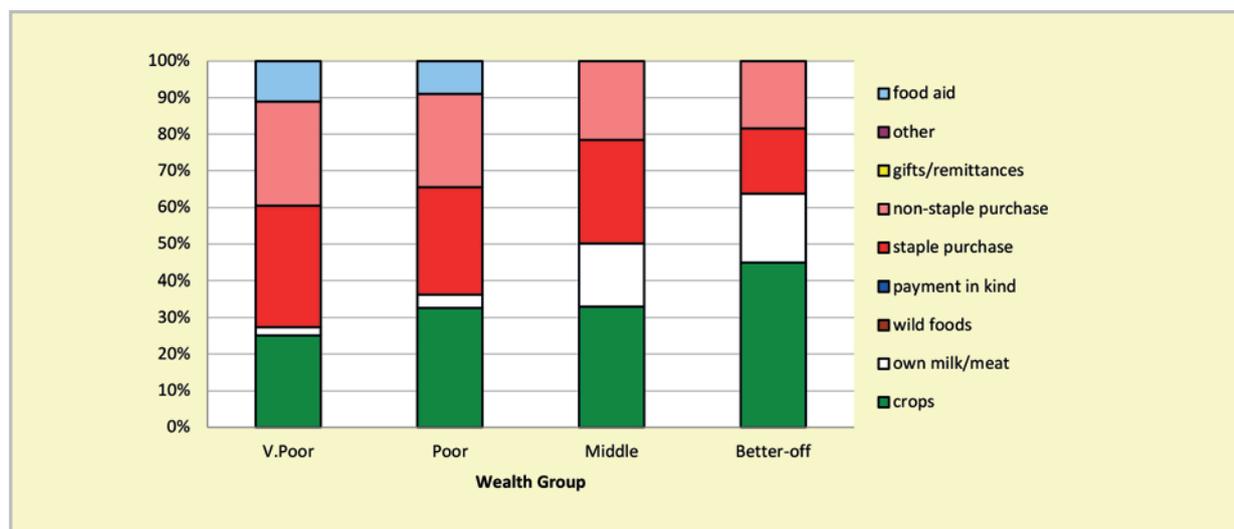
## 6.2.7 Sources of food and income in ZANWC of Bojanala, Dr Ruth Segomotsi, Mompoti, and Ngaka Modiri Molema districts

Purchases were the largest source of people's food, contributing about 63% to 73% of minimum food energy needs. The contribution from staple food purchases decreased steadily as households get wealthier. Conversely, the contribution from non-staple food purchases increased with increasing wealth. Most households and all wealth groups also consume food from their own crop production, although this was only about 4% for the 'very poor' because they lacked the labour and capital to produce any significant quantities of their own food. The 'better-off' and 'middle' have the highest contribution to their food energy from both staple and non-staple crops, at about 16% to 26% of their minimum needs, respectively. The analysis showed that about 63% and 64% of the food purchases which needed to be obtained on almost a daily basis from local markets were affected for the 'very poor' and 'poor' households in this area during COVID-19 lockdowns. This exacerbated the food insecurity level of the 'poor' and 'very poor' households in the Waterberg and Capricorn districts.



**Figure 41:** Sources of food in ZANWC (expressed as percentage of minimum average food energy needs) for each wealth group

The 'better-off' and 'middle' have the highest contribution to their food energy from both staple and non-staple crops, at about 16% to 26% of their minimum needs, respectively. The analysis showed that about 63% and 64% of the food purchases which needed to be obtained on almost a daily basis from local markets were affected for the 'very poor' and 'poor' households in this area during COVID-19 lockdowns. This exacerbated the food insecurity level of the 'poor' and 'very poor' households in the Waterberg and Capricorn districts.



**Figure 42:** Food source as a contribution to the total in ZANWC Livelihood Zone

Only the 'middle' and 'better-off' households obtain substantial food from their livestock products; this is usually from cow's milk and occasional slaughter for meat (the 'poor' obtain a small contribution from the meat of an occasional slaughter). Dairy production in this zone is not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1:3 to 1:6) is milked for consumption.

The poorest households' children receive additional food from school lunches, which is the official food assistance. This food source for the 'poor' households was also affected as schools were closed during the COVID-19 lockdowns. Wealthier households tend to send their children to fee-paying schools that do not offer meals. All households may collect wild foods for consumption (e.g., mushroom or wild fruits) but the quantities involved do not merit a significant contribution to food energy.

### 6.2.8 Gender breakdown of who produces food

Policy makers recognize the need for a participatory and inclusive approach to improving access to food and income in the communities. There is a need to promote and ensure the inclusion of the youths and women in food production. This is very critical to promote and ensure participation, equity, and equality in all development programmes.

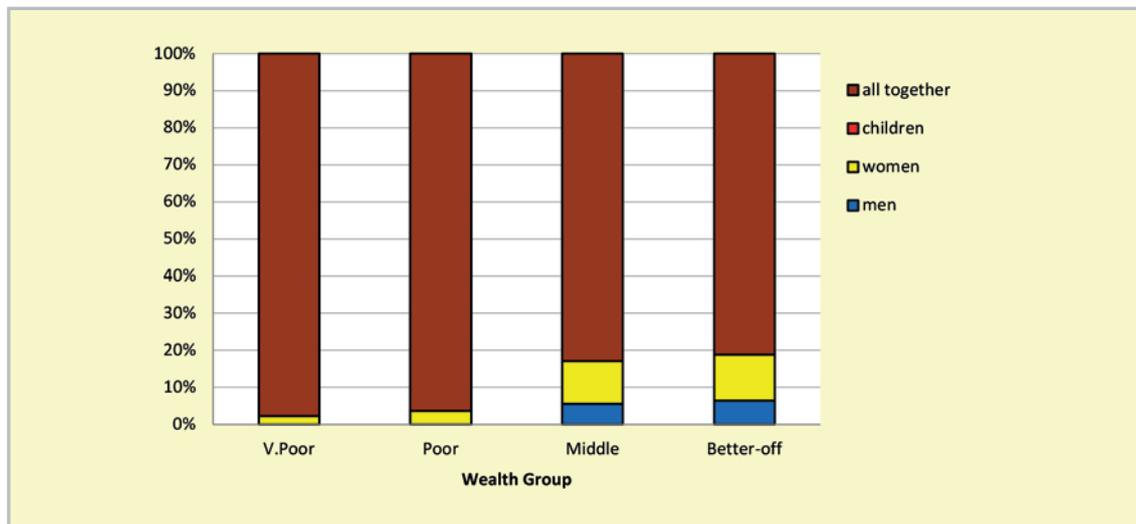


Figure 43: Gender breakdown of who produces food in the zone for each wealth group in ZANWC

The findings showed that in the majority of the districts and municipalities in this livelihood zone, young people, men, and women collectively contribute significantly to generate food among the “poor” and “very poor” households. In “middle” and “better-off” homes, women make a considerable contribution to food production. Youth involvement in the development and gender mainstreaming, however, continue to serve as obstacles. There are still many difficulties for women, such as the responsibility of caring for others, which limits their ability to work effectively.

### 6.2.9 Sources of cash in ZANWC of Bojanala, Dr Ruth Segomotsi Mompati, and Ngaka Modiri Molema districts

Cash incomes vary considerably across wealth groups, with the ‘better-off’ earning R386,284 per annum, more than ten times as much as the ‘very poor’, who earn R36,194 per annum. Figure 45 shows this distribution as the bars represent wealth groups.

The main sources of cash incomes in the zone are: formal employment - for the ‘middle’ and ‘better-off’ - and cash grants for the ‘poor’ and ‘very poor’. This is consistent with most surveys that assess livelihood strategies and their contribution to the main livelihood income source.

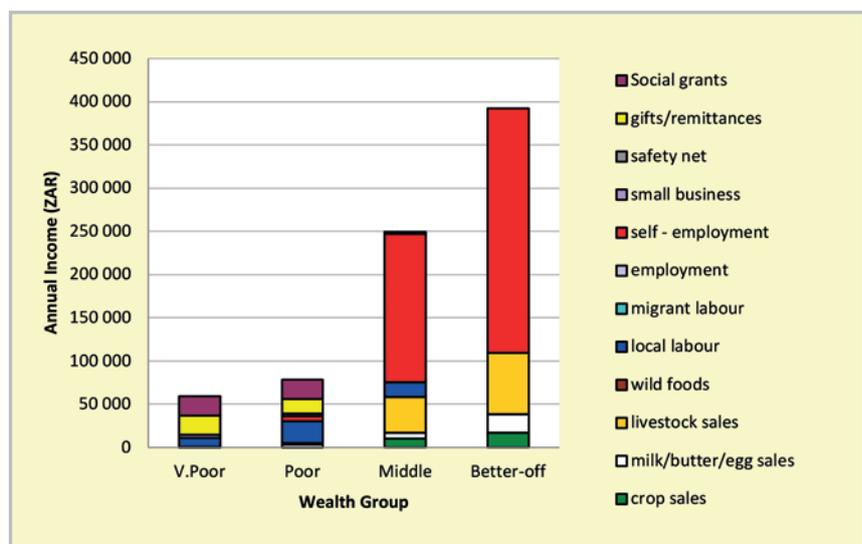


Figure 44: Sources of annual cash income by wealth group in ZANWC

However, the point of this enquiry was to gain an understanding of how *all* livelihood sources contribute to the main income of each wealth group in the sampled communities. This is important because it enables practitioners to link a hazard (such as a price change) to an income, and it enables other users to see potential areas of intervention. By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 46.

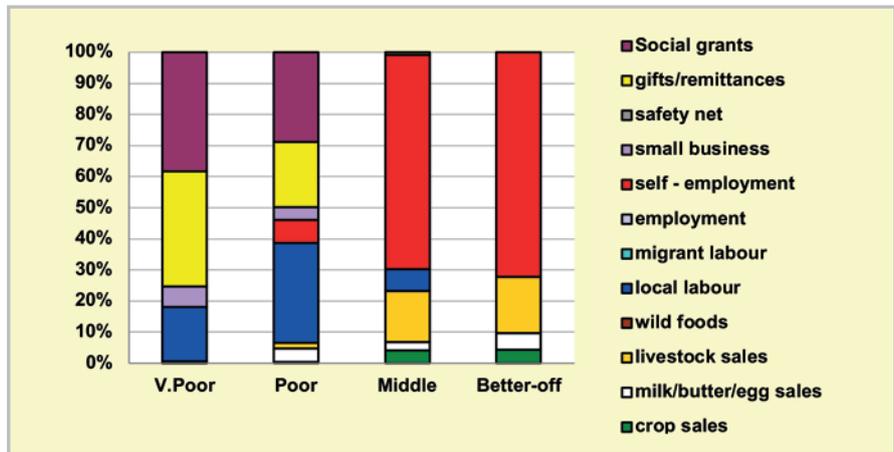


Figure 45: Sources of annual cash income as a percentage of total, by wealth group in ZANWC

For the 'very poor' and 'poor', grants make up 60% and 20% of total cash income, respectively; the remainder coming from casual labour (mostly domestic work, agricultural piece work, construction jobs, etc.) and self-employment (collecting natural products for sale, weaving, making bricks, etc.). The 'poor', 'middle', and 'better-off' earn some of their cash from animal sales and from petty trading or a small business.

The 'middle' and 'better-off' gain their wealth from a formal wage or salary for the better part of their income. Some 'middle' households may have a member that works seasonally on the commercial farms, but earnings typically amount to almost R79,000 per annum, while the 'better-off' earn around R386,284 per annum. 'Middle' and 'better-off' households also gain a little cash from grants. The earnings from livestock products are nil, which is lost productivity. The number of cows that are milked compared with those likely to be lactating is low and this is due to a number of factors: lack of economic incentives for milking, lack of time by the cattle-owners (because they are full-time employed), and minimal herd management.

### 6.2.10 Sources of food and income in ZAKOL of Dr Ruth Mompati District

Despite the good rainfall and fertile soils, purchases still make up the largest portion of people's sources of food. Food purchases contribute 56% to 77% of food energy needs. Conversely, the contribution to food energy of non-staple food purchases increased with increasing wealth, from 22% for the 'very poor', to 23% for the 'better-off'.

The contribution to food energy needs from own crop production increased with increasing wealth, from 8% for the 'very poor' to 31% for the 'better-off' in the zone. The breakdown into staple and non-staple did not

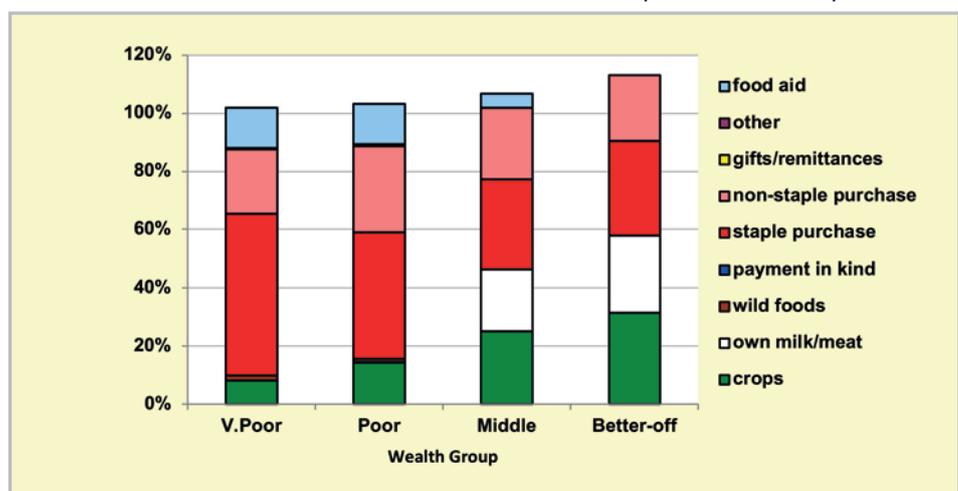


Figure 46: Sources of food in ZAHMI (expressed as percentage of minimum average food energy needs) for each wealth group

weeded in time, as well as being protected from pests. 'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (11% and 24%, respectively); this was usually from cow's milk and occasional slaughter for meat. Dairy production in this zone was not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) was milked for consumption.

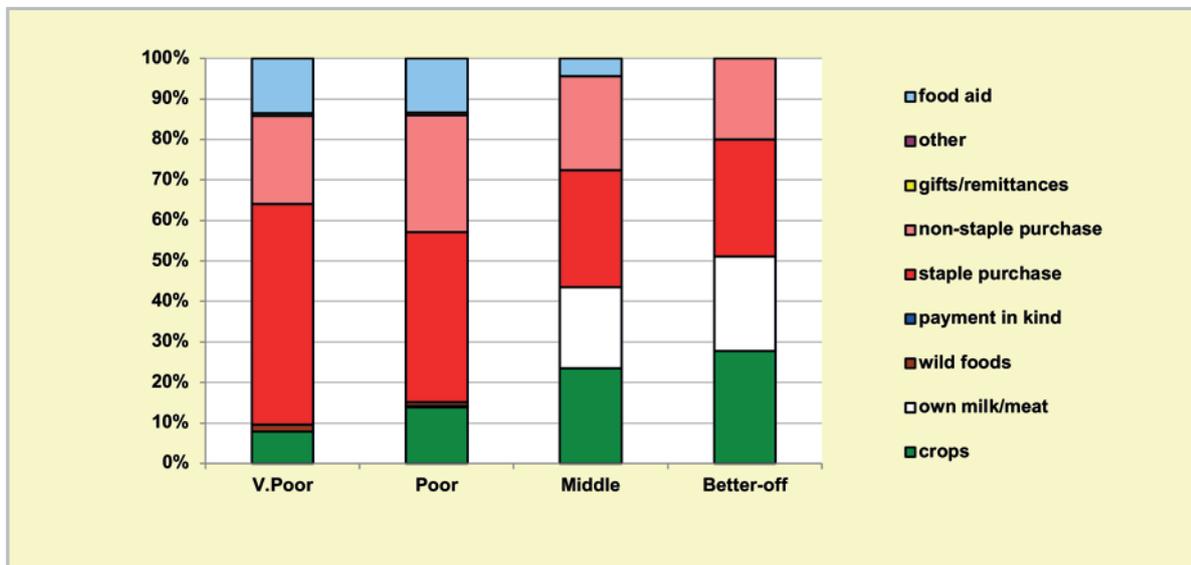


Figure 47: Sources of food as overall to the total by Wealth Breakdown in ZAHMI

The poorest households' children received additional food from school lunches, which was the official food assistance. Wealthier households tend to send their children to fee-paying schools that do not offer meals.

### 6.2.11 Sources of cash in ZAHMI of Nkangala District

Cash incomes varied considerably across wealth groups, with the 'better-off' earning R525,639 per annum, more than ten times as much as the 'very poor', who earn only R45,094 per annum. Figure 49 shows this distribution.

The main sources of cash incomes in the zone were: formal employment - for the 'middle' and 'better-off' - and cash grants for the 'poor' and 'very poor'. This is in keeping with most surveys that ask for the main livelihood source.

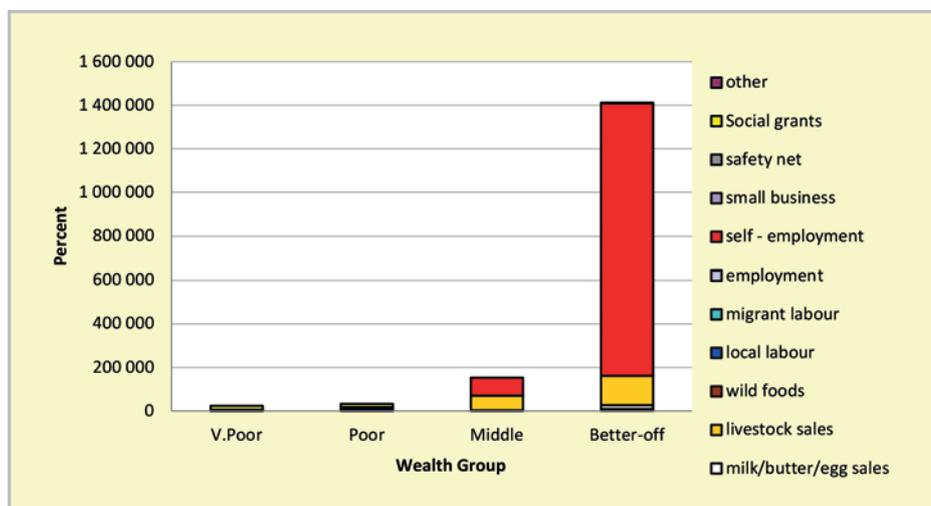


Figure 48: Sources of annual cash income by wealth group in ZAHMI

By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 48 above.

For the 'very poor' and 'poor', grants make up 65% and 30% of total cash income, respectively; the remainder comes from casual labour (mostly domestic work, agricultural piece work, construction, and mining related jobs) and self-employment (collecting natural products for sale, weaving, making bricks, trading in mineral related products, etc.). This income was mostly affected during COVID-19 lockdowns, leaving the 'poor' and 'very poor' hopeless and food insecure. The 'poor' earn small amounts of income through livestock sales

(usually goats) and local labour (40%) and remittances. This, coupled with a small income from the formal sector annually and self-employment, is what distinguishes their livelihoods from that of the 'very poor'. The 'middle' and 'better-off' gain their cash from self-employment (R282,246 and 409,980 annually, respectively) and a formal wage or salary for the better part of their income. Some 'middle' households may have a member that works seasonally on the commercial farms, but earnings typically amount to almost R126,000 per annum, while the 'better-off' earn around R168,000 per annum. 'Middle' and 'better-off' households also gain a little cash from grants (for example, pensions and fostering are not means-tested and the probability of a household having a pensioner in it is about one in two).

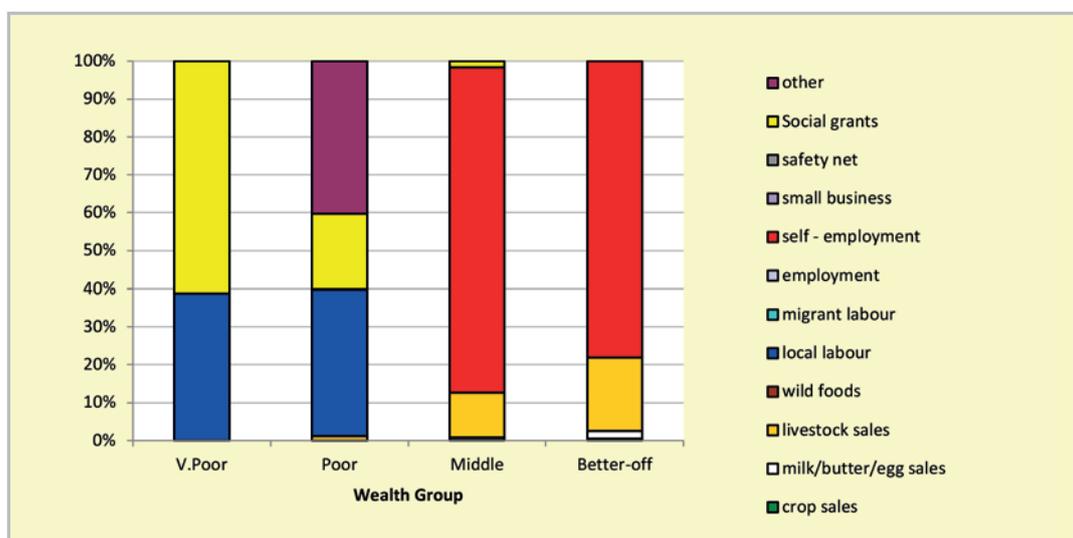


Figure 49: Sources of annual cash income as a percentage of total, by wealth group in ZAHMI

### 6.2.12 Hazards, vulnerabilities, and response strategies

Since households are dependent on markets for most of their food, they are, therefore, most vulnerable to market shocks. These 'market shocks' may consist of escalating food prices, eroded grants (for example, when they are not adjusted to match consumer inflation), and job losses.

Droughts are frequent and have an impact on food production by reducing crops. However, unless food prices also rise simultaneously, households will manage crop losses by prioritising more cash to their food purchases. A severe drought can badly affect animal conditions and production, but the current low productivity means that it would only have an impact on 'better-off' households' asset bases.

Additional response strategies households may engage in under stress are switching expenditure, seeking more casual work (usually outside of the village), or selling off assets or belongings.

## 6.3 Access to agriculture extension services, road infrastructure, and markets

Access to agricultural extension services, road infrastructure, and markets has the potential to improve household food security in the study area. This section highlights access to these services in the province.

### 6.3.1 Access to agriculture extension services

Agricultural extension has the potential to improve household production in the study area. Some of the extension services provided in the study area include dipping, training, and provision of loans, inputs, and advice to improve livestock and crop production.

**Table 36:** Access to agricultural extension services disaggregated according to sex, age, and district

Variable		Access to Extension Services			
		No access		Access	
		N	Row N %	N	Row N %
Sex of household Head	Male	909	97	28	3
	Female	884	97	20	3
Age of household head	18-24	70	100	0	0
	25-34	201	99	3	1
	35-44	305	98	5	2
	45-54	368	96	13	4
	55-64	384	97	14	3
	65+	448	97	12	3
District	Bojanala	458	97	14	3
	Dr Kenneth Kaunda	472	99	5	1
	Dr Ruth Segomotsi Mompati	391	96	19	4
	Ngaka Modiri Molema	474	98	10	2

Table 36 shows that access to agriculture extension services is very limited across all the five districts, with the highest being in Dr Kenneth Kaunda (98%) and among males (97%). The 18-24 age group reported that they never receive agriculture extension services and, generally, inaccessibility to extension services was high across all the age groups. The government, therefore, needs to take urgent steps to address the problem of the provision of agriculture extension services in the North West Province.

### 6.3.2 Access to markets

Households in the province have reasonably good access to markets, with over 90% of the districts reporting market accessibility (Table 37). Ngaka Modiri Molema recorded the highest access. Because this age group is the most mobile throughout the population, they reported having the greatest access to marketplaces (100%). The age group 45-65+ indicated the lowest market access (95%).

**Table 37: Access to markets by household**

Variable		Market access			
		No		Yes	
		N	Row N %	N	Row N %
Sex of household head	Male	42	5	859	95
	Female	33	4	828	96
Household head age	18-24	0	0	69	100
	25-34	3	1	182	99
	35-44	8	3	291	97
	45-54	19	5	347	95
	55-64	21	5	366	95
	65+	23	5	411	95
District	Bojanala	19	4	434	96
	Dr Kenneth Kaunda	16	3	450	97
	Dr Ruth Segomotsi Mompati	31	9	365	91
	Ngaka Modiri Molema	9	2	440	98

### 6.3.3 Access to road infrastructure

Access to infrastructure such as roads is critical in enhancing food and nutrition security. Both females and males reported high levels of access to roads, with the 18-24 age category having 98% access (Table 39). Across the districts, road access was relatively good, with the highest (93%) being recorded in Dr Kenneth Kaunda whilst the least was reported in Dr Ruth Segomotsi Mompati (88%).

**Table 38: Access to road infrastructure by households**

Variable		Access to road Infrastructure			
		No		Yes	
		N	Row N %	N	Row N %
Sex of household head	Male	77	8	822	92
	Female	66	8	791	92
Household head age	18-24	1	2	68	98
	25-34	11	7	174	93
	35-44	26	8	271	92
	45-54	29	8	336	92
	55-64	32	8	349	92
	65+	41	10	396	90
District	Bojanala	37	9	415	91
	Dr Kenneth Kaunda	32	7	436	93
	Dr Ruth Segomotsi Mompati	44	12	346	88
	Ngaka Modiri Molema	30	7	418	93

## Discussion

### ***Seasonal variation***

The results depicted by the seasonal calendar developed from HEA focus group discussions in the North West Province indicate that the rain season starts from September, stretching over to February, with pronounced farming activities of land preparation, planting, and weeding. However, the changing climatic conditions are shifting the planting dates as well as the onset of rains within the province. Harvesting of crops and other activities such as gardening start in March up to around June. Similar season characterisation has been reported in other studies such as, Phokele and Sylvester (2012). Previous studies in North West Province have reported that rainfall is highly seasonal, with 95% occurring between October and March (M'marete, 2003), often with a mid-season dry spell during critical periods of growth (FAO, 2009). Midsummer drought often leads to crop failure and low yields (Beukes, Bennie, and Hensley, 1999). Average rainfall is about 800mm, but it often varies temporarily.

### ***Access and land ownership***

Access to land is relatively better in the North West Province, although most of the households owned land, which was not enough for agricultural purposes. This explains the limited agriculture production of food crops in most of the districts. Most households reported that they own land, yet this land is between 0-0.25 hectares and is primarily used for residential purposes. This is buttressed by Nieuwoudt and Groenewald (2003), who noted that land holdings in these former homelands are generally very small and are mainly used for residential and, to some extent, subsistence farming. Securing land rights for communities has been shown to improve production and household food security (Prosterman, 2013). In South Africa, there are dual systems when it comes to land rights i.e., statutory law vested in the Constitution and customary law vested mostly in patrilineal tribal traditions and customs (Toulmin, 2008). The 18-24 age group in North West Province reported the least land access (<5%) across the five districts, which calls for a need to empower the youths with land ownership since it is the category currently plagued by high levels of unemployment. This would result in increased participation by youths in agriculture income generating projects and improved food availability at the household level. Land access was not significantly different between male- and female-headed households.

### ***Agriculture production systems***

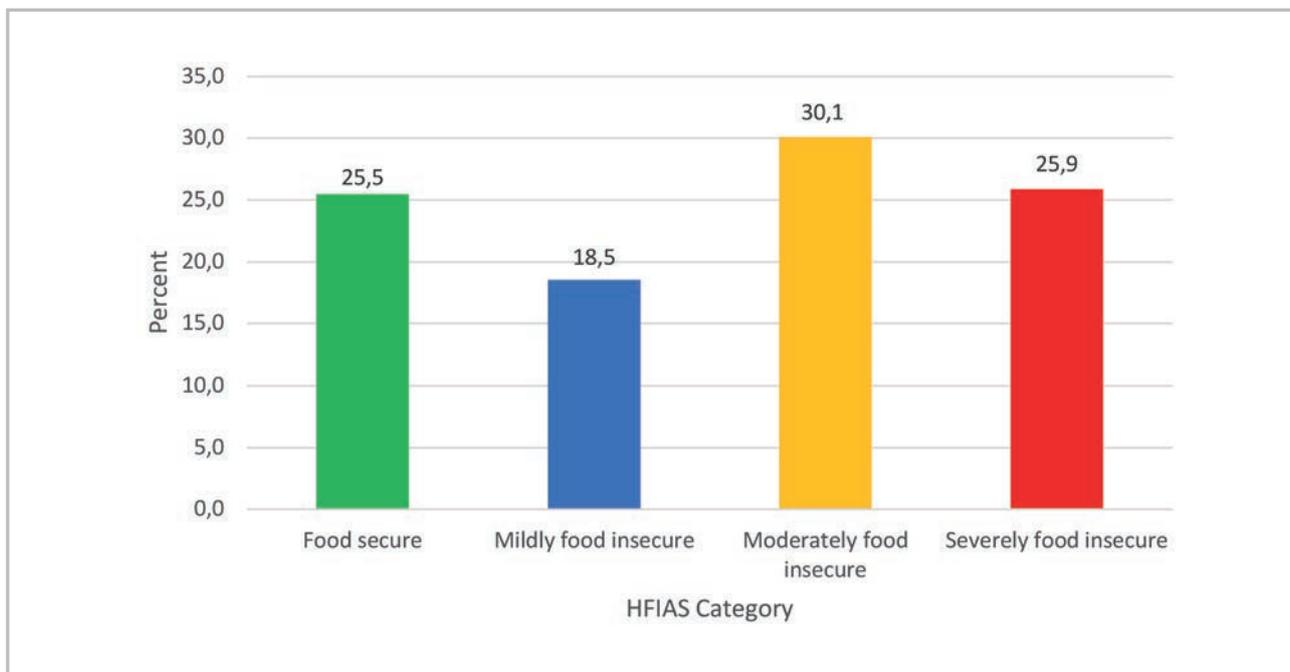
Livestock production within the North West Province was relatively better compared to crop production, although both production systems were generally low. Livestock production was predominantly practised in Dr Ruth Segomotsi (37%) and Ngaka Modiri Molema (30%) districts. Poultry production was also very low across the districts, with Dr Kenneth Kaunda district recording the highest level of 22%. Crop production was low (11%), and among the districts, Bojanala had the highest (32%). The limited participation in agriculture related activities can be attributed to the competing forms of livelihood strategies, especially mining, which is common within the province. Instead of focussing on agriculture, most of the household heads and youths prefer to seek formal employment in mines and some of the local commercial farms. Most areas in North West Province generally receive very limited rainfall and are generally dry such that there is high crop failure. This justifies the high percentage of livestock rearing compared to crop production, as similarly reported by Materechera and Scholes (2021).

## 7.1 Household Food Insecurity Access Scale

The Household Food Insecurity Access Scale (HFIAS) score measures the degree of food access challenges at the household level. It is calculated by adding the households' responses to nine questions asking about the frequency of certain behaviours that signify rising challenges in accessing food in a particular household (Coates et al., 2007). The higher scores indicate more food access challenges, while low scores indicate less food access challenges. The lower bound of the score is 0, while the upper bound is 27. The average HFIAS score for North West was 10.4, with a range of 0 to 27.

Interpreting this continuous score in terms of its food security implications is not straightforward, necessitating the need to generate categorical indicators of food insecurity (Coates et al., 2007). However, when the HFIAS score is used to categorise households into four levels of food (in)security status (i.e., food secure, mildly food insecure, moderately food insecure, and severely food insecure), the picture becomes less rosy. The food secure category are those households that do not experience food access conditions, and rarely worry about not having enough food. Households in the mildly food insecure category worry about not having enough food sometimes or often, are unable to eat preferred foods, and rarely eat some foods considered undesirable. These households have not cut back on food quantities, and have not experienced most severe access food challenges such as running out of food, going to bed hungry, or going the whole day and night without eating. A moderately food insecure household frequently consumes food that is of low quality, and/or sometimes or often eats undesirable foods, and/or rarely or sometimes reduces quantities of food consumed (i.e., reducing the size of meals or number of meals). A severely food insecure household not only cuts back on meal size or a number of meals often, but also experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating). The cut-off was as follows: food secure if HFIAS is less than or equal to 1, mildly food insecure if HFIAS is between 2 and 8, moderately food insecure if HFIAS is between 9 and 17, and severely food insecure if HFIAS is greater than or equal to 18.

Figure 50 presents the proportion of the prevalence of food insecurity among the sampled households. The overall results showed that close to three quarters of the households (74.5%) in North West Province experienced food insecurity, with only 25.5% found to be food secure. This suggests that households in the province are generally experiencing difficulties in terms of food access. Figure 50 shows that 25.9% of the households were severely food insecure, 30.1% of the surveyed households were moderately food insecure, and 18.5% of the households were mildly food insecure. Overall, the findings of this study slightly differ from the findings of the GHS 2020, which found more proportions of food secure households than the food insecure ones. However, this household food security situation is not strange, bearing in mind that the data was collected during the years of the COVID-19 pandemic, which may have severely impacted on households' purchasing power and thus increased the proportions of food insecure households. The results are in line with most of the food security findings, which generally indicate that a significant proportion of households experience food access challenges in South Africa. For example, in 2016, SAVAC commissioned a study on livelihoods, and food and nutrition security in which more households were found to be food insecure than those that were food secure (Ngidi et al., 2016).



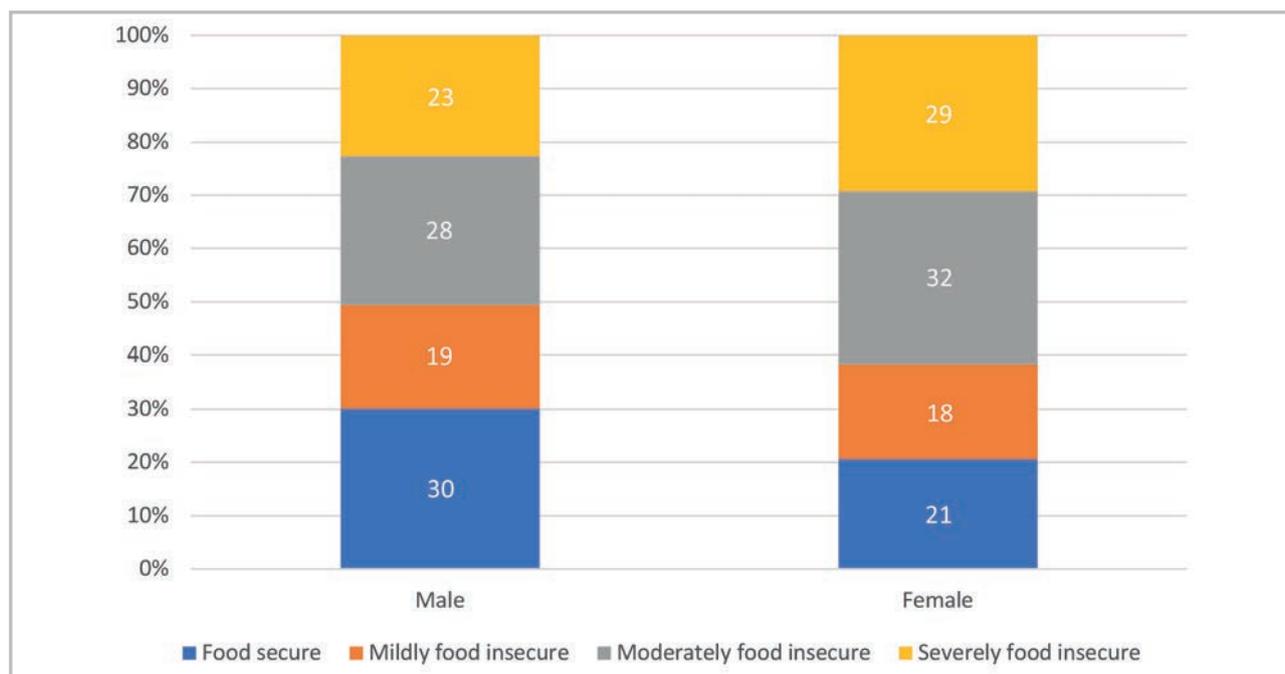
**Figure 50:** The categorized food security situation, using HFIAS in North West Province

Table 39 shows that the food security status of households was found to be varied by age and sex of household head, as well as by district. About 30% of the male-headed households were found to be food secure, compared to 21% of the female-headed households, indicating that male-headed households were more food secure than female-headed households. The results show that more male-headed households (30%) were found to be food secure compared to 21% of female-headed households. Similarly, Negesse et al. (2020), found that the severity of food insecurity among female-headed households in Ethiopia was higher as compared to male-headed households. In any category of the HFIAS, except 'mildly food insecure', female-headed households experienced higher levels of food insecurity. Severe food insecurity was experienced by 23% of the male-headed households compared to 29% of the female-headed households that fell within the same category. Approximately 28% and 32% of male-headed and female-headed households experienced moderate food insecurity, respectively. About 19% and 18% of male-headed and female-headed households experienced mild food insecurity, respectively.

**Table 39:** District level and gendered food security situation as determined by HFIAS

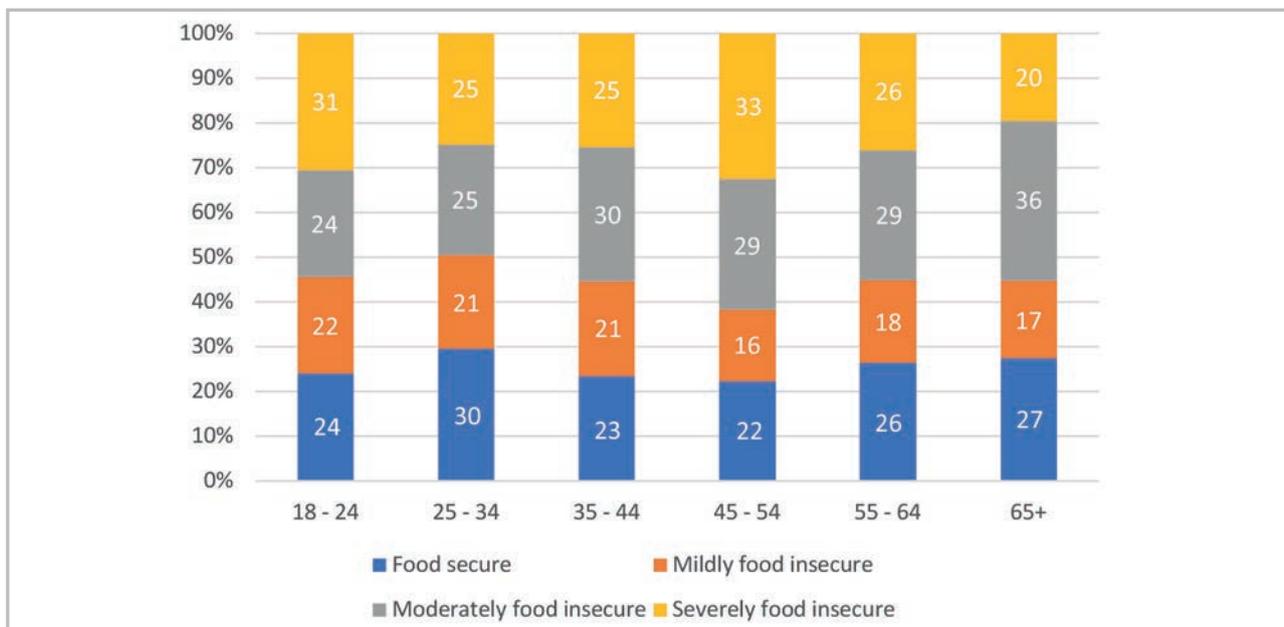
		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	%	N	%	N	%	N	%
	Male	269	30	170	19	265	28	230	23
	Female	176	21	154	18	292	32	278	29
Household head age	18-24	17	24	15	22	15	24	19	31
	25-34	64	30	43	21	49	25	60	25
	35-44	76	23	62	21	93	30	87	25
	45-54	79	22	60	16	109	29	124	33
	55-64	92	26	70	18	124	29	114	26
	65+	113	27	71	17	162	36	94	20

		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	%	N	%	N	%	N	%
District name	Bojanala	134	27	98	20	148	30	108	22
	Dr Kenneth Kaunda	85	20	78	19	116	27	148	34
	Dr Ruth Segomotsi Mompati	98	22	66	15	156	35	122	29
	Ngaka Modiri Molema	128	28	82	17	139	29	130	26



**Figure 51:** Food security status by sex of household head

Table 39 and Figure 51 show that households headed by the 25-34 years age group had the highest proportion of households (30%) who were food secure. They were followed by those households headed by the 65+ years age group, with 27% of the households headed by this age group found to be food secure. The least food secure age group was found to be the 45-54 years age group. This same group was also found to be the most severely food, insecure age group, with 33% of the households headed by this age group found to be severely food insecure. Government interventions in the province also need to target this age group, for it is possible that this age working group may have been affected by the COVID-19 lockdown, particularly if they relied on casual labour. Male-headed households showed a higher proportion of food secure households than female-headed households, indicating a similar trend as what was found with respect to food access challenges in the province.



**Figure 52:** Food security status by age group of household head

Table 40 and Figure 52 show that the Ngaka Modiri Molema District had the highest proportion of households that were food secure (28%), followed by the Bojanala and Dr Ruth Segomotsi Mompoti districts, with 27% and 22% of the households that were found to be food secure in these districts, respectively. The least food secure district was found to be Dr Kenneth Kaunda, with 20% of the households found to be food insecure. Ironically, the Dr Kenneth Kaunda District also had the highest proportion of households experiencing severe food insecurity. This may suggest that authorities need to pay slightly more attention to this district when it comes to food and nutrition security interventions. About 34% of the households in the Dr Kenneth Kaunda District were severely food insecure. This was followed by households from the Dr Ruth Segomotsi Mompoti District, who had 29% of the households that were severely food insecure. About 26% of the households in Ngaka Modiri Molema District also experienced severe food insecurity, while another 22% of the severely food insecure households were from Bojanala District. Moderate food insecurity was largely experienced by households from the Dr Ruth Segomotsi Mompoti District, where 35% of the households were moderately food insecure. This was followed by households from Bojana District, where 30% of the households were reported to have experienced moderate food insecurity. Mild food insecurity was largely experienced by households from the Bojanala and Dr Kenneth Kaunda districts, where 20% and 19% of the households, respectively, experienced mild food insecurity.

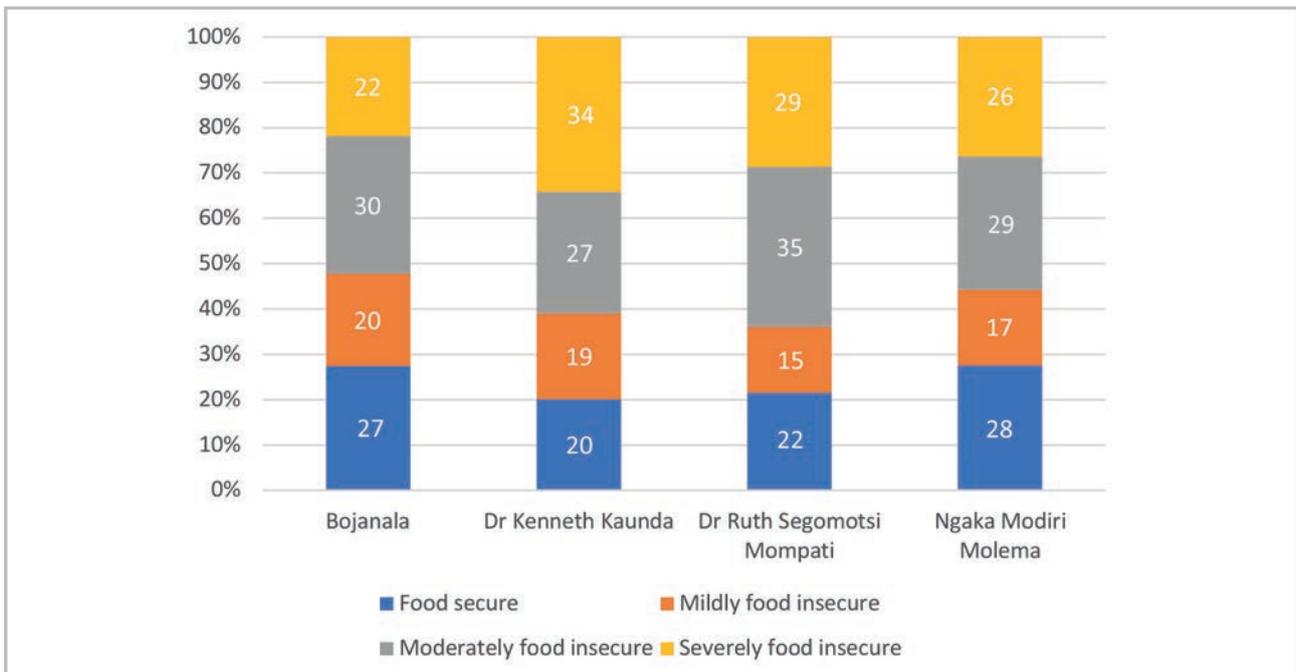


Figure 53: Food security status by district in North West Province

## 7.2 Household Hunger Situation

The Household Hunger Scale (HHS) is a household food deprivation scale that is derived from selected HFIAS questions for use mainly in situations of high food insecurity levels. Figure 54 presents the results of the HHS scale, showing that most of the sampled households experienced little to no hunger (69%). About 21.2% of the households and 9.8%, respectively, experienced moderate hunger and severe hunger. While a significant proportion of households experienced food insecurity (as shown by the HFIAS results), the HHS suggests that the level of food deprivation is not very severe for most of the households in North West Province.

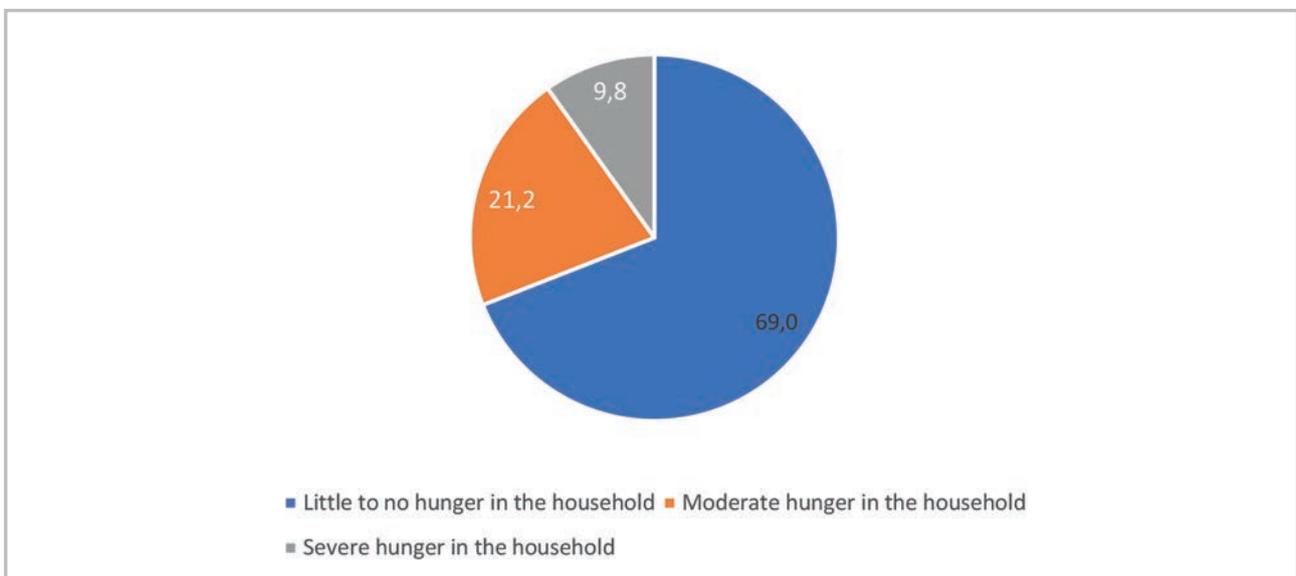


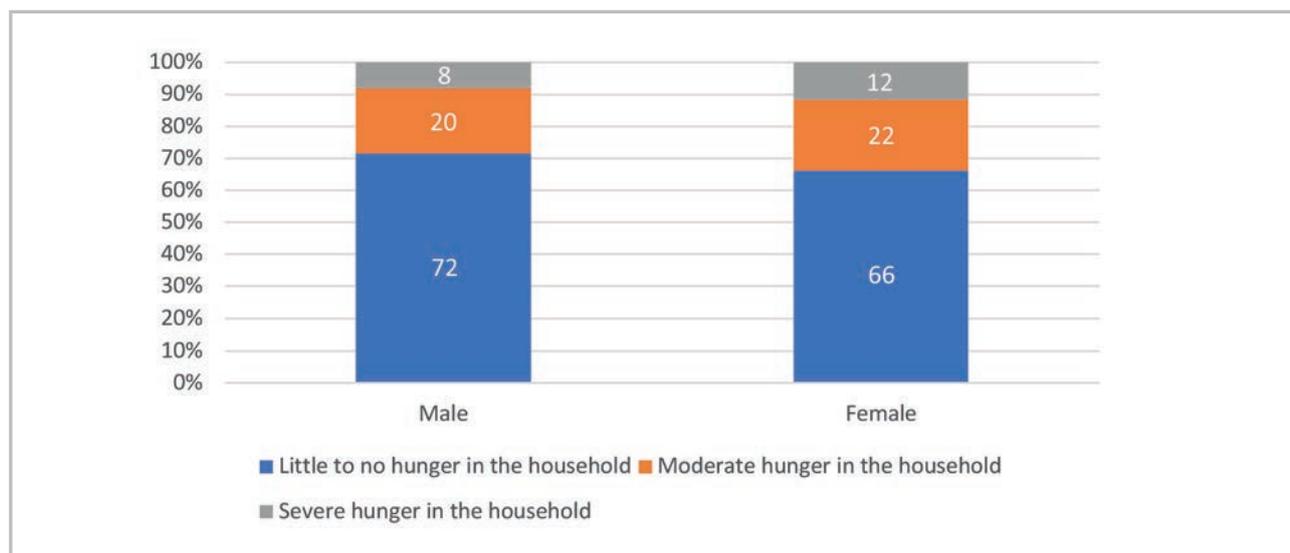
Figure 54: Hunger experiences of households

Table 40 presents the hunger status of households by sex, age, and district. Table 40 and Figure 55 show that the hunger status generally did slightly differ between male-headed and female-headed households across all the categories of the HHS.

**Table 40:** Food security situation, using HHS

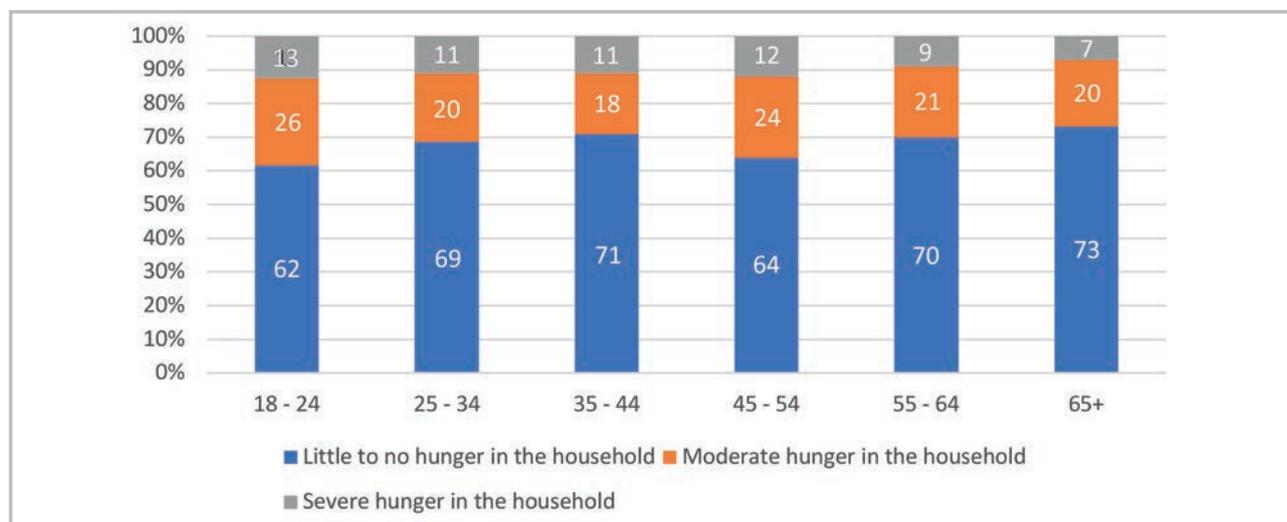
		Little to no hunger in the household		Moderate hunger in the household		Severe hunger in the household	
		N	%	N	%	N	%
Sex of household head	Male	719	72	228	20	90	8
	Female	628	66	247	22	112	12
Household head age	18-24	45	62	22	26	8	13
	25-34	150	69	52	20	26	11
	35-44	238	71	66	18	37	11
	45-54	252	64	106	24	50	12
	55-64	303	70	112	21	42	9
	65+	348	73	108	20	36	7
District	Bojanala	400	74	90	17	52	10
	Dr Kenneth Kaunda	277	59	140	28	64	13
	Dr Ruth Segomotsi Mompati	314	64	124	25	47	10
	Ngaka Modiri Molema	357	69	122	23	39	8

Table 41 and Figure 55 indicate that 72% of the male-headed households experienced little to no hunger, compared to 66% of the female-headed households. The proportion of female-headed households (22%) was higher than that of male-headed (20%) in the moderate hunger category. Severe hunger in the household was lower among male-headed (8%) than among female-headed households (12%).



**Figure 55:** Household hunger status by sex of household head in North West Province

Households in the age group of 18-24 years experienced relatively more hunger compared to the other age groups, with the age group of 18-24 years being the most food-secure group (Figure 56). This was followed by households in the age group 45-54 years, where 12% of the households were reported to be experiencing severe hunger. Households in the age group 65+ experienced little to no hunger, with 73% of the households found to have experienced little food insecurity in this age group. This was followed by households in the age group 55-64 years.



**Figure 56:** Household hunger status by age group of household head

There were minor variations in the hunger status of households across the four districts in the North West Province. Bojanala was the most food-secure district, with 74% of the households found to have experienced little to no hunger. This was followed by Ngaka Modiri Molema District, with 69% of the households found to have experienced little to no hunger. In terms of the HHS, Dr Kenneth Kaunda District was slightly the least food secure, with 59% of the households experiencing hunger compared to others. More households in the Dr Kenneth Kaunda District (28%) also experienced moderate levels of hunger compared to the other two districts. Overall, there were minor differences in the proportion of households who experienced severe hunger in the four districts, ranging from 8% of the households found in Ngaka Modiri Molema District and 13% found in Dr Kenneth Kaunda District.

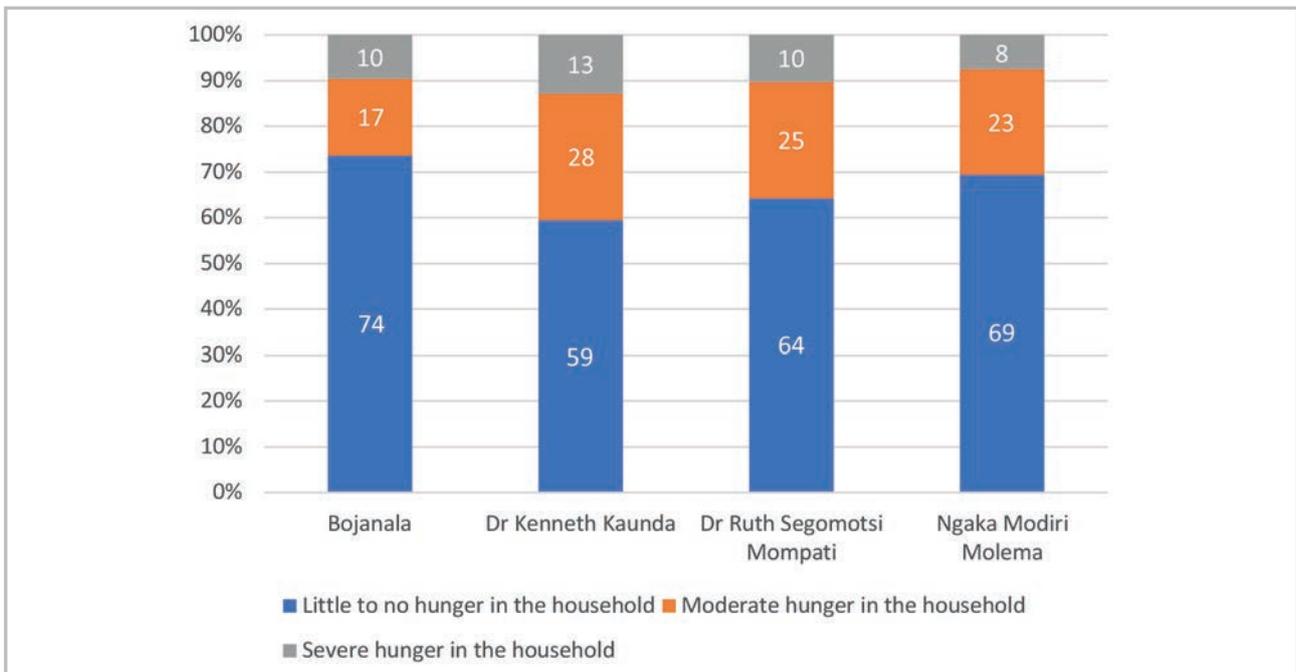


Figure 57: Household hunger status disaggregated by district

### 7.3 Household Dietary Diversity Score (HDDS)

HDDS measures the economic ability of a household to access a variety of foods (Kennedy, 2009). Higher levels of HDDS imply improved chances for a household to consume enough of all food components necessary for good health. HDDS was constructed using the number of food groups consumed by the household over a 24-hour recall. The food items were categorized into 12 different food groups.

Figure 58 shows that, on average, the households in North West consumed more than 7 out of 12 food groups, which suggests above-average dietary diversity levels. Using the cut-offs suggested by Kennedy (2009), 76.8% of households consumed highly diverse diets (more or equal to 6 food groups), whilst 17.1% and 6.1% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively.

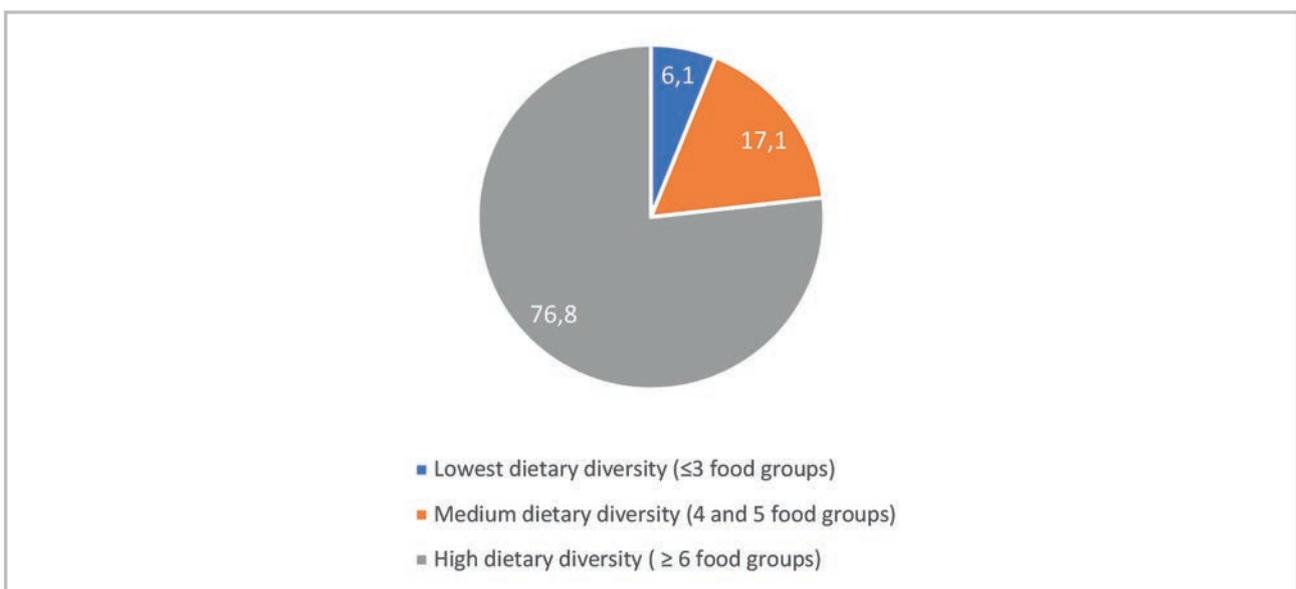
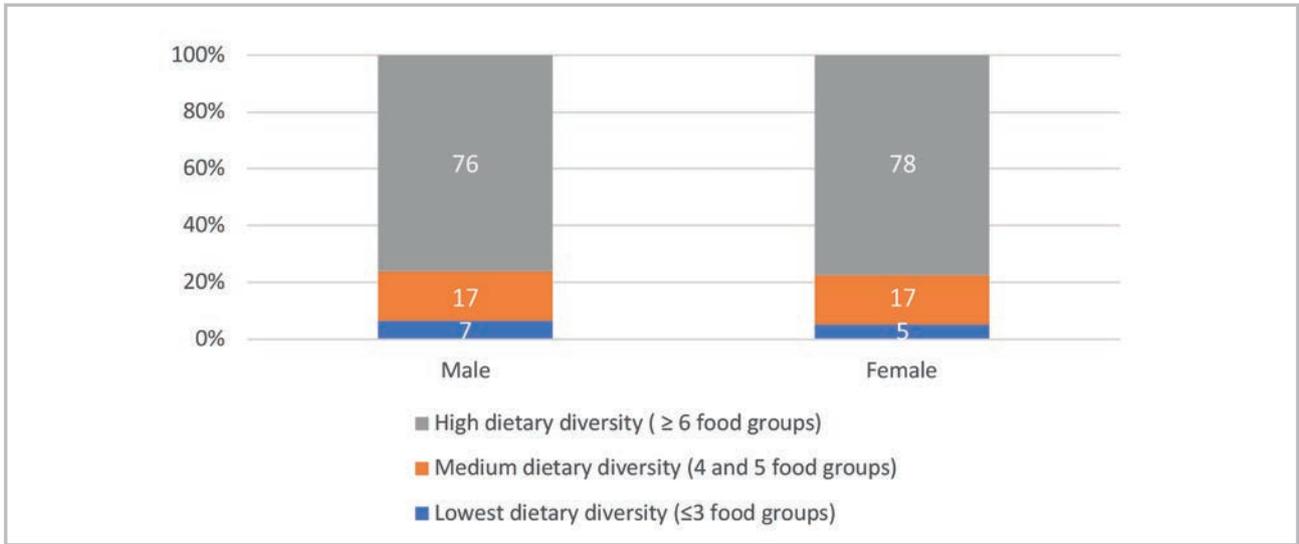


Figure 58: Household Dietary Diversity Scores

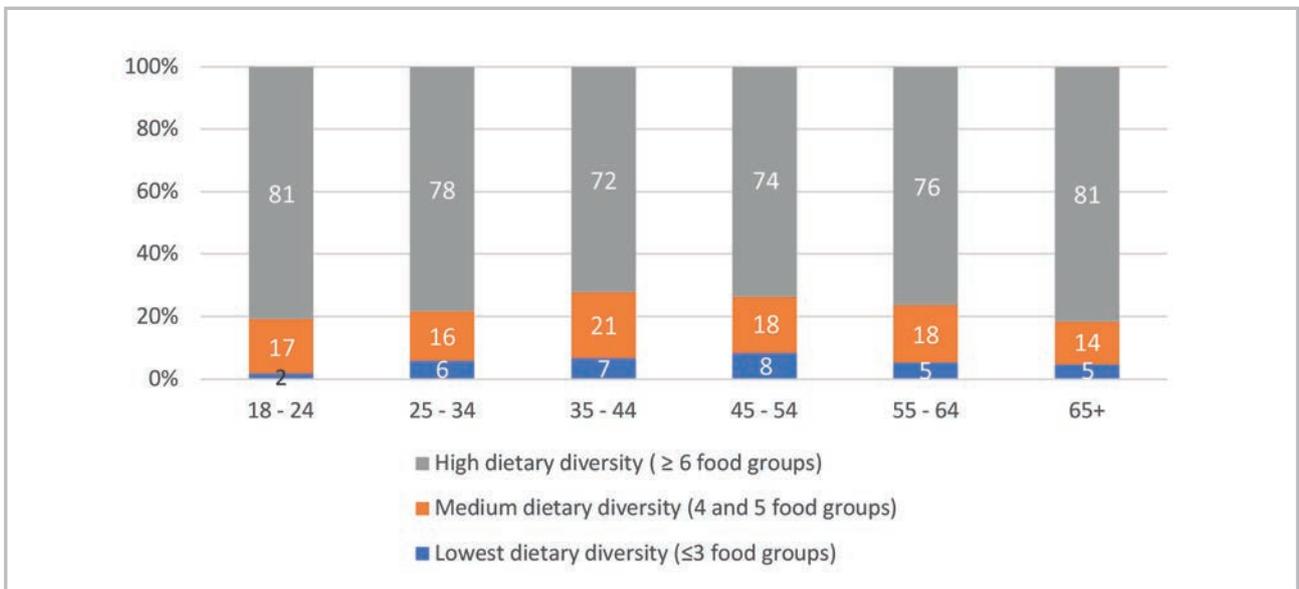
The results in Table 41 show that 7% of the male-headed households had the lowest dietary diversity, compared to 5% of the female-headed households. About 76% of the male-headed households consumed the highest dietary diversity compared to 78% of the female-headed households, suggesting that while female-headed households in the province are having more challenges with hunger and food access, given the chance, they are able to consume more diversified foods as compared to male-headed households. Concluding within the context of this tool, these results generally suggest that female-headed households have better access to diversified food compared to male-headed households. In terms of the age groups, all age groups generally consumed a high dietary diversity, with results showing all age groups having a higher percentage of 70% or above of households that consumed highly diversified food. Results of the age groups also show that household heads aged 45-54 years were the ones that largely consumed the lowest dietary diversity, followed by household heads within the age group of 55-64 and 65+ years age groups. In general, results from all districts but Dr Kenneth Kaunda showed that the majority (more than 70%) consumed the highest dietary diversity. These results should be taken with caution because with 24-hour recall, it is possible to find the situation looking good in terms of food variety simply because the previous day was a pension day.

**Table 41: Household Dietary Diversity Scores**

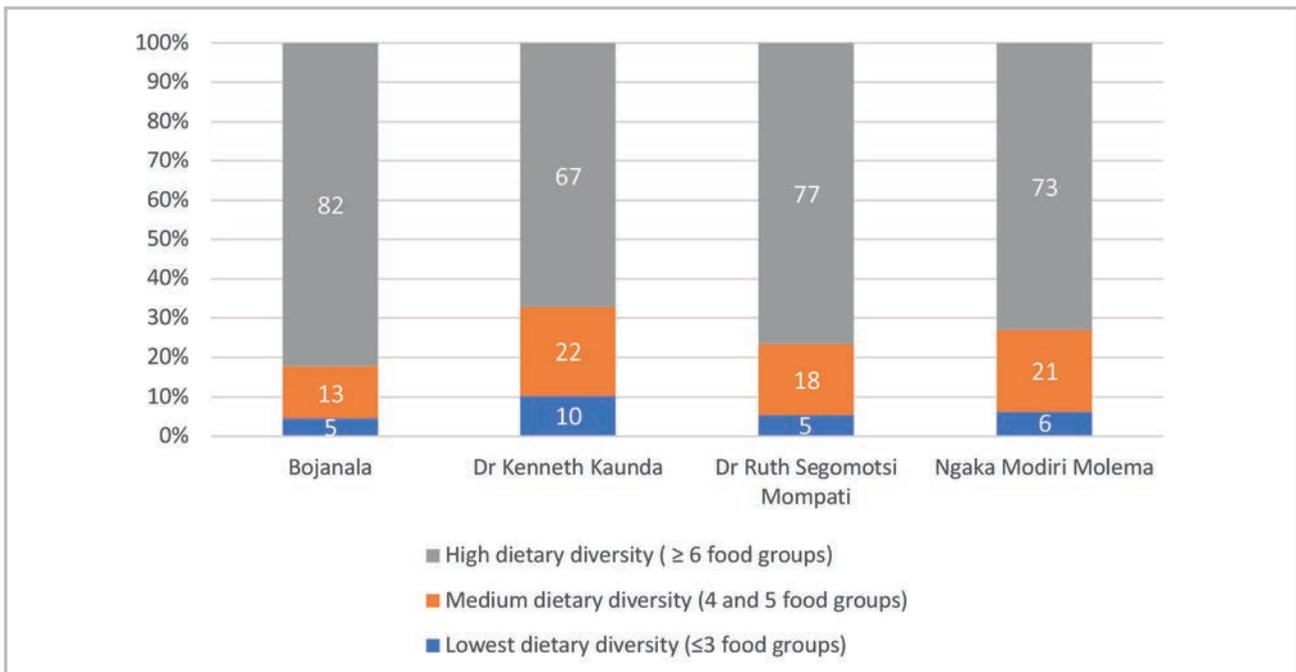
		Lowest dietary diversity (≤3 food groups)		Medium dietary diversity (4 and 5 food groups)		High dietary diversity (≥ 6 food groups)	
		N	%	N	%	N	%
Sex of the household head	Male	79	7	189	17	788	76
	Female	55	5	189	17	761	78
Household head age	18-24	2	2	14	17	59	81
	25-34	16	6	35	16	178	78
	35-44	24	7	72	21	252	72
	45-54	33	8	80	18	306	74
	55-64	31	5	87	18	346	76
	65+	27	5	87	14	389	81
District name	Bojanala	25	5	72	13	457	82
	Dr Kenneth Kaunda	48	10	112	22	334	67
	Dr Ruth Segomotsi Mompati	27	5	84	18	379	77
	Ngaka Modiri Molema	35	6	110	21	380	73



**Figure 59:** Dietary Diversity Score category by the sex of household



**Figure 60:** Dietary diversity category by age of household head



**Figure 61:** Dietary diversity category by district

However, HDDS should not be interpreted as a measure of nutrition or diet quality, as achieving a high dietary diversity score does not guarantee that important food groups, such as fruits and vegetables, are included in the diet. A household can lack crucial micronutrients even when consuming a diverse diet. Figure 62 shows the food groups and their frequency of consumption by the households. The figure shows that the most popular food groups were cereals, condiments, oils and fats, sugars, meats, other vegetables, milk and milk products, roots and tubers, dark green leafy vegetables, eggs, sugars, vegetables, meat, fruits and eggs. The least consumed food groups were oranges, pulses and nuts, fish and sea foods, fresh orange vegetables and other fruits. The results in Figure 62 show that the most consumed food groups were mostly the less healthy ones, providing a different light to Figure 61, which gives an impression of a highly diverse and healthy diet. This also validates the point that findings on what a household consumed on the previous day should be taken with great caution as it is possible that households had a pension day on the previous day and thus purchased a variety of foods. There is a need to continue to encourage households to consume vegetables in the province, particularly the orange flesh vegetables.

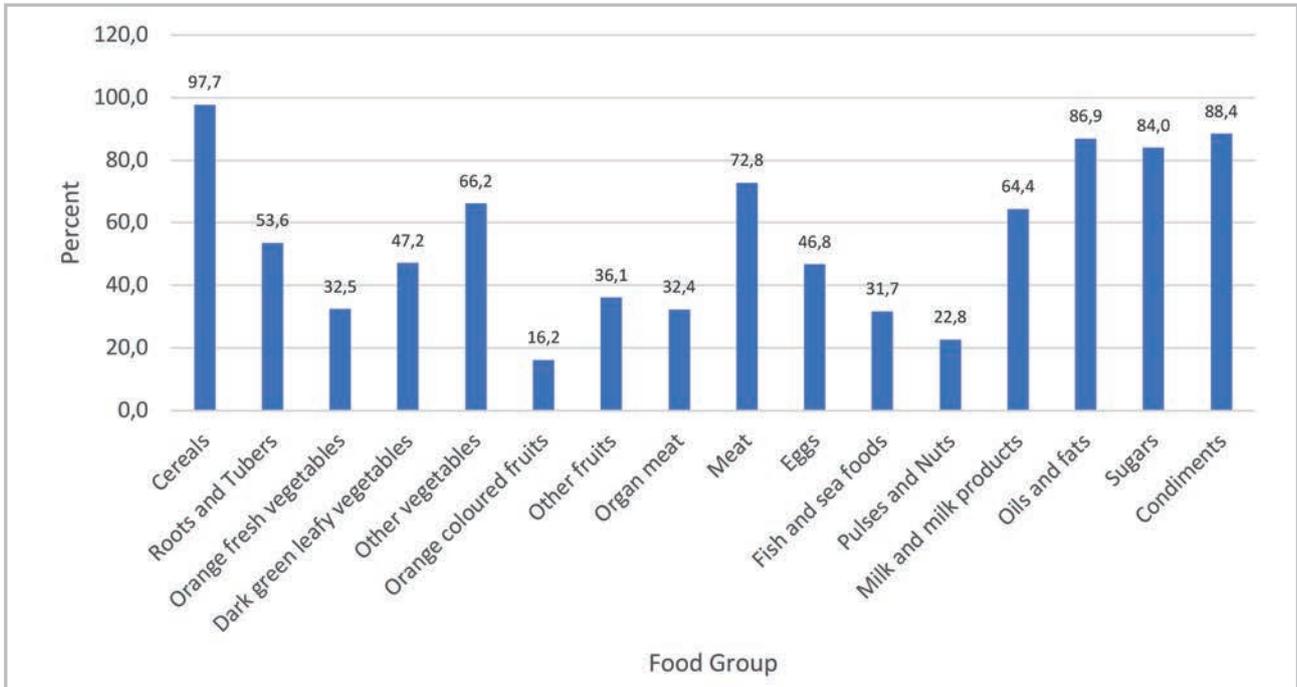


Figure 62: Frequency of food group consumption

## 7.4 Food consumption score

Food Consumption Scores (FSC) were calculated using the WFP methodology to further understand the levels of dietary diversity in the study areas. This FCS differs from Dietary Diversity in that it represents a weighted dietary diversity score.

Figure 63 shows that most households (44.8%) were consuming adequately (acceptable) diversified diets, and about 33.9% of households are at the borderline and could fall into unacceptable diversity of foods if no actions are taken to help them improve their diets. Results further indicate that 21.3% of the households consumed poor diets. This is concerning because more than half (55.2%) of households are not consuming acceptable diets and this may lead to nutrition-related problems.

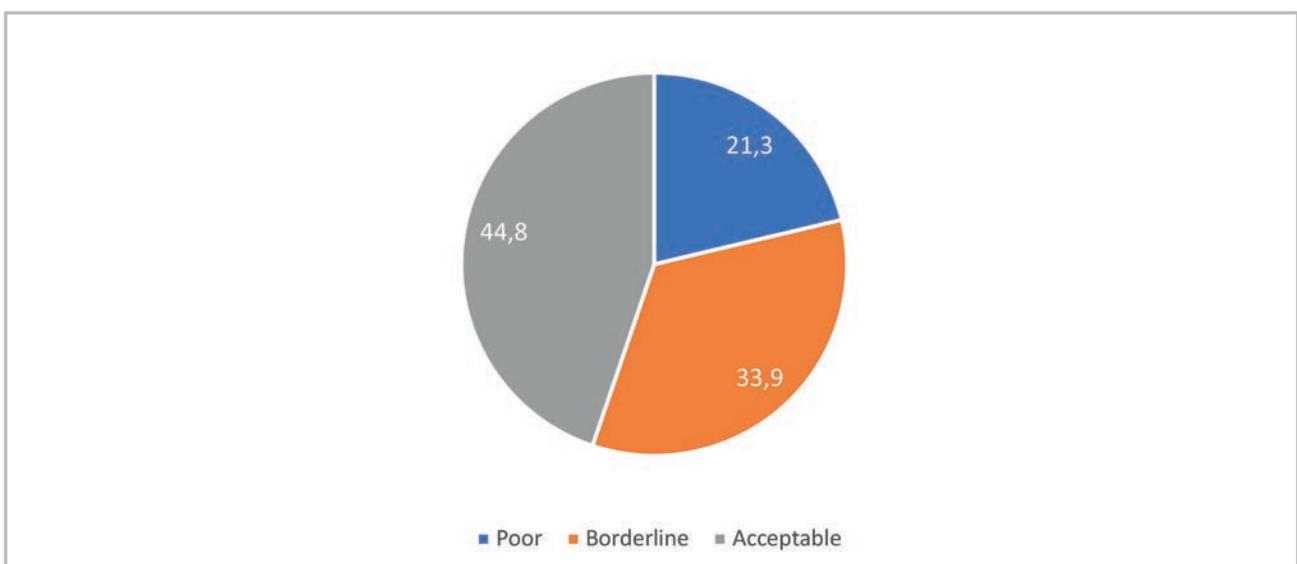


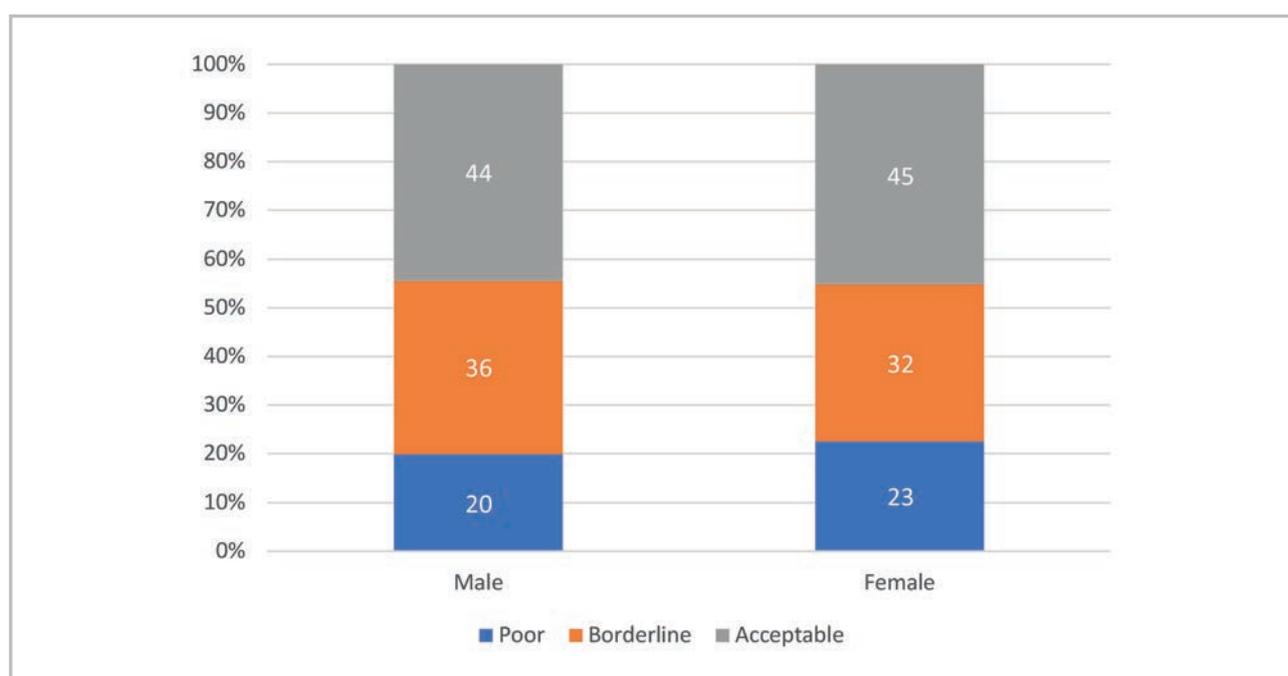
Figure 63: Food consumption score

Results in Table 42 present the food consumption score categories according to sex, age, and district.

**Table 42: Food Consumption Score by sex, age of household head, and district**

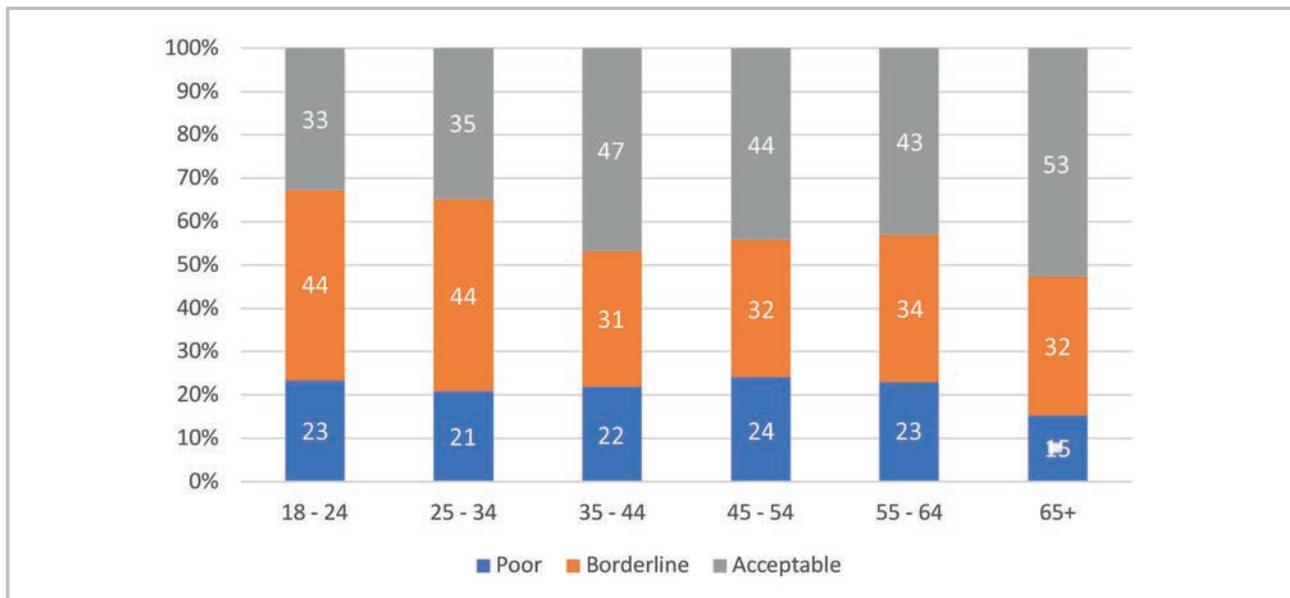
		Poor		Borderline		Acceptable	
		N	%	N	%	N	%
Sex of household head	Male	128	20	210	36	260	44
	Female	131	23	186	32	264	45
Household head age	18-24	10	23	19	44	15	33
	25-34	28	21	52	44	54	35
	35-44	43	22	60	31	92	47
	45-54	56	24	80	32	103	44
	55-64	64	23	87	34	105	43
	65+	49	15	95	32	148	53
District name	Bojanala	63	19	103	33	155	48
	Dr Kenneth Kaunda	42	22	49	26	109	51
	Dr Ruth Segomotsi Mompati	92	27	135	36	139	37
	Ngaka Modiri Molema	62	22	109	38	121	40

Figure 64 presents the results showing the relationship between the sex of the household head and food consumption category. The figure indicates that female-headed households had slightly more acceptable diets compared to male-headed households. About 45% of the female-headed households were found to have consumed acceptable diets compared to 44% of the male-headed households. Female-headed households were found in marginally higher proportions in the poor category, while male-headed are on the borderline category. Overall, interventions do need to focus on both gender groups so that they do not further fall on the borderline, and also improve the situation so that those who consume poor diets also come out of that situation.



**Figure 64: Food consumption category by sex of household head**

The relationship between the age of household head and the chances of consuming acceptable diets was not linear (Figure 65). The proportion of households who consumed acceptable diets increased from 33% among household heads among the 18-25 age group, to 47% among the 33-44 years age group. The percentage of households in the acceptable diets group then decreased, until the 65+ age group, where a marginal increase was observed. Households from the age group of 45-54 were the highest in consuming poor diets. The most households in the borderline were in the age groups of 18-25 and 25-34 years, with each found with 44% of the households in the borderline.



**Figure 65:** Food consumption category by age of household head in North West Province

Regarding the districts, it was found that more households with poor diets were found in the Dr Ruth Segomotsi Mompati District, followed by households from the Dr Kenneth Kaunda and Ngaka Modiri Molemo districts, with each having 22% of the households in this category (Figure 66). Households from the Dr Kenneth Kaunda District also consumed slightly diverse diets compared to the other districts, and the district also had slightly less households who were on the borderline. Many households from the different districts are also generally on the borderline, which is a concern as those households may fall into poor diets unless things change for the better and they move on to fall into acceptable diets.

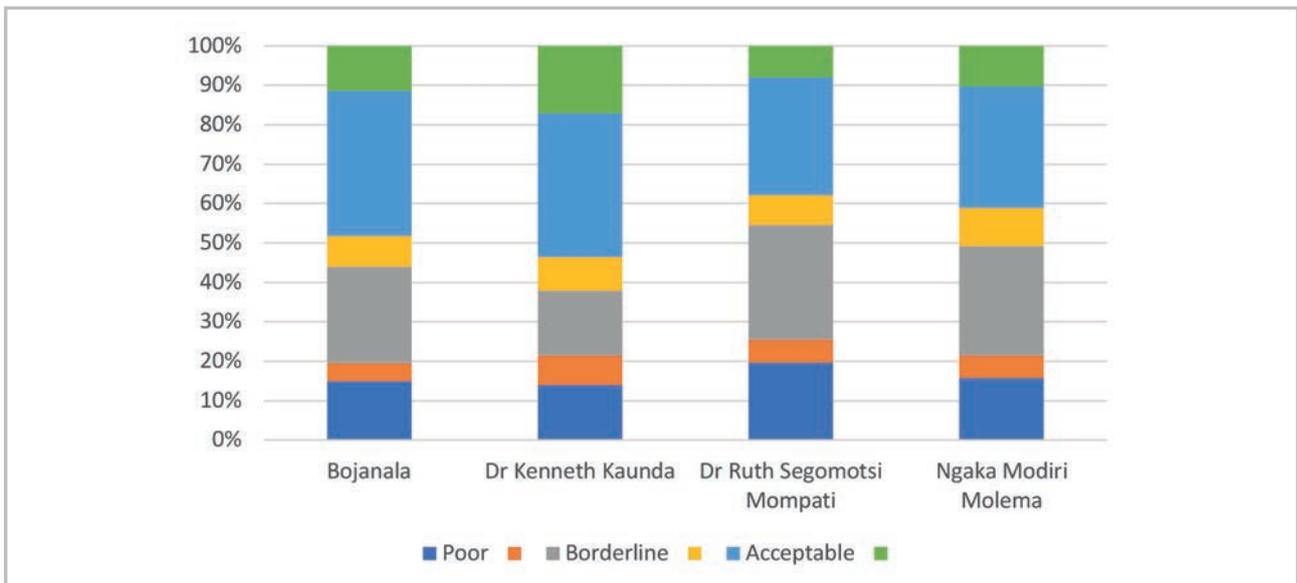


Figure 66: Food consumption category by district in North West Province

## 7.5 Food expenditure

The food expenditure approach captures food security in terms of the amounts of money spent by a household to acquire food, and whether or not that amount is above or below the food poverty line. The food poverty line, commonly referred to as the ‘extreme’ poverty line, refers to the amount of money that an individual will need to afford the minimum required daily energy intake (Stats SA, 2021). In 2021, the food poverty line was R624 per person per month (Stats SA, 2021). On average, the households’ food expenditure per person per month in North West Province was R578.58, which is below the food poverty line (Figure 67). Using the 2021 food poverty line (i.e., R624), Figure 46 shows that 68% of the households were below the food poverty line. This indicates very high levels of food poverty, which supports the results of the HFIAS study.

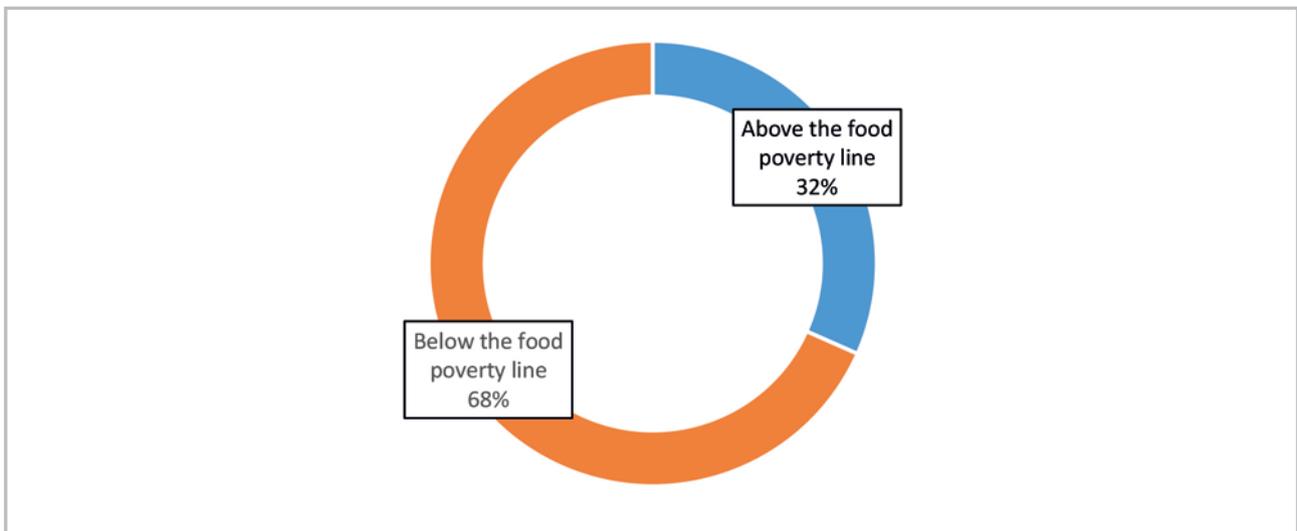


Figure 67: Food poverty levels in North West Province

The food expenditure and poverty levels varied by sex, age group, and district (Table 44). Table 43 shows that female-headed households spent more on food than male-headed households. Across the age-groups, the results show a somewhat negative, but nonlinear, relationship between food expenditure per capita per month and age, with increasing age associated with declining food expenditure. The households in Bojanala District spent more on food than the other two districts.

**Table 43:** Food expenditure per capita per month by sex, age group, and district

Variable		Mean (Rands per capita per month)	Percentage above FPL	Percentage below FPL
All sample		R 578.58	31.7	68.3
Household head Sex	Male	R 500.90	26.2	73.8
	Female	R653.14	36.8	63.2
Household head Age group	18-24	R588.41	34.4	65.6
	25-34	R695.55	40.4	59.6
	35-44	R597.68	30.4	69.4
	45-54	R552.23	32.1	67.9
	55-64	R541.24	26.1	73.9
	65+	R566.15	32.5	67.5
District	Bojanala	R732.50	39.7	60.3
	Dr Kenneth Kaunda	R523.80	25.3	74.7
	Dr Ruth S Mompoti	R490.38	24.6	75.4
	Ngaka Modiri Molema	R545.81	25.3	74.7

**7.6****Relationship between household food security situation and socio-economic factors**

Household food security varies according to demographics, socio-economic characteristics, and support levels. This section presents results investigating the extent to which the food security status of households differs according to several factors. For this analysis, the HFIAS categories were merged into a binary food security status variable, indicating whether a household was food secure or food insecure. The three food insecurity categories (i.e., mild, moderate, and severe levels) were all captured as food insecure. Table 41 presents the results. Table 41 shows that significant relationships were found between household food security status and some demographics and socio-economic factors such as gender, age of household heads/acting head, access to irrigation, improved water source, sanitation, social grants, household size, markets, education level of household head/ acting head, and involvement in agricultural production.

**Table 44:** Relationship of food security and socio-economic factors

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
HH Sex	Male	30.1	69.9	***
	Female	23.9	76.1	
HH age	Mean age (years)	52.4	51.9	**
HH age group	18-24	23.9	76.1	***
	25-34	29.6	70.4	
	35-44	23.4	76.6	
	45-54	22.3	77.7	

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
	55-64	27.4	72.6	
	65+	25.6	74.4	
Marital status	Married	30.8	69.2	***
	Unmarried	22.3	77.7	
District	Bojanala	27.4	72.6	***
	Dr Kenneth Kaunda	20.1	79.9	
	Dr Ruth S Mompoti	21.5	78.5	
	Ngaka Modiri Molema	25.5	74.5	
HH education level	No schooling	18.0	82.0	***
	Primary	21.2	78.8	
	Matric	26.1	73.9	
	Tertiary	50.8	49.2	
Household size	mean	2.9	3.3	**
HH employment status	Employed	37.4	62.6	***
	Unemployed	21.0	79.0	
Access to social grants	Beneficiary	20.3	79.3	***
	Non-beneficiary	30.3	69.7	
Access to land	Yes	26.5	73.5	***
	No	23.8	76.2	
Involved in farming activities	Yes	28.9	71.1	***
	No	24.0	76.0	
Access to irrigation	Yes	34.5	65.5	***
	No	25.4	67.4	
Access to extension	Yes	37.6	62.4	**
	No	25.9	74.1	
Access to markets	Yes	25.8	74.2	***
	No	24.1	75.9	
Access to road infrastructure	Yes	21.0	79.0	***
	No	26.3	73.7	
Location type	Urban, formal & informal	25.0	75.0	***
	Rural, Traditional areas	24.7	75.3	
	Farms	33.3	66.7	
Access to improved water sources	Yes	26.1	73.9	***
	No	8.9	91.1	
Access to improved sanitation	Yes	25.6	74.6	***
	No	16.8	83.2	

Table 44 shows that female-headed households were significantly more likely to be food insecure than male-headed households. Among male-headed households, 30.1% were food secure, while only 23.9% were food secure among female-headed households. This result is not unexpected, as females generally have disadvantages in accessing productive resources in traditional communities due to, among others, the historical formulation and implementation of patrilineal laws and cultural traditions, including laws that limit females' inheritance of productive assets such as land. Further, there is often a social and administrative bias towards males, as well as unequal access to education, extension services, training, information, and inputs, which limits the livelihood options for females, compounding the food security plight of their households. The age of a household head also significantly varied with the food status of their households, with the average age of households in the food secure category marginally higher than that of those in the food insecure category. The relationship seems to be non-linear, with households headed by those in the 18-24 years and 35-54 years categories appearing more in the food insecure group than the other households. Households headed by those in the 25-34 years category had a higher proportion of those who are food secure when compared to the rest. This finding was not expected, since one would expect the household heads in their late 30s and early 50s to have access to more opportunities than those younger or older.

Households in the food secure category had fewer household members than those in the food insecure category, and this difference was statistically significant. This was expected, since more members imply more mouths to feed, thus a greater burden than in smaller ones. While bigger households can be a source of labour, the results suggest that the consumption burden dominates the labour availability dimension. Table 44 shows a positive and significant relationship between the education level of household heads and household food security. The proportion of food secure households increased significantly as education levels also increased. For example, while about 18% of households headed by people with no education were food secure, more than half of households headed by people with tertiary qualifications were food secure. Educated people have higher opportunities and higher chances of success in their endeavours, which leads to higher welfare. Also, higher education among farming communities, such as those in North West, could lead to better information access and assimilation, which may increase awareness of the possible advantages of modernizing agriculture by means of technological inputs, or simply taking advantage of opportunities arising in the area. This leads to higher productivity, food production, and incomes. Even though increasing education is associated with increasing chances of being food secure, the results indicate that it is only after a household head attains a tertiary qualification that education plays a decided role in ensuring food security. The food insecure households dominate among those with education level attainments of matric and below, with food secure households becoming the majority for those in the tertiary qualification category.

The results show that households who reported to have access to land for farming activities were likely to be those who experienced higher levels of food security. Access to land means that the households can engage in different livelihood activities, such as farming, increasing their chances of being food secure. Similarly, households that were involved in agriculture were characterised by marginally higher levels of food security than those not engaged in farming activities. Further, households in farms (33.3%) reported higher levels of food security than those in traditional (24.7%) and urban (25%) areas. These results imply that farming activities play an important role in the livelihoods of these households, lifting a few households out of the scourge of poverty and food insecurity. However, food insecurity also dominates those with access to land and those involved in farming, suggesting that farming alone will not adequately address the food insecurity challenge in the North West Province. These households are often located in areas where livelihood opportunities are very limited. While access to land provides a potential livelihood option, resulting in improved food security status, these are often small pieces of land located in areas with poor soil quality, and the productivity of the farming activities remains low, due to factors such as rudimentary farming methods, poor pest and disease management practices, inadequate extension advisory services, etc. Employment was positively and significantly associated with food security. While 37.4% of households among those headed by employed household heads were food secure, only 21% of those headed by unemployed heads were food secure. Employment remains a crucial pathway in alleviating the scourge of poverty and food insecurity. That food insecurity dominated even among employed household heads suggests that the earnings of the employed are not enough to lift their households out of food insecurity. Further, given that the survey was done during

the period of COVID-19 lockdown restrictions, this also captures the fact that there were also concerns, even among those gainfully employed, about food availability.

The results show that access to infrastructure (such as roads) and basic services (such as water and sanitation) are crucial in improving the food security status of households. Access to all-weather roads reduces transport costs to and from the market, whether to buy (inputs, food, etc.), or to sell output. Those located near accessible roads are likely to have better access to market information (prices of inputs, food items, commodities), and they are thus in a better position to achieve better transactions and savings. Access to safe water and sanitation are important development goals and are among the most basic human necessities. A community that has safe drinking water, good sanitation and good hygiene is less likely to be affected by water-borne diseases such as diarrhoea, dysentery, cholera, typhoid, worms, and trachoma. The analysis showed a significant positive relationship between household food security and access to improved water sources. There is, therefore, a need for government to expand programmes and projects that provide safe water, such as tap water and boreholes in communities, to ensure that each South African has access to safe drinking water.

Improved sanitation facilities are facilities that ensure hygienic separation of human excreta from human contact. They include a flush or pour-flush toilet or latrine, piped sewer system, septic tank pit latrine, ventilated improved pit (VIP) latrine, pit latrine with slab, and composting toilet. The results showed that water and sanitation have a significant positive role in household food security. Progress in the WASH sector is assessed through the level of access to WASH services, and the quality and functionality of those services. Equity analyses focus on the degree to which progress in WASH has been pro-poor, and the allocation of budget in relation to need and location. Among the areas that need improvement in the sector include those that relate to coordination and improved service delivery. Communities indicated that there is also limited consultations by government and development partners during the development of WASH programmes and interventions. This results in limited alignment of partner projects with district priorities. For example, some partners support sanitation and hygiene activities falling under their project impact areas, and not district sanitation and hygiene priority areas. About two-thirds of the challenges reported were in the areas of coordination and delivery of WASH interventions. The results suggest that there is a need for government to promote projects and programmes that provide and encourage access to improved water sources and good hygiene practices, such as the use of latrines and washing hands with soap after using the toilet.

## 7.7 Discussion

Concerns remain about the North West Province's status with regard to food security. The Household Food Insecurity Access Score (HFIAS) revealed that nearly three quarters of the households (74.5%) in the North West Province experienced food insecurity, with only 25.5% being found to be food secure, demonstrating that a sizeable portion of households experience difficulties accessing food. This number is significantly higher when compared to earlier studies, such as Stats SA (2020), which found that 35.7% of the sampled families in the North West Province had trouble accessing food in the study's annual General Household Survey.

The HFIAS also showed that 25.9% of the households were severely food insecure, 30.1% of the surveyed households were moderately food insecure, while 18.5% of the households were mildly food insecure. This household food security situation is not strange, bearing in mind that the data was collected three weeks after the first lockdown due to the COVID-19 pandemic. This implies that the lock down affected both food availability and access in the study area. The higher food insecurity figures reported in this study could also be possible because the study largely focussed on open access livelihood zones and these are generally rural communities which are traditionally more food insecure, hence you would expect higher food insecurity levels there. Overall, these results are in line with most of the food security findings, which generally indicate that a significant proportion of households experience food access challenges in South Africa. For example, the 2021 Global Food Security Report indicated that during the 2018-20 period, 45% of the population in South Africa were characterised by moderate food insecurity, and 19% experienced severe food insecurity.

The Rapid Assessment Study on the impact of COVID-19 on food and nutrition security found that about 48.9% of individuals in South Africa have moderate to severe food insecurity.

In addition, the results of the food security status as measured by the Household Hunger Scale (HHS) showed that most of the sampled households experienced little to no hunger (69%). About 21% and 10% of the households experienced moderate hunger and severe hunger, respectively. While a significant proportion of households experienced food insecurity (as shown by the HFIAS results), the HHS suggests that the level of food deprivation is not very severe for most of the households in North West Province. Also, emerging results from the household survey indicate that 72% of the male-headed households experienced little to no hunger, compared to 66% of the female-headed households. This situation indicates that there is a need for interventions tailor made for female-headed households to assist them to reduce hunger experiences. Likewise, the moderate and severe hunger in the household were slightly more experienced by female-headed households compared to male-headed households.

The Food Consumption Score (FCS) revealed that most households (44.8%) were consuming adequately (acceptable) diversified diets and about 33.9% of households are at the borderline and could fall into unacceptable diversity of foods if no actions are taken to help them improve their diets. The findings denote the importance for the government to develop interventions that enhance access to diverse foods across districts, as a number of these districts are on borderline diets. The most popular food groups were cereals, condiments, oils and fats, sugars, meats, other vegetables, milk and milk products, roots and tubers, dark green leafy vegetables, eggs, sugars, vegetables, meat, fruits and eggs. The least consumed food groups were orange-coloured fruits, pulses and nuts, fish and seafoods, orange fresh vegetables, and other fruits. This shows that the most consumed food groups were mostly the less healthy ones, providing a different light to what a dietary diversity score showed which gave an impression of a highly diverse and healthy diet.

## 8.1 Child nutrition

South Africa adopted the WHO feeding guidelines, which recommended that infants should be exclusively breastfed until 6 months of age (WHO, 2003; DoH, 2011). It is important to have data on breastfeeding and complementary feeding since this can provide information on the child's growth and immunity and may also explain certain disease conditions. Exclusive breastfeeding for 6 months is particularly important because it provides the best immunity against infectious diseases and, furthermore, decreases the likelihood of the development of gastrointestinal diseases, resulting from feeding from bottles which are not properly clean or from infant formula which has not been correctly mixed. Exclusive breastfeeding is encouraged by putting the baby to the breast as soon as possible after giving birth, and by not providing any fluid other than breast milk. The longer this is delayed, the less chance there is of exclusive breastfeeding taking place. It is recommended that semi-solid foods should not be introduced to exclusive breastfeeding infants before 6 months of age since breast milk meets all nutritional requirements; and to infants on other feeding regimes at 4 months of age. Introducing solids too late can also be harmful since infants may not meet all their energy and nutrient requirements.

### 8.1.1 Infant feeding practices

#### Breastfeeding status

Data was recorded for a total of 226 children under the age of 2 years. Of those aged 0-11 months (n=117), 83.5% were ever breastfed, while 71.8% were breastfeeding at the time the survey was conducted. In children aged 12-24 months (n=109), 80.9% were ever breastfed, while 54.5% were being breastfed at the time the survey was conducted (Table 45). Exclusive breastfeeding was reported in 18.8% of all children aged 0-6 months. Male children appeared to have a higher prevalence of being ever breastfed and currently being breastfed, than female children; however, the differences were not significant. Reports of between 69.0% and 88.6% were recorded for children that were ever breastfed across all districts, with no significant differences between districts. Dr Kenneth Kaunda and Dr Ruth Segomotsi Mompati districts reported a similar proportion of children (88.6% and 87.8%, respectively), while Bojanala reported a slightly lower proportion at 82.6%, and Ngaka Modiri Molema reported the lowest proportion (69.0%) ever being breastfed. Conversely, Ngaka Modiri Molema reported the highest proportion (83.2%) of children who were currently being breastfed, compared to 54.9%-67.7% of children in the other districts. When disaggregating by district, results should be interpreted with caution, as the sample sizes in some districts were small.

**Table 45:** Breastfeeding status among infants aged 0-24 months in North West

	Ever been breastfed			Currently breastfed <sup>1</sup>			Exclusively breastfed (0-6 months)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n
<b>Age</b>									
0-11 months	83.5	[69.2-91.9]	117	71.8	[53.9-84.7]	100	18.8	[3.5-59.6]	38
12-24 months	80.9	[67.1-89.7]	109	54.5	[39.0-69.2]	89	*	-	0

	Ever been breastfed			Currently breastfed <sup>1</sup>			Exclusively breastfed (0-6 months)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n
<b>Gender</b>									
Male	88.1	[77.9-93.9]	119	66.1	[50.9-78.5]	99	*	-	18*
Female	75.5	[57.1-87.7]	107	61.3	[42.2-77.4]	90	*	-	20*
<b>District</b>									
Bojanala	82.6	[65.1-92.3]	48	54.9	[36.2-72.3]	39	*	-	7*
Dr Kenneth Kaunda	88.6	[76.1-95.0]	53	67.7	[44.4-84.6]	46	*	-	7*
Dr Ruth Segomotsi Mompoti	87.8	[77.6-93.7]	75	65.8	[52.5-77.0]	63	*	-	15*
Ngaka Modiri Molema	69.0	[47.5-84.6]	50	83.2	[66.1-92.6]	41	*	-	9*
<b>Total</b>	<b>82.3</b>	<b>[73.0-88.9]</b>	<b>226</b>	<b>64.0</b>	<b>[52.5-74.1]</b>	<b>189</b>	<b>18.8</b>	<b>[3.5-59.7]</b>	<b>38</b>

<sup>1</sup>among those ever breastfed

\* cell sample sizes too small to generate a reasonable estimate

# n<30

### 8.1.1.1 Time lapsed until the introduction of breastfeeding

In the majority of infants aged 0-24 months (n=189), breastfeeding was introduced immediately (69.7%) within the first hour (16.3%) or within 24 hours (10.2%) (Table 46). Only in 3.3% of cases was breastfeeding introduced more than 24 hours after birth. There were no significant differences reported between children aged 0-11 months and 12-24 months. Neither were there any significant differences reported between male and female children.

At a district level, Ngaka Modiri Molema and Dr Ruth Segomotsi Mompoti reported the lowest proportion of children to be immediately breastfed (between 50%-60%), while Bojanala reported close to 70%, and Dr Kenneth Kaunda reported nearly 90% (Table 46). While these differences may seem large, they were not significantly different. Due to the small sample size at district level, results should be interpreted with caution.

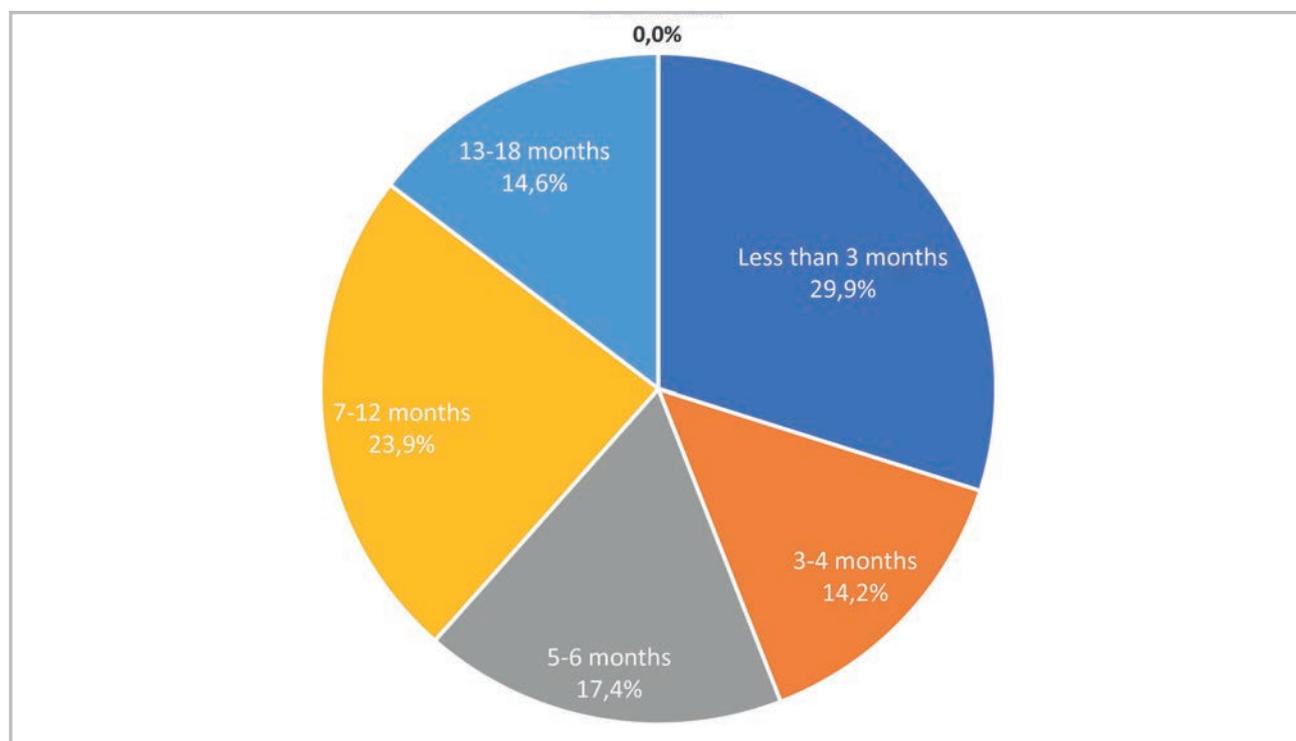
**Table 46:** Time lapsed until the introduction of breastfeeding among infants aged 0-24 months in North West

	How long after birth was (NAME) first breastfed?										
	Immediately		Less than one hour		Less than 24 hours		More than 24 hours		Don't know		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age</b>											
0-11 months	67.5	[50.6-80.8]	21.3	[10.5-38.4]	6.1	[2.6-14.0]	4.5	[1.3-14.2]	0.5	[0.1-2.5]	100
12-24 months	72.3	[56.0-84.3]	10.2	[4.4-21.8]	15.1	[6.1-32.9]	1.7	[0.4-7.6]	0.6	[0.1-4.6]	89
<b>Gender</b>											
Male	72.8	[57.4-84.2]	11.4	[5.6-21.9]	10.9	[4.5-24.4]	4.0	[1.1-13.6]	0.8	[0.2-3.5]	99
Female	65.4	[45.8-80.8]	23.1	[10.3-44.1]	9.1	[3.8-20.4]	2.2	[0.7-6.9]	0.2	[0.0-1.6]	90

	How long after birth was (NAME) first breastfed?										
	Immediately		Less than one hour		Less than 24 hours		More than 24 hours		Don't know		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
District											
Bojanala	68.9	[49.8-83.2]	16.0	[5.4-38.9]	11.7	[4.2-28.7]	3.3	[0.5-19.0]	0.0		39
Dr Kenneth Kaunda	88.5	[71.4-96.0]	4.0	[1.5-10.0]	3.7	[0.7-17.8]	2.7	[0.5-12.8]	1.1	[0.2-5.7]	46
Dr Ruth Segomotsi Mompoti	59.6	[43.3-74.0]	28.4	[17.5-42.7]	9.5	[3.4-23.9]	2.5	[0.5-11.8]	0.0		63
Ngaka Modiri Molema	50.6	[26.5-74.4]	25.6	[12.9-44.4]	17.1	[6.1-39.5]	4.9	[1.5-15.0]	1.8	[0.2-13.0]	41
<b>Total</b>	<b>69.7</b>	<b>[57.8-79.4]</b>	<b>16.3</b>	<b>[9.5-26.6]</b>	<b>10.2</b>	<b>[5.3-18.6]</b>	<b>3.3</b>	<b>[1.2-8.4]</b>	<b>0.6</b>	<b>[0.2-2.0]</b>	<b>189</b>

### 8.1.1.2 Age at which breastfeeding was stopped

In children aged 0-24 months (n=71), breastfeeding was most often stopped between the ages of 0-3 months (29.9%) and 7-12 months (23.9%). More than 60% of mothers stopped breastfeeding before the age of 6 months, while 29.9% stopped breastfeeding before 3 months, 14.2% stopped between 3-4 months, and 17.4% stopped between 5-6 months (Figure 68). Only 14.6% of mothers continued to breastfeed for longer than 12 months, with no reports of breastfeeding continuing up to 24 months. No significant differences were found when disaggregating the data by district. Due to the small sample size when disaggregating by district, no comparisons could be made at a district level.



**Figure 68:** Age at which breastfeeding was stopped among infants aged 0-24 months in North West

### 8.1.1.3 First drink other than breastmilk

Infant formula (40.7%) and plain water (27.2%) were reported to be the most common first drink other than breastmilk that was introduced to infants under 2 years of age (Figure 69). There were significant differences between age groups for the introduction of sugar water as a first drink, where children aged 0-11 months had a higher prevalence of receiving sugar water (14.8%) compared to 1.4% of children aged 12-24 months (Table 47). There were, however, no significant differences found between male and female children.

Mothers in all districts, except Ngaka Modiri, reported that infant formula - followed by water - was the most common first drink introduced to children aged 0-24 months. Mothers in Ngaka Modiri reported that water (57.5%) was introduced more often than infant formula (28.3%) to children in this district. However, there was no significant differences between districts for the introduction of infant formula as a first drink. There was, however, a significantly higher prevalence of children in Ngaka Modiri (57.5%) that received water as a first drink compared to children in Bojanala (18.8%). Conversely, a significantly lower prevalence of children in Ngaka Modiri (0.2%) received gripe water as a first drink compared to children in Bojanala (14.7%) and Dr Kenneth Kaunda (6.5%) (Table 47). Other drinks such as, juice, tea, and medicine were reported as first drinks by less than 10.0% of mothers across all districts, with no significant differences between districts. While not significant, it is interesting to note that 25.8% of mothers in Dr Kenneth Kaunda reported sugar water as a first drink compared to less than 5.0% in the other districts. It is important to note, though, that district level comparisons must be interpreted with caution due to the small sample sizes in these districts.

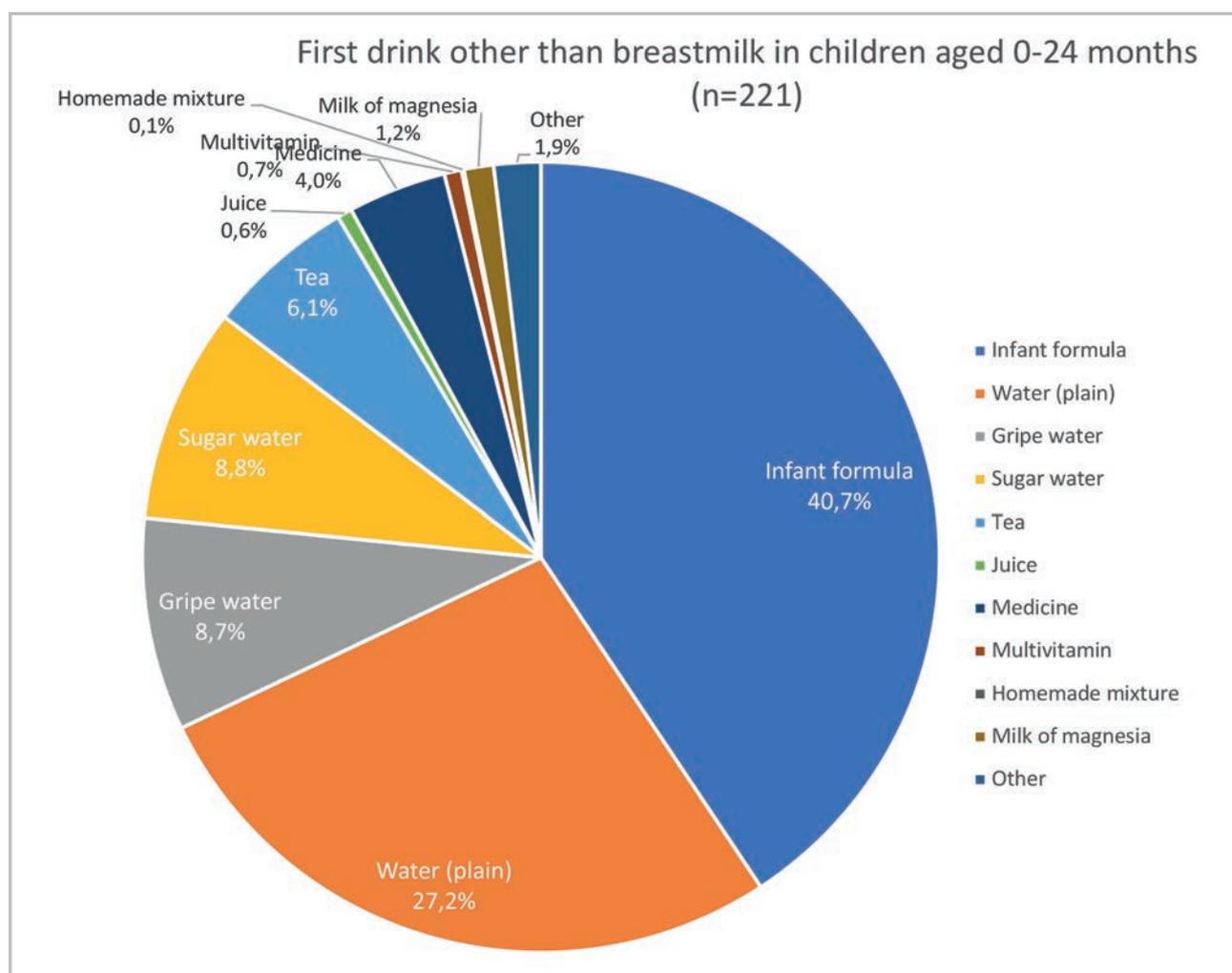


Figure 69: First drink other than breast milk in children aged 0-24 months

**Table 47:** The first drink other than breast milk among children aged 0-24 months by district in North West

	Infant formula		Water (plain)		Gripe water		Sugar water		Tea		Juice		Medicine		Homemade mixture		Other		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age</b>																			
0-11 months	42.1	[26.6-59.3]	20.8	[11.6-34.3]	11.6	[4.0-29.0]	14.8	[3.6-44.8]	1.2	[0.2-8.3]	0.3	[0.0-2.0]	4.6	[1.7-11.9]	0.1	[0.0-0.8]	2.7	[0.7-10.1]	114
12-24 months	39.0	[26.5-53.2]	35.1	[21.2-52.1]	5.1	[1.9-12.9]	1.4	[0.3-7.8]	12.2	[4.6-28.8]	1.1	[0.3-4.4]	3.2	[1.2-7.8]	0.0		0.9	[0.2-4.1]	107
<b>District - NW</b>																			
Bojanala	47.5	[29.7-65.8]	18.8	[8.9-35.5]	14.7	[5.2-35.2]	4.6	[0.7-24.4]	9.1	[2.4-28.5]	0.4	[0.1-2.5]	2.0	[0.3-13.6]	0.0		3.0	[0.7-11.6]	45
Dr Kenneth Kaunda	32.0	[16.8-52.2]	26.5	[8.7-57.7]	6.5	[2.3-17.0]	25.8	[5.2-68.8]	1.9	[0.3-12.7]	0.6	[0.1-4.9]	2.8	[0.4-17.0]	0.0		0.6	[0.1-3.9]	51
Dr Ruth Segomotsi Mompoti	48.5	[33.6-63.6]	19.5	[11.2-31.8]	4.5	[1.2-15.5]	4.1	[0.7-19.6]	2.6	[0.3-17.5]	2.0	[0.4-9.8]	8.8	[3.9-18.7]	0.4	[0.1-1.9]	2.9	[0.4-19.6]	78
Ngaka Modiri Molema	28.3	[14.9-47.1]	57.5	[39.1-74.0]	0.2	[0.0-1.7]	0.0		7.6	[2.2-23.1]	0.0		6.2	[1.6-20.9]	0.0		0.2	[0.0-1.5]	47
<b>Total</b>	<b>40.7</b>	<b>[30.7-51.6]</b>	<b>27.2</b>	<b>[18.0-38.8]</b>	<b>8.7</b>	<b>[3.8-18.6]</b>	<b>8.8</b>	<b>[2.3-28.5]</b>	<b>6.1</b>	<b>[2.4-14.7]</b>	<b>0.6</b>	<b>[0.2-2.0]</b>	<b>4.0</b>	<b>[1.9-8.1]</b>	<b>0.1</b>	<b>[0.0-0.4]</b>	<b>1.9</b>	<b>[0.6-5.8]</b>	<b>221</b>

#### 8.1.1.4 Age at which the first drink other than breastmilk was introduced

Overall, the first drink other than breastmilk was mainly introduced at 0-1month (51.4%), followed by 3 months (15.4%). A similar pattern was followed for children aged 12-24 months, with other drinks mainly introduced at 0-1months (50.4%), followed by 3 months (21.4%). In those aged 0-11 months, though, it changed slightly - while other drinks were mainly introduced at 0-1month (52.3%), it was now followed by 6 months (15.8%) (Table 48). We can assume that the introduction of other drinks before the age of 1 month is most likely the introduction of infant formula. Of the remaining children, less than 13% were introduced to other drinks between 2-6 months of age.

When doing comparisons by gender, 50.6% of males were introduced to other drinks before the age of one month; however, in the remaining males, just over 12% were only introduced to other drinks after 6 months. Slightly more females (52.4%) were introduced to other drinks before the age of 1 month, but only 2.6% were introduced to other drinks after 6 months of age, with about 13.9% being introduced to other drinks around 3 months of age. This seems to indicate that more male children are possibly exclusively breastfed compared to female children.

Similar patterns were displayed across districts, where the majority of children were introduced to other drinks before the age of 1 month (48.5%–57.5%). This was followed by 2 months in Dr Kenneth Kaunda (20.0%), 3 months in Bojanala, Dr Ruth Segomotsi Mompoti, and Ngaka Modiri Molema (20.2%, 19.0%, and 13.7%, respectively).

**Table 48:** Age at which the first drink other than breastmilk was introduced among infants aged 0-24 months in North West Province

	0-1 month		2 months		3 months		4 months		5 months		6 months		>6 months		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age</b>															
0-11 months	52.3	[38.5-65.6]	12.4	[5.2-26.9]	10.5	[3.6-27.0]	0.3	[0.0-2.3]	2.0	[0.6-6.7]	15.8	[7.8-29.6]	6.7	[1.4-26.9]	116
12-24 months	50.4	[38.6-62.1]	5.9	[2.6-13.1]	21.4	[13.1-33.0]	5.3	[1.9-13.9]	2.4	[0.5-11.0]	5.8	[2.9-11.4]	8.7	[4.7-15.6]	109
<b>Gender</b>															
Male	50.6	[35.8-65.2]	9.8	[3.3-26.1]	16.8	[8.2-31.2]	1.4	[0.4-4.5]	3.1	[0.9-9.8]	6.3	[1.6-21.8]	12.1	[4.9-26.7]	118
Female	52.4	[37.5-66.8]	9.1	[4.3-18.3]	13.9	[5.4-31.4]	3.9	[1.2-11.4]	1.1	[0.2-4.5]	17.1	[8.4-31.8]	2.6	[0.8-7.7]	107
<b>District</b>															
Bojanala	48.5	[32.6-64.7]	4.6	[1.3-15.2]	20.2	[9.3-38.4]	1.9	[0.3-12.3]	1.4	[0.2-8.8]	15.1	[6.2-32.4]	8.3	[1.7-32.3]	46
Dr Kenneth Kaunda	50.5	[36.4-64.5]	20.0	[6.4-47.9]	5.5	[1.8-16.0]	6.3	[1.9-19.0]	4.4	[0.8-21.2]	3.2	[0.9-11.0]	10.1	[5.3-18.5]	53
Dr Ruth Segomotsi Mompati	54.5	[41.7-66.8]	10.2	[5.0-19.9]	13.7	[4.9-32.7]	0.1	[0.0-1.1]	0.9	[0.1-6.3]	11.7	[3.8-30.8]	8.8	[3.4-20.7]	78
Ngaka Modiri Molema	57.5	[35.1-77.1]	6.1	[1.6-20.4]	19.0	[7.8-39.4]	1.1	[0.1-7.3]	2.0	[0.4-8.2]	13.2	[7.2-22.9]	1.3	[0.2-9.5]	48
<b>Total</b>	<b>51.4</b>	<b>[42.3-60.4]</b>	<b>9.5</b>	<b>[4.4-19.5]</b>	<b>15.4</b>	<b>[9.1-24.9]</b>	<b>2.5</b>	<b>[1.0-6.5]</b>	<b>2.2</b>	<b>[0.8-5.7]</b>	<b>11.3</b>	<b>[6.3-19.7]</b>	<b>7.6</b>	<b>[3.4-16.1]</b>	<b>225</b>

### 8.1.1.5 Milk feeds

The mean age at which milk feeds were introduced to children was higher in children aged 12-24 months (5.3 months) and females (5.3 months), as compared to children aged 0-11 months (3.6 months) and females (3.1 months); however, these differences were not significant (Table 49). At a district level, comparisons were not possible due to the small sample sizes.

**Table 49:** Mean age at introduction of milk feeds among infants 0-24 months old in North West Province

	Mean	95% CI	n
<b>Age</b>			
0-11 months	3.6	[1.5-5.7]	67
12-24 months	5.3	[3.8-6.7]	57
<b>Gender</b>			
Male	3.1	[2.0-4.1]	66
Female	5.3	[3.2-7.4]	58
<b>District</b>			
Bojanala	4.6	[2.1-7.2]	27
Dr Kenneth Kaunda	*	-	30*

	Mean	95% CI	n
Dr Ruth Segomotsi Mompati	4.1	[2.8-5.5]	41
Ngaka Modiri Molema	*	-	26*
<b>Total</b>	<b>4.3</b>	<b>[3.0-5.6]</b>	<b>124</b>

\* cell sample sizes too small to generate reasonable estimate

# n<30

Except for breastmilk, the majority of infants (83.6%) were receiving infant formula, followed by full strength cow milk (14.8%), Klim/ Nespray (8.9%) - with only 4.7% receiving other milk (Table 50). These results do have to be interpreted with caution, though, due to the small sample sizes.

**Table 50:** The type of milk other than breast milk that the infant receives (among infants aged 0-24 months who are receiving milk feeds) in North West Province

	Cow's milk (full strength)		Cow's milk (diluted)		Goats milk		KLIM / Nespray		Infant formula		Other		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age</b>													
0-11 months	3.3	[1.3-8.4]	0.0		1.2	[0.3-4.9]	9.4	[1.5-41.0]	96.0	[90.9-98.3]	1.9	[0.5-6.7]	67
12-24 months	28.2	[14.3-48.1]	0.7	[0.1-5.2]	0.6	[0.1-4.2]	8.3	[2.6-23.4]	69.1	[48.6-84.0]	5.3	[1.3-19.7]	57
<b>Gender</b>													
Male	12.8	[3.6-37.1]	0.7	[0.1-5.4]	1.3	[0.3-5.7]	3.5	[1.1-11.0]	86.1	[71.8-93.8]	2.8	[0.7-10.3]	66
Female	16.3	[6.9-33.8]	0.0		0.5	[0.1-3.9]	13.2	[3.5-39.3]	81.6	[60.5-92.8]	4.1	[0.9-16.1]	58
<b>Total</b>	<b>14.8</b>	<b>[7.3-27.4]</b>	<b>0.3</b>	<b>[0.0-2.2]</b>	<b>0.9</b>	<b>[0.3-2.9]</b>	<b>8.9</b>	<b>[2.8-24.5]</b>	<b>83.6</b>	<b>[71.4-91.2]</b>	<b>3.5</b>	<b>[1.2-9.6]</b>	<b>124</b>

#### 8.1.1.6 Solid foods

The mean age at which the first semi-solid or solid foods were introduced was 4.6 months. There were no significant differences between age groups, gender, and districts (Table 51).

**Table 51:** Age of introduction of first semi-solid or solid food and the types of foods among infants 0-24 months

	Mean	95% CI	sample
<b>Age</b>			
0-11 months	4.0	[3.3-4.8]	94
12-24 months	5.1	[4.4-5.8]	109
<b>Gender</b>			
Male	4.6	[4.0-5.3]	108
Female	4.5	[3.9-5.1]	95

	Mean	95% CI	sample
<b>District</b>			
Bojanala	4.3	[3.4-5.1]	44
Dr Kenneth Kaunda	4.9	[4.4-5.3]	46
Dr Ruth Segomotsi Mompoti	4.9	[3.9-5.8]	67
Ngaka Modiri Molema	4.7	[3.9-5.5]	46
<b>Total</b>	<b>4.6</b>	<b>[4.1-5.0]</b>	<b>203</b>

Table 52 below shows that homemade infant cereal was the first semi-solid food given to the majority of children aged 0-24 months (44.6%), followed by commercial infant cereal/porridge (35.6%). There were no significant differences between infants aged 0-11 and 12-24 months. A further 5.2% of mothers reported that their infants received pureed/ mashed vegetables/ fruit as their first foods. Less than 4% of infants had cereal/ porridge supplied by the clinic, bottled/ canned baby foods and custard as their first semi-solid foods, while 4.6% and 6.4% of mothers reported other foods and traditional baby foods as their infants' first food, respectively. There were no significant differences when disaggregating by gender; however, when disaggregating by district, there was a significant difference between Bojanala and Dr Kenneth Kaunda with regards to the introduction of pureed/ mashed vegetables/ fruit where Dr Kenneth Kaunda reported a higher prevalence (19.1%) compared to 0.5% in Bojanala.

**Table 52:** Types of first semi-solid or solid food among infants 0-24 months

	Name of first semi-solid or solid food (with a spoon or fingers)																
	Infant Cereal / Porridge (commercial)		Cereal / Porridge (homemade)		Cereal / Porridge (clinic)		Pureed / mashed vegetables / fruit		Bottled / canned baby foods		Traditional baby food		Custard		Other (specify)		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age (months)</b>																	
0-11 months	30.9	[17.3-48.9]	41.7	[24.0-61.9]	1.0	[0.1-7.2]	8.6	[1.7-33.7]	2.2	[0.5-9.1]	7.4	[1.4-31.3]	0.0		8.1	[4.0-15.7]	94
12-24 months	40.2	[26.2-56.0]	47.5	[31.8-63.7]	3.1	[1.0-9.5]	1.8	[0.5-5.7]	0.4	[0.0-2.7]	5.3	[1.0-23.4]	0.7	[0.1-3.1]	1.1	[0.3-4.3]	109
<b>Gender</b>																	
Male	34.3	[21.4-50.1]	49.7	[35.3-64.1]	2.3	[0.6-8.6]	1.0	[0.2-3.9]	2.5	[0.7-8.7]	6.0	[1.4-22.1]	0.2	[0.0-1.5]	4.1	[1.6-10.0]	108
Female	36.8	[22.6-53.7]	39.5	[22.8-59.1]	1.9	[0.4-7.5]	9.4	[2.2-32.5]	0.0		6.8	[1.1-32.0]	0.5	[0.1-3.5]	5.2	[1.8-13.9]	95
<b>District</b>																	
Bojanala	25.9	[11.0-49.8]	57.0	[34.8-76.8]	0.5	[0.1-3.3]	0.5	[0.1-2.9]	0.0		11.9	[2.8-38.6]	0.0		4.2	[1.2-13.7]	44
Dr Kenneth Kaunda	43.4	[23.4-65.7]	27.3	[8.6-60.0]	4.0	[1.0-15.4]	19.1	[4.9-51.8]	2.7	[0.3-19.2]	0.0		0.0		3.5	[0.8-13.7]	46
Dr Ruth Segomotsi Mompoti	33.6	[22.4-46.9]	38.8	[22.3-58.3]	6.0	[1.1-26.5]	3.7	[1.2-11.1]	1.2	[0.2-8.4]	7.6	[2.5-20.8]	0.0		9.3	[3.1-24.8]	67
Ngaka Modiri Molema	50.9	[33.2-68.3]	41.6	[26.4-58.6]	0.0		0.0		2.5	[0.3-17.8]	0.0		1.9	[0.4-8.7]	3.1	[0.7-12.5]	46
<b>Total</b>	<b>35.6</b>	<b>[24.9-47.9]</b>	<b>44.6</b>	<b>[32.0-58.0]</b>	<b>2.1</b>	<b>[0.8-5.5]</b>	<b>5.2</b>	<b>[1.4-17.8]</b>	<b>1.3</b>	<b>[0.3-4.5]</b>	<b>6.4</b>	<b>[1.9-18.9]</b>	<b>0.3</b>	<b>[0.1-1.5]</b>	<b>4.6</b>	<b>[2.3-8.9]</b>	<b>203</b>

### 8.1.2 Anthropometry (6-59 months)

This section presents the key nutrition findings for children aged 6-59 months. The section presents anthropometric measures such as stunting, wasting, and underweight which are important indicators in the assessment of child health and nutrition status. It highlights both forms of moderate and severe acute malnutrition among children under the age of five. The prevalence of malnutrition remains a public health problem which results in substantial mortality and disease burden worldwide. The Lancet series (2013) reported that malnutrition accounts for 45% of all death of children under the age of five. This estimate translated to 3.1 million deaths globally in 2011. It is further reported that it includes intrauterine fetal growth restriction, stunting, wasting, and micronutrient deficiency, especially vitamin A and Zinc. This occurs along poor infant feeding practices, which are indicated by suboptimum breastfeeding.

Anthropometric data (Table 53) was recorded for 433 children under the age of 5 years, of these there was a slightly higher number of boys (52.9%) than girls (47.1%).

**Table 53:** Distribution of age and sex of the sample in North West Province

AGE (months)	Boys		Girls		Total	
	n	%	n	%	n	%
<6	24	55.8	19	44.2	43	9.9
6-17	54	51.9	50	48.1	104	24
18-29	43	51.8	40	48.2	83	19.2
30-41	49	55.1	40	44.9	89	20.6
42-53	35	46.1	41	53.9	76	17.6
54-59	24	63.2	14	36.8	38	8.8
<b>Total</b>	<b>229</b>	<b>52.9</b>	<b>204</b>	<b>47.1</b>	<b>433</b>	<b>100</b>

#### 8.1.2.1 Stunting

The overall prevalence of stunting for children under the age of 5 years (n=403) was 32.9%, of which 15.1% was severe and 17.8% was moderate stunting (Table 54 and Figure 70). While there were no significant differences in overall stunting between age groups, the findings can still provide government and policy makers with clear directions regarding food and nutrition security interventions to reduce stunting across different age groups

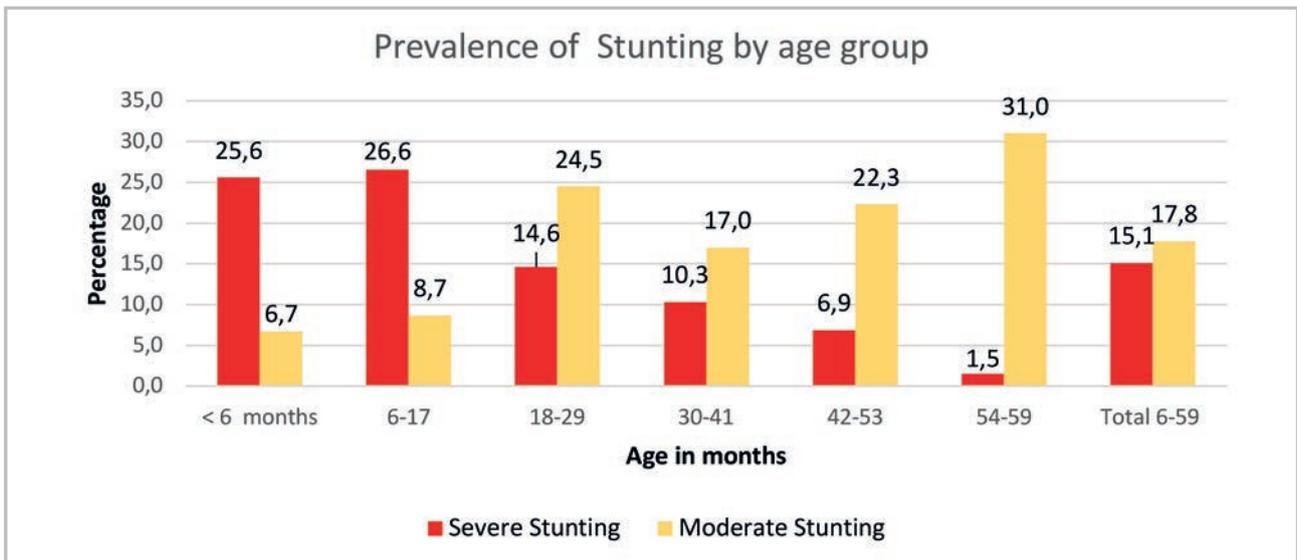
When disaggregating between severe and moderate stunting, though, it appeared as if children in the younger age groups had a higher prevalence of severe stunting (slightly more than 25.0%) compared to those in the older age groups (less than 15%). Those in the older age groups were more likely to have moderate stunting (Table 54 and Figure 70). For severe stunting, there was a significant difference between the 6-17 months and the 54-59 months age groups. There were no significant differences between age groups for moderate stunting.

Comparisons by gender in all children in North West under 5 years of age indicated that boys had a higher prevalence of stunting (36.9%) compared to girls (27.4%); however, this was not significant (Table 54 and Figure 71).

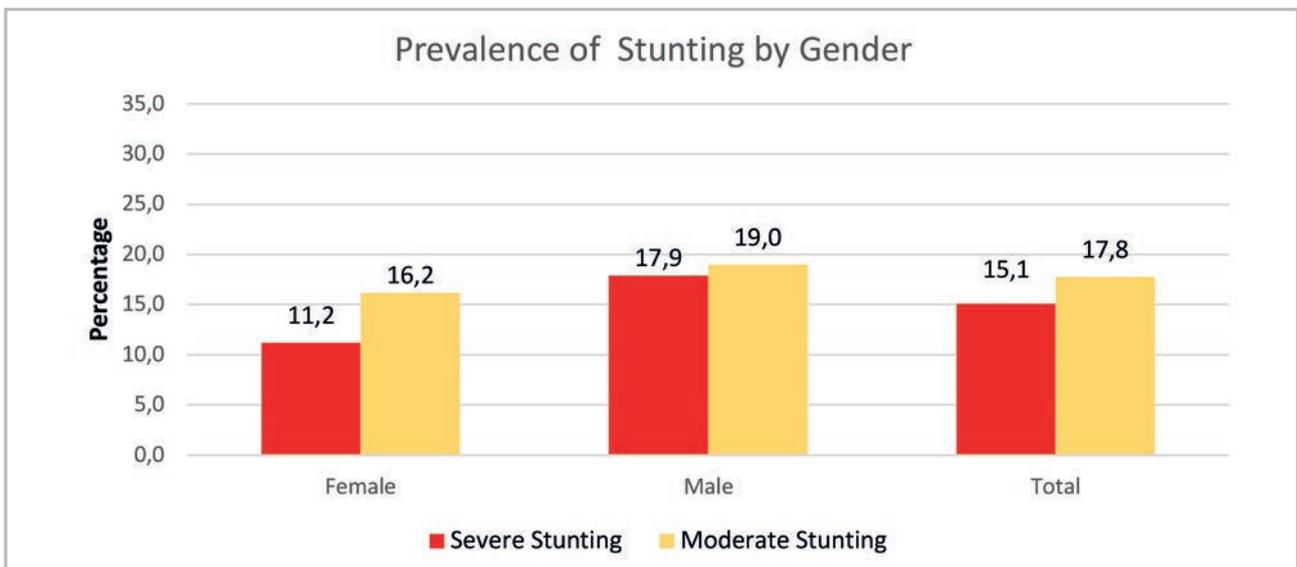
District comparisons show that the overall prevalence of stunting was highest in the Ngaka Modiri Molema District (52.8%), with more moderate (30.1%) than severe stunting (22.7%). The prevalence of overall stunting was significantly lower in Bojanala District (18.1%) compared to both Ngaka Modiri Molema and Dr Ruth Segomotsi Mompati districts (52.8% and 46.2%, respectively) (Table 54 and Figure 72).

**Table 54:** The prevalence of stunting in children under five years by age, sex, and district

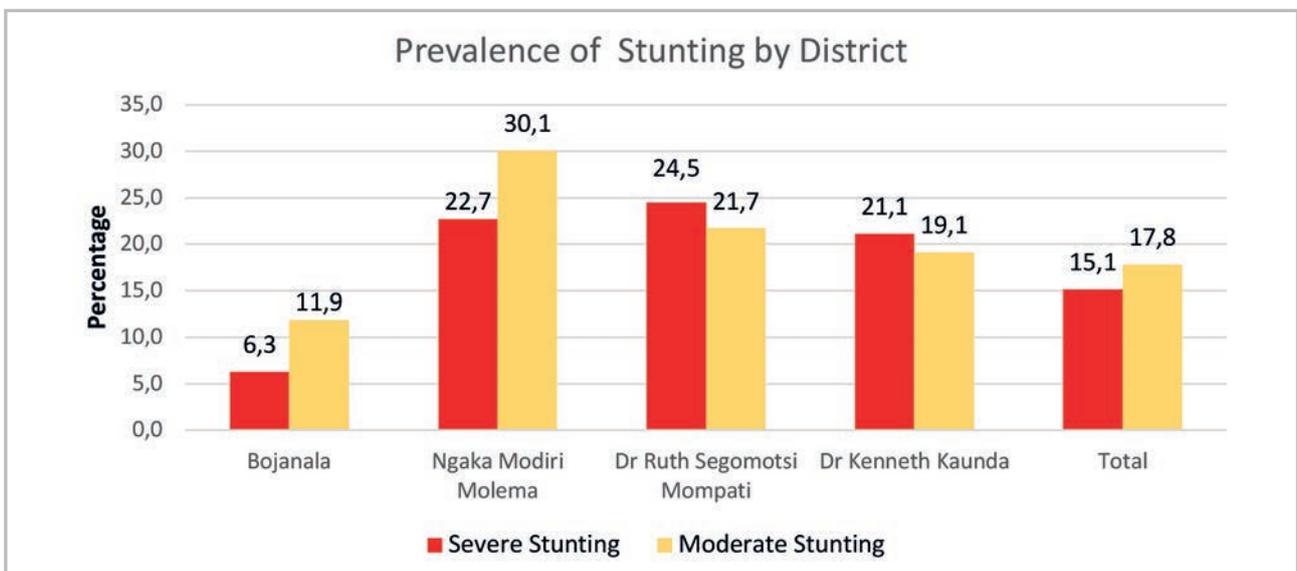
	No stunting HAZ $\geq$ -2		All stunting HAZ<-2		Moderate stunting HAZ<-2 and $\geq$ -3		Severe stunting HAZ<-3		n	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI		
<b>Age (months)</b>										
<6	67.7	[38.7-87.4]	32.3	[12.6-61.3]	6.7	[2.0-20.0]	25.6	[7.5-59.3]	39	
6-17	64.7	[48.9-77.8]	35.3	[22.2-51.1]	8.7	[4.6-16.0]	26.6	[14.0-44.6]	99	
18-29	60.9	[44.5-75.1]	39.1	[24.9-55.5]	24.5	[14.0-39.3]	14.6	[6.5-29.6]	82	
30-41	72.7	[58.4-83.4]	27.3	[16.6-41.6]	17.0	[8.6-31.0]	10.3	[4.6-21.6]	85	
42-53	70.8	[51.7-84.6]	29.2	[15.4-48.3]	22.3	[9.9-42.8]	6.9	[3.1-14.7]	74	
54-59	67.4	[35.0-88.9]	32.6	[11.1-65.0]	31.0	[10.1-64.3]	1.5	[0.2-9.7]	34	
<b>Gender</b>										
Female	72.6	[60.4-82.2]	27.4	[17.8-39.6]	16.2	[10.0-25.2]	11.2	[5.3-22.2]	197	
Male	63.1	[51.4-73.5]	36.9	[26.5-48.6]	19.0	[11.0-30.6]	17.9	[11.1-27.7]	216	
<b>District</b>										
Bojanala	81.9	[68.1-90.5]	18.1	[9.5-31.9]	11.9	[4.9-26.0]	6.3	[2.2-16.5]	96	
Ngaka Modiri Molema	47.2	[30.1-65.0]	52.8	[35.0-69.9]	30.1	[20.9-41.3]	22.7	[11.1-40.8]	83	
Dr Ruth Segomotsi Mompoti	53.8	[42.2-65.1]	46.2	[34.9-57.8]	21.7	[11.2-37.7]	24.5	[16.2-35.3]	146	
Dr Kenneth Kaunda	59.8	[40.5-76.5]	40.2	[23.5-59.5]	19.1	[11.0-31.0]	21.1	[6.4-51.4]	88	
<b>Total</b>	<b>67.1</b>	<b>[58.0-75.1]</b>	<b>32.9</b>	<b>[24.9-42.0]</b>	<b>17.8</b>	<b>[12.5-24.6]</b>	<b>15.1</b>	<b>[9.2-23.8]</b>	<b>413</b>	



**Figure 70:** The prevalence of Stunting in children under five years age group



**Figure 71:** The prevalence of Stunting in children under 5 years by gender



**Figure 72:** The prevalence of Stunting in children under 5 years in North West by district

### 8.1.2.2 Wasting

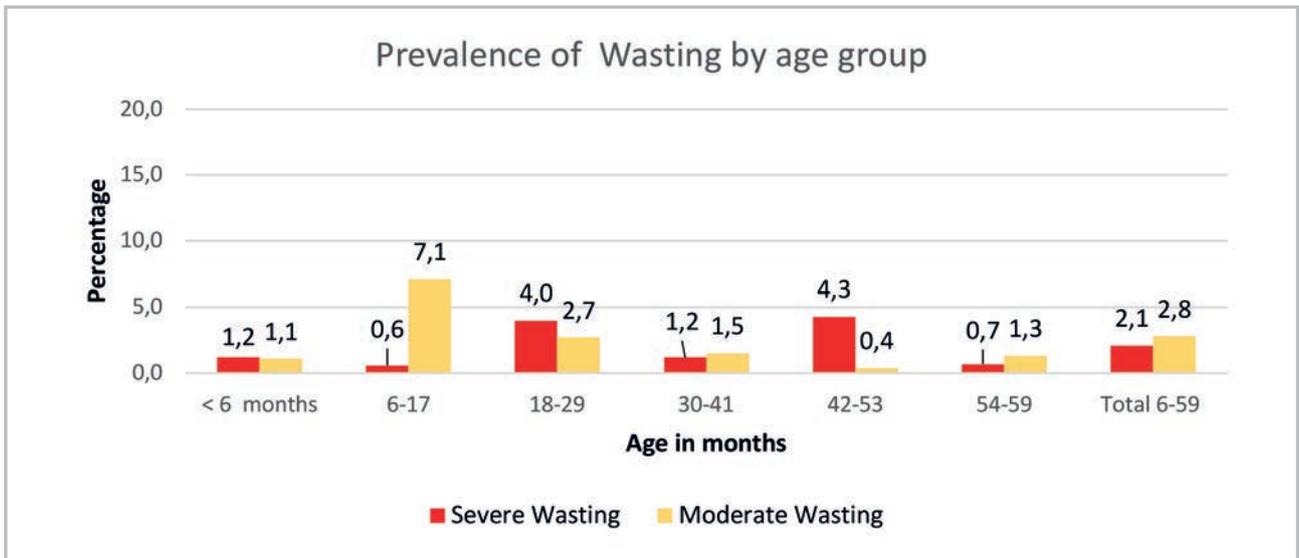
The overall prevalence of wasting for children under the age of 5 years (n=408) was 4.8%, of which 2.1% was severe and 2.8% was moderate wasting (Table 55 and Figure 73). The prevalence of severe wasting was highest in children aged 18-29 months (4.0%) and 42-53 months (4.3%), compared to 1.2% or less in all other age groups. The prevalence of moderate wasting was highest in children aged 6-17 months (7.1%) compared to 2.7% or less in all other age groups. However, there was no significant differences in the prevalence of severe wasting and moderate wasting between age groups.

Comparisons between gender showed that females had a higher prevalence of wasting (6.6%) compared to males (3.7%) (Table 55 and Figure 74). While these differences were not significant, it does appear that girls had a higher prevalence of both moderate (4.4%) and severe wasting (2.2%), compared to boys (1.7% and 2.0%, respectively).

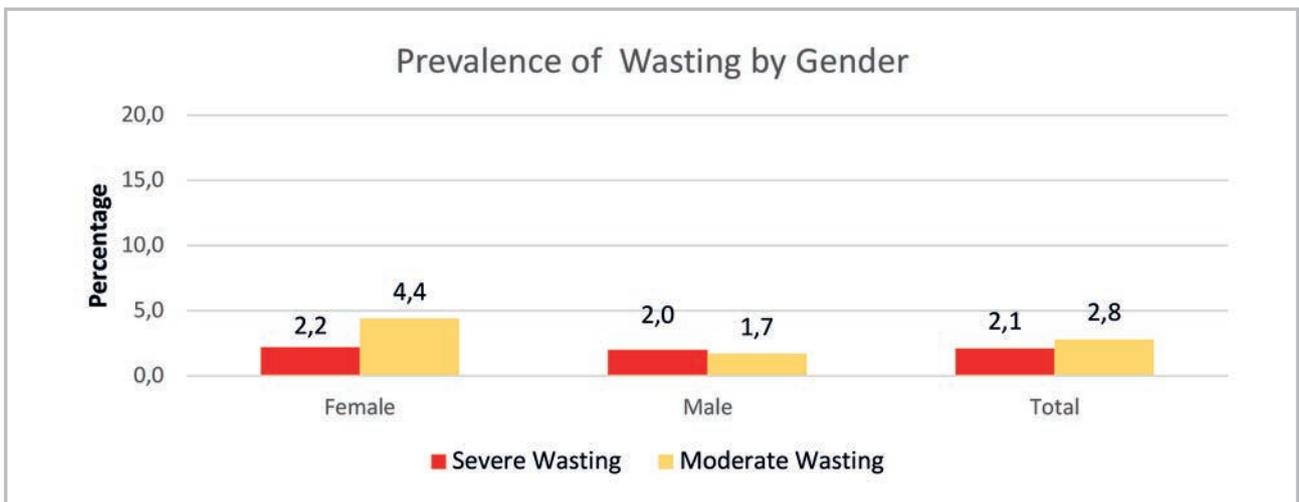
Dr Ruth Segomotsi Mompoti reported the highest overall prevalence of wasting (8.2%), while Dr Kenneth Kaunda reported the lowest overall prevalence (1.3%); however, there were no significant differences reported at a district level for all categories of wasting (Table 55 and Figure 75).

**Table 55:** The prevalence of wasting in children under five years by age, sex, and district

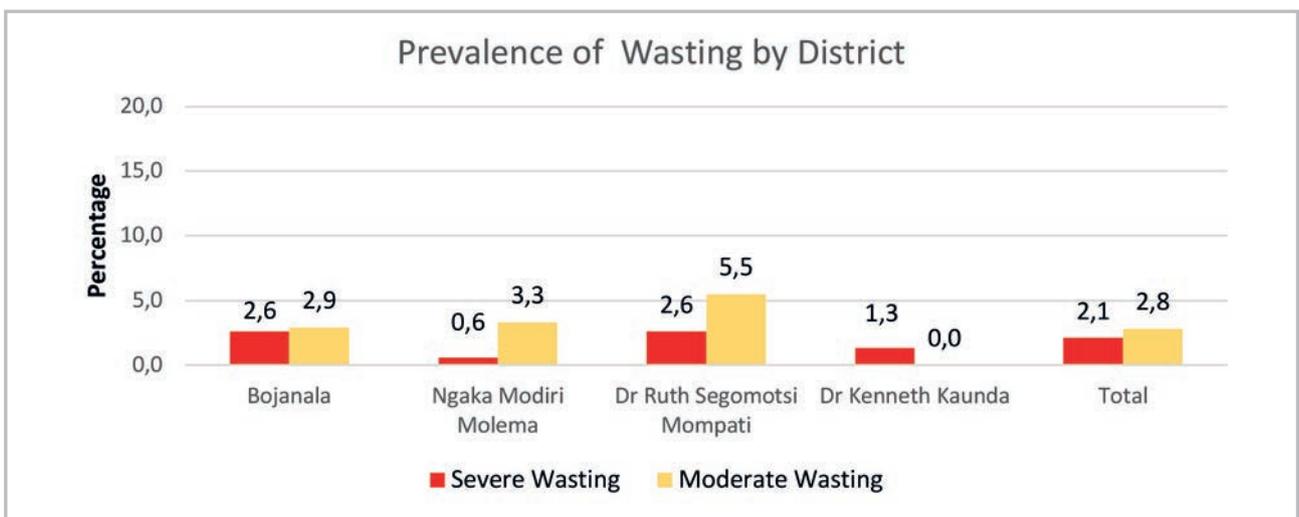
	No wasting WHZ>=-2		All wasting WHZ<-2		Moderate wasting WHZ<-2 and >=-3		Severe wasting WHZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age (months)</b>									
<6	97.7	[91.7-99.4]	2.3	[0.6-8.3]	1.1	[0.2-5.2]	1.2	[0.1-8.6]	42
6-17	92.3	[78.5-97.5]	7.7	[2.5-21.5]	7.1	[2.1-21.3]	0.6	[0.1-4.5]	97
18-29	93.3	[84.6-97.3]	6.7	[2.7-15.4]	2.7	[0.9-8.0]	4.0	[1.1-12.9]	79
30-41	97.3	[93.3-98.9]	2.7	[1.1-6.7]	1.5	[0.5-4.8]	1.2	[0.3-5.3]	83
42-53	95.3	[82.3-98.9]	4.7	[1.1-17.7]	0.4	[0.0-2.8]	4.3	[0.9-18.1]	73
54-59	98.0	[92.6-99.5]	2.0	[0.5-7.4]	1.3	[0.2-7.6]	0.7	[0.1-5.3]	34
<b>Gender</b>									
Female	93.4	[86.3-97.0]	6.6	[3.0-13.7]	4.4	[1.5-12.2]	2.2	[0.9-5.2]	193
Male	96.3	[93.0-98.1]	3.7	[1.9-7.0]	1.7	[0.7-4.1]	2.0	[0.7-5.3]	215
<b>District</b>									
Bojanala	94.4	[86.3-97.8]	5.6	[2.2-13.7]	2.9	[0.7-11.4]	2.6	[0.8-8.9]	95
Ngaka Modiri Molema	96.1	[89.7-98.6]	3.9	[1.4-10.3]	3.3	[1.0-10.1]	0.6	[0.1-3.8]	81
Dr Ruth Segomotsi Mompoti	91.8	[85.1-95.7]	8.2	[4.3-14.9]	5.5	[2.8-10.5]	2.6	[0.8-8.5]	145
Dr Kenneth Kaunda	98.7	[94.4-99.7]	1.3	[0.3-5.6]	0.0		1.3	[0.3-5.6]	87
<b>Total</b>	<b>95.2</b>	<b>[91.6-97.2]</b>	<b>4.8</b>	<b>[2.8-8.4]</b>	<b>2.8</b>	<b>[1.3-5.9]</b>	<b>2.1</b>	<b>[0.9-4.6]</b>	<b>408</b>



**Figure 73:** The prevalence of Wasting in children under 5 years by age group in



**Figure 74:** The prevalence of Wasting in children under 5 years by gender



**Figure 75:** The prevalence of Wasting in children under 5 years by district

### 8.1.2.3 Underweight

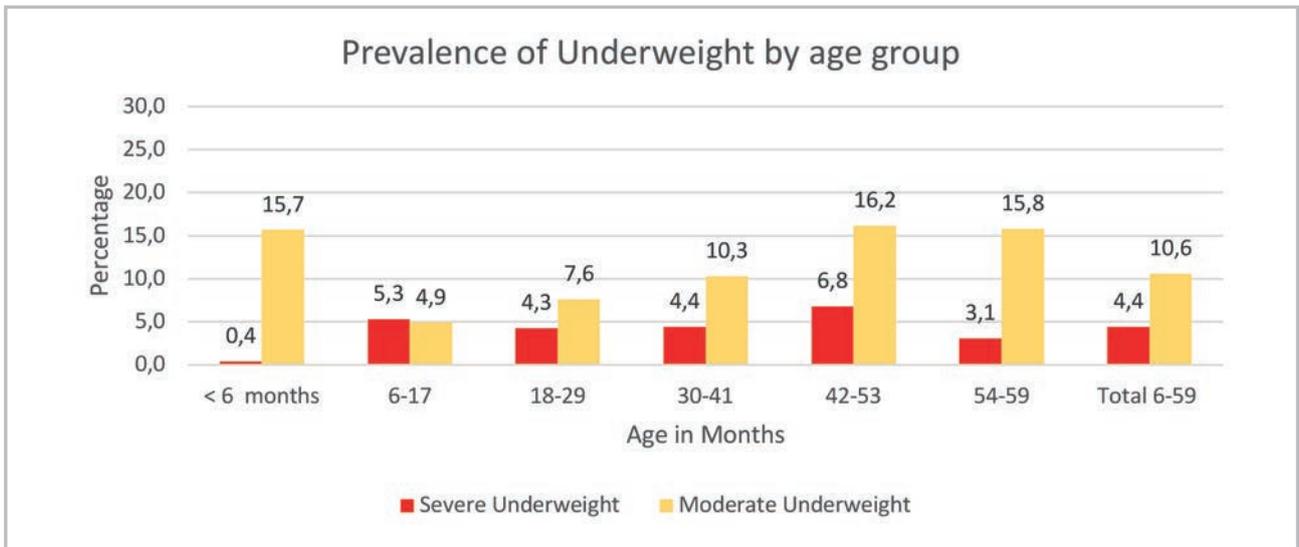
The overall prevalence of underweight for children under the age of 5 years (n=428) was 15.0%, of which 4.4% was severe and 10.6% was moderate underweight (Table 56 and Figure 76). The prevalence of overall, moderate, and severe underweight was highest in children aged 42-53 months at 23%, 16.2% and 6.8%, respectively. However, there were no significant differences in all categories of underweight across age groups.

The prevalence of overall underweight in boys and girls was evenly distributed at 14.7% and 15.5%, respectively (Table 56 and Figure 77). Amongst these, moderate underweight was more common in both genders than severe underweight.

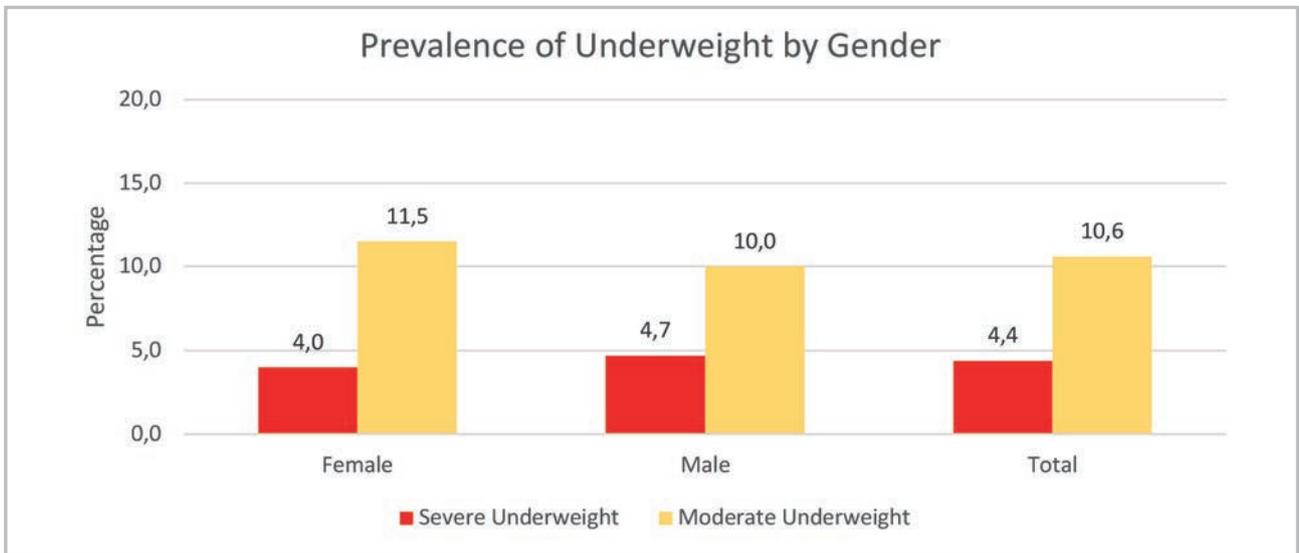
As with wasting, Dr Ruth Segomotsi Mompoti also reported the highest overall prevalence of underweight (33.2%), which was significantly different to that of Bojanala, who reported the lowest overall prevalence (7.6%) (Table 56 and Figure 78).

**Table 56:** The prevalence of Underweight in children under five years by age, sex, and district

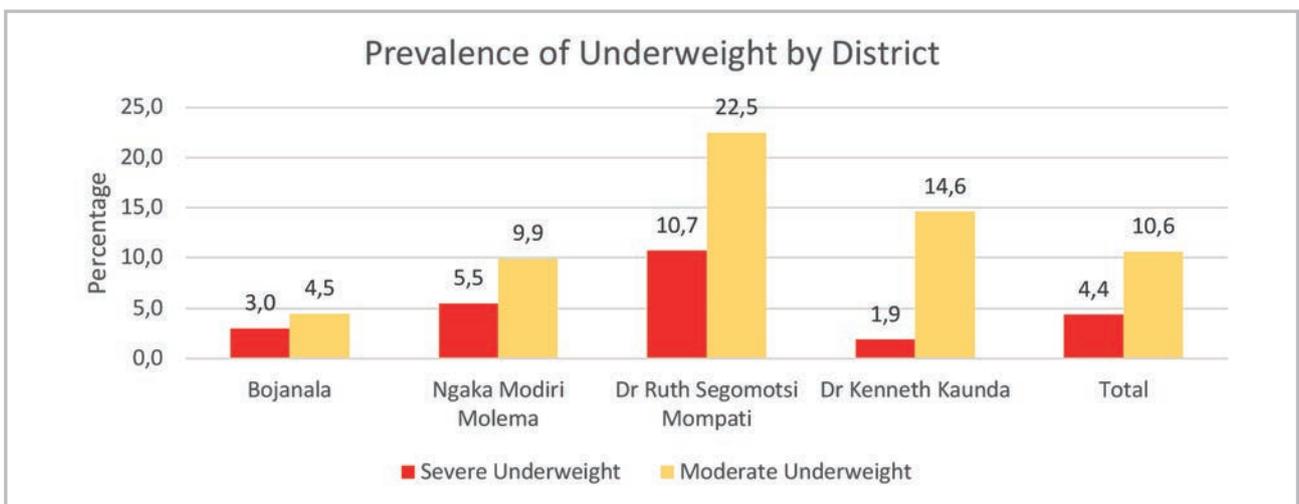
	Not underweight WAZ>=-2		All Underweight WAZ<-2		Moderate underweight WAZ<-2 and >=-3		Severe underweight WAZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age (months)</b>									
<6	83.9	[45.2-97.0]	16.1	[3.0-54.8]	15.7	[2.7-55.1]	0.4	[0.1-3.4]	42
6-17	89.8	[79.8-95.2]	10.2	[4.8-20.2]	4.9	[1.8-12.2]	5.3	[1.8-14.3]	103
18-29	88.1	[76.8-94.3]	11.9	[5.7-23.2]	7.6	[3.4-16.3]	4.3	[1.4-12.5]	81
30-41	85.3	[73.8-92.3]	14.7	[7.7-26.2]	10.3	[4.6-21.3]	4.4	[1.4-13.3]	88
42-53	77.0	[58.5-88.9]	23.0	[11.1-41.5]	16.2	[6.3-35.8]	6.8	[2.5-17.1]	76
54-59	81.1	[47.0-95.4]	18.9	[4.6-53.0]	15.8	[3.0-53.3]	3.1	[0.6-15.8]	38
<b>Gender</b>									
Female	84.5	[73.9-91.3]	15.5	[8.7-26.1]	11.5	[5.4-22.9]	4.0	[2.1-7.4]	200
Male	85.3	[76.9-91.0]	14.7	[9.0-23.1]	10.0	[5.1-18.5]	4.7	[2.3-9.7]	228
<b>District</b>									
Bojanala	92.4	[83.8-96.6]	7.6	[3.4-16.2]	4.5	[1.4-13.7]	3.0	[1.0-8.8]	100
Ngaka Modiri Molema	84.6	[67.1-93.7]	15.4	[6.3-32.9]	9.9	[3.3-26.1]	5.5	[1.3-21.1]	86
Dr Ruth Segomotsi Mompoti	66.8	[55.5-76.5]	33.2	[23.5-44.5]	22.5	[12.6-36.9]	10.7	[6.5-17.3]	148
Dr Kenneth Kaunda	83.5	[68.8-92.0]	16.5	[8.0-31.2]	14.6	[6.5-29.7]	1.9	[0.5-6.8]	94
<b>Total</b>	<b>85.0</b>	<b>[78.7-89.6]</b>	<b>15.0</b>	<b>[10.4-21.3]</b>	<b>10.6</b>	<b>[6.7-16.5]</b>	<b>4.4</b>	<b>[2.6-7.5]</b>	<b>428</b>



**Figure 76:** The prevalence of Underweight in children under five years by age group



**Figure 77:** The prevalence of Underweight in children under five years by gender



**Figure 78:** The prevalence of Underweight in children under five years by district

### 8.1.2.4 Overweight

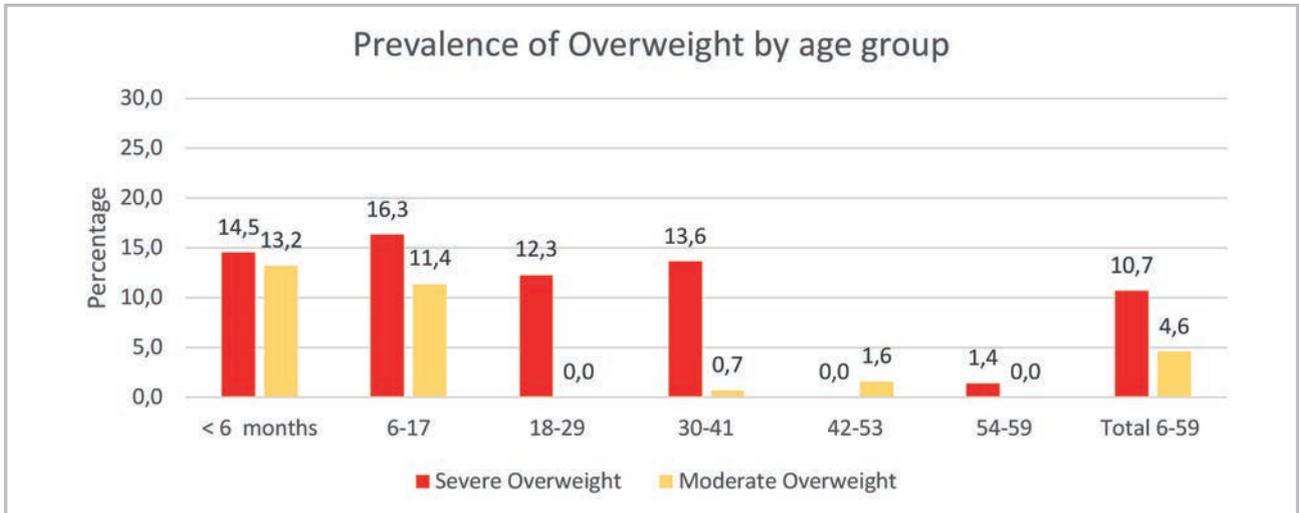
The overall prevalence of overweight for children under the age of 5 years (n=408) was 15.3%, of which 10.7% was severe and 4.6% was moderate overweight (Table 57 and Figure 79). The prevalence of all categories of overweight (all, moderate and severe) was highest in children in the youngest two age groups; <6 months (27.7%, 13.2%, 14.5%, respectively) and 6-17 months (27.7%, 11.4%, 16.3%, respectively) compared to the older two age groups; 42-53 months (1.6%, 1.6%, 0.0%, respectively) and 54-59 months (1.4%, 0.0%, 1.4%, respectively). There were significant differences in the prevalence of overweight between younger and older age groups.

Boys had a higher prevalence of overweight (16.3%) compared to girls (13.9%) (Table 57 and Figure 80). While these differences were not significant, it does appear that boys had a higher prevalence of severe overweight (12.0% vs 8.7%), while girls had a higher prevalence of moderate overweight (5.2% vs 4.3%).

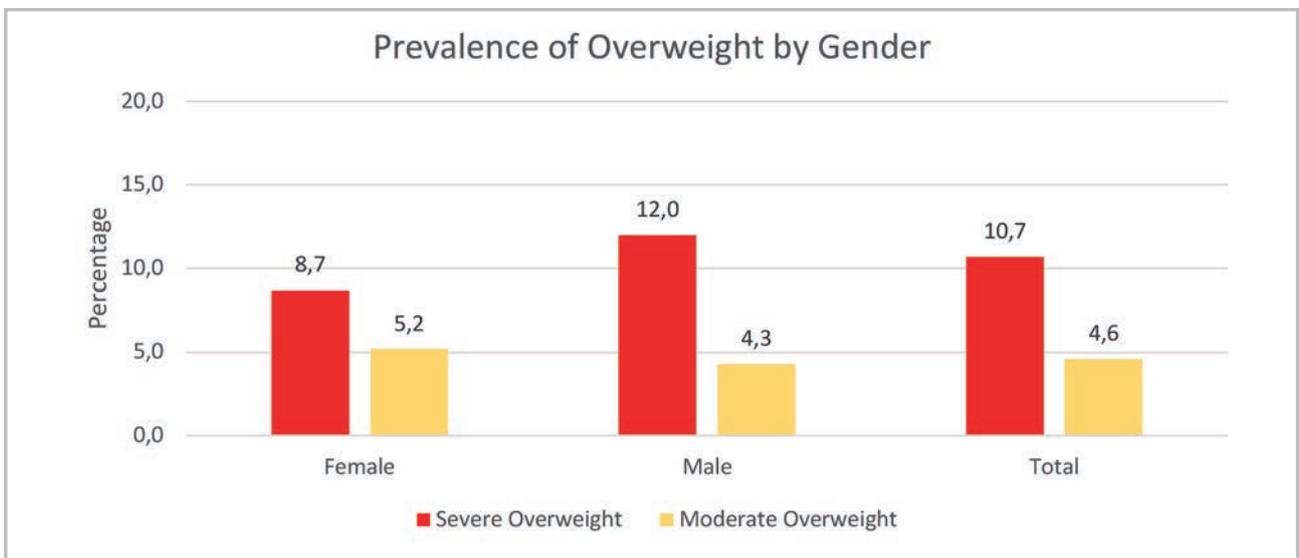
Ngaka Modiri Molema reported the highest overall prevalence of overweight (18.3%), while Dr Ruth Segomotsi Mompoti reported the lowest overall prevalence (7.7%); however, there were no significant differences in overweight reported at a district level (Table 57 and Figure 81).

**Table 57:** The prevalence of Overweight in children under five years by age, sex, and district

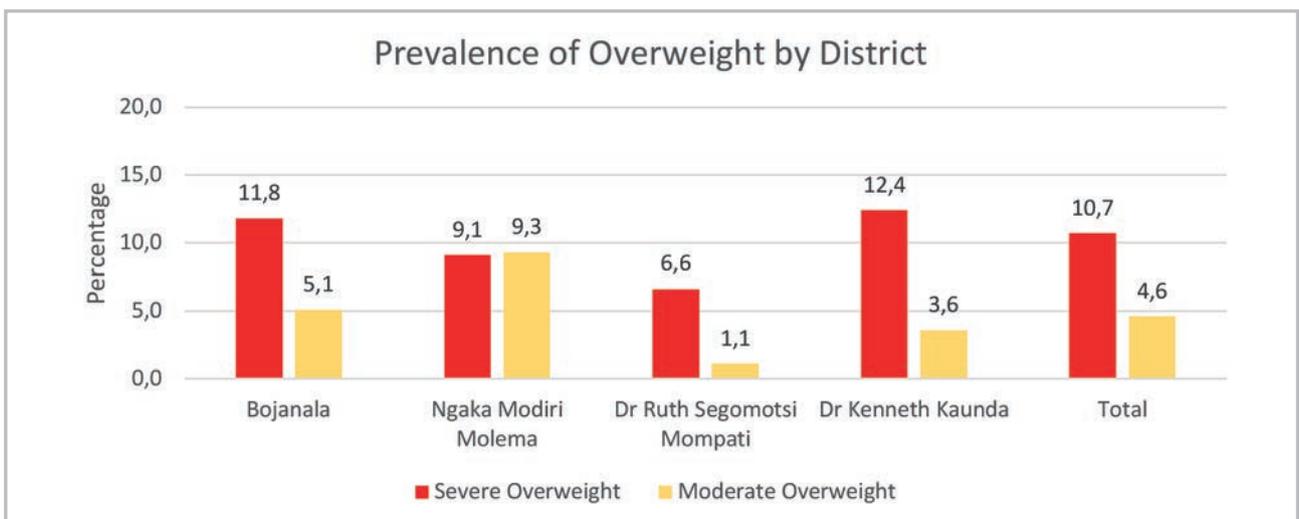
	Not overweight WHZ<2		All overweight WHZ>=2		Moderate overweight WHZ>=2 and <3		Severe overweight WHZ>=3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
<b>Age (months)</b>									
<6	72.3	[51.9-86.3]	27.7	[13.7-48.1]	13.2	[4.9-30.8]	14.5	[5.9-31.4]	42
6-17	72.3	[57.3-83.5]	27.7	[16.5-42.7]	11.4	[4.7-25.2]	16.3	[7.2-32.8]	97
18-29	87.7	[69.0-95.8]	12.3	[4.2-31.0]	0.0		12.3	[4.2-31.0]	79
30-41	85.6	[60.6-95.9]	14.4	[4.1-39.4]	0.7	[0.2-3.2]	13.6	[3.7-39.5]	83
42-53	98.4	[88.9-99.8]	1.6	[0.2-11.1]	1.6	[0.2-11.1]	0.0		73
54-59	98.6	[89.7-99.8]	1.4	[0.2-10.3]	0.0		1.4	[0.2-10.3]	34
<b>Gender</b>									
Female	86.1	[75.7-92.5]	13.9	[7.5-24.3]	5.2	[2.4-10.7]	8.7	[3.4-20.4]	193
Male	83.7	[74.0-90.3]	16.3	[9.7-26.0]	4.3	[1.8-10.0]	12.0	[5.9-22.7]	215
<b>District</b>									
Bojanala	83.2	[64.3-93.1]	16.8	[6.9-35.7]	5.1	[1.4-16.8]	11.8	[3.2-34.8]	95
Ngaka Modiri Molema	81.7	[73.4-87.8]	18.3	[12.2-26.6]	9.3	[5.1-16.4]	9.1	[3.7-20.7]	81
Dr Ruth Segomotsi Mompoti	92.3	[85.5-96.0]	7.7	[4.0-14.5]	1.1	[0.3-4.6]	6.6	[3.3-12.9]	145
Dr Kenneth Kaunda	84.0	[62.0-94.4]	16.0	[5.6-38.0]	3.6	[1.0-11.9]	12.4	[3.3-37.2]	87
<b>Total</b>	<b>84.7</b>	<b>[75.4-90.9]</b>	<b>15.3</b>	<b>[9.1-24.6]</b>	<b>4.6</b>	<b>[2.2-9.4]</b>	<b>10.7</b>	<b>[5.0-21.1]</b>	<b>408</b>



**Figure 79:** The prevalence of Overweight in children under 5 years by age group



**Figure 80:** The prevalence of Overweight in children under five years by gender



**Figure 81:** The prevalence of Overweight in children under five years by district

## 8.2 Adult Anthropometry

### 8.2.1 Adult BMI

The mean BMI for adults aged 18 years and older (n=1810) in North West was 26.2 kg/m<sup>2</sup>. This was significantly different between males (23.0 kg/m<sup>2</sup>; 95% CI 22.2-23.8) and females (28.1 kg/m<sup>2</sup>; 95% CI 27.3-28.9). There were also significant differences in BMI between individuals of different age groups, with those aged 18-24 years having a significantly lower mean BMI (23.6 kg/m<sup>2</sup>) than those aged 35 years and older (range 27.6-29.8 kg/m<sup>2</sup>). Those aged 25-35 years also had a significantly lower mean BMI compared to those aged 45 years and older. There were no significant differences in mean BMI at a district level.

Overall, 46.5% were classified as either overweight (19.0%) or obese (27.4%). Around 40% (42.8%) were classified as normal weight and 10.7% were classified as underweight (Figure 82).

When disaggregating by gender (Females n=1 157, Males n=650), the proportion of both overweight (21.2% vs 15.1%, respectively) and obesity (38.1% vs 9%, respectively) is higher in females than in males (Figure 83). Nearly four times more females are obese compared to males. Conversely, the prevalence of underweight in females (8.2%) is about half of that in males (15.2%). While the results for obesity are significantly different between the genders, the results for other weight categories were not significantly different between genders.

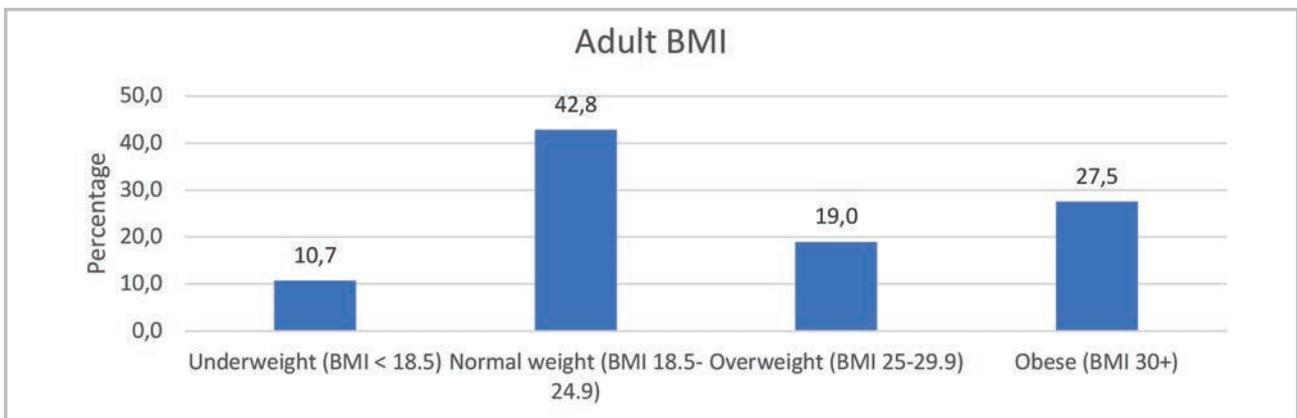


Figure 82: Adult BMI Status

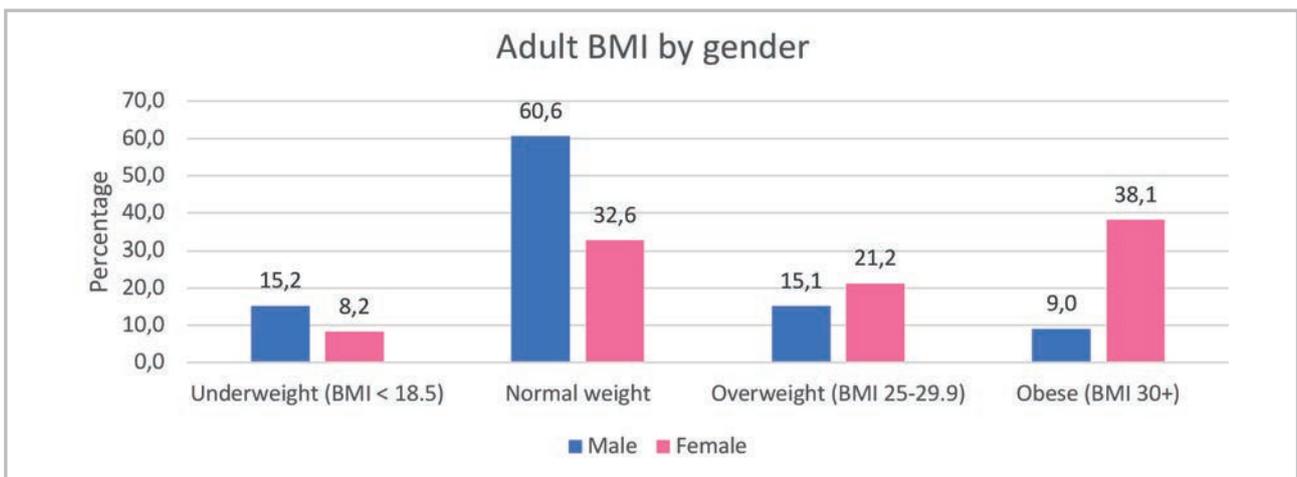


Figure 83: Adult BMI by gender

When disaggregating the overall adult population by age, adults who were aged 45-54 and 55-64 years have the highest prevalence of both overweight (24.4% and 25.4%, respectively) and obesity (41.5% and 41.1%, respectively) (Figure 84). While there were no significant differences in the prevalence of overweight between age groups, there was a significant difference in the prevalence of obesity between the 18-24 years age group (14.8%) and all other age groups older than 35 years (range: 34.3%-41.5%). The prevalence of underweight ranged from 6.8%-17.8% across all age groups, with no significant differences between them.

Figure 85 compares BMI differences by age group between males and females. These figures clearly illustrate that underweight is lower in females (3.1-11.3%) than males (4.1%-27.9%) across all age categories, except the 35-44 years old group. Conversely, for the most part, both overweight (17.3%-27.0% vs 10.5%-18.1%) and obesity (23.5%-53.2% vs 1.3%-34.7%) is higher in females than males across all age categories, respectively. The only exception is in the 55-64 years age group, where males have a higher prevalence of overweight (27.6%) compared to females at 24.4%.

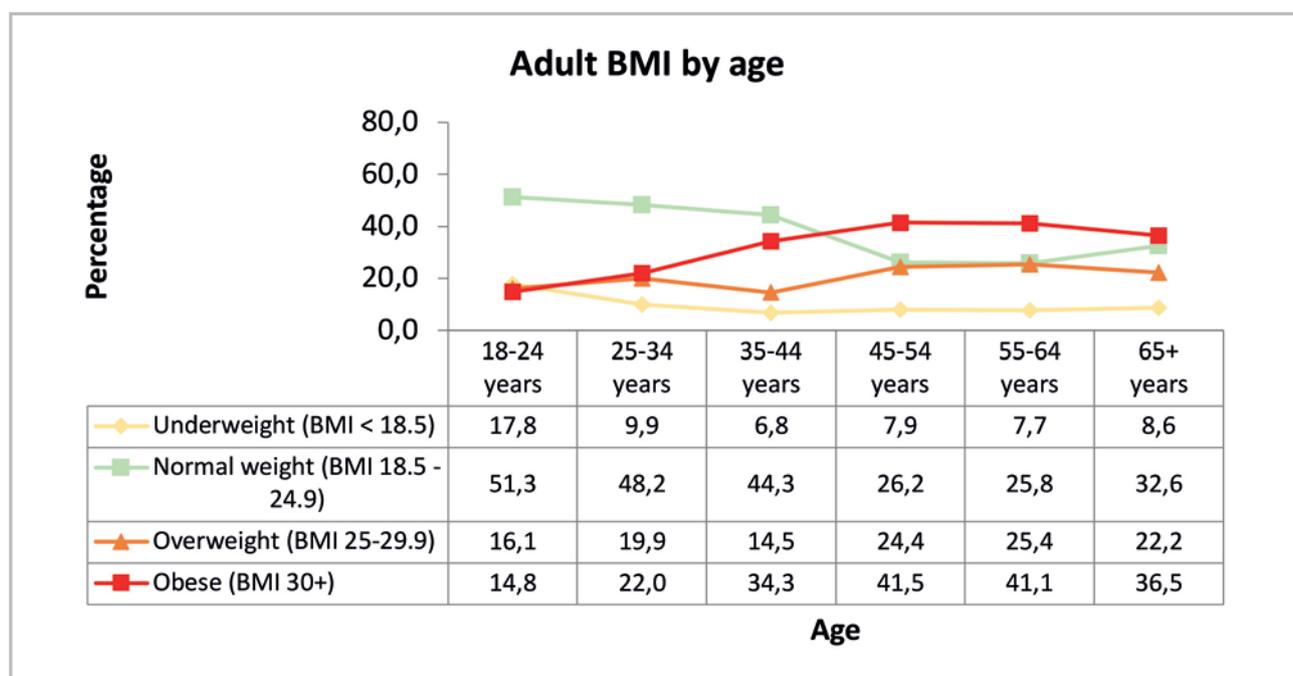


Figure 84: Distribution of BMI in adults aged 18 years and older by age

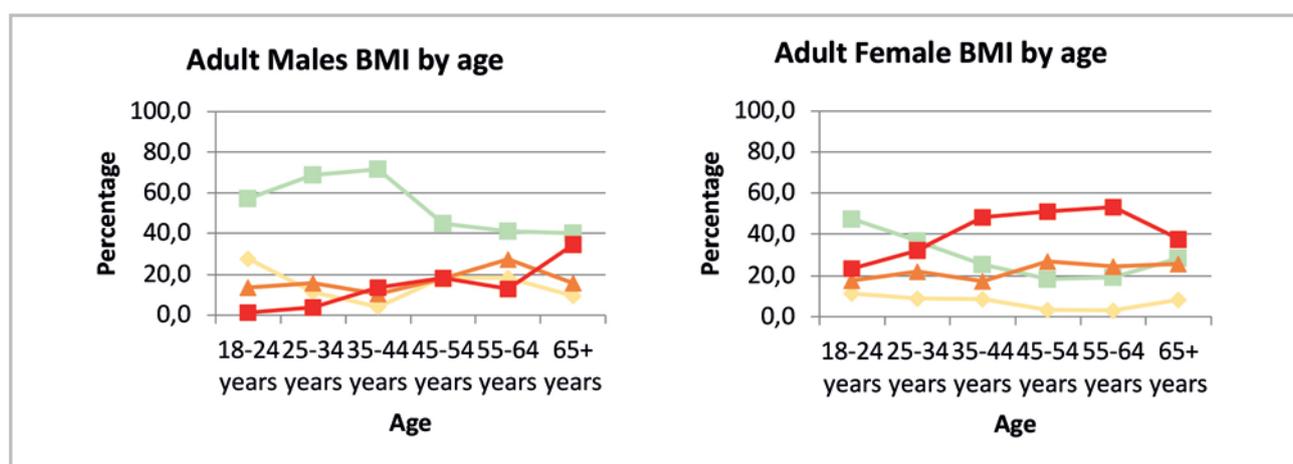


Figure 85: Comparison of the distribution of BMI in adults aged 18 years and older by age and gender

Figure 86 shows the disaggregation of BMI by district level and indicates that BMI categories are similar across all districts. The only exception is Dr Ruth Segomotsi Mompoti, where this district has a significantly higher prevalence of underweight (22.7%) compared to both Bojanala (9.1%) and Dr Kenneth Kaunda (8.0%). Dr Ruth Segomotsi Mompoti also has a significantly lower prevalence of normal weight than Ngaka Modiri Molema. Figure 87 compares district level data by gender. In both genders these figures illustrate that in all districts, females have higher rates of overweight and obesity than males. Generally, while there are no significant differences in overweight and obesity between districts for both males and females, there does seem to be a significant difference in underweight in males between Dr Ruth Segomotsi Mompoti (36.3%) and Dr Kenneth Kaunda (10.0%).

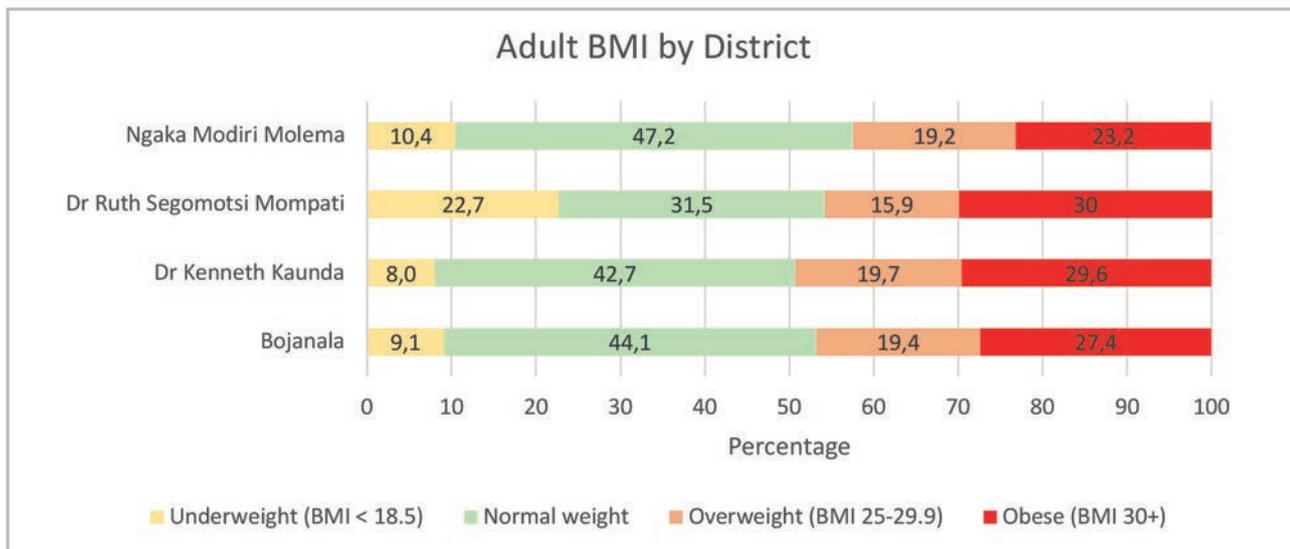


Figure 86: Comparison of the distribution of BMI in adults aged 18 years and older by District

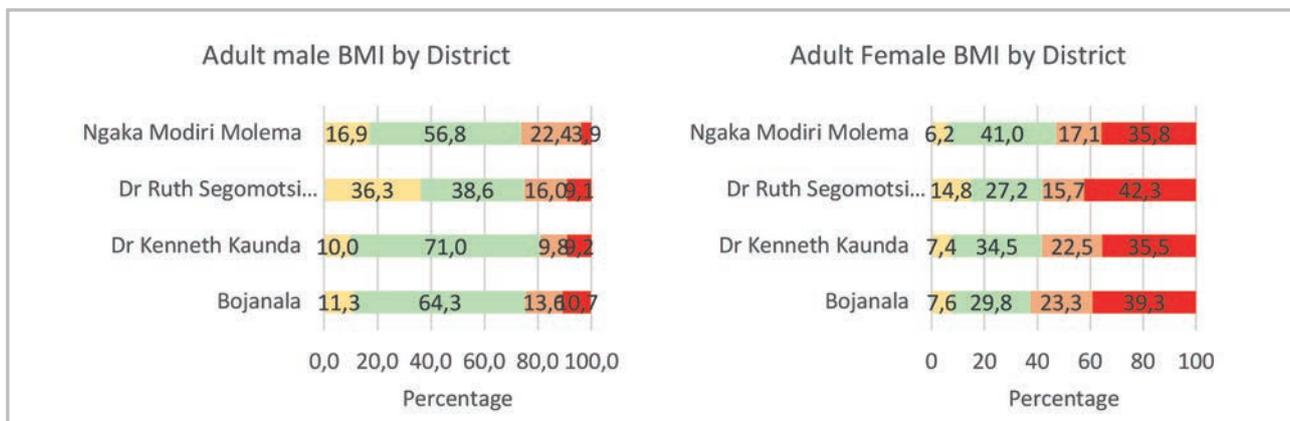


Figure 87: Comparison of the distribution of BMI in adults aged 18 years and older by districts and gender

### 8.2.2 Waist Hip Ratio

A waist hip ratio (WHR)  $\geq 1$  in males and  $\geq 0.85$  in females is indicative of an increased risk of non-communicable diseases (NCDs) such as diabetes and hypertension, amongst other illnesses. The mean waist hip ratio for males (n=667) and females (n=1203) was 0.92 (range: 0.87-0.97) and 0.87 (range: 0.82-0.91), respectively. However, Table 58 clearly shows that, overall, a far greater proportion of females (46.9%) had a high WHR compared to only 10.3% of males.

**Table 58:** Waist hip ratio (WHR) of adults aged 18 years and older by gender age and district

	Males					Females				
	Waist-hip ratio		Waist hip ratio $\geq 1$			Waist-hip ratio		Waist hip ratio $\geq 0.85$		
	Mean	95% CI	%	95% CI	n	Mean	95% CI	%	95% CI	n
<b>Age group</b>										
18-24	0.87	[0.78-0.96]	4.5	[1.3-14.0]	90	0.82	[0.79-0.85]	20.3	[11.7-32.9]	147
25-34	0.94	[0.83-1.05]	8.9	[3.5-20.9]	123	0.89	[0.80-0.98]	42.9	[33.9-52.3]	218
35-44	0.91	[0.87-0.94]	12.6	[6.7-22.4]	125	0.87	[0.84-0.90]	53.9	[41.3-66.0]	238
45-54	0.94	[0.89-0.98]	18.3	[10.5-29.8]	123	0.87	[0.86-0.89]	62.2	[52.2-71.2]	216
55-64	0.97	[0.89-1.06]	12.7	[6.3-23.8]	121	0.89	[0.87-0.91]	74.9	[66.0-82.1]	219
$\geq 65$	0.92	[0.87-0.98]	20.7	[11.6-34.1]	85	0.91	[0.89-0.93]	75.6	[62.3-85.3]	165
<b>District</b>										
Bojanala	0.95	[0.87-1.03]	14.7	[8.6-24.2]	189	0.87	[0.85-0.88]	49.2	[40.2-58.1]	305
Dr Kenneth Kaunda	0.85	[0.84-0.86]	2.9	[1.4-5.9]	124	0.89	[0.80-0.98]	40.4	[33.2-48.1]	325
Dr Ruth Segomotsi Mompoti	0.89	[0.85-0.93]	8.0	[4.3-14.3]	206	0.85	[0.83-0.86]	52.0	[42.0-61.8]	305
Ngaka Modiri Molema	0.88	[0.86-0.90]	4.1	[1.8-8.9]	148	0.85	[0.83-0.86]	47.0	[36.6-57.6]	268
<b>Total</b>	<b>0.92</b>	<b>[0.87-0.96]</b>	<b>10.3</b>	<b>[6.8-15.4]</b>	<b>667</b>	<b>0.87</b>	<b>[0.84-0.89]</b>	<b>46.9</b>	<b>[41.7-52.1]</b>	<b>1 203</b>

Table 58 and Figure 88 illustrate that WHR tends to increase with age in males and females, peaking in the age group 65 years and older. There were no significant differences between age groups in males; however, in females there was a significant difference between the youngest age group and all other age groups.

There were no significant differences in the mean WHR and the proportion of those who had a high WHR among females across the various districts in North West. There was, however, a significant difference in mean WHR and the proportion of those who had a high WHR among males between Bojanala (0.95 and 14.7%) and Dr Kenneth Kaunda (0.85 and 2.9%) (Table 58 and Figure 89).

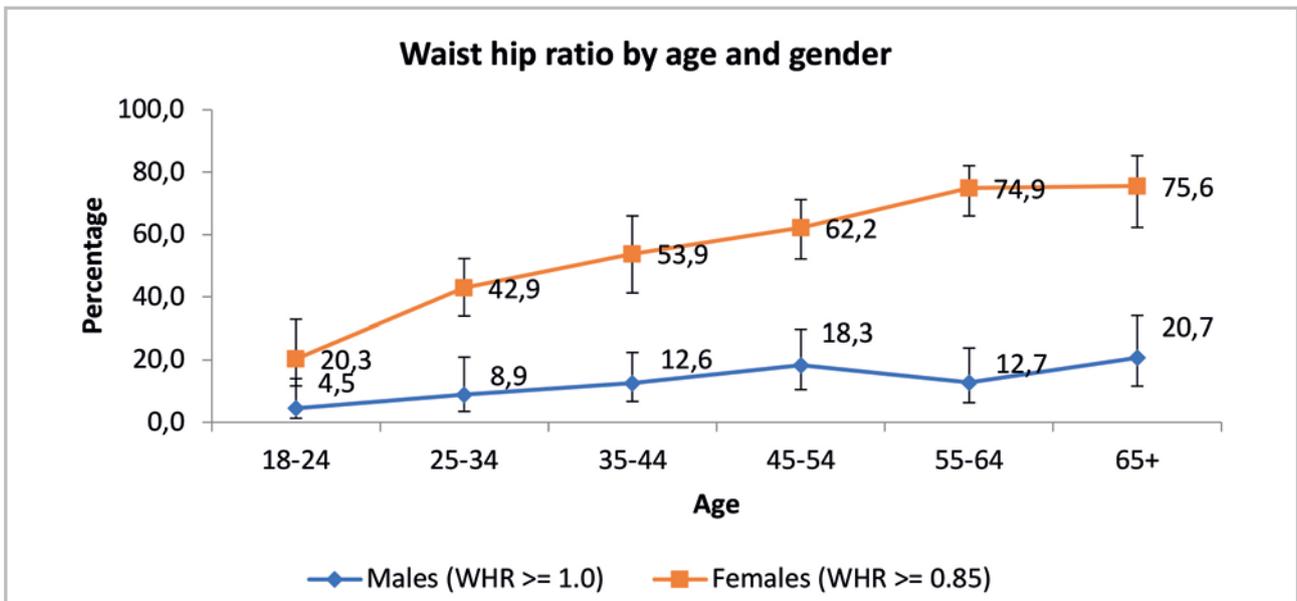


Figure 88: Comparison of the distribution of WHR in adults aged 18 years and older by age and gender

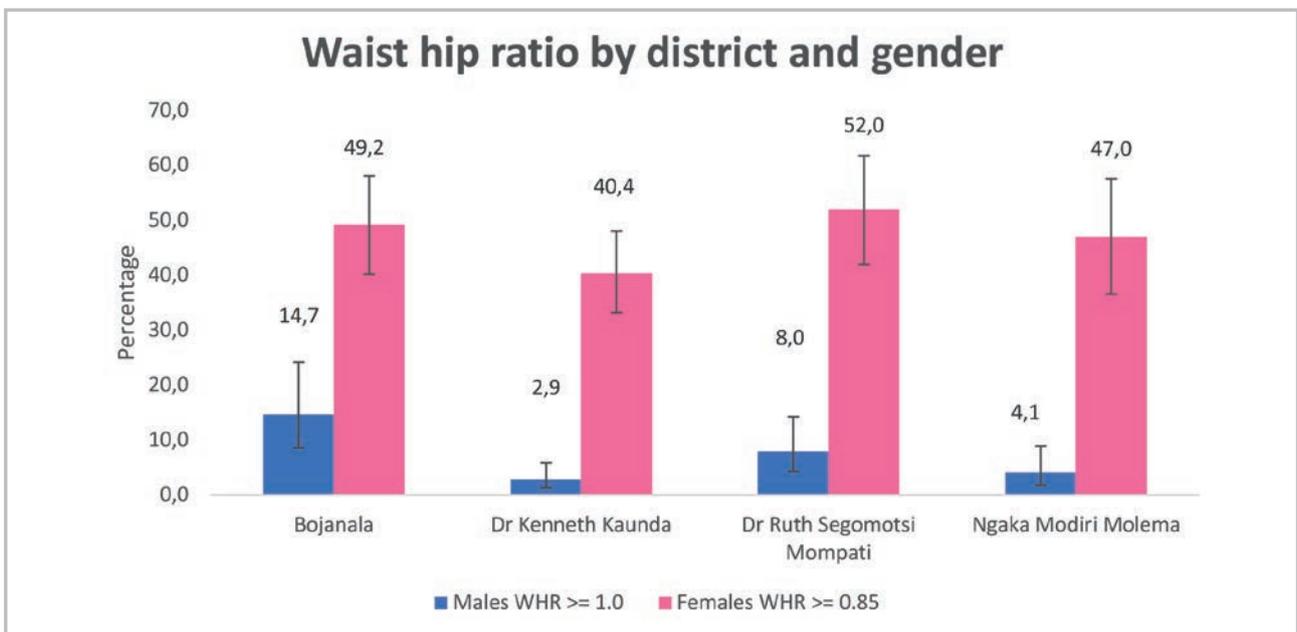


Figure 89: Comparison of the distribution of WHR in adults aged 18 years and older by districts and gender

### 8.3 Individual Dietary Diversity

A variety of foods in the diet is needed to ensure an adequate intake of essential nutrients. Dietary diversity can be used as a proxy measure of the nutritional quality of a population's diet, as well as an indicator of the access dimension of household food security (Kennedy, 2009). Populations consuming a diet of low dietary diversity are nutritionally vulnerable (Kennedy, 2009).

In this survey, adult participants and caregivers of children aged 6 months-5 years were asked to recall all foods and drinks they or their child had consumed the previous day. These food items were then allocated to specific food groups. An individual Dietary Diversity Score (IDDS) was then calculated by summing the number of food groups from which food had been consumed; the nine food groups were cereals, roots and tubers; vitamin A-rich vegetables and fruit; vegetables other than vitamin A-rich; fruit other than vitamin A-rich fruit; meat, poultry, and fish; eggs; legumes; dairy products; and foods made with fats or oils. Each food group was counted only once. An IDDS below four is considered to be low and associated with dietary inadequacies (Steyn et al., 2006).

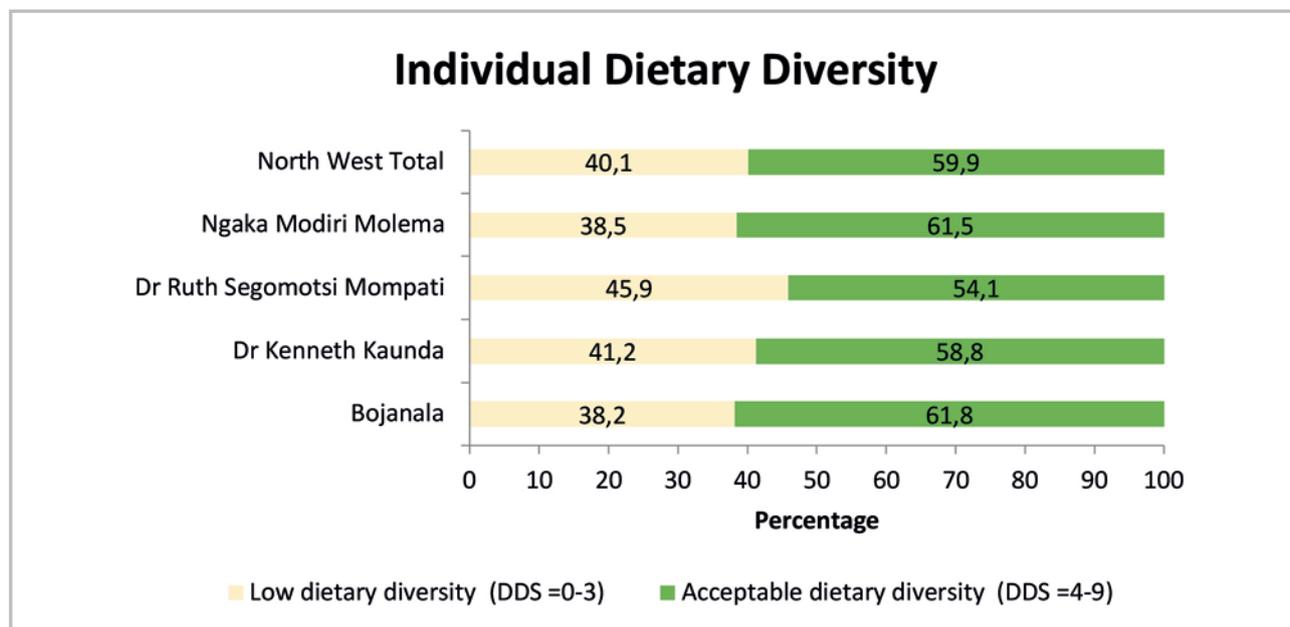
The mean dietary diversity score (DDS) for individuals residing in the North West (n=2196) was 4.18, which is indicative of an adequate dietary diversity (Table 59). District comparisons showed that Bojanala had the highest mean DDS (4.53), compared to Dr Kenneth Kaunda which had the lowest (3.87). Table 60, therefore, shows that while individuals in three of the four districts have an adequate dietary diversity (DDS >4), those in Dr Kenneth Kaunda reported a low dietary diversity (DDS <4).

The study was not able to differentiate between DDS scores for adults and children.

**Table 59:** Mean dietary diversity scores for individuals in the North West

District	Dietary Diversity Score (DDS)		
	Mean	95% CI	N
Bojanala	4.53	[4.10-4.97]	348
Dr Kenneth Kaunda	3.87	[3.50-4.24]	613
Dr Ruth Segomotsi Mompati	4.03	[3.74-4.33]	644
Ngaka Modiri Molema	4.09	[3.64-4.54]	591
<b>Total</b>	<b>4.18</b>	<b>[3.94-4.42]</b>	<b>2196</b>

Figure 90 illustrates the proportion of the population in the North West and in the various districts who have low and acceptable DDS. Overall, 59.9% of people in the North West reported an adequate DDS, while 40.1% have a low DDS. Bojanala reported the lowest proportion of people with low DDS (38.2%), while Dr Ruth Segomotsi Mompati reported the highest proportion of people with a low DDS (45.9%).



**Figure 90:** Comparison of the distribution of DDS in individuals by districts

## 8.4 Relationship of Household Food Insecurity and Malnutrition

Table 60 presents the associations between nutrition indicators and food security status, based on the Household Food Insecurity Access Scale (HFIAS). In North West, there was no significant relationships between food security and three of the nutrition indicators (wasting, underweight, and overweight) for children aged 0-5 years. The relationship between food security and stunting was, however, significant. The table shows that the prevalence of household food insecurity was higher among households that had at least one child under 5 years who was stunted (86.6%) than among households that did not have a child under 5 years who was stunted (74.6%) ( $p < 0.001$ ).

For adults, there was no significant relationship between household food security and an elevated waist hip-ratio (WHR), which is a risk factor for non-communicable diseases (NCDs). Persons with an elevated waist-hip ratio, that is WHR of  $>1$  in males or  $>0.85$  in females, are considered as being at increased risk of NCDs. There were, however, significant relationships between food security and 3 of the nutrition indicators for adults. The prevalence of household food insecurity was higher among households that had at least one adult who was underweight (81.5%) than among households that did not have an underweight adult (75.1%) ( $p < 0.01$ ). Conversely, the prevalence of household food insecurity was lower among households that had at least one adult who was overweight/ obese (74.2%) than among households that did not have an overweight/ obese adult (78.1%) ( $p < 0.01$ ). The prevalence of food insecurity was significantly higher (83.4%) in households that had at least one person who had a low dietary diversity (DDS  $<4$ ), compared to households in which everyone had acceptable dietary diversity (70.4%) ( $p < 0.001$ ).

**Table 60:** Relationship between Household Food Insecurity and Malnutrition indicators

Nutrition indicators	Categories	Food security status (%)		Chi-square tests
		Food secure	Food insecure	
<b>0-5 years</b>				
Stunting	Yes	13.4	86.6	***
	No	25.4	74.6	
Wasting	Yes	11.1	88.9	
	No	22.0	78.0	
Underweight	Yes	12.1	87.9	
	No	23.1	76.9	
Overweight	Yes	22.3	77.7	
	No	20.8	79.2	
<b>Adults</b>				
Underweight	Yes	18.5	81.5	*
	No	24.9	75.1	
Obesity / Overweight	Yes	25.8	74.2	*
	No	21.9	78.1	
Increase risk of NCDs (Waist / hip ratio)	Yes	24.4	75.6	
	No	23.6	76.4	
Individual Dietary Diversity	Low	16.6	83.4	***
	Acceptable	29.6	70.4	

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 60 demonstrates South Africa's double burden of malnutrition. While on the one hand South Africa experiences higher levels of undernutrition, it also experiences higher levels of overweight and obesity (FAO et al., 2021).

### ***Infant feeding practices***

Exclusive breastfeeding has been adopted as one of the key and crucially important components of the *Infant and Young Child Feeding Policy* which was developed in 2007 (DoH, 2011). Promotion, protection, and support of breastfeeding are a key focus area of infant and young child feeding of the Integrated Nutrition Programme of the Department of Health. The results of the current study indicate that 82.3% of children under 2 years were breastfed at some point in their lives, which is very similar to the national results reported in the SADHS in 2016 (84%).

Furthermore, the results of the current study indicated that more than two-thirds of children aged 0-2 years in the North West were introduced to breastfeeding immediately after birth, with a total of 86.0% being breastfed within an hour of birth. These results are very similar to the national results reported by the SANHANES in 2012 (83.0%) and far higher than those reported in the SADHS in 2016 (67%).

Exclusive breastfeeding in North West was reported to be 18.8%. This should be interpreted with caution due to the small sample size. However, 18.8% is higher than the national reports in the 2003 SADHS (8.3%) and SANHANES 2012 (7.5%) but considerably lower than that reported by Shisana et al. (2008) (25.7%), and the 2016 SADHS (30%).

In 1998, 2003, and 2016 the SADHS reported an average duration of breastfeeding of 15.6 months, 16.6 months, and 12.2 months, respectively. SANHANES, however, showed a much lower average duration of breastfeeding (5.9 months). The average duration of breastfeeding in those who are not currently being breastfed in North West was 6.7 months, which is slightly longer but more in line with what the SANHANES reported, compared to the SADHS. Overall, the first drink other than breastmilk was mainly introduced at 0-1 months. This occurred in about half (51.4%) of the children. We can assume that this is most likely the introduction of infant formula, for mothers who may be unable to breastfeed. At 3 months, other drinks were introduced in 15.4% of children. Less than 20% of children were first introduced to other drinks at the age of 6 months. With regards to the type of drink that was first introduced, just more than 40% indicated infant formula, while 27.2% indicated plain water.

After 6 months, infants should be introduced to solid foods as breastmilk is no longer sufficient to meet the nutritional requirements. However, the results of this study indicates that complementary feeding is initiated earlier than the anticipated 6 months - at 4.6 months. This is similar to the results of the SANHANES 2012 (4.5 months). The most common food introduced is homemade cereal/ porridge rather than commercial cereal/ porridge.

### ***Anthropometry (0-5 years)***

In 2012, the SANHANES reported a national stunting prevalence of 28.6% in children 0-5 years, and a provincial prevalence of 40.6% in the North West. Four years later, in 2016, the SADHS reported a slightly lower stunting prevalence at the national level (27.0%), and a much lower prevalence at the provincial level (27%). The results of the current study appear to indicate that the stunting prevalence in North West is about halfway between what the SANHANES and SADHS reported, with a current prevalence of 32.9% in children of the same age group. These results indicate that there were still a substantial number of children experiencing chronic undernutrition in 2021. The SADHS reported that stunting was more prevalent nationally in the age group 18-23 months. The results of this provincial analysis corroborate this, as children aged 18-29 months had the highest prevalence of stunting in the North West. Furthermore, the SANHANES and SADHS have reported that stunting is more prevalent in male children than female children at a national level. This study shows similar trends at a provincial level. At a district level, the current study reported that stunting is more prevalent in the Ngaka Modiri Molema and Dr Ruth Segomotsi Mompati districts than it is in the Bojanala District.

The national prevalence of wasting was reported to be 3.7% in 2012 (SANHANES), with a higher provincial prevalence in North West of 4.4%. In 2016 similar national results were presented in the SADHS (3.0%); however,

a provincial prevalence was not reported at the time. The current study has reported a similar provincial prevalence of wasting in North West of 4.8%, thereby indicating that the proportion of children experiencing acute undernutrition in 2021 has remained more or less the same. It also appears that the younger age groups, as well as females, experience a higher prevalence of wasting. There were no differences between districts in the current study.

The prevalence of underweight in the North West in the current study (15.0%) is slightly higher than the provincial prevalence of underweight reported by the SANHANES in 2012 (13.4%). A much lower prevalence was reported at the national level in 2012 (6.8%) and 2016 (6%).

In 2016, the SADHS reported a national prevalence of overweight of 13% in children 0-5 years. SANHANES reported a higher prevalence in females than in males across all age categories at a provincial level. The current study found that a slightly higher prevalence (15.3%) of children were overweight and that males had a higher prevalence of being more overweight than females, though the differences between genders were not significant.

The above trends across time seem to indicate that over the last 10 years, children in the North West remain plagued by both chronic and acute undernutrition. At a district level, it appears as if the Dr Ruth Segomotsi Mompati district has the highest prevalence of acute undernutrition, and that both Dr Ruth Segomotsi Mompati and Ngaka Modiri Molema have the highest prevalence of chronic undernutrition.

### ***Anthropometry (18 years and older)***

At a national level, the mean BMI in females were reported to be 28.9 kg/m<sup>2</sup> in 2012 and 29.2 kg/m<sup>2</sup> in 2016. For males, there was no change in mean BMI between 2012 and 2016, as both the SANHANES and the SADHS reported a mean BMI of 23.6 kg/m<sup>2</sup>. A slightly lower provincial mean was reported for BMI in North West for both females (27.0 kg/m<sup>2</sup>) and males (21.8 kg/m<sup>2</sup>) in 2012. The current study, however, reported a slightly higher mean BMI for both females (28.1 kg/m<sup>2</sup>) and males (23.0 kg/m<sup>2</sup>) in the North West.

Based on BMI cut-off points, SANHANES reported a national prevalence of overweight and obesity of 64.0% in females and 30.7% in males 10 years ago. The SADHS reported similar results in 2016 - 68.0% in females and 31% in males. The provincial prevalence of overweight and obesity in the North West was lower than the national estimates for both females (54.0%) and males (16.3%) in 2012. In 2016, the SADHS reported an increase in the provincial prevalence in North West in both females (67.8%) and males (30%). Ten years later, the results of this study report a lower provincial prevalence of overweight and obesity in females (59.3%), and in males (24.1%) compared to the SADHS but a higher prevalence compared to the SANHANES..

The current study also reported an increase in the proportion of both females (46.9%) and males (10.3%) with regards to a waist hip ratio larger than 0.85 and 1.0, respectively, compared to previous studies. For females, SANHANES reported 47.1% and 44.7% at a national and provincial levels, respectively. For males, SANHANES reported 6.8% and 5.2% at a national and provincial level, respectively.

### ***Individual Dietary Diversity***

A diet that is sufficiently diverse reflects nutrient adequacy. This statement is based on the fact that no single food contains all the required nutrients for optimal health. Consequently, the more food groups included in a daily diet, the greater the likelihood of meeting nutrient requirements (Kennedy, 2009). Monotonous diets, based mainly on starches such as maize, rice and bread, have been closely associated with food insecurity. Dietary diversity is an outcome measure of food security at the individual or household level (Kennedy, 2009). Apart from reflecting on food security, a low DDS has also been associated with low weight and stunted growth (Rah et al., 2010), as well as other health issues. In the present survey, the mean dietary score of the population was 4.2, with 40.1% of the population having a score of less than 4. These results are almost exactly the same as those reported in SANHANES nationally in 2012 (mean of 4.2 and 40%) and slightly higher than that of the NFCS in 2009 (mean 4.02 and 38%).

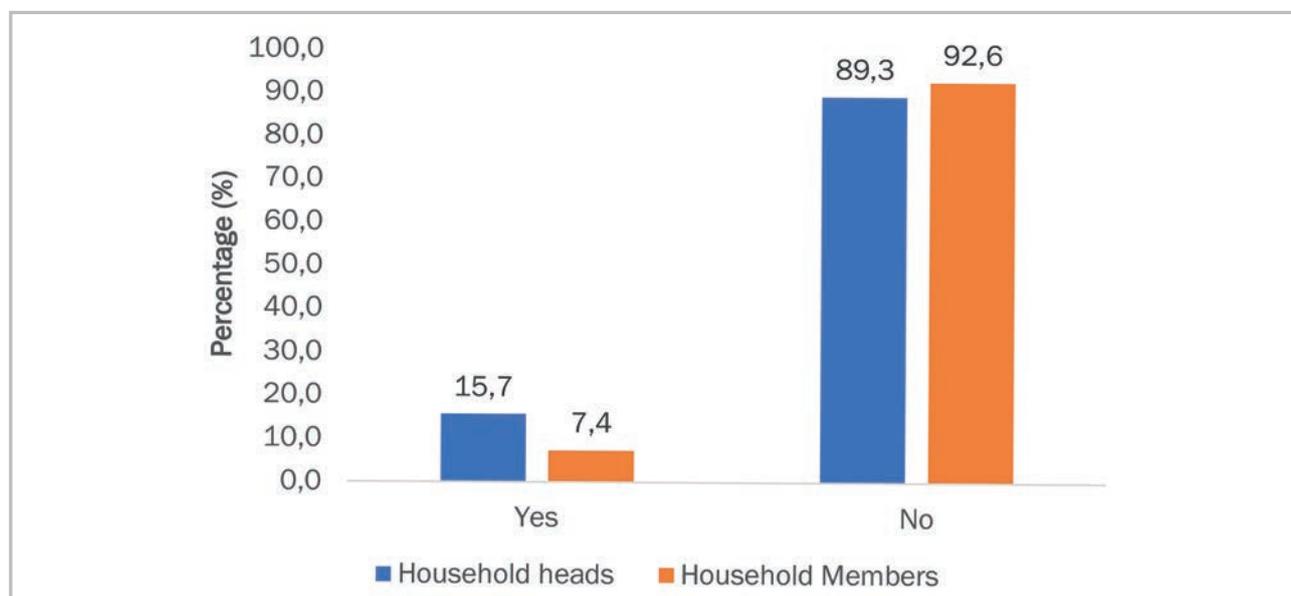
### 9.1 Household health status, chronic illnesses, and diseases

The study sought to review the disease burden and health experiences of household heads and members in the year preceding the study. As expected, a wide range of illness/diseases were reported (Table 61). The most common illnesses/ diseases reported by household heads were coughs/colds/chest infections (19.5%), headaches (15.1%), hypertension (11.0%), other diseases (7.2), abdominal pains (6.3%) and HIV/AIDS (6.1%). Cough/cold/chest infections were also reported by 12.3% of household members. These are commonly reported ailments, some of which are simply symptoms rather than confirmed diseases. Nonetheless, the level of access to nutritious food predisposes individuals to a multitude of illnesses/ diseases and also influences the ability to prevent/ manage/ recover from these illnesses/diseases. Diseases such as diabetes and hypertension, for example, require specific diets in order so that they may be managed successfully. It is, therefore, important that households have access to diverse diets, including medically prescribed diets.

**Table 61:** Illnesses and diseases reported by household heads and members in North West a year prior to the survey

Disease	Household heads		Household members	
	n	%	n	%
Cough/cold/chest infection	356	19.5	964	12.3
Headache	218	15.1	432	5.9
Hypertension	371	11.0	547	6.8
Other disease	230	7.2	476	6.0
Abdominal pains	111	6.3	183	2.5
HIV/AIDS	133	6.1	264	3.4
Diarrhoea	54	5.3	95	1.5
Vomiting	33	4.8	83	1.1
Toothache or mouth infection	121	4.6	194	2.8
Eye infection	143	4.2	226	2.9
Diabetes	136	4.2	193	2.5
Fever/malaria	66	3.6	159	2.0
Skin rash	41	2.7	115	1.6
Asthma	52	1.8	110	1.4
Paralysis	58	1.5	95	1.1
TB	32	1.5	62	0.8
Bronchitis/pneumonia/chest pain	33	1.1	45	0.6

The study found a low prevalence of chronic illness (a disease that lasts for more than 3 months) at both the household head (15.7%) and household member (7.4%) levels (Figure 90). The significance of this finding is that food and nutrition security is vital to managing most chronic diseases (such as TB and diabetes) as the nutritious status of foods that people eat assists in controlling recovery processes. The prevalence of chronic diseases adds to the need for ensuring that most households are food secure.



**Figure 91:** Household heads and members reported to having been continuously ill, for at least 3 months in the last 12 months prior to the survey

There was generally no difference in the reported or perceived health status of household heads by sex and district, but noticeable differences are observed particularly by age (Table 62). Those aged 55 years and above reported significant levels of poor or fair health compared to those younger. Dr Ruth Segomotsi Mompoti had a slightly higher percentage (16.2%) of household heads who perceived their general health status as poor or fair.

**Table 62:** Household heads' perceived health status by sex, age, and district

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
<b>Sex</b>							
Male	10.6	[7.8-14.2]	64.7	[57.8-71.0]	24.7	[19.5-30.9]	919
Female	19.5	[15.4-24.3]	51.9	[44.1-59.5]	28.7	[22.0-36.5]	831
<b>Total</b>	<b>14.8</b>	<b>[12.6-17.4]</b>	<b>58.6</b>	<b>[53.6-63.4]</b>	<b>26.6</b>	<b>[22.2-31.6]</b>	<b>1,750</b>
<b>Age group</b>							
18-24	2.0	[0.7-6.1]	62.0	[41.2-79.2]	35.9	[19.6-56.3]	75
25-34	12.3	[6.4-22.4]	57.0	[48.5-65.1]	30.7	[23.2-39.4]	211
35-44	10.5	[7.2-15.1]	65.7	[58.8-72.1]	23.8	[18.1-30.7]	326
45-54	17.9	[12.2-25.6]	54.9	[48.6-61.1]	27.2	[21.0-34.3]	377
55-64	28.2	[21.1-36.7]	55.6	[48.3-62.6]	16.2	[11.8-22.0]	388
65+	42.5	[34.7-50.8]	48.2	[40.0-56.4]	9.3	[5.7-14.7]	371

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
<b>Total</b>	<b>14.9</b>	<b>[12.7-17.5]</b>	<b>58.7</b>	<b>[53.7-63.5]</b>	<b>26.4</b>	<b>[22.0-31.3]</b>	<b>1,748</b>
<b>District</b>							
Bojanala	16.4	[12.7-20.9]	58.8	[50.8-66.4]	24.8	[18.1-32.9]	463
Ngaka Modiri Molema	13.5	[10.6-17.0]	59.3	[48.6-69.2]	27.2	[19.2-37.0]	460
Dr Ruth Segomotsi Mompati	16.2	[12.2-21.2]	68	[57.6-76.9]	15.8	[7.4-30.5]	403
Dr Kenneth Kaunda	11.8	[8.3-16.6]	52.4	[43.8-60.8]	35.8	[27.2-45.4]	424
<b>Total</b>	<b>14.8</b>	<b>[12.6-17.4]</b>	<b>58.6</b>	<b>[53.6-63.4]</b>	<b>26.6</b>	<b>[22.2-31.6]</b>	<b>1,750</b>

A similar pattern is observed across household members by sex, age, and district (Table 63). Unsurprisingly, the elderly (55-64 years and 65 years and older) had the higher percentage of household members who were reported as having poor or fair health status, with 25.8% and 40.1%, respectively. Ngaka Modiri Molema had the highest percentage of household members who were reported as having poor or fair health status, with 12.7%, while Bojanala had the least in this category with 9.4%.

**Table 63:** Household members reported perceived health status by sex, age, and district

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
<b>Sex</b>							
Male	9.8	[8.2-11.6]	57.6	[53.0-62.1]	32.6	[28.4-37.1]	3,479
Female	11.5	[10.0-13.3]	57.6	[53.5-61.5]	30.9	[26.9-35.1]	3,908
<b>Total</b>	<b>10.7</b>	<b>[9.3-12.3]</b>	<b>57.6</b>	<b>[53.4-61.7]</b>	<b>31.7</b>	<b>[27.7-35.9]</b>	<b>7,387</b>
<b>Age group</b>							
0-14	4.0	[2.7-6.0]	58.1	[52.2-63.8]	37.9	[32.8-43.3]	2,327
15-24	5.1	[3.7-7.2]	58.4	[52.8-63.8]	36.5	[31.4-41.8]	1,417
25-34	8.5	[6.6-10.9]	57.0	[51.9-62.0]	34.4	[29.7-39.4]	1,045
35-44	11.2	[8.7-14.1]	60.4	[54.4-66.2]	28.4	[23.2-34.3]	784
45-54	16.3	[13.4-19.6]	60.6	[55.9-65.2]	23.1	[18.6-28.2]	664
55-64	25.8	[21.2-31.1]	54.2	[49.4-58.9]	19.9	[16.0-24.6]	544
65+	40.1	[34.9-45.5]	49.3	[43.8-54.9]	10.6	[7.0-15.7]	451
<b>Total</b>	<b>10.9</b>	<b>[9.4-12.5]</b>	<b>57.6</b>	<b>[53.4-61.7]</b>	<b>31.5</b>	<b>[27.6-35.8]</b>	<b>7,232</b>
<b>District</b>							
Bojanala	9.4	[7.2-12.3]	57.5	[49.8-65.0]	33.0	[26.0-40.9]	1,800
Ngaka Modiri Molema	12.7	[10.3-15.6]	54.7	[48.5-60.8]	32.6	[26.1-39.8]	1,949
Dr Ruth Segomotsi Mompati	9.6	[7.9-11.6]	69.6	[61.0-77.0]	20.8	[13.6-30.4]	1,960
Dr Kenneth Kaunda	11.8	[8.4-16.3]	52.8	[46.1-59.4]	35.4	[30.0-41.3]	1,713
<b>Total</b>	<b>10.7</b>	<b>[9.2-12.3]</b>	<b>57.7</b>	<b>[53.5-61.8]</b>	<b>31.7</b>	<b>[27.7-35.9]</b>	<b>7,422</b>

Figure 91 shows that Ramotshere Moiloa and Ratlou local municipalities were under the highest category (13.1% to 16.7%) of household members with reported poor or fair health status. Local municipalities that fell under the lowest category (4.5% to 6.0%) were Kgetlengrivier and Rustenburg.

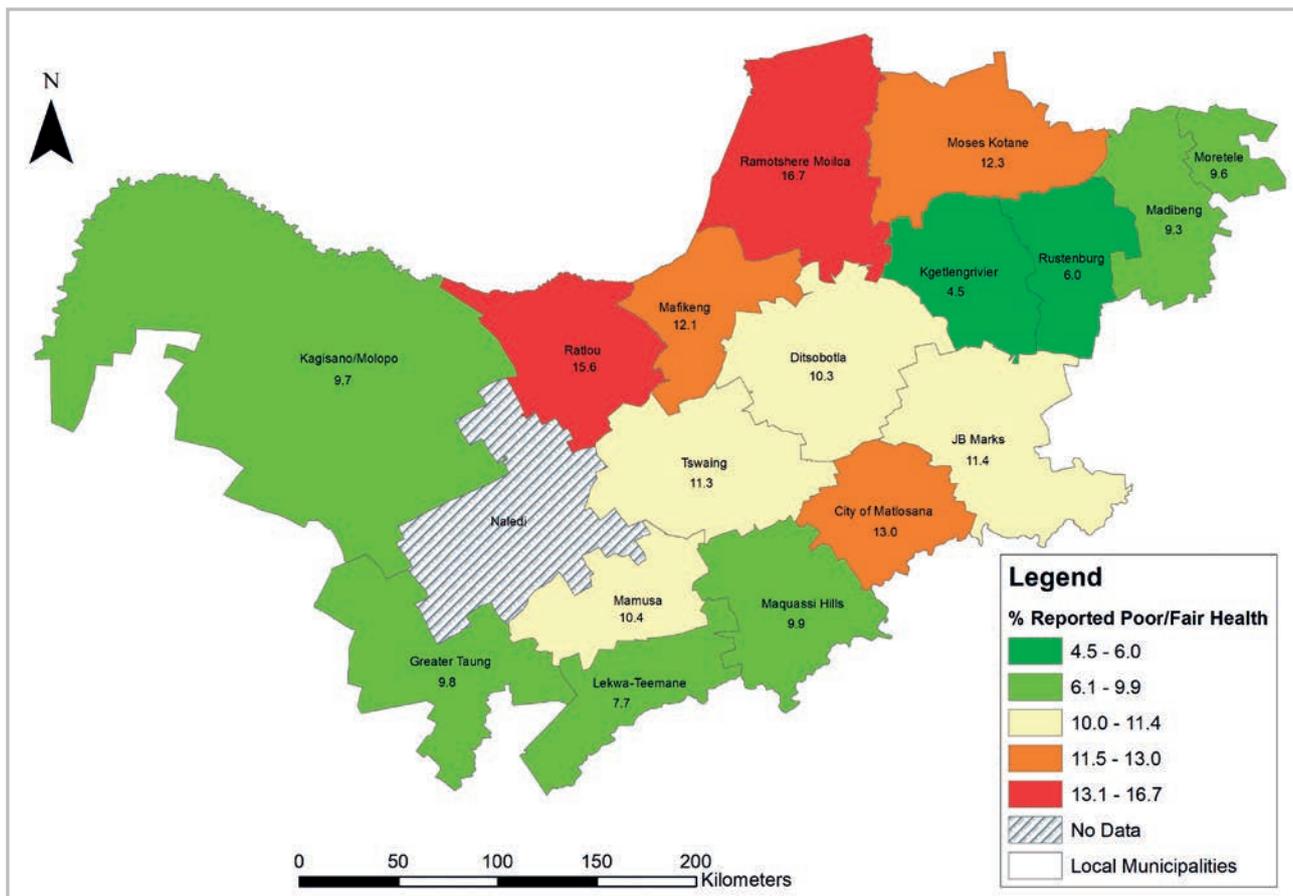
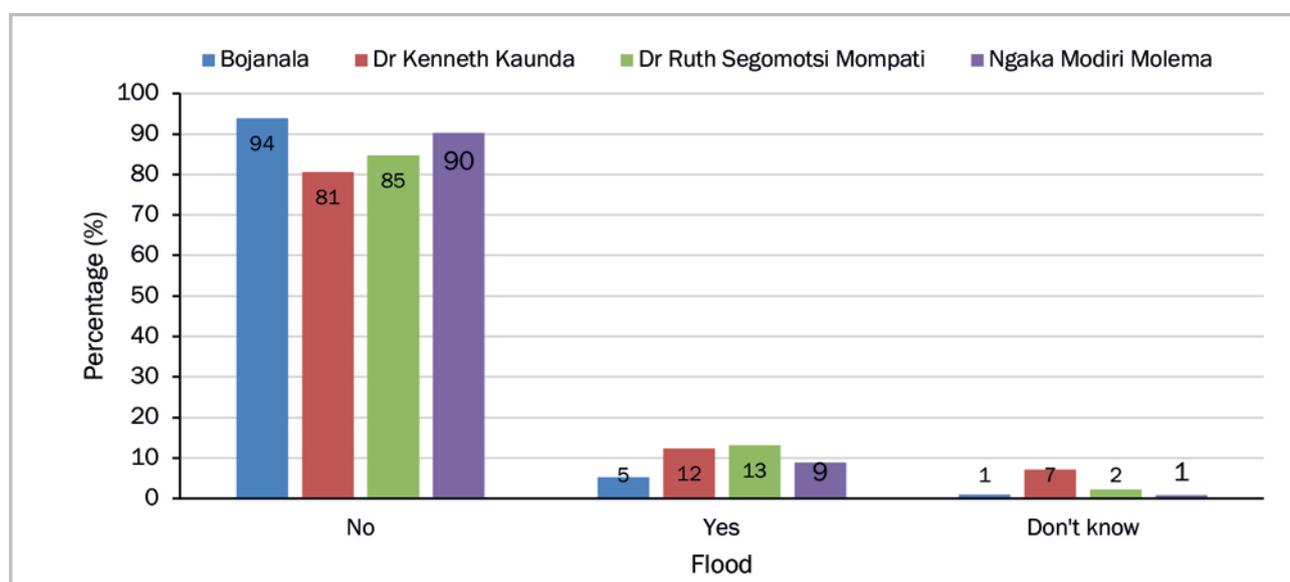


Figure 91 Household members reported perceived health status by local municipality

This section covers some of the shocks and their associated effects on household food availability. The COVID-19 coping strategies are also covered in this section bearing in mind that the survey was conducted three weeks after the first COVID-19 lockdown, which affected household food access and availability in the study area.

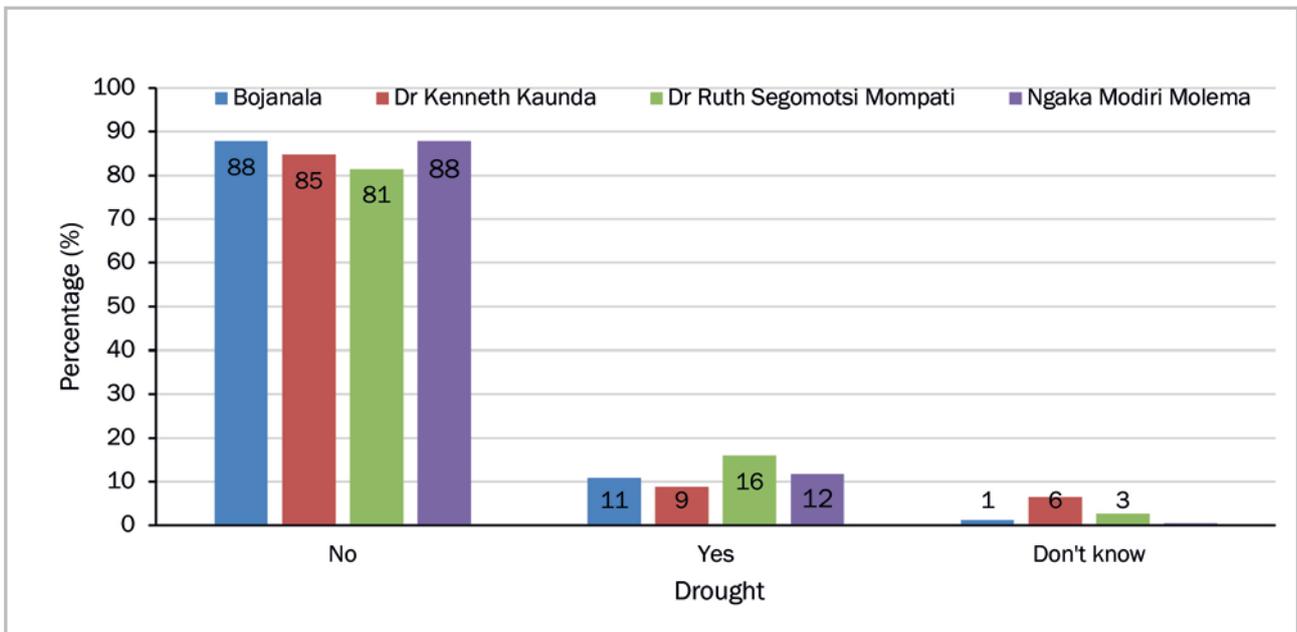
### 9.2.1 Drought and water shortage

Shocks due to floods were not commonly reported across the three districts of the North West Province. Only 13% of the households in Dr Kenneth Kaunda and Dr Ruth Segomotsi are reported to have experienced flooding. Over 80% across the four districts reported that they have not experienced floods (Figure 92). In general, the North West Province does experience periods of above normal rainfall, which bring flooding in the area; however, during the period of the survey in 2020, South Africa experienced close to normal rainfall, since it was a neutral year. Only the southern parts of the North West Province experienced slightly more than normal rainfall.

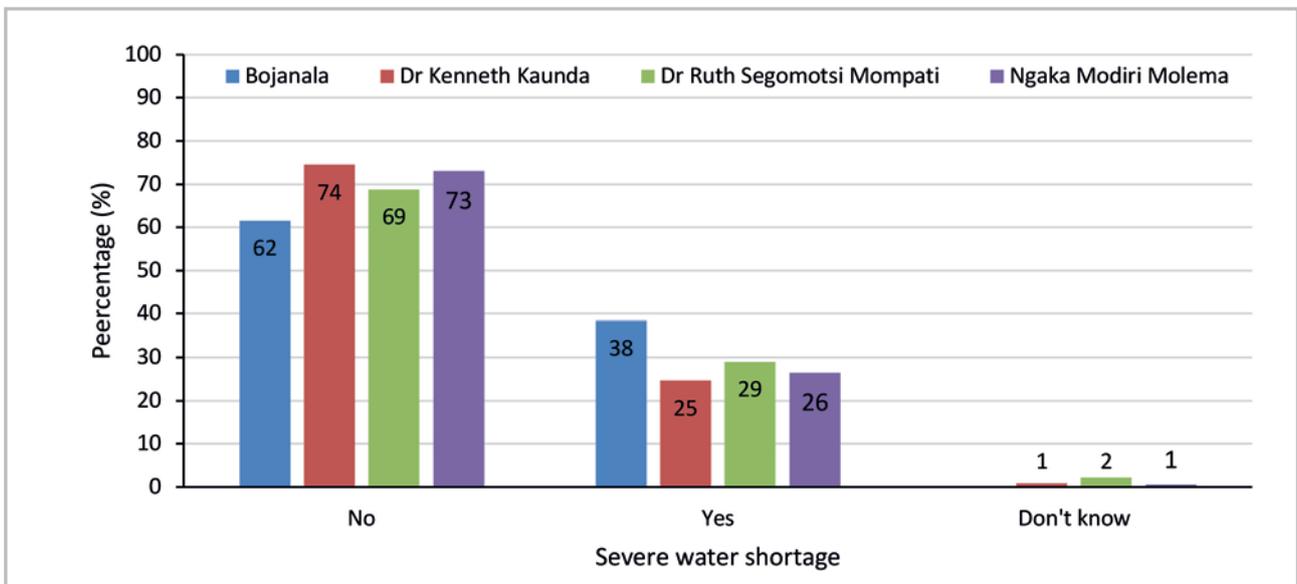


**Figure 92:** Households that experience floods in the last 12 months in Northwest Province

Overall, North West experiences inter annual variation when it comes to drought. It experiences years with wet summers, neutral, and dry seasons as shown in Figure 93 below. Only a handful (less than 17% in all districts) have experienced drought shock during the study period.



**Figure 93:** Household that experience drought shock by district in the last 12 months in North West Province



**Figure 94:** Household that experience severe water shortage shock by district

Severe water shortage is one of the shocks that was reported in most of the districts and was more pronounced in Bojanala District (38%) as depicted by the graph. However, severe water shortage was least reported in Dr Kenneth Kaunda (25%) (Figure 94). It should be noted that most of the parts of the province are generally dry, and they do experience water supply challenges.

### 9.2.2 Crop disease and crop failure

Crop failure and emergence of crop diseases were widely reported across the districts, with Nkangala having about 73%, whilst the least was reported in Ngaka Modiri Molema District (31%) (Figure 95).

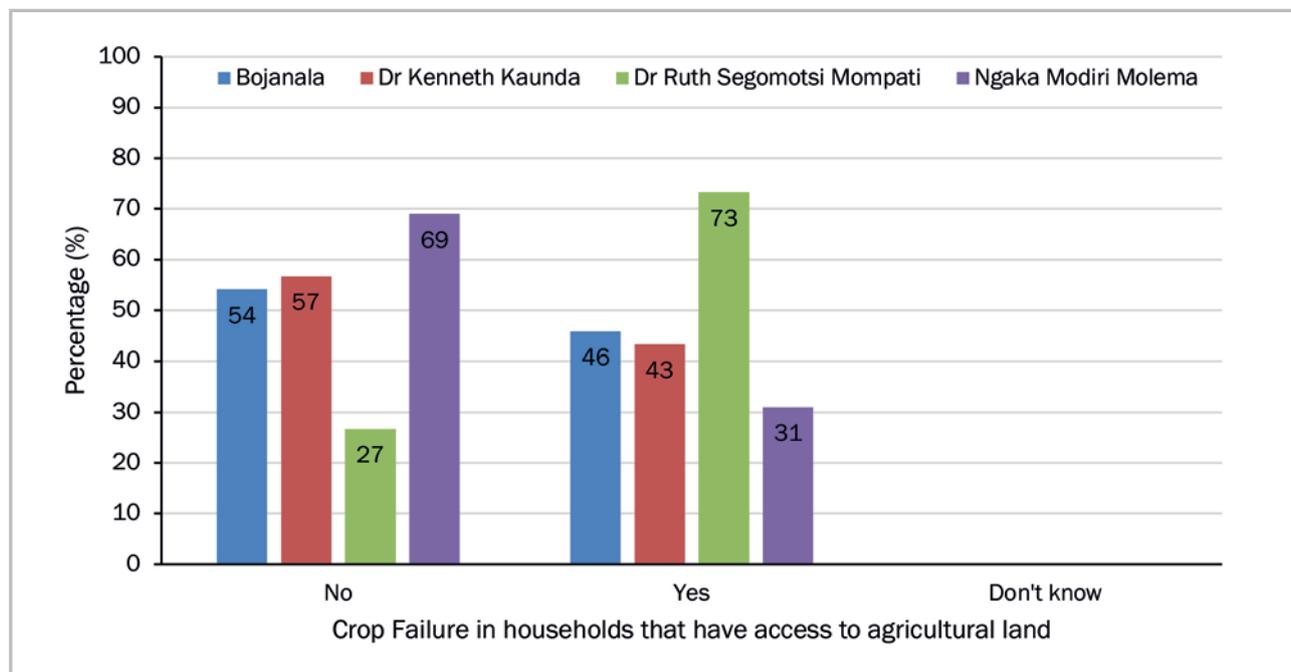


Figure 95: Households that experience crop failure shock by district

The high number of crop failure recorded in Dr Ruth Segomotsi Mompoti are closely related to the fact that crop production is highly practised in that Municipality (Figure 96). On average, all the districts are involved in agricultural production activities, hence the slightly high number of crop failure and disease.

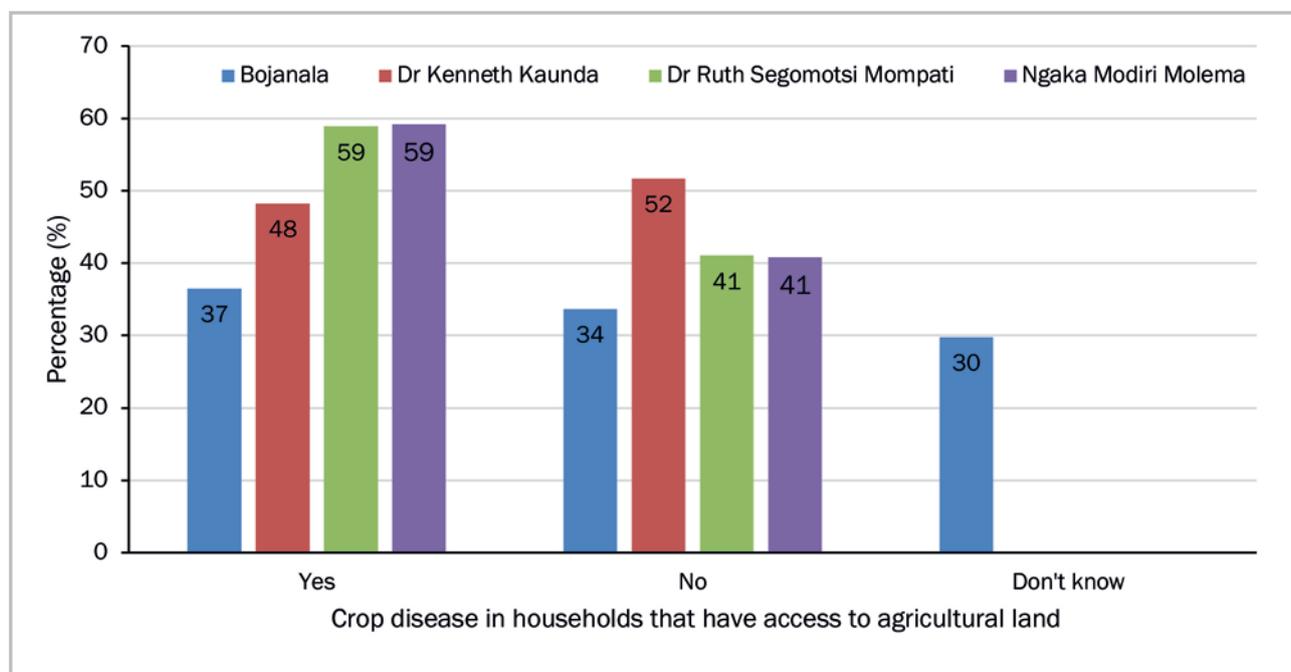
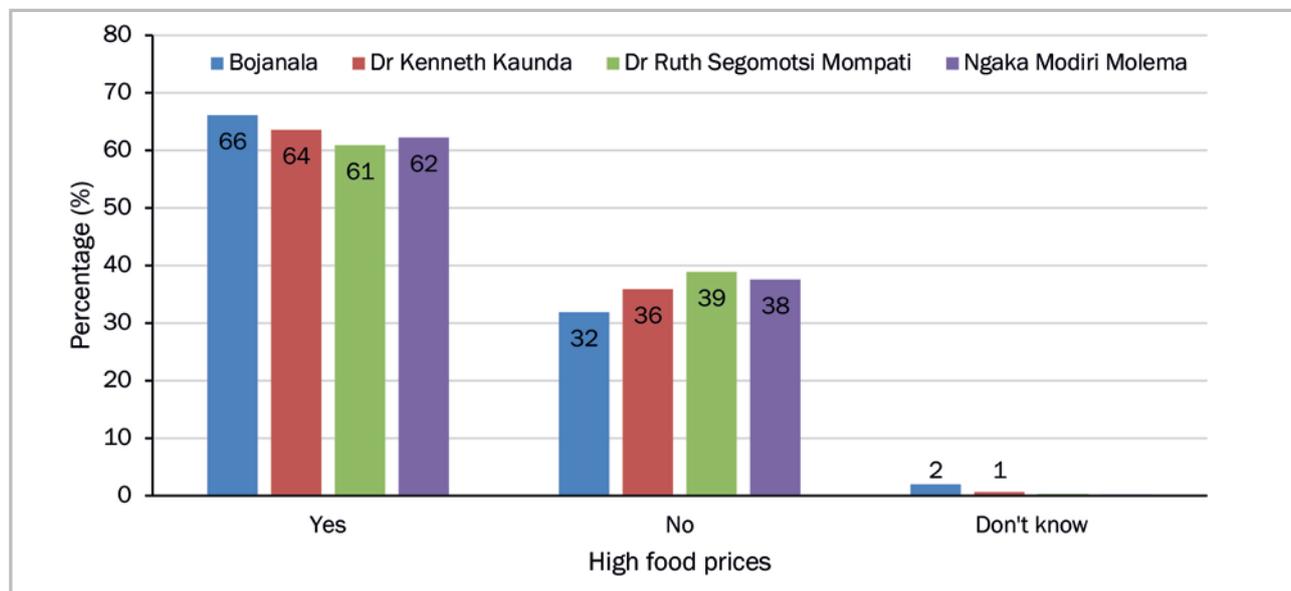


Figure 96: Households that experience drought and water shortage shock by district

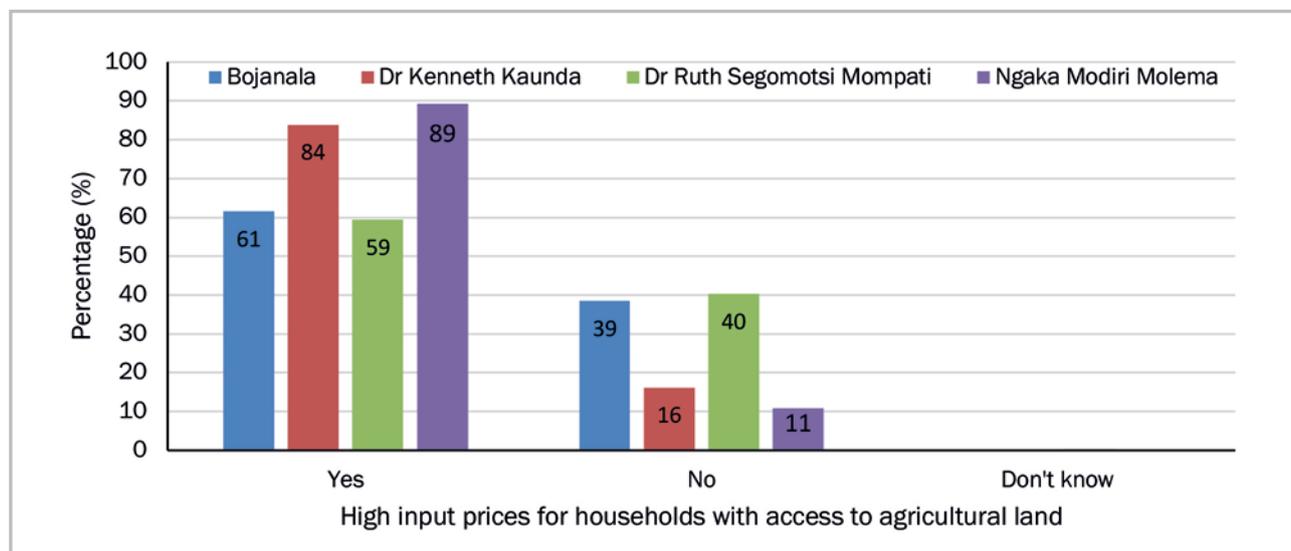
### 9.2.3 Increase in inputs and food Prices

The increase in food prices was the biggest shock experienced across all the four districts in North West Province. All the four districts reported percentages above 60%, in terms of increases in food prices. This is attributable to the idea that there was extremely limited food production globally, and shocks such as the COVID-19 pandemic would immediately trigger price increases since the supply chains were disrupted.



**Figure 97:** Household that experience high food prices shock by district

The increases in input prices were highly reported in Ngaka Modiri Molema District (89%) and Dr Kenneth Kaunda District (84%), whilst it was least in Dr Ruth Segomotsi Mompoti District (59%). The increase in input prices also has a direct effect on the increase in the food process, hence this justifies the reported increases in food prices across the four districts (Figure 97).



**Figure 98:** Households that experience high input prices shock by district

### 9.2.4 COVID-19 shocks and associated coping strategies

The COVID-19 pandemic resulted in serious disruptions to food supply chains and production systems. Results indicate that in three of the four districts in the North West Province, about 16% of the households in each district were never worried about food running out, except in Ngaka Modiri Molema, which had a slightly higher number of households (22.9%) who were never worried about food running out (Table 64).

**Table 64:** Households that worried their food would run out before we got money to buy more

We worried our food would run out before we got money to buy more	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	16.0	96	16.2	65	15.4	77	22.9	109
Rarely	16.8	94	18.2	80	11.9	53	10.6	70
Sometimes	38.8	208	30.3	170	44.9	225	28.3	175
Often	28.4	153	35.3	178	27.8	135	38.2	169

Dr Ruth Segomotsi Mompoti District had the highest percentage (44.9) of households who were sometimes worried about their food running out before they can get money to buy some more food. This followed an almost similar trend in Bojanala District where about 39% of the households sometimes worried that their food would run out. In all the four districts as well, the food that they bought did not often last and at least 30% of the respondents did not have money to buy more food (Tables 65 and 66).

**Table 65:** Households whose food did not last, and they did not have money to get more

The food that households bought just did not last, and they did not have money to get more	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	17.7	114	21.2	76	17.8	90	26.0	119
Rarely	18.9	110	15.7	78	16.1	80	9.9	78
Sometimes	33.6	188	31.0	180	46.1	225	32.5	192
Often	29.8	138	32.1	159	20.0	95	31.6	135

**Table 66:** Households who could not afford sufficient and nutritious food because the price of food increased

Households couldn't afford sufficient and nutritious food because the price of food increased	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	19.4	105	20.9	74	14.8	79	28.4	126
Rarely	15.0	89	14.2	74	20.0	84	11.7	77
Sometimes	35.4	218	30.5	181	43.1	220	28.2	180
Often	30.2	139	34.5	164	22.1	107	31.7	141

In all the districts, at least 30% of the households reported that they could not often afford sufficient and nutritious food because of the price increases. Across all the four districts, the respondents reported that they sometimes could not afford sufficient and nutritious foods owing to the increases in the price of food. As a result, most households were unable to eat healthy and nutritious foods, as shown in Table 67 below, where 46.1% of the respondents in Dr Ruth Segomotsi Mompoti District reported that sometimes they were unable to eat healthy and nutritious food.

**Table 67:** Households which were unable to eat healthy and nutritious food

Households were unable to eat healthy and nutritious food	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	21.0	109	19.2	71	15.1	80	24.0	120
Rarely	16.4	97	16.2	79	18.2	83	9.2	76
Sometimes	36.8	223	33.0	187	46.1	231	32.8	183
Often	25.7	124	31.6	156	20.6	96	34.1	146

**Table 68:** Households which could not access the cheap and affordable food market, because they were shut down due to national lockdown restrictions.

Households could not access the cheap and affordable food market, because they were shut down due national lockdown restrictions	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	19.0	113	20.0	76	17.5	91	29.2	143
Rarely	18.0	112	17.9	93	24.6	106	11.3	78
Sometimes	37.1	212	29.0	166	43.7	219	31.0	188
Often	25.9	111	33.1	158	14.2	74	28.5	115

Most households across the districts reported that sometimes they could not access cheap and affordable food markets since they were shut down because of COVID-19 national lockdown restrictions. However, this was mostly experienced in Dr Ruth Segomotsi (Table 61).

**Table 69:** Household heads who were hungry but did not eat

Households were hungry but did not eat	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	46.9	277	33.9	157	43.7	226	50.2	231
Rarely	19.0	100	17.3	98	24.4	112	10.5	86
Sometimes	19.2	111	32.2	158	17.3	90	24.7	144
Often	14.9	56	16.5	75	14.5	59	14.5	64

**Table 70:** Household head who had to skip a meal

Households had to skip a meal	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	44.7	247	27.7	137	39.9	194	40.6	213
Rarely	17.0	94	18.8	93	19.5	95	16.0	84
Sometimes	23.9	132	32.2	159	26.5	129	28.6	150
Often	14.3	79	21.3	105	14.0	68	14.9	78

Although skipping a meal was least reported across all the districts of North West, in Dr Kenneth Kaunda it was often high (21.3%) compared to other districts. In Bojanalo (44.7%) of household heads never had to skip meals. This is also attributable to the fact that these are not major food crop producing districts since they mostly rely on formal employment in the commercial agricultural sector, mining, and tourism. Hence, households would rely entirely on buying food which was limited due to restricted markets and high food price.

**Table 71:** Households who ran out of food

Households ran out of food	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	39.6	229	32.4	141	39.0	190	39.1	216
Rarely	15.9	94	15.8	96	18.3	101	11.9	77
Sometimes	26.7	150	30.3	148	27.7	128	34.1	152
Often	17.9	73	21.5	107	15.0	69	14.9	80

COVID-19 was expected to increase the number of households who are food insecure in developing countries. In North West Province, in all the districts, at least 15% of the households did report that often they run out of food, with at most 39% of the households in all the four districts reporting to have often run out of food.

**Table 72:** Household heads who went without eating for a whole day

You went without eating for a whole day	District							
	Bojanala		Dr Kenneth Kaunda		Dr Ruth Segomotsi Mompoti		Ngaka Modiri Molema	
	%	N	%	N	%	N	%	N
Never	58.2	332	42.8	208	51.4	263	58.5	279
Rarely	14.8	73	16.9	85	19.9	87	9.0	63
Sometimes	15.8	87	25.0	132	17.3	81	22.4	129
Often	11.2	44	15.3	64	11.4	49	10.1	52

Results show that it was exceedingly rare for the household heads to go without eating for the entire day. About 15.4% of the households in Dr Kenneth Kaunda often went the entire day without eating during the COVID-19 pandemic. About 22% of the household heads in Ngaka Modiri Molema sometimes went the whole day without eating.

Food security is one of the strategic imperatives for South Africa, as outlined in many government policy documents, including the Constitution and the National Development Plan. The right to have access to sufficient food by all citizens is enshrined in the Constitution of the country. This survey provides a baseline assessment of the food and nutrition security situation of households in North West Province. The findings presented in this report provided insights regarding the food and nutrition security status across the four dimensions of food and nutrition security in the province.

### Demographics characterisation

More than half (51.1%) of household heads were males. The Black African population group accounted for 97.3%, while those aged 65 years and older constituted 24.3%. In terms of marital status, those who were single accounted for 40.8%. Bojanala recorded the highest percentage with 26.8%, while Dr Ruth Segomotsi Mompati accounted for the least proportion with 23.7%. With regards to household members, more than half (53.2%) of household heads were females, and the majority were children aged 0 to 14 years old, with 30.6%. Three out of four household members were single. Dr Ruth Segomotsi Mompati and Ngaka Modiri Molema districts had 26.1% of household members each, while Dr Kenneth Kaunda had the least with 23.4%.

Secondary school education accounted for 38.9%, followed by those with matric qualification at 25.5%. The older household heads, those aged 65 years and older and those aged 55 years to 64 years, had higher percentages of no schooling, with 37.2% and 22.8%, respectively. Ngaka Modiri Molema had the highest percentage (9.8%) of household heads with tertiary education.

### Socio-economic status, health, and well being

This survey has revealed that socio-economic challenges that include limited food production at household level, high dependencies on social grants, acute unemployment among the youth and dwindling household incomes expose households to food and nutrition insecurity. Subsistence farming in rural areas of the North West Province has been plagued by climate change and further exacerbated by the COVID-19 pandemic, which had accumulated effects on food and nutrition security. Most household heads reported having experienced coughs/colds/chest infections at 19.7%, followed by headaches (15.1%), hypertension (11.0%), other disease (7.2%), abdominal pains (6.3%) and HIV/AIDS (6.1%) in that order. Cough/cold/chest infections accounted for 12.3% of household members.

Among the household heads and members who were economically active, 56.0% and 73.7%, respectively were unemployed. A higher proportion (75.1%) of female household heads were unemployed compared to their male counterparts (39.3%). About 80% of female household members were unemployed compared to 66.5% of males. Among the youth, those aged 34 years and younger, the unemployment rate was 54.3% and 82.1% for household heads and members, respectively. The highest percentage (35.8%) was recorded among households which recorded between R1 501 and R3 000, followed by those that had no income or earned less than R1 500 with 24.9%. Male-headed households had a significantly higher percentage (17.7%) of household income of more than R6 000, compared to female headed ones with 10.6%. Households headed by those aged from 25 to 34 years old had the highest percentage of household income of more than R6 000 with a percentage of 17.2%. The majority of household heads and members in the North West rely on social welfare grants (including old age grant) as their source of income, with 34.5% and 36.9%, respectively. About a third (33.3%) of household heads reported salaries and wages as their source of income.

## Access to basic services and social amenities

North West Province shows that the most common dwelling type occupied by households was described as a formal dwelling/house or brick/concrete block structure on a separate stand or yard or on a farm (87.9%). The predominant source of drinking water in North West Province was tap water in the yard, making up 40.4% of all water sources. Public/communal taps (16.1%) were the second most common drinking water source for households. Only 12.5% of the households had access tap water inside the dwelling. Boreholes accounted for 13.2% of all water sources. About 3.5% of the household's main source of drinking water was from water vendors. Of those households that reported the municipality as the supplier of their main source of drinking water, only 28.1% of households paid for it. Pit latrine/toilets with ventilation pipes were the most common toilet facility used by the households, accounting for 30.5% of all toilet types. Twenty-nine percent of households used flush toilets connected to public sewerage. The majority (91.5%) of the households indicated that they had access to electricity in North West Province. Of the households that indicated they had access to electricity, 97.6% were connected to the main electricity supply. Wood (5.9%) was the second most used energy source for cooking. Other sources of energy, such as coal, paraffin, animal dung, and gas, were the main source of energy for less than 5% of the households. Electricity was the main source of energy for cooking.

## Access to land and agriculture production

At least 65% of the households in the three districts have access to land. Dr Kenneth Kaunda is the only district with limited access to land, with only 47% of the households having access to land. Bojanala District is the largest district in the province, covering almost 44% of the province. Within North West, at least 30% of the households in both Dr Kenneth Kaunda and Dr Ruth Segomotsi Mompoti districts use the land for food production and other agricultural purposes. Results from the household survey show that of the land that they have access to, most households have ownership rights, with both Bojanala and Dr Kenneth Kaunda households at the forefront with 83%, followed by Dr Ruth Segomotsi at 82%. However, the size of the land owned ranged from zero to a quarter of a hectare (0-0.25ha). Households in North West Province are practising livestock production at a lower scale.

Dr Ruth Segomotsi and Ngaka Modiri Molema district municipalities have the highest level of participation in livestock production with percentage values of 37% and 30%, respectively. All three districts produce maize (33.3%) except for Dr Ruth Segomotsi Mompoti District Municipality. North West Province is part of The Maize Triangle, a high yield maize area, and that is why all the districts practise maize production, except for Dr Ruth Segomotsi Mompoti.

## Food security indicators

The HFIAS results show that only 25.5% of households were food secure, 18.5% were mildly food insecure, 30.1% were moderately food insecure, and 25.9% were severely food insecure. Male-headed households were found to be food secure (30%) compared to 21% of female-headed households. Ngaka Modiri Molema District had the highest proportion of households that were food secure (28%), followed by the Bojanala and Dr Ruth Segomotsi Mompoti districts with 27% and 22% of households that were found to be food secure, respectively. The least food secure district was found to be Dr Kenneth Kaunda, with 20% of the households found to be food insecure.

The HHS scale shows that most of the sampled households experienced little to no hunger (69%). About 21.2% and 9.8% of the households experienced moderate hunger and severe hunger, respectively. The HHS suggests that the level of food deprivation is not very severe for most of the households in the North West. On average, the households in North West consumed more than 7 out of 12 food groups, which suggests above-average dietary diversity levels. In North West Province, about 76.8% of households consumed highly diverse diets (more or equal to 6 food groups), whilst 17.1% and 6.1% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively.

The food consumption score (FCS) in North West shows that most households (44.8%) were consuming adequately (acceptable) diversified diets and about 33.9% of households are at the borderline and could fall into unacceptable diversity of foods if no actions are taken to help them improve their diets. On average, the households' food expenditure per person per month in North West Province was R578.58, which is below the food poverty line (Figure 67) - using the 2021 food poverty line (i.e., R624).

### **Nutrition indicators**

Reports of between 69.0% and 88.6% were recorded for children that were ever breastfed across all districts, with no significant differences between districts. Overall prevalence of stunting for children under the age of 5 years (n=403) was 32.9%, of which 15.1% was severe and 17.8% was moderate stunting. It appeared as if children in the younger age groups had a higher prevalence of severe stunting (slightly more than 25.0%) compared to those in the older age groups (less than 15%).

The overall prevalence of wasting for children under the age of 5 years (n=408) was 4.8%, of which 2.1% was severe and 2.8% was moderate wasting. The prevalence of severe wasting was highest in children aged 18-29 months (4.0%) and 42-53 months (4.3%), compared to 1.2% or less in all other age groups. The prevalence of moderate wasting was highest in children aged 6-17 months (7.1%) compared to 2.7% or less in all other age groups. Dr Ruth Segomotsi Mompoti reported the highest overall prevalence of wasting (8.2%), while Dr Kenneth Kaunda reported the lowest overall prevalence (1.3%).

The overall prevalence of underweight for children under the age of 5 years (n=428) was 15.0%, of which 4.4% was severe and 10.6% was moderate underweight. The prevalence of overall, moderate, and severe underweight was highest in children aged 42-53 months at 23%, 16.2%, and 6.8%, respectively. Like wasting, Dr Ruth Segomotsi Mompoti also reported the highest overall prevalence of underweight (33.2%), which was significantly different to that of Bojanala, who reported the lowest overall prevalence (7.6%).

The overall prevalence of overweight for children under the age of 5 years (n=408) was 15.3%, of which 10.7% was severe and 4.6% was moderate overweight. The prevalence of all categories of overweight (all, moderate, and severe) was highest in children in the youngest two age groups; <6 months (27.7%, 13.2%, 14.5%, respectively) and 6-17 months (27.7%, 11.4%, 16.3%, respectively) compared to the older two age groups; 42-53 months (1.6%, 1.6%, 0.0%) and 54-59 months (1.4%, 0.0%, 1.4%). Females had a higher prevalence of overweight (16.3%) compared to males (13.9%). Ngaka Modiri Molema reported the highest overall prevalence of overweight (18.3%), while Dr Ruth Segomotsi Mompoti reported the lowest overall prevalence (7.7%).

The mean BMI for adults aged 18 years and older (n=1810) in North West was 26.2 kg/m<sup>2</sup>.

Those aged 25-35 years also had a significantly lower mean BMI compared to those aged 45 years and older. There were no significant differences in mean BMI at a district level.

Overall, 46.5% were classified as either overweight (19.0%) or obese (27.4%). Around 40% (42.8%) were classified as normal weight and 10.7% were classified as underweight. When disaggregating by gender (Females n=1157, Males n=650), the proportion of both overweight (21.2% vs 15.1%) and obesity (38.1% vs 9%) is higher in females than in males, respectively. The mean waist hip ratio for males (n=667) and females (n=1203) was 0.92 (range: 0.87-0.97) and 0.87 (range: 0.82-0.91), respectively. However, Table 7.13 clearly shows that overall, a far greater proportion of females (46.9%) had a high WHR compared to only 10.3% for males.

### **COVID-19 and other shocks**

Because of COVID-19, in all the districts, at least 30% of the households reported that they could not often afford sufficient and nutritious food because of the price increases. In all the four North West districts, it was reported that more than 60% of the respondents reported a shock in terms of increases in food prices. This is attributable to extremely limited food production globally, and shocks such as the COVID-19 pandemic.

Almost 13% of the households in Dr Kenneth Kaunda and Dr Ruth Segomotsi have reported to have experienced flooding. Over 80% across the four districts reported that they have not experienced floods. Crop failure and emergence of crop diseases were widely reported across the districts, with Nkangala having about 73%; the least was reported in Ngaka Modiri Molema District (31%).

- Focus Group Discussions generally revealed a lack of young people's participation in agricultural activities. To revitalize rural economies, the government and other stakeholders need to pay attention towards attracting the youth into the agriculture sector, particularly rural youth, so that traditional land plots can be used for agricultural purposes. A sizeable number of households were involved in agricultural activities to increase production.
- Water shortage and recurrent drought emerged as part of major shocks. This implies that there is a need for a well-thought-out water provision programme in North West Province for household use and for agriculture production purposes. Possible interventions could be the construction of dams for irrigation, and domestic water reticulation systems at the household level.
- Promotion of projects and programmes that encourage good hygiene practices, such as the use of latrines and washing hands with soap after using the toilet is crucial.
- Breastfeeding promotion, growth monitoring for improved case detection in children who need care, appropriate referrals, and management of acute malnutrition, coupled with appropriate messages on complementary feeding remain key interventions that need to be done. There is a need to scale-up multiple micronutrient supplementation during pregnancy, calcium supplementation to mothers at risk of low intake, promotion of maternal balanced nutrition, use of iodised salt, deworming, and vitamin A and Zinc supplementation for children under 5.
- Nutrition assessment of children under five at all points of contact should be strengthened. More focus should be given to the first 1000 days of a child's life. Nutrition assessment during pregnancy and appropriate management of pregnant women who are underweight or with poor weight gain should be strengthened during basic antenatal care services.
- Households need support in some months of the year (mainly January and June) to avoid negative consumption reduction practices and incidence of seasonal hunger. Interventions that seek to help households budget and save in anticipation of lumpy expenditures are crucial to ensure year-round food security.
- Enlightenment about the importance of micro- and macro-nutrient consumption is a crucial food security programme that must be formulated to focus on the production and consumption of foods aimed at improving the identified deficient micro-nutrient at the household level. Interventions on food preparation, meal planning, and nutrition advice to support home production of fresh produce is required for improved dietary diversity in the households.
- These interventions, together with full scale implementation of other nutrition sensitive programmes and approaches such as school feeding, agriculture and food security enhancement programmes, social safety network, early childhood nutrition, women empowerment, child protection water, sanitation and hygiene, and other health and family planning services in an enabling environment will greatly reduce morbidity and mortality in childhood, incidence of obesity and non-communicable diseases, while on the other hand contributing to the improvement of cognitive, motor socio-emotional development, school performance and learning capacity, adult stature and work capacity and productivity.
- Promotion of domestic food production: This will involve encouraging families to produce their own food to ensure food security at household level. In North West, most families rely on food purchased from supermarkets, and formal and informal traders. This is unsustainable and makes households more vulnerable to food insecurity.

- Focused investment and the establishment of food banks: Creating an enabling environment for commercial food production - There is need to increase agricultural production in each district through focused food production and agro-processing investments. These can be distributed through fruit and vegetables markets that can be strategically located close to vulnerable households in all districts of the province. The markets may also serve as food banks where items imported elsewhere can be sold at affordable prices.
- Focus on employment creation: Targeted intervention through an agric-sector employment creation drive - A combination of high levels of unemployment and dwindling incomes means that vulnerability to food insecurity will always remain high.
- Land redistribution and restitution: Most households reported limited access to land hence there is a need for deliberate land apportionment to empower the vulnerable, especially women and the youth. Competing priorities for land pose a threat to agriculture production. People seem to prefer obtaining big pieces of land and use it to build houses rather than food production. Considering this, the government is tasked to provide priorities for land use. This will increase and sustain agricultural production in rural areas of South Africa. It has potential to allow agriculture to serve as significant sources of income for households.
- Investment in post-harvest agro-processing: Although some households were found to be involved in agricultural activities now, these are not sustainable and cannot ward off household vulnerability to food insecurity. A food system that encourages and enables households to process and consume what they produce locally is needed. Households need support in some months of the year (mainly January) to avoid reduced consumption patterns and incidence of seasonal hunger. Interventions that seek to help households budget and save in anticipation of lumpy expenditures are crucial to ensure year-round food security. Awareness raising to enlighten households about the importance of dietary diversity for improved nutrition is crucial. Implementation of nutrition sensitive food security programmes by all sectors should be initiated.
- Enhancing food Safety: Informal traders and small businesses that trade in agricultural products need assistance to help them improve the quality of their services through quality assurance and extend the lifespan of their products. COVID-19 has irreversibly transformed human perception of food and food safety. As a result, people have realized the importance of consuming safe and healthy food, not only to boost one's immune system but also to prevent the spread of diseases. As revealed in this study, people do not have equal access to safe and healthy food. For most poor people, informal traders are the main source of food. It is for this reason that a proposal to integrate food safety and quality standards in the operations of informal traders and small to medium enterprises is here being made. This will improve the quality of food items traded and increase the profits for informal traders.

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