

National Food and Nutrition
Security Survey

NORTHERN CAPE PROVINCE REPORT



National Food and Nutrition Security Survey Northern Cape Province Report

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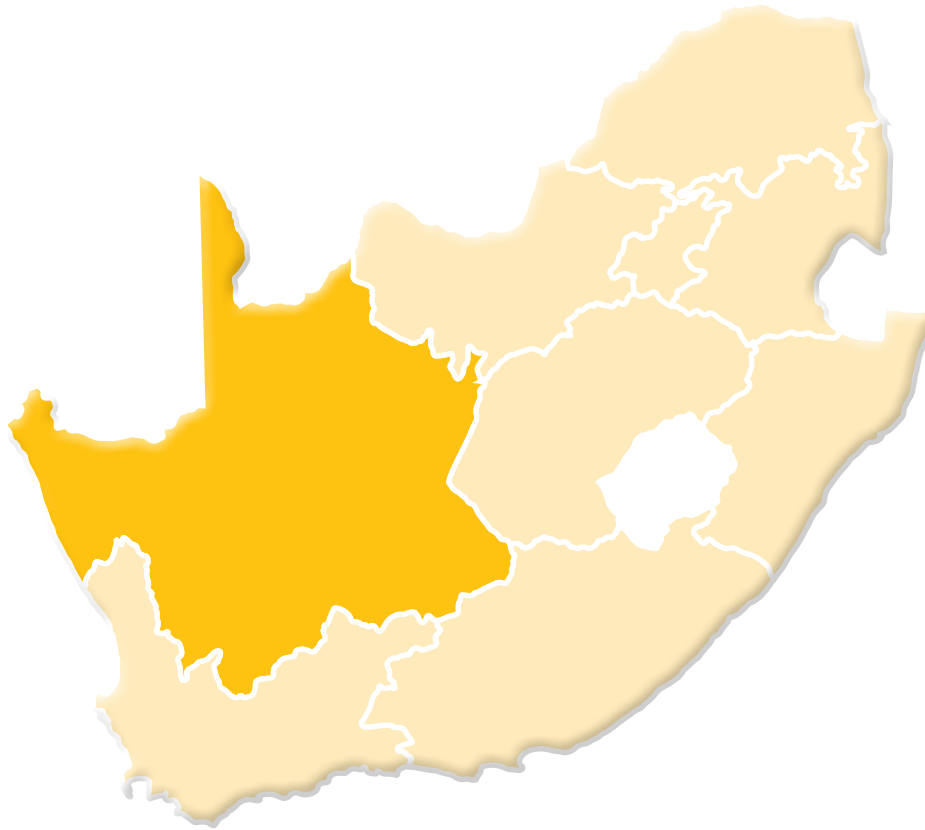
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List of Abbreviations

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

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



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Disclaimer

This report is based on the empirical evidence collected from selected Small Area Layers (SALs) within the five districts of the Northern Cape 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 February - March 2022. 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 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 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 five districts of the Northern Cape 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 4 515 visiting points (VPs), 88.7% were valid. Out of these valid VPs, 60.4% were realised. A total of 2 074 people were interviewed in this province; when weighted, this total represents 855,674 South Africans 18 years and older living in the Northern Cape Province.

Several internationally accepted food security indicators, such as the Household Food Insecurity Access Score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and Household Dietary Diversity Score (DDS), were used to capture the different dimensions of food and nutrition security. The results indicated that many households were food insecure in the Northern Cape Province. The HFIAS revealed that below half 34.5% of households were food secure, with the remaining 65.5% of the households being food insecure. Furthermore, of those who were food insecure, 21.2% of the households experienced severe levels of food insecurity. The HHS showed that over 70% of households experienced little to no hunger, while 19.2% and 7.3% of households experienced moderate hunger and severe hunger, respectively. The FCS and HDDS showed that over 52.3% and 81.0%, respectively, consumed an acceptable number of food groups across all the districts. The FCS indicated

that 23.6% of households consumed poor diets, while 24.1% 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 ZF Mgcawu District, where 27% of the households were severely food insecure and 11% experienced severe hunger as determined by HFIAS and HHS, respectively. Additionally, households from the ZF Mgcawu region 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 Frances Baard, John Taolo Gaetsewe, and Namakwa, while the Pixley ka Seme District had the lowest proportion of households experiencing severe food insecurity (9%). Severe food insecurity was more prevalent among households headed by younger household heads, and among the households from Frances Baard, John Taolo Gaetsewe, and Namakwa districts.

Significant relationships were found between household food security status and some demographic and socio-economic factors such as gender, age of household head/ acting head, access to irrigation, water source, sanitation, social grants, household size, markets, education level of household head/ acting head, and involvement in agricultural production. Overall, the results showed that social grants, education levels, and employment were positively correlated with better food security outcomes. As an example, the proportion of food-secure households increased significantly as education levels also increased, only 21.9% of households headed by people with no education were food secure, compared to 78.9% 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 the Northern Cape is dependent on agricultural activities as well as the expansion of social protection measures (such as social grants) and creating employment opportunities.

The survey indicates that 85.6% of children under 2 years were breastfed at some point in their lives. The provincial prevalence of overall stunting, wasting, and underweight in children aged 0-5 years is 41.3%, 20.8%, and 25.8% respectively, compared to 37.7%, 19.1% and 22.6% in 2012. These results indicate that the proportion of children experiencing acute and chronic undernutrition has increased over the past 10 years. Over the same time period, the combined prevalence of overweight and obesity in adult females has decreased slightly from 62.0% to 57.6%, while that of adult males have remained more or less the same 25.0% to 25.1%. Across the districts, overall Pixley ka Seme District remains the highest risk with an overall prevalence of stunting of 73.2%, a severe stunting prevalence of 15.6%, a severe wasting prevalence of 48.4%, and a severe undernutrition prevalence of 47.6%. However, ZF Mgcawu District has the highest prevalence of severe stunting (21.8%). The nutrition indicators for both children and adults showed some significant correlations with food security status of households. In children, stunting, underweight, and overweight were significantly correlated with food security status. In adults underweight, obesity/overweight, and individual dietary diversity showed some significant correlations with the food security status of households. Summary results on food security and nutrition indicators for the Northern Cape.

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 the five districts in the Northern Cape Province. The highest shocks were experienced in Namakwa and ZF Mgcawu districts, with 67% and 64%, respectively. Frances Baard District had the highest percentage (41.5%) of households who were sometimes worried about their food running out before they can get money to buy some more food. Frances Baard (42.6%) and Pixley ka Seme (35.4%) districts also had the highest percentages 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: Northern Cape 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
Frances Baard	24.0	52.0	24.0	70.0	20.0	9.0	83.0	13.0	4.0	80.0	15.0	5.0
John Taolo Gaetsewe	36.0	40.0	24.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Namakwa	40.0	43.0	17.0	79.0	17.0	4.0	81.0	14.0	5.0	53.0	26.0	21.0
Pixley ka Seme	42.0	50.0	9.0	86.0	12.0	2.0	85.0	11.0	4.0	74.0	17.0	9.0
ZF Mgcawu	40.0	34.0	27.0	71.0	18.0	11.0	83.0	12.0	5.0	48.0	25.0	27.0
Province	34.5	44.3	21.2	73.5	19.2	7.3	81.0	13.2	5.9	52.3	24.1	23.6

DISTRICTS	NUTRITION INDICATORS (%)											
	STUNTING			WASTING			UNDERWEIGHT			ADULT BMI		
	All	Moderate	Severe	All	Moderate	Severe	All	Moderate	Severe	Underweight	Overweight	Obese
Frances Baard	40.0	23.0	17.0	8.9	4.3	4.6	8.3	3.0	5.4	21.6	14.5	27.7
John Taolo Gaetsewe	25.2	17.9	7.3	9.2	3.6	5.5	14.3	11.6	2.7	9.1	24.8	36.0
Namakwa	27.0	13.9	13.1	8.9	6.5	2.4	11.6	8.0	3.6	18.2	21.2	29.4
Pixley ka Seme	73.2	57.6	15.6	49.9	1.5	48.4	58.9	11.3	47.6	16.2	15.1	20.8
ZF Mgcawu	35.7	13.9	21.8	18.8	11.5	7.3	26.8	13.8	13.0	25.4	15.2	28.4
Province	41.3	26.2	15.1	20.8	5.6	15.2	25.8	10.2	15.6	18.6	17.7	28.8

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 which 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), 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, the 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 solid legislative, constitutional, and policy framework for food and nutrition security imperatives, a significant proportion of South Africa’s population faces massive food and nutrition challenges. These 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, many families and individuals go to bed hungry (Stats SA, 2019). Recent estimates are that the number of individuals with inadequate or severely inadequate access to food stands at 13.7 million (Stats SA, 2019). This was confirmed in 2019 by the World Food Programme.

Food security is a multi-dimensional concept¹, 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, 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 household level in the respective livelihood zones in Northern Cape 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.

¹ 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 sought 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. Not long ago, SAVAC began a process of conducting 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 conducted.

In this regard, SAVAC endorsed the need for a national food, nutrition, and security assessment that would enable the country to have a complete baseline data set of open access, exclusive access, and urban areas to provide a complete picture of the food and nutrition security situation at municipal, district, and provincial levels. Such a national baseline is meant to guide planning, including the design of intervention strategies for the National Food and Nutrition Security Plan (NFNSP).

The national report will provide the first ever full-scale baseline assessment of the National Food and Nutrition Security Survey (NFNSS) conducted in all the districts across the nine provinces of South Africa. This report contains the results from the Northern Cape Province only. The survey seeks to provide 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 presented. The General Household Surveys (GHS) cover approximately 32 000 households annually since 2002, but do not include nutrition indicators. They focus on the experience of hunger and access to food only. In most countries, food and nutritional security assessments provide estimates which are representative at administrative levels or areas (i.e., province, districts, and sub-district) by rural/ urban divide, or for both rural and urban as defined by the livelihood zones.

The survey adopted the SAVAC endorsed 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 level experience. Figure 1 provides an overview of the food security continuum.

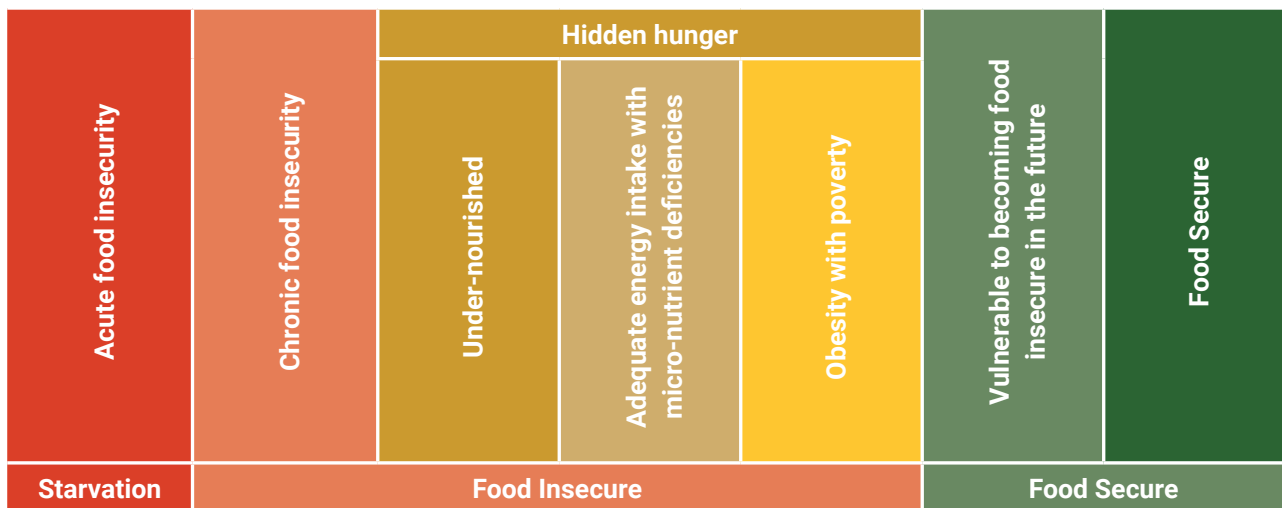


Figure 1: Food Security Continuum (Hendriks, 2016)

A set of indicators to monitor food security and nutrition were considered, including 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. This report focuses on 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 utilisation pillar speaks to the ability of households to select, store, prepare, distribute, and eat food in ways that ensure adequate nutritional absorption for all members of a household. 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 (e.g., 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 are 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 is no single perfect agreed global measure that captures all aspects of food insecurity, the framework proposed the use of standard and acceptable food and nutrition measurement indicators. 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 quantitative and qualitative methods

	Baseline Assessment Indicators	Tools	Instrument: Section	
Food Security Continuum	Availability	<ul style="list-style-type: none"> • Production • Post-Harvest 	6	Household Economic Approach
	Access	<ul style="list-style-type: none"> • Hunger Scale (12months) • Hunger Scale (4Weeks) • HFIAS 	7 A, B, C, D 9	
	Stability	<ul style="list-style-type: none"> • Food expenditure • Key Informant Interviews • Shocks 	8, 11, 12	
	Utilisation	<ul style="list-style-type: none"> • HDD • Anthropometry Measurements 	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 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 129 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 the Northern Cape 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, Northern Cape Province is divided into 5 districts, and 26 local municipalities (mixed urban and rural). In this study, the smallest geographic unit is the small area layer (SAL), composed of 35 households sampled. Given the heterogeneity in livelihoods within regions, the province has two 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).

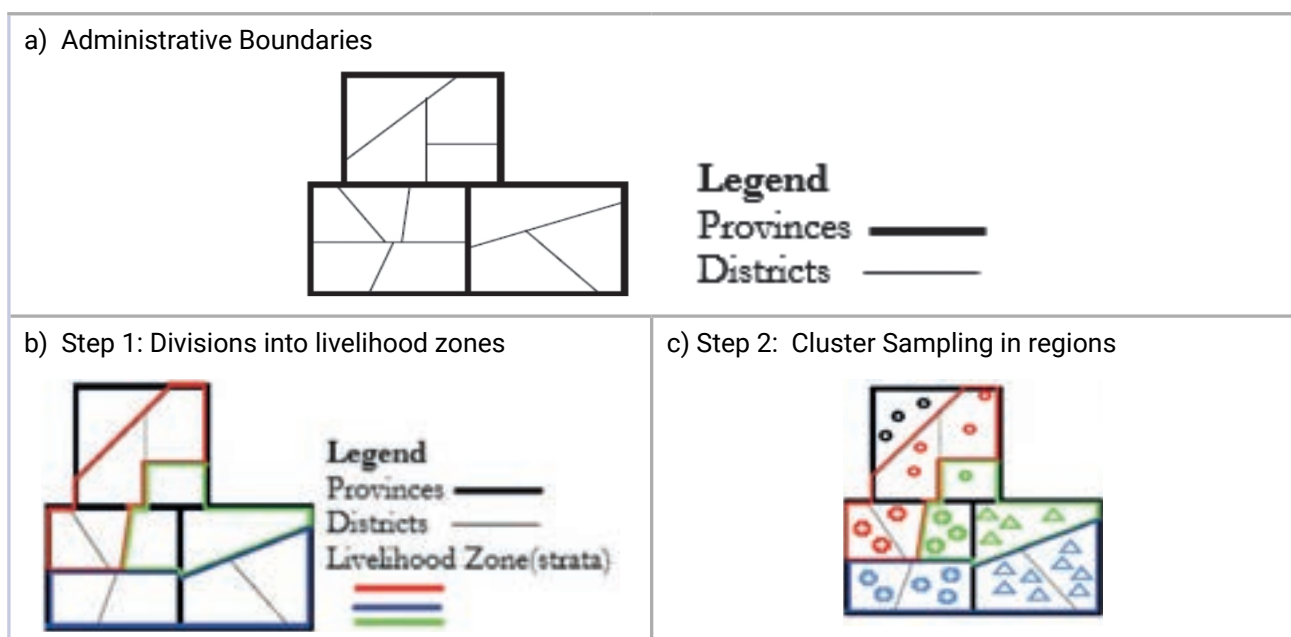


Figure 2: Schematic representation of the overlay of administrative boundaries and LHZ.

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 5 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 will be eligible for the survey, on condition that their parent or caregiver provides consent for participation. Parents or caregivers will provide individual dietary information related to the child and children will participate in anthropometry measurements.
- Mothers/ primary caregivers of the children in the household will be eligible if they are included in the survey sample and have given consent for data collection.

4.3.2 Participant exclusion criteria

- Households not currently living in the defined geographic area, or consent for participation is denied by the adult household member approached by the survey team.
- Individuals in selected households will be ineligible if consent for individual participation is denied.
- Children will be ineligible for anthropometric measurement if they have 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

The sample size estimate was aimed at informing the surveillance purpose of tracking important changes in the food and nutritional security in South Africa over time; that is, between rounds of food and nutritional security. In addition, this sample was not meant to produce precise estimates of malnutrition prevalence at district level. The primary goal of collecting the nutrition data and/or anthropometric measures data was to analyse the link between food security and nutrition. The sample design was based on the estimated prevalence of food security outcome indicators described in Section 3.2. This was deemed sufficient to calculate the minimum sample size that allows the link between children's nutritional status and the household level of food security.

In order to enhance precision in the estimation of the main outcome indicators, the Standardised Monitoring and Assessment of Relief and Transitions (SMART) methodology was adopted. Essentially, the sample size considered both nutrition and food security indicators through a stepwise process.

Two different samples, based on both food and nutritional security indicators, were calculated and the following was applied.

- 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 an appropriate sample size is 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 calculation 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 many different indicators that could be used to measure food security, a proportion of 50% to get the largest sample desired for analysis of multiple indicators of food security at district level was considered.

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

- 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%
Households per district (strata)	678	401	346
TOTAL SAMPLE	35 256	20 852	17992

A sample of 401 households per stratum (district), provide required estimate of food insecurity of 50% (SANAHNAES, 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 was adopted for Northern Cape 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 size for nutritional indicators survey

The sample did not aim at providing an estimate of malnutrition in lower geographies. The goal was to establish the link between food security and nutrition. We estimated that a sample of 106 children under five for each stratum (district) and converted into 366 households provides the required estimate of stunting of 21.5% (SANAHNAES, 2013), with a 10% precision around the estimate assuming a 21% non-response rate, and a design effect of 1.5 with 95% confidence level, and 80% power. (See formula in Box 1 and parameters in Appendix 5 & 6.) The 10% precision was informed by budgetary constraints on sample size, and the fact that the study was only interested in linkages between malnutrition and food security in the households. However, the malnutrition prevalence was relatively precise at national and provincial levels. 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
Total households for the study		
* SANHANES (Shisana et.al 2013) Appendix Table 1		

This survey was conducted in 129 SALs, across 5 districts in the province. Within each SAL, a random sample of 35 visiting points was identified. One household was to be selected at each visiting point. This yielded a total sample size of 4 515 households. Once a household was selected, specific household members were eligible to participate in the survey (as per the inclusion and exclusion criteria set in Section 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. The study had estimated that, on average each household will yield 3 people. The total sample was thus 4 515. The survey managed to get 364 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 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 study adopted the World Food Program (WFP) Technical Guideline, which defines a cluster based on SALs, cluster size or the number of households survey teams can visit safely in one day, and the number of clusters with a number of households in each for each indicator. Usually, 20 to 30 clusters/EAs per stratum are typical for most settings (Technical Guideline, WFP- see Appendix I). In this province, 35 households per cluster or (SAL) were used.

4.4.3.1 Household Response Rate

Out of the targeted 4 515 visiting points (VPs), 94.3% were valid. Out of these valid VPs, 68.0% of them (3 069) were realised or interviewed, while the refusals accounted for 5.4%. Absent or 'other' constituted 26.6% (Table 4). 'Other' included those who were not eligible to participate, such as those who were incapacitated, were underage and had no adult to consent, were not at home for the duration of the study, and those who could not participate due to COVID-19 exposure.

Namakwa recorded the highest realisation with 71.5%, while Pixley ka Seme accounted for the least percentage with 60.8%.

Table 4: Household response rate by district

District	Total VPs	Valid VPs		Interviewed		Refused		Absent/Other	
	n	n	%	n	%	n	%	n	%
Namakwa	875	807	92.2	626	71.5	27	3.1	222	25.3
Pixley ka Seme	910	868	95.3	553	60.8	30	3.2	327	35.9
ZF Mgcawu	910	881	96.8	638	70.1	52	5.7	220	24.1
Frances Baard	910	860	94.5	642	70.5	72	7.9	196	21.5
John Taolo Gaetsewe	910	840	92.3	610	67.0	61	6.7	239	26.2
Total	4515	4256	94.3	3069	67.9	242	5.4	1204	26.6

4.4.3.2 Delimitation of the Household Economic Approach (HEA)

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

Data collection process in the field was preceded by training, which followed an operational manual for field staff. The manual encapsulated processes and steps for household survey data collection, together with the HEA data collection in the selected livelihood zones. The primary purpose of the training was to outline the standard procedure for the fieldwork to ensure consistency and systematic enquiry across the data collection activities. In doing so, the protocol will ensure that the fieldwork is consistent and rigorous, and that it upholds the highest degree of ethical standards. Some of the broad undertakings enshrined in the training included the Standard Operational Guideline for data collection in the COVID-19 environment, ethics, and the broader governance structure and team structure. (Refer to Operational Manual Annexure)

4.5.1 COVID-19 safety procedures and protocols

The preliminary survey took place during the outbreak of the COVID-19 pandemic. As such, a COVID-19 Standard Operation Procedure (SOP) was designed to ensure compliance with a set of rules, regulations, principles, and guidelines imposed to mitigate the exposure and risks of infections by research participants and data collectors. Prior to the study, all enumerators were tested for COVID-19. Each research team under the leadership of their team leader, was provided with COVID-19 apparatus such as thermometer and protection during the fieldwork. All COVID-19 prevention precautionary measures were strictly adhered to throughout the data collection exercise.

4.5.2 Survey data collection

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

- Entering an SAL (community entry and stakeholder identification), identification of visiting points (VPs) (using maps and GPS coordinates), selection of household (using the Kish Grid), and obtaining verbal consent.

4.5.3 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 129 Small Area Layer (SALs) with a total of 4 515 households in each visiting point were preselected 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 caregiver 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.

- The training included 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.

4.5.4 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 Cederberg Karoo (ZACKA 59263) of ZF Mgqawu and Francis Baard districts

This is a rural zone, with a low population density of 11 people per 1,000 Hectares (or 1.1 people per square kilometre). It covers an area of 102,500ha in the Northern Cape (Francis Baard and ZF Mgqawu districts) and 352,000ha in the Western Cape. The climate is dry, so agriculture is extensive, but water from the mountains allows for crops such as rooibos, pome fruits, stone fruits, and citrus, as well as livestock such as goats, sheep, and ostriches - with a few cattle. There are some irrigated commercial bush crops, such as high fynbos and commercial dry land crops. The R364, a dirt road from Clanwilliam to Soetwater near Calvinia, is the only major thoroughfare through the zone.

The average population density ranges from 10 to 100 people per km²;

- 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 3: Map of ZACKA Livelihood Zone in Northern Cape

Most of the zone receives more than 400mm of rainfall per annum. The temperature ranges from 33°C to -3 °C in the area. The main crops that are grown for food are maize, beans, and vegetables. Wealthier households keep cattle, sheep, and goats, which make use of the extensive grazing in the surrounding area.



Figure 4: ZANWC Livelihood Zone location

4.6.2 Coastal Open Access Non-Crop Income (ZAKOL) of Francis Baard and John Taolo Gaetsewe districts

This livelihood zone covers several districts, including Francis Baard, John Taolo Gaetsewe, and Dr Ruth Mompati. It covers an area of 575,400ha in North West Province and 1,013,800ha of land in the 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 and 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 km²;

- 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 5: 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 '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 6: 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 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 by making use of 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 Scientists (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 3 069 cases and 3 864 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 Northern Cape 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 3 069 people were interviewed in this province. When weighted, this total represents 855,674 South Africans living in the Northern Cape Province of 18 years and older. The final data set (unweighted and weighted) are disaggregated by key demographic variables of household heads.

Table 5: District weighted and unweighted N's for household heads

District	Unweighted N	Weighted N
Frances Baard	642	273 579
John Taolo Gaetsewe	610	171 239
Namakwa	626	80 812
Pixley ka Seme	553	135 034
ZF Mgcawu	638	195 010
Total	3 069	855 674

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

Gender	Unweighted N	Weighted N
Male	1561	420 240
Female	1508	435 434
Total	3 069	855 674

Table 7: Age groups weighted and unweighted N's for household heads

Age groups	Unweighted N	Weighted N
18-24	96	135 185
25-34	379	220 406
35-44	542	187 392
45-54	638	127 731
55-64	681	91 401
65+	733	93 560
Total	3 069	855 674

4.7.3 Data analysis

Descriptive statistical analyses were conducted as a first step towards developing insights from the data collected. Stata and SPSS software packages were used to obtain proportions of responses and cross-tabulations. Weighting - benchmarked to the 2021 mid-year population estimates provided by Statistics South Africa (Stats SA) for age, race, age group, and province - was done to ensure that the estimates of the food and nutrition survey variables were aligned to the general population of Northern Cape Province. Analyses of weighted data were conducted considering the multi-level sampling design and adjusting for non-responses.

5.1 Demographics of the respondents

5.1.1 Characteristics of the household heads and members

Table 8 depicts the characteristics of household heads and members from the households that were interviewed. More than half of (50.9%) household heads were males. Coloured and Black African population groups accounted for about 48% each, while those between aged 65 years and older constituted 23.9%. In terms of marital status, those who were single accounted for 41.3%. Frances Baard District recorded the highest percentage, with 20.9%, while Pixley ka Seme District accounted for the least proportion, with 18.0%. Regarding household members, more than half (53.5%) of household members were females, 51.1% were Coloureds, and the majority were children aged 0 to 14 years old, with 29.9%. Almost three out of four (73.4%) household members were single. Frances Baard District had the highest percentage (21.2%) of household members, while Namakwa District had the least, with 19.3%.

Table 8: Characteristics of the sample for household heads and members

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
Sex						
Male	50.9	[49.1-52.6]	1,561	46.5	[45.7-47.4]	5,623
Female	49.1	[47.4-50.9]	1,508	53.5	[52.6-54.3]	6,459
Total	100.0		3,069	100.0		12,082
Population group						
Black African	48.3	[46.5-50.0]	1,481	46.5	[45.6-47.4]	5,634
White	2.6	[2.1-3.2]	79.0	2.0	[1.7-2.2]	239
Coloured	48.4	[46.7-50.2]	1,486	51.1	[50.2-52.0]	6,185
Indian/Asian	0.7	[0.5-1.1]	23	0.4	[0.3-0.6]	51
Total	100.0		3,069			12,109
Age group						
0-14	-	-	-	29.9	[29.1-30.7]	3,567
18-24 (15 -24 for HH Members)	3.1	[2.6-3.8]	96	17.6	[17.0-18.3]	2,105
25-34	12.3	[11.2-13.6]	379	14.9	[14.2-15.5]	1,773
35-44	17.7	[16.4-19.1]	542	11.9	[11.4-12.5]	1,425
45-54	20.8	[19.4-22.3]	638	9.4	[8.9-9.9]	1,119
55-64	22.2	[20.8-23.7]	681	8.8	[8.3-9.3]	1,047
65+	23.9	[22.4-25.4]	733	7.5	[7.0-8.0]	891
Total	100.0		3,069	100.0		11,927

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
Marital status						
Married/Living together	38.4	[36.6-40.1]	1,173	20.1	[19.4-20.9]	2,394
Divorced/Widowed/Separated	20.3	[18.9-21.8]	622	6	[5.6-6.4]	710
Single	41.3	[39.6-43.1]	1,263	73.9	[73.1-74.7]	8,780
Total	100.0		3,058	100.0		11,884
District						
Frances Baard	20.9	[19.5-22.4]	642	21.2	[20.4-21.9]	2,567
John Taolo Gaetsewe	19.9	[18.5-21.3]	610	19.9	[19.2-20.6]	2,416
Namakwa	20.4	[19.0-21.9]	626	19.3	[18.6-20.0]	2,337
Pixley ka Seme	18.0	[16.7-19.4]	553	20.0	[19.3-20.7]	2,427
ZF Mgcawu	20.8	[19.4-22.3]	638	19.7	[19.0-20.4]	2,387
Total	100.0		3,069	100.0		12,134

*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

Education attainment plays a role in household heads' ability to access information and make informed decisions for improved household welfare. Table 9 depicts results regarding the education attainment by the household heads in Northern Cape Province. Secondary school education accounted for 42.1%, followed by those with matric qualifications, that accounted for 23.7%. The older household heads, those aged 65 years and above and those aged 55 years to 64 years, had higher percentages of no schooling, with 21.3% and 15.8%, respectively. Pixley ka Seme District had the highest percentage (12.9%) of household heads with tertiary education, while John Taolo Gaetsewe District had the highest percentage of (12.8%) household heads with no schooling education.

Table 9: 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
Sex										
Male	4.8	[3.2-7.1]	20.8	[17.5-24.5]	40.3	[29.7-51.9]	24.6	[17.2-33.8]	9.5	[5.3-16.7]
Female	7.7	[5.7-10.4]	21.6	[17.8-25.9]	43.9	[35.9-52.1]	22.8	[17.8-28.6]	4.1	[2.7-6.1]
Total	6.3	[4.6-8.6]	21.2	[18.7-23.9]	42.1	[34.0-50.7]	23.7	[18.7-29.5]	6.7	[4.3-10.3]
Age group										
18-24	2.6	[0.6-10.5]	8.8	[4.2-17.4]	59.9	[41.4-76.0]	28.3	[16.3-44.3]	0.4	[0.1-3.0]
25-34	1.0	[0.4-2.3]	9.5	[6.6-13.6]	56.3	[45.2-66.9]	27	[19.1-36.8]	6.2	[3.4-11.0]
35-44	2.6	[1.3-4.9]	14.5	[10.3-19.9]	40.1	[29.8-51.3]	29.8	[21.2-40.2]	13.1	[6.5-24.5]
45-54	7.2	[4.5-11.2]	31.2	[24.5-38.8]	28.8	[25.0-32.9]	24.7	[19.8-30.3]	8.2	[5.2-12.6]
55-64	15.8	[11.4-21.5]	40.0	[34.0-46.3]	29.3	[22.2-37.6]	9.3	[6.8-12.6]	5.5	[2.8-10.3]
65+	21.3	[16.7-26.7]	48.8	[42.1-55.4]	17.4	[14.1-21.3]	9.0	[4.6-17.0]	3.5	[2.0-6.0]
Total	6.3	[4.6-8.6]	21.2	[18.7-23.9]	42.1	[34.0-50.7]	23.7	[18.7-29.5]	6.7	[4.3-10.3]

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
District										
Frances Baard	5.7	[2.8-11.4]	22.1	[19.4-25.0]	48.9	[31.1-66.9]	20.2	[10.6-35.0]	3.2	[1.1-8.6]
John Taolo Gaetsewe	12.8	[8.9-18.0]	22.4	[17.7-27.9]	29.0	[24.3-34.3]	27.9	[21.7-35.1]	7.9	[4.4-13.6]
Namakwa	3.6	[2.1-5.9]	27.5	[20.4-35.9]	44.9	[39.7-50.2]	20.1	[15.3-26.0]	3.9	[1.9-8.2]
Pixley ka Seme	6.0	[4.3-8.3]	21.1	[13.5-31.5]	41.8	[28.7-56.2]	18.2	[12.8-25.1]	12.9	[4.8-30.5]
ZF Mgcaawu	2.7	[1.4-5.1]	16.4	[12.1-21.8]	43.0	[30.4-56.6]	30.0	[21.9-39.7]	7.8	[3.8-15.5]
Total	6.3	[4.6-8.6]	21.2	[18.7-23.9]	42.1	[34.0-50.7]	23.7	[18.7-29.5]	6.7	[4.3-10.3]

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 34%, followed by those with primary school education at 32.1% (Table 10). The older household members, those aged 65 years and above and those aged 55 years to 64 years, had higher percentages of no schooling, with 21.8% and 15.7%, respectively. When considering those aged 20 years and older, 6.6% of household members did not have any form of schooling, while 29.2% had matric education.

Table 10: 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
Sex										
Male	4.5	[3.7-5.5]	34	[31.9-36.2]	33.5	[31.7-35.3]	22.0	[20.1-24.1]	5.9	[4.4-7.9]
Female	5.5	[4.6-6.5]	30.4	[28.5-32.4]	34.4	[32.3-36.6]	23.4	[21.5-25.4]	6.3	[4.8-8.4]
Total	5.0	[4.3-5.9]	32.1	[30.4-33.8]	34	[32.3-35.7]	22.8	[21.1-24.5]	6.2	[4.7-7.9]
Age group										
7-14	1.3	[0.8-2.1]	85.2	[82.2-87.8]	12.8	[10.7-15.3]	0.6	[0.2-2.2]	0.1	[0.0-0.4]
15-24	1.1	[0.8-1.7]	10.8	[9.1-12.8]	53.4	[50.5-56.2]	31.7	[29.1-34.5]	3.0	[2.2-4.1]
25-34	0.9	[0.6-1.5]	8.1	[6.5-10.1]	42.3	[38.2-46.4]	39.1	[35.5-42.8]	9.6	[7.2-12.6]
35-44	2.5	[1.7-3.5]	14.4	[10.9-18.8]	38.4	[34.5-42.5]	33.3	[29.6-37.2]	11.4	[7.7-16.6]
45-54	6.6	[4.8-9.0]	27.4	[23.8-31.3]	30.8	[27.8-34.1]	25.0	[21.6-28.8]	10.2	[6.8-14.9]
55-64	15.7	[12.1-19.9]	38.4	[34.8-42.1]	28.7	[25.0-32.7]	10.6	[8.4-13.4]	6.6	[4.3-10.0]
65+	21.8	[18.1-26.0]	44.8	[40.2-49.6]	19.2	[15.9-23.0]	8.7	[5.1-14.7]	5.5	[3.5-8.5]
Total	5.0	[4.3-5.9]	32.0	[30.4-33.8]	34.0	[32.4-35.7]	22.8	[21.1-24.5]	6.2	[4.7-8.0]
District										
Frances Baard	5.1	[3.9-6.7]	31.3	[28.1-34.6]	34.5	[31.4-37.7]	24.2	[20.8-27.9]	4.9	[3.0-8.0]
John Taolo Gaetsewe	6.8	[4.8-9.7]	32.9	[29.3-36.6]	30.6	[27.9-33.4]	22.3	[19.3-25.8]	7.3	[4.5-11.6]
Namakwa	3.3	[2.3-4.7]	30.4	[27.7-33.3]	41.6	[38.8-44.5]	20.5	[17.9-23.3]	4.1	[2.5-6.8]

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Pixley ka Seme	5.6	[3.9-8.1]	33.8	[29.7-38.1]	31.0	[27.1-35.2]	22.0	[18.5-25.9]	7.6	[3.9-14.2]
ZF Mgcawu	3.1	[2.1-4.5]	31.6	[27.8-35.7]	35.6	[31.6-39.9]	22.9	[19.2-27.0]	6.8	[3.7-12.1]
Total	5.0	[4.3-5.9]	32.0	[30.4-33.8]	34.0	[32.4-35.7]	22.8	[21.1-24.5]	6.2	[4.7-8.0]

5.1.4 Employment Status

Table 12 shows that among the household heads and members who were economically active, 55.5% and 69.6%, respectively, were unemployed. A higher proportion (71.9%) of female-headed households were unemployed compared to their male counterparts, with 39.6% being unemployed. For household members, a similar pattern existed. About 74% of female household members were unemployed, compared to 64.5% of males. Among the youth, those aged 34 years and younger, the unemployment rate was 58.9% and 78.6% for household heads and members, respectively. Those aged between 55 years and 64 years old had the highest unemployment rate of 77.1% for household heads, while the younger people (15 to 24 years) had the highest unemployment rate of 90.3%. The highest unemployment rate for household heads and members was reported in Frances Baard and John Taolo Gaetsewe districts, with 61.3% and 74.9%, respectively.

Table 11: 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
Sex								
Male	60.4	[51.3-68.8]	39.6	[31.2-48.7]	35.5	[32.4-38.8]	64.5	[61.2-67.6]
Female	28.1	[23.2-33.5]	71.9	[66.5-76.8]	26.1	[23.8-28.5]	73.9	[71.5-76.2]
Total	44.5	[39.5-49.7]	55.5	[50.3-60.5]	30.4	[28.1-32.9]	69.6	[67.1-71.9]
Age group								
18-24 (15 -24 for HH Members)	41.2	[22.6-62.7]	58.8	[37.3-77.4]	9.7	[8.0-11.5]	90.3	[88.5-92.0]
25-34	41.0	[32.5-50.0]	59.0	[50.0-67.5]	34.3	[30.9-37.9]	65.7	[62.1-69.1]
35-44	57.5	[43.7-70.3]	42.5	[29.7-56.3]	48.2	[43.6-52.9]	51.8	[47.1-56.4]
45-54	50.6	[43.0-58.3]	49.4	[41.7-57.0]	45.9	[41.8-50.1]	54.1	[49.9-58.2]
55-64	22.9	[18.3-28.3]	77.1	[71.7-81.7]	21.7	[18.5-25.2]	78.3	[74.8-81.5]
Total	44.5	[39.5-49.7]	55.5	[50.3-60.5]	30.4	[28.0-32.8]	69.6	[67.2-72.0]
District								
Frances Baard	38.7	[32.5-45.4]	61.3	[54.6-67.5]	26.5	[23.0-30.3]	73.5	[69.7-77.0]
John Taolo Gaetsewe	41.7	[31.5-52.7]	58.3	[47.3-68.5]	25.1	[20.5-30.3]	74.9	[69.7-79.5]
Namakwa	54.7	[46.4-62.8]	45.3	[37.2-53.6]	36.1	[31.0-41.5]	63.9	[58.5-69.0]
Pixley ka Seme	57.7	[42.7-71.4]	42.3	[28.6-57.3]	35.9	[29.3-43.0]	64.1	[57.0-70.7]
ZF Mgcawu	42.2	[33.7-51.3]	57.8	[48.7-66.3]	34.5	[29.6-39.7]	65.5	[60.3-70.4]
Total	44.5	[39.5-49.7]	55.5	[50.3-60.5]	30.4	[28.0-32.8]	69.6	[67.2-72.0]

At local municipality level, the following local municipalities: Dikgatlong, Joe Morolong, Phokwane and Umsombovu, fell under the highest band (74.3% to 84.2%) of unemployed household members (Figure 8). Ga-Segonyana, Kareeberg and Ubuntu local municipalities were under the lowest band of 29.4 to 42.9% of household members being unemployed.

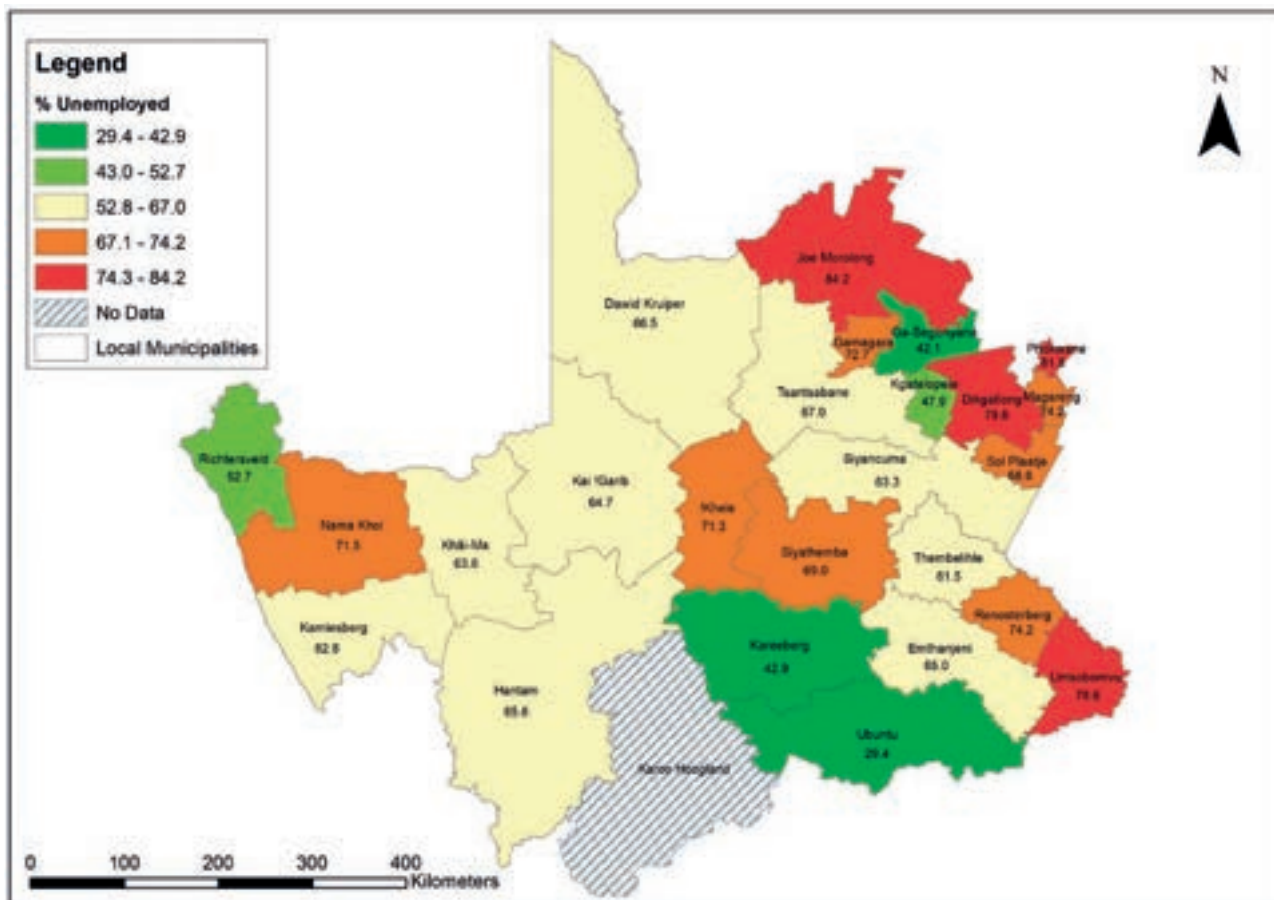


Figure 7: Employment status of household members by local municipality

5.1.5 Household income

Table 13 shows household income by household head sex, age, and district. The highest percentage (30.7%) of income was recorded among households which ranged between R1,501 and R3,000, followed by those who earned more than R6,000, with 23.4%. Male-headed households had a significantly higher percentage (27.9%) of household income of more than R6,000, compared to female headed ones with 18.4%. Households headed by those aged from 35 to 44 years old had the highest percentage of household income of more than R6,000, with 30.6%. John Taolo Gaetsewe District had the highest percentage of (22.6%) households which had no income or earned less than R1,500, while Namakwa District had the highest percentage (31.1%) of households which earned more than R6,000.

Table 12: 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
Sex										
Male	18.4	[15.5-21.8]	24.0	[21.2-27.0]	18.8	[16.3-21.7]	10.9	[8.8-13.4]	27.9	[23.3-32.9]
Female	17.1	[14.5-20.2]	38.1	[35.0-41.3]	17.9	[15.8-20.2]	8.5	[6.9-10.3]	18.4	[15.7-21.6]
Total	17.8	[15.4-20.5]	30.7	[28.4-33.1]	18.4	[16.7-20.2]	9.7	[8.4-11.3]	23.4	[20.2-26.9]
Age group										
18-24	51.7	[39.2-64.1]	17.9	[10.7-28.2]	8.2	[4.2-15.2]	13.5	[5.9-28.0]	8.7	[4.4-16.6]
25-34	32.9	[25.6-41.1]	25.0	[20.1-30.7]	14.3	[9.9-20.3]	7.8	[4.6-13.0]	19.9	[14.9-26.1]
35-44	23.4	[18.4-29.3]	23.1	[18.6-28.3]	15	[10.4-21.2]	7.9	[5.7-10.8]	30.6	[23.1-39.4]
45-54	21.7	[18.3-25.6]	25.0	[21.1-29.3]	16.8	[13.8-20.3]	9.8	[7.6-12.7]	26.7	[22.2-31.8]
55-64	10.5	[8.0-13.7]	36.4	[32.3-40.7]	20.8	[17.8-24.2]	10.8	[8.2-14.1]	21.4	[17.6-25.7]
65+	3.1	[1.8-5.4]	41.5	[37.1-46.1]	24.0	[20.6-27.9]	10.8	[8.3-14.0]	20.6	[16.4-25.5]
Total	17.8	[15.4-20.5]	30.7	[28.4-33.1]	18.4	[16.7-20.2]	9.7	[8.4-11.3]	23.4	[20.2-26.9]
District										
Frances Baard	19.5	[14.4-25.8]	36.2	[32.1-40.4]	17.1	[14.2-20.5]	8.2	[6.5-10.4]	19.0	[14.3-24.7]
John Taolo Gaetsewe	22.6	[18.1-27.9]	32.2	[27.9-36.8]	16.4	[12.7-20.9]	7.3	[5.4-9.7]	21.5	[14.7-30.4]
Namakwa	10.5	[8.0-13.6]	26.5	[22.4-31.1]	18.8	[15.7-22.4]	13.1	[10.0-17.0]	31.1	[25.6-37.1]
Pixley ka Seme	10.1	[6.9-14.4]	28.9	[23.0-35.7]	20.3	[15.9-25.6]	14.2	[9.4-21.0]	26.5	[17.5-38.0]
ZF Mgcawu	20.4	[15.4-26.4]	23.9	[19.6-28.8]	20.7	[17.3-24.7]	9.3	[7.4-11.7]	25.7	[19.7-32.8]
Total	17.8	[15.4-20.5]	30.7	[28.4-33.1]	18.4	[16.7-20.2]	9.7	[8.4-11.3]	23.4	[20.2-26.9]

5.1.6 Sources of income

Table 13 shows that the majority of household heads and members relied on social welfare grants (including old age grant) as their source of income, with 38.1% and 42.9%, respectively. About a third (34.3%) of household heads reported salaries and wages as their source of income.

Table 13: Sources of income of household heads and members

Source of income	Household heads	Household members
	%	%
Social welfare grants (including old age grant)	38.1	42.9
Salaries and wages	34.3	17.0
Net profit from business or professional practice/activities or commercial farming	2.9	1.2

	Household heads	Household members
Source of income	%	%
Other	1.9	0.5
Regular receipts from a pension from previous employment and pension from annuity funds	1.4	0.9
Regular allowances/remittances received from non-Household members	1.3	0.4
Alimony, maintenance, and similar allowances from a divorced spouse, family members, etc., living elsewhere	0.9	0.4
Income from small-scale farming	0.3	0.2
Dividends on shares (e.g., unit trusts)	0.3	0.1
Income from letting of fixed property	0.1	0.1
Interest received and/or accrued on deposits, loans, savings certificates	0.1	0.1
Income from share trading	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 14. Significantly, more female household heads (53.6%) relied on social welfare grants as a source of income, compared to their male counterparts, with only 21.9% reporting social welfare grants as their source of income. A similar trend is noticed at household members' level, where there were significantly more females (48.4%) who relied on social welfare grants as a source of income, compared to their male counterparts with only 36.7%. Namakwa District had the highest proportion of (45.5%) household heads, while Pixley ka Seme District had the highest proportion (43.4%) of household members who relied on social welfare grants as their source of income. It is worth noting, though, that the difference between the four districts in the Northern Cape were not significant based on confidence intervals.

Table 14: 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
Sex						
Male	21.9	[18.1-26.2]	1,554	36.7	[34.1-39.4]	5,592
Female	53.6	[45.4-61.6]	1,507	48.4	[45.6-51.3]	6,440
Total	38.1	[33.5-42.8]	3,061	42.9	[40.4-45.5]	12,032
Age group						
0-14				51.5	[45.9-57.0]	3,559
18-24 (15 -24 for HH Members)	21.2	[10.9-37.0]	96	31.3	[28.6-34.1]	2,099
25-34	34.8	[24.9-46.2]	376	28.6	[25.5-31.9]	1,766
35-44	23.9	[17.0-32.5]	541	26.5	[23.3-29.9]	1,423

Table 15 shows household heads and members reported to be receiving any social grant(s) for 12 months preceding the survey by sex, age, and district. Similar trends were noticed as for those who reported social welfare grants as their source of income. The majority of elderly household heads (84.7%) and members (84.3%) received social grants in the last 12 months prior to the survey. More than half (54.9%) of the children aged 14 and younger received social grants in the year preceding the survey. Namakwa District had the highest percentage of (45.4%) household heads, and Frances Baard District had the highest percentage (49.0%) of household members who had received social grants during the 12 months preceding the survey.

Table 15: 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	
Sex							
Male	24.5	[16.4-34.9]	1,548	37.6	[34.9-40.4]	5,589	
Female	52.2	[44.1-60.3]	1,503	48.2	[45.2-51.1]	6,425	
Total	38.6	[32.4-45.2]	3,051	43.2	[40.6-45.8]	12,014	
Age group							
0-14	-	-	-	54.9	[48.8-60.9]	3,552	
18-24 (15-24 for HH Members)	34.6	[16.7-58.3]	96	32.3	[29.6-35.1]	2,100	
25-34	33.0	[22.9-44.9]	377	26.8	[23.9-30.0]	1,766	
35-44	23.8	[17.0-32.3]	539	25.0	[22.0-28.2]	1,418	
45-54	28.1	[23.8-32.9]	633	30.5	[27.1-34.0]	1,110	
55-64	56.2	[49.9-62.4]	678	61.4	[57.2-65.4]	1,044	
65+	84.7	[77.2-90.0]	728	84.3	[78.3-88.9]	884	
Total	38.6	[32.4-45.2]	3,051	43.5	[40.9-46.1]	11,874	
District							
Frances Baard	44.0	[33.0-55.6]	636	49.0	[44.9-53.0]	2,544	
John Taolo Gaetsewe	42.6	[33.6-52.1]	605	39.1	[34.3-44.0]	2,411	
Namakwa	45.4	[36.9-54.2]	625	43.1	[39.5-46.9]	2,335	
Pixley ka Seme	24.9	[17.0-35.0]	548	46.3	[39.1-53.6]	2,418	
ZF Mgcawu	34.2	[22.4-48.5]	637	34.6	[29.8-39.8]	2,377	
Total	38.6	[32.4-45.2]	3,051	43.1	[40.6-45.8]	12,085	

In terms of the type of grants accessed, child support grant constituted 34.4% and 58.3% for household heads and members, respectively (Table 10). The dominant grant accessed by household heads was the old age grant which accounted for 36.5%. Social relief distress (SRD) grant recorded at 25.1% and 14.2% for household heads and members, respectively.

Table 16: Social grant type received by household heads and members during the 12 months prior to survey

Grant type	Household heads (%)	Household members (%)
Old age	36.5	23.1
Child support	34.4	58.3
Social relief distress	25.1	14.2
Disability	7.6	6.0
Care dependency	1.2	1.0
Foster care	0.7	0.8
Grant-in-aid	0.5	0.4
War veterans	0.0	0.0

Table 17 shows household heads and members who reported receiving social relief grant over 12 months prior to the survey. About 18% of household heads reported receiving social relief during the 12 months prior to the survey, while only 11.3% of household members were reported to have received social relief grant. Those respondents aged 25 to 34 years old recorded the highest proportion of household heads (26.4%) and members (22.1%) who received social relief grant during the 12 months prior to the survey. Namakwa District had the lowest percentage (9.1%) of household heads who received social relief during a year prior to the survey, which was even lower than the provincial average of 17.7%.

Table 17: 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
Sex						
Male	13.9	[8.6-21.7]	1,557	10.5	[9.2-11.9]	5,600
Female	21.4	[15.1-29.3]	1,508	12.1	[10.8-13.4]	6,444
Total	17.7	[12.6-24.4]	3,065	11.3	[10.2-12.5]	12,044
Age group						
0-14				1.1	[0.6-1.9]	3,563
18-24 (15-24 for HH Members)	24.5	[12.5-42.5]	96	19.6	[17.0-22.6]	2,102
25-34	26.4	[17.0-38.5]	378	22.1	[19.0-25.6]	1,771
35-44	17.6	[8.9-31.7]	542	15.4	[12.9-18.1]	1,425
45-54	13.0	[9.9-17.0]	636	14.8	[12.3-17.7]	1,115
55-64	8.0	[5.7-11.1]	680	9.3	[7.2-12.0]	1,046
65+	3.7	[1.9-6.9]	733	3.4	[2.2-5.3]	891
Total	17.7	[12.6-24.4]	3,065	11.4	[10.3-12.6]	11,913

	Household heads received social relief a year prior survey			Household members received social relief a year prior survey		
	%	95% CI	n	%	95% CI	n
District						
Frances Baard	27.2	[17.8-39.1]	641	13.5	[11.5-15.9]	2,556
John Taolo Gaetsewe	15.5	[10.5-22.3]	610	12.1	[10.5-13.9]	2,408
Namakwa	9.1	[5.4-14.9]	625	8.9	[7.4-10.7]	2,330
Pixley ka Seme	10.9	[6.0-19.1]	552	9.7	[7.0-13.3]	2,418
ZF Mgcawu	14.7	[8.2-24.9]	637	9.4	[7.2-12.0]	2,370
Total	17.7	[12.6-24.4]	3,065	11.3	[10.2-12.5]	12,082

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

Table 18: 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 9 shows that Ga-Segonyana, Kareeberg, and Ubuntu local municipalities did not have household members who received social relief grant during the year preceding the survey. Phokwane and Umsobomvu local municipalities fell under the highest band of 16.7% to 22.3% of the households who received social relief grant.

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
Sex					
Male	62.4	[55.5-68.8]	37.6	[31.2-44.5]	619
Female	67.1	[60.4-73.2]	32.9	[26.8-39.6]	821
Total	65.0	[58.7-70.9]	35.0	[29.1-41.3]	1,440
Age group					
0-14	22.3	[8.9-45.7]	77.7	[54.3-91.1]	50
15-24	70.1	[62.3-76.9]	29.9	[23.1-37.7]	416
25-34	68.4	[59.8-75.8]	31.6	[24.2-40.2]	400
35-44	60.1	[51.0-68.6]	39.9	[31.4-49.0]	248
45-54	77.0	[66.3-85.1]	23.0	[14.9-33.7]	180
55-64	58.1	[45.6-69.6]	41.9	[30.4-54.4]	103
65+	26.3	[12.3-47.5]	73.7	[52.5-87.7]	34
Total	65.0	[58.7-70.9]	35.0	[29.1-41.3]	1,431
District					
Frances Baard	60.7	[48.2-72.0]	39.3	[28.0-51.8]	375
John Taolo Gaetsewe	69.9	[59.5-78.5]	30.1	[21.5-40.5]	325
Namakwa	66.0	[53.3-76.8]	34.0	[23.2-46.7]	210
Pixley ka Seme	64.1	[47.1-78.2]	35.9	[21.8-52.9]	287
ZF Mgqawu	69.0	[58.3-78.0]	31.0	[22.0-41.7]	244
Total	65.0	[58.7-70.8]	35.0	[29.2-41.3]	1,441

5.1.7 Discussion

It is always important to give the context to the demographic characteristics of the current study population in relation to other recent nationally representative surveys. This is because some of these demographic variables, like education level, employment status, and, gender will be linked to the food security indicators as well as nutrition indicators. For those aged 20 years and older, 6.6% of household members did not have any form of schooling compared to 4.3% in 2020, while 29.2% had matric education compared to 29.6% in 2020 (Stats SA, 2021). The unemployment rate for household heads and members who were economically active from the current study was 55.5% and 69.6%, which is higher than the provincial official unemployment rate from the third quarter of the Quarterly Labour Force Survey in 2021, which was 24.9% (QLFS, 2021). This is probably because the survey was able to capture people who are unemployed but not actively looking for work.

According to the General Household Survey, a larger percentage of households received salaries compared to grants as a source of income in the Northern Cape (61.3% versus 59.5%) in 2020. In contrast, most household heads (38.1%) and members (42.9%) relied on social welfare grants (including old age grant) as their source of income, followed by those who relied on salaries with 34.3% and 17.0% for household heads and members, respectively. The provincial average of 38.6% of household members reported receiving social grant is in line with the Northern Cape average for household population of 43.4% and 36.3% reported in 2016 and 2020,

respectively (SADHS, 2016; Stats SA, 2021). In terms of the grant type, the child support grant was the most common type of grant, with 58.3% of household members receiving this grant. Although this was also the case in 2016, the percentage of the household population that received child grant in this province was lower, with 27.7% (SADHS, 2016). Unsurprisingly, children and the elderly were more likely than other age groups to receive any type of grants. In terms of the COVID-19 grant, 65.0% of household members were reported to have received this grant in the Northern Cape in this study. This is higher than the provincial average of 4.2% of individuals who accessed the COVID-19 grants in 2020 (Stats SA, 2021). The reason behind this might be because 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 the Northern Cape Province show that the most common type of dwelling occupied by households was a formal dwelling/house or brick/concrete block structure on a separate stand or yard or on a farm (82%) (Table 21). The second most common dwelling type was an informal dwelling/shack not in a backyard (9.2%). About 4.7% of the households reported living in informal dwellings/shacks in the backyard.

Table 21: Types of dwellings occupied by households

(n=3053)	Number (n)	Percentage (%)
Formal dwelling/ House or brick/concrete block structure on a separate stand or yard or on a farm	2,504	82.0
Informal dwelling/Shack not in the backyard	294	9.2
Informal dwelling/Shack in the backyard	140	4.7
Traditional dwelling/Hut/Structure made of traditional materials	37	1.5
Room/Apartment on a property or an apartment in a larger dwelling, servants quarters/granny	21	0.8
Formal dwelling /House/ Flat/Room in backyard	24	0.8
Other	12	0.5
Flat or apartment in a block of flats	11	0.3
Semi-detached house	8	0.2
Town house (semi-detached house in a complex)	1	0.1
Caravan/Tent	1	0.0

5.3 Access to water service

5.3.1 Households main source of drinking water

Table 24 shows that the predominant source of drinking water in the Northern Cape Province was tap water in the yard, making up 38.4% of all water sources (Table 22). Tap water in dwellings/houses was the second most common drinking water source for households. Only 15.1% of the households had access to public/communal taps (Table 22). Boreholes accounted for 4.2 % of all water sources. About 1.3% of the households' main source of drinking water was from water vendors (Table 22).

Table 22: Main source of drinking water

(n=3064)	Number (n)	Percentage (%)
Piped (tap) water in the yard	1,250	38.4
Piped (tap) water in dwelling/house	1,116	35.1
Public/communal tap	416	15.1
Borehole in yard	79	4.2
Neighbour's tap	66	2.3
Borehole outside the yard	30	1.3
Water vendor (charge involved)	39	1.3
Water-carrier/tanker	27	0.9
Other	13	0.5
Stagnant water/dam/pool	11	0.3
Rain-water tank in yard	8	0.3
Flowing water/stream/river	6	0.2
Spring	2	0.1
Well	1	0.0

Water sources were further categorized into improved and unimproved based on the WHO & UNICEF Joint Monitoring Programme (JMP) definition (WHO and UNICEF,2017). Almost all the households (99%) in the Northern Cape have access to improved water sources. Table 23 shows the main source of drinking water by the sex of household head and district. There is almost an equal distribution between both gender groups. Namakwa District (47.7%) had the highest proportion of households using tap water inside dwellings/houses as the main source of drinking water, followed by Frances Baard (44.9%) and Pixley ka Seme districts (42.4). ZF Mgcawu District has the highest proportion of households using tap water in the yard, while John Taolo Gaetsewe District had the least (17.5%). John Taolo District (45.8%) leads with the proportion of households using drinking water from the public/communal taps, followed by Frances Baard (10.6%). Namakwa District had 0%.

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

		Household head sex		Districts				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mgcawu	Frances Baard	John Taolo Gaetsewe
Piped (tap) water in dwelling/house	%	35.3	34.9	47.7	42.4	27.2	44.8	16.2
	95% CI	[30.1-40.9]	[30.0-40.2]	[39.4-56.1]	[32.2-53.2]	[18.7-37.9]	[36.4-53.6]	[9.9-25.3]
Piped (tap) water in the yard	%	38	38.8	44.5	41.4	56.2	37.8	17.5
	95% CI	[33.0-43.2]	[34.0-43.8]	[37.2-52.1]	[33.9-49.3]	[46.3-65.6]	[30.1-46.1]	[11.7-25.4]
Borehole in the yard	%	5.8	2.3	2.2	8.8	3.4	0	8.3
	95% CI	[3.4-9.8]	[1.2-4.5]	[0.6-7.9]	[3.9-18.5]	[0.7-16.2]		[4.5-14.9]
Rain-water tank in the yard	%	0.2	0.3	0.3	0.1	0.4	0.2	0.4
	95% CI	[0.1-0.8]	[0.1-0.8]	[0.1-1.4]	[0.0-1.0]	[0.1-1.4]	[0.0-1.3]	[0.1-1.4]

		Household head sex		Districts				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mgqawu	Frances Baard	John Taolo Gaetsewe
Neighbour's tap	%	2.1	2.5	1.6	0.3	2.8	3.1	2.6
	95% CI	[1.3-3.3]	[1.6-4.1]	[0.6-4.4]	[0.1-1.1]	[1.5-5.2]	[1.3-7.0]	[1.5-4.7]
Public/communal tap	%	13.4	17	0	2.4	7.8	10.6	45.8
	95% CI	[9.1-19.3]	[11.9-23.7]		[0.6-8.5]	[4.4-13.6]	[4.1-24.9]	[34.3-57.8]
Water-carrier/tanker	%	1	0.9	1	0.8	0.1	1.4	1
	95% CI	[0.4-2.5]	[0.4-2.0]	[0.3-3.4]	[0.2-3.6]	[0.0-0.9]	[0.4-5.4]	[0.3-2.8]
Water vendor (charge involved)	%	1.6	0.9	1.7	2.2	0.3	0.2	2.8
	95% CI	[1.0-2.7]	[0.5-1.5]	[0.8-3.5]	[0.9-5.0]	[0.1-1.1]	[0.0-1.1]	[1.6-4.9]
Borehole outside the yard	%	1.6	1	0	1.6	0.9	0.8	2.9
	95% CI	[0.7-3.6]	[0.4-2.6]		[0.3-8.2]	[0.1-6.3]	[0.2-4.1]	[1.1-7.1]
Flowing water/stream/river	%	0.1	0.3	0	0	0	0	0.9
	95% CI	[0.0-0.4]	[0.0-2.5]					[0.1-6.1]
Stagnant water/dam/pool	%	0.2	0.4	0.8	0	0	0	1.1
	95% CI	[0.1-0.7]	[0.1-1.7]	[0.3-2.2]				[0.2-5.5]
Well	%	0.1	0	0	0	0	0	0.2
	95% CI	[0.0-0.5]						[0.0-1.2]
Spring	%	0.1	0.1	0	0	0	0	0.3
	95% CI	[0.0-0.4]	[0.0-0.5]					[0.0-2.1]
Other	%	0.6	0.4	0.1	0	0.8	1.1	0
	95% CI	[0.2-1.5]	[0.2-1.0]	[0.0-0.9]		[0.4-1.8]	[0.4-3.0]	
		1,550	1,508	625	552	637	641	609

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

Eighty-five percent of households reported that they were supplied with water by the municipality (Figure 10). Moreover, 8.1% of the households were not supplied with water by the scheme. Other water schemes supplied water to 4.4% of the households in the Northern Cape.

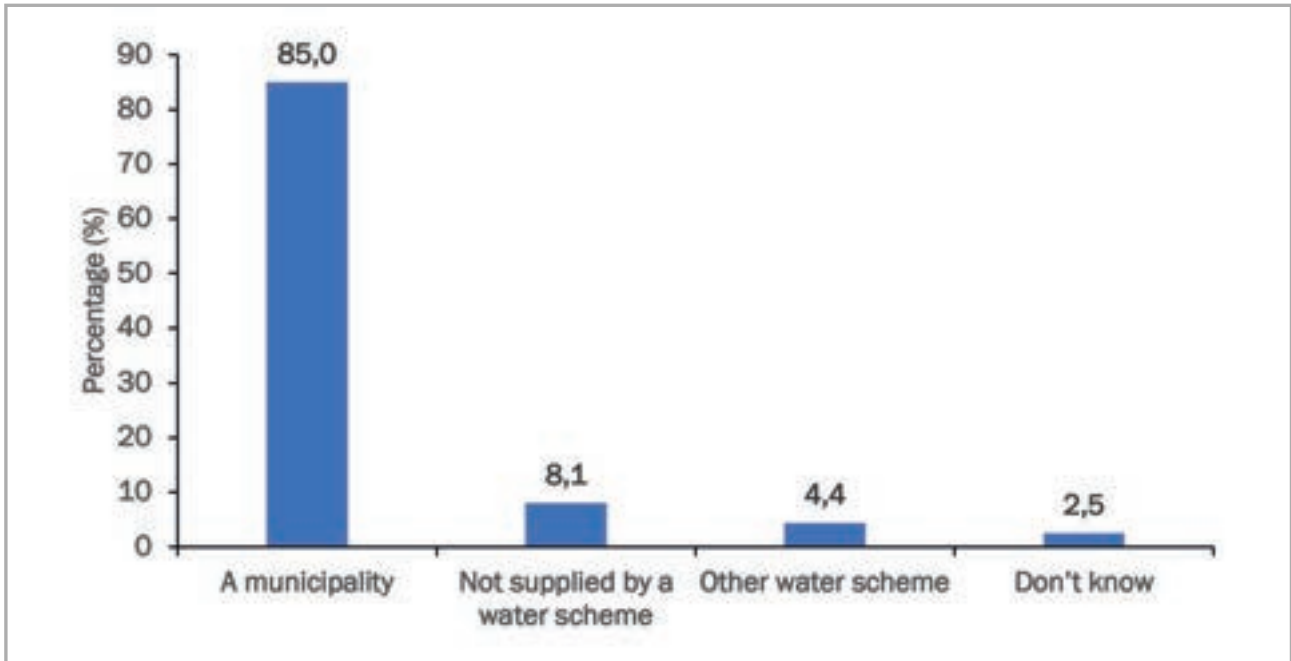


Figure 10: Improved and unimproved water sources by district (n=3042)

5.3.2 Payment for water services

Of those households that reported the municipality as the supplier of their main source of drinking water, about 49.4% of households paid for it (Figure 11). This had a good breakdown between those who paid and those who did not pay (50.6%). A comparison of the payment of water services by the district showed that Namakwa District had the highest proportion of the households that paid for their water services, while John Taolo Gaetsewe District had the highest proportion (65.4%) of those who did not pay (Table 26). The findings also highlighted that more males (51.7%) pay for water services than females (46.9%).

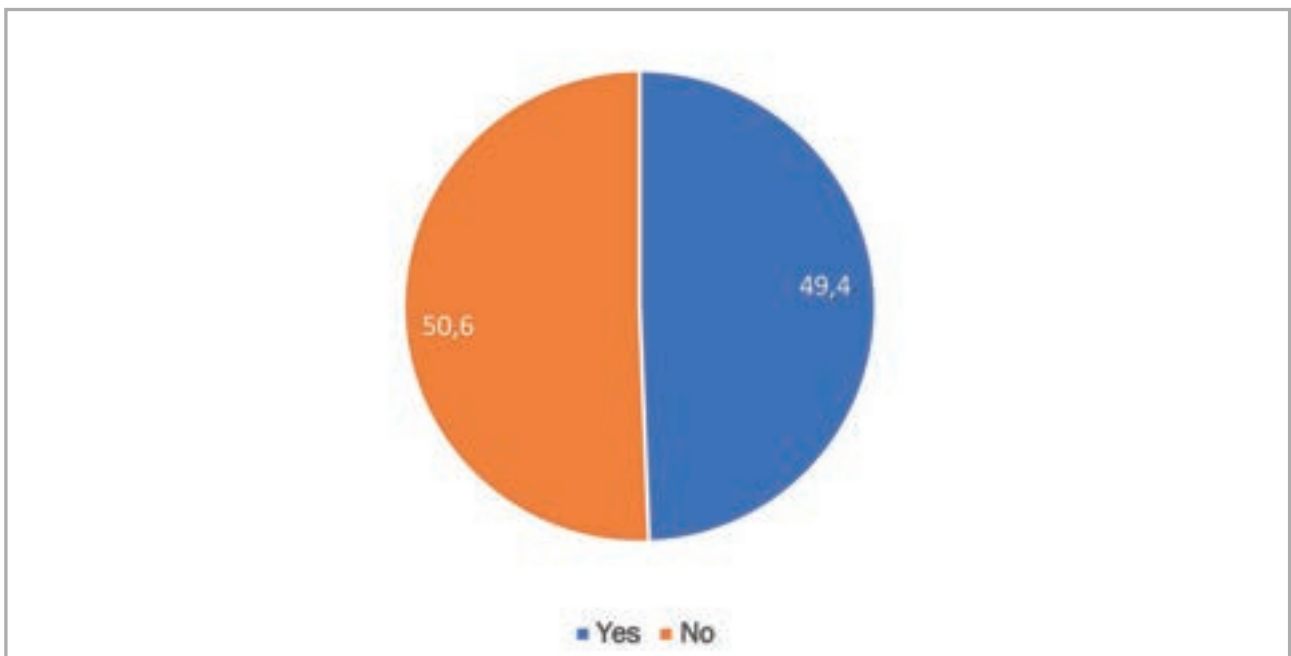


Figure 11: Payment of water services (n=3035)

5.4 Sanitation and hygiene

Table 24 shows the types of toilet facilities used by the Northern Cape Province households. Flush toilets connected to a public sewerage system were the most common toilet facility used by the households, accounting for 63.6% of all toilet types (Table 24). About 12.4% used a Pit latrine/toilet with a ventilation pipe, with 0.6% using chemical toilets.

Table 24: Type of toilet facility used by households

Type of toilet facility (n=3036)	Number (n)	Percentage (%)
Flush toilet connected to a public sewerage system	1,973	63.6
Pit latrine/toilet with a ventilation pipe	382	12.4
Pit latrine/toilet without a ventilation pipe	291	9.8
Flush toilet connected to a septic or conservancy tank	132	5.1
Open defecation (e.g., no facilities, field, bush)	85	3.3
Bucket toilet (collected by municipality)	56	1.7
Bucket toilet (emptied by household)	45	1.6
Pour flush toilet connected to a septic tank (or septage pit)	31	1.0
Other	26	0.9
Chemical toilet	14	0.6
Ecological Sanitation Systems (e.g., urine diversion)	1	0.0

France Baard District had the highest proportion (82%) of households using flush toilets connected to a public sewerage system, followed by Namakwa District (Table 28). The highest proportion of households practising open defecation was in Pixley ka Seme District (7.4%). John Taolo Gaetsewe District had the highest proportion of households using pit latrine/toilet with ventilation (38.4%) and pit latrine/toilet without ventilation pipe (27.1%). There was almost an equal distribution between males (63.3%) and females (63.9%) using flush toilets connected to a public sewerage system.

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

		Household head sex		District				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mgcawu	Frances Baard	John Taolo Gaetsewe
Flush toilet connected to a public sewerage system	%	63.3	63.9	75.5	72.8	66.5	82	21.6
	95% CI	[55.6-70.4]	[55.7-71.3]	[63.2-84.7]	[57.6-84.1]	[53.4-77.4]	[66.7-91.2]	[12.9-33.9]
Flush toilet connected to a septic or conservancy tank	%	4.7	5.6	5.6	5.3	8.2	2.3	5.8
	95% CI	[3.1-6.9]	[3.8-8.0]	[2.9-10.7]	[2.0-13.5]	[4.8-13.7]	[0.8-6.7]	[3.4-9.6]
Pour flush toilet connected to a septic tank (or septage pit)	%	1.1	0.8	1.8	0.5	1.1	0.3	1.6
	95% CI	[0.6-1.8]	[0.5-1.5]	[0.7-4.5]	[0.1-2.4]	[0.6-2.2]	[0.1-1.2]	[0.8-3.2]
Chemical toilet	%	0.3	0.9	0.1	0	0.1	0.7	1.4
	95% CI	[0.1-1.0]	[0.2-2.9]	[0.0-1.0]		[0.0-1.0]	[0.1-5.1]	[0.4-4.1]
Pit latrine/toilet with a ventilation pipe	%	11.6	13.3	9.1	5.6	4.6	4.1	38.4
	95% CI	[8.1-16.4]	[9.3-18.7]	[4.8-16.5]	[2.6-11.8]	[2.4-8.6]	[1.1-14.9]	[28.5-49.3]
Pit latrine/toilet without a ventilation pipe	%	9.6	10	4.4	3.6	7.8	4.3	27.1
	95% CI	[7.0-13.1]	[6.8-14.4]	[1.9-9.7]	[1.5-8.6]	[3.6-15.8]	[1.5-11.4]	[19.4-36.5]
Bucket toilet (collected by municipality)	%	2	1.3	0.1	3.2	2.4	1.5	0.7
	95% CI	[1.0-3.9]	[0.4-3.9]	[0.0-1.0]	[0.5-18.3]	[0.7-8.1]	[0.4-5.2]	[0.3-1.8]
Bucket toilet (emptied by household)	%	2.1	1.2	0.7	0.4	1.8	2.1	2.2
	95% CI	[1.0-4.3]	[0.6-2.2]	[0.3-1.7]	[0.1-1.7]	[0.7-4.7]	[0.6-6.7]	[0.8-5.8]
Ecological Sanitation Systems (e.g., urine diversion)	%	0	0.1	0	0	0	0	0.2
	95% CI		[0.0-0.6]					[0.0-1.3]
Open defecation (e.g., no facilities, field, bush)	%	4.3	2.2	1.9	7.4	6	1.9	0.4
	95% CI	[2.4-7.6]	[1.1-4.1]	[0.5-7.9]	[2.9-17.5]	[2.8-12.4]	[0.6-6.0]	[0.1-2.5]
Other	%	1	0.9	0.7	1	1.5	0.8	0.7
	95% CI	[0.5-1.9]	[0.4-1.9]	[0.3-1.9]	[0.2-5.1]	[0.7-3.4]	[0.3-2.0]	[0.1-3.3]

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

Toilet types were categorized into improved and unimproved sanitation types following the WHO & UNICEF Joint Monitoring Programme (JMP) definition (WHO and UNICEF, 2017). The study results show that most of the households had access to improved sanitation. The Namakwa District (96.5%) had the highest proportion of households using improved toilets, followed by the John Taolo Gaetsewe District (96%) (Figure 12). Pixley Ka Seme District (88%) had the lowest proportion of households using improved water sources (Figure 12).

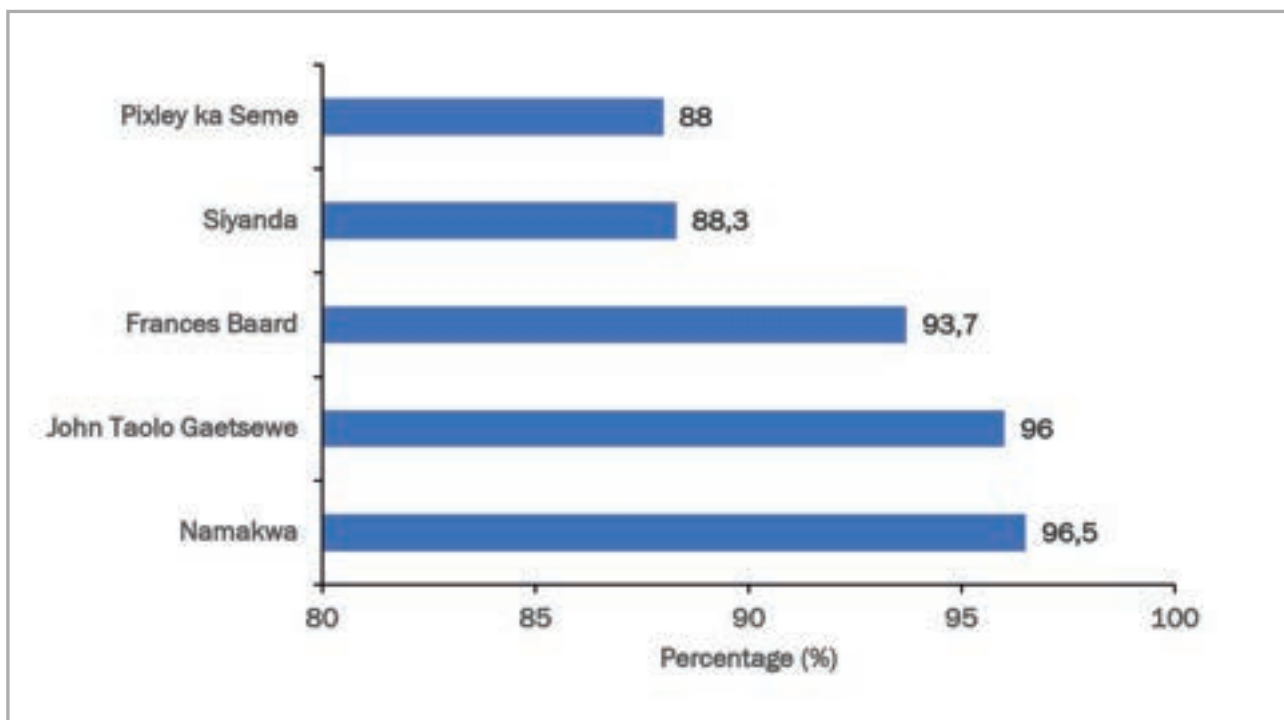


Figure 12: Improved and unimproved toilet types

Figure 13 shows that most households (58%) do not pay for sewage, and only 38% indicated that they pay for sewage; 3.9% reported that they don't know whether it is paid or not. When asked whether the households receive free sanitation as part of the South African Government's free basic services policy, about 74.8% indicated they were not receiving it (Figure 14), while 17.8% reported receiving free sanitation services.

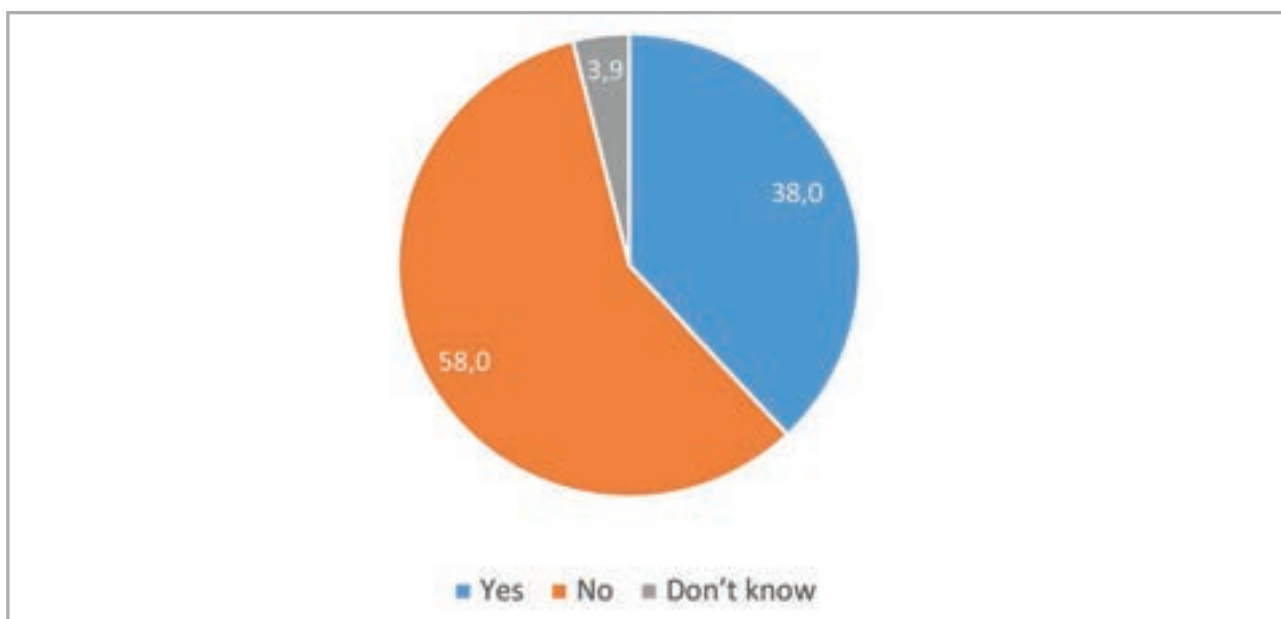


Figure 13: Proportion of households paying for public sewerage (n=2796)



Figure 14: Proportion of households receiving free sanitation (n=1973)

Most female-headed households (20.4%) indicated to have received free sanitation, whilst 77% of male-headed households did not. ZF Mngcawu District (32.5%) had the highest proportion of households receiving free sanitation services, while Frances Baard District (9.4%) had the least (Table 26).

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

	Yes		No		Don't Know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	15.4	[12.0-19.6]	77.0	[72.3-81.2]	7.5	[4.9-11.3]
Female	20.4	[16.7-24.6]	72.2	[67.9-76.1]	7.5	[5.5-10.1]
District						
Namakwa	22.9	[17.2-29.8]	74.2	[66.0-80.9]	2.9	[1.0-8.4]
Pixley ka Seme	12.8	[9.1-17.7]	77.8	[70.9-83.5]	9.3	[5.3-15.8]
ZF Mngcawu	32.5	[24.3-41.9]	57.5	[49.5-65.1]	10.1	[5.2-18.6]
Frances Baard	9.4	[6.4-13.6]	83.7	[78.9-87.6]	6.9	[4.2-11.1]
John Taolo Gaetsewe	25.9	[14.9-41.2]	67.5	[55.9-77.3]	6.6	[1.7-22.6]

5.4.1 Refuse removal

Table 27 shows rubbish disposal methods used by households in the Northern Cape Province. About 35.8% of household rubbish was removed by local authority/private company at least once a week, while 24.1% of households used their own refuse dump (Table 27). Households that indicated that they leave their rubbish lying anywhere made up 6.4% of their households in the Northern Cape Province. Few households reported using communal refuse dump to dispose of their rubbish (5.7%).

Table 27: Households rubbish disposal

Rubbish disposal methods (n=3011)	Number (n)	Percentage (%)
Removed by local authority/private company at least once a week	1,077	35.8
own refuse dump	725	24.1
Removed by community members, contracted by municipality at least once a week	588	19.5
Dump or leave rubbish anywhere	193	6.4
Communal refuse dump	170	5.7
Removed by community members at least once a week	75	2.5
Removed by local authority/private company less often than once a week	59	2.0
Other	56	1.9
Removed by community members, contracted by municipality less than once a week	36	1.2
Communal container/central collection point	18	0.6
Removed by community members, less often than once a week	14	0.5

Table 30 shows that a higher proportion of male-headed households have their rubbish removed by local authority/private company at least once a week (35.7%). John Taolo Gaetsewe District had the highest proportion of the households who use their own refuse dump (57.8%), while Namakwa District had the lowest (7.8%). John Taolo Gaetsewe District (11.2%) had the highest proportion of households who leave their rubbish everywhere, while Namakwa District (2.4%) had the least. About 70.6% of the households indicated that they were not receiving free refuse removal services (Figure 15).

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

		Household head sex		District				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mgcawu	Frances Baard	John Taolo Gaetsewe
Removed by local authority/private company at least once a week	%	35.7	34.9	43.4	49.9	31.3	45.1	9.6
	95% CI	[30.0-41.7]	[29.1-41.3]	[38.1-48.9]	[38.8-61.1]	[23.1-40.8]	[34.1-56.6]	[4.4-19.9]
Removed by local authority/private company less often than once a week	%	1.7	2.3	2.3	1.1	3.6	2.1	0.9
	95% CI	[1.0-2.8]	[1.5-3.6]	[0.9-5.5]	[0.5-2.5]	[2.0-6.5]	[0.9-4.7]	[0.2-4.5]
Removed by community members, contracted by municipality at least once a week	%	16.5	17.2	34.1	16.3	21.8	17.3	3.3
	95% CI	[13.7-19.7]	[14.1-20.9]	[28.3-40.3]	[12.2-21.4]	[15.2-30.2]	[13.7-21.7]	[1.4-7.2]

		Household head sex		District				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mgcawu	Francesca Baard	John Taolo Gaetsewe
Removed by community members, contracted by municipality less than once a week	%	1.1	0.9	1.1	0.4	2.6	0.6	0.7
	95% CI	[0.6-2.0]	[0.5-1.7]	[0.5-2.2]	[0.1-1.2]	[1.2-5.3]	[0.1-2.4]	[0.2-2.4]
Removed by community members at least once a week	%	2.2	2.4	2.5	2.6	0.1	4.5	0.8
	95% CI	[1.3-3.6]	[1.4-4.1]	[0.9-6.7]	[1.0-6.4]	[0.0-0.9]	[2.4-8.4]	[0.3-2.0]
Removed by community members, less often than once a week	%	0.4	0.4	0.3	1.1	0.3	0.4	0
	95% CI	[0.2-0.9]	[0.1-0.9]	[0.1-1.0]	[0.5-2.3]	[0.1-1.1]	[0.1-1.4]	
Communal refuse dump	%	4.4	5.3	6	0.8	9.3	1.2	8.4
	95% CI	[3.0-6.3]	[3.4-8.2]	[3.5-10.2]	[0.2-2.3]	[5.3-15.8]	[0.4-3.8]	[4.3-15.9]
Communal container/central collection point	%	1.6	0.5	0	0	3.6	0	1.7
	95% CI	[0.5-4.6]	[0.2-1.3]			[1.0-11.8]		[0.9-3.4]
Own refuse dump	%	28.5	26.1	7.8	22.8	17.9	21.6	57.8
	95% CI	[22.6-35.3]	[20.2-33.0]	[3.3-17.7]	[12.5-38.0]	[10.0-30.0]	[12.5-34.7]	[46.5-68.4]
Dump or leave rubbish anywhere	%	6.3	7.6	2.4	4.7	8.1	6	11.2
	95% CI	[4.5-8.9]	[5.7-10.2]	[0.9-6.4]	[2.2-9.7]	[4.7-13.7]	[3.1-11.4]	[8.5-14.6]
Other	%	1.7	2.3	0.1	0.3	1.5	1.3	5.5
	95% CI	[1.0-3.0]	[1.2-4.3]	[0.0-0.9]	[0.1-1.2]	[0.5-4.5]	[0.2-6.6]	[3.0-9.9]

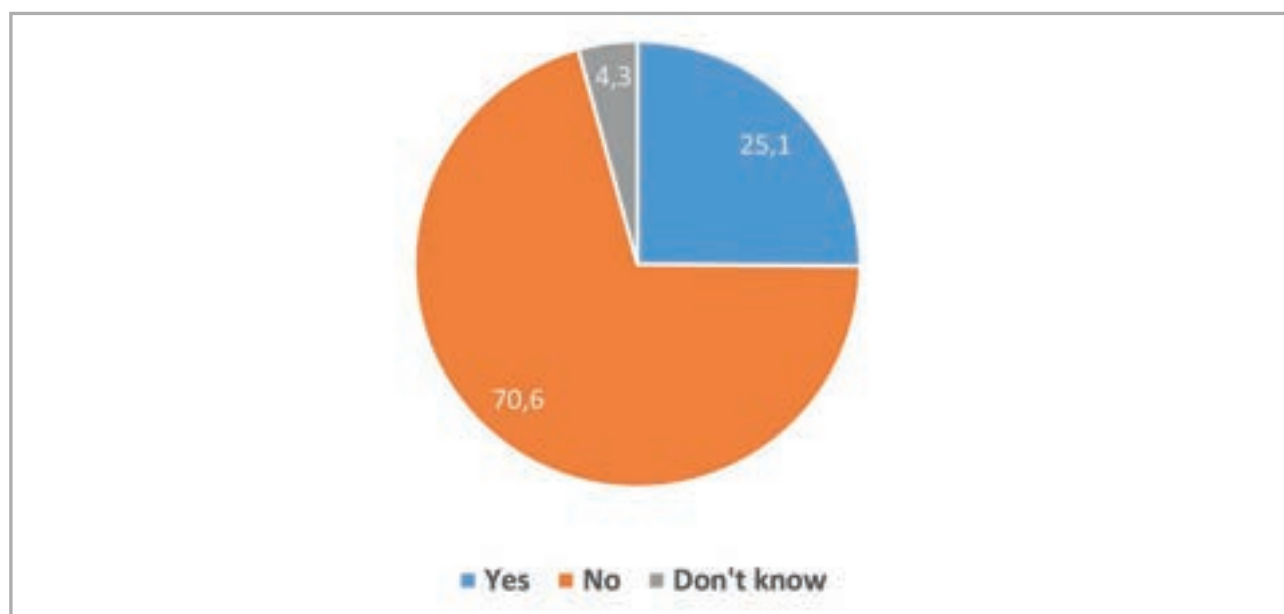


Figure 15: Proportion of households receiving free refuse removal services (n=1839)

5.5.1 Access to electricity

Figure 16 shows that the majority (90.6%) of the households had access to electricity in the Northern Cape Province. Table 31 shows that more female-headed households (91.9%) had access to electricity than male-headed (89.3%). John Taolo Gaetsewe District (97.2%) and Namakwa District (95.4%) had the highest proportion of households with electricity access, while France Baard District (11.6%) had the lowest proportion of households with access to electricity.



Figure 16: Proportion of households with access to electricity (n=3059)

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

	Yes		No		Don't Know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	89.3	[83.5-93.3]	10.4	[6.5-16.2]	0.3	[0.1-0.7]
Female	91.9	[88.2-94.5]	7.5	[5.0-11.2]	0.6	[0.2-1.5]
District						
Namakwa	95.4	[88.9-98.2]	4.1	[1.5-10.7]	0.5	[0.1-2.1]
Pixley ka Seme	89.2	[80.7-94.3]	9.7	[4.9-18.2]	1.1	[0.5-2.7]
Siyanda	85.9	[79.4-90.6]	14	[9.3-20.5]	0.1	[0.0-0.9]
Frances Baard	87.9	[72.9-95.2]	11.6	[4.5-26.8]	0.5	[0.1-2.0]
John Taolo Gaetsewe	97.2	[95.3-98.3]	2.8	[1.7-4.7]	0	

Figure 17 shows that only 27.6% of the households in Northern Cape Province indicated that they were receiving free electricity as part of the Free Basic Electricity Programme (FBE). Under this programme, qualifying households receive 50kWh per month.

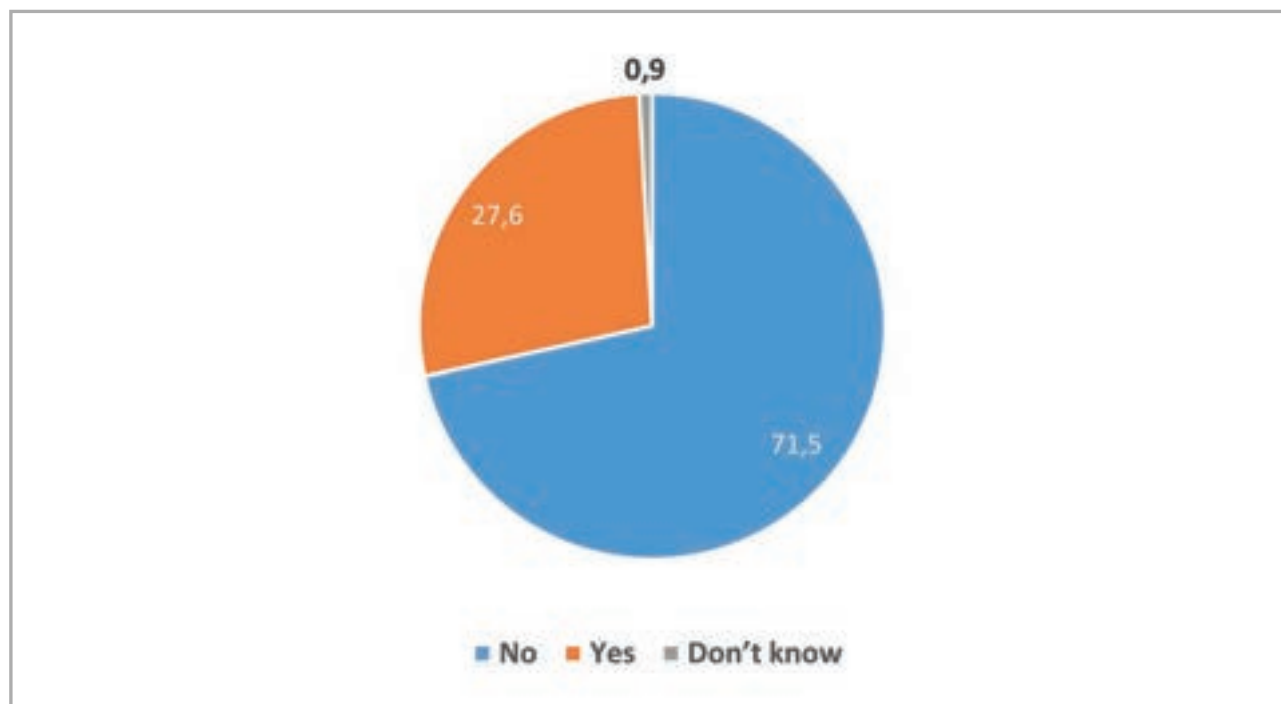


Figure 17: Proportion of households receiving free electricity (n=2800)

Table 30 shows households receiving free electricity disaggregated by the sex of the household head and district. More female-headed households (33.3%) reported receiving free electricity than male-headed households (22.3%). Namakwa District (51%) had the highest proportion of households receiving free electricity, followed by ZF Mngcawu District (33.3%), while Frances Baard District had the least (20.2%) (Table 30).

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

	Yes		No		Don't Know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	22.3	[18.9-26.1]	76.7	[72.8-80.2]	1	[0.6-1.7]
Female	33.3	[29.2-37.6]	65.9	[61.6-69.9]	0.8	[0.4-1.5]
District						
Namakwa	51	[43.7-58.3]	48.5	[41.3-55.8]	0.4	[0.1-1.3]
Pixley ka Seme	24	[17.5-32.0]	75.3	[67.3-81.9]	0.7	[0.3-1.6]
ZF Mngcawu	33.3	[24.5-43.4]	65.6	[55.4-74.5]	1.1	[0.5-2.7]
Frances Baard	20.2	[15.1-26.3]	78.4	[72.1-83.6]	1.5	[0.7-2.9]
John Taolo Gaetsewe	23.5	[18.0-30.0]	76.2	[69.7-81.6]	0.3	[0.1-1.3]

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). Results show that electricity from the mains (89.2%) was the main energy source for cooking for most of the households in the Northern Cape Province. Gas (6.6%) 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 shows that, Namakwa District (93.9%) had the highest proportion of households whose main source of energy for cooking was electricity from the mains, closely followed by Frances Baard District (90.1%). Pixley ka Seme District (9.1%) had the highest proportion of households whose main source of energy for cooking was gas.

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	89.2	98.1	93.4	57.9
Gas	6.6	0.04	1.5	3.0
Wood	2.7		3.2	7.3
Other source of electricity (e.g., generator)	0.7	0.55	0.5	0.3
Paraffin	0.4	0.1	0.3	0.5
Solar energy	0.3	0.78		0.6
Others	0.1		0.0	0.1
None	0.1	0.04	0.2	29.4
Coal	0.0			1.0
Candles		0.37		
Animal dung			0.1	

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

		Household head sex		District				
		Male	Female	Namakwa	Pixley ka Seme	Siyanda	Frances Baard	John Taolo Gaetsewe
Electricity from mains	%	88.5	89.9	93.9	86	89.9	90.1	87.2
	95% CI	[85.4-91.0]	[86.6-92.5]	[87.5-97.1]	[79.5-90.7]	[84.3-93.7]	[86.9-92.6]	[79.5-92.3]
Other source of electricity (e.g., generator, etc.)	%	0.7	0.7	0.3	1	0.7	0.9	0.3
	95% CI	[0.3-1.6]	[0.3-1.3]	[0.1-1.0]	[0.3-3.3]	[0.3-1.7]	[0.3-2.3]	[0.1-1.3]
Gas	%	7.7	5.3	4.4	9.1	7.7	6.6	4.8
	95% CI	[5.6-10.4]	[4.1-7.0]	[2.7-7.0]	[6.0-13.5]	[4.2-13.8]	[4.4-9.7]	[2.6-8.7]
Paraffin	%	0.6	0.2	0	0.3	0.2	1.1	0
	95% CI	[0.2-1.5]	[0.0-0.8]		[0.1-1.2]	[0.0-1.5]	[0.4-2.8]	

		Household head sex		District				
		Male	Female	Namakwa	Pixley ka Seme	Siyanda	Frances Baard	John Taolo Gaetsewe
Wood	%	1.7	3.7	0.4	2.4	1.2	0.9	7.6
	95% CI	[1.0-2.9]	[1.8-7.5]	[0.1-2.6]	[0.9-6.3]	[0.5-3.1]	[0.3-2.3]	[3.5-16.1]
Coal	%	0.1	0	0	0	0	0.1	0
	95% CI	[0.0-0.6]					[0.0-1.0]	
Solar energy	%	0.5	0.1	1.1	0.9	0.1	0	0
	95% CI	[0.1-1.9]	[0.0-0.6]	[0.1-7.7]	[0.1-6.3]	[0.0-1.1]		
Other	%	0.1	0.1	0	0	0.1	0.2	0
	95% CI	[0.0-0.7]	[0.0-0.4]			[0.0-1.0]	[0.0-1.2]	
None	%	0.1	0.1	0	0.2	0	0.1	0
	95% CI	[0.0-0.6]	[0.0-0.4]		[0.0-1.2]		[0.0-1.0]	

Almost (98.1%) of the households in Northern Cape Province had electricity from the mains as their main source of energy for lighting. Similarly, electricity from the mains was the most common energy source (93.4%) for water heating among households in the Northern Cape Province (Table 33). Table 33 depicts results for energy sources used for water heating accounting for about 96.9% in the Namakwa District. Across the province, a few households reported using paraffin (0.2%) as their main energy source for water heating.

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

		Head of household sex		District				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mngcawu	Frances Baard	John Taolo Gaetsewe
Electricity from mains	%	93.9	93	96.9	92.1	95.9	94.9	88.8
	95% CI	[91.5-95.6]	[89.0-95.6]	[87.8-99.3]	[86.5-95.5]	[91.5-98.0]	[92.7-96.5]	[79.9-94.0]
Other source of electricity (e.g., generator)	%	0.5	0.5	0.2	0.9	0.5	0.4	0.5
	95% CI	[0.2-1.1]	[0.2-1.0]	[0.0-1.7]	[0.3-2.8]	[0.2-1.4]	[0.1-1.4]	[0.2-1.6]
Gas	%	1.7	1.3	0.7	2	1.1	1.9	1.3
	95% CI	[1.0-2.7]	[0.8-2.1]	[0.2-2.3]	[1.0-3.7]	[0.4-3.2]	[1.1-3.4]	[0.6-2.8]
Paraffin	%	0.5	0.1	0	0.3	0.2	0.7	0
	95% CI	[0.2-1.1]	[0.0-0.9]		[0.1-1.2]	[0.0-1.5]	[0.3-2.0]	
Wood	%	2.1	4.2	0.5	2.4	0.9	1.6	9
	95% CI	[1.3-3.5]	[2.1-8.5]	[0.1-2.3]	[0.9-6.4]	[0.3-2.8]	[0.8-3.1]	[4.2-18.1]
Animal dung	%	0	0.1	0	0	0	0	0.2
	95% CI		[0.0-0.8]					[0.0-1.5]
Solar energy	%	1.3	0.3	1.7	2	1.3	0.2	0
	95% CI	[0.5-3.0]	[0.1-0.9]	[0.3-9.2]	[0.6-6.5]	[0.3-5.5]	[0.0-1.2]	

		Head of household sex		District				
		Male	Female	Namakwa	Pixley ka Seme	ZF Mngcwawu	Frances Baard	John Taolo Gaetsewe
Other, specify	%	0	0.1	0	0	0.1	0	0
	95% CI		[0.0-0.4]			[0.0-1.0]		
None	%	0.1	0.3	0	0.4	0	0.3	0.2
	95% CI	[0.0-0.6]	[0.1-0.9]		[0.1-1.4]		[0.1-1.3]	[0.0-1.4]

The predominant energy source for space heating was electricity from the mains. About 29.4% of households did not use anything for space heating. Namakwa District (63.1%) had the highest proportion of households using electricity from the mains as the main source of energy for space heating (Table 34). Nearly one-third (36.5%) of the households did not use anything for space heating in Frances Baard District. Wood was used by 13% of John Taolo Gaetsewe District households for space heating. Male-headed households (58.2%) had the highest proportion of households using electricity from the mains; female-headed households were at 57.5%.

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

		Household head sex		District				
		Male	Female	Namakwa	Pixley ka Seme	Siyanda	Frances Baard	John Taolo Gaetsewe
Electricity from mains	%	58.2	57.5	63.1	50.4	62.9	54.9	60.2
	95% CI	[54.0-62.4]	[53.2-61.6]	[55.5-70.2]	[42.3-58.5]	[54.0-71.1]	[48.3-61.2]	[52.7-67.2]
Other source of electricity (e.g., generator, etc.)	%	0.2	0.5	0.6	0	0.5	0.2	0.4
	95% CI	[0.0-0.6]	[0.2-1.0]	[0.2-1.5]		[0.2-1.5]	[0.0-1.2]	[0.1-1.4]
Gas	%	3.2	2.7	2.8	4.5	1.9	3.7	1.9
	95% CI	[2.2-4.6]	[1.9-4.0]	[1.2-6.5]	[2.7-7.4]	[0.7-5.1]	[2.5-5.4]	[1.1-3.4]
Paraffin	%	0.5	0.6	0	1.2	0.2	0.2	1
	95% CI	[0.2-1.1]	[0.3-1.3]		[0.5-2.9]	[0.0-1.5]	[0.0-1.3]	[0.4-2.7]
Wood	%	6.8	7.8	6.8	6	5.7	4.6	13
	95% CI	[5.0-9.1]	[5.5-10.9]	[3.5-13.0]	[3.1-11.2]	[3.1-10.1]	[2.3-8.8]	[8.5-19.4]
Coal	%	1	1	0.9	0.5	1	0	2.6
	95% CI	[0.5-1.8]	[0.4-2.2]	[0.3-2.3]	[0.1-2.2]	[0.2-4.4]		[1.3-5.2]
Solar energy	%	1.1	0.1	1.1	1.4	1.3	0	0
	95% CI	[0.4-2.7]	[0.0-0.5]	[0.1-7.7]	[0.3-5.7]	[0.3-5.6]		
Other	%	0.1	0.1	0.5	0.2	0	0	0
	95% CI	[0.0-0.5]	[0.0-0.3]	[0.2-1.5]	[0.0-1.5]			
None	%	29	29.9	24.1	35.8	26.5	36.5	20.9
	95% CI	[25.1-33.1]	[26.7-33.2]	[20.1-28.7]	[28.1-44.3]	[19.7-34.5]	[31.0-42.4]	[16.8-25.7]

5.6 Indigent households

Results show that 53.4% of the households responded 'yes' (Figure 18), while about 4.5% did not know if the household was registered.

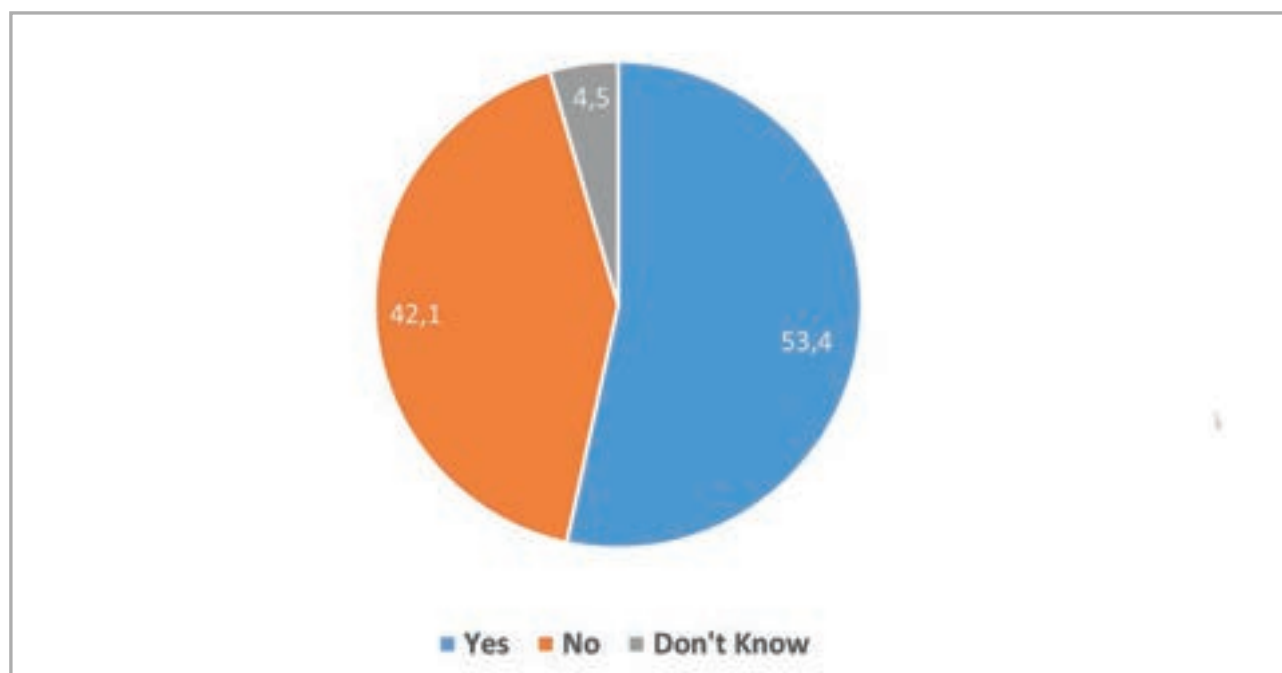


Figure 18: Proportion of the household registered as indigent (n=3065)

More female-headed households (57.9%) were registered as indigent households compared to male-headed households (Table 35). Namakwa District (68.6%) had the highest proportion of households that indicated that they were registered as indigent households, followed by Frances Baard District (58.3%). John Taolo Gaetsewe District had the lowest proportion of households registered as indigent (42.3%).

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

	Yes		No		Don't Know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	49.5	[44.2-54.9]	45.7	[40.5-51.1]	4.7	[3.5-6.4]
Female	57.9	[52.9-62.7]	37.8	[33.3-42.5]	4.3	[3.1-6.0]
District						
Namakwa	68.6	[62.5-74.1]	29.1	[23.7-35.2]	2.3	[1.3-3.8]
Pixley ka Seme	46.7	[35.9-57.8]	49.1	[37.9-60.3]	4.2	[2.2-7.9]
ZF Mgwa	55.1	[46.6-63.4]	40.3	[32.8-48.3]	4.6	[2.4-8.5]
Frances Baard	58.3	[48.3-67.7]	36.9	[28.2-46.7]	4.8	[2.8-7.9]
John Taolo Gaetsewe	42.3	[34.9-50.1]	52.1	[45.1-59.0]	5.6	[3.4-9.2]

6.1 Agriculture and Production Systems

This section focuses on the food availability dimension of food security, which unpacks how food is produced within the province by various households. Most households in the African setting relies on agriculture as the primary source of food, hence they engage in crop and livestock production to provide food for their households. This section will characterize land ownership and access, and the agriculture production trends across the different districts in the Northern Cape Province.

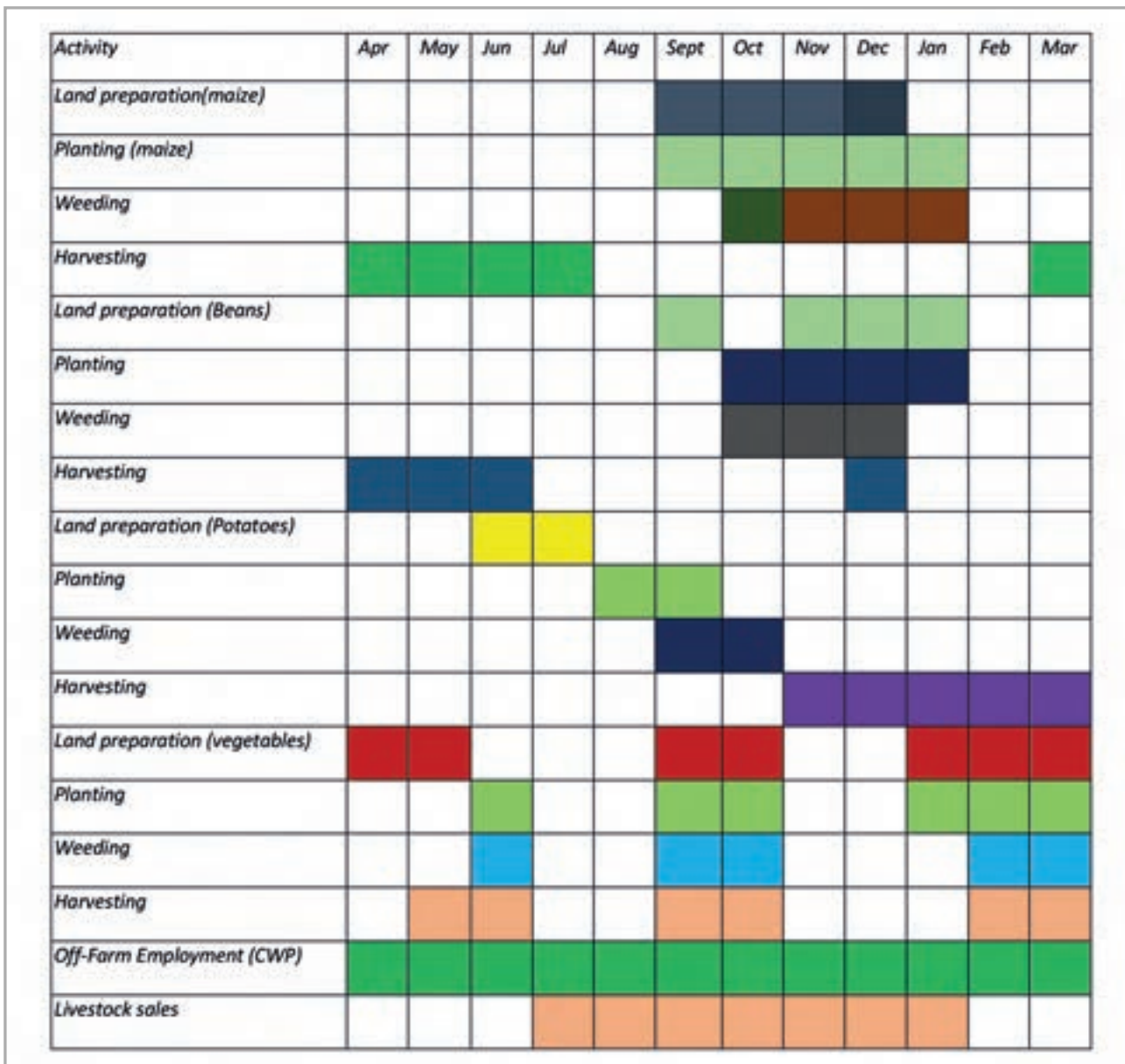


Figure 19: Seasonal calendar (Source: HEA, Qualitative Output)

Findings from the Household Economic Approach (HEA) focus group discussions indicate that agricultural production and value chains have a critical role in household food and nutrition security. Figure 19 depicts a seasonal calendar for the Northern Cape Province. The rain season (September to February) is characterised by land preparation, planting, and weeding. Much of the rural life in this livelihood zone is still determined by agricultural seasons, although this has been ameliorated by employment, mining, and social grants, which are all year-round contributors to people's livelihoods. Livelihood 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 year in 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 team also referred to 2019 (before the COVID-19 pandemic) as one of the typical years for reference.

The main season for farming begins with land preparation in August. It 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.

6.2 Household Access to Land

South Africa, has a dual system 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). Overall, access to land by households in the Northern Cape Province is extremely low (Figure 20). The John Taolo Gaetsewe District (JTGDM) is the only district with a slightly higher percentage of households who have access to land, with 29% of the households having access to land. The municipality (JTGDM) is a rural one (80% villages) and access to land in South Africa is usually easier in rural areas, hence the slightly higher percentage. About 80% of the land mass of Joe Morolong is Trust Land and is under the custodianship of traditional leaders and that makes it easier for households to have access to agricultural land, since in most cases, no title deed is required. The district with the lowest percentage of households accessing land is the ZF Mgcawu District (16%) (Figure 20). This can be ascribed to the area not having any tribal land, and also, in accordance with the Commission on the Restitution of Land Rights' 2018 annual report, the district had the highest number of all outstanding claims and more complex claims, as well.

Second to JTGM District, Pixley ka Seme District has 26% of households who have access to land. It should be noted that, the ZF Mgcawu District is part of the Arid Innovation Region consisting of the key national roads (N10 and N14), linking the district to major industrial areas in the country (National Spatial Development Plan (NSDf), 2019). It is also part of the Kalahari, and it is the most arid and sparsely populated central part of the country. The primary economic activities in the area are agriculture and mining, with Sishen being known for massive quantities of iron ore. The arid area is famous for its production and exportation of grapes, which become ripe and ready before the other grapes of the world (National Spatial Development Plan (NSDf), 2019). Other dominating agricultural practices in the area are livestock and game farming.

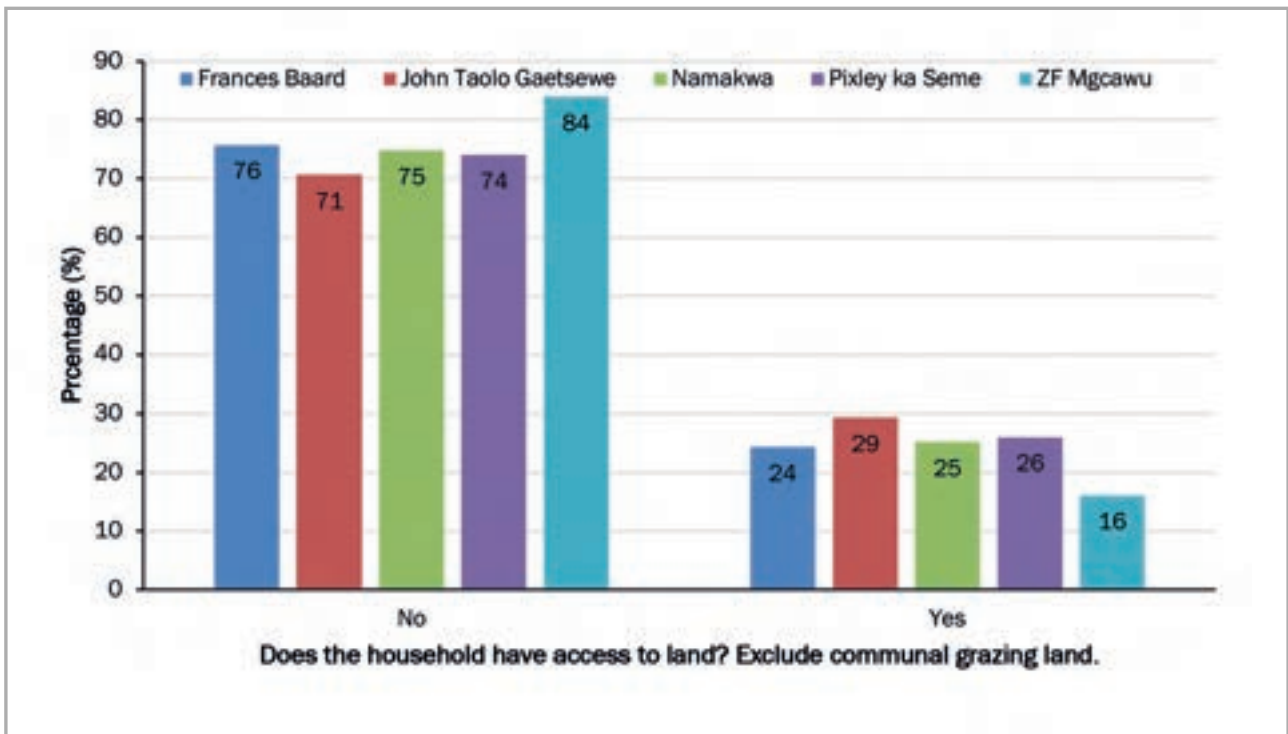


Figure 20: Household access to land

Disaggregated by gender, both female- and male-headed households were, on average having less access to land; however, this is more pronounced among females in the Namakwa District, where only 35% of the females have access to the land (Figure 21). The higher number of females having access to land in JTGDM and Pixley ka Seme districts can be attributed to the migration of males looking for work in other districts, especially within the mines and other provinces.

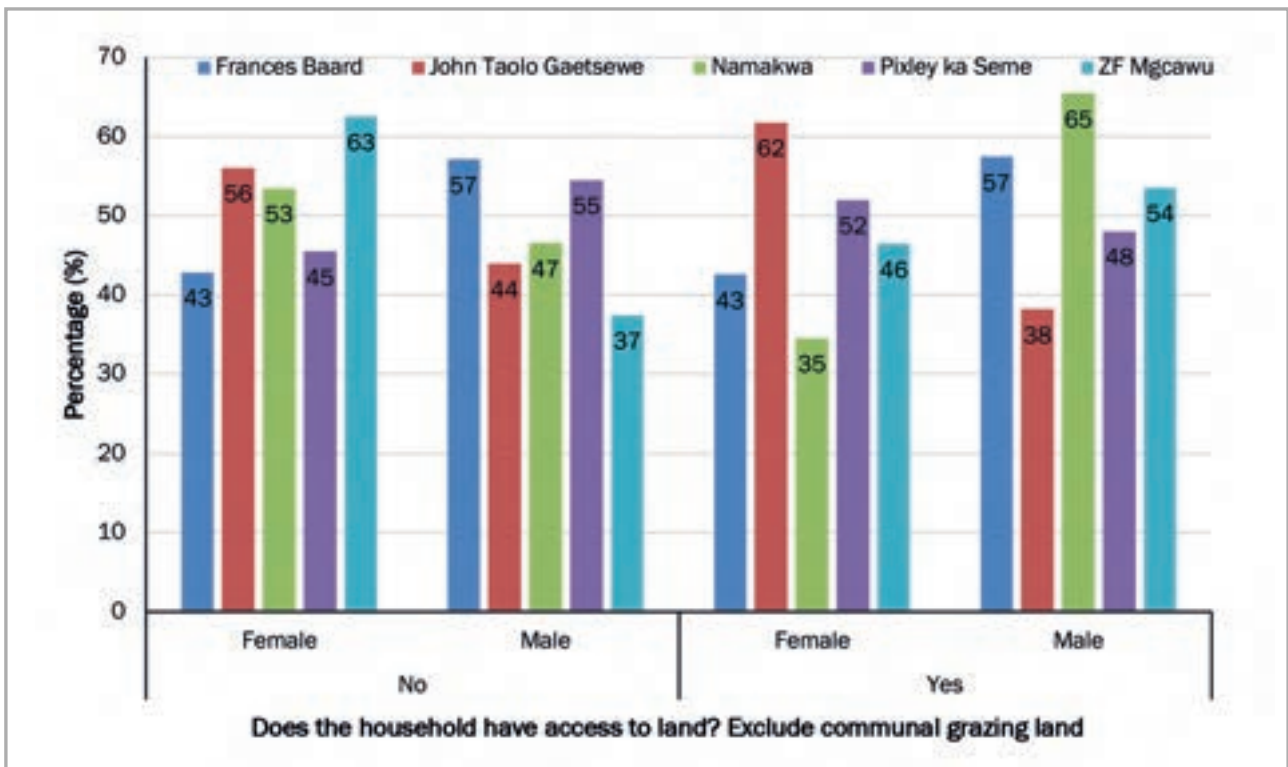


Figure 21: Land access disaggregated according to household head sex

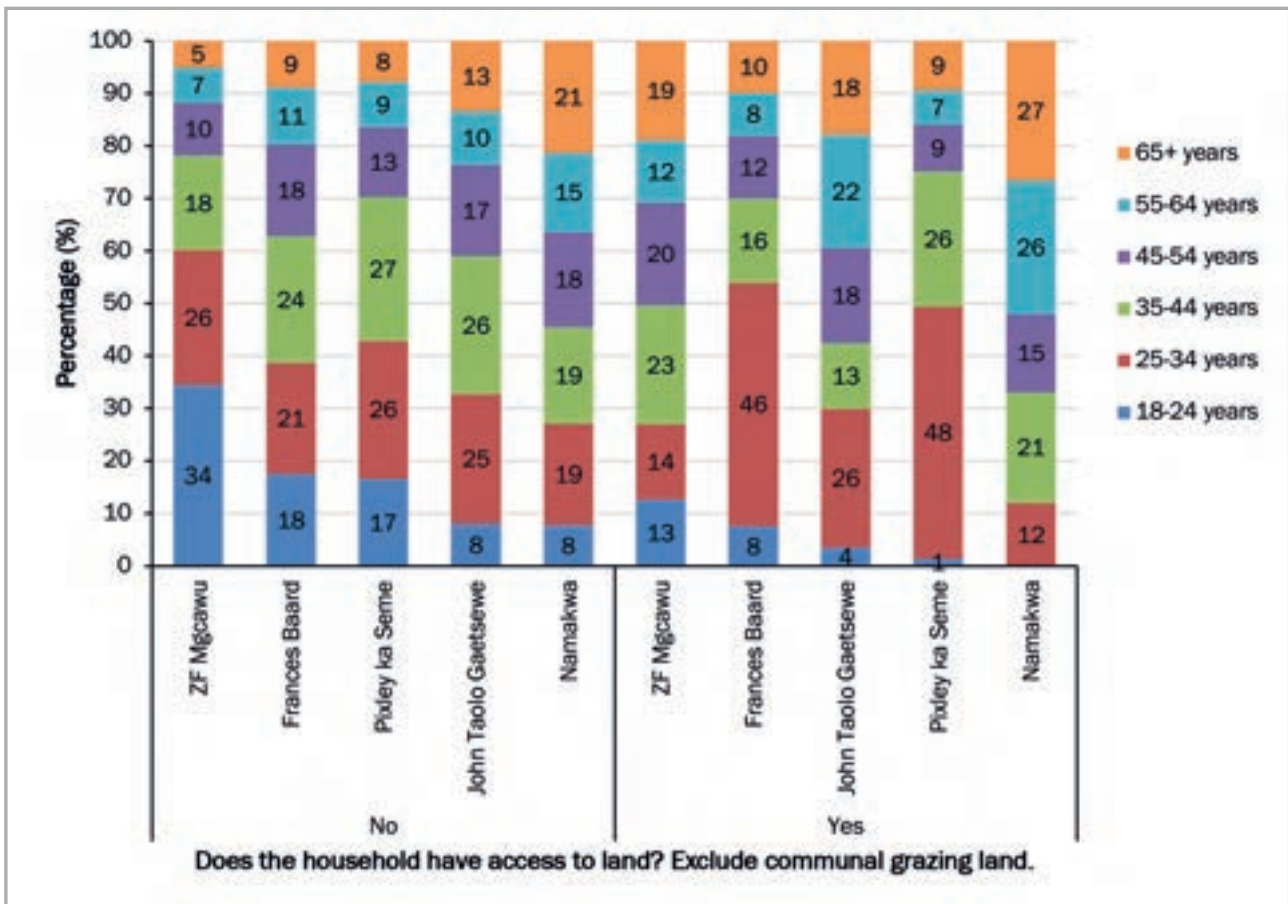


Figure 22: Access to land disaggregated according to age

Land access varied disproportionately according to the different age categories, as shown in Figure 16. Nearly all the respondents in the 18-24 year age category have extremely limited access to land across the four districts. In the 18-24 year category, only ZF Mgcawu District households have the highest percentage (13%) of youth who have access to land. It should be noted that, in a well-functioning society, we expected low levels of child/youth-headed households, hence the extremely low levels of the youth with access to land. As expected, access to land increased with an increase in age; hence, the age group between 25-44 years has the highest percentage of access to land.

6.2.1 Land tenure system

Results from the household survey show that of the land that they access, most of it is owned by the households (Figure 23), with households in both Namakwa and JTGDM districts being at the forefront, with 95% and 92%, respectively. This result indicates that the majority of the reported landowners were merely for residential purposes and not for agriculture production purposes. There is, however, a small percentage of households who reside in land which is state owned i.e., Frances Baard District reported 15% of state-owned land. Ownership of the land in this context is a small area for dwelling, with extremely limited backyard farming or gardening.

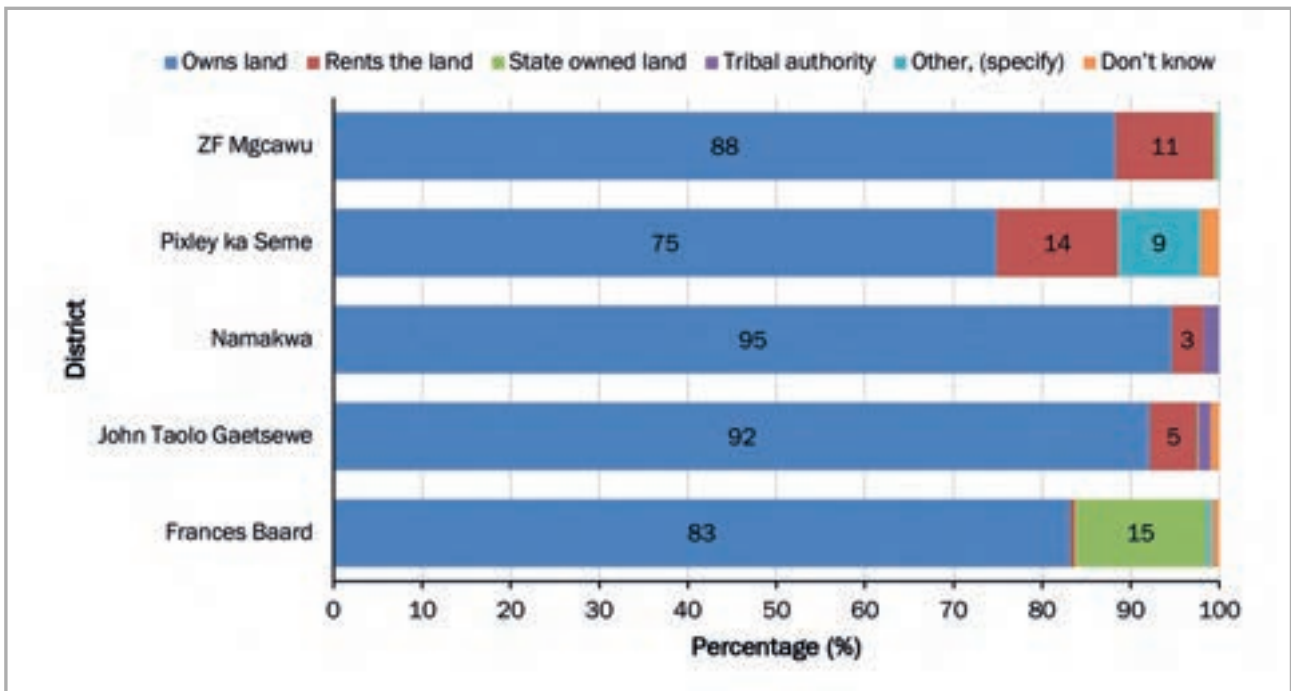


Figure 23: Land tenure in the Northern Cape Province

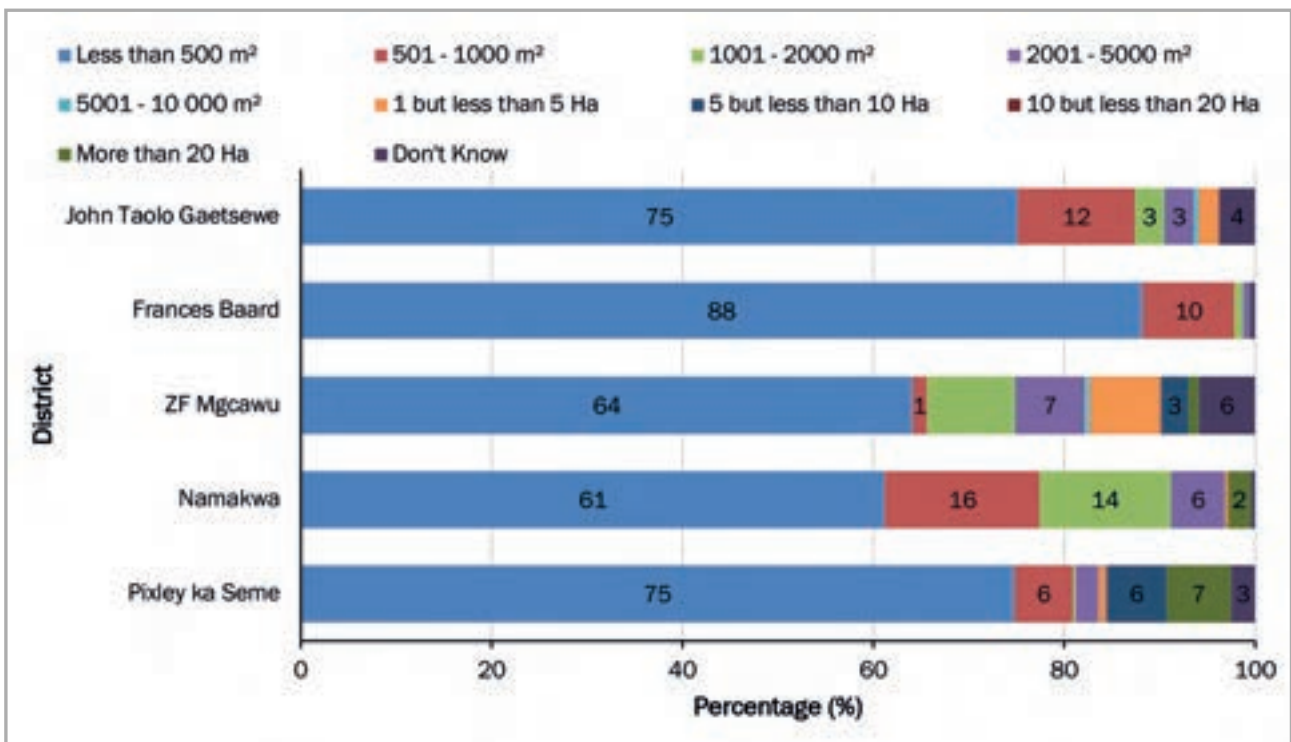


Figure 24: The approximated agricultural land size accessed by households in the Northern Cape Province

6.2.2 Use of land for food production or other agricultural products

Within the Northern Cape Province, at least 57% of the households in JTGDM use the land for food production and other agricultural products. This is followed by households from Namakwa District, with 41% of them being able to use the land for agricultural production purposes. It should be noted that JTGDM District had a higher proportion of households (75%) with yards that are between 5 000-10 000 square meters, so it makes it easier to use the land for agricultural production. Therefore, the land that was regarded as 'owned' was primarily meant for residential purposes with adequate opportunities for backyard farming, even though all the districts are not widely using the land for agricultural production. The low level of involvement of the households in

agricultural activities in their land might be influenced by the climatic conditions since the province is mostly arid, and some parts are part of the Kalahari Desert.

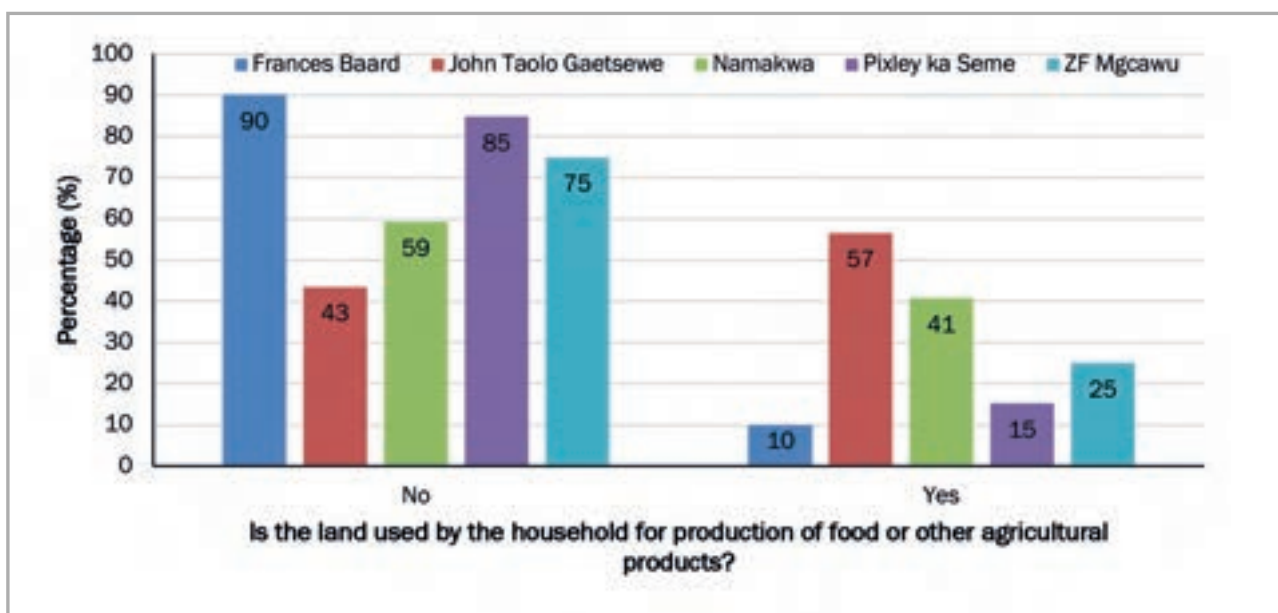


Figure 25: Land use for food and other agricultural production

6.2.3 Crop and livestock production

Households in the Northern Cape Province are practising livestock production at a slightly higher rate, compared to food and crop production. Francis Baard District is the only district with the lowest percentage of livestock production (5%). ZF Mgcawu and Namakwa districts have the highest level of participation in livestock production, with values of 59% and 58%, respectively (Figure 26). The low level of participation by households in livestock production in Frances Baard District is probably due to the high proportion of mining activities in the area. The other plausible reason is the challenges with the land restitution and delays in land claims processes, as well as shortages of agricultural extension services.

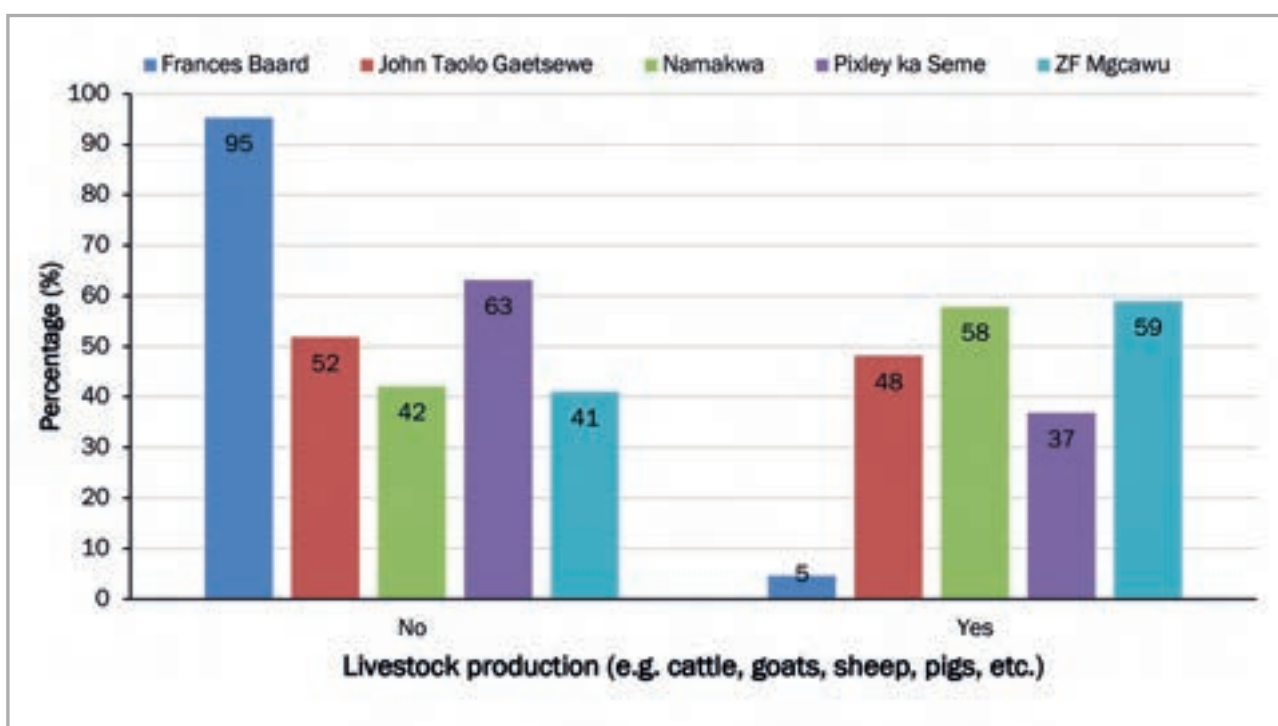


Figure 26: Livestock production by district in the Northern Cape Province

Generally, poultry production is practised by a fairly average percentage of households in the Northern Cape Province. The results indicated that slightly above 57% of the households in ZF Mgcawu and Namakwa districts were involved in poultry production. The least level of poultry production was reported in Frances Baard District, with 5% of the households engaged in poultry production (Figure 26). The fairly low level of poultry production might be attributed to the high concentration of mining activities and arid climatic conditions in the province.

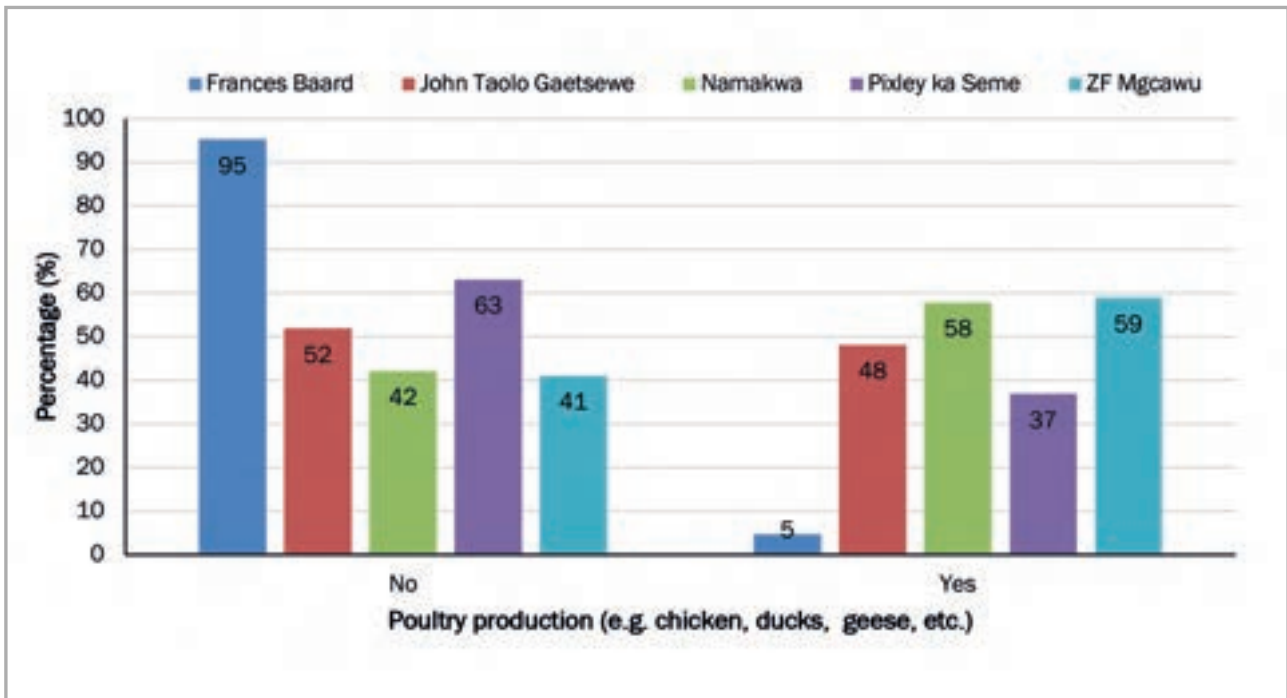


Figure 27: Poultry production by district in the Northern Cape Province

Households in the Northern Cape Province reported an extremely low percentage of engagement in grain crop production, with JTGD and Pixley ka Seme districts reported to have some fairly low level of engagement in crop production at 24% and 20%, respectively (Figure 28). Households from ZF Mgcawu District reported not to be involved in any form of grain crop production. Such low levels of grain production can be ascribed to the arid conditions and extreme temperatures experienced in the province, which do not support optimum crop production conditions.

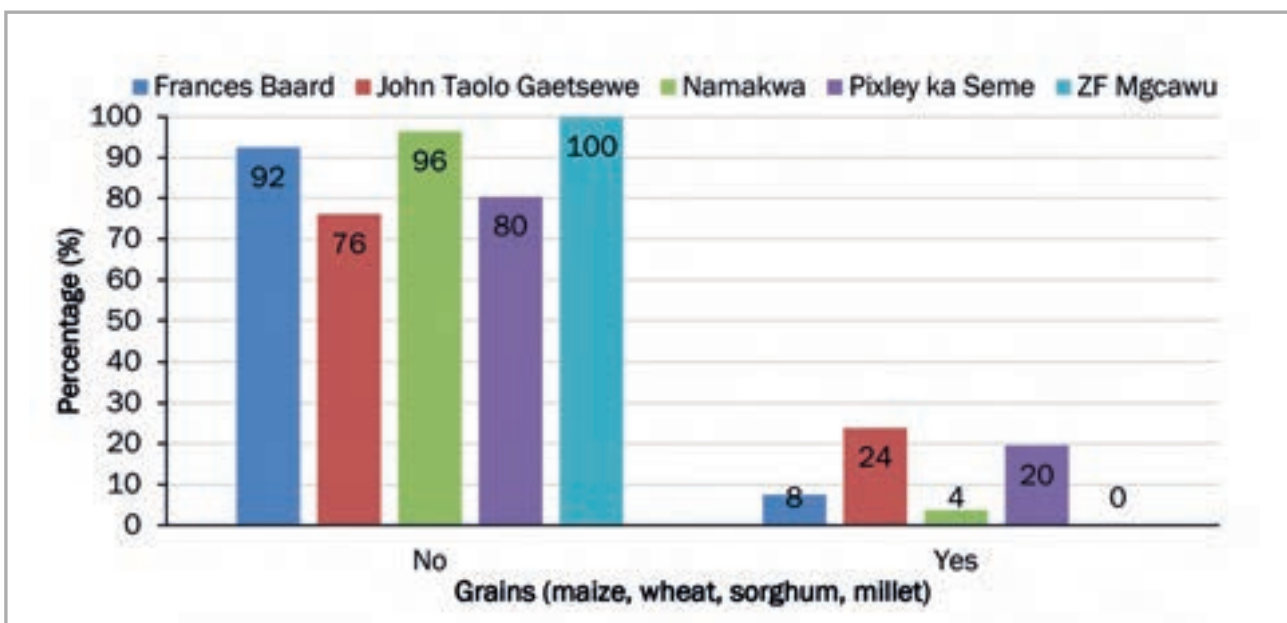


Figure 28: Household involvement in crop production in the Northern Cape Province

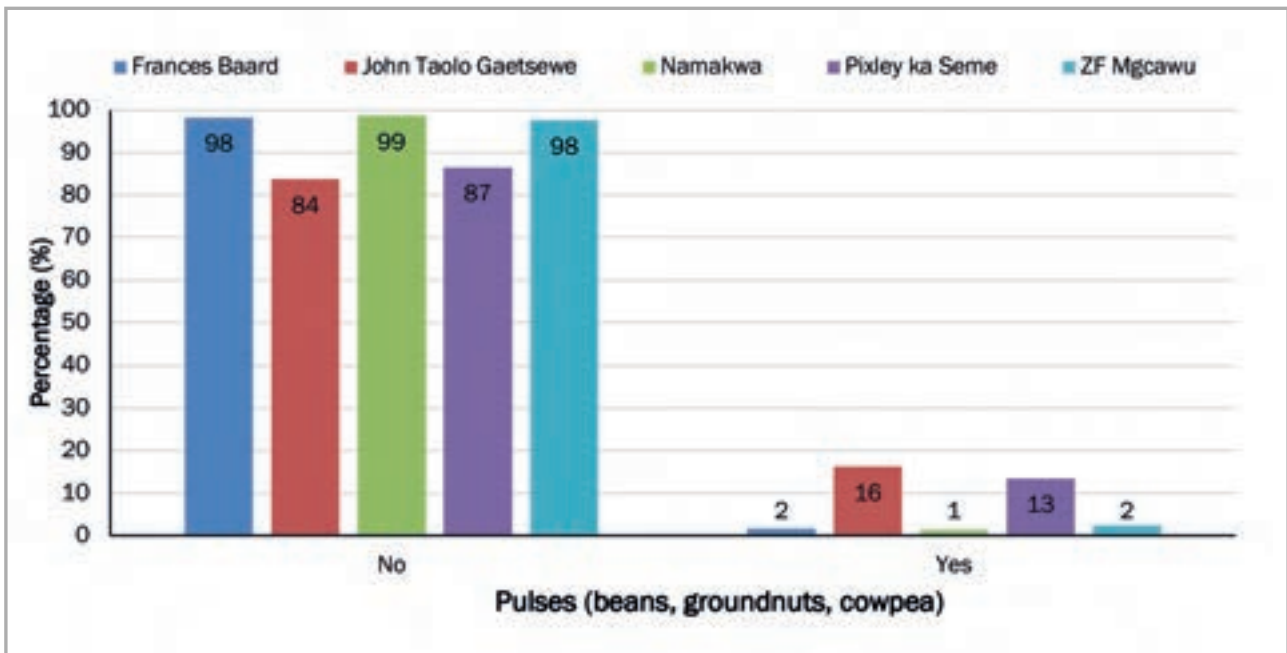


Figure 29: Pulses production by district in the Northern Cape Province

The production of pulses was reported to be the least practised by most households in Northern Cape Province within all five districts (Figure 29). More than 95% of the households in Frances Baard, ZF Mgcau, and Pixley ka Seme districts do not produce pulses, and at least 84% of the households in JTGM and Namakwa districts also reported not to be engaged in the production of pulses.

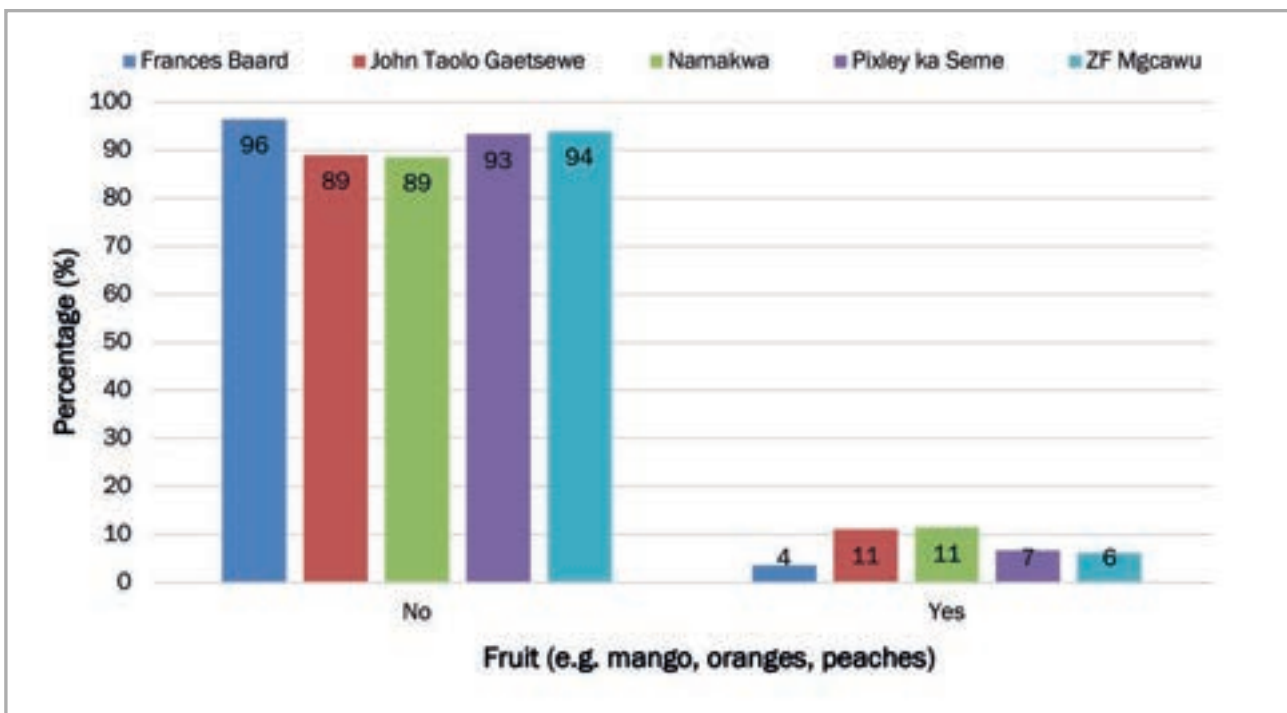


Figure 30: Household fruit production

Fruit production was reported to be extremely low in all the districts in the Northern Cape Province. The highest engagement in fruit production has been at most 11%, in JTGM and Namakwa districts.

6.2.4 Major Crops Grown

Crop production plays a major role in supplementing food availability among the rural households in the province. Both qualitative and quantitative data shows that maize, beans, potatoes, and vegetables are the major crops grown in the open access livelihood zones of the province. Hence agricultural extension services for both livestock and crops are needed by most of the households.

6.3 Wealth Breakdown, Food, and Income Sources

Results emerging from the HEA focus group discussions indicate that most of the households in Northern Cape are 'poor' and 'very poor'. This result is a cause for concern with regards to government interventions that need to be tailor-made for this province. 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 households' vulnerabilities to different shocks, and to estimate numbers of people who may be affected by different economic changes.

The analysis showed that geography plays a critical role in determining household's options for obtaining food and income in a society. However, it is not the only factor that determines the pattern of livelihood. 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 can 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.

6.3.1 Coastal Open Access Non-Crop Income (ZAKOL) of Francis Baard and John Taolo Gaetsewe 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.

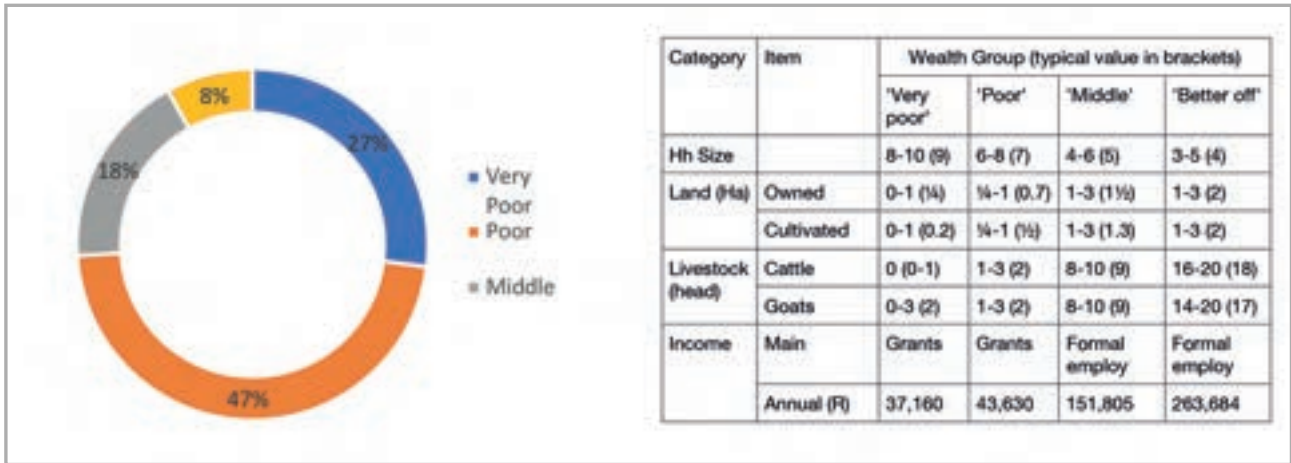


Figure 31: Wealth breakdown in ZABOL Livelihood Zone

Land holdings increase with wealth but not as exponentially as the factors listed above (0.25ha 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 R263,684, compared to the R37,160 of the 'very poor' households. Households with lower-paying or less permanent formal employment and some business opportunities with an average annual income of R151,805 are referred to as the 'middle'. Those who depend primarily on grants are described as the 'poor' and 'very poor'; collectively, they are about 74% 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 class 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.

6.3.2 Cederberg Karoo (ZACKA 59263) of ZF Mgcau, Francis Baard, and ZF Mgcau districts

Wealth in this livelihood zone is determined primarily by three 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; and
3. Livestock ownership, especially cattle.

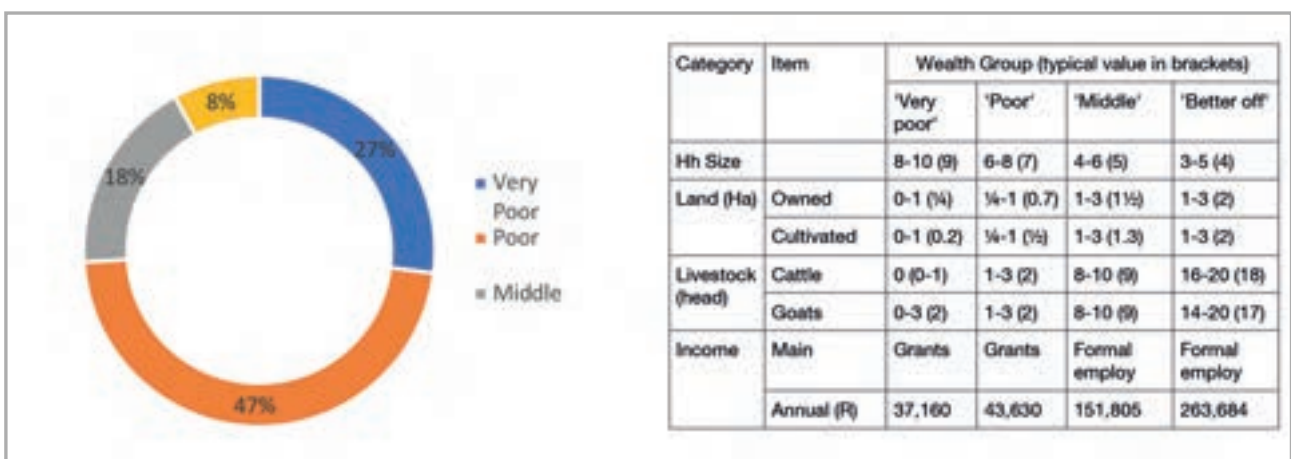


Figure 32: Wealth breakdown in the northern open access cattle and dry land crops livelihood zone (ZAHIC)

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, herein 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 73% of households interviewed. 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 class 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.

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.

6.3.3 Source of food and income in ZABOL Zone of Francis Baard and John Taolo Gaetsewe 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. Crop production contributed to 2% and 3% of the food sources for the 'very poor' and 'poor' wealth groups, respectively. Food purchases contributed about 91% and 90% of the food needs for the 'very poor' and 'poor' 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 purchase *increased* steadily from 41% to 56% across the wealth groups. The 'very poor' and 'poor' households also accessed food from payment in kind from the 'better-off' wealth groups. 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 90% and 91% of the 'very poor' and 'poor' households' food needs were drastically affected by COVID-19 restrictions, leaving them vulnerable to food insecurity.

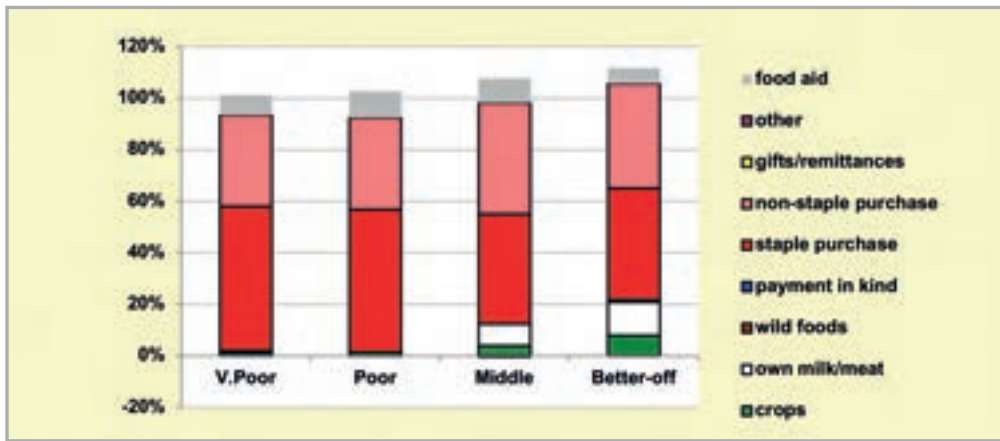


Figure 33: Sources of food in ZABOL (expressed as percentage of minimum average food energy needs) for each wealth group

Wealthier households have capital for inputs and hired labour, ensuring their crops are planted and being protected from pests, and that weeding is done in time.

'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock; this was usually from cow milk and occasional slaughter for meat. Dairy production in this zone does not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) is milked for consumption.

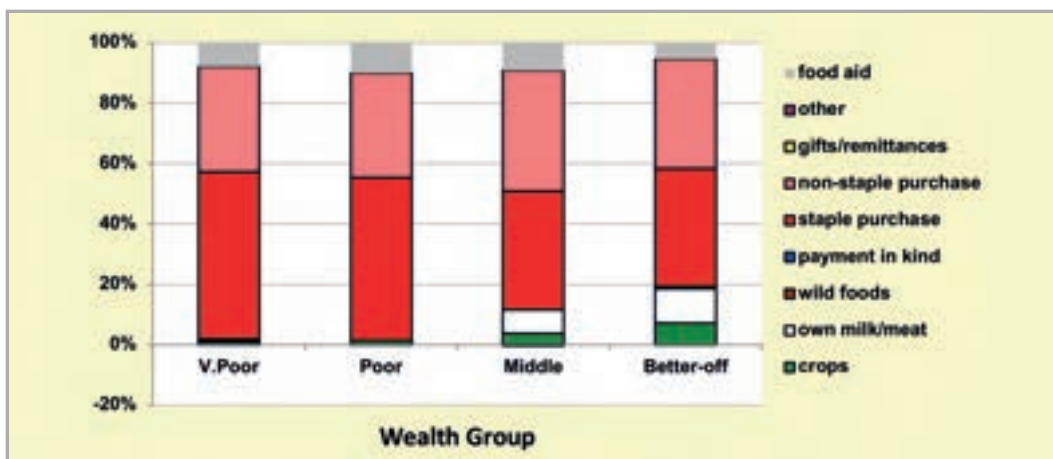


Figure 34: Sources of food in ZABOL (expressed as percentage of overall total food energy needs) for each wealth group

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

6.3.4 Gender analysis of who produces food in ZABOL Zone of Francis Baard and John Taolo Gaetsewe districts

Policymakers recognize that youths and women represent a vast human resource potential in development, with their 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 were affected differently. The '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.

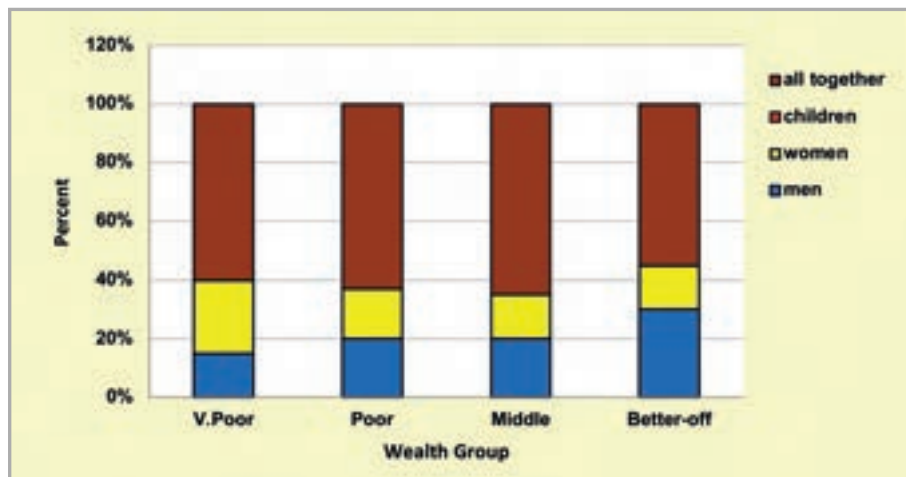


Figure 35: Gender Breakdown of who produces food in the zone for each wealth group

The results indicated that men and women altogether contributed significantly to generate food. This was about 60 percent across all wealth groups. Women appear to contribute significantly to the production of food among all wealth groups, ranging from 15% among 'better-off' and 25% among 'very poor' households. However, there are still challenges and emerging issues relating to gender mainstreaming and youth participation in development. These include HIV and AIDS, poor youth participation in the development agenda, gender-based violence (GBV), increased environmental degradation, climate change, and high levels of poverty. Women still face many challenges, including the burden of care, which takes away much of their time for productive work. They also have poor access to extension services, information, inputs, and markets. Hence 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 groups at all levels to maintain a collective and sustained response to gender and youth empowerment issues.

6.3.5 Sources of cash income in ZABOL Zone of Francis Baard and John Taolo Gaetsewe districts

Cash incomes varied considerably across wealth groups, with the 'better-off' earning above R386,284 per annum, seven times as much as the 'very poor', who earned only R36,194 per annum. Figure 36 below shows this distribution; it must be noted that the bars in the figure are not quantiles, they represent wealth groups and wealth groups are *not* distributed evenly (see **Wealth Breakdown**, above).

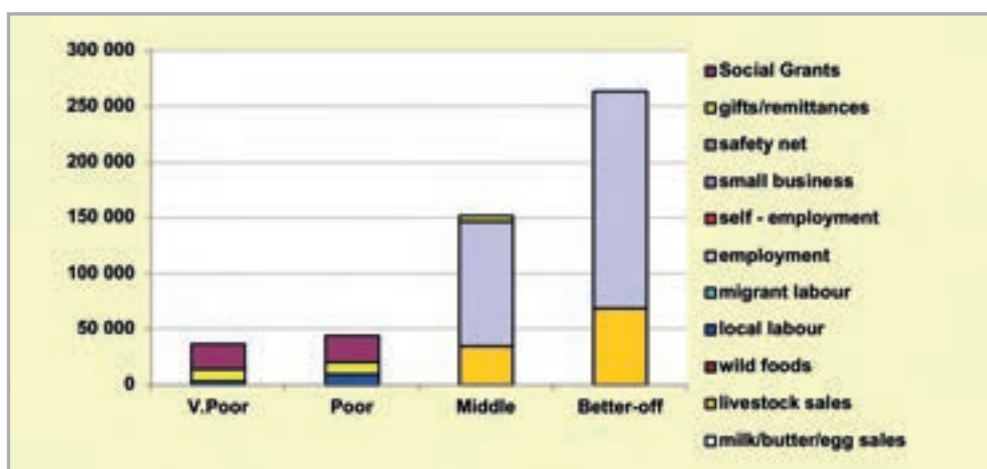


Figure 36: Sources of annual cash income by wealth group

The main sources of cash incomes in the zone are: 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.

However, the objective 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 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 37** below.

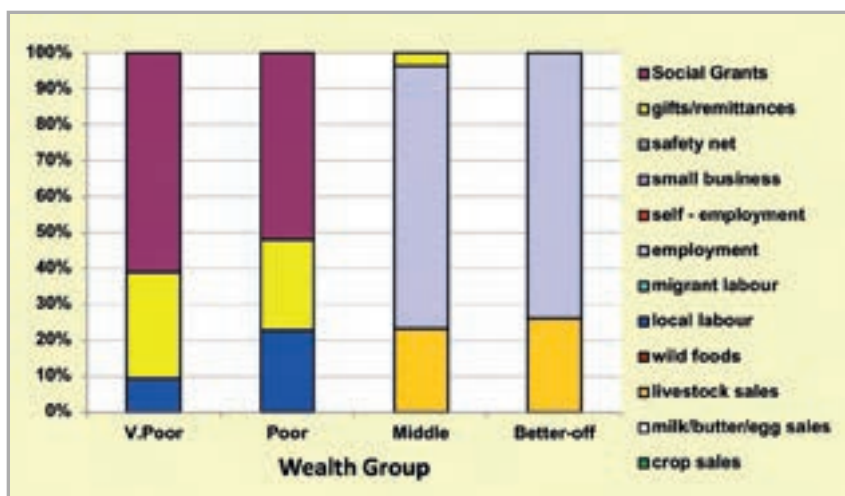


Figure 37: Sources of annual cash income as a percentage of total, by wealth group

For the ‘very poor’ and ‘poor’, grants made up 61% and 52% 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 (R12,000 annually) was what distinguishes their livelihoods from that of the ‘very poor’. The analysis showed that ‘poor’ households would lose up to 30 percent 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 of the food security situation for the ‘very poor’ and ‘poor’ households who comprise of most of the population in this area.

The ‘middle’ and ‘better-off’ wealth group households get their cash from a formal wage or salary for the better part of their income. Some ‘middle’ wealth group households may have a member that works seasonally on the commercial farms but typically earning an amount equivalent to R126,000 per annum, while the ‘better-off’ earn around R168,000 per annum. ‘Middle’ and ‘better-off’ households also get 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. 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.

6.3.6 Sources of food and income in ZACKA of ZF Mgcawu, Francis Baard, and ZF Mgcawu districts

Purchases were the largest source of people’s food, contributing about 53% to 76% of minimum food energy needs. The contribution from staple food purchases decreases steadily as households get wealthier. The contribution from non-staple food purchases never *increased* with increasing wealth. Most households and all wealth groups also consume food from their own crop production, although about 4% for the ‘very poor’, who lack 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 70% to 53% of their minimum needs, respectively. The analysis showed that about 73% and 76% of the food purchases which needed to be obtained on an almost 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 area.

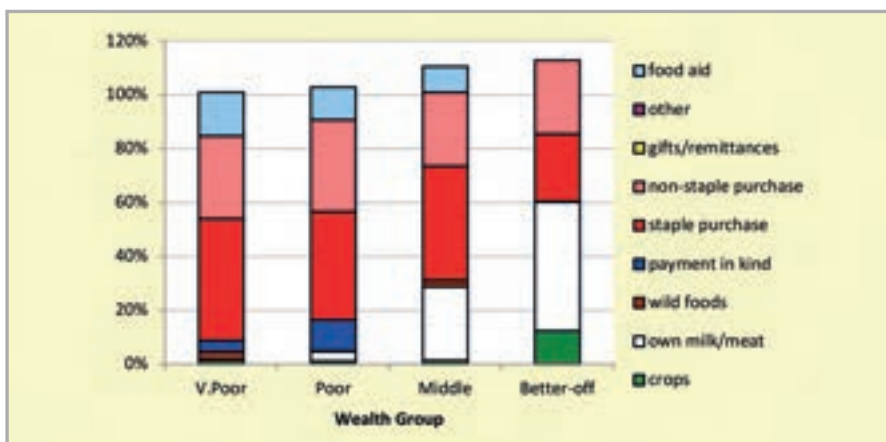


Figure 38: Sources of food in ZACKA (expressed as percentage of minimum average food energy needs) for each wealth group

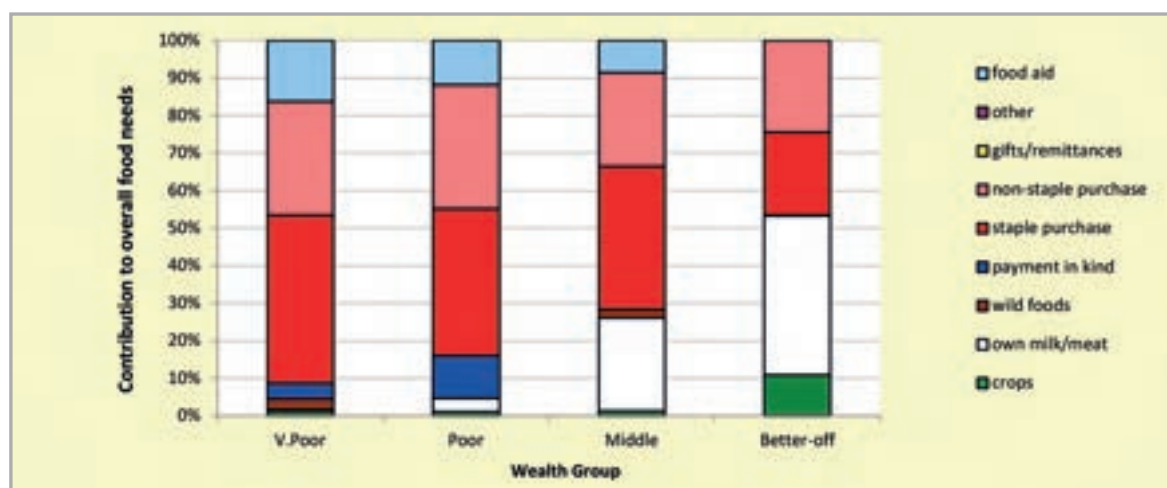


Figure 39: Food source as contribution to the total in ZACKA

Only the 'middle' and 'better-off' households obtain substantial food from their livestock products; this is usually from cow 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, but the quantities involved do not merit a significant contribution to food energy.

6.3.7 Gender Breakdown of who produces food

Policymakers recognize the need for a participatory and inclusive approach to improving access to food and income in the communities. Hence there is a need to promote and ensure 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.

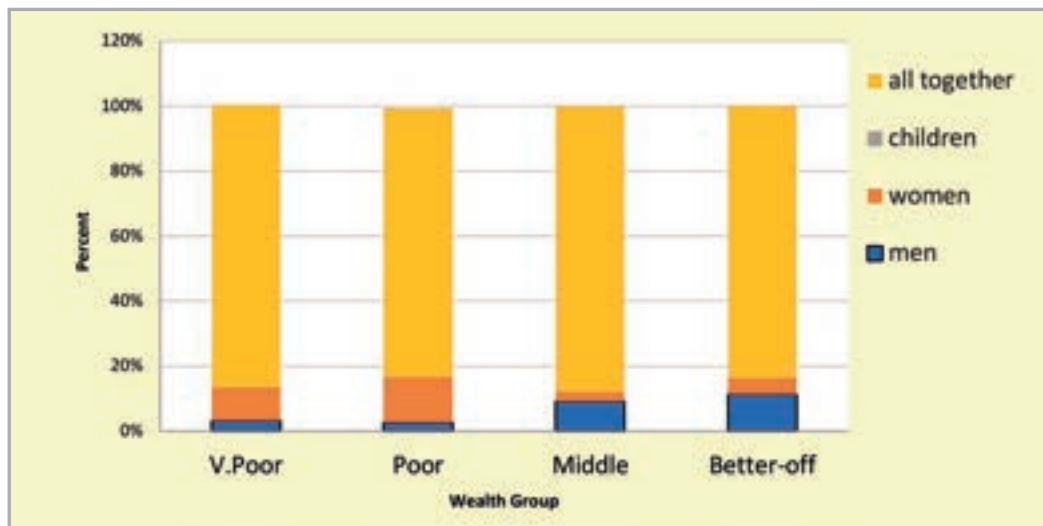


Figure 40: Gender breakdown of who produces food in the zone for each wealth group

The results indicated that young adults, men, and women altogether contribute significantly to generate food among the ‘poor’ and ‘very poor’ households in most districts and municipalities in this livelihood zone. Women appeared to contribute significantly to the production of food among ‘middle’ and ‘better-off’ households. However, there are still challenges and emerging issues relating to gender mainstreaming and youth participation in development. These include HIV and AIDS, poor youth participation in the development agenda, gender-based violence (GBV), increased environmental degradation, climate change and high levels of poverty. Women still face many challenges, including the burden of care, which takes away much of their time for productive work. They also have poor access to extension services, information, inputs, and markets. 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.

6.3.8 Sources of Cash in ZACKA Zone of Francis Baard and ZF Mgcawu 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 41 shows this distribution as the bars represent wealth groups and wealth groups.

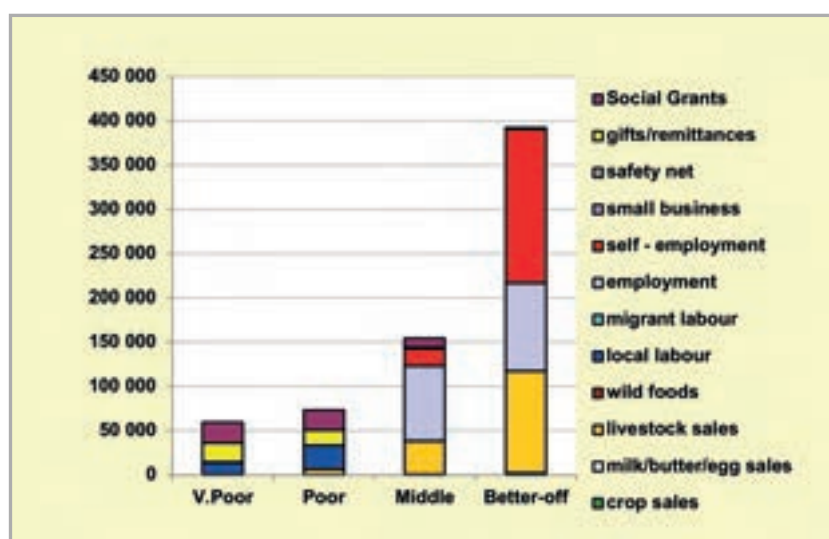


Figure 41: Sources of annual cash income by wealth group in ZACKA

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.

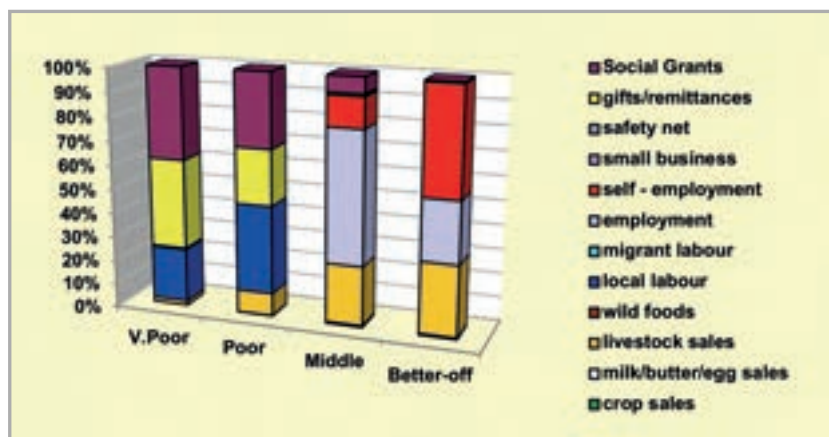


Figure 42: Sources of annual cash income as a percentage of total, by wealth group in ZACKA

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 above.

For the 'very poor' and 'poor', grants make up 42% and 36% of total cash income, respectively; the remainder is coming 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', '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 more. '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 several factors: lack of economic incentives for milking, lack of time by the cattle-owners (because they are full-time employed), and minimal herd management.

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

Some of the coping strategies that households may engage in under stress include: switching expenditure, seeking more casual work (usually outside of the village), or selling off assets or belongings.

6.4 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.

6.4.1 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 all the age categories having at least 80% (Table 36). Across the five districts, road access was relatively good, with the highest (95%) being recorded in ZF Mgcawu, whilst the least was reported in Namakwa (68%).

Table 36: Access to road infrastructure by households

Variable		Access to road Infrastructure			
		No		Yes	
		N	Row N %	N	Row N %
Households		77	18	331	82
Household head sex	Male	46	18	192	82
	Female	30	18	139	82
Household head age	18-24 years	1	11	4	89
	25-34 years	8	20	27	80
	35-44 years	10	18	46	82
	45-54 years	11	13	72	87
	55-64 years	21	19	89	81
	65+ years	26	21	92	79
District	Namakwa	21	32	52	68
	Pixley ka Seme	13	19	50	81
	ZF Mgcawu	2	5	32	95
	Frances Baard	13	19	56	81
	John Taolo Gaetsewe	28	17	141	83

6.4.2 Access to the Market

Within the Northern Cape Province, both females and males had an equal share when it comes to access to the market, with both the sexes reporting 88% access. Aggregates by district (Table 37) show there is an ease of market in the area, with ZF Magcawu having 100% access to the market. Access to the market is largely influenced by road networks, hence all the district households have reported having good access to the road infrastructure (Table 37).

Table 37: Access to market by households

Variable		Access to market			
		No		Yes	
		N	Row N %	N	Row N %
Households		50	12	360	88
Household head sex	Male	30	12	210	88
	Female	19	12	150	88
Household head age	18-24 years	1	11	4	89
	25-34 years	6	16	29	84
	35-44 years	11	19	45	81
	45-54 years	4	4	79	96
	55-64 years	14	14	97	86
	65+ years	14	11	105	89
District	Namakwa	11	13	62	87
	Pixley ka Seme	12	18	51	82
	ZF Mgqawu	0	0	34	100
	Frances Baard	10	14	60	86
	John Taolo Gaetsewe	17	10	153	90

(Source: HEA, Qualitative Output)

6.4.3 Access to Agricultural extension services

Access to agricultural extension services has been reported to be extremely low in the entire Northern Cape Province (Figure 43). Crop production was reported to be extremely low in the previous sections and the extremely low percentage (2%) of households reporting to have receiving seedlings fertilizers for free does influence the low level of household's involvement in crop production. The situation is also exacerbated by the harsh climatic conditions, which are predominantly arid. Only about 7% of the households (Figure 43) have reported having received support when it comes to dipping and vaccination services, general training, and advisory services pertaining to agricultural activities. Disaggregation by district showed that Frances Baard District had the highest percentage (27.4%) of households with access to agricultural extension services (Table 38).

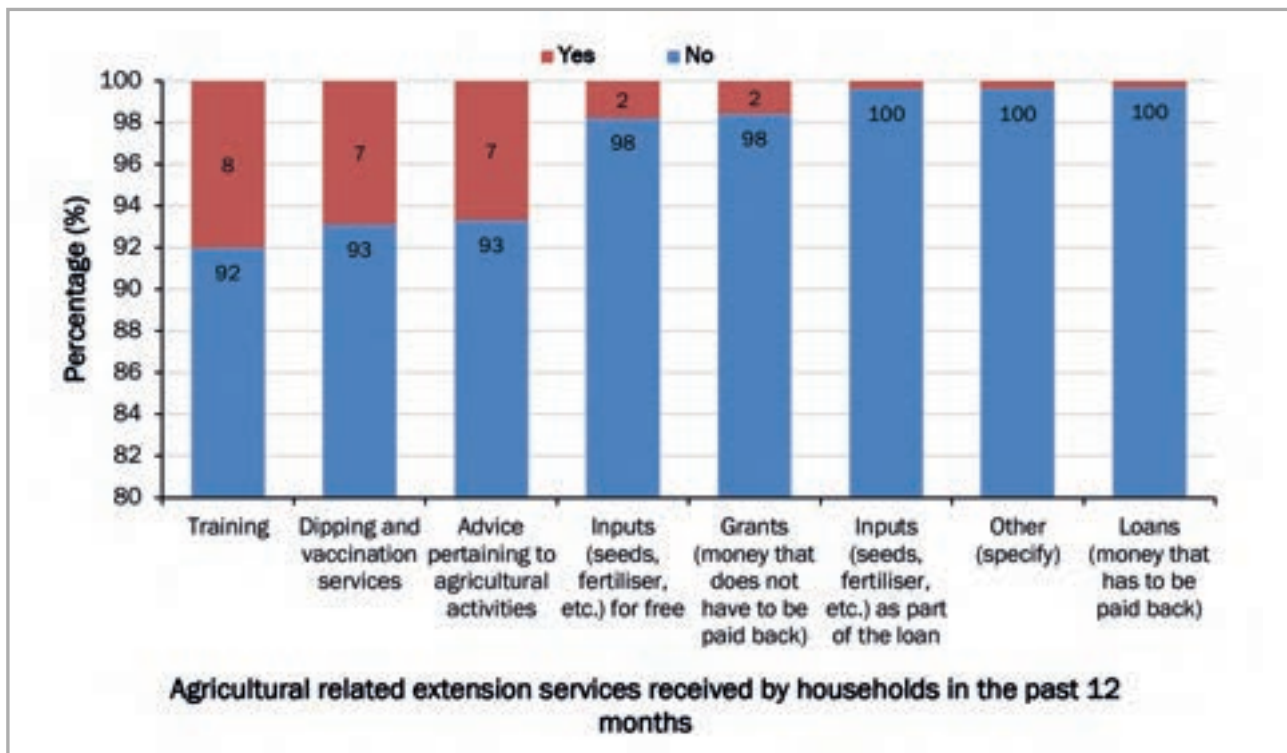


Figure 43: Agricultural related extension services received by households in the past 12 months

Table 38: Access to extension services by households

Variable		Access to extension services			
		Yes		No	
		N	Row N %	N	Row N %
Households		48	13.2	340	86.8
Household head sex	Male	29	11.7	211	88.3
	Female	10	3.5	162	96.5
Household head age	18-24 years	0	0.0	5	100.0
	25-34 years	3	7.6	33	92.4
	35-44 years	7	9.8	49	90.2
	45-54 years	5	7.5	78	92.5
	55-64 years	10	9.6	100	90.4
	65+ years	14	9.4	108	90.6
District	Frances Baard	18	27.4	55	72.6
	John Taolo Gaetsewe	2	1.8	61	98.2
	Namakwa	1	4.9	33	95.1
	Pixley ka Seme	2	1.4	67	98.6
	ZF Mgcau	16	9.3	157	90.7

(Source: HEA, Qualitative Output)

Discussion

Seasonal variation

The results depicted by the seasonal calendar developed from HEA focus group discussions in Northern Cape 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 starts in March up to around June. Similar season characterisation has been reported in other studies, such as Phokele and Sylvester (2012). Previous studies in the Northern Cape 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 et al., 1999). Average rainfall is about 800mm, but it often varies temporarily.

Access and land ownership

There is pronounced limited access to land (by households across the five districts of Northern Cape Province). 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). In the Northern Cape Province, which is mostly rural, most of the land is held under customary law, and this has eased access to land for most households since the land held by traditional authorities is cheaper and easily accessible (Figures 14-16). This has resulted in increased participation by youths in agriculture income generating projects, and improved food availability at the household level. Land access is also limited among female-headed households. This result is similarly echoed by Murugani et al. (2014) who argued that in Northern Cape Province, land access by females is mediated by patrilineal customary law where women have mostly secondary property rights as wives. Consequently, their land use security was derived from the family and other means of fostering accountability (Murugani et al., 2014). These cultural practices have led to women having limited access and user rights to land for agricultural purposes, particularly in rural communities.

Agriculture production systems

There is limited crop production across all the districts within the Northern Cape Province. Only 24% and 20% of the respondents in John Taolo and Pixley ka Seme districts, respectively confirmed that they grow grains such as maize, sorghum, and millet (Figure 43a). Over 76% and 80% of the respondents in the same districts confirmed that they do not grow grains. Such low levels of grain production can be ascribed to the fact that the province is very arid and generally warm and hot, with an average daily temperature of 26-33 degrees Celsius not conducive for crop production.

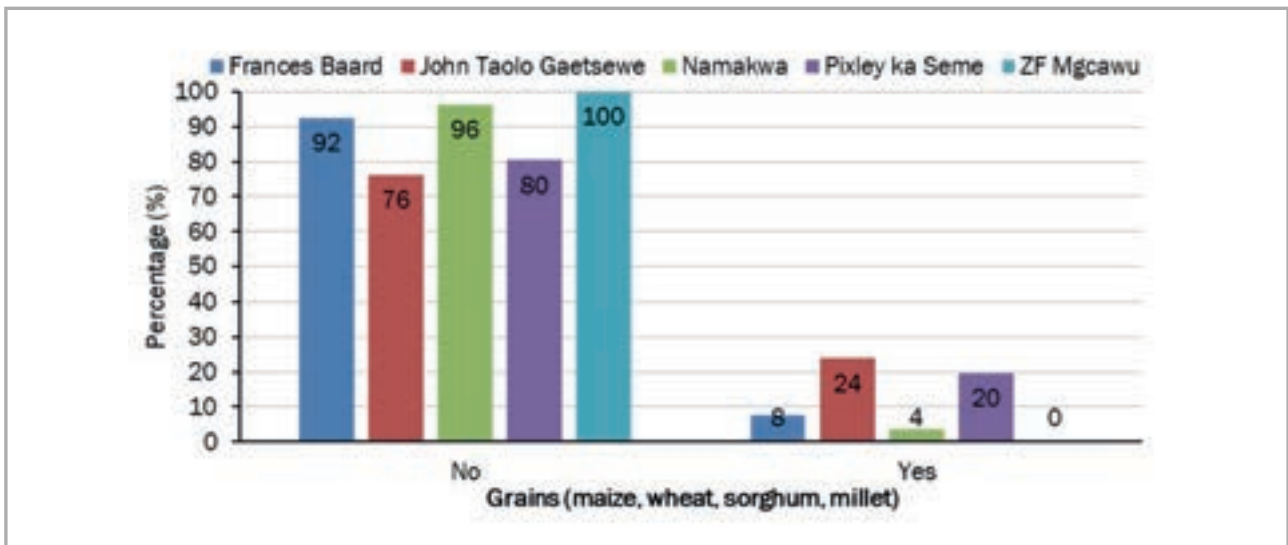


Figure 43a: Household involvement in crop production

Fruit production is even far much less in Northern Cape Province, with less than 12% of respondents confirming that they produce fruits (Figure 43b). Most respondents also reported that vegetable production is also not highly practised in the province.

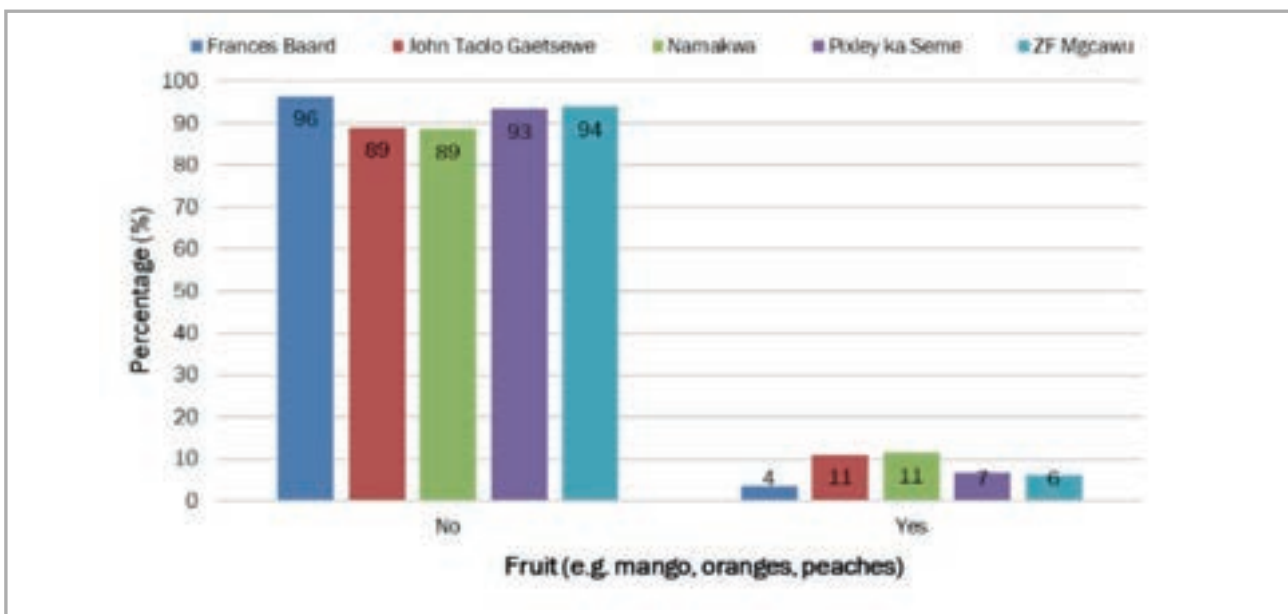


Figure 43b: Household involvement in fruit production

Households in the Northern Cape Province are practising livestock production (Figure 43c). At least over 50% of the respondents in Namakwa and ZF Mgcawu districts confirmed that they do livestock production. In fact, Namakwa, ZF Mgcawu and John Taolo have 58%, 59 % and 48,% respectively. Francis Baard is the only districts with a very low percentage of livestock production (5%).

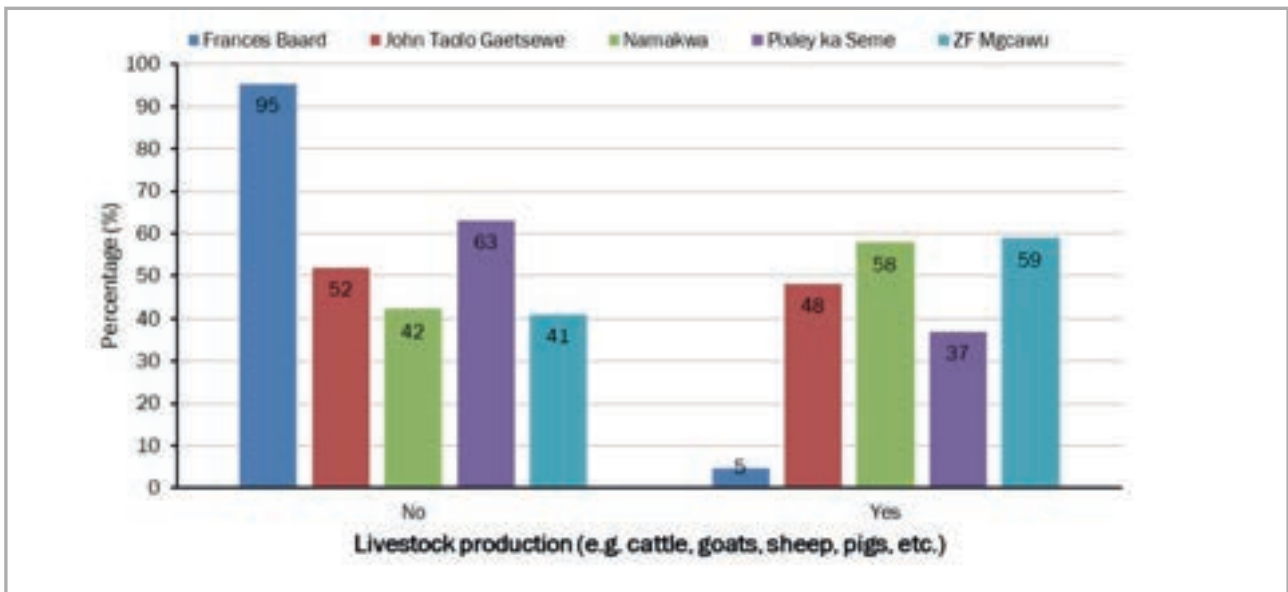


Figure 43c: Household involvement in livestock production

Generally poultry production and livestock production are the main agriculture production practices in Northern Cape Province. (Figure 43d). The households in both the ZF Mgcawu and Namakwa districts are at the forefront when it comes to poultry production, 59%, 58% and 48%, respectively. The least is Francis Baard district.

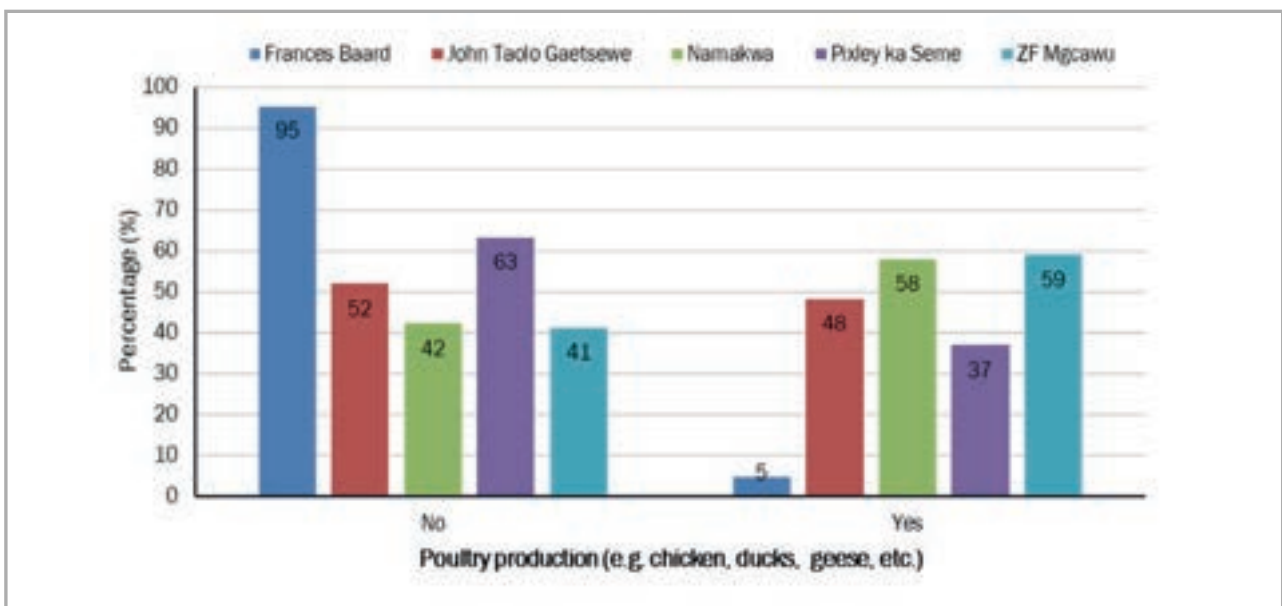


Figure 43d: Household involvement in livestock production

Household food security access indicators

This section reports FNS as captured by the HFIAS, HHS, HDDS, and the FCS. These indicators are presented according to districts, sex, age, and other important variables. Correlation analyses are done to investigate the extent to which food security levels, as captured by the various indicators, vary across districts, demographics, and socio-economic characteristics of households.

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 Northern Cape was 10.4, with a range of 0 to 27 (Coates et al., 2007).

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 44 presents the proportion of the prevalence of food insecurity among the sampled households. The overall results showed that most of the households (65.5%) in Northern Cape Province experienced food insecurity, with only 34.5% found to be food secure. Figure 43 shows that 21.2% of the households were severely food insecure, 26.2% of the surveyed households were moderately food insecure, and 18.1% 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, between 2015 and 2017, 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., 2015; 2016; Ngidi, 2017).

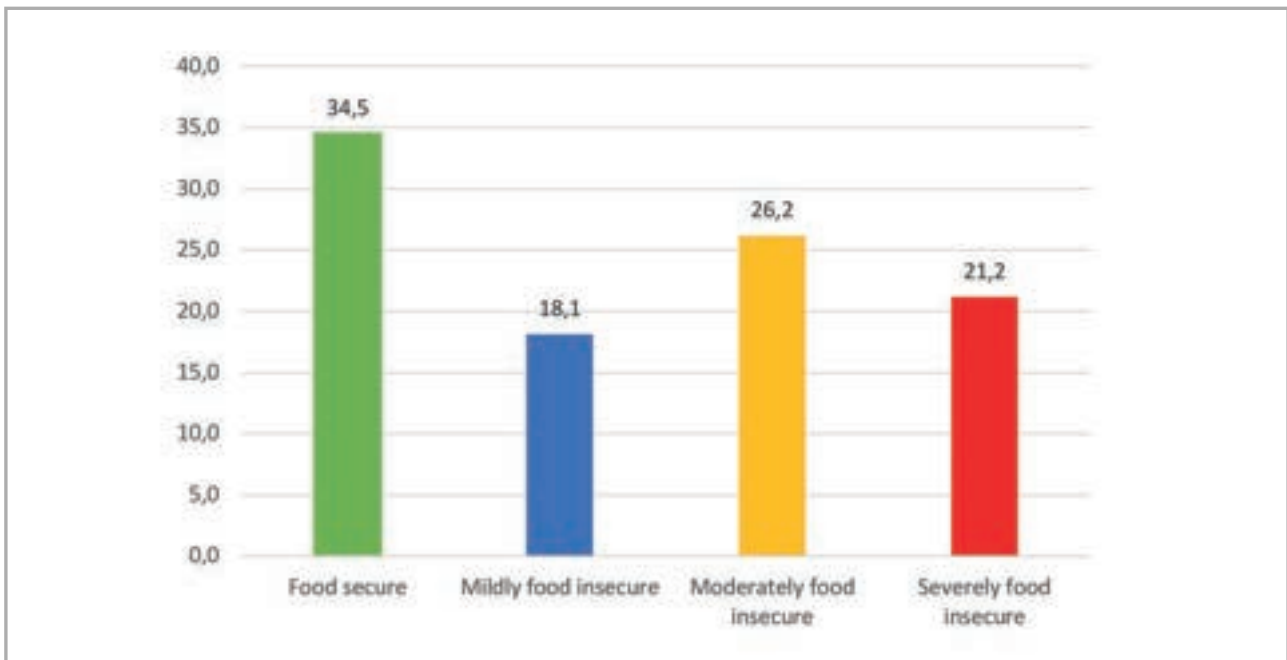


Figure 44: The categorized food security situation, using HFIAS

Table 39 and Figure 45 show that the food security status of households was found to vary by sex and age of household head, as well as by district. The results show that male-headed households were more food secure than female-headed households, with 40% of the male-headed households found to be food secure, compared to only 28% of female-headed households in this category. In any category of the HFIAS, female-headed households experienced higher levels of food insecurity. Severe food insecurity was experienced by 21% of the male-headed households compared to 22% of the female-headed households that fell within the same category. Approximately 22% and 31% of male-headed and female-headed households experienced moderate food insecurity, respectively. About 18% and 19% 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	%
Sex of Household head	Male	528	40	261	18	344	22	296	21
	Female	399	28	256	19	433	31	304	22
Household head age	18-24	22	23	18	26	16	15	33	35
	25-34	123	33	51	17	88	26	79	25
	35-44	175	42	70	13	136	23	117	22
	45-54	179	30	96	16	170	30	138	23
	55-64	198	32	139	22	182	28	111	18
	65+	227	36	136	19	185	27	120	18

		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	%	N	%	N	%	N	%
District	Namakwa	221	40	107	18	156	25	99	17
	Pixley ka Seme	168	42	118	22	175	28	55	9
	ZF Mgcawu	214	40	80	13	133	21	163	27
	Frances Baard	140	24	117	20	185	32	139	24
	John Taolo Gaetsewe	189	36	96	17	130	23	144	24

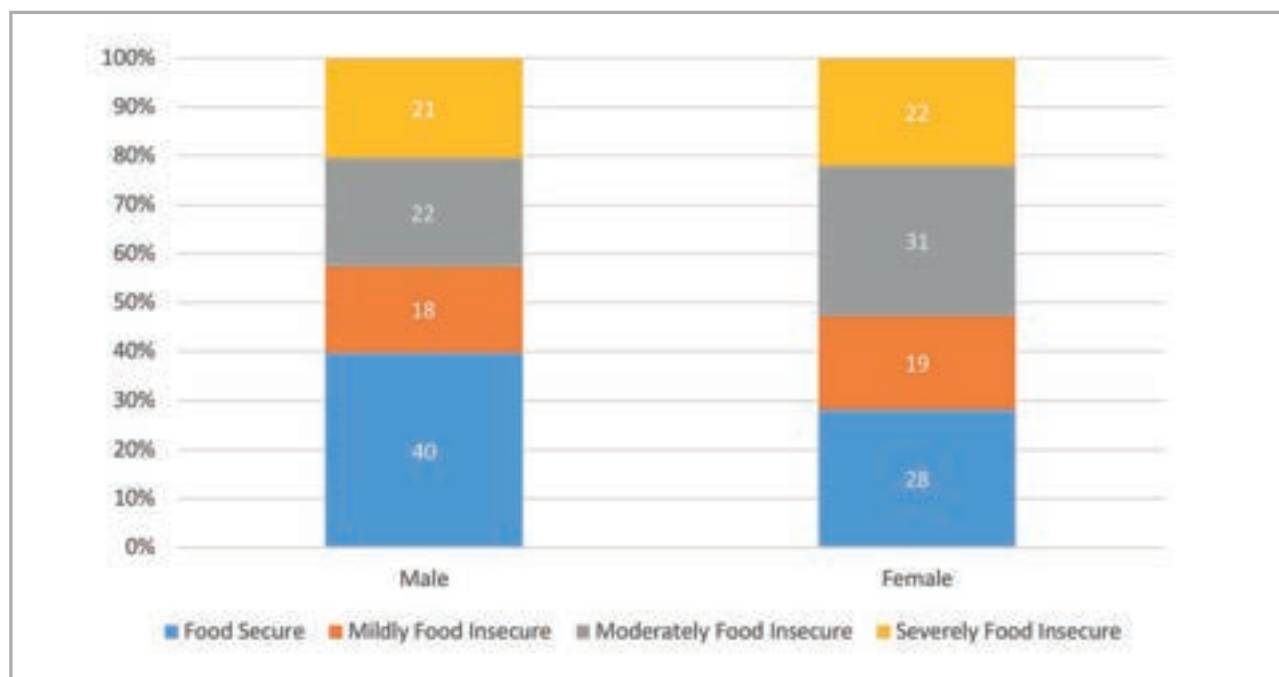


Figure 45: Food security status by sex of household head

Table 40 and Figure 46 show that households headed by the 35-44 years age group had the highest proportion of households (42%) that were food secure. They were followed by those households headed by the 65+ years age group, with 36% of the households headed by this age group found to be food secure. The least food secure age group was found to be the 18-24 years age group. This same was also found to be the most severely food insecure age group, with 35% of the households headed by this age group found to be severely food insecure.

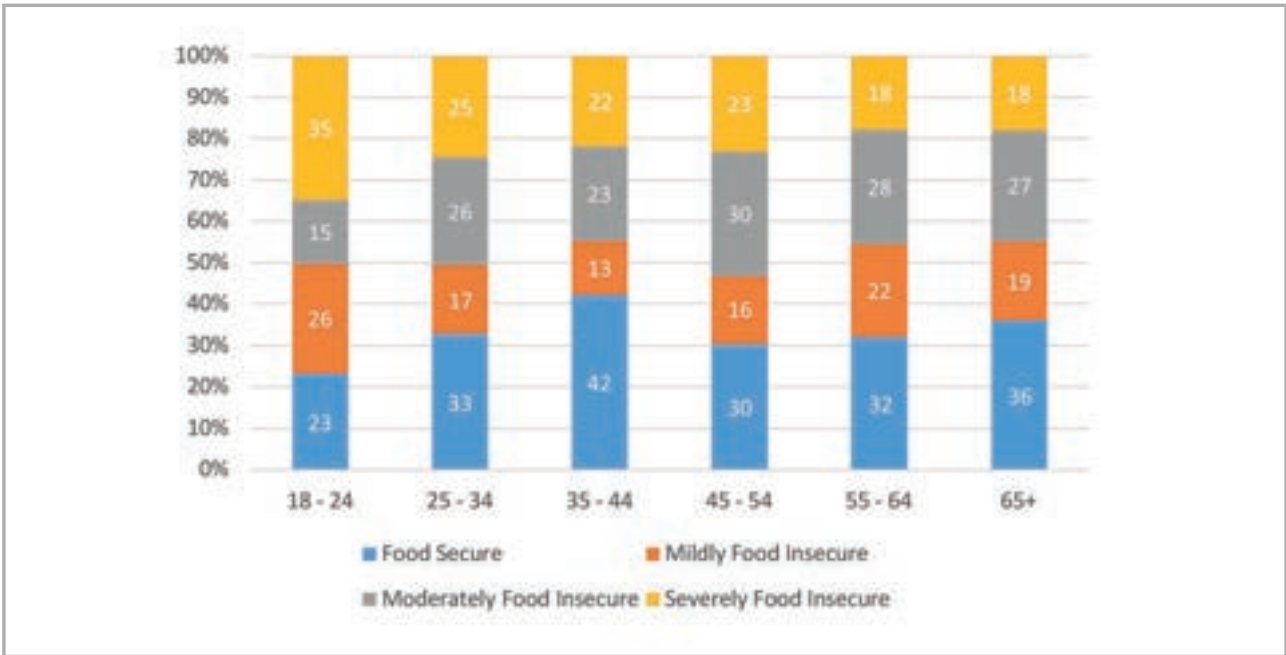


Figure 46: Food security status by age group of household head

Table 40 and Figure 47 show that the Pixley Ka Seme District had the highest proportion of households that were food secure (42%), followed by the Namakwa and ZF Mgcawu districts, with each district having 40% of the households that were found to be food secure. The least food secure district was found to be Frances Baard, with 24% of the households found to be food secure. The ZF Mgcawu District had the highest proportion of households experiencing severe food insecurity. About 27% of the households in the ZF Mgcawu District were severely food insecure. This was followed by households from the Frances Baard and John Taolo Gaetsewe districts, who, each had 24% of the households that were severely food insecure. About 17% of the households in Namakwa District also experienced severe food insecurity, while another 9% of the severely food insecure households were from Pixley Ka Seme District. Moderate food insecurity was largely experienced by households from the Frances Baard District, where 32% of the households were moderately food insecure. This was followed by households from Pixley Ka Seme District, where 28% of the households were reported to have experienced moderate food insecurity. Mild food insecurity was largely experienced by households from the Pixley Ka Seme and Frances Baard districts, where 22% and 20% of the households, respectively, experienced mild food insecurity.

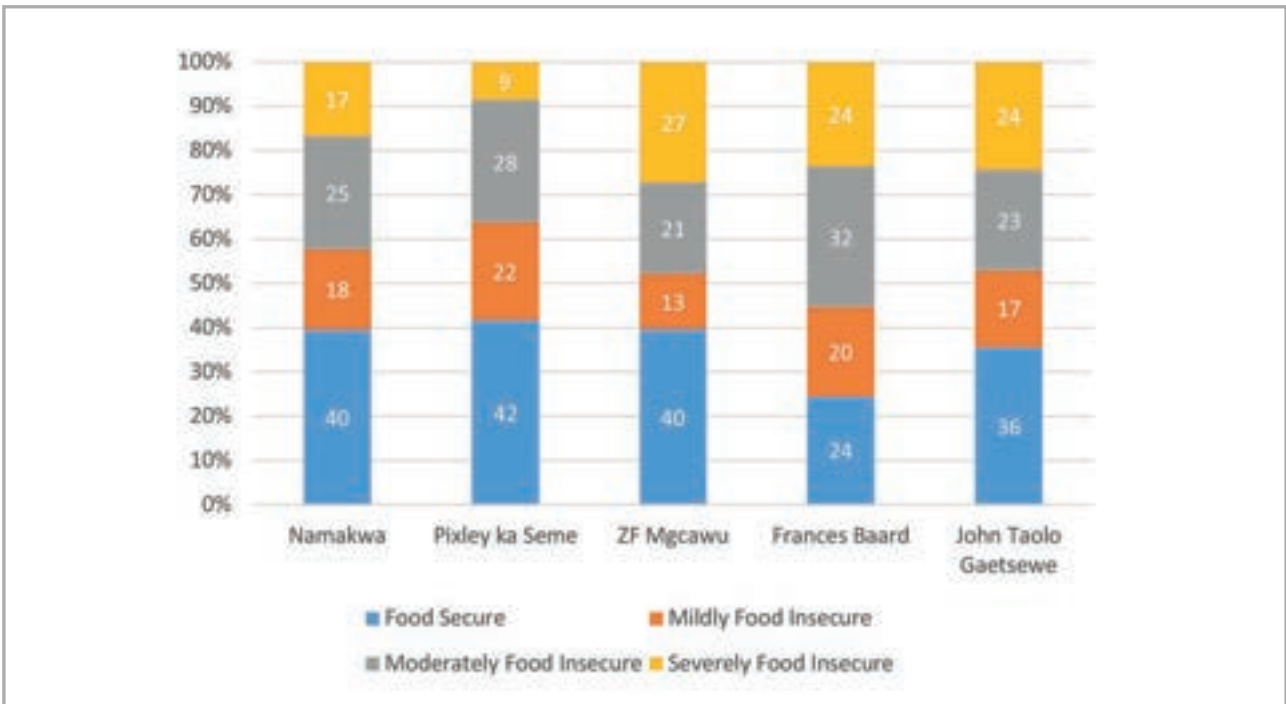


Figure 47: Food security status by district

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 48 presents the results of the HHS scale, showing that most of the sampled households experienced little to no hunger (73.5%). About 19.2% of the households and 7.3%, 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 the Northern Cape.

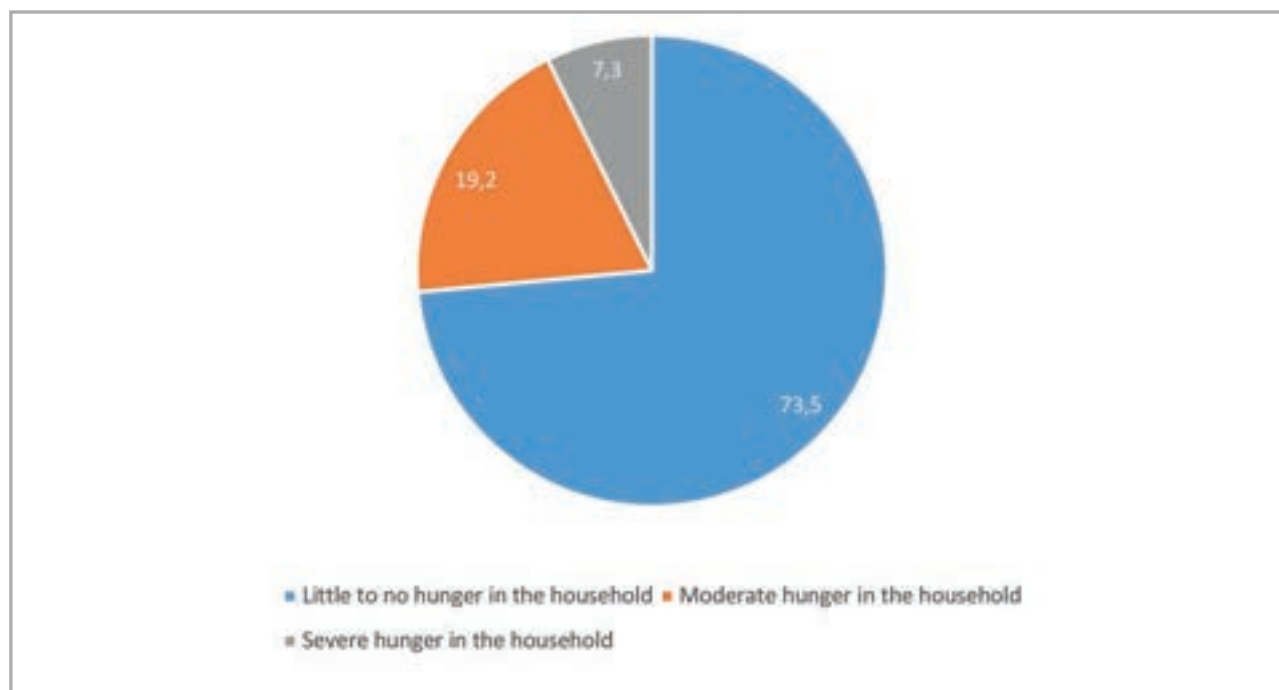


Figure 48: Hunger experiences of households

Table 40 presents the hunger status of households by sex, age and district. Table 40 and Figure 49 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	1158	75	271	17	124	8
	Female	1090	72	325	22	93	6
Household head age	18-24	54	60	23	22	17	18
	25-34	256	71	75	19	37	9
	35-44	377	72	116	20	46	9
	45-54	448	71	152	24	35	6
	55-64	533	77	106	16	41	7
	65+	570	77	122	17	40	6

		Little to no hunger in the household		Moderate hunger in the household		Severe hunger in the household	
		N	%	N	%	N	%
District	Namakwa	493	79	110	17	23	4
	Pixley ka Seme	465	86	77	12	11	2
	ZF Mgcawu	441	71	122	18	75	11
	Frances Baard	452	70	130	20	60	9
	John Taolo Gaetsewe	405	67	157	25	48	7

Table 40 and Figure 49 indicate that 75% of the male-headed households experienced little to no hunger, compared to 72% of the female-headed households. The proportion of female-headed households (22%) was higher than that of male-headed (17%) in the moderate hunger category. Severe hunger in the household was higher among male-headed (8%) than among female-headed households (6%).

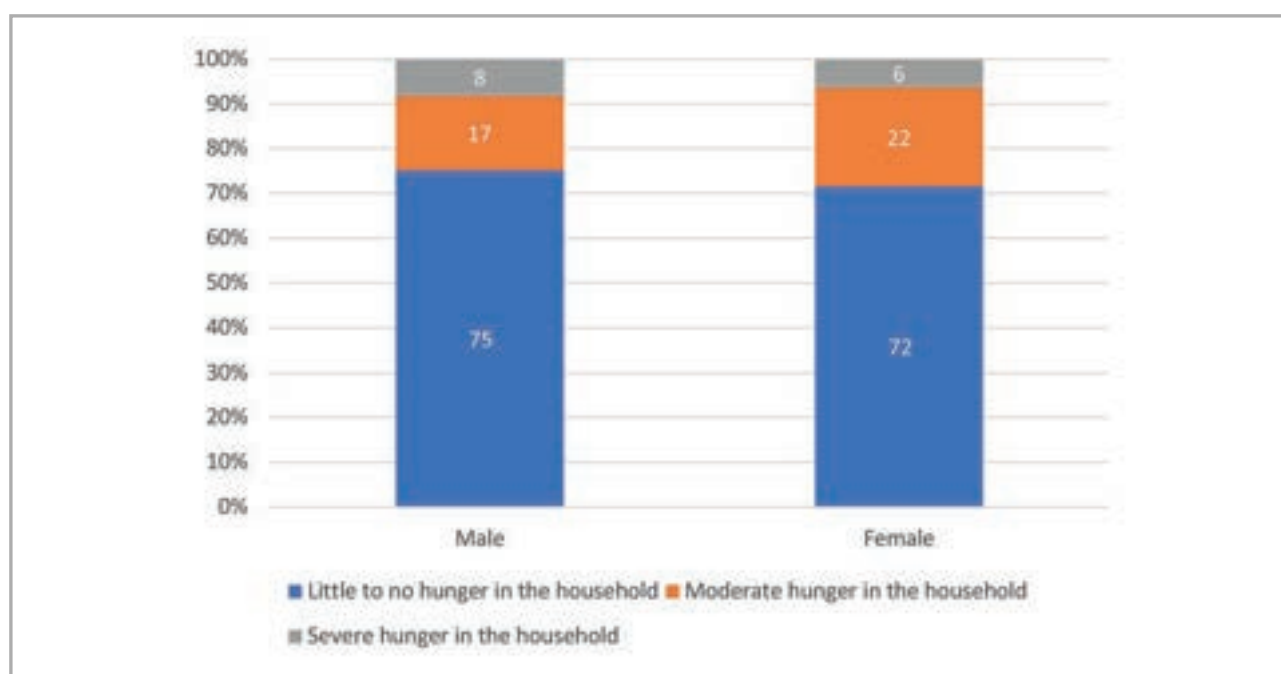


Figure 49: Household hunger status by sex of household head

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-insecure group (Figure 49). About 18% of the households in this age group experienced severe hunger.

This was followed by households in the age group 25-34 years and 35-44 years, where 9% of the households were each reported to be experiencing severe hunger. Households in the age group 55-64 years and 65+ years experienced little to no hunger, with 77% of the households from each group found to have experienced little food insecurity in these age groups. This was followed by households in the age group 35-44 years.

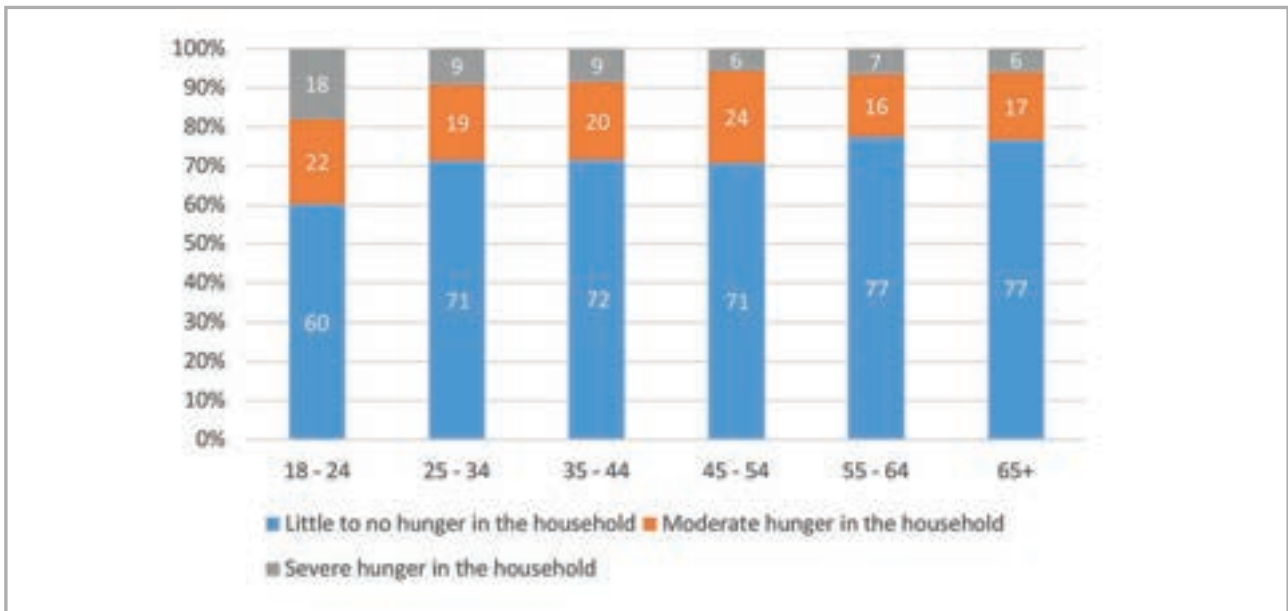


Figure 50: Household hunger status by age group of household head

There were minor variations in the hunger status of households across the four districts in the Northern Cape Province. The Pixley ka Seme District was the most food-secure district, with 86% of the households found to have experienced little to no hunger. This was followed by Namakwa District, with 79% of the households found to have experienced little to no hunger. In terms of the HHS, the John Taolo Gaetsewe District was slightly the least food secure, with 67% of the households experiencing hunger compared to others which had slightly higher percentages. More households in the John Taolo Gaetsewe District (25%) also experienced moderate levels of hunger compared to the other four districts. Overall, there were differences in the proportion of households who experienced severe hunger in the five districts, ranging from 2% of the households found in Pixley Ka Seme District and 11% found in ZF Mgqawu District.

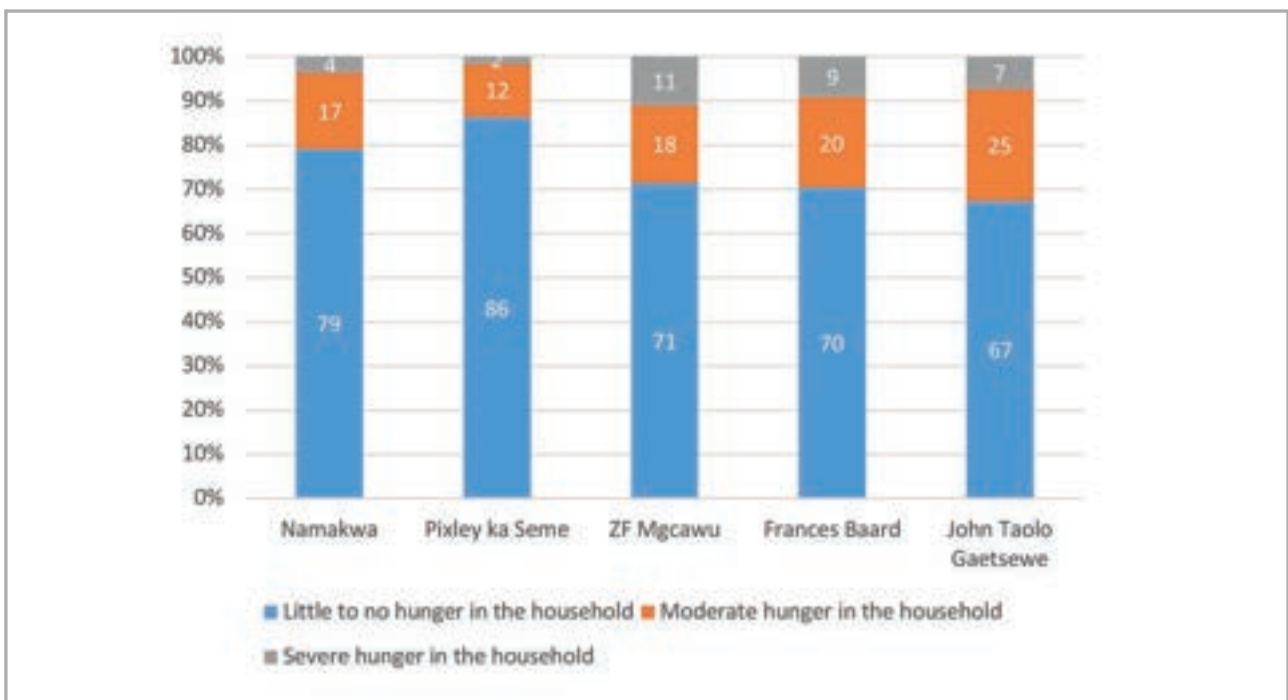


Figure 51: Household hunger status by district

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 51 shows that, on average, the households in the Northern Cape Province consumed more than 7 out of 12 food groups, which suggests above-average dietary diversity levels. Using the cut-offs suggested by Kennedy (2009), 81% of households consumed highly diverse diets (more or equal to 6 food groups) whilst 13.2% and 5.9% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively.

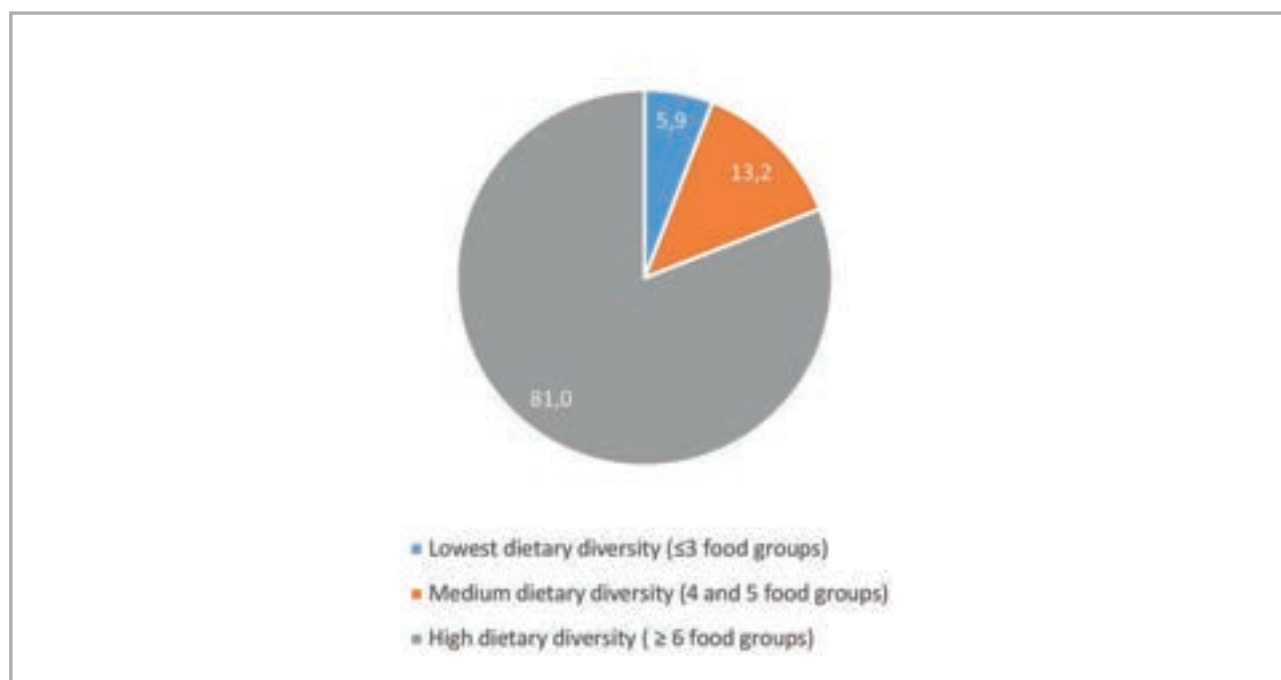


Figure 52: Household Dietary Diversity Scores

The results in Table 41 and Figure 53 show that 6% of both male-headed and female-headed households had the lowest dietary diversity. About 81% of both male-headed and female-headed households were in the category of highest dietary diversity, suggesting that they had better access to diversified food. Slightly more male-headed households consumed about 4 and 5 food groups (medium dietary diversity), with 14% of male-headed households compared to 13% of the female-headed households. Concluding within the context of this tool, these results generally suggest that both male-headed and female-headed households have better access to diversified food.

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	94	6	210	14	1243	81
	Female	102	6	197	13	1205	81
household head age	18-24	8	9	11	12	75	79
	25-34	27	6	50	13	289	81
	35-44	37	6	77	14	424	80
	45-54	38	5	81	13	515	82
	55-64	42	6	97	14	541	80
	65+	42	5	89	13	595	82
District	Namakwa	32	5	89	14	501	81
	Pixley ka Seme	28	4	54	11	469	85
	ZF Mgcawu	37	5	82	12	519	83
	Frances Baard	28	4	84	13	527	83
	John Taolo Gaetsewe	71	11	98	16	439	73

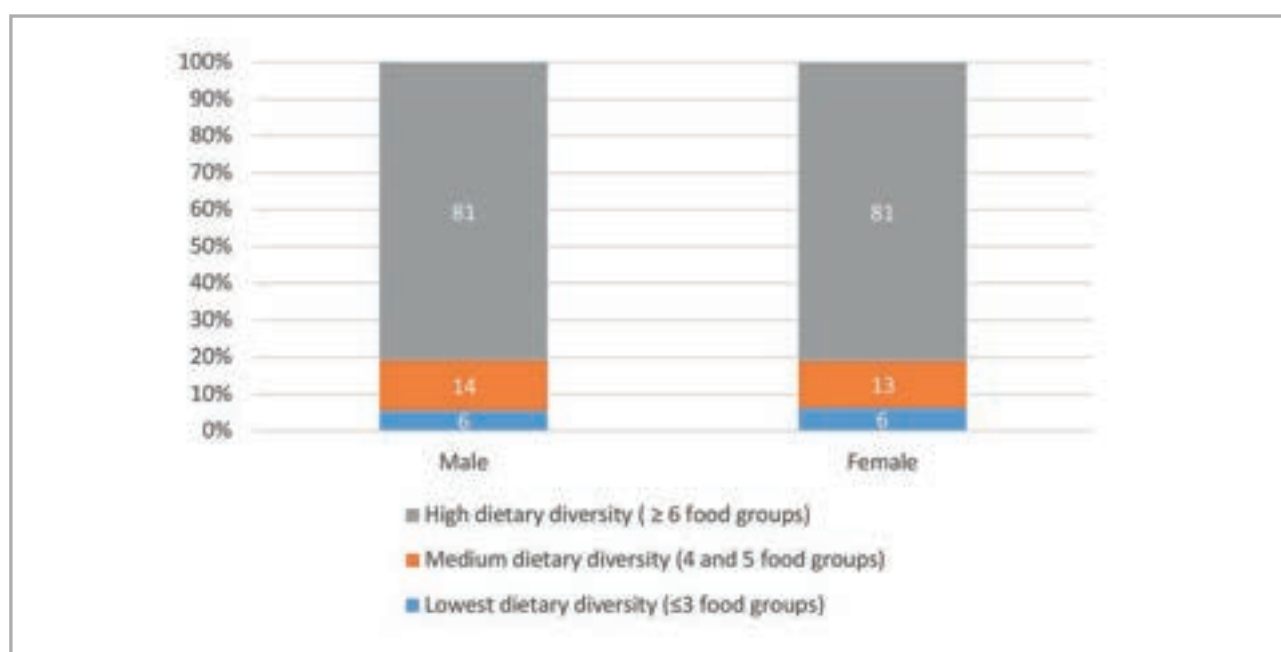


Figure 53: Dietary Diversity Score category by sex of household

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 80% or above of households that consumed highly diversified food, with the exception of the 18-24 years age group where 79% of the households were reported to have consumed highest dietary diversity. Results of the age groups also show that household heads aged 18-24 years were the ones that largely consumed the lowest dietary diversity. Generally, households from different districts had the highest dietary diversity, with 80% or more found to be in the category of high dietary diversity (Figure 54). Most households with the lowest dietary diversity were in John Taolo Gaetsewe District. 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, it was pension day.

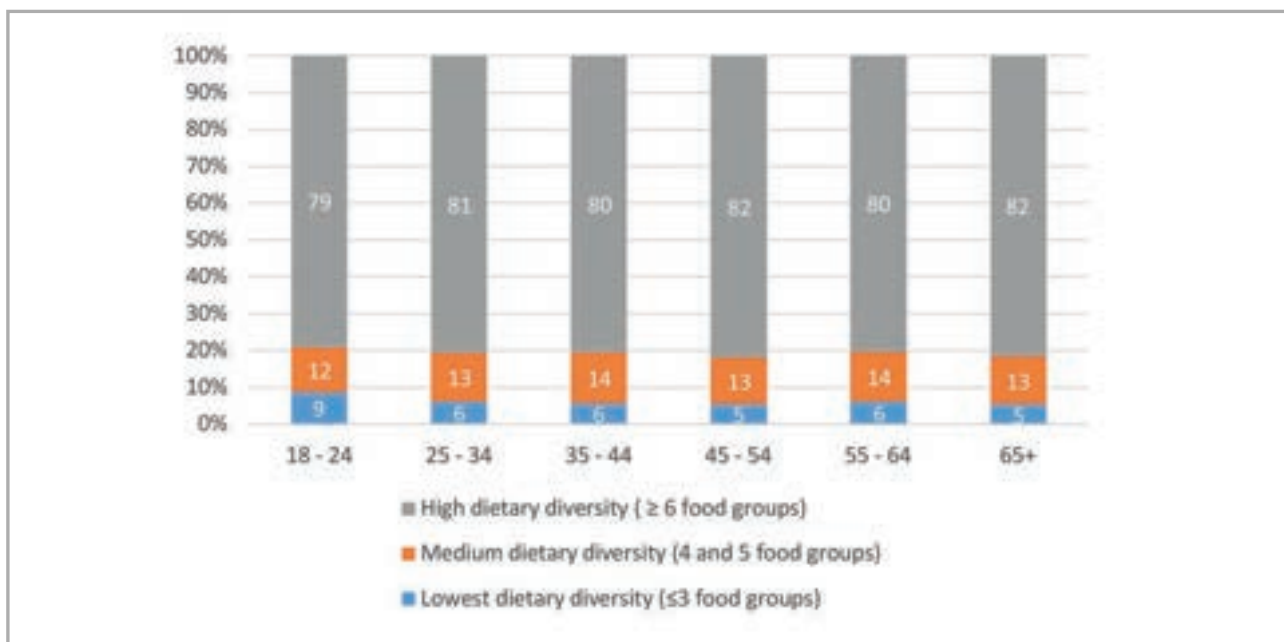


Figure 54: Dietary diversity category by age of household head

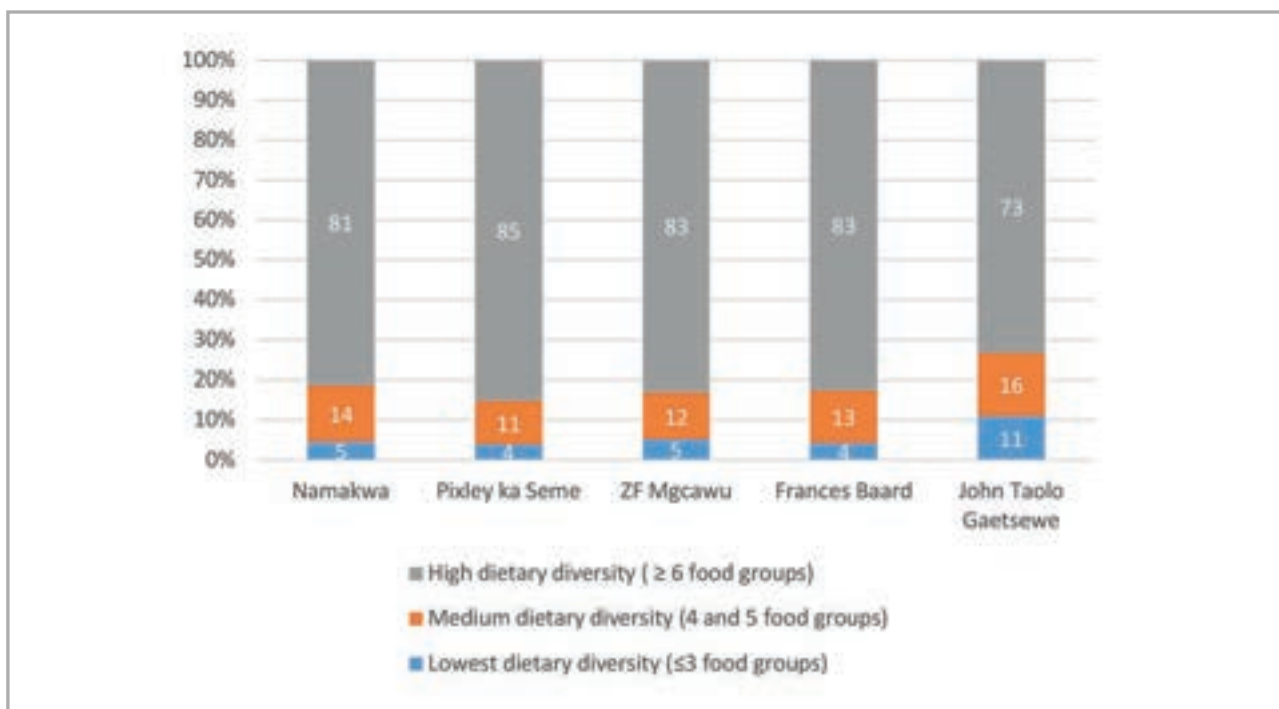


Figure 55: Dietary diversity category by district

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 55 shows the food groups and their frequency of consumption by the households. The figure shows that the most popular food groups were cereals, condiments, sugars, oils and fats, meats, milk and milk products, other vegetables, roots and tubers, eggs, fresh orange vegetables, other fruits, fish and seafoods, orange coloured fruits, pulses and nuts. The least consumed food groups were organ meat, dark green leafy vegetables, orange coloured fruits, pulses and nuts, fish and seafoods, orange fresh vegetables and other fruits. Figure 62 shows 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.

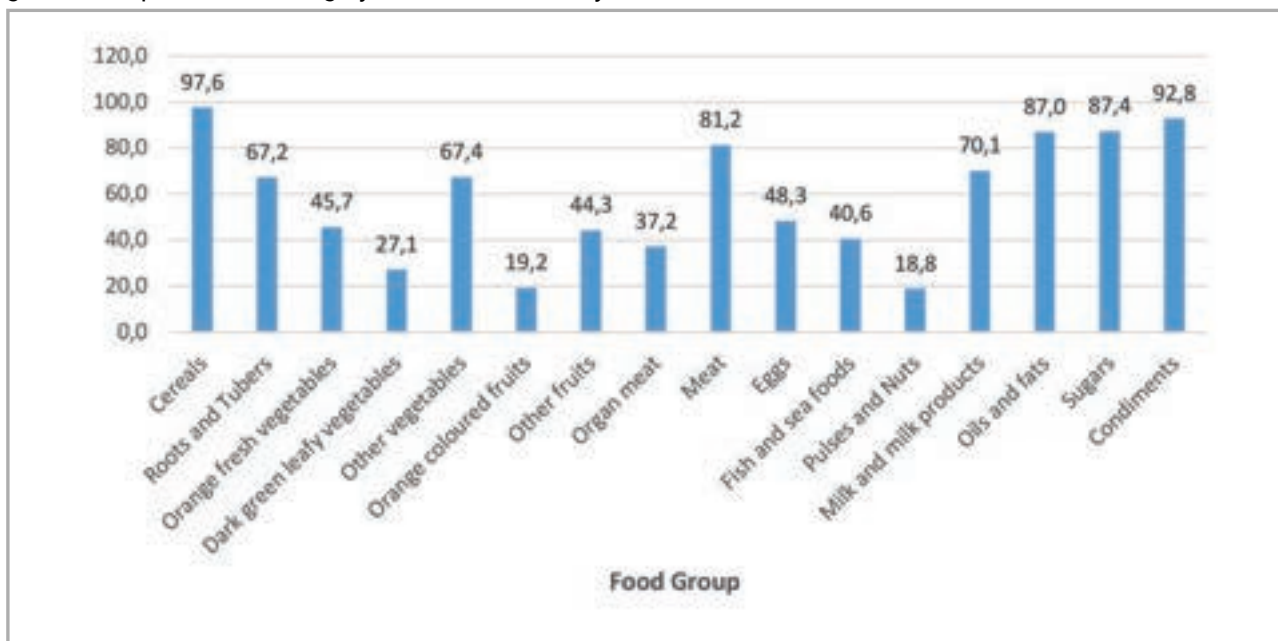


Figure 56: Frequency of food group consumption

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 57 shows that most households (52.3%) were consuming adequately (acceptable) diversified diets, and about 24.1% 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 23.6% of the households consumed poor diets. This is of great concern because close to half (48%) of households are not consuming acceptable diets, and this may lead to nutrition-related problems.

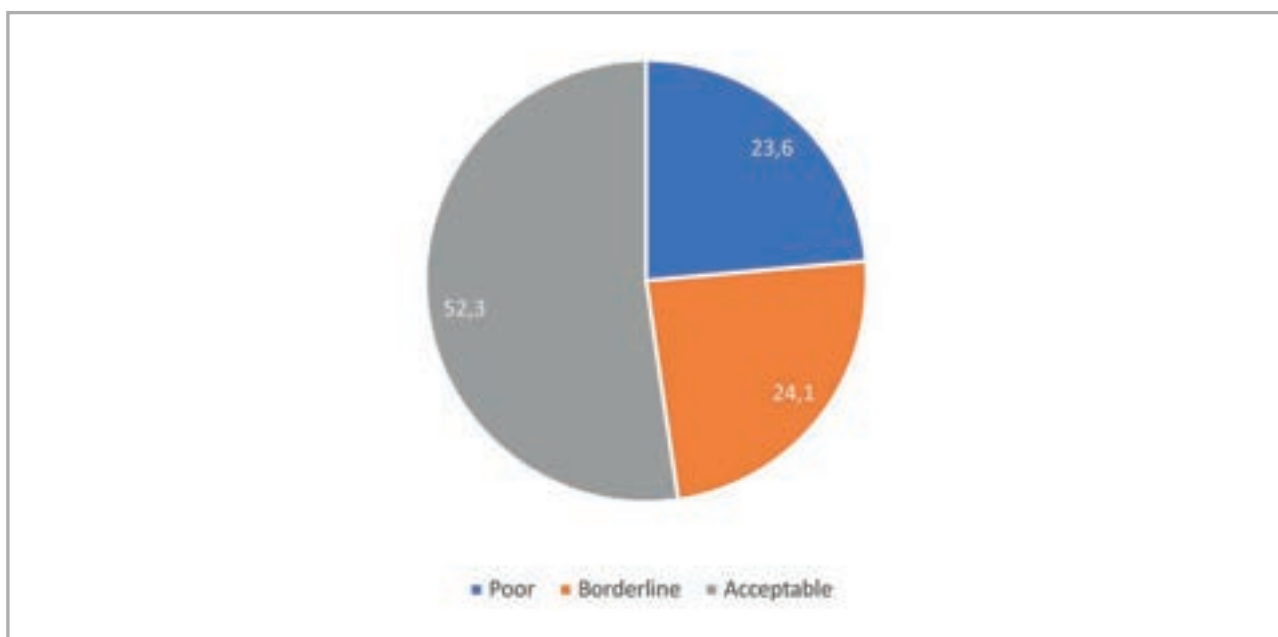


Figure 57: Food consumption score

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	197	21	216	23	431	56
	Female	216	27	207	26	361	48
Household head age	18 - 24	19	38	13	22	20	40
	25 - 34	52	24	64	27	87	48
	35 - 44	85	26	71	23	141	52
	45 - 54	88	24	94	27	148	49
	55 - 64	89	24	73	19	189	56
	65+	78	19	106	25	205	56
District	Namakwa	76	21	102	26	192	53
	Pixley ka Seme	8	9	28	17	127	74
	ZF Mgcawu	148	27	130	25	194	48
	Frances Baard	11	5	33	15	170	80
	John Taolo Gaetsewe	172	40	130	31	114	29

Table 42 and Figure 58 present the results showing the relationship between the sex of household head and food consumption category. The results indicate that male-headed households had more acceptable diets compared to female-headed households. About 56% of the male-headed households were found to have consumed acceptable diets compared to 48% of the female-headed households. Female-headed households were found in marginally higher proportions in the poor and borderline category.

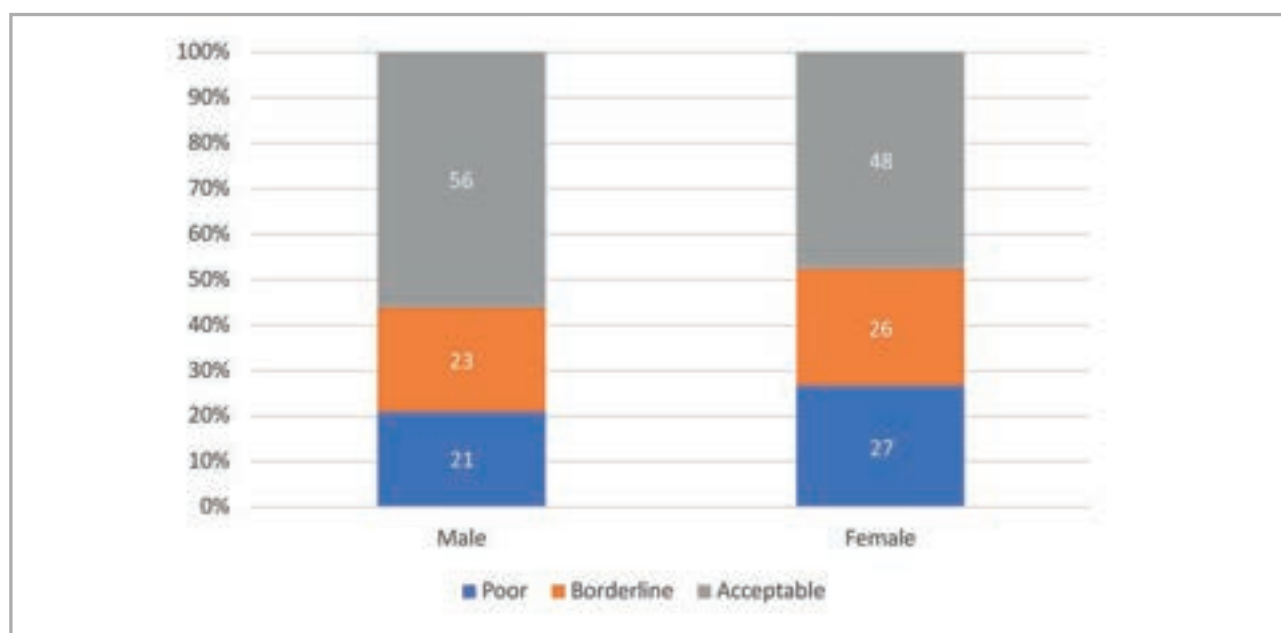


Figure 58: Food consumption category by sex of household head

The relationship between the age of the household head and the chances of consuming acceptable diets was not linear (Figure 58). With the exception of the age group 45-54 years, the proportion of households who consumed acceptable diets increased from 40% among the household heads aged 18-24 years to 56% among households aged 65+ years age group. Most households on the borderline were in the age groups of 25-34 years and 45-54 years, with each found with 27% of the household who are in the borderline. Most households with poor diets were in the age group of 18-24 years.

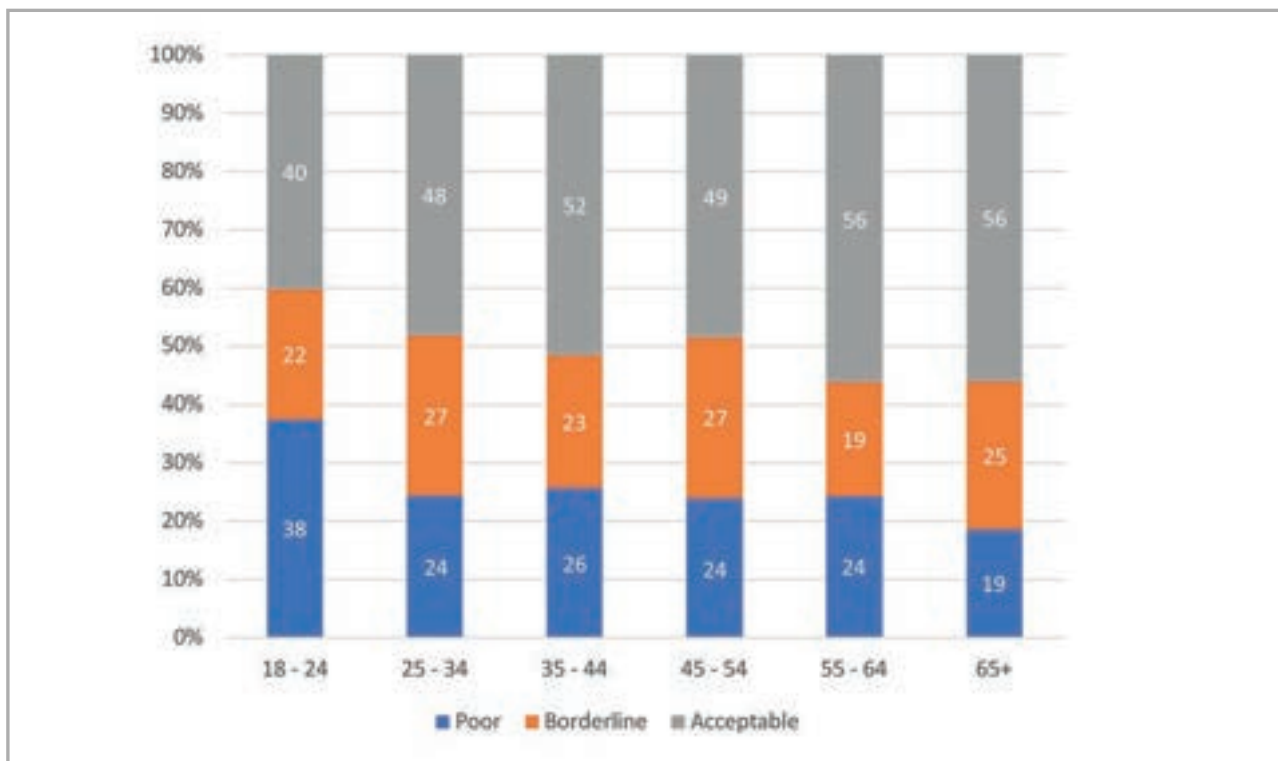


Figure 59: Food consumption category by age of household head

More households with poor diets were reported in the John Taolo Gaetsewe District, (40%). This was followed by ZF Mgcawu and Namakwa districts, with 27% and 21% of the households in this category, respectively (Figure 60). Households from the Frances Baard and Pixley Ka Seme districts consumed diverse diets compared to the other districts, with 80% and 74% of the households in this category. The highest number of households on the borderline were from John Taolo Gaetsewe District, followed by Namakwa District.

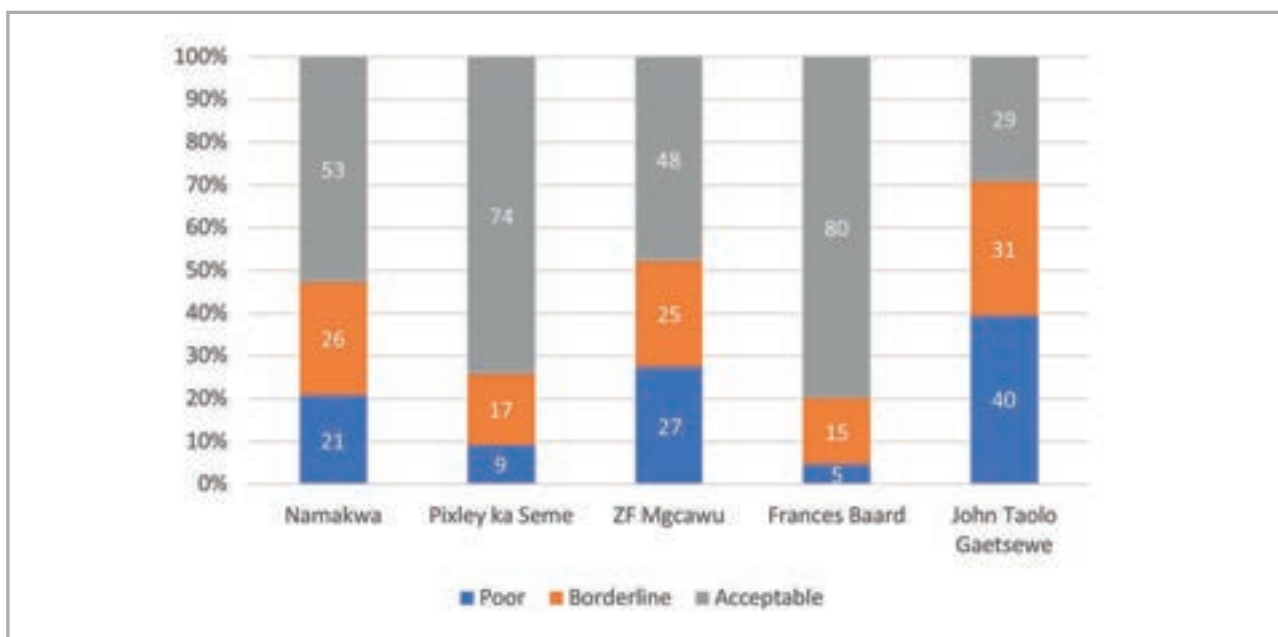


Figure 60: Food consumption category by district

7.5 Food expenditure

The food expenditure approach captures food security in terms of the amount of money spent by a household to acquire food, and whether 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 the Northern Cape Province was R548.87, which is below the food poverty line (Figure 61). Using the 2021 food poverty line (i.e., R624), Figure 47 shows that 71% 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.

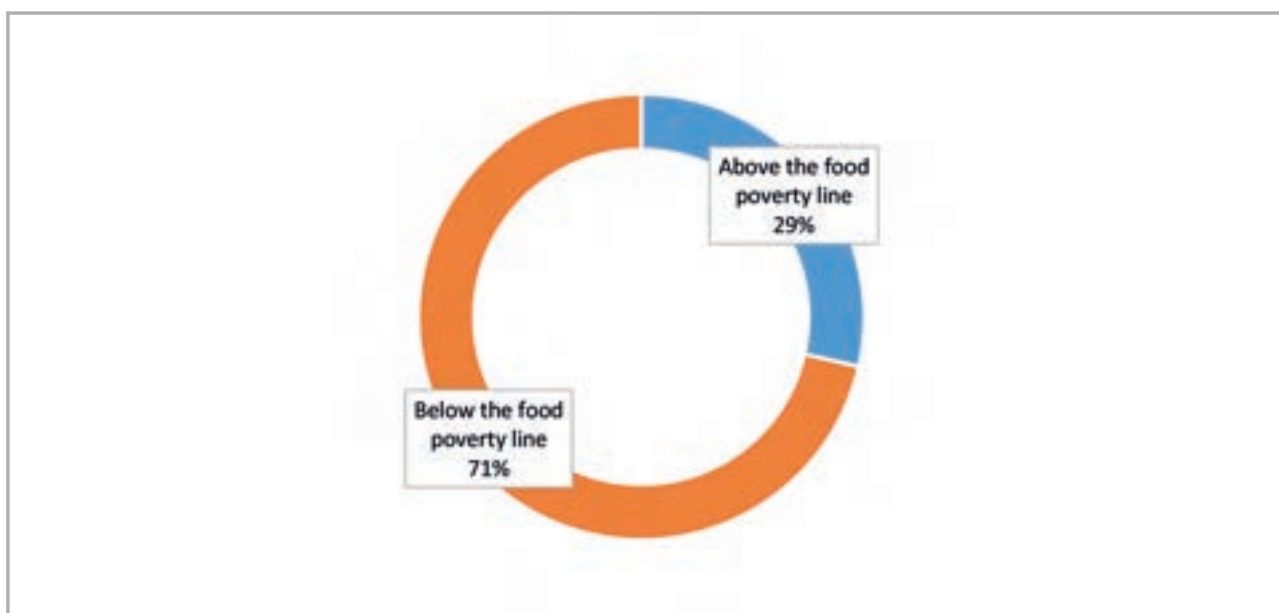


Figure 61: Food poverty levels in Northern Cape

The food expenditure and poverty levels varied by sex, age group, and district (Table 43). The results show that a higher proportion of female-headed households (78.1%) were below the food poverty line compared to male-headed households (65.5%). Across the age groups, the results show food poverty was more prevalent among households headed by the 18-24 years age group, and among those headed by heads at least 45 years old. Food poverty was relatively less prevalent among households headed by those in the 25-44 age group.

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

Variable		Percentage above FPL	Percentage below FPL
All sample		28.6	71.4
Household head Sex	Male	34.5	65.5
	Female	21.9	78.1
Household head Age group	18-24 years	24.8	75.2
	25-34 years	38.9	61.1
	35-44 years	33.6	66.4
	45-54 years	25.2	74.8
	55-64 years	22.5	77.5
	65+ years	28.6	71.4
District	Frances Baard	18.7	81.3
	John T Gaetsewe	26.1	73.9
	Namakwa	30.0	70.0
	Pixley ka Seme	37.1	62.9
	ZF Mgcawu	28.6	71.4

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 44 presents the results. Table 44 shows that significant relationships were found between household food security status and some demographics and socioeconomic 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	39.8	60.2	***
	Female	28.3	71.9	
HH age	Mean age (years)	51.54	51.53	**
HH age group	18-24	23.4	76.6	***
	25-34	32.8	67.2	
	35-44	42.3	57.7	
	45-54	30.4	69.6	
	55-64	32.1	67.9	
	65+	36.0	64.0	
Marital status	Married	29.8	70.2	***
	Unmarried	41.5	58.5	
District	Namakwa	39.6	60.4	***
	Pixley ka Seme	41.7	58.3	
	ZF Mgcawu	39.7	60.3	
	Frances Baard	24.4	75.6	
	John Taolo Gaetsewe	34.5	64.4	
HH education level	No schooling	21.9	78.1	***
	Primary	25.2	74.8	
	Matric	34.7	65.3	
	Tertiary	78.9	21.1	
Household size	mean	3.59	3.96	***
HH employment status	Employed	50.5	49.5	***
	Unemployed	26.5	73.5	
Access to social grants	Beneficiary	24.8	75.2	***
	Non-beneficiary	43.1	56.9	
Access to land	Yes	33.4	66.6	*
	No	34.6	65.7	
Involved in farming activities	Yes	34.9	65.1	***
	No	34.3	65.7	
Access to irrigation	Yes	23.2	76.8	***
	No	44.3	55.7	
Access to extension	Yes	64.3	35.7	**
	No	26.8	73.2	

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
Access to markets	Yes	34.1	65.9	***
	No	9.0	91.0	
Access to road infrastructure	Yes	32.3	67.7	***
	No	28.1	71.7	
Location type	Urban, formal & informal	33.8	66.2	***
	Rural, Traditional areas	30.8	69.2	
	Farms	47.4	52.6	
Access to improved water sources	Yes	34.7	65.3	***
	No	34.3	65.7	
Access to improved sanitation	Yes	18.7	81.3	***
	No	35.6	64.4	

Table 44 shows that female-headed households were significantly more likely to be food insecure than male-headed households. Among male-headed households, 39.8% were food secure, while only 28.3% 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, 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 between the age of household head and food security status was non-linear, with a higher proportion of households headed by those in the 18-24 years categories appearing more in the food insecure group than in the other households. Households headed by those in the 35-44 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 marginally fewer household members than those in the food insecure category, and this difference was statistically significant. This was expected, since more members imply more people who need to be fed, thus a greater burden than in smaller households. 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 22% of households headed by people with no education were food secure, 78.9% 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 the North Cape Province, 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 category dominates 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 access to land, as well as involvement in farming activities, did not play a crucial role in the food security status of households. Among those with access to land, 33.4% were food secure, while 34.6% were food secure among those with no access to land. While marginally significant at 10% level, this result suggests that access to land does not lead to practical differences in the food security status of households in the Northern Cape Province. Households that were involved in agriculture were characterised by marginally higher levels of food security than those not engaged in farming activities. Again, the difference in the proportions was very small (less than a percentage point), indicating that farming does not play a huge role when it comes to food security in the province. The Northern Cape Province is highly urbanised, with several small towns that are located, on average, hundreds of kilometres apart. While geographically vast and sparsely populated, the Northern Cape Province is characterised by a hot and dry climate, which limits farming activities to isolated areas near water sources (e.g., along the Orange River and Vaal River - farming towns such as Douglas and Prieska). As such, households are likely to find it difficult to engage in viable farming activities even when they have access to land. Contrary to expectations, however, households with access to irrigation had a smaller proportion of food security (23.2%) in comparison to households with no access to irrigation (44.3%). Households in farms (47.4%) reported higher levels of food security than those in traditional (30.8%) and urban (33.8%) areas.

Employment was positively and significantly associated with an increased chance of a household being food security. While more than half (50.5%) of households among those headed by employed household heads were food secure, only just above a quarter (26.5%) of those headed by unemployed heads were food secure. Employment remains an important pathway in alleviating the scourge of poverty and food insecurity. The results show that access to infrastructure (such as roads) and basic services (such as improved water sources) are crucial in improving the food security status of households. Access to all-weather roads reduce 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.

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 334 children under the age of 2 years. Of those aged 0-11 months (n=146), 87.5% were ever breastfed, while 89.2% were breastfeeding at the time the survey was conducted. In children aged 12-24 months (n=188), 84.2% were ever breastfed, while 51.2% were being breastfed at the time the survey was conducted (Table 45). Exclusive breastfeeding was not reported in all children aged 0-6 months. Male children appeared to have a higher prevalence of being ever breastfed as compared to female children, while female children appeared to have a higher prevalence of currently being breastfed. However, the differences were not significant. Reports of between 75.8% and 91.3% were recorded for children that were ever breastfed across all districts, with no significant differences between districts. Namakwa District reported the highest proportion (91.3%), while Pixley ka Seme and ZF Mgcawu districts reported a similar proportion of children (90.6% and 90.7%, respectively). Frances Baard District reported a slightly lower proportion at 84.7%, and John Taolo Gaetsewe District reported the lowest proportion (75.8%) ever being breastfed. Conversely, ZF Mgcawu and Pixley ka Seme districts reported similar high proportions (79.8% and 78.9%, respectively) of children who were currently being breastfed, compared to 45.8%-69.9% of children in the other districts. When disaggregating by district, results should be interpreted with caution as the sample sizes in some districts, such as, Frances Baard were very small.

Table 45: Breastfeeding status among infants aged 0-24 months in Northern Cape

	Ever been breastfed			Currently breastfed ¹			Exclusively breastfed (0-6 months)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n
Age									
0-11 months	87.5	[80.4-92.2]	146	89.2	[82.7-93.4]	126			
12-24 months	84.2	[77.5-89.2]	188	51.2	[36.8-65.4]	153			

	Ever been breastfed			Currently breastfed ¹			Exclusively breastfed (0-6 months)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n
Gender									
Male	86.5	[80.4-90.9]	184	67.1	[54.9-77.4]	158	17.5	[5.9-41.9]	38
Female	84.5	[77.1-89.8]	150	68.5	[54.5-79.7]	121	-	-	20 [#]
District									
Namakwa	91.3	[82.7-95.8]	70	69.9	[53.9-82.2]	62	-	-	12 [#]
Pixley ka Seme	90.6	[78.6-96.2]	58	78.9	[47.1-94.0]	51	-	-	11 [#]
ZF Mgcawu	90.7	[83.2-95.0]	81	79.8	[67.1-88.4]	71	-	-	12 [#]
Frances Baard	84.7	[73.8-91.5]	46	66.0	[37.9-86.0]	36	-	-	5 [#]
John Taolo Gaetsewe	75.8	[65.7-83.7]	79	45.8	[27.8-65.0]	59	-	-	18 [#]
Total	85.6	[81.2-89.1]	334	67.7	[57.1-76.7]	279	20.1	[9.6-37.2]	58

¹among 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 most infants aged 0-24months, (n=279), breastfeeding was introduced immediately (79.9%), within the first hour (12.7%) or within 24 hours (3.2%) (Table 46). Only 2.4% 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 in terms of introduction to breastfeeding between male and female children.

At district level, ZF Mgcawu and John Taolo Gaetsewe districts reported the lowest proportion of children to be immediately breastfed (between 75%-80%), while Namakwa and Pixley ka Seme districts reported close to 82%, and Frances Baard District reported nearly 86% (Table 43). These proportions 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 Northern Cape

	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	
Age											
0-11 months	79.1	[69.1-86.4]	13.3	[7.3-23.0]	3.8	[1.8-8.1]	3.6	[1.0-12.0]	0.2	[0.0-1.7]	126
12-24 months	80.6	[71.8-87.1]	12.2	[6.9-20.8]	2.6	[1.0-6.6]	1.4	[0.2-9.1]	3.1	[1.2-7.8]	153
Gender											
Male	79.5	[70.5-86.2]	13.1	[7.7-21.2]	2.9	[1.3-6.0]	2.5	[0.6-10.1]	2.1	[0.7-6.2]	158
Female	80.5	[69.4-88.2]	12.3	[6.2-22.8]	3.5	[1.2-9.8]	2.2	[0.4-10.3]	1.6	[0.5-5.3]	121

	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											
Namakwa	82.0	[67.8-90.8]	12.4	[4.9-28.0]	0.9	[0.1-6.5]	1.6	[0.5-5.3]	3.1	[0.8-11.1]	62
Pixley ka Seme	81.6	[65.9-91.1]	17.3	[8.0-33.6]	0.0		0.0		1.1	[0.2-7.0]	51
ZF Mgcawu	75.2	[61.7-85.1]	14.7	[6.4-30.1]	3.6	[1.4-8.8]	5.4	[1.4-18.6]	1.2	[0.2-7.5]	71
Frances Baard	85.7	[69.6-94.1]	14.3	[5.9-30.4]	0.0		0.0		0.0		36
John Taolo Gaetsewe	79.5	[62.9-89.9]	6.4	[2.1-18.4]	8.1	[2.9-20.5]	2.0	[0.3-12.6]	4.0	[0.9-15.3]	59
Total	79.9	[73.4-85.2]	12.7	[8.4-18.7]	3.2	[1.6-6.1]	2.4	[0.8-6.6]	1.9	[0.8-4.4]	279

8.1.1.2 Age at which breastfeeding was stopped

In children aged 0-24 months (n=80), breastfeeding was most often stopped between the ages of 0-3 months (23.7%) and 5-6 months (27.1%). More than 65% of mothers stopped breastfeeding before the age of 6 months (23.7% stopped breastfeeding before 3 months, 15.5% stopped between 3-4 months, and 27.1% stopped between 5-6 months (Figure 62)). Only 16.2% of mothers continued to breastfeed for longer than 12 months and up to 24 months. No significant differences were found when disaggregating the results by districts. Due to the small sample size when disaggregating by district, no comparisons could be made at a district level.

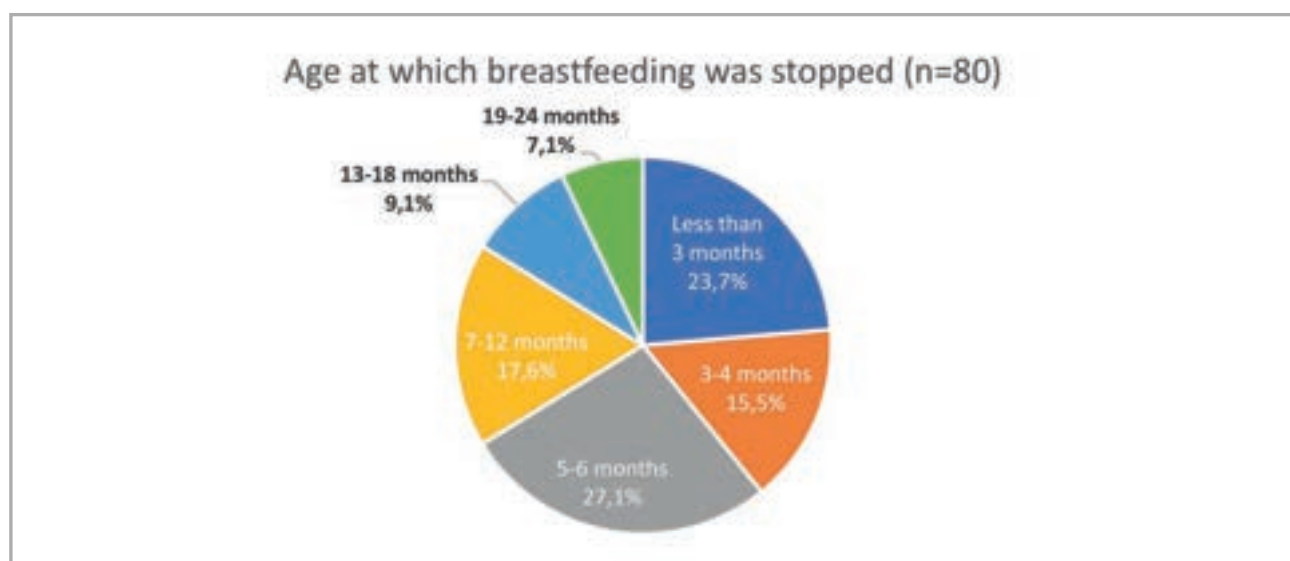


Figure 62: Age at which breastfeeding was stopped among infants aged 0-24 months in Northern Cape

8.1.1.3 First drink other than breastmilk

Infant formula (52.2%) and plain water (25.6%) were reported to be the most common first drink other than breastmilk that was introduced to infants under 2 years of age (Figure 63). There were no significant differences reported between age groups and between genders (Table 44). Mothers in all districts reported that infant formula, followed by water, was the most common first drink introduced to children aged 0-24 months (Table 44), with no significant differences between districts. In Frances Baard District, however, slightly more children received tea (20.2%) than water (18.5%) as their first drink. Furthermore, a significantly higher prevalence of children in the Frances Baard District received tea as their first drink compared to children in the John Taolo

Gaetsewe District (1.7%). It is important to note, though, that district level comparisons must be interpreted with caution due to the small sample sizes in these districts.

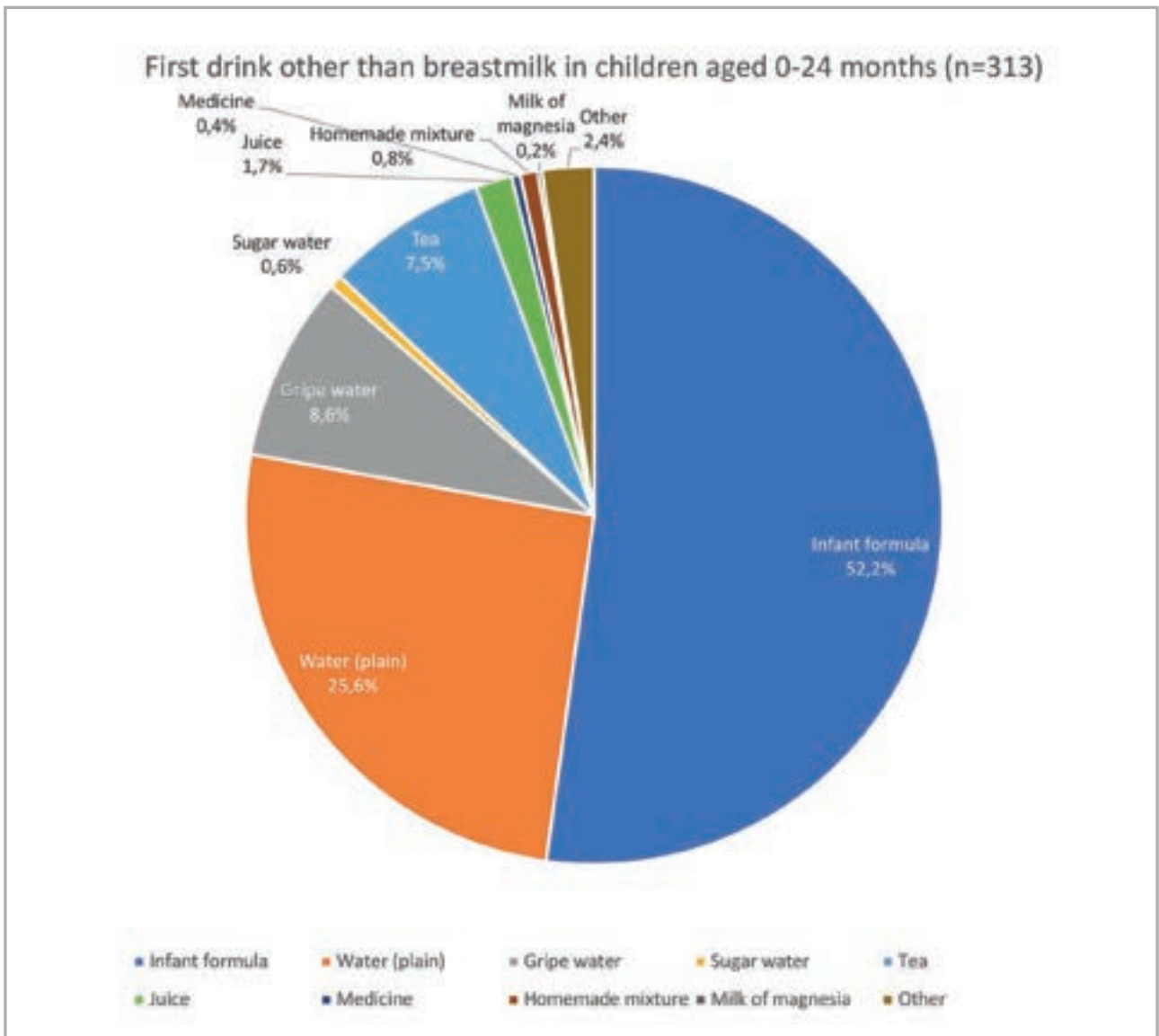


Figure 63: First drink other than breast milk among children aged 0-24 months in Northern Cape

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

	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	
Age																			
0-11 months	45.4	[34.6-56.7]	28.6	[18.4-41.5]	10.7	[5.2-20.7]	0.6	[0.1-4.1]	7.3	[2.5-19.6]	1.1	[0.2-6.9]	0.8	[0.1-5.3]	0.0		5.6	[1.6-18.0]	131
12-24 months	57.0	[45.5-67.7]	23.6	[16.3-32.8]	7.0	[3.0-15.4]	0.6	[0.1-2.4]	7.7	[4.0-14.5]	2.2	[0.7-6.5]	0.2	[0.0-1.7]	1.3	[0.2-7.2]	0.2	[0.0-1.2]	182
Gender																			
Male	56.2	[47.0-65.1]	27.3	[20.3-35.6]	7.1	[3.7-13.2]	0.2	[0.0-1.7]	4.4	[2.1-9.3]	2.1	[0.7-6.3]	0.6	[0.1-4.1]	1.2	[0.2-8.4]	0.5	[0.1-2.6]	174
Female	47.5	[36.4-58.9]	23.7	[15.5-34.4]	10.3	[4.6-21.3]	1.0	[0.3-3.6]	11.1	[5.3-21.8]	1.3	[0.4-4.3]	0.3	[0.0-2.2]	0.2	[0.0-1.4]	4.6	[1.2-16.5]	139
District -																			
Namakwa	53.3	[40.4-65.8]	30.9	[18.8-46.2]	2.7	[0.6-10.3]	0.0		8.0	[2.2-25.3]	2.3	[0.3-14.8]	0.0		0.0		1.4	[0.2-8.4]	66
Pixley ka Seme	55.2	[34.8-74.0]	31.1	[14.4-54.7]	8.7	[3.3-21.1]	1.9	[0.3-12.9]	3.1	[1.1-8.7]	0.0		0.0		0.0		0.0		52
ZF Mgqawu	43.2	[31.4-55.8]	33.9	[24.8-44.4]	7.3	[2.3-21.0]	0.4	[0.1-3.0]	6.8	[2.0-20.1]	1.4	[0.3-5.8]	0.0		2.2	[0.3-14.4]	4.8	[0.7-27.2]	77
Frances Baard	51.5	[36.4-66.3]	18.5	[6.8-41.3]	7.6	[2.6-19.8]	1.2	[0.3-5.6]	20.2	[7.7-43.7]	0.0		0.0		0.0		1.1	[0.2-4.6]	43
John Taolo Gaetsewe	60.6	[43.5-75.5]	16.8	[9.5-28.1]	13.0	[5.2-28.8]	0.0		1.7	[0.6-4.8]	3.7	[0.9-14.2]	1.6	[0.3-7.4]	0.3	[0.0-2.3]	2.3	[0.5-9.3]	75
Total	52.2	[44.4-59.9]	25.6	[19.6-32.8]	8.6	[5.1-14.0]	0.6	[0.2-1.8]	7.5	[3.8-14.4]	1.7	[0.6-4.4]	0.4	[0.1-2.0]	0.8	[0.1-4.3]	2.4	[0.7-8.0]	313

8.1.1.4 Age at which the first drink other than breast milk was introduced

Overall, the first drink other than breastmilk was mainly introduced at 0-1 month (28.8%), followed by 6 months (19.7%) and then 3 months (17.0%) (Table 47). The same pattern was followed in children aged 0-11 months (38.6%, 17.3% and 17.1%). In children aged 12-24 months, however, other drinks were mainly introduced at more than 6 months (23.0%), followed by 0-1 month (21.9%) and 6 months (21.3%). In Table 45, we can assume that the introduction of other drinks before the age of 1 month is most likely the introduction of infant formula. Disaggregated by age group, it appears as if those aged 12-24 months were far more likely to be introduced to other drinks after the age of 6 months (44.3%), compared to 21.4% of those aged 10-11 months. There was, in fact, a significant difference between age groups for those who were introduced to other drinks after 6 months of age, where those aged 12-24 months had a significantly higher prevalence of only being introduced to other drinks after 6 months (23.0% compared to 4.1%). It, therefore, appears as if a larger percentage of children aged 12-24 months were exclusively breastfed compared to those aged 0-11 months.

When doing comparisons by gender, no significant differences were found. It is interesting to note though, that nearly one-third of males were introduced to other drinks before the age of one month compared to less than a quarter of females. Furthermore, while nearly 40% of females were introduced to other drinks from the age of 6 months and older, just over 30% of males were introduced to other drinks at the same time. This seems to indicate that gender does not influence exclusive breastfeeding in the Northern Cape Province.

Similar patterns were displayed across districts, where most children were introduced to other drinks before the age of 1 month (30.3% – 41.9%), except for Namakwa District, where the majority of the children (30.5%) were only introduced to a first drink other than breastmilk at 3 months, and in the Frances Baard District where majority children (25.6%) were introduced to a first drink other than breastmilk at 6 months. There was a significant difference between ZF Mgcawu and Frances Baard districts, where Frances Baard District had a higher prevalence of children introduced to other drinks at the age of more than 6 months (33.0%) compared to those in ZF Mgcawu District (4.0%). This implies that there may be a higher prevalence of exclusive breastfeeding in the Frances Baard District compared to the other districts.

Table 48: Age at which the first drink other than breastmilk was introduced among infants aged 0-24 months in Northern Cape

	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	
Age															
0-11 months	38.6	[28.6-49.7]	10.6	[5.7-18.7]	17.1	[9.9-28.0]	11.6	[5.0-24.6]	0.8	[0.2-3.1]	17.3	[10.4-27.5]	4.1	[1.4-10.9]	129
12-24 months	21.9	[14.1-32.2]	9.1	[5.3-15.1]	16.9	[10.8-25.5]	4.7	[2.5-8.7]	3.1	[1.0-9.2]	21.3	[14.2-30.6]	23	[12.9-37.5]	181
Gender															
Male	32.4	[24.0-42.1]	8.0	[4.9-12.7]	20.0	[13.3-29.0]	6.6	[2.8-14.6]	1.7	[0.5-5.3]	17.7	[11.6-26.0]	13.6	[7.1-24.5]	172
Female	24.6	[15.6-36.6]	11.7	[6.4-20.4]	13.5	[7.2-23.7]	8.7	[4.1-17.6]	2.6	[0.6-10.8]	21.9	[14.9-31.0]	17.0	[7.5-34.1]	138
District															
Namakwa	24.2	[14.3-37.9]	13.8	[6.4-27.3]	30.5	[16.0-50.1]	5.7	[1.1-24.1]	0.0		18.8	[10.1-32.5]	7.1	[2.2-20.7]	65
Pixley ka Seme	41.9	[21.2-65.9]	17.6	[8.3-33.5]	13.5	[6.3-26.4]	5.2	[1.7-14.6]	2.4	[0.6-8.7]	11.5	[5.0-24.5]	7.9	[2.0-26.3]	53
ZF Mgcawu	30.9	[19.4-45.3]	7.5	[3.3-16.1]	20.8	[10.3-37.5]	9.7	[3.1-26.5]	3.3	[0.6-17.3]	23.8	[14.9-35.6]	4.0	[1.3-12.1]	77
Frances Baard	16.9	[6.9-35.6]	6.0	[2.1-16.0]	11.4	[4.2-27.7]	7.1	[3.3-14.8]	0.0		25.6	[14.3-41.5]	33.0	[12.9-62.2]	42
John Taolo Gaetsewe	30.3	[19.0-44.6]	9.2	[5.8-14.2]	12.5	[5.3-27.0]	7.4	[2.0-24.3]	3.0	[0.8-10.8]	15.3	[8.4-26.3]	22.2	[9.5-43.9]	73
Total	28.8	[22.0-36.6]	9.7	[6.9-13.5]	17.0	[11.7-24.1]	7.6	[4.2-13.4]	2.1	[0.8-5.6]	19.7	[15.0-25.4]	15.2	[8.3-26.0]	310

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 (5.8 months) and males (5.3 months) as compared to children aged 0-11 months (3.5 months) and females (4.5 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 Northern Cape

	Mean	95% CI	n
Age			
0-11 months	3.5	[2.8-4.3]	71
12-24 months	5.8	[4.2-7.3]	102
Gender			
Male	5.3	[3.6-7.0]	95
Female	4.5	[3.4-5.7]	78
District			
Namakwa	2.8	[2.1-3.5]	42
Pixley ka Seme	-	-	28*
ZF Mgcawu	3.6	[2.7-4.5]	43
Frances Baard	-	-	23*
John Taolo Gaetsewe	6.4	[3.9-8.9]	37
Total	4.9	[3.8-6.1]	173

* cell sample sizes too small to generate a reasonable estimate

n<30

Except for breastmilk, most infants (80.2%) received infant formula, followed by full strength cow's milk (8.6%), Klim/ Nespray (7.1%) and only 5.5% received other milk (Table 50). Comparisons at a district level were not possible 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 Northern Cape

	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	
Age													
0-11 months	4.0	[0.9-15.9]	0.0		0.0		4.6	[0.7-25.6]	87.8	[65.0-96.5]	4.5	[1.6-12.5]	71
12-24 months	11.2	[5.7-21.1]	2.6	[0.4-16.2]	0.6	[0.1-3.8]	8.5	[3.5-19.3]	75.7	[65.8-83.5]	6.2	[2.4-14.6]	102
Gender													
Male	13.8	[6.6-26.6]	0.0		0.7	[0.1-4.3]	9.3	[3.7-21.7]	74.3	[62.3-83.6]	3.0	[0.9-9.1]	95
Female	2.5	[0.9-6.8]	3.4	[0.5-21.0]	0.0		4.4	[0.8-20.8]	86.9	[73.8-94.0]	8.5	[3.6-18.6]	78
District													
Namakwa	3.3	[0.4-20.7]	0.0		0.0		0.0		89.1	[69.6-96.7]	8.9	[2.5-27.5]	42

	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	
Pixley ka Seme	-	-	-	-	-	-	-	-	-	-	-	-	28*
ZF Mgcawu	4.4	[1.3-14.3]	6.8	[1.0-33.7]	0.0		4.7	[0.7-24.9]	83.2	[70.3-91.2]	9.2	[3.2-23.8]	43
Frances Baard	-	-	-	-	-	-	-	-	-	-	-	-	23*
John Taolo Gaetsewe	18.6	[9.8-32.3]	0.0		1.1	[0.2-7.2]	5.3	[1.1-22.2]	73.3	[60.0-83.4]	5.6	[1.2-22.6]	37
Total	8.6	[4.5-15.8]	1.6	[0.2-10.6]	0.3	[0.0-2.4]	7.1	[3.2-15.0]	80.2	[71.2-86.9]	5.5	[2.7-11.0]	173

8.1.1.6 Solid foods

The mean age at which the first semi-solid or solid foods were introduced was 5.5 months. There was a significant difference between age groups, where those aged 12-24 months were introduced to solids later than those aged 0-11 months (6 months and 4.6 months, respectively). There were no significant differences between gender. Significant differences between districts did not emerge, where children in Frances Baard District appeared to be introduced to semi-solid/ solid foods significantly later (6.9 months) than children in both Namakwa district (4.7 months) and ZF Mgcawu District (4.9 months) (Table 51).

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

	Mean	95% CI	sample
Age			
0-11 months	4.6	[3.8-5.3]	103
12-24 months	6.0	[5.4-6.5]	183
Gender			
Male	5.3	[4.8-5.9]	153
Female	5.6	[4.6-6.6]	133
District			
Namakwa	4.7	[4.1-5.2]	59
Pixley ka Seme	5.1	[4.5-5.7]	47
ZF Mgcawu	4.9	[4.4-5.3]	71
Frances Baard	6.9	[5.5-8.3]	42
John Taolo Gaetsewe	5.5	[4.3-6.7]	67
Total	5.5	[4.9-6.0]	286

Table 52 shows that homemade infant cereal was the first semi-solid food given to most children aged 0-24 months (43.4%), followed by commercial infant cereal/porridge (38.9%). A further 8.2% of mothers reported that their infants received pureed/mashed vegetables/fruit as their first foods. Less than 4.0% of infants had cereal/ porridge supplied by the clinic (3.4%) and other foods (3.4%) as their first semi-solid foods, while less than 2% of mothers reported that their babies had bottled/ canned baby foods (1.6%) and custard (0.7%) as their infants' first foods.

Significantly, more children aged 12-24 months had homemade cereal as their first semi-solid food (53.0) compared to 26.5% of those aged 0-11 months). However, significantly more children aged 0-11 months were introduced to other foods (8.3%), compared to 0.7% of children aged 12-24 months.

There were no significant differences when disaggregating by gender; however, when disaggregating by district, there was a significant difference between Frances Baard District and Namakwa District regarding the introduction of pureed/mashed vegetables/fruit, where the Namakwa District reported a higher prevalence (17.5%) compared to 0.6% in Frances Baard District.

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

	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	
Age (months)																	
0-11 months	49.2	[36.9-61.7]	26.5	[17.4-38.2]	2.1	[0.6-6.6]	11.2	[5.0-23.4]	1.8	[0.5-6.6]	0.4	[0.1-3.1]	0.5	[0.1-3.5]	8.3	[3.0-21.0]	104
12-24 months	33.1	[24.1-43.5]	53.0	[41.7-64.1]	4.1	[1.2-13.4]	6.5	[3.1-13.1]	1.5	[0.3-7.2]	0.2	[0.0-1.4]	0.9	[0.1-6.0]	0.7	[0.2-2.7]	181
Gender																	
Male	37.5	[27.7-48.4]	50.3	[38.9-61.7]	2.9	[0.6-13.4]	4.9	[2.4-9.7]	1.1	[0.3-4.5]	0.2	[0.0-1.6]	1.4	[0.3-6.3]	1.7	[0.7-3.8]	154
Female	40.5	[31.7-50.0]	35.6	[25.6-47.1]	4.0	[1.2-13.0]	12.0	[5.9-22.7]	2.1	[0.4-9.8]	0.3	[0.0-2.4]	0.0		5.4	[1.6-16.8]	131
District																	
Namakwa	41.6	[26.4-58.5]	35.5	[22.1-51.7]	0.0		17.5	[5.4-44.0]	1.8	[0.4-9.0]	0.0		0.0		3.6	[1.2-10.1]	58
Pixley ka Seme	46.3	[25.8-68.2]	31.2	[15.2-53.4]	4.3	[1.2-14.2]	14.3	[4.3-38.2]	2.4	[0.4-13.4]	0.0		1.5	[0.2-9.7]	0.0		47
ZF Mgcawu	36.8	[23.6-52.3]	38.6	[23.6-56.1]	5.0	[0.9-22.6]	7.0	[2.2-20.0]	3.7	[0.9-14.1]	0.4	[0.1-2.7]	1.9	[0.3-12.0]	6.6	[1.4-25.8]	71
Frances Baard	38.6	[24.6-54.8]	58.6	[42.3-73.2]	0.0		0.6	[0.1-4.1]	0.0		0.0		0.0		2.2	[0.5-8.6]	41
John Taolo Gaetsewe	37.1	[23.5-53.1]	46.0	[29.3-63.7]	5.2	[1.0-22.5]	8.8	[3.3-21.2]	0.0		0.6	[0.1-4.3]	0.0		2.3	[0.9-6.0]	68
Total	38.9	[31.6-46.8]	43.4	[34.9-52.4]	3.4	[1.2-9.0]	8.2	[4.7-14.0]	1.6	[0.5-4.7]	0.3	[0.1-1.1]	0.7	[0.2-3.5]	3.4	[1.3-8.5]	285

8.1.2 Anthropometry (0-59 months)

This section presents the key nutrition findings for children aged 0-59 months. The section presents anthropometric measures such as stunting, wasting and being 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 translates to 3.1 million deaths globally in 2011. It is further reported that it includes intrauterine foetal growth restriction, stunting, wasting, and micronutrient deficiency, especially vitamin A and Zinc. This occurs along with poor infant feeding practices, which are indicated by suboptimum breastfeeding.

Anthropometric data was recorded for 719 children under the age of 5 years, of these, there was a slightly higher number of boys (50.6%) than girls (49.4%) (Table 53).

Table 53: Distribution of age and sex of the sample in the Northern Cape

AGE (months)	Boys		Girls		Total	
	n	%	n	%	n	%
<6	37	59.7	25	40.3	62	8.6
6-17	94	54.0	80	46.0	174	24.2
18-29	70	47.3	78	52.7	148	20.6
30-41	74	49.3	76	50.7	150	20.9
42-53	68	49.3	70	50.7	138	19.2
54-59	21	44.7	26	55.3	47	6.5
Total	364	50.6	355	49.4	719	100

8.1.2.1 Stunting

The overall prevalence of stunting for children under the age of 5 years (n=680) was 41.3%, of which 15.1% was severe, and 26.2% was moderate stunting (Table 54 and Figure 63). There were no significant differences in overall stunting between age groups.

When disaggregated by severe and moderate stunting, no significant differences between the age groups were found for moderate stunting. However, for severe stunting, there was a higher prevalence (25.1%) of children aged 6-17 months that were reported to be severely stunted compared to children in all other age groups (range 7.7%-19.4%). This was, however, only significant between those aged 6-17 months and those aged 42-53 months (Table 51 and Figure 64).

Comparisons by gender among children under 5 years of age in Northern Cape Province, indicated that males had a higher prevalence of stunting (50.0%) compared to females (30.3%). However, the difference was not significant (Table 51 and Figure 65). Furthermore, nearly 3 times as many males were moderately stunted (36.3%) compared to females (13.5%). However, this was also not significant. Generally, it seems as if moderate and severe stunting were evenly distributed among females (13.5% and 16.8%, respectively). However, far more males were moderately stunted (36.3%) compared to those who were severely stunted (13.7%).

District comparisons show that the overall prevalence of stunting was highest in the Pixley ka Seme District (73.2%), with more moderate (57.6%) than severe stunting (15.6%). The prevalence of overall stunting was significantly lower in John Taolo Gaetsewe District (25.2%) and Namakwa District (27.0%) compared to Pixley ka Seme District. Regarding moderate stunting, Pixley ka Seme District reported 4 times more children who were moderately stunted (57.6%) than both Namakwa District (13.9%) and ZF Mgcawu District (13.9%).

This was, however, only significant between Pixley ka Seme and ZF Mgcawu districts. Regarding severe stunting, ZF Mgcawu District reported a significantly higher prevalence (21.8%), nearly 3 times as high as John Taolo Gaetsewe District (7.3%) (Table 51 and Figure 65 and Map 1).

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

	No stunting HAZ>=-2		All stunting HAZ<-2		Moderate stunting HAZ<-2 and >=-3		Severe stunting HAZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	64.5	[43.9-80.8]	35.5	[19.2-56.1]	20.3	[9.2-39.0]	15.2	[5.4-36.3]	58
6-17	57.4	[48.6-65.7]	42.6	[34.3-51.4]	17.6	[11.7-25.5]	25.1	[18.0-33.8]	164
18-29	49.7	[28.7-70.7]	50.3	[29.3-71.3]	38.1	[16.5-65.7]	12.3	[6.6-21.7]	140
30-41	67.9	[55.4-78.3]	32.1	[21.7-44.6]	18.2	[11.2-28.1]	13.9	[7.3-24.9]	145
42-53	58.0	[28.5-82.7]	42.0	[17.3-71.5]	34.4	[10.5-70.0]	7.7	[3.6-15.4]	129
54-59	71.1	[52.4-84.6]	28.9	[15.4-47.6]	9.6	[3.3-24.6]	19.4	[9.1-36.6]	44
Gender									
Female	69.7	[62.1-76.3]	30.3	[23.7-37.9]	13.5	[9.5-18.8]	16.8	[12.0-23.2]	340
Male	50.0	[32.1-67.9]	50.0	[32.1-67.9]	36.3	[17.3-60.9]	13.7	[8.1-22.2]	340
District									
Namakwa	73.0	[65.1-79.7]	27.0	[20.3-34.9]	13.9	[8.2-22.7]	13.1	[7.9-21.0]	151
Pixley ka Seme	26.8	[9.6-55.7]	73.2	[44.3-90.4]	57.6	[22.7-86.3]	15.6	[5.1-38.9]	129
ZF Mgcawu	64.3	[54.0-73.4]	35.7	[26.6-46.0]	13.9	[8.8-21.4]	21.8	[14.2-31.9]	178
Frances Baard	60.0	[43.1-74.8]	40.0	[25.2-56.9]	23.0	[7.8-51.5]	17.0	[8.3-31.6]	68
John Taolo Gaetsewe	74.8	[67.1-81.3]	25.2	[18.7-32.9]	17.9	[12.7-24.6]	7.3	[3.8-13.6]	154
Total	58.7	[46.1-70.3]	41.3	[29.7-53.9]	26.2	[14.1-43.4]	15.1	[10.7-20.8]	680

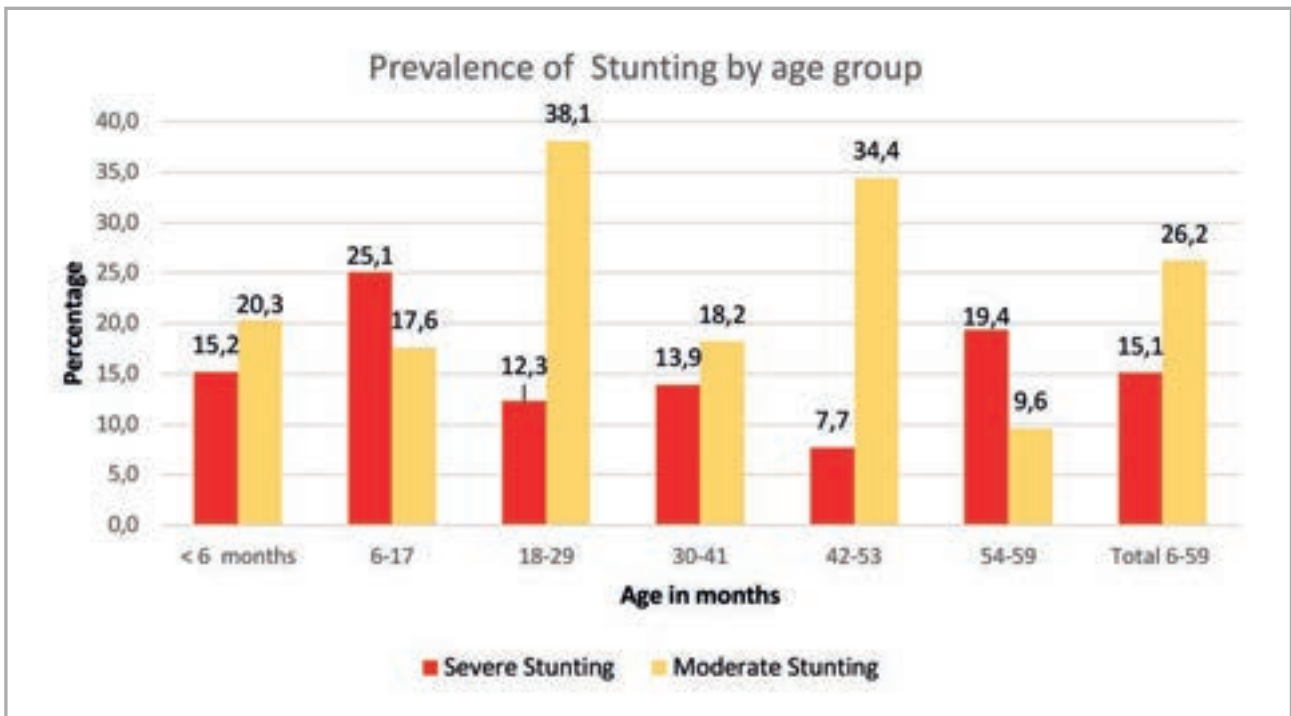


Figure 64: The prevalence of Stunting in children under five years age group in Northern Cape

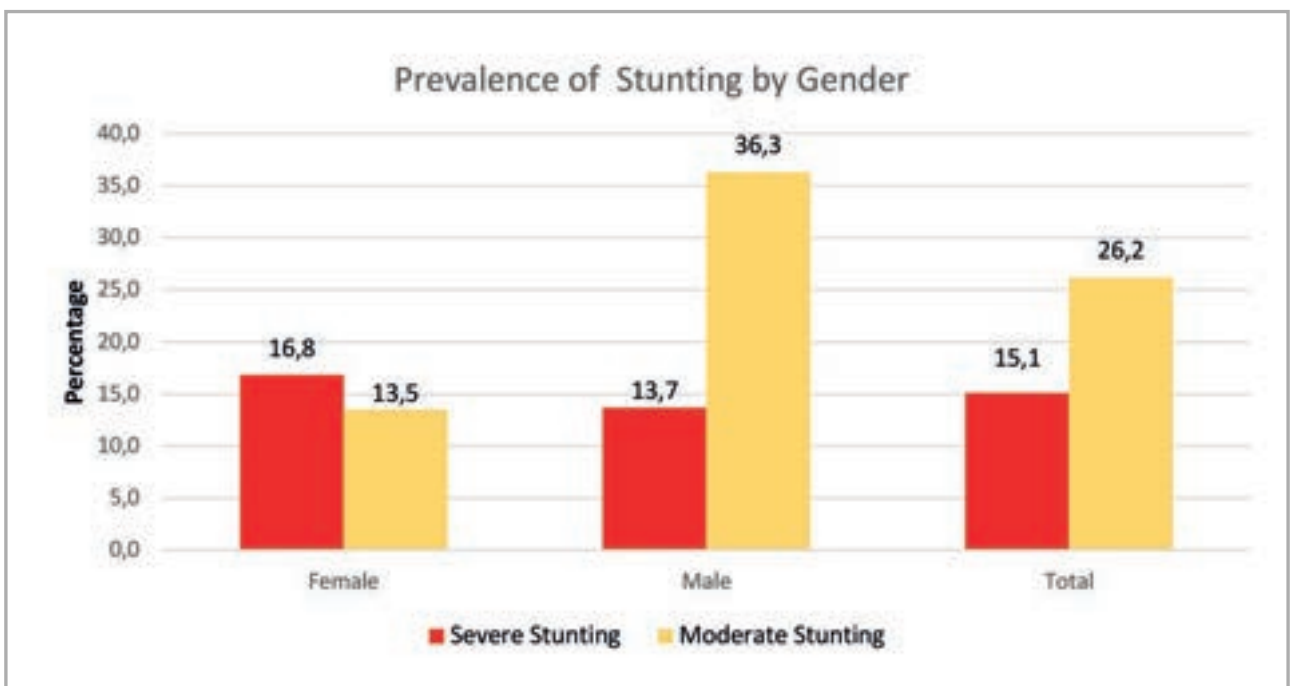


Figure 65: The prevalence of Stunting in children under 5 years by gender in Northern Cape

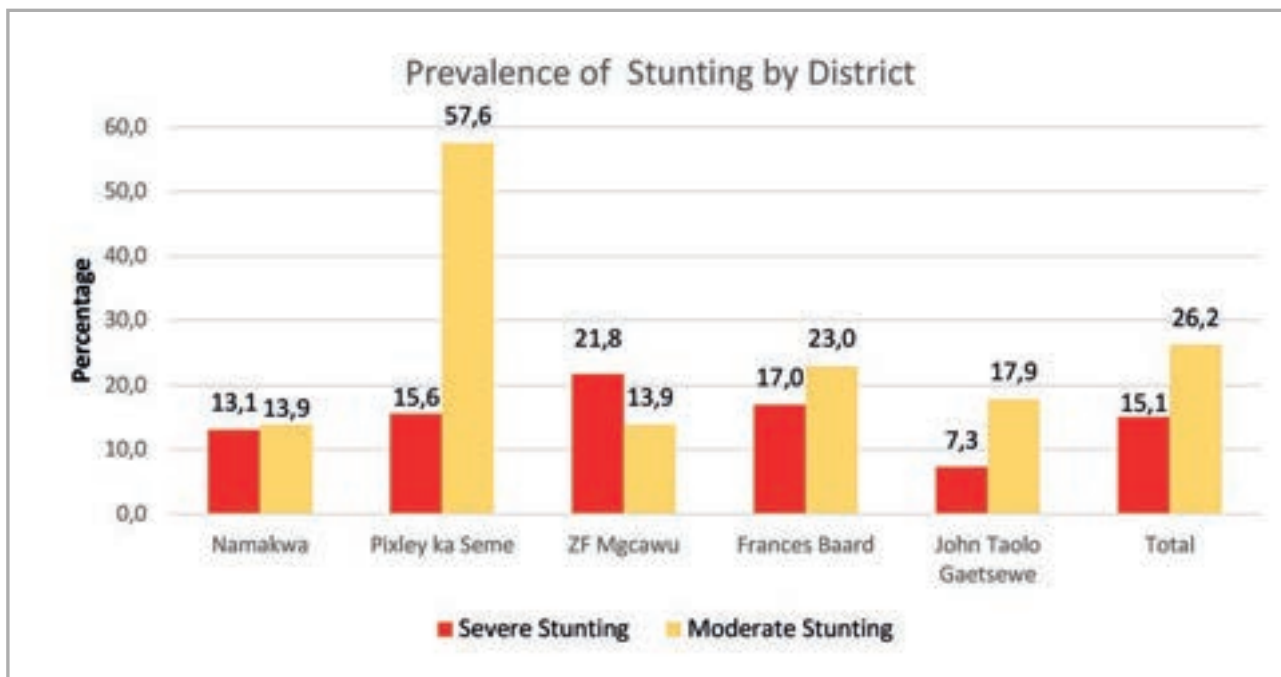


Figure 66: The prevalence of Stunting in children under 5 years in Northern Cape by district in Northern Cape

8.1.2.2 Wasting

The overall prevalence of wasting for children under the age of 5 years (n=659) was 20.8%, of which 15.2% was severe, and 5.6% was moderate wasting (Table 55 and Figure 67). For overall wasting, across all age groups, the prevalence ranged from 3.9% in children aged 54-59 months to 38.2% in children aged 38.2%. The differences between these age groups were significant. The prevalence of moderate wasting was highest in children aged 30-41 months (8.6%), and lowest in the age group 6-17 months (2.9%); however, there were no significant differences in the prevalence of moderate wasting between age groups.

The prevalence of severe wasting was highest in children aged 42-53 months (32.0%), followed by those aged 18-29 months (21.8%), compared to 7.6% or less in all other age groups. There was a significant difference between the 42-53 months (32.0%) and the 54-59 months age groups (0.7%).

Comparisons between gender showed that males had a higher prevalence of wasting (26.6%) compared to females (13.4%) (Table 52 and Figure 67). While these differences were not significant, it does appear that males had a higher prevalence of severe wasting (22.7%) as compared to females (5.7%), while females had a higher prevalence of moderate wasting (7.7%) as compared to males (3.9%).

Pixley ka Seme District reported the highest overall prevalence of wasting (49.9%), while Frances Baard and Namakwa districts reported the lowest overall prevalence (8.9%). However, there were no significant differences reported at a district level for overall wasting (Table 52 and Figure 68 and Map 2). ZF Mgcawu District had a significantly higher prevalence of moderate wasting (11.5%) compared to Pixley ka Seme (1.5%), while Pixley ka Seme had a significantly higher prevalence (48.4%) of severe wasting than both Namakwa (2.4%) and John Taolo Gaetsewe districts (5.5%).

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

	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	
Age (months)									
<6	93.1	[84.0-97.2]	6.9	[2.8-16.0]	5.3	[1.9-14.0]	1.7	[0.4-7.0]	55
6-17	89.5	[82.2-94.1]	10.5	[5.9-17.8]	2.9	[1.0-7.9]	7.6	[3.9-14.2]	158
18-29	72.7	[40.1-91.4]	27.3	[8.6-59.9]	5.6	[2.4-12.2]	21.8	[4.8-60.6]	137
30-41	84.2	[71.1-92.0]	15.8	[8.0-28.9]	8.6	[3.6-19.1]	7.1	[2.2-20.5]	141
42-53	61.8	[28.5-86.8]	38.2	[13.2-71.5]	6.2	[2.7-13.6]	32.0	[8.3-71.1]	125
54-59	96.1	[88.8-98.7]	3.9	[1.3-11.2]	3.2	[0.9-10.7]	0.7	[0.1-4.8]	43
Gender									
Female	86.6	[79.8-91.4]	13.4	[8.6-20.2]	7.7	[4.6-12.7]	5.7	[3.0-10.6]	327
Male	73.4	[42.0-91.3]	26.6	[8.7-58.0]	3.9	[2.0-7.4]	22.7	[5.8-58.3]	332
District									
Namakwa	91.1	[83.4-95.4]	8.9	[4.6-16.6]	6.5	[3.2-12.7]	2.4	[0.5-10.5]	151
Pixley ka Seme	50.1	[14.4-85.7]	49.9	[14.3-85.6]	1.5	[0.4-6.1]	48.4	[13.0-85.5]	123
ZF Mgcawu	81.2	[70.5-88.6]	18.8	[11.4-29.5]	11.5	[6.6-19.4]	7.3	[3.8-13.6]	172
Frances Baard	91.1	[80.5-96.2]	8.9	[3.8-19.5]	4.3	[1.3-13.7]	4.6	[1.1-17.1]	65
John Taolo Gaetsewe	90.8	[82.7-95.3]	9.2	[4.7-17.3]	3.6	[1.4-9.3]	5.5	[2.5-12.0]	148
Total	79.2	[59.2-90.9]	20.8	[9.1-40.8]	5.6	[3.5-8.7]	15.2	[4.6-39.8]	659

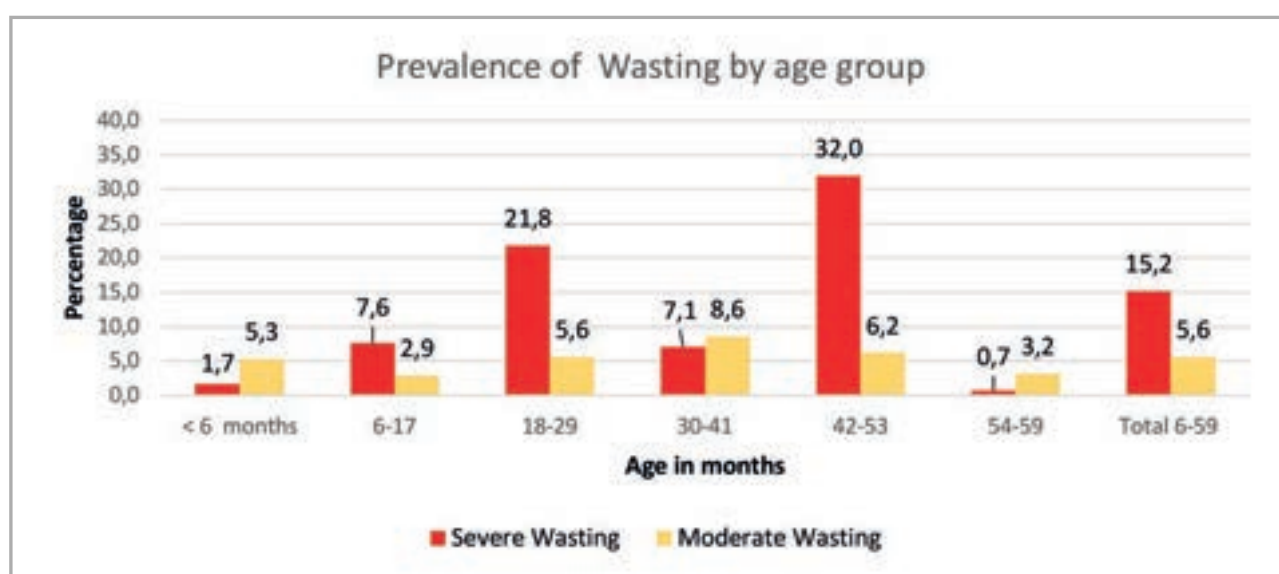


Figure 67: The prevalence of Wasting in children under 5 years by age group in Northern Cape

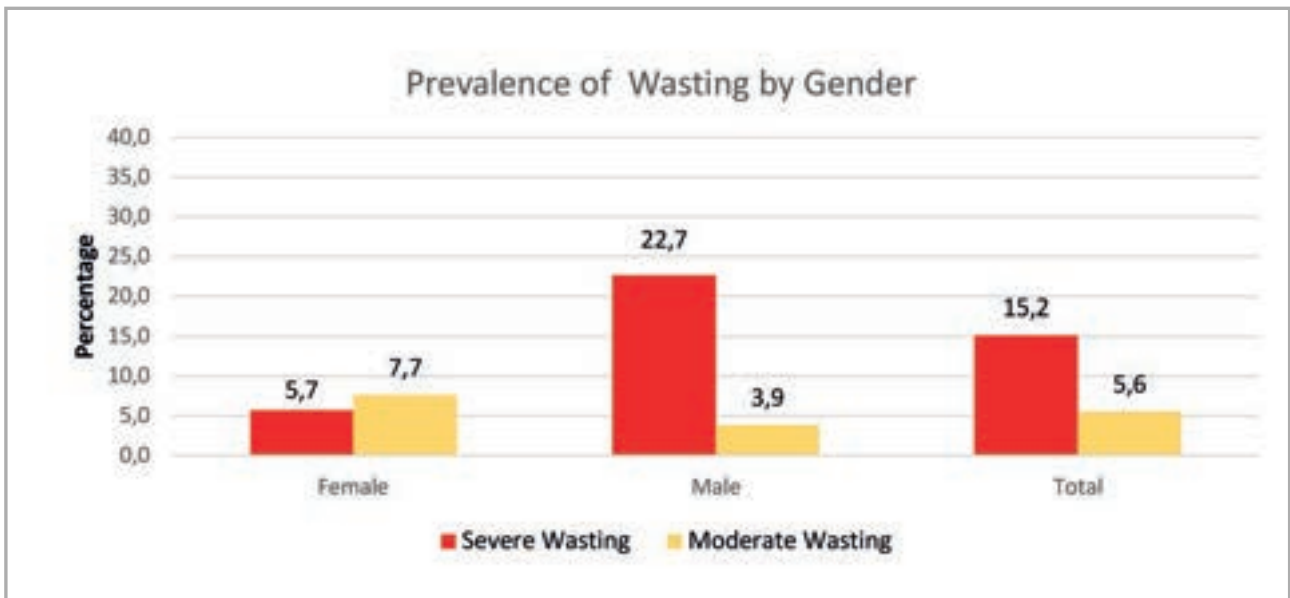


Figure 68: The prevalence of Wasting in children under 5 years by gender in Northern Cape

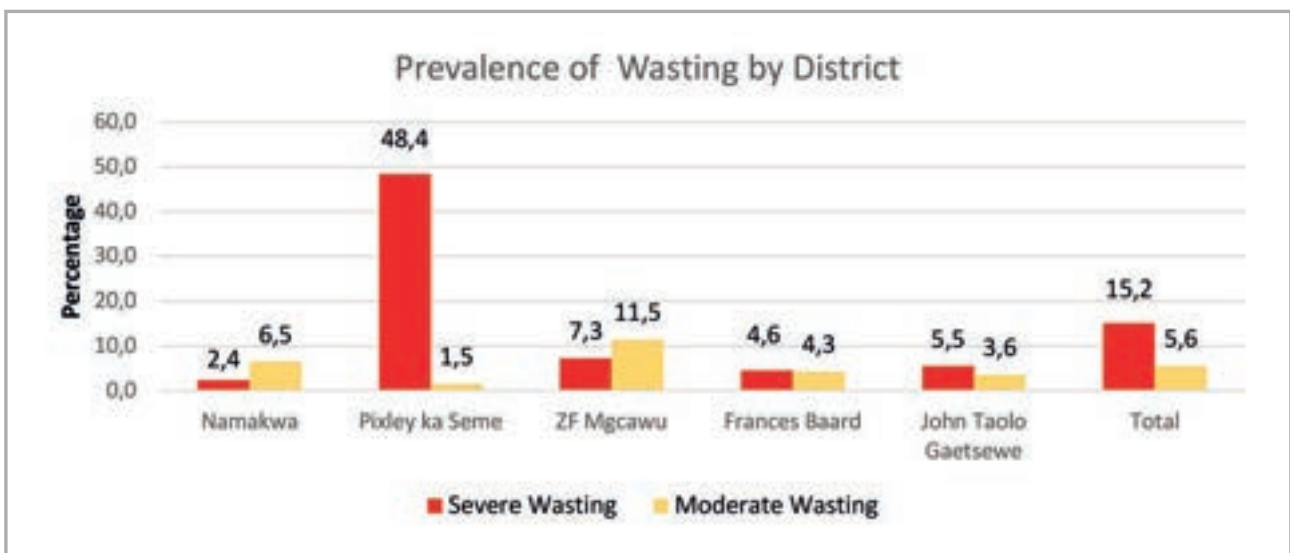


Figure 69: The prevalence of Wasting in children under 5 years by district in Northern Cape

8.1.2.3 Underweight

The overall prevalence of underweight for children under the age of 5 years (n=705) was 25.8%, of which 15.6% was severe and 10.2% was moderate underweight (Table 56 and Figure 70). The prevalence of overall and severe underweight was highest in children aged 42-53 months at 40.8% and 31.8%, respectively. Moderate underweight was highest in the 30-41 months age group (15.5%). While there were no significant differences in moderate and severe underweight across age groups, there was a significant difference in overall underweight. Children aged 30-41 months (23.8%) and 42-53 months (40.8%) had a significantly higher prevalence of overweight than children aged younger than 6 months (5.1%).

Comparisons between gender showed that males had a higher prevalence of being underweight (32.9%) compared to females (17.0%) (Table 56 and Figure 70). While these differences were not significant, it does appear that males had a higher prevalence of severe underweight (22.7%) as compared to females (6.9%), while both males and females had the same prevalence of moderate underweight (10.2%).

Pixley ka Seme District reported the highest overall prevalence of underweight (58.9%), while Frances Baard District reported the lowest overall prevalence (8.3%) (Table 56 and Figure 71). Both Pixley ka Seme (58.9%) and ZF Mgcawu (26.8%) districts had a significantly higher prevalence of overall wasting than Frances Baard (8.3%). Pixley ka Seme also had a significantly higher prevalence than Namakwa (11.6%). While there were no significant differences across districts for moderate wasting, Pixley ka Seme showed a significantly higher prevalence of severe wasting (47.6%), compared to both Namakwa (3.6%) and John Taolo Gaetsewe (2.7%).

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

	Not underweight WAZ \geq -2		All Underweight WAZ $<$ -2		Moderate underweight WAZ $<$ -2 and \geq -3		Severe underweight WAZ $<$ -3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	94.9	[86.6-98.2]	5.1	[1.8-13.4]	2.7	[0.6-11.1]	2.4	[0.5-10.1]	59
6-17	79.1	[67.9-87.1]	20.9	[12.9-32.1]	14.4	[7.2-26.8]	6.5	[2.8-14.2]	173
18-29	72.5	[41.1-90.9]	27.5	[9.1-58.9]	4.9	[2.2-10.4]	22.6	[5.6-58.9]	146
30-41	76.2	[62.9-85.8]	23.8	[14.2-37.1]	15.5	[7.9-28.3]	8.3	[3.1-20.2]	146
42-53	59.2	[29.4-83.5]	40.8	[16.5-70.6]	9.0	[4.2-18.1]	31.8	[8.8-69.2]	135
54-59	79.6	[64.2-89.4]	20.4	[10.6-35.8]	13.1	[5.5-28.1]	7.4	[2.7-18.8]	46
Gender									
Female	83.0	[77.0-87.7]	17.0	[12.3-23.0]	10.2	[6.5-15.5]	6.9	[4.0-11.5]	351
Male	67.1	[41.7-85.3]	32.9	[14.7-58.3]	10.2	[5.9-17.1]	22.7	[6.2-56.4]	354
District									
Namakwa	88.4	[81.2-93.1]	11.6	[6.9-18.8]	8.0	[4.3-14.4]	3.6	[1.2-9.9]	160
Pixley ka Seme	41.1	[13.6-75.6]	58.9	[24.4-86.4]	11.3	[3.1-33.4]	47.6	[12.8-84.9]	128
ZF Mgcawu	73.2	[63.3-81.3]	26.8	[18.7-36.7]	13.8	[7.8-23.3]	13.0	[8.1-20.2]	180
Frances Baard	91.7	[82.1-96.3]	8.3	[3.7-17.9]	3.0	[1.0-8.7]	5.4	[1.7-15.6]	74
John Taolo Gaetsewe	85.7	[75.2-92.2]	14.3	[7.8-24.8]	11.6	[5.4-23.1]	2.7	[1.1-6.4]	163
Total	74.2	[57.6-85.9]	25.8	[14.1-42.4]	10.2	[6.6-15.3]	15.6	[5.3-38.0]	705

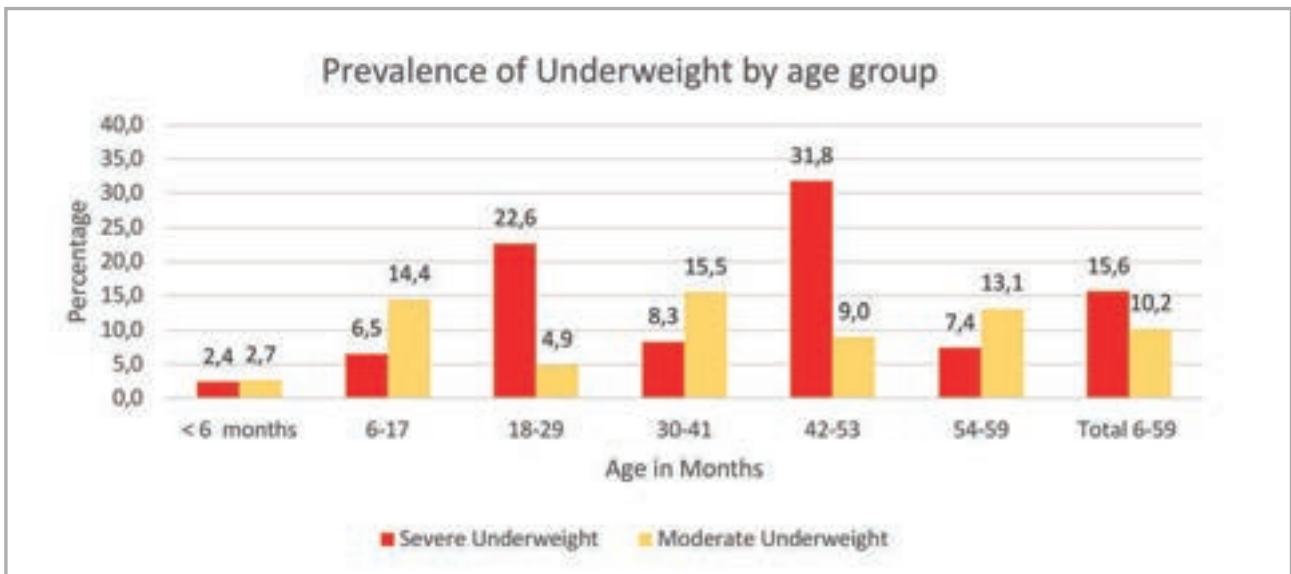


Figure 70: The prevalence of Underweight in children under five years by age group in Northern Cape

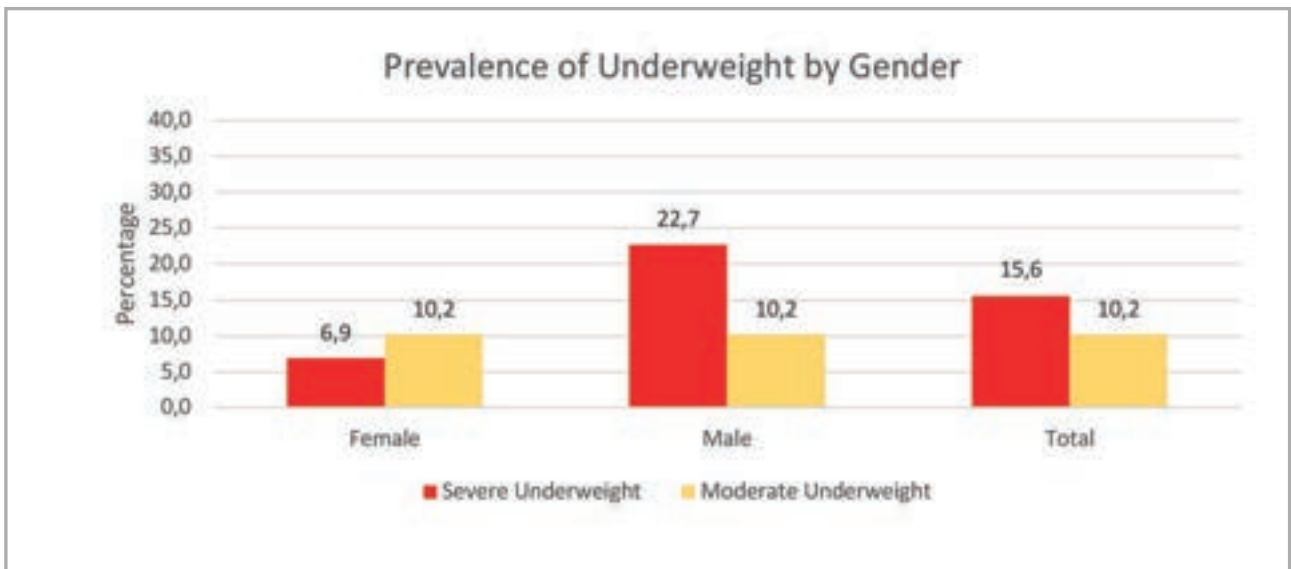


Figure 71: The prevalence of Underweight in children under five years by gender in Northern Cape

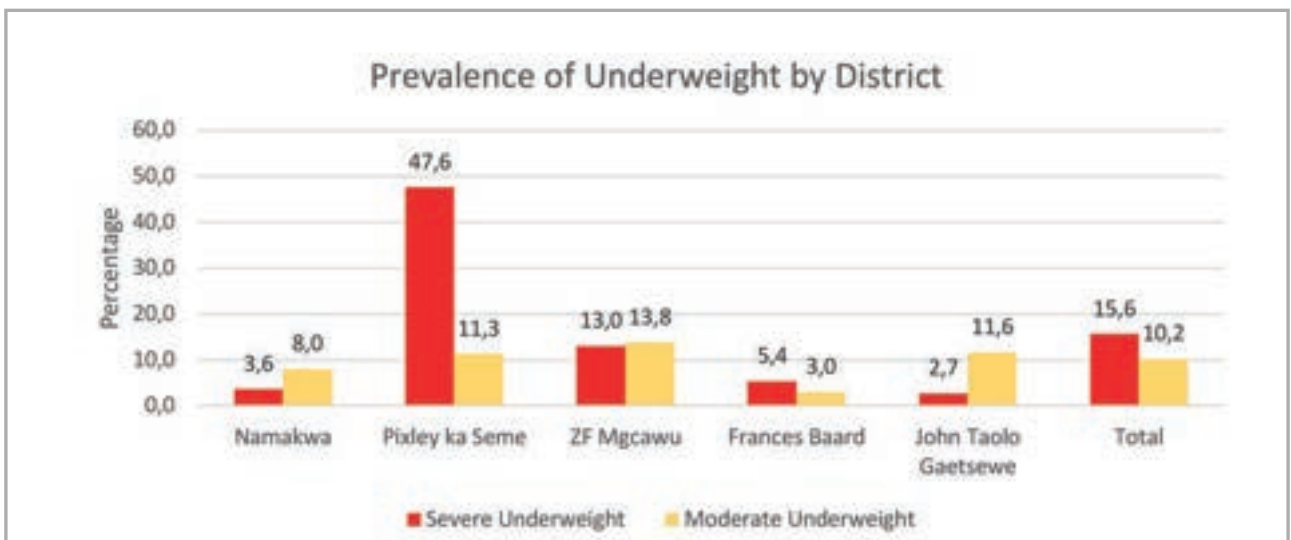


Figure 72: The prevalence of Underweight in children under five years by district in Northern Cape

8.1.2.4 Overweight

The overall prevalence of overweight for children under the age of 5 years (n=659) was 9.0%, of which 4.9% was severe and 4.1% was moderate overweight (Table 57 and Figure 72). The prevalence of all categories of overweight (all, moderate and severe) was highest in children in the youngest two age groups; <6 months (33.4%, 15.5%, 17.9%, respectively) and 6-17 months (18.3%, 8.7%, 9.6%, respectively) compared to the 42-53 months age group (1.7%, 1.0%, 0.6%). There were significant differences in the prevalence of overweight between younger and older age groups.

Females had a higher prevalence of overweight (11.8%) compared to males (6.8%) (Table 54 and Figure 72). While these differences were not significant, it does appear that females had a higher prevalence of both severe overweight (6.9% vs 3.3%), and moderate overweight (4.9% vs 3.5%), compared to males.

John Taolo Gaetsewe District reported the highest overall prevalence of overweight (16.1%), while Pixley ka Seme District reported the lowest overall prevalence (5.0%). While there were no significant differences in overall overweight reported at a district level, there were significant differences in moderate overweight. Namakwa (8.2%) and John Taolo Gaetsewe (8.5%) districts had a significantly higher prevalence of moderate overweight than Pixley ka Seme District (0.6%) (Table 54 and Figure 73 and Map 3).

Table 57: The prevalence of overweight in children under five years by age, sex, and district in Northern Cape

	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	
Age (months)									
<6	66.6	[47.3-81.6]	33.4	[18.4-52.7]	15.5	[6.2-33.8]	17.9	[7.3-37.9]	55
6-17	81.7	[73.7-87.7]	18.3	[12.3-26.3]	8.7	[4.3-16.8]	9.6	[5.2-17.1]	158
18-29	95.1	[89.7-97.8]	4.9	[2.2-10.3]	2.2	[0.7-6.4]	2.7	[1.1-6.7]	137
30-41	95.9	[91.6-98.0]	4.1	[2.0-8.4]	2.0	[0.7-5.6]	2.2	[0.9-5.0]	141
42-53	98.3	[94.8-99.5]	1.7	[0.5-5.2]	1.0	[0.2-4.8]	0.6	[0.1-2.6]	125
54-59	94.6	[69.5-99.3]	5.4	[0.7-30.5]	0.0		5.4	[0.7-30.5]	43
Gender									
Female	88.2	[82.8-92.1]	11.8	[7.9-17.2]	4.9	[2.8-8.5]	6.9	[4.0-11.7]	327
Male	93.2	[88.2-96.1]	6.8	[3.9-11.8]	3.5	[1.5-8.0]	3.3	[1.7-6.3]	332
District									
Namakwa	87.5	[77.9-93.3]	12.5	[6.7-22.1]	8.2	[3.5-18.3]	4.3	[1.9-9.3]	151
Pixley ka Seme	95.0	[85.7-98.4]	5.0	[1.6-14.3]	0.6	[0.1-3.1]	4.3	[1.3-13.4]	123
ZF Mgqawu	93.6	[89.6-96.1]	6.4	[3.9-10.4]	2.7	[1.3-5.6]	3.7	[1.9-7.0]	172
Frances Baard	94.1	[82.7-98.1]	5.9	[1.9-17.3]	1.9	[0.3-10.3]	4.0	[1.0-14.7]	65
John Taolo Gaetsewe	83.9	[76.3-89.4]	16.1	[10.6-23.7]	8.5	[4.7-14.8]	7.6	[3.3-16.2]	148
Total	91.0	[87.4-93.6]	9.0	[6.4-12.6]	4.1	[2.5-6.7]	4.9	[3.1-7.6]	659

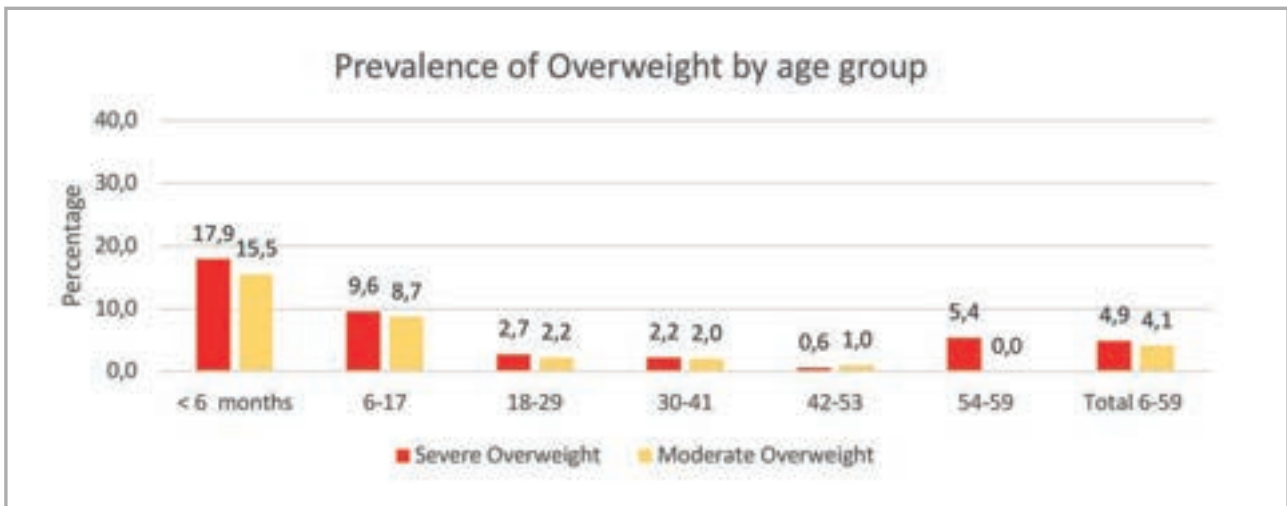


Figure 73: The prevalence of Overweight in children under 5 years by age group in Northern Cape

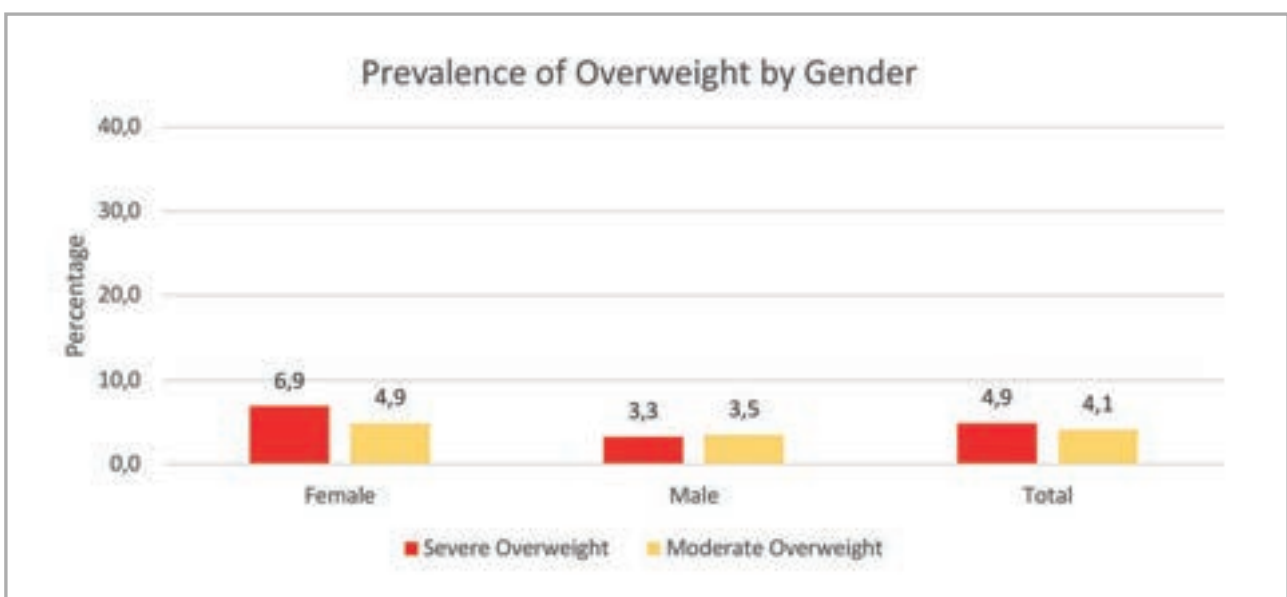


Figure 74: The prevalence of Overweight in children under five years by gender in Northern Cape

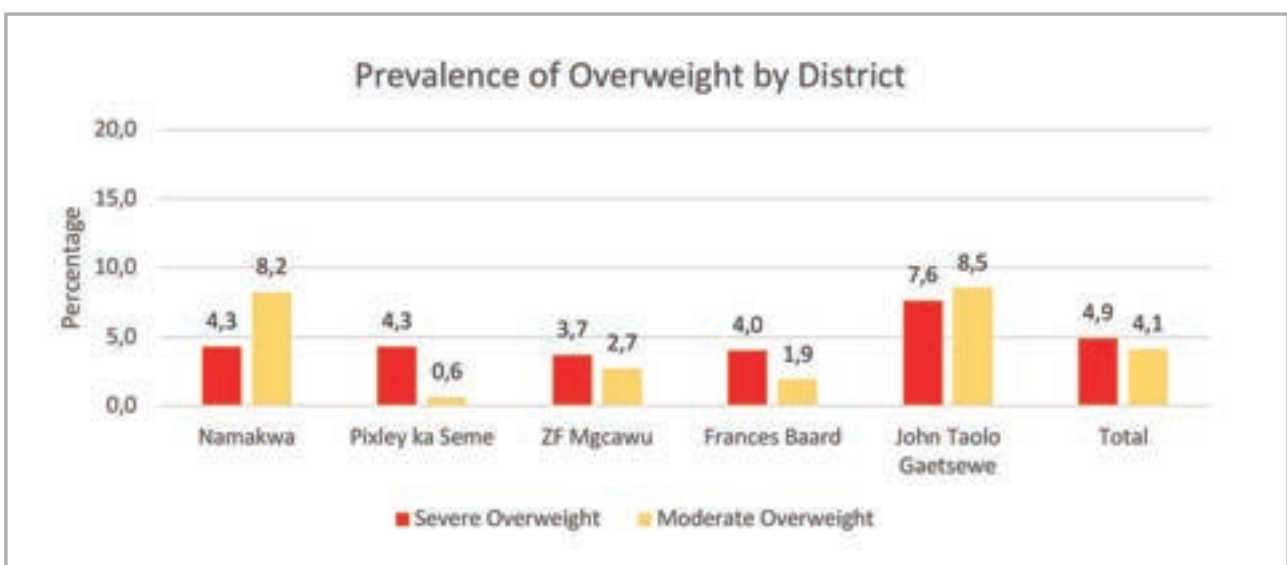


Figure 75: The prevalence of Overweight in children under five years by district in Northern Cape

8.2 Anthropometry (18 years and older)

8.2.1 Body Mass Index (BMI)

The mean BMI for adults aged 18 years and older (n=3139) in Northern Cape Province was 26.2 kg/m². This was significantly different between males (22.4 kg/m²; 95% CI 21.3 – 23.5) and females (28.2 kg/m²; 95% CI 27.2 – 29.2). 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 (22.5 kg/m²) than those aged 25 years and older (range 25.5-29.5 kg/m²). At district level, the only significant difference occurred between John Taolo Gaetsewe and Pixley ka Seme districts, where the latter had a lower mean BMI than the former.

Overall, 46.5% were classified as either overweight (17.7%) or obese (28.8%). Around 35% (34.9%) were classified normal weight and 18.6% were classified as underweight (Figure 75).

When disaggregating by gender (Females n=2 054, Males n=1 078), the proportion of both overweight (19.4% vs 14.4%) and obesity (38.2% vs 10.7%) is higher in females than in males, respectively (Figure 76). Nearly four times more females were obese compared to males. Conversely, the prevalence of underweight in females (13.5%) was about half of that in males (28.6%). Results for all weight categories, except overweight, were significantly different between genders. Males had a significantly higher prevalence of both normal weight (46.4%) and underweight (28.6%) compared to females (28.9% and 13.5%, respectively), while females had a significantly higher prevalence of obesity (38.2%) compared to males (10.7%).

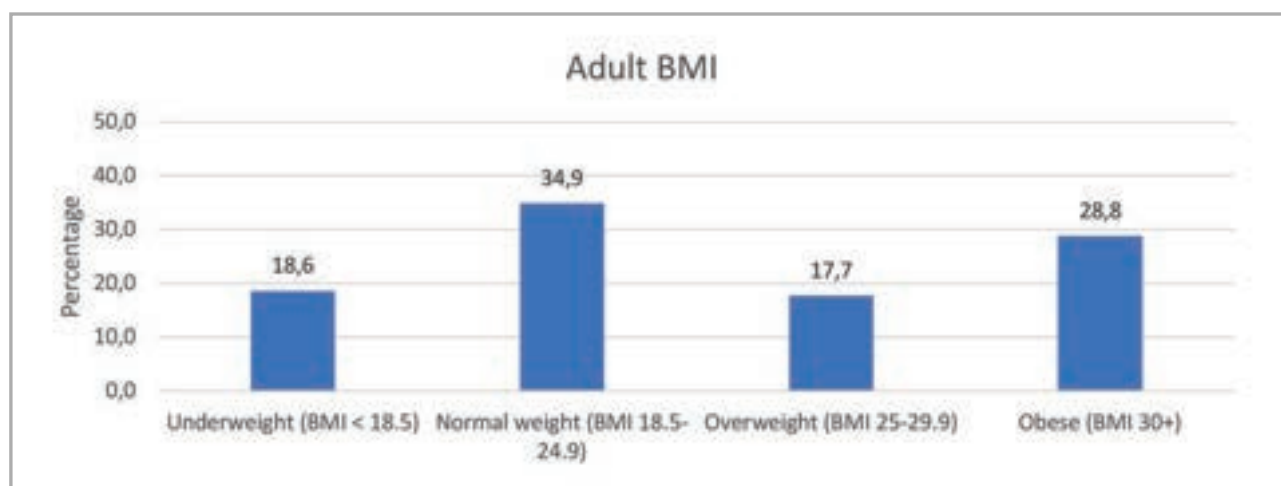


Figure 76: Distribution of BMI in adults aged 18 years and older across all districts in Northern Cape

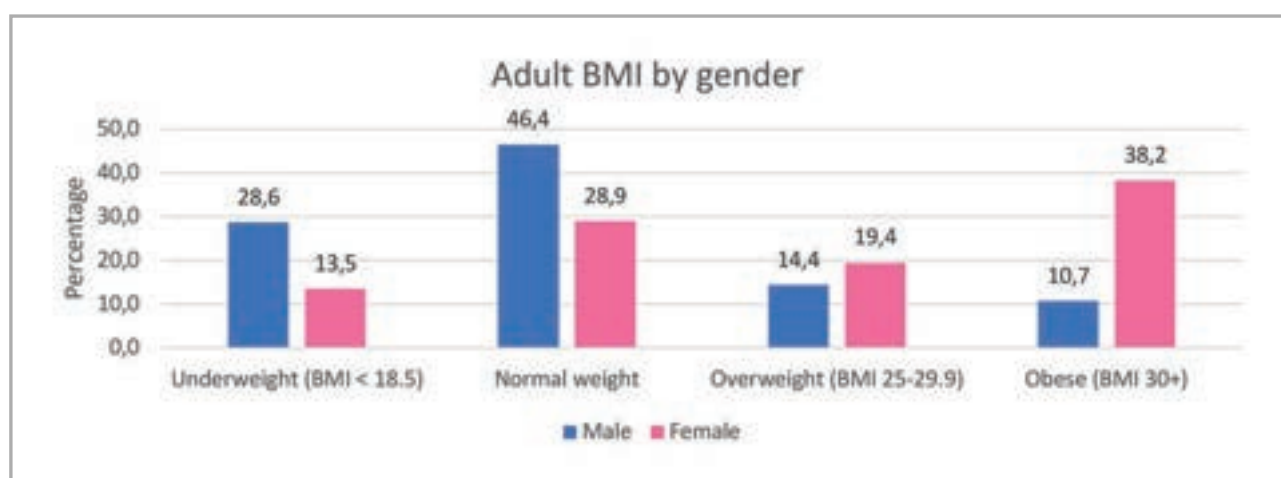


Figure 77: Distribution of BMI in adults aged 18 years and older by gender in Northern Cape

When disaggregating the overall adult population by age, those aged 65 years and older have the highest prevalence of overweight (31.6%) while the 55-64 age group had the highest prevalence of obesity (46.5%) (Figure 77). There was a significant difference in the prevalence of overweight between those aged 18-24 years (9.9%) and those aged 65 years and older (31.6%). There were also significant differences in the prevalence of obesity between the 18-24 years age group (13.7%) and all other age groups 25 years and older (range: 25.6%-46.5%). Furthermore, there were additional significant differences in obesity, where those aged 55-64 years had a significantly higher prevalence of obesity (46.5%) than those aged 65 years and older (30.6%), as well as those aged younger than 35 years (13.7% to 25.6%). The prevalence of underweight ranged from 6.4% to 33.3% across all age groups, with significant differences between those aged 18-24 years (33.3%) and all those aged 35 years and older (range: 6.4% to 14.6%).

Figure 78 compares BMI differences by age group between males and females. These figures clearly illustrate that underweight is lower in females (3.0-33.0%) than males (13.0%-35.0%) across all age categories. Conversely, for the most part, both overweight (14.0%-35.0% vs 2.2%-25.3%) and obesity (19.0%-54.0% vs 3.7%-26.5%) is higher in females than males across all age categories, respectively. The only exception is in the 55-64 year age group, where males have a higher prevalence of overweight (25.3%) compared to females at 19.0%.

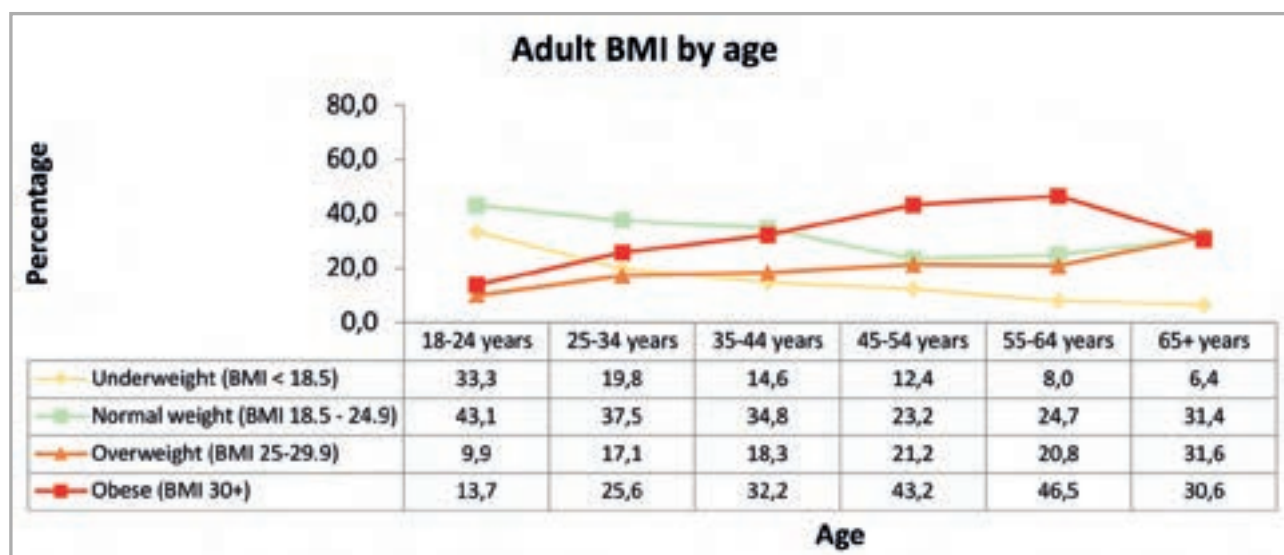


Figure 78: Distribution of BMI in adults aged 18 years and older by age categories in Northern Cape

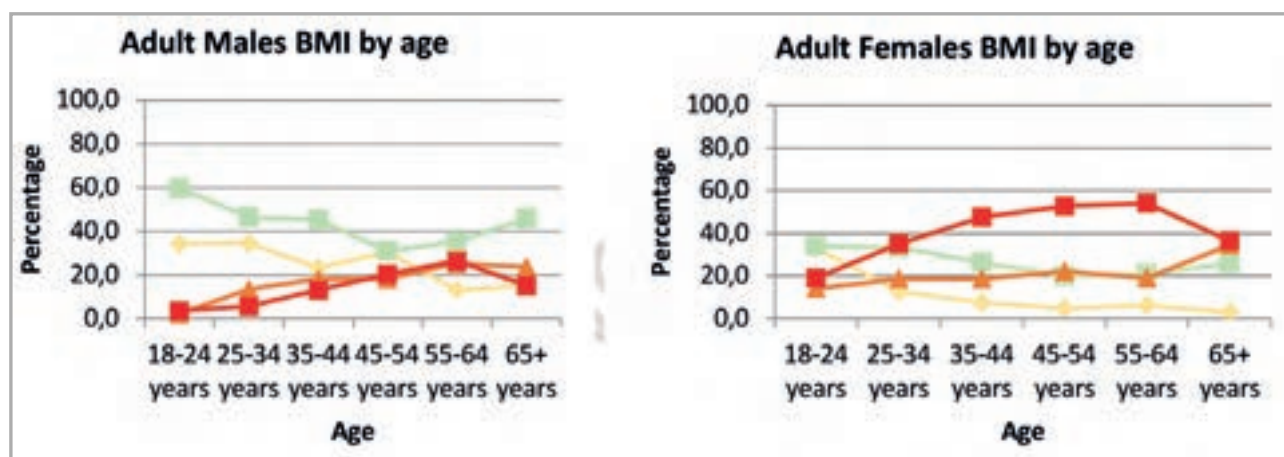


Figure 79: Comparison of the distribution of BMI in adults aged 18 years and older by age and gender in Northern Cape

Figure 79 shows the disaggregation of BMI at district level. There were significant differences across all BMI categories at a district level. John Taolo Gaetsewe District had a significantly lower prevalence of underweight (9.1%) compared to Namakwa, ZF Mgcawu, and Frances Baard districts (18.2%, 25.4%, and 21.6%, respectively). Pixley ka Seme District had the highest prevalence of normal weight (47.9%), which was significantly higher than both ZF Mgcawu (31.0%) and John Taolo Gaetsewe districts (30.1%). John Taolo Gaetsewe District had a significantly higher prevalence of overweight (24.8%), compared to Pixley ka Seme, ZF Mgcawu, and Frances Baard districts (15.1%, 15.2%, and 14.5%, respectively). John Taolo Gaetsewe District also had a significantly higher prevalence of obesity (36.0%) compared to Pixley ka Seme District (20.8%).

Figure 79 compares district level results by gender. In both gender groups, these figures illustrate that in all districts, females have higher rates of overweight and obesity than males have. Generally, there were no significant differences within BMI categories at a district level for both males and females. The only significant difference was found for underweight in males, where those in Frances Baard District had a significantly higher prevalence of underweight (37.0%) compared to males in John Taolo Gaetsewe District (17.0%).

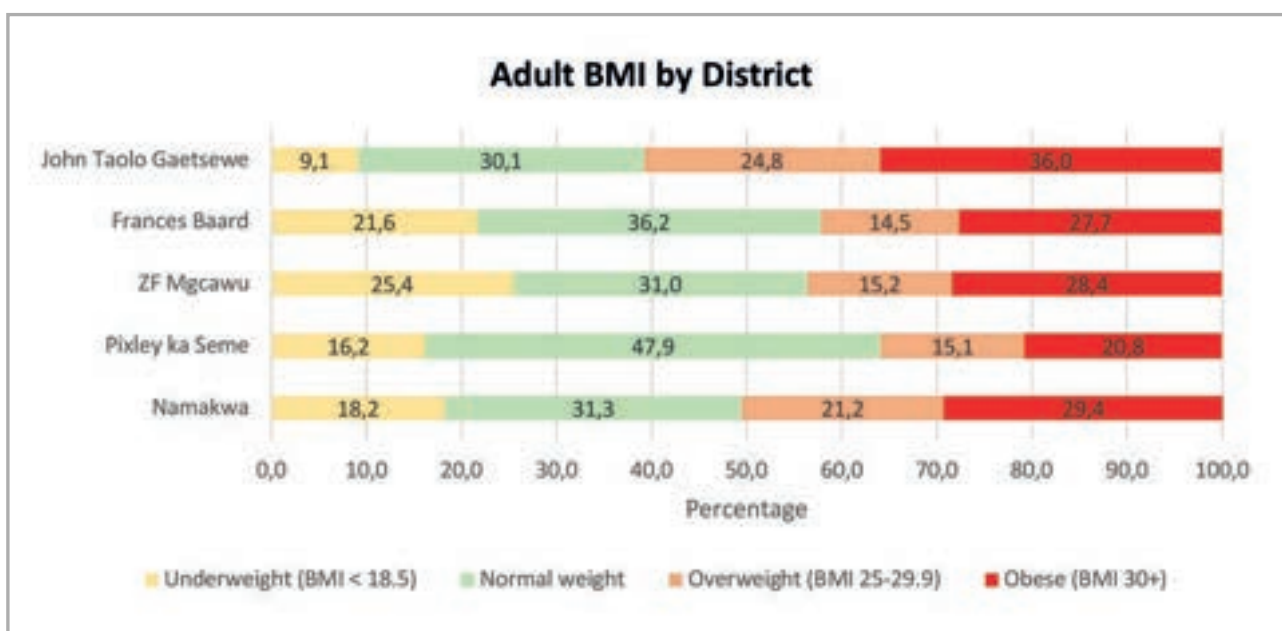


Figure 80: Comparison of the distribution of BMI in adults aged 18 years and older by districts in Northern Cape

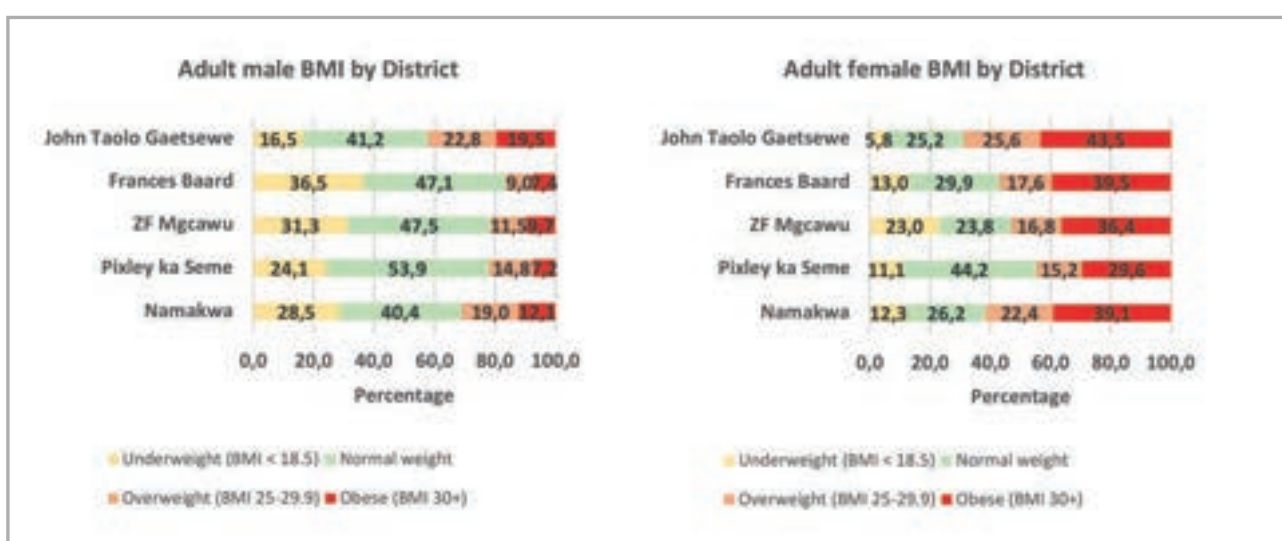


Figure 81: Comparison of the distribution of BMI in adults aged 18 years and older by districts and gender in Northern Cape

8.2.2 Waist hip ratio

A waist hip ratio (WHR) ≥ 1 in males and ≥ 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=1111) and females (n=2098) was 0.89 (range: 0.87-0.96) and 0.86 (range: 0.80-0.91), respectively. However, Table 58 clearly shows that, overall, a far greater proportion of females (49.0%) had a high WHR compared to only 11.7% of males.

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

	Males					Females				
	Waist-hip ratio		Waist hip ratio ≥ 1			Waist-hip ratio		Waist hip ratio ≥ 0.85		
	Mean	95% CI	%	95% CI	n	Mean	95% CI	%	95% CI	n
Age group										
18-24	0.87	[0.77-0.97]	6.1	[1.6-20.7]	137	0.80	[0.79-0.82]	21.6	[13.6-32.6]	231
25-34	0.87	[0.85-0.89]	5.4	[2.6-10.7]	235	0.86	[0.84-0.88]	47.4	[39.3-55.6]	435
35-44	0.92	[0.87-0.96]	17.6	[7.5-35.9]	234	0.86	[0.84-0.88]	50.1	[39.1-61.0]	401
45-54	0.91	[0.90-0.93]	13.5	[8.8-20.2]	180	0.88	[0.86-0.91]	67.0	[60.0-73.3]	351
55-64	0.96	[0.93-0.98]	26.4	[14.9-42.3]	171	0.90	[0.88-0.91]	67.7	[61.7-73.3]	364
≥ 65	0.93	[0.91-0.95]	21.4	[12.3-34.6]	154	0.91	[0.89-0.92]	74.1	[67.3-79.9]	316
District										
Namakwa	0.90	[0.88-0.93]	14.2	[9.3-21.1]	282	0.89	[0.87-0.90]	60.5	[55.4-65.4]	457
Pixley ka Seme	0.88	[0.86-0.91]	4.7	[2.0-10.2]	156	0.84	[0.82-0.86]	35.5	[23.9-49.1]	365
ZF Mgcawu	0.91	[0.81-1.00]	11.1	[5.4-21.6]	229	0.84	[0.82-0.86]	44.6	[33.5-56.4]	450
Frances Baard	0.90	[0.87-0.92]	15.3	[9.9-23.0]	234	0.86	[0.84-0.89]	53.4	[44.8-61.8]	386
John Taolo Gaetsewe	0.88	[0.87-0.89]	10.5	[6.5-16.5]	210	0.87	[0.85-0.89]	50.7	[44.8-56.5]	440
Total	0.89	[0.87-0.92]	11.7	[8.6-15.8]	1 111	0.86	[0.85-0.87]	49.0	[44.2-53.8]	2 098

Table 58 and Figure 81 illustrate that WHR tends to increase with age in males and females, peaking in the age group 65 years and older in females and 55-64 years in males. Males aged 55 years and older had a higher prevalence (21.4%-26.4%) of a waist hip ratio greater than 1 compared to males aged 25-34 years (5.4%). Females aged 18-24 years had a significantly lower prevalence of an increased waist hip ratio (21.6%) compared to females in all other age groups (range: 47.4%-74.1%). Those aged 55 years and older also had a significantly higher prevalence (67.7%-74.1%) than those aged 25-44 years (47.4%-50.1%).

There were no significant differences in the mean WHR and the proportion of those who had a high WHR among males across the various districts in Northern Cape Province. There was, however, a significant difference in mean WHR among females, where those in Namakwa District had a significantly higher mean WHR (0.89) compared to both Pixley ka Seme and ZF Mgcawu districts (0.84 each). Similarly, Namakwa District had a higher prevalence of the proportion of females who had a high WHR (60.5%), compared to Pixley ka Seme District (35.5%) (Table 58 and Figure 82).

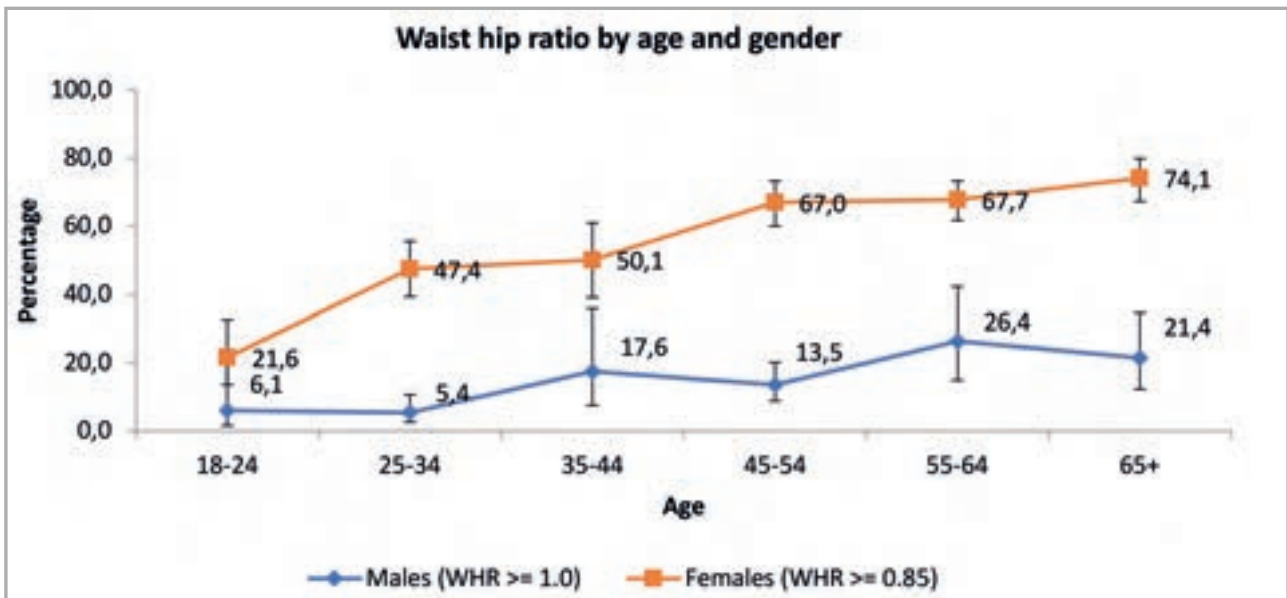


Figure 82: Comparison of the distribution of WHR in adults aged 18 years and older by age and gender in Northern Cape

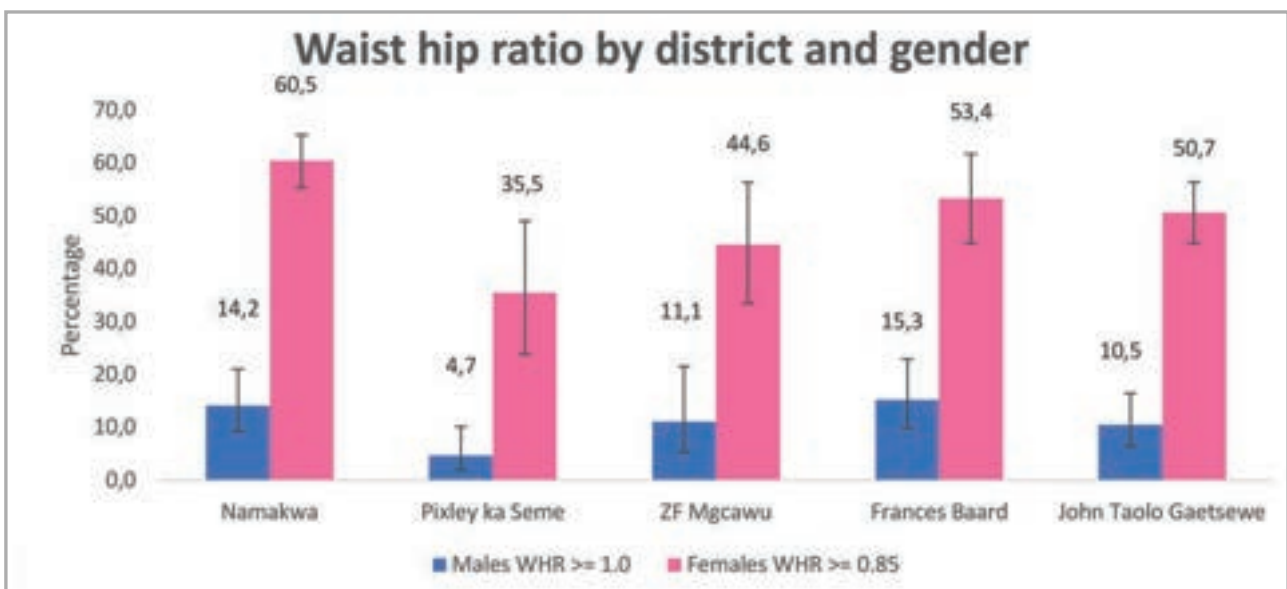


Figure 83: Comparison of the distribution of WHR in adults aged 18 years and older by districts and gender in Northern Cape

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. A dietary diversity score (DDS) was 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. A DDS below four is low and is to be associated with dietary inadequacies (Steyn et al., 2006).

The mean dietary diversity score (DDS) for children aged 0-5 years residing in the Northern Cape Province (n=666) was 3.52, which is indicative of an inadequate dietary diversity (Table 59). There were no significant differences in mean DDS and across DDS categories between those younger than 2 years of age and those older than 2 years of age. Similarly, there were no significant differences in mean DDS and across DDS categories between males and females. District comparisons showed that Frances Baard had the highest mean DDS (4.19) compared to John Taolo Gaetsewe, which had the lowest (3.11). John Taolo Gaetsewe District had a significantly lower mean DDS than both Namakwa (4.05) and Frances Baard (4.19). Table 56 shows that while individuals in two of the five districts have an adequate dietary diversity (DDS >4), those in Pixley ka Seme, ZF Mgcawu, and John Taolo Gaetsewe districts reported a low dietary diversity (DDS >4). There were, however, no significant differences in DDS categories between districts.

Table 59: Dietary diversity scores for children aged 0-5 years in the Northern Cape

Variable	Dietary Diversity Score		Dietary Diversity Score category				
			0-3		4-9		n
	Mean	95% CI	%	95% CI	%	95% CI	
Age (months)							
0-24 months	3.35	[3.00-3.70]	57.8	[48.9-66.2]	42.2	[33.8-51.1]	255
25-60 months	3.61	[3.09-4.12]	56.2	[41.9-69.5]	43.8	[30.5-58.1]	411
Gender							
Male	3.32	[2.81-3.82]	60.4	[44.4-74.4]	39.6	[25.6-55.6]	332
Female	3.77	[3.48-4.07]	52.0	[44.1-59.9]	48.0	[40.1-55.9]	332
District							
Namakwa	4.05	[3.49-4.61]	41.7	[30.2-54.2]	58.3	[45.8-69.8]	139
Pixley ka Seme	3.19	[2.02-4.36]	67.1	[31.2-90.1]	32.9	[9.9-68.8]	115
ZF Mgcawu	3.48	[3.05-3.91]	55.0	[42.2-67.1]	45.0	[32.9-57.8]	176
Frances Baard	4.19	[3.78-4.60]	46.8	[34.5-59.4]	53.2	[40.6-65.5]	71
John Taolo Gaetsewe	3.11	[2.84-3.37]	63.9	[53.4-73.2]	36.1	[26.8-46.6]	165
Total	3.52	[3.16-3.87]	56.7	[46.6-66.3]	43.3	[33.7-53.4]	666

Table 59 and Figure 83 illustrate the proportion of the children aged 0-5 years in the Northern Cape Province and in the various districts who have low and acceptable DDS. Overall, 43.3% of people in the Northern Cape Province reported an adequate DDS, while 56.7% have a low DDS. Namakwa District reported the lowest proportion of people with low DDS (41.7%), while Pixley ka Seme District reported the highest proportion of people with a low DDS (67.1%). However, there were no significant differences between districts.

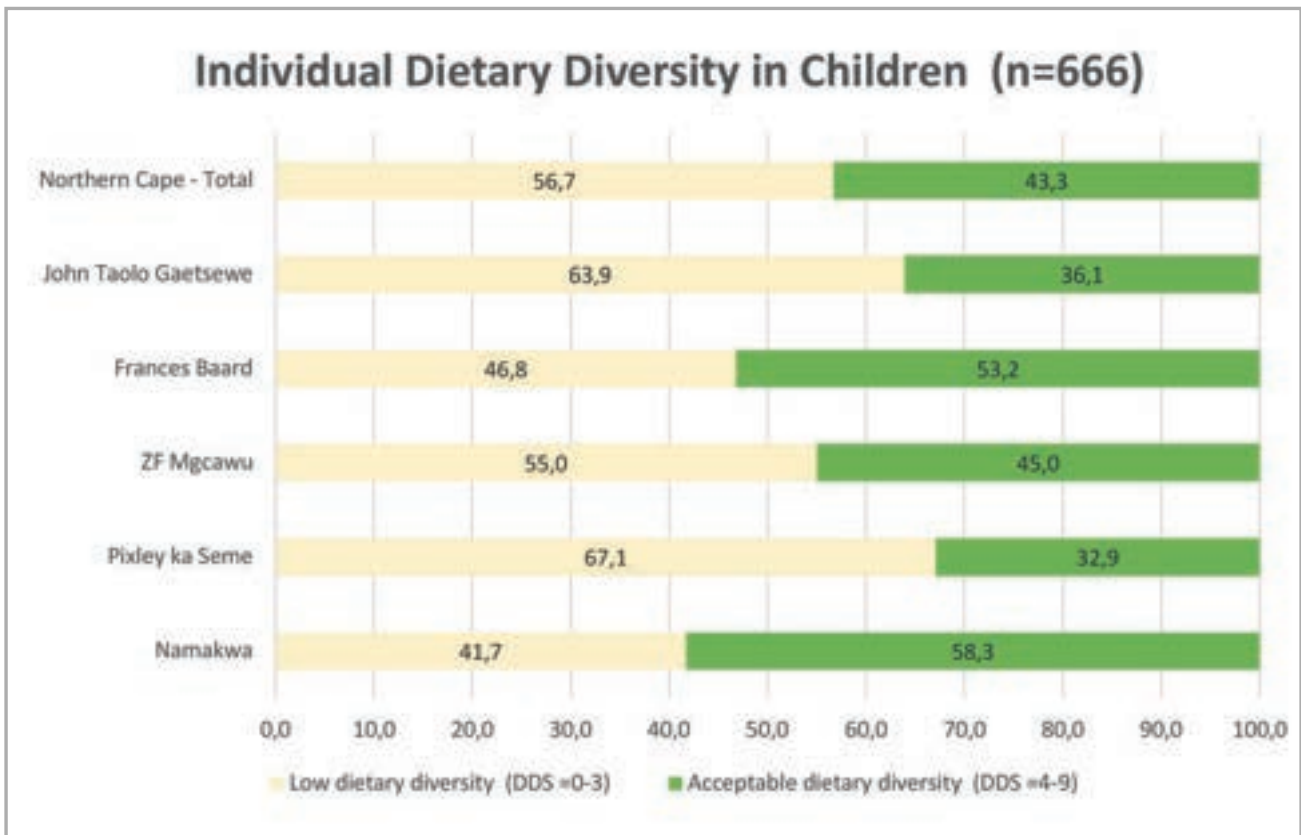


Figure 84: Comparison of the distribution of DDS in children aged 0-5 years in Northern Cape by district

The mean dietary diversity score (DDS) for adults residing in the Northern Cape Province (n=3382) was 4.30, which is indicative of adequate dietary diversity (Table 60). There were no significant differences in mean DDS when disaggregating by age groups, gender, or district level. It is important to note, though, that two districts - ZF Mgcawu and John Taolo Gaetsewe - both had mean DDS below 4, indicating low dietary diversity compared to an adequate dietary diversity in the other three districts.

It appears as if the proportion of people with a low DDS decreases with age, from 45.8% in those aged 18-24 years to 29.7% in those aged 65 years and older. However, these differences were not significant. That does, however, imply that the older generation has a more diverse diet than the younger generation. There were no significant differences in DDS categories between gender.

Table 60: Mean Dietary diversity scores for adults in the Northern Cape

Variable	Dietary Diversity Score	Dietary Diversity Score category					
				0-3		4-9	
	Mean	95% CI	%	95% CI	%	95% CI	n
Age group							
18-24	4.14	[3.79-4.49]	45.8	[34.4-57.6]	54.2	[42.4-65.6]	381
25-34	4.12	[3.57-4.66]	43.1	[32.9-54.0]	56.9	[46.0-67.1]	715
35-44	4.47	[4.10-4.85]	34.4	[29.5-39.6]	65.6	[60.4-70.5]	670
45-54	4.47	[4.16-4.78]	36.9	[30.7-43.5]	63.1	[56.5-69.3]	557
55-64	4.57	[4.12-5.02]	36.3	[28.0-45.4]	63.7	[54.6-72.0]	557
>=65	4.56	[4.30-4.82]	29.7	[23.9-36.3]	70.3	[63.7-76.1]	502
Gender							
Male	4.33	[3.99-4.67]	37.3	[32.2-42.7]	62.7	[57.3-67.8]	1 163
Female	4.28	[3.97-4.60]	41.1	[34.3-48.2]	58.9	[51.8-65.7]	2 212
District							
Namakwa	4.36	[4.07-4.64]	36.0	[31.3-41.0]	64.0	[59.0-68.7]	755
Pixley ka Seme	4.79	[4.14-5.45]	32.8	[22.0-45.7]	67.2	[54.3-78.0]	569
ZF Mgqawu	3.94	[3.70-4.19]	45.9	[35.5-56.7]	54.1	[43.3-64.5]	703
Frances Baard	4.58	[3.70-5.46]	35.7	[23.5-50.1]	64.3	[49.9-76.5]	691
John Taolo Gaetsewe	3.88	[3.45-4.31]	46.2	[36.0-56.7]	53.8	[43.3-64.0]	664
Total	4.30	[4.01-4.59]	39.8	[34.4-45.4]	60.2	[54.6-65.6]	3 382

Table 60 and Figure 84 illustrate the proportion of the adult population in the Northern Cape Province and in the various districts who have low and acceptable DDS. Overall, 60.2% of people in the Northern Cape Province reported an adequate DDS, while 39.8% have a low DDS. Pixley ka Seme District reported the lowest proportion of people with low DDS (32.8%), while John Taolo Gaetsewe District reported the highest proportion of people with a low DDS (46.2%); however, there were no significant differences across districts.

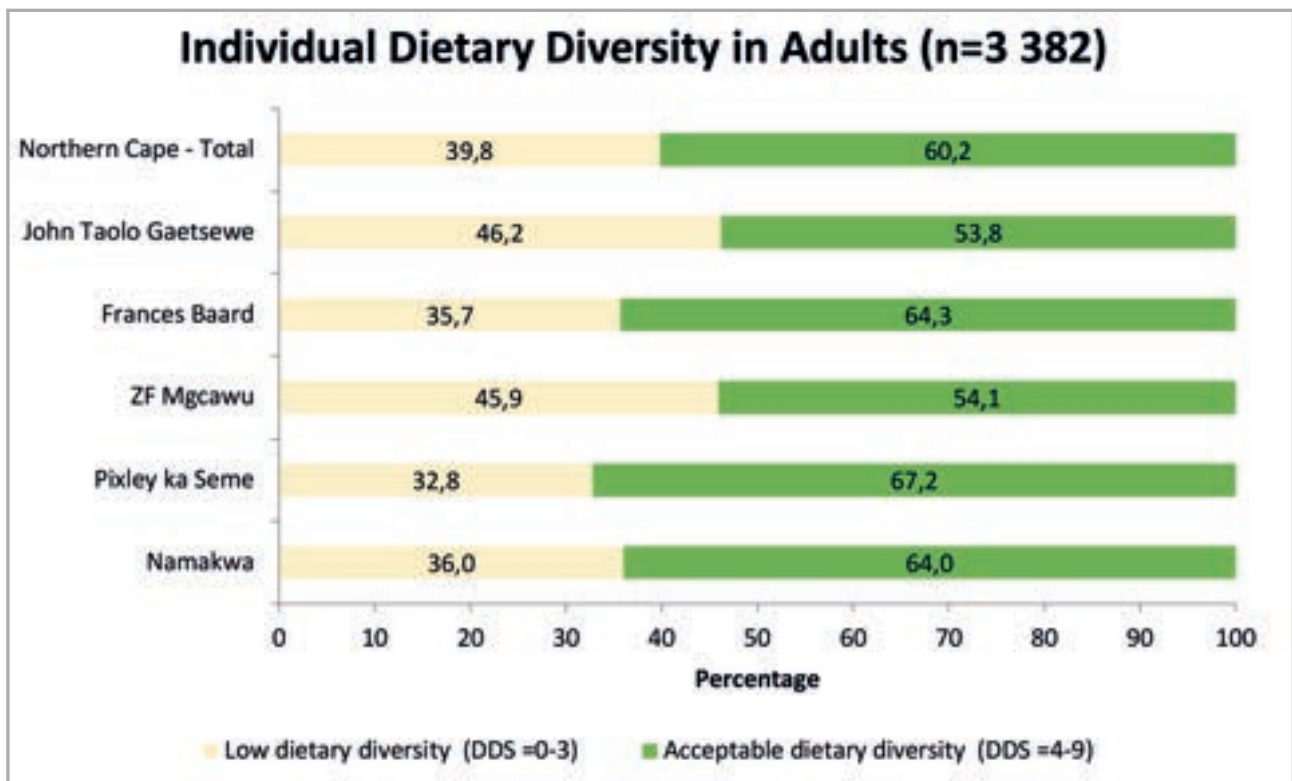


Figure 85: Comparison of the distribution of DDS in adults aged 18 years and older in Northern Cape by district

8.4 Relationship of Household Food Insecurity and Malnutrition

Table 61 presents the associations between nutrition indicators and food security status, based on the Household Food Insecurity Access Scale (HFIAS). In Northern Cape, there were significant relationships between food security and three of the nutrition indicators (stunting, underweight, and overweight) for children aged 0-5 years. The relationship between food security and wasting was, however, not significant. Table 61 shows that the prevalence of household food insecurity was significantly higher among households that had at least one child under 5 years who was stunted (82.0%) than among households that did not have a child under 5 years who was stunted (76.2%) ($p < 0.01$). Similarly, the prevalence of household food insecurity was also significantly higher among households that had at least one child under 5 years who was underweight (86.8%) than among households that did not have a child under 5 years who was underweight (75.3%) ($p < 0.05$). Conversely, the prevalence of household food insecurity was significantly lower among households that had at least one child under 5 years who was overweight (62.9%) than among households that did not have a child under 5 years who was overweight (80.9%) ($p < 0.001$).

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 (79.6%) than among households that did not have an underweight adult (64.8%) ($p < 0.001$). Conversely, the prevalence of household food insecurity was lower among households that had at least one adult who was overweight / obese (64.2%) than among households that did not have an overweight / obese adult (71.4%) ($p < 0.05$). The prevalence of food insecurity was significantly higher (76.9%) 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 (59.4%) ($p < 0.001$).

Table 61: Relationship between Household Food Insecurity and Malnutrition indicators in the Northern Cape

Variables	Categories	Food security status based on the HFIAS (%)		Chi-square tests
		Food secure	Food insecure	
0-5 years				
Stunting	Yes	18.0	82.0	*
	No	23.8	76.2	
Wasting	Yes	13.5	86.5	
	No	23.0	77.0	
Underweight	Yes	13.2	86.8	**
	No	24.7	75.3	
Overweight	Yes	37.1	62.9	***
	No	19.1	80.9	
Adults				
Underweight	Yes	20.4	79.6	***
	No	35.2	64.8	
Obesity / Overweight	Yes	35.8	64.2	**
	No	28.6	71.4	
Increase risk of NCDs (Waist / hip ratio)	Yes	32.5	67.5	
	No	32.3	67.7	
Individual Dietary Diversity	Low	23.1	76.9	***
	Acceptable	40.6	59.4	

* p<0.10, ** p<0.05, ***p < 0.01

Table 61 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).

8.5 Discussion

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.

Results of this study indicates that 85.6% 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 this study indicated that nearly 80% of children aged 0-2 years in the Northern Cape Province were introduced to breastfeeding immediately after birth, with a total of 92.6% being breastfed within an hour of birth. These results are far greater than the national results reported by both the SAHANES in 2012 (83.0%), and the SADHS in 2016 (67%).

Exclusive breastfeeding in Northern Cape Province was reported to be 20.1%. This should be interpreted with caution due to the small sample size. However, 20.1% is far higher than the national reports in the 2003 SADHS (8.3%) and SANHANES 2012 (7.5%), but 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 (year), however, showed a much lower average duration of breastfeeding (5.9 months). The average duration of breastfeeding for those who were not currently breastfed during this study was 6.9 months, which is 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 less than one-third (28.8%) of 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 a further 17.0% of children. Slightly more than a third of children (34.9%) were first introduced to other drinks at the age of 6 months/ older. Regarding the type of drink that was first introduced, more than half (52.2%) indicated infant formula, while 25.6% 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 slightly earlier than the anticipated 6 months - at 5.5 months. This is about a month later than the results of the SANHANES 2012 (4.5 months). The most common food introduced is homemade cereal/ porridge (43.4%) and commercial cereal/porridge (38.9%).

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 37.7% in Northern Cape Province. Four years later in 2016, the SADHS reported a lower stunting prevalence at the national level (27.0%) and a much lower prevalence at the provincial level (21%). The results of the current study appear to indicate that the stunting prevalence in Northern Cape Province is closer to what the SANHANES reported, with a current prevalence of 41.3% in children of the same age group. These results indicate that stunting has increased over the last 10 years, and as such, there are 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 Northern Cape Province. 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, where 50% of males are stunted compared to 30% of females. At a district level, the current study reported that stunting is significantly more prevalent in the Pixley Ka Seme District it is in the Namakwa and John Taolo Gaetsewe districts.

The national prevalence of wasting was reported to be 3.7% in 2012 (SANHANES), with a far higher provincial prevalence in the Northern Cape of 19.1%. 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 but slightly higher provincial prevalence of wasting in the Northern Cape Province of 20.8%, thereby indicating that the proportion of children experiencing acute undernutrition in 2021 has increased slightly over the past 10 years. It also appears that those aged 18-53 months, as well as males, experience a higher prevalence of wasting than their counterparts. At a district level, the current study reported that wasting, while not significant, is far more prevalent in the Pixley Ka Seme District, where nearly half (49.9%) of children are wasted, compared to the other districts (range 8.9% to 18.8%).

The prevalence of underweight in the Northern Cape Province in this study (25.8%) is slightly higher than the provincial prevalence of underweight reported by the SANHANES in 2012 (22.6%). 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 a lower prevalence (9.0%) of children who were overweight and that females had a higher prevalence of overweight than males; 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 Northern Cape Province remain plagued by both chronic and acute undernutrition, and that in fact, the problem seems to have increased. At a district level, it appears as if the Pixley ka Seme district has the highest prevalence of both acute and chronic undernutrition, more double that of the other districts.

Anthropometry (18 years and older)

At a national level, the mean BMI in females were reported to be 28.9 kg/m² in 2012 and 29.2 kg/m² 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/m². A slightly lower provincial mean was reported for BMI in the Northern Cape Province for both females (28.7 kg/m²) and males (22.5 kg/m²) in 2012 and similar results were reported in 2016 (females 27.9 kg/m² and males 23.3 kg/m²). The current study reported similar results for both females (28.2 kg/m²) and males (22.4 kg/m²) in the Northern Cape Province.

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, 67.5% in females and 31.3% in males. The provincial prevalence of overweight and obesity in the Northern Cape Province was slightly lower than the national estimates for females (62.0%) and lower for males (25.0%) in 2012. In 2016, the SADHS reported a similar provincial prevalence in the Northern Cape Province in females (61.8%) and an increased prevalence in males (31.5%). Ten years later, the results of this study report a lower provincial prevalence of overweight and obesity in both females (57.6%) and males (25.1%) compared to the SADHS, though the prevalence of males is almost exactly the same as the SANHANES.

The current study also reported an increase in the proportion of both females (49.0%) and males (11.7%) regarding a waist hip ratio larger than 0.85 and 1.0 respectively, compared to previous studies. For females, SANHANES reported 47.1% and 46.7% at a national and provincial level, respectively. For males, SANHANES reported 6.8% and 2.7% at a national and provincial level, respectively.

Dietary Diversity

A diet that is sufficiently diverse reflects nutrient adequacy. This statement is since no single food contains all 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 4.3, with 39.8% 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%). However, the current study found that children have a lower mean DDS of 3.52, with a larger proportion (56.7%) of children having a score of less than 4.

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 preceding year to the study. As expected, a wide range of illnesses/diseases were reported (Table 62). The most common illnesses / diseases reported by household heads were coughs/colds/chest infections (17.5%), hypertension (11.9%), headache (10.8%), other diseases (5.7%), Diabetes (5.1%) and abdominal pains (4.5%) in that order. Cough/Cold/chest infections were also reported by 16.9% of household members. These are commonly reported ailments, some of which are simply symptoms rather than confirmed diseases. Nonetheless, the level of access to food and especially nutritious food, predisposes individuals to a multitude of illnesses/ disease and also influences the ability to prevent/ manage/ recover from these illnesses/diseases. Diseases such as diabetes and hypertension, for example, require specific diets so that they may be managed successfully. It is there important that households have access to diverse diets, including medically prescribed diets.

Table 62: Disease experienced by household heads and members a year prior to the survey in Northern Cape

Disease	Household heads		Household members	
	n	%	n	%
Cough/cold/chest infection	658	17.5	2,120	16.9
Hypertension	648	11.9	983	7.5
Headache	400	10.8	1,012	8.0
Diabetes	302	5.1	444	3.5
Other disease	255	5.7	491	4.2
Abdominal pains	187	4.5	368	3.2
Fever/malaria	169	5.1	490	4.2
Eye infection	152	3.3	271	2.4
Toothache or mouth infection	150	4.1	375	3.4
Paralysis	130	2.3	226	1.8
Asthma	125	3.2	260	2.1
HIV/AIDS	108	3.4	236	2.1
Diarrhoea	99	3.5	292	2.6
Skin rash	80	2.3	272	2.0
TB	63	1.9	122	1.0
Vomiting	53	2.5	149	1.4
Bronchitis/pneumonia/chest pain	40	0.9	74	0.7

The study found a low prevalence of chronic illness (a disease that lasts for more than 3 months) at both the household (9.3%) and household member levels (6.6%) (Figure 85). 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 nutritional 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.

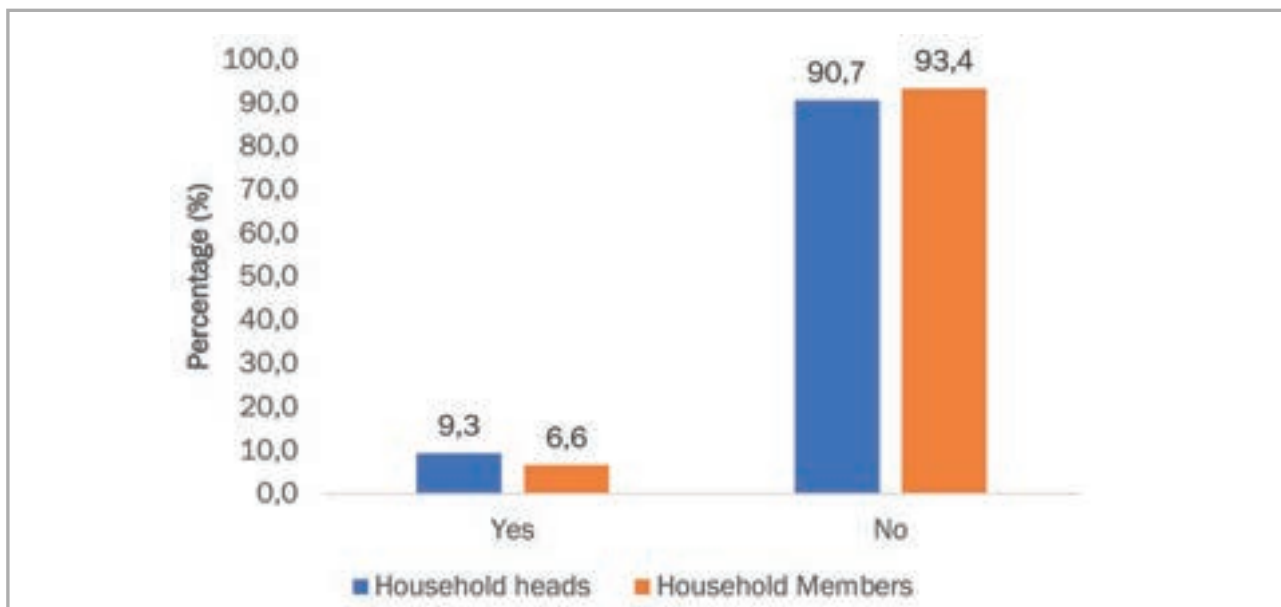


Figure 86: Household heads and members reported to having been continuously ill, for at least 3 months in the last 12 months prior to the survey

There was generally no significant difference in the reported or perceived health status of household heads by sex and district, but noticeable differences are observed, particularly by age (Table 63). Those aged 55 years and above reported significant levels of poor or fair health compared to those younger. Frances Baard District had a slightly higher percentage (16.3%) of household heads who perceived their general health status as poor or fair.

Table 63: Household heads' perceived health status by sex, age, and district

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Sex							
Male	11.3	[7.6-16.5]	51.8	[43.2-60.3]	36.9	[25.8-49.5]	1,361
Female	13.0	[10.2-16.5]	58.9	[51.2-66.2]	28.0	[22.4-34.4]	1,238
Total	12.2	[9.9-14.8]	55.3	[48.4-62.0]	32.5	[25.5-40.4]	2,599
Age group							
18-24	4.3	[1.7-10.7]	65.8	[47.3-80.5]	29.9	[16.6-47.7]	93
25-34	7.5	[3.9-13.9]	57.6	[49.9-65.0]	34.9	[25.7-45.3]	366
35-44	6.9	[4.3-11.1]	52.5	[40.9-63.9]	40.5	[27.7-54.8]	499
45-54	17.4	[14.2-21.1]	50.3	[44.3-56.3]	32.3	[26.2-39.1]	544
55-64	22.9	[17.3-29.7]	50.7	[42.3-59.1]	26.4	[19.9-34.2]	545
65+	34.4	[28.7-40.6]	48.1	[42.2-54.1]	17.5	[13.3-22.6]	552
Total	12.2	[9.9-14.8]	55.3	[48.4-62.0]	32.5	[25.5-40.4]	2,599
District							
Frances Baard	17.3	[14.3-20.7]	58.1	[43.7-71.2]	24.6	[12.9-41.8]	570
John Taolo Gaetsewe	13.7	[9.5-19.3]	46.3	[38.2-54.6]	40.0	[30.6-50.2]	474

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Namakwa	10.9	[6.3-18.0]	45.4	[36.1-55.1]	43.7	[34.8-53.0]	526
Pixley ka Seme	8.7	[5.4-13.6]	56.0	[44.0-67.4]	35.3	[24.6-47.7]	496
ZF Mgcawu	6.6	[3.6-11.7]	62.0	[48.7-73.7]	31.4	[21.1-43.9]	533
Total	12.2	[9.9-14.8]	55.3	[48.4-62.0]	32.5	[25.5-40.4]	2,599

A similar pattern is observed across household members by sex, age, and district (Table 64). 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 21.5% and 34.0%, respectively.

Table 64: 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
Sex							
Male	7.3	[6.2-8.7]	46.9	[43.4-50.5]	45.7	[41.9-49.7]	5,252
Female	9.5	[8.2-10.9]	47.7	[44.2-51.1]	42.9	[39.1-46.7]	5,932
Total	8.4	[7.3-9.7]	47.3	[44.0-50.6]	44.2	[40.6-47.9]	11,184
Age group							
0-14	2.9	[2.0-4.2]	44.2	[40.3-48.1]	52.9	[48.6-57.2]	3,499
15-24	4.1	[3.0-5.6]	46.9	[42.7-51.1]	49	[44.5-53.5]	2,057
25-34	5.8	[4.6-7.3]	47.5	[42.9-52.2]	46.7	[41.9-51.5]	1,722
35-44	7.5	[6.1-9.3]	52.2	[47.1-57.2]	40.3	[35.2-45.6]	1,329
45-54	14.9	[12.4-17.8]	49.3	[44.7-53.8]	35.9	[31.4-40.5]	966
55-64	21.5	[17.7-25.8]	51.5	[46.6-56.3]	27.0	[22.3-32.4]	832
65+	34.0	[29.0-39.5]	46.5	[41.2-51.9]	19.5	[15.4-24.4]	669
Total	8.4	[7.3-9.6]	47.3	[44.0-50.6]	44.3	[40.7-48.0]	11,074
District							
Frances Baard	12.1	[9.8-14.7]	43.2	[36.5-50.2]	44.7	[36.5-53.2]	2,418
John Taolo Gaetsewe	8.6	[6.4-11.5]	45.7	[41.0-50.5]	45.7	[40.0-51.5]	2,161
Namakwa	4.3	[3.2-5.7]	45.7	[38.8-52.7]	50.0	[43.1-56.9]	2,162
Pixley ka Seme	7.5	[5.4-10.2]	49.2	[41.1-57.4]	43.3	[35.1-51.9]	2,308
ZF Mgcawu	5.1	[3.8-6.9]	55.4	[48.6-62.1]	39.4	[33.0-46.2]	2,177
Total	8.4	[7.3-9.7]	47.3	[44.0-50.7]	44.2	[40.6-47.9]	11,226

Figure 86 shows that Siyathemba local municipality was under the highest category (12.3% to 16.2%) of household members with reported poor or fair health status. Local municipalities that showed low levels of health status (8.8% to 13.1%) were Joe Morolong, Sol Plaatjie, Kheis, Dikgatlong, and Magareng. Ga-Segonyana, Kgatelopele, Kareeberg, Richtersveld, and Ubuntu local municipalities were under the least category (0.0% to 2.6%) of household members with reported poor or fair health status.

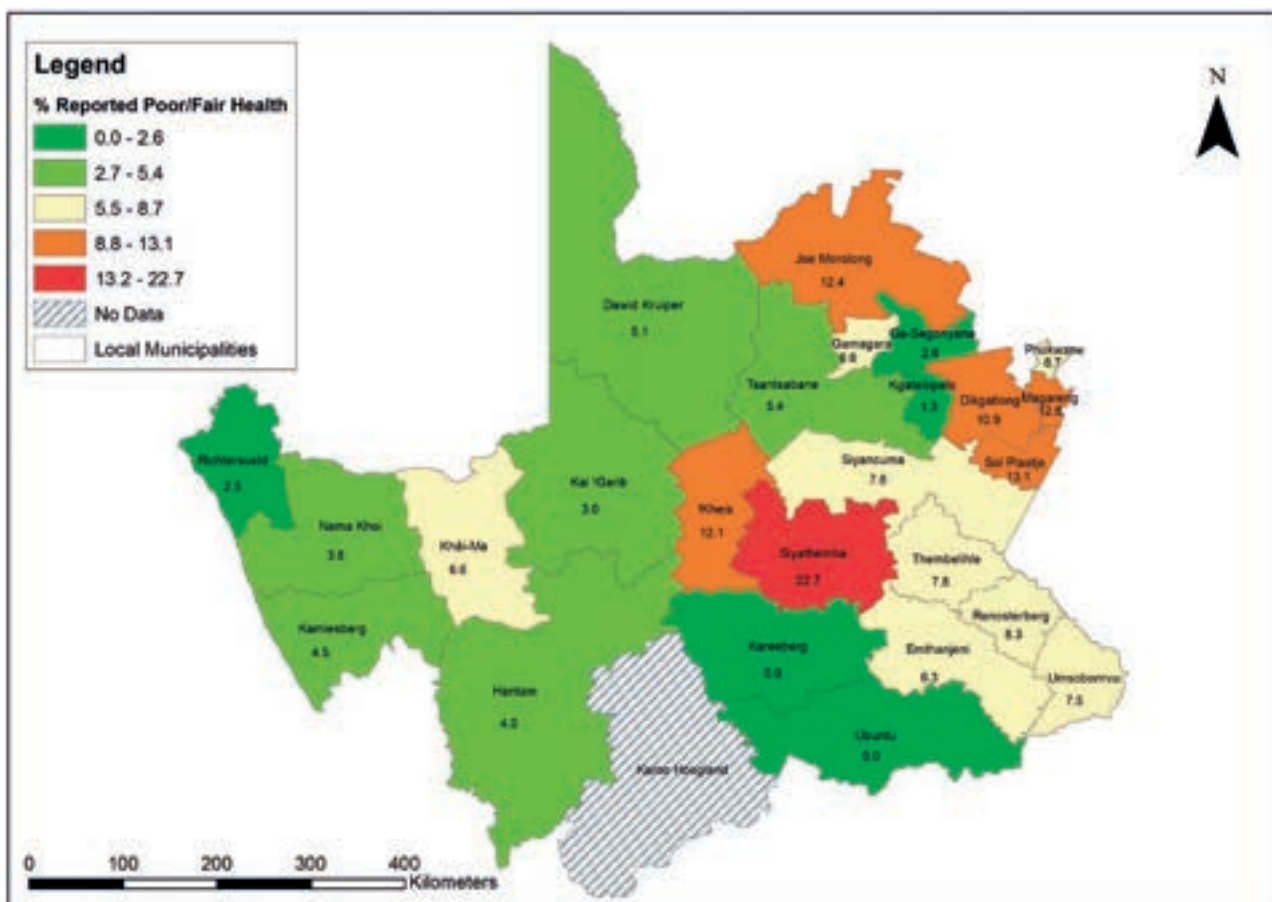


Figure 87: Household members reported perceived health status by local municipality

9.2 Shocks, COVID-19 coping strategies and their associated effect on food availability and access

This section covers some of the shocks and their associated impact 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 experienced due to flooding were not commonly reported across the three districts of the Northern Cape Province. Within the province, over 80% of households in four of the five districts reported that they have not experienced floods (Figure 87). In general, the Northern Cape Province is a drier and most of its landscape is part of the Kalahari Desert. Very few households in the province reported to have experienced flooding in the previous 12 months.

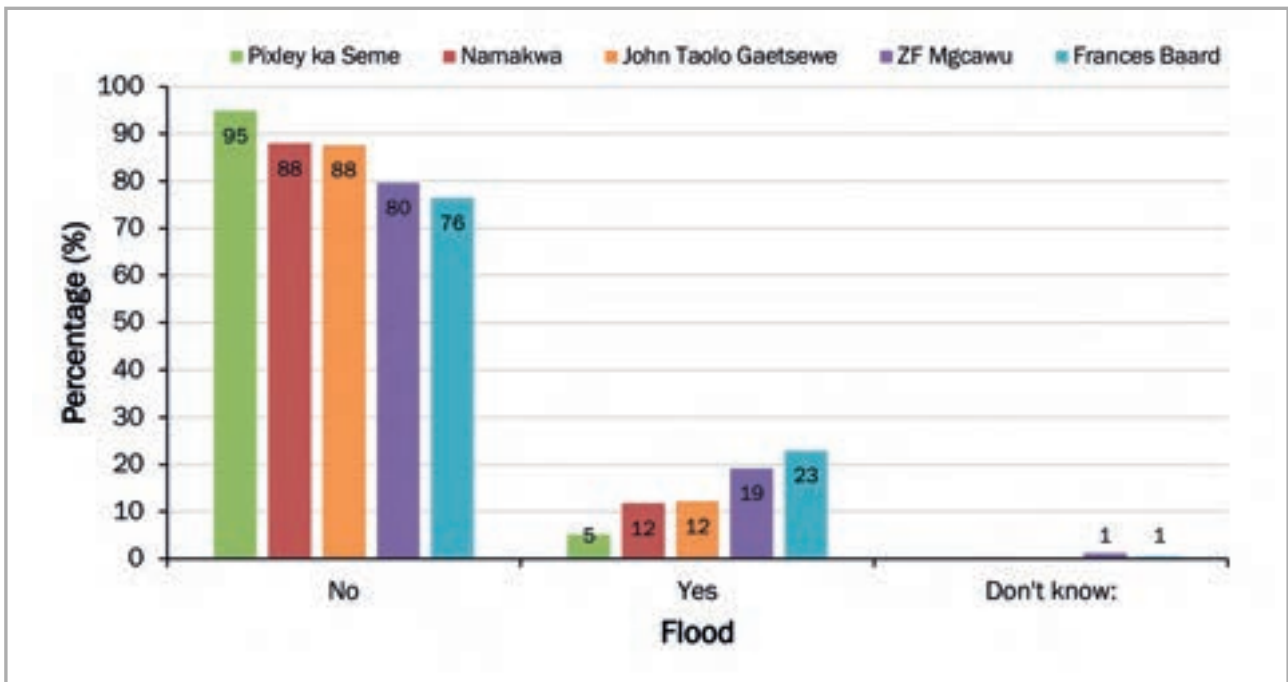


Figure 88: Household that experience floods in the last 12 months in Northern Cape Province

Overall, Northern Cape Province experiences annual variation in terms of drought. Generally, the seasons are characterised by wet summers and hot, dry seasons, as shown by Figure 88 below, and only a handful (less than 8% in all districts) have experienced drought shock during the study period. It should be noted that the province was experiencing severe drought and water shortages during the year 2019.

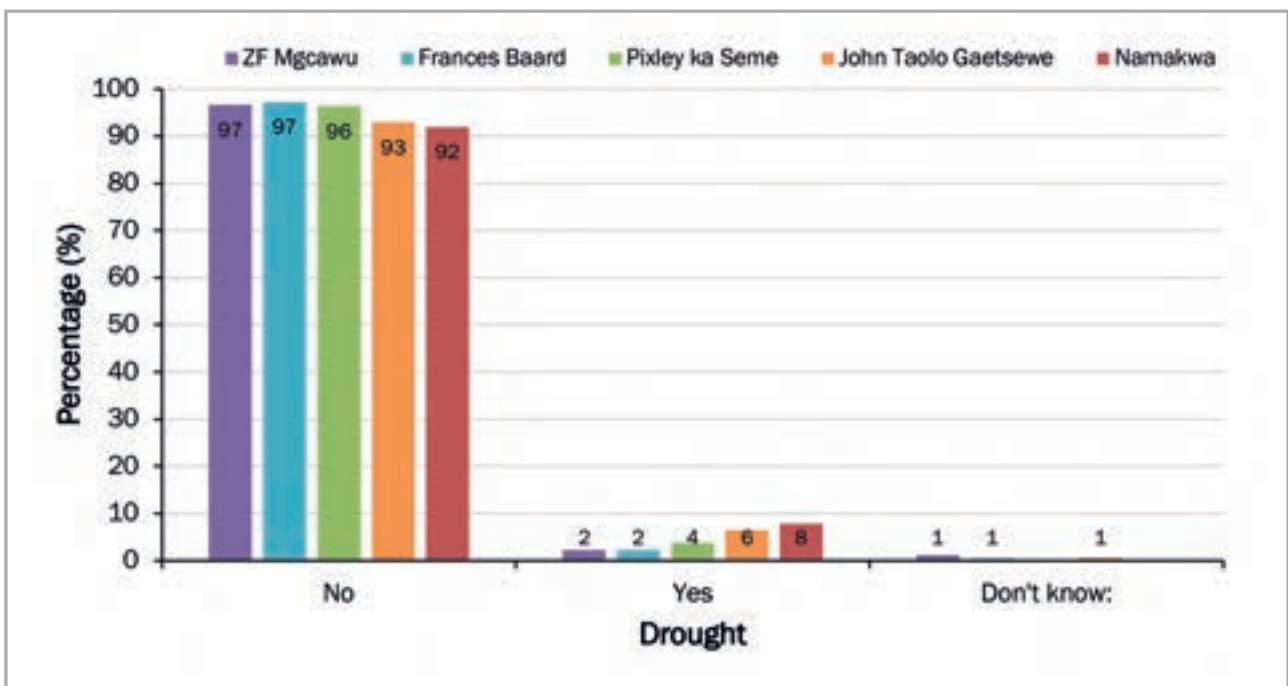


Figure 89: Household that experience drought shock by district in the last 12 months in Northern Cape Province

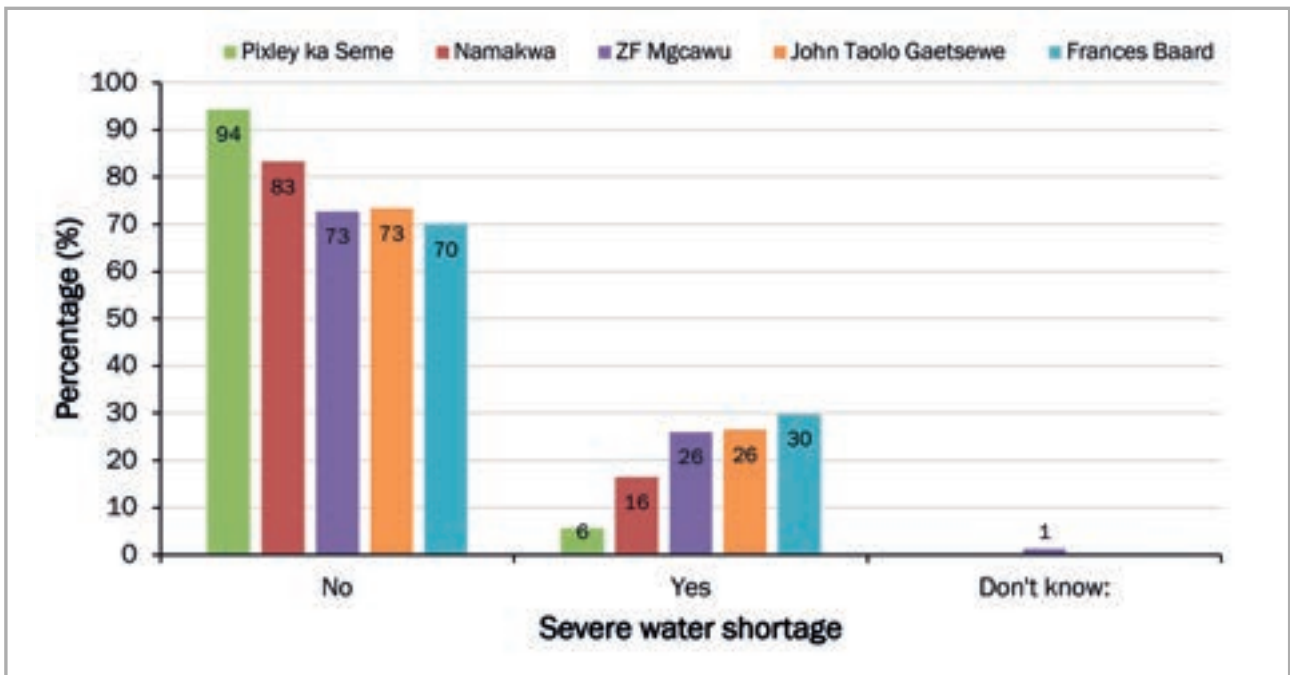


Figure 90: Household that experience severe water shortage shock by district

Severe water shortage is also one of the shocks that was reported in most of the districts and was more pronounced in Frances Baard District (30%), as depicted by the graph. However, severe water shortage was least reported in Pixley Ka Seme District (6%) (Figure 89). It should be noted that most of the parts of the province are dry, and they do experience water supply challenges since the area is part of the hot and dry Kalahari Desert.

9.2.2 Crop disease and crop failure

Crop failure and emergence of crop diseases were barely reported across the districts, with only 13% of the households reporting that they experienced it, mostly in Frances Baard District as well as 11% in John Taolo Gaetsewe District (Figure 90).

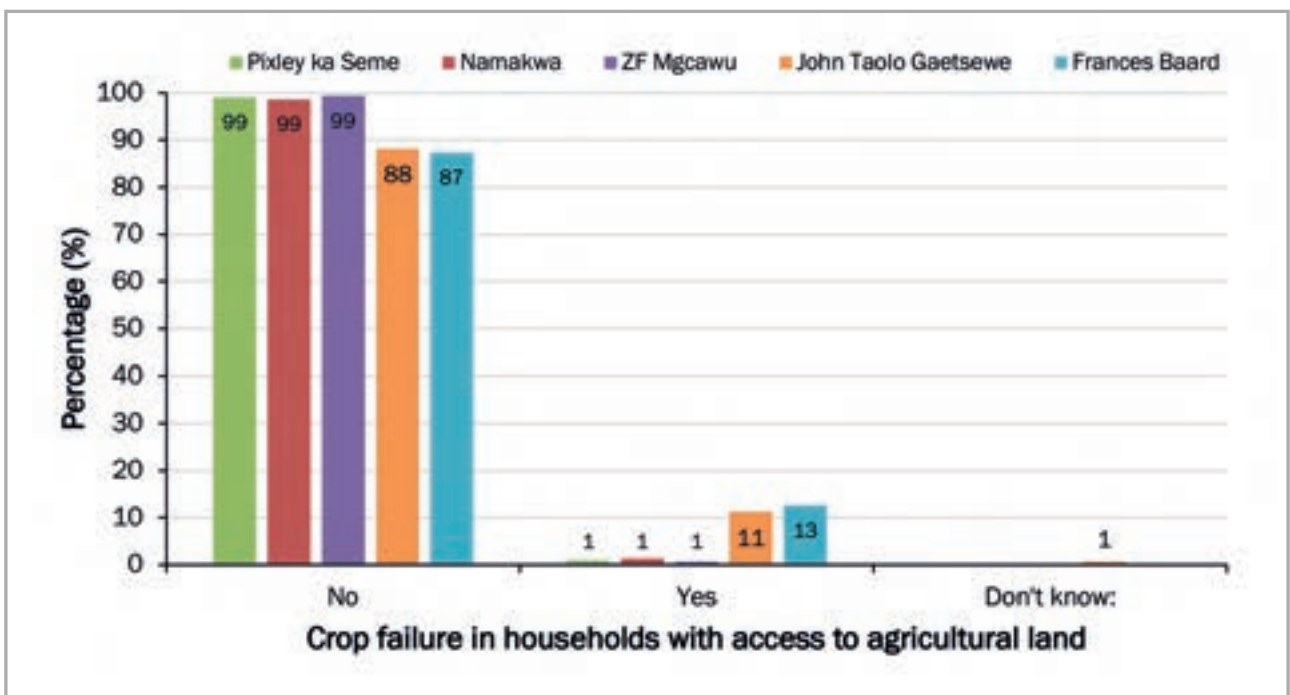


Figure 91: Household that experience crop failure shock by district

The low-level percentages of crop failure reported in the Northern Cape Province are closely related to the fact that crop production is not commonly practised within various districts (Figure 91). On average, all the districts are less involved in agricultural production activities, hence the extremely low number of crop failure and disease.

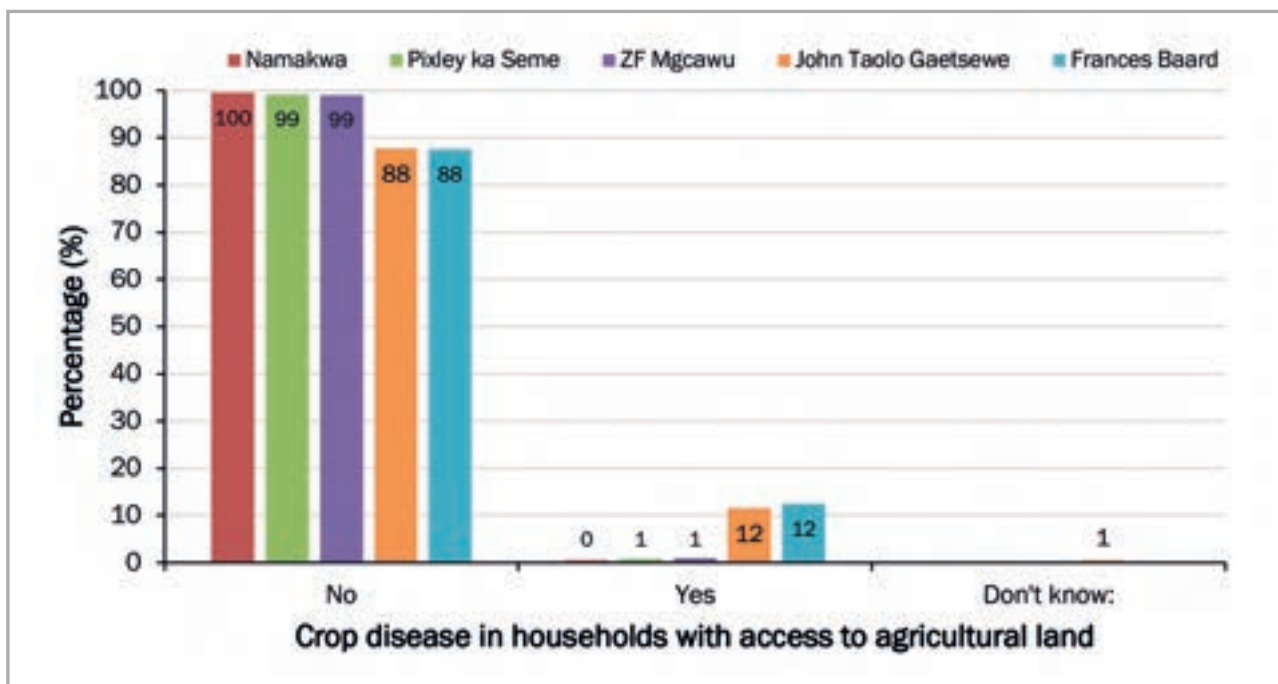


Figure 92: Household that experience drought and water shortage shock by district

9.2.3 Increase in inputs and food Prices

The increase in food prices was the biggest shock experienced across all the five districts in Northern Cape Province. The highest shocks were experienced in Namakwa and ZF Mgcawu districts, with 67 % and 64 %, respectively (Figure 93). 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.

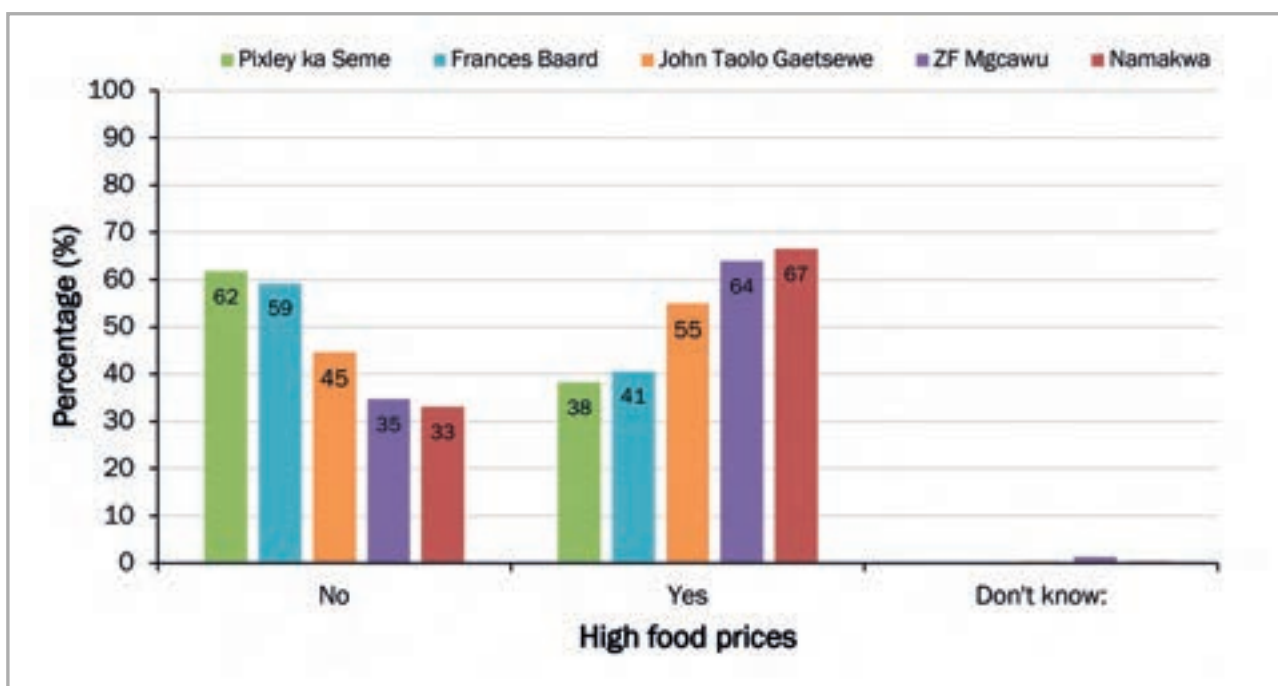


Figure 93: Household that experience high food prices shock by district

The increase in input prices were highly reported in Ngaka Modiri Molema District (89%) and Dr Kenneth Kaunda District (89%), whilst it was least in Dr Ruth Segomotsi Mompati District (59%). The increase in input prices also has a direct effect on the increase of costs in food processing, hence this justifies the reported increases in food prices across the four districts (Figure 93).

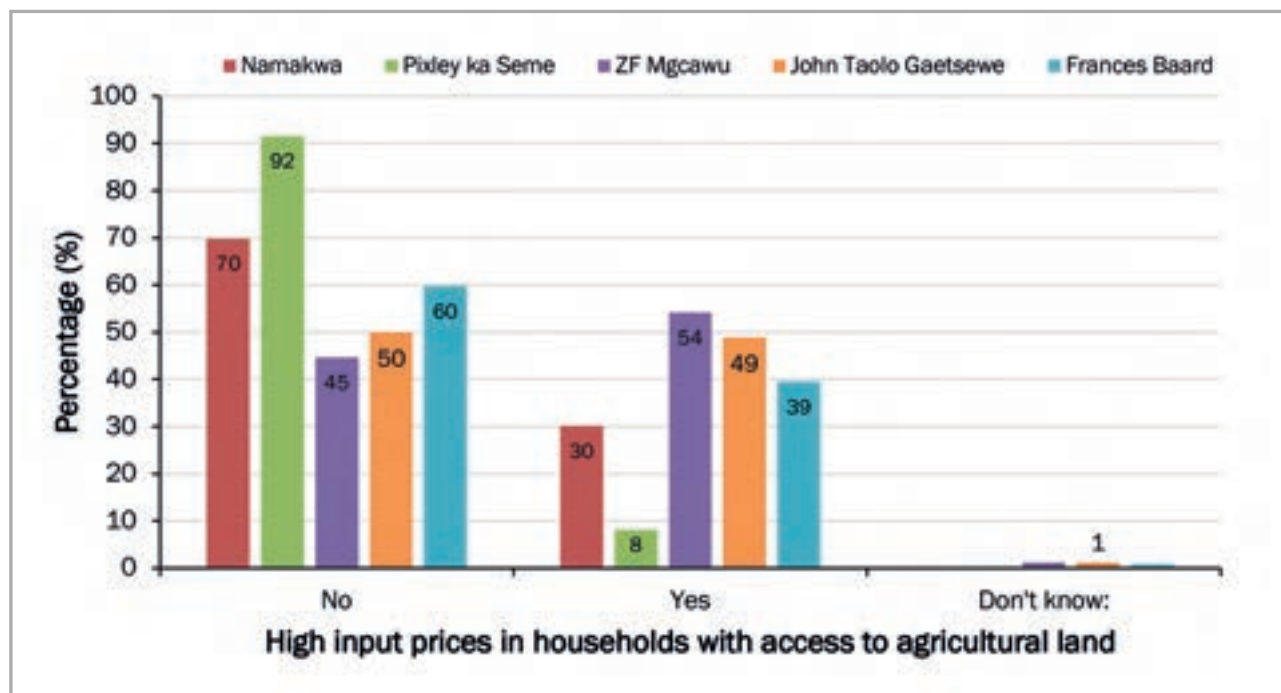


Figure 94: Household that experience high input prices shock by district

9.2.4 COVID-19 shocks and associated coping strategies

The COVID-19 pandemic resulted in serious disruptions in food supply chains and production systems. Results indicate that often, 44% of the households in ZF Mgcawu District were worried about food running out, they were then followed by JTGD District households with 38.9% (Table 65).

Table 65: Households that worried their food would run out before we got the money to buy more

Worried our food would run out before they get money to buy more	District									
	Namakwa		Pixley ka Seme		Siyanda		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	18.5	115	15.3	101	16.0	116	9.4	94	20.5	120
Rarely	20.0	121	28.3	97	13.8	106	10.4	73	17.5	99
Sometimes	34.2	232	32.1	226	25.9	193	41.5	251	29.9	193
Often	27.3	156	24.4	127	44.3	221	38.7	217	32.2	197

ZF Mgcawu District had the highest percentage (44.3%) 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 Frances Baard District, where about 39% of the households sometimes worried that their food would run out. In all the five districts as well, the food that they bought did not often last and at least 24% of the respondents did not have money to buy more food (Tables 66-67).

Table 66: Households whose food did not last, and they did not have money to get more

The food that was bought just did not last, and they did not have money to get more	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	23.0	134	16.8	119	19.2	128	10.4	104	20.3	120
Rarely	19.8	130	26.5	100	18.8	119	11.7	84	20.5	118
Sometimes	33.3	226	35.4	222	27.3	199	42.6	264	31.4	194
Often	23.8	134	21.2	111	34.8	189	35.3	184	27.8	176

Table 67: Households who could not afford sufficient and nutritious food because the price of food increased

Households could not afford sufficient and nutritious food because the price of food increased	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	20.8	125	13.9	98	18.2	116	10.2	100	20.0	118
Rarely	16.0	116	20.6	88	18.1	113	10.5	77	20.2	110
Sometimes	34.8	215	38.6	230	23.4	192	42.4	258	32.1	204
Often	28.4	168	26.9	135	40.3	215	36.9	201	27.7	177

Across all the districts, at least 28% 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 nutrition 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 the table below, where 42% of the respondents in the Frances Baard District reported that sometimes they were unable to eat healthy and nutritious food (Table 68).

Table 68: Households which were unable to eat healthy and nutritious food

Unable to eat healthy and nutritious food	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	19.8	122	16.6	118	23.1	130	11.0	100	20.4	114
Rarely	18.9	129	22.1	94	11.9	90	13.3	89	18.2	113
Sometimes	34.0	214	40.9	218	25.9	208	40.4	257	33.6	209
Often	27.2	159	20.4	123	39.1	208	35.2	191	27.9	173

Table 69: Households which could not access the cheap and affordable food market, because they were shut down due to national lockdown restrictions

Could not access the cheap and affordable food market, because they were shut down due to national lockdown restrictions	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	25.2	145	15.9	124	23.5	127	14.5	124	19.6	118
Rarely	17.8	126	22.3	90	14.2	115	9.7	83	21.9	115
Sometimes	35.7	227	36.3	215	23.7	202	43.4	259	34.1	230
Often	21.3	126	25.5	122	38.6	192	32.4	169	24.4	145

Most households across the districts reported that sometimes they could not access cheap and affordable food markets since they were shut down because of the COVID-19 national lockdown restrictions. However, this was mostly experienced in Frances Baard District (Table 69).

Table 70: Household heads who were hungry but did not eat

You were hungry but did not eat	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	47.4	305	37.1	225	41.4	282	25.0	210	42.5	241
Rarely	25.4	138	29.4	149	15.8	114	20.1	154	19.6	122
Sometimes	20.9	129	23.5	128	28.5	155	31.8	170	27.8	179
Often	6.3	51	10.0	50	14.3	84	23.1	103	10.1	67

Table 71: Household head who had to skip a meal

Had to skip a meal	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	39.5	239	34.1	216	38.2	240	23.0	198	35.6	198
Rarely	23.2	152	29.8	151	25.1	122	22.2	146	22.7	141
Sometimes	26.6	158	24.1	126	18.9	149	28.4	173	26.0	172
Often	10.7	75	12.1	60	17.7	123	26.4	120	15.7	97

Although skipping a meal was least reported across all the districts of Northern Cape Province, in Frances Baard District households' heads did report that they often skipped a meal and it was the highest percentage (21.3%) compared to other districts. In the Namakwa District, 39.5% of household heads never skipped meals (Table 70). This is also attributable to the fact that these are not major food crop-producing districts since households 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 72: Households who ran out of food

Household ran out of food	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	50.0	317	37.6	242	36.5	252	23.2	203	33.1	200
Rarely	14.2	102	33.9	117	14.9	109	17.9	135	23.4	131
Sometimes	24.6	129	17.1	125	27.6	143	31.7	180	25.1	167
Often	11.2	74	11.5	68	21.1	131	27.2	119	18.5	111

COVID-19 was expected to increase the number of households who are food insecure in developing countries. In the Northern Cape Province, in all the districts, at least 15% of the households did report that they often 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 73: Household heads who went without eating for a whole day

Went without eating for a whole day	District									
	Namakwa		Pixley ka Seme		ZF Mgcawu		Frances Baard		John Taolo Gaetsewe	
	%	N	%	N	%	N	%	N	%	N
Never	64.7	412	55.8	297	61.7	379	32.1	268	56.4	333
Rarely	12.7	76	20.8	96	13.7	86	18.4	120	18.5	103
Sometimes	17.0	86	14.2	106	12.4	89	26.9	145	16.0	118
Often	5.6	46	9.2	50	12.2	78	22.6	101	9.1	55

Results show that it was exceedingly rare for the household heads to go without eating for the entire day. However, in the Frances Baard District, a considerable number of the household heads (22%) had reported that they often went a full day without consuming food during the COVID-19 pandemic.

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 Northern Cape 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.

This survey has revealed that socio-economic challenges that include limited food production at household level, high dependencies on social grants, acute unemployment among youth, and dwindling household incomes expose households to food and nutrition insecurity. Subsistence farming in rural areas of the Northern Cape Province has been plagued by climate change and further exacerbated by the COVID-19 pandemic, which had accumulated effects on food and nutrition security.

Demographics of the respondents

More than half (50.9%) of household heads were males. Coloured and Black African population groups accounted for about 48% each, while those between aged 65 years and older constituted 23.9%. In terms of marital status, those who were single accounted for 41.3%. Frances Baard District recorded the highest percentage with 20.9%, while Pixley ka Seme District accounted for the least proportion with 18.0%. Regarding household members, more than half (53.5%) of household members were females, 51.1% were Coloureds and the majority were children aged 0 to 14 years old, with 29.9%.

Education level

Secondary school education accounted for 42.1%, followed by those with matric qualification at 23.7%. 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 21.3% and 15.8%, respectively.

Employment status

Results show that among the household heads and members who were economically active, 55.5% and 69.6%, respectively, were unemployed. A higher proportion (71.9%) of female household heads were unemployed, compared to their male counterparts, with 39.6% being unemployed.

Major sources of income

The highest percentage (30.7%) was recorded among households which recorded between R1 501 and R3 000, followed by those who earned more than R6 000 with 23.4%. Male-headed households had a significantly higher percentage (27.9%) of household income of more than R6 000 compared to female-headed ones with 18.4%.

Access to social grants

Majority of household heads and members relied on social welfare grants (including old age grant) as their source of income, with 38.1% and 42.9%, respectively. About a third (34.3%) of household heads reported salaries and wages as their source of income.

Type of dwellings

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 (82%). The second most common dwelling type was informal dwelling/shack not in a backyard (9.2%). About 4,7% of the households reported living in informal dwellings/shacks in the backyard.

Access to water and sanitation services

Flush toilets connected to a public sewerage system were the most common toilet facility used by the households, accounting for 63.6% of all toilet types (Table 27). About 12.4% used pit latrine/toilet with a ventilation pipe, with 0.6% using chemical toilets. Most female-headed households (20.4%) indicated to have received free sanitation, whilst 77% of male-headed households did not.

Access to electricity and other energy sources

The majority (90.6%) of the households indicated that they had access to electricity in Northern Cape Province. Results show that more female-headed households (91.9%) had access to electricity than male-headed households (89.3%). John Taolo Gaetsewe District (97.2%) and Namakwa District (95.4%) had the highest proportion of households with electricity access, while France Baard District (11.6%) had the lowest proportion of households with access to electricity. Energy sources were categorized into cooking, lighting, water heating, and space heating (Table 33). Results also show that electricity from the mains (89.2%) was the main energy source for cooking for most of the households in Northern Cape Province. Gas (6.6%) was the second most used energy source for cooking.

Access to land and Agriculture productivity

Overall, ownership to land by households in the Northern Cape Province is extremely low. About 80% of the land mass of Joe Morolong is Trust Land and is under the custodianship of traditional leaders, and that makes it easier for households to have access to agricultural land since in most cases, no title deed is required. The primary economic activities in the area are agriculture and mining, with Sishen being known for massive quantities of iron ore. The arid area is famous for its production and exportation of grapes, which become ripe and ready before the other grapes of the world. Other dominating agricultural practices in the area are livestock and game farming. Disaggregated by gender, both female- and male-headed households were on average, having less access to land. However, this is more pronounced within the province. At least 57% of the households in the JTGD District use the land for food production and other agricultural products. It is then followed by the Namakwa District households, with 41% of the households able to use the land for agricultural production. It should be noted that JTGD has a higher proportion of households (75%) with yards that are between 5 000-10 000 square meters, so it makes it easier to use the land for agricultural production. In Namakwa, only 35% of the females have access to the land.

Both qualitative and quantitative data shows that maize, beans, potatoes, and vegetables are the major crops grown in the open access livelihood zones of the province. Hence agricultural extension services for both livestock and crops are needed by most of the households. Access to agricultural extension services has been reported to be extremely low in the entire Northern Cape Province.

Household Food Security Status

Household Food Insecurity Access Score (HFIAS)

The average HFIAS score for the Northern Cape Province was 10.4, indicating that the households were moderately food insecure in this province. The overall results showed that most of the households (65.5%) in the Northern Cape experienced food insecurity, with only 34.5% found to be food secure. About 21.2% of the households were severely food insecure, 26.2% of the surveyed households were moderately food insecure, and 18.1% of the households were mildly food insecure. Male-headed households were more food secure than female-headed households, with 40% of the male-headed households found to be food secure, compared to only 28% of female-headed. Severe food insecurity was experienced by 21% of the male-headed households,

compared to 22% of the female-headed households that fell within the same category. Approximately 22% and 31% of male-headed and female-headed households experienced moderate food insecurity, respectively. About 18% and 19% of male-headed and female-headed households experienced mild food insecurity, respectively.

Pixley Ka Seme District had the highest proportion of households that were food secure (42%), followed by the Namakwa and ZF Mgcawu districts, with each district having 40% of the households that were found to be food secure. The least food secure district was found to be Frances Baard, with 24% of the households found to be food secure. The ZF Mgcawu District had the highest proportion of households experiencing severe food insecurity. About 27% of the households in the ZF Mgcawu District were severely food insecure. This was followed by households from the Frances Baard and John Taolo Gaetsewe districts, who each had 24% of the households that were severely food insecure.

Household Hunger Scale (HHS)

The HHS scale showed that most of the sampled households experienced little to no hunger (73.5%). About 19.2% of the households experienced moderate hunger and 7.3% severe hunger. This result suggests that the level of food deprivation is not very severe for most of the households in the Northern Cape. About 75% of the male-headed households experienced little to no hunger, compared to 72% of the female-headed households. 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-insecure group.

Household Dietary Diversity Score (HDDS)

Households in Northern Cape consumed more than 7 out of 12 food groups, which suggests above-average dietary diversity levels. About 81% of households consumed highly diverse diets (more or equal to 6 food groups), whilst 13.2% and 5.9% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively. About 6% of both male-headed and female-headed households had the lowest dietary diversity. About 81% of both male-headed and female-headed households were in the category of highest dietary diversity, suggesting that they had better access to diversified food. Results showed that all the age groups have an 80% and above of households that consumed highly diversified food, with the exception of the 18-24 age group, where 79% of the households were reported to have consumed the highest dietary diversity. Most households with the lowest dietary diversity were in John Taolo Gaetsewe District.

Food Consumption Score (FCS)

Results indicate that most households (52.3%) were consuming adequately (acceptable) diversified diets, and about 24.1% 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 23.6% of the households consumed poor diets. This is concerning because close to half (48%) of households are not consuming acceptable diets and this may lead to nutrition-related problems. About 56% of the male-headed households were found to have consumed acceptable diets, compared to 48% of the female-headed households. Female-headed households were found in marginally higher proportions in the poor and borderline category. With the exception of the age group 45-54, the proportion of households who consumed acceptable diets increased from 40% among the household heads aged 18-24 to 56% among household heads aged 65+.

Food Expenditure

About 71% of the households were below the food poverty line. This indicates very high levels of food poverty, which supports the results of the HFIAS. A higher proportion of female-headed households (78.1%) were below the food poverty line compared to male-headed households (65.5%). Across the age-groups, the results show food poverty was more prevalent among households headed by the 18-24 age group, and among those headed by heads at least 45 years old.

Nutrition

Breastfeeding infant and solid foods status

Of those aged 0-11 months (n=146), 87.5% were ever breastfed, while 89.2% were breastfeeding at the time the survey was conducted. In children aged 12-24 months (n=188), 84.2% were ever breastfed, while 51.2% were

being breastfed at the time the survey was conducted. Exclusive breastfeeding was not reported in all children aged 0-6 months. Male children appeared to have a higher prevalence of being ever breastfed as compared to female children, while female children appeared to have a higher prevalence of currently being breastfed. Reports of between 75.8% and 91.3% were recorded for children that were ever breastfed across all districts, with no significant differences between districts. More than 65% of mothers stopped breastfeeding before the age of 6 months (23.7% stopped breastfeeding before 3 months, 15.5% stopped between 3-4 months, and 27.1% stopped between 5-6 months (Figure 60)). Only 16.2% of mothers continued to breastfeed for longer than 12 months and up to 24 months. Infant formula (52.2%) and plain water (25.6%) were reported to be the most common first drink other than breastmilk that was introduced to infants under 2 years of age. Mothers in all districts reported that infant formula, followed by water, was the most common first drink introduced to children aged 0-24 months. In Frances Baard, however, slightly more children received tea (20.2%) than water (18.5%) as their first drink. Except for breastmilk, most infants (80.2%) received infant formula, followed by full strength cow milk (8.6%), Klim/Nespray (7.1%), and only 5.5% received other milk. The mean age at which the first semi-solid or solid foods were introduced was 5.5 months. Children in Frances Baard appeared to be introduced to semi-solid/ solid foods significantly later (6.9 months) than children in both Namakwa (4.7 months) and ZF Mgcahu (4.9 months).

Anthropometry (0-59 months)

Stunting

The overall prevalence of stunting for children under the age of 5 years (n=680) was 41.3%, of which 15.1% was severe and 26.2% was moderate stunting. Under severe stunting, there was a higher prevalence (25.1%) of children aged 6-17 months reported, compared to children in all other age groups (range 7.7%-19.4%). Males had a higher prevalence of stunting (50.0%) compared to females (30.3%). Nearly 3 times as many males were moderately stunted (36.3%) compared to females (13.5%). Overall prevalence of stunting was highest in the Pixley ka Seme District (73.2%), with more moderate (57.6%) than severe stunting (15.6%). The prevalence of overall stunting was significantly lower in John Taolo Gaetsewe (25.2%) and Namakwa (27.0%).

Wasting

The overall prevalence of wasting for children under the age of 5 years (n=659) was 20.8%, of which 15.2% was severe and 5.6% was moderate wasting. The prevalence of moderate wasting was highest in children aged 30-41 months (8.6%), and lowest in the age group 6-17 months (2.9%). The prevalence of severe wasting was highest in children aged 42-53 months (32.0%), followed by those aged 18-29 months (21.8%), compared to 7.6% or less in all other age groups. There was a significant difference between the 42-53 months (32.0%) and the 54-59 months age groups (0.7%). Comparisons between gender showed that males had a higher prevalence of wasting (26.6%) compared to females (13.4%). While these differences were not significant, it does appear that males had a higher prevalence of severe wasting (22.7%) as compared to females (5.7%), while females had a higher prevalence of moderate wasting (7.7%) as compared to males (3.9%). Pixley ka Seme reported the highest overall prevalence of wasting (49.9%), while Frances Baard and Namakwa reported the lowest overall prevalence (8.9%).

Underweight

The overall prevalence of underweight for children under the age of 5 years (n=705) was 25.8%, of which 15.6% was severe and 10.2% was moderate underweight. The prevalence of overall and severe underweight was highest in children aged 42-53 months at 40.8% and 31.8%, respectively. Moderate underweight was highest in the 30-41 months age group (15.5%). Comparisons between gender showed that males had a higher prevalence of being underweight (32.9%) compared to females (17.0%). Pixley ka Seme reported the highest overall prevalence of underweight (58.9%), while Frances Baard reported the lowest overall prevalence (8.3%).

Overweight

The overall prevalence of overweight for children under the age of 5 years (n=659) was 9.0%, of which 4.9% was severe and 4.1% 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 (33.4%, 15.5%, 17.9%, respectively) and 6-17 months (18.3%, 8.7%, 9.6%, respectively) compared to the 42-53 months age group (1.7%, 1.0%, 0.6%,

respectively). Females had a higher prevalence of overweight (11.8%) compared to males (6.8%). John Taolo Gaetsewe reported the highest overall prevalence of overweight (16.1%), while Pixley ka Seme reported the lowest overall prevalence (5.0%).

Body Mass Index (BMI)

The mean BMI for adults aged 18 years and older (n=3139) in Northern Cape was 26.2 kg/m². This was significantly different between males (22.4 kg/m²; 95% CI 21.3 – 23.5) and females (28.2 kg/m²; 95% CI 27.2 – 29.2). Overall, 46.5% were classified as either overweight (17.7%) or obese (28.8%). About 35% were classified as having normal weight and 18.6% were classified as underweight. The proportion of both overweight (19.4% vs 14.4%) and obesity (38.2 % vs 10.7%) is higher in females than in males, respectively. Nearly four times more females were obese compared to males. The prevalence of underweight in females (13.5%) was about half of that in males (28.6%). Males had a significantly higher prevalence of both normal weight (46.4%) and underweight (28.6%), compared to females (28.9% and 13.5%, respectively), while females had a significantly higher prevalence of obesity (38.2%) compared to males (10.7%).

Waist Hip Ratio

The mean waist hip ratio for males (n=1111) and females (n=2098) was 0.89 (range: 0.87-0.96) and 0.86 (range: 0.80-0.91), respectively. Results also show that a far greater proportion of females (49.0%) had a high WHR compared to only 11.7% of males. WHR tends to increase with age in males and females, peaking in the age group 65 years and older in females and 55-64 years in males. Males aged 55 years and older had a higher prevalence (21.4%-26.4%) of a waist hip ratio greater than 1 compared to males aged 25-34 years (5.4%). Females aged 18-24 years had a significantly lower prevalence of an increased waist hip ratio (21.6%) compared to females in all other age groups (range: 47.4%-74.1%). Those aged 55 years and older also had a significantly higher prevalence (67.7%-74.1%) than those aged 25-44 years (47.4%-50.1%).

Individual dietary diversity score

The mean dietary diversity score (DDS) for children aged 0-5 years residing in the Northern Cape (n=666) was 3.52, which is indicative of an inadequate dietary diversity. There were no significant differences in mean DDS and across DDS categories between those younger than 2 years of age and those older than 2 years of age. District comparisons showed that Frances Baard had the highest mean DDS (4.19) compared to John Taolo Gaetsewe, which had the lowest (3.11). John Taolo Gaetsewe had a significantly lower mean DDS than both Namakwa (4.05) and Frances Baard (4.19). There were no significant differences in mean DDS and across DDS categories between males and females. Overall, 43.3% of people in the Northern Cape reported an adequate DDS, while 56.7% have a low DDS. Namakwa reported the lowest proportion of people with low DDS (41.7%), while Pixley ka Seme reported the highest proportion of people with a low DDS (67.1%).

The mean dietary diversity score (DDS) for adults residing in the Northern Cape (n=3382) was 4.30. There were no significant differences in mean DDS when disaggregating by age groups, gender, or district level. It appears as if the proportion of people with a low DDS decreases with age, from 45.8% in those aged 18-24 years to 29.7% in those aged 65 years and older. However, these differences were not significant. Overall, 60.2% of people in the Northern Cape reported an adequate DDS, while 39.8% have a low DDS. Pixley ka Seme reported the lowest proportion of people with low DDS (32.8%), while John Taolo Gaetsewe reported the highest proportion of people with a low DDS (46.2%).

COVID-19 pandemic and associated shocks

Results indicate that 44% of the households in ZF Mgcawu were often worried about food running out, they were then followed by JTGDM households with 38.9 % because of the COVID-19 pandemic. Across all the districts, at least 28% of the households reported that they could not often afford sufficient and nutritious food because of the price increases caused by the COVID-19 pandemic.

Within the province, over 80% households in four of the five districts reported that they have not experienced floods. Very few households in the province reported to have experienced flooding in the previous 12 months.

- While a sizeable number of households were involved in agricultural activities, the study revealed many households did not participate in farming in the Northern Cape. As such, there is a huge reliance on food purchases, from income that is mainly received from social grants. Focus group discussions generally revealed lack of young people's participation in agricultural activities. To revitalize rural economies and improve household food security, the government and other stakeholders should implement strategies to motivate and/or attract household members, especially the youth, to be involved in farming activities. A key strategy is to make farming profitable (through market support, agro-processing, prices, etc.), as well as 'sexy' (e.g., introducing smart farming). Given the limited potential of labour absorption in the non-farm sectors, it is clear that farming will continue to have a role in addressing the food security challenges facing communities, especially in rural areas. 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 the Northern Cape 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 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 1 000 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 Northern Cape, 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; considering this, the government is tasked to provide priorities of land use. People seem to prefer obtaining big pieces of land and use it to build houses rather than food production. This will increase and sustain agricultural production in rural areas of South Africa. It has potential to allow agriculture to serve as a significant source 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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