National Food and Nutrition Security Survey

KWAZULU-NATAL PROVINCE REPORT

FOOD AND NUTRITION SECURITY

agriculture, land reform & rural development
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National Food and Nutrition Security Survey KwaZulu-Natal Province Report

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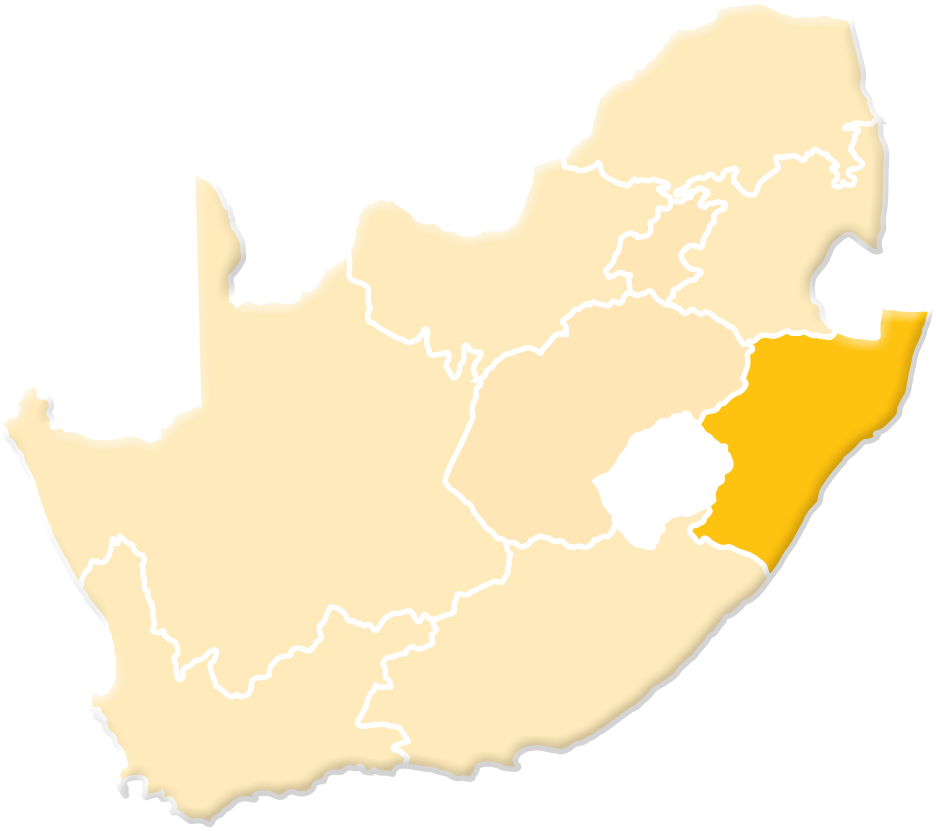
List of Abbreviations

BMI	Body Mass Index
CAPI	Computer Assisted Personal Interviewing
CAI	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
GauVAC	Gauteng Vulnerability Assessment Committee
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	Nation 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
SANHNES	South African National Health and Nutrition Examination Survey
SAVAC	South Africa Vulnerability Assessment Committee
SOP	Standard Operation Procedure
SPSS	Statistical Package for Social Scientists
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 Gauteng 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) for all provinces. The results provide a baseline assessment of the status quo of food and nutrition security in the province. The data was collected more than 8 months after the COVID-19 lockdown measures, a period characterized by much more relaxed restrictive COVID-19 measures. This greatly influenced and changed the picture from what would ordinarily obtain under a normal situation.

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, including but not limited to child support, school feeding schemes, farmer support programmes and many others 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 major concern and reality for several millions of people in South Africa. Strong perceptions and evidence exist 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, 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 that are experiencing food insecurity and malnutrition need to be established as this has been a cause for concern for the Department of Agriculture, Land Reform and Rural Development (DALRRD) as well as the membership of the South African Vulnerability Assessment Committee (SAVAC) as comprised of various sectors.

To develop intervention measures that are well targeted and address the root causes of household food and nutrition insecurity, current data at lower geographic levels and contextually relevant scientific evidence are crucial. Accordingly, the DALRRD commissioned a National Food and Nutrition Security Survey (NFNSS), aimed at providing baseline data on the state of food and nutrition security across districts and livelihood zones in South Africa. Further, the survey sought to investigate the link between food security and nutrition as well as assessing the impacts of COVID-19 on household food and nutrition survey (FNS). National surveys on food and nutrition security are needed as they inform the government and policymakers about the actual status of food and nutrition insecurity in a country.

This provincial report provides the first-ever full-scale baseline assessment of the Food and Nutrition Security Survey (NFNSS) conducted in all 11 districts of the Province of KwaZulu-Natal. 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 10 692 visiting points (VPs), 95.7% were valid. Out of these valid VPs, 82.6% of them were realized. A total of 8 824 people were interviewed in this province, when weighted this total represents 11 521 536 South Africans living in KwaZulu-Natal Province of 18 years and older.

To measure the various aspects of food and nutrition security, a list of internationally recognized food security indicators was used, including the Household Food Insecurity Access Score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and the Household Dietary Diversity Score (DDS). The results indicated that many households were food insecure across the province. The HFIAS revealed that about 29.6 % of households were food secure, with the remaining 70.4% of the households being food insecure. Furthermore, of those who are food insecure 17.1 % of the households experienced severe levels of

food insecurity. The HHS showed that over 80.2 % of households experienced little to no hunger, while 15.5 % and 4.3% % of households experienced moderate hunger and severe hunger respectively. The FCS and HDDS showed that over 75.9% and 81.5% respectively consumed an acceptable number of food groups across all the districts. The FCS indicated that 5% of households consumed poor diets, while 19.2% consumed borderline diets. However, the households mostly consumed nutrient poor food groups such as cereals, condiments, sugars, oils/fats, and 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 Zululand district where 35% of the households were severely food insecure and 17.1% and 4.3 % experienced severe hunger as determined by HFIAS and HHS, respectively. Additionally, households from Zululand and uMkhanyakude regions had the lowest dietary diversity, of 7%, and 6% respectively while uMkhanyakude, uMgungundlovu and iLembe had poor food consumption score of 24%, and 9 % respectively. Severe food insecurity was more prevalent among households headed by household-heads of the old age group.

Significant relationships were found between household food security status and some demographic and socioeconomic 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, while 11.5% of households headed by people with no education were food secure, 67.1% 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 economic and welfare outcomes. Farming activities did not play a significant role, suggesting that dealing with food insecurity in a province such as the KwaZulu-Natal is not dependent on agricultural activities but rather an expansion of social protection measures (such as social grants) and creating employment opportunities.

Findings indicate that 80.9% 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 31.4%, 4.1% and 7.7%, indicating that the proportion of children experiencing both acute and chronic undernutrition has increased over the past 10 years. Simultaneously, over the same time period, the combined prevalence of overweight and obesity in adults has reduced slightly to 62%. Across the districts, overall, Uthukela remains the highest risk with an overall prevalence of stunting of 55.8%, a severe stunting prevalence of 48.8%, a severe wasting prevalence of 7.6%, and Harry Gwala had a severe underweight prevalence of 12.5%. 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 food security status of households.

The results also demonstrated that the COVID-19 pandemic, and the lockdown measures introduced to curb its spread led to serious disruption of food supply chains and production systems. The increase in food prices was the biggest shock experienced across all eight districts in the KwaZulu-Natal Province. The highest shocks were experienced in uGu and uMzinyathi, with 94% and 92% respectively. uMzinyathi District had the highest percentage (46%) of households who were sometimes worried about their food running out before they can get money to buy some more food. Zululand districts also had the highest percentages of households (41.6%) who reported that their food often runs out and they did not have money to buy more.

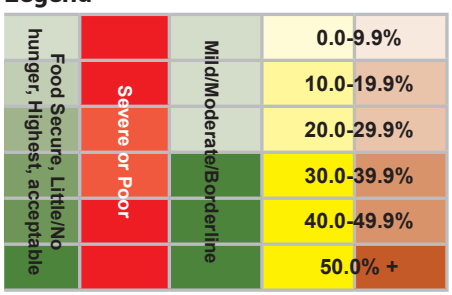
Several recommendations have been proposed and these revolve around strategies to increase incomes of households, employment creation, a clear path for ensuring water security to adapt to changing climate, enhancing food safety, investment in post-harvest agro-processing, intrinsic land access, the establishment of food banks, promotion of domestic food production, improved awareness of micro and macronutrient consumption interventions, together with full-scale implementation of other nutrition-sensitive programmes.

Table A: KwaZulu-Natal 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	Litte/No	Moderate	Severe	Highest	Medium	Lowest	Acceptable	Borderline	Poor
Ugu	25.0	65.0	11.0	85.0	13.0	2.0	85.0	13.0	2.0	79.0	16.0	5.0
UMgungundlovo	32.0	51.0	16.0	83.0	14.0	3.0	75.0	22.0	3.0	72.0	18.0	9.0
Uthukela	30.0	51.0	19.0	78.0	18.0	5.0	78.0	17.0	4.0	83.0	15.0	20
Umkhanyakude	28.0	48.0	24.0	72.0	20.0	8.0	74.0	20.0	6.0	53.0	24.0	24.0
King Cetshawayo	27.0	54.0	19.0	78.0	18.0	3.0	83.0	14.0	4.0	80.0	15.0	5.0
Harry Gwala	23.0	57.0	20.0	79.0	17.0	4.0	73.0	22.0	4.0	72.0	22.0	6.0
Umzinyathi	19.0	53.0	28.0	72.0	19.0	9.0	74.0	23.0	3.0	56.0	40.0.0	4.0
Amajuba	34.0	50.0	15.0	83.0	13.0	4.0	85.0	12.0	3.0	67.0	27.0	6.0
Zululand	14.0	51.0	35.0	65.0	22.0	13.0	67.0	26.0	7.0	71.0	23.0	5.0
iLembe	27.0	53.0	20.0	76.0	18.0	5.0	79.0	17.0	4.0	77.0	15.0	9.0
eThekwini	35.0	53.0	12.0	84.0	13.0	3.0	88.0	11.0	1.0	81.0	18.0	2.0
Province	29.6	53.3	17.1	80.2	15.5	4.3	81.5	15.6	2.9	75.9	19.2	5.0

DISTRICTS	NUTRITION INDICATORS (%)											
	STUNTING			WASTING			UNDERWEIGHT			BMI		
	All	Moderate	Severe	All	Moderate	Severe	All	Moderate	Severe	Underweight	Overweight	Obese
Amajuba	35.3	17.1	18.2	2.2	0.3	1.9	3.9	2.4	1.5	2.6	33.2	29.8
Harry Gwala	39.4	12.5	27.0	2.1	1.3	0.8	14.7	2.3	12.5	10.8	22.7	27.8
Kings Getshwayo	42.1	17.6	24.5	6.1	3.4	2.7	4.1	3.6	0.5	3.1	23.6	40.6
UMgungundlovo	27.7	12.1	15.7	0.9	0.1	0.8	5.6	4.4	1.1	4.8	23.4	39.0
Ugu	38.7	18.8	19.9	4.9	0.7	4.2	6.4	2.9	3.5	1.8	26.0	37.3
Umkhanyakude	17.7	7.9	9.8	9.0	3.9	5.1	7.0	5.3	1.7	3.6	34.8	31.5
Umzinyathi	27.3	13.1	14.2	3.3	1.6	1.6	4.6	2.7	2.0	4.1	22.1	38.2
Uthukela	55.8	7.1	48.7	7.6	0.0	7.6	2.6	2.1	0.5	1.4	29.7	39.9
Zululand	22.4	14.6	7.8	1.8	1.6	0.2	2.0	1.6	0.5	3.1	25.3	42.8
eThekwini	25.8	11.4	14.4	1.2	0.9	0.3	4.7	3.1	1.6	5.1	22.7	36.8
iLembe	35.7	19.1	16.6	7.5	6.3	1.2	3.1	1.7	1.4	3.4	28.8	32.8
Province	29.8	13.6	16.1	3.1	1.7	1.4	4.8	3.0	1.8	4.2	25.1	36.9

Legend



1 Introduction

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

Food security is a multi-dimensional concept[1], 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 limited economic activities. This requires planning that is adequate, efficient, and effective in addressing the country's vulnerability to food insecurity. Such planning needs to be supported by up-to-date data at lower geographic levels and scientific evidence that is contextually relevant to the realities facing various communities and households in the country. Large-scale surveys, such as the NFNSS, can generate such data and evidence, given its focus on generating data that is representative at the district levels. The NFNSS survey intends to address the following objectives:

1. To provide a baseline assessment of the food and nutrition security situation at households in the respective livelihood zones in KwaZulu-Natal 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 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 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).

2 Background

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

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

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

3 Methodological Matrix

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 experience, it considers the right to food. Figure 1 provides an overview of the food security continuum.

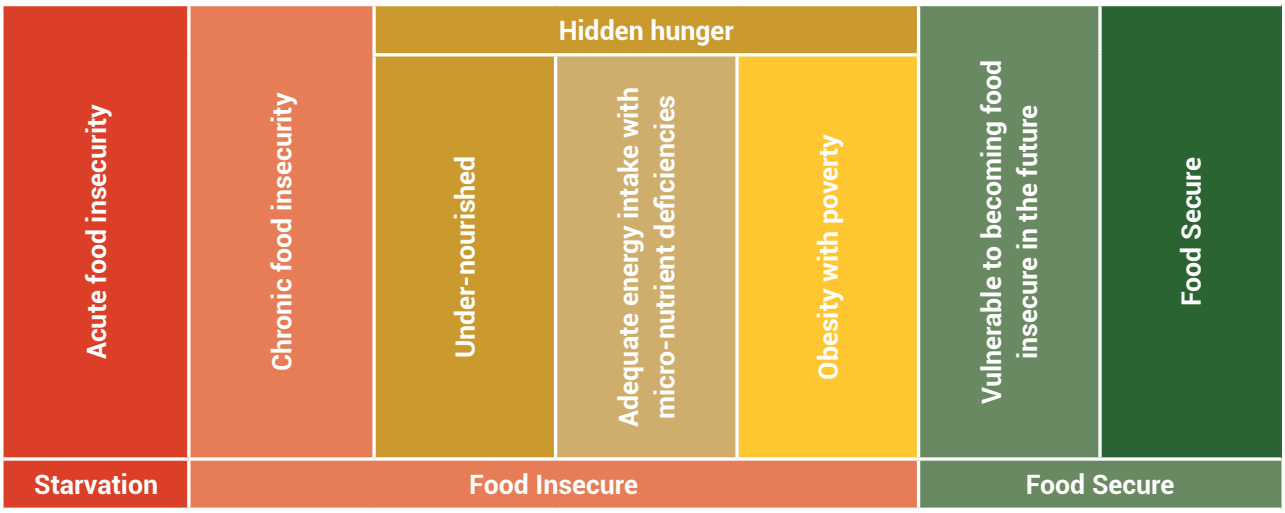


Figure 1: *Food Security Continuum (Hendriks, 2016)*

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

3.2 Indicators of Food and Nutrition Security Measurement

The household food and nutrition security (FNS) levels were measured using different indicators. The multidimensional 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 will focus 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 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 the quantitative and qualitative methods

	Baseline Assessment Indicators	Tools	Instrument: Section	
Food Security Continuum	Availability	• Production • Post-Harvest	6	Household Economic Approach
	Access	• Hunger Scale (12months) • Hunger Scale (4Weeks) • HFIAS	7 A, B, C, D 9	
	Stability	• Food expenditure • Key Informant Interviews • Shocks	8, 11, 12	
	Utilisation	• HDD • Anthropometry Measurements	Individual Nutrition Questionnaire	

**HEA: 1) Food Security Livelihood Zoning 2) Wealth Breakdowns 3) Livelihood Strategies 4) Problem Specification 5) Analysis of Coping Strategies 6) Projected Outcomes.

3.3 Household Economy Approach (HEA)

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

4 Survey Design and Sampline

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 119 SALs were selected. 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 were selected. Then in each household, we selected an average of 3 persons (household head, mother/caregiver, and child under 5 years old) were targeted for participation in the survey.

For the HEA, qualitative information was gathered through the focus group discussions and key informant interviews in the selected open-access livelihood zones of KwaZulu-Natal Province. A livelihood zone is an area within which people share broadly 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

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 of the livelihood zones (LHZ).

Administratively, KwaZulu-Natal Province is divided into 10 districts, and 61 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 may not necessarily have all the livelihood zones. A Geographical Information System (GIS) function was used to overlay the administrative boundaries with the livelihood zones (as illustrated in Figure 2).

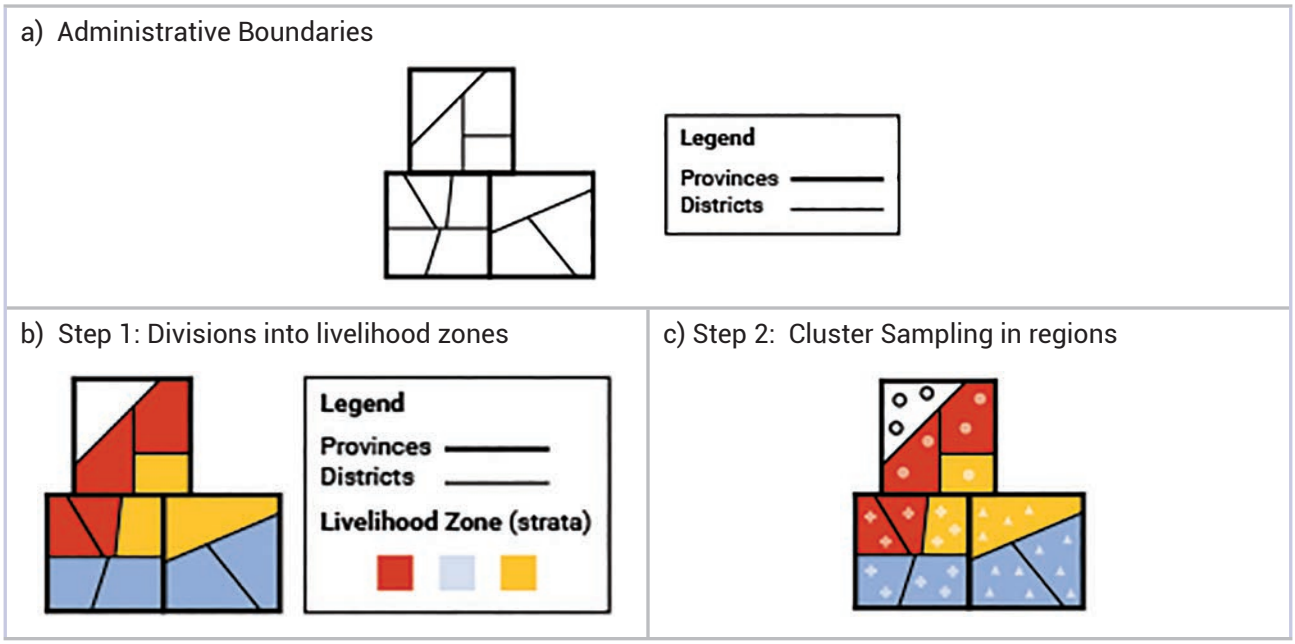


Figure 2: *Schematic representation of the overlay of administrative boundaries and LHZ*

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 10 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 household level of food security.

In order to enhance precision in the estimation of the main outcome indicators, 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 the appropriate sample size was covered, extra clusters per strata were added to substitute inaccessible areas, insecurity, or rejection of some original clusters. Likewise, households within each cluster were reserved to compensate for nonresponse or refusal.

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. 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.

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

- 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 (if applicable)	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**	**17 992**

A sample of 401 households per stratum (district) provides the required estimate of food insecurity of 50% (SANHNAES, 2013), with a 6.5% precision around the estimate assuming a 15% household non-response rate, and a design effect of 1.5 with 95 % confidence level and 80% power. This has been adopted for KwaZulu-Natal Province with an expected calculated average of 480 households per district (Table 3). A lower precision, e.g., 7%, recommended for lower geographies, yields 346 households per region.

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. It was 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% (SANHNAES, 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. 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 level. 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 (if applicable)	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 313 SALs, across 11 districts in the province. Within each SAL, a random sample of 30 visiting points was identified. One household was to be selected at each visiting point. This yielded a total sample size of 10 692 households. Once a household was selected, specific household members were eligible to participate in the survey (as per the inclusion and exclusion criteria set refer to 4.3). These include the head of the household and / or the person responsible for food procurement and food preparation, as well as the biological mother of any children under the age of 5 years and all children between the ages of 0-5 years. We had estimated that on average each household will yield 3 people. The total sample was thus 10 692. The survey managed to get 934 children in the province.

4.4.3 Sampling procedure: selecting clusters

The representativeness of the sample also depends on the sample structure including the selection of clusters and households within clusters. Clusters or SALs within districts were selected using PPS (Probability Proportional to Size) which measures the size of the number of households in each SAL. To ensure results could be reported at district or livelihood zones, the SALs were distributed across the livelihood zones within each district.

We adopted the World Food Program (WFP) Technical Guideline which defines a cluster based on SALs, cluster size or the number of household's survey teams that 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. In this province, 30 households per cluster or (SAL) were thus used.

4.4.3.1 Household Response Rate

Out of the targeted 10 692 visiting points (VPs), 95.7% were valid. Out of these valid VPs, 82.6% (8 824) were realised or interviewed while the refusals accounted for 4.6%. Absent or 'other' constituted 8.5%. '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.

Ugu recorded the highest realisation with 88.8%, while uMkhanyakude accounted for the least percentage with 71.8%.

Table 4: Household response rate by district

District	Total VPs	Valid VPs		Interviewed		Refused		Absent/Other	
	n	n	%	n	%	n	%	n	%
Ugu	970	944	97.3	861	88.8	35	3.6	48	4.9
UMgungundlovu	928	900	97	727	78.3	75	8.1	98	10.6
Uthukela	1 003	963	96	826	82.4	38	3.8	99	9.8
Umkhanyakude	1 001	891	89	719	71.8	53	5.3	119	11.9
King Cetshwayo	960	912	95	798	83.1	31	3.2	83	8.7
Harry Gwala	925	887	95.9	744	80.4	43	4.6	100	10.9
Umzinyathi	968	944	97.5	855	88.3	33	3.4	56	5.8
Amajuba	1 000	958	95.8	802	80.2	79	7.9	77	7.7
Zululand	948	910	96	816	86.1	26	2.7	68	7.2
iLembe	985	955	97	812	82.4	31	3.1	112	11.5
eThekwini	1 004	973	96.9	864	86.1	45	4.5	64	6.3
Total	**10237**	**10237**	**95.7**	**8824**	**82.6**	**489**	**4.6**	**924**	**8.5**

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 zones 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, 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.

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 a 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, among others:

- Entering an SAL (community entry and stakeholder identification), identification of Visiting Points (VPs) (using maps and GPS coordinates), selecting a 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 313 Small Area Layer (SALs) with 35 households in each visiting point were preselected for the survey using Geographic Information Systems with maps developed and used for the 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. (Table 1). Data collection was done using tablets that were linked to the central server where data was deposited through real-time streaming that took place under strict supervision.

- There was a 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

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 South Coast Intensive Open Access Cropping (ZASCO) of eThekwini and Ugu districts

This livelihood zone covers an area of 142,800ha of the eThekwini and Ugu districts. It is one of the livelihood zones close to Durban in KwaZulu-Natal Province. The vegetation consists of bushveld and grassland and the topography is coastal and riverine with broken terrain. The main features of the zone are Port Shepstone Town, uMzimkhulu, Mthavuna, Mthwalume, and Mkomaas rivers, and the valley of the thousand hills. The population is largely made up of Zulu people and the average population density is 821 people per km^2. It receives very good rainfall, but land degradation and slope are an issue. It is densely populated. Because

of its proximity to the urban centres of Durban and the coastal towns, households also obtain income from remittances, petty trading, and casual labour. It is accessed by feeder roads that connect to the N2 Highway. The south coast railway line also passes by the zone. Durban serves as the main administrative and business centre for people in the zone, while Pietermaritzburg is the capital city of KwaZulu-Natal Province. The total population in the zone is 429,462 (Census 2011).

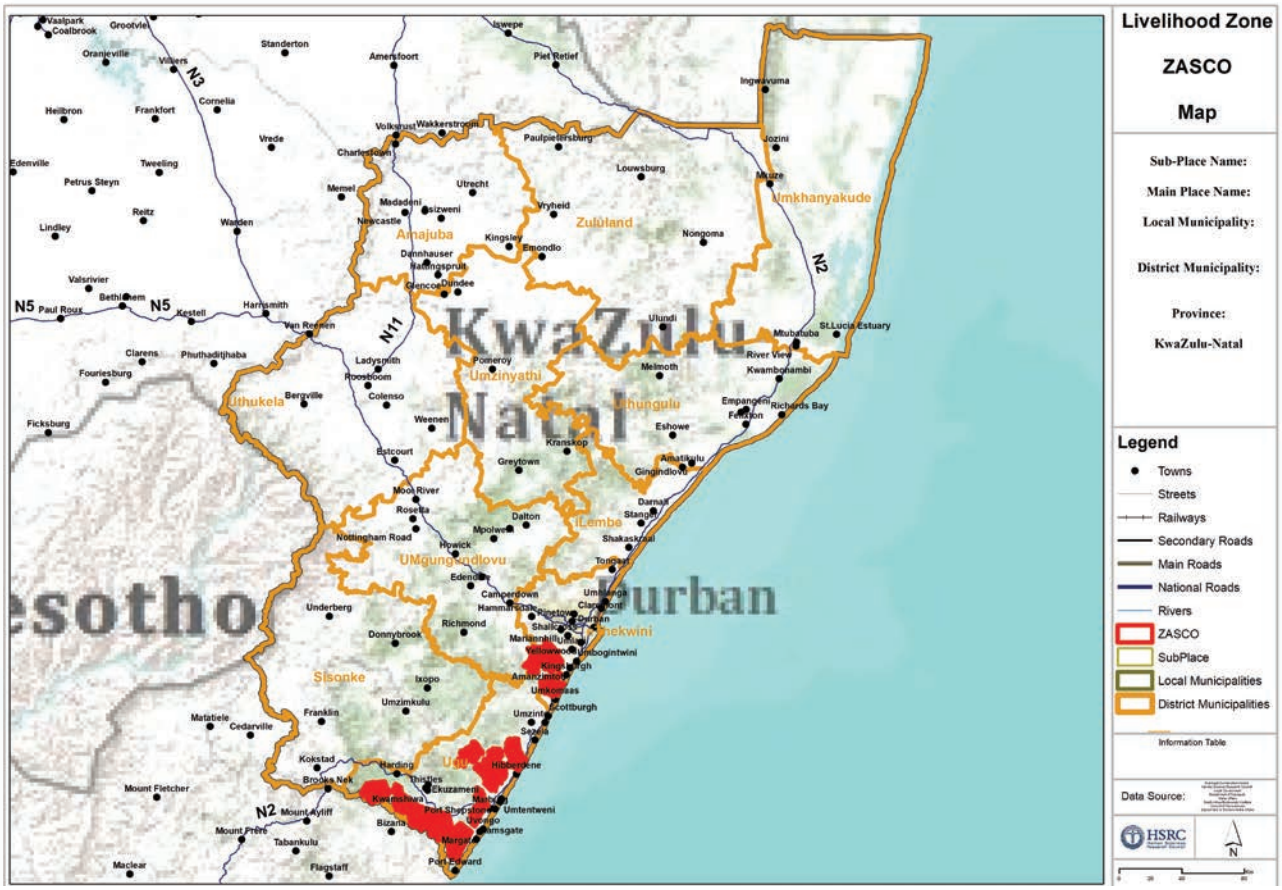


Figure 3: *Map of South Coast Intensive Open Access Cropping Livelihood Zone (ZASCO)*

- This zone is located in a series of pockets just inland of the coast in hilly terrain.
- Crops are grown in the valley and livestock grazed on the hills. Slopes can be steep.
- Some of the main crops grown in the zone include sugarcane, potatoes, maize, amadumbe, sweet potatoes, and vegetable.
- Timber, game, wild food, and fish are also found in the zone.

Figure 4: *Livelihood zone provincial location*

Most of the zone receives rainfall ranging from 650 to 1200 mm per annum. The temperature ranges from 22°C to 35°C in summer and 10°C to 18°C in winter. The main crops that are grown for food are maize, beans, potatoes, and vegetables. Fertile well-drained soils characterize the zone, and the land capability is classified as 'high potential agricultural area'. Wealthier households keep cattle and goats which make use of the extensive grazing in the surrounding veld. Households also depend on both formal and informal cash transfers.

The figures above show a map of the zone and the location. The N2 (National Road) serves the zone and connects the area to the Eastern Cape Province.

4.6.2 Open Access Low Intensity Rain-Fed Cultivation (ZALRC)

This livelihood zone covers uMkhanyakude, Zululand, uThungulu, iLembe, and uMgungundlovu districts. It is one of the livelihood zones close to Durban in KwaZulu-Natal Province. The vegetation consists of bush shrubs and grassland. The topography is plain valleys and lowlands. The main features close to and within the zone are the Lebombo mountains, Jozini Dam, and Phongolo River. The population is largely made up of Zulu people and the average population density is 10 people per km^2. It receives very good rainfall, but land degradation and soil erosion are challenges. Because of its proximity to the urban centres of Durban and Pietermaritzburg, households also obtain income from remittances, petty trading, and casual labour. Trunk roads through the zone include the N2 Highway, and there is also a railway line coming up from Durban, while numerous smaller feeder roads provide local access.

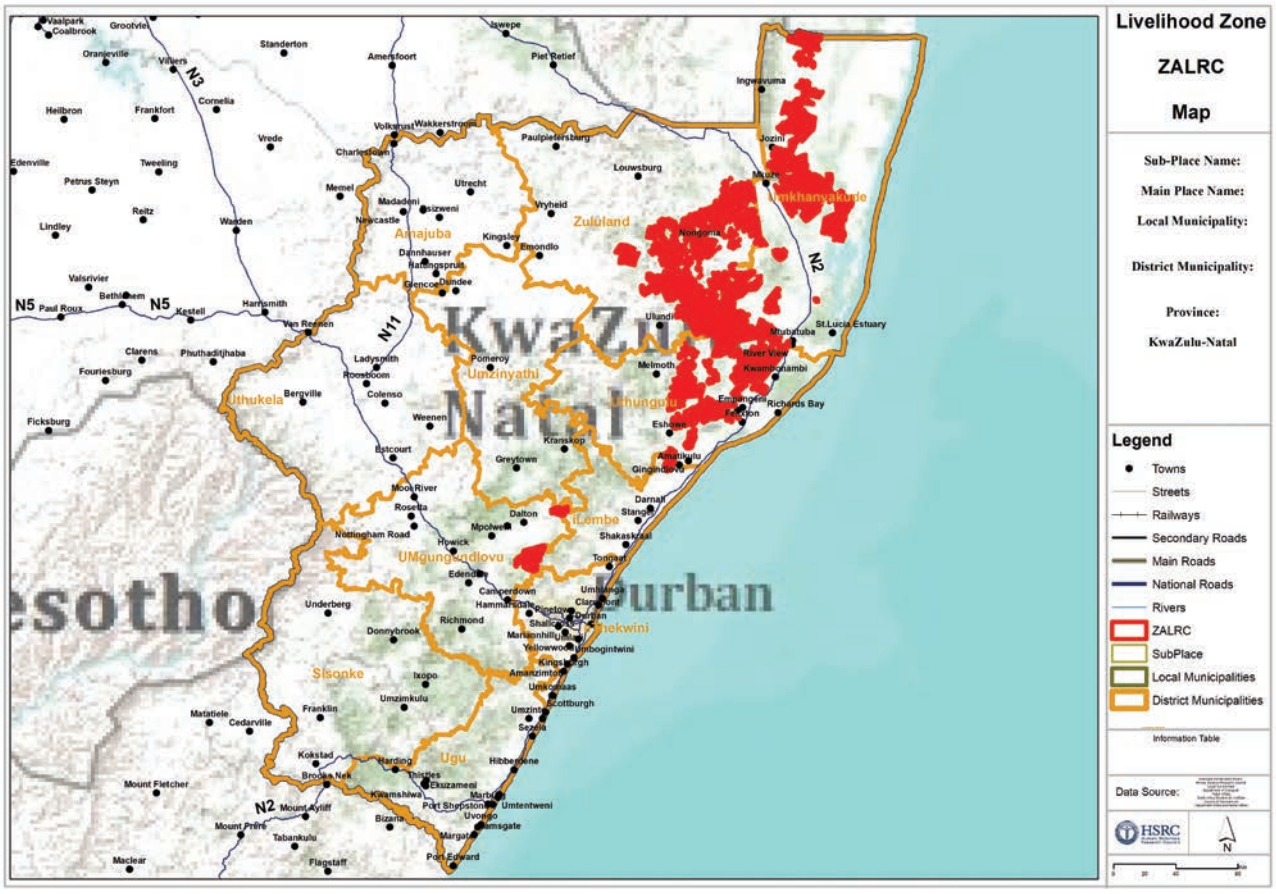


Figure 5: *Map of Open Access Low Intensity Rainfed Cultivation Livelihood Zone (Northern Section)*

- This livelihood zone has 528,798 people. It is located mostly on the northern coastal strip of KwaZulu-Natal and, due to the good rains and less-hilly topography, livelihoods are based on a mix of cropping, livestock husbandry, and other income sources such as petty trading and grants. Crop field sizes are limited by topography and the population density.
- The area of the zone below Jozini Dam has significant irrigated farms.
- Some of the main crops grown in the zone include sugarcane, potatoes, maize, sweet potatoes, and vegetables.
- Timber, game, wild food, and fish are also found in the zone.

Figure 6: *Livelihood zone provincial location*

Most of the zone receives rainfall ranging from 650 to 1 200mm per annum. The temperature ranges from 22°C to 35°C in summer and 7°C to 18°C in winter. The main crops that are grown for food are maize, beans, potatoes, and vegetables. Fertile, well-drained fertile soils characterize the zone, and the land capability is classified as 'high potential agricultural area'. Wealthier households keep cattle and goats which make use of the extensive grazing in the surrounding veld. Households also depend on both formal and informal cash transfers. The N2 National Road serves the zone and connects the area to the Eastern Cape Province. Durban and Pietermaritzburg serve as the main administrative and business centres for people in the zone. The total population in the zone is 528,798 (Census 2011).

4.6.3 Coastal Open Access Non-crop Income (ZACNI) of iLembe, Sisonke, Ugu, uMgungundlovu, uMkhanyakude, uMzinyathi, and uThungulu districts

This livelihood zone covers iLembe, Sisonke, Ugu, uMgungundlovu, uMkhanyakude, uMzinyathi, and uThungulu districts. It covers an area of 1,233,600ha. It is one of the livelihood zones close to a number of administrative centres including Pietermaritzburg, Nqutu, Richmond, Msinga, Nkandla, Grey town, Dundee, and Jozini. The vegetation consists of bush shrubs and grassland. The topography is mountainous and lowlands, with sandy to loam soils. The main features close to and within the zone are Matshensikazi, Msahweni, Mhlosheni and Nonsengwa mountains, and Umfolozi, Umkhomazi and Umzimlilo rivers. The population is 1,501,812 and is largely made up of the Zulu people. The average population density ranges from 130-500 people per km^2. Because of its proximity to some urban centres, households also obtain income from remittances, petty trading, and casual labour.

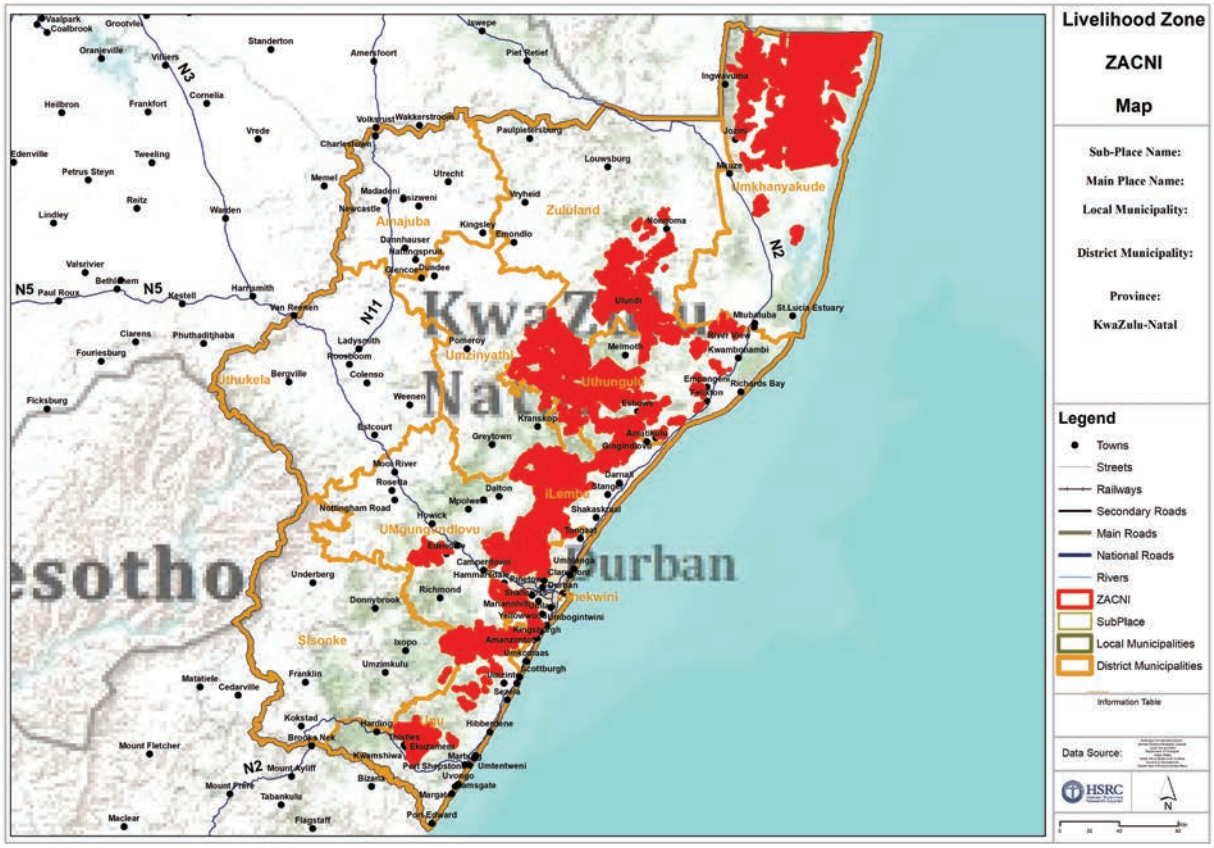


Figure 7: *Map of the Coastal Open Access non-crop income Livelihood Zone (ZACNI) - Umhlabauyalingana Section*

Densely populated and with unsuitable soils, especially on the flat plains of Makathini, or slopes too steep elsewhere, so there is minimal cropping;

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

Most of the zone receives rainfall ranging from 300 to 700mm per annum. The temperature ranges from 15°C to 39°C. Eroded, poor sandy-loam fertile soils characterise the zone and the land capability is classified as 'moderate potential agricultural area'. The main crops that are grown for food are maize, beans, sweet potato, cassava, groundnuts, and vegetables.

Figure 8: *Livelihood zone provincial location*

Wealthier households keep cattle and goats, which make use of the extensive grazing in the surrounding open-access areas. Households also depend on both formal and informal cash transfers. The zone is serviced by the N2 Highway and numerous smaller feeder roads. The total population in the zone is 1,501,812 (Census 2011).

4.6.4 Mzimkhulu–Mkhomazi Midlands Open Access Mixed Farming (ZAMMO) of Harry Gwala, eThekwini, uMgungundlovu, and Ugu districts

This livelihood zone covers Harry Gwala, eThekwini, uMgungundlovu, and Ugu districts. It is one of the livelihood zones close to Durban and Pietermaritzburg. The vegetation consists of bush shrubs and grassland. The topography is plain valleys and lowlands. The main features close and within the zone are Drakensberg and Msikazi mountains. Some of the main rivers include Mkhomazi, Mzimkhulu, Pholela, Umzumbe, and Mhlabashana rivers. The population is largely made up of the Zulu people and the average population density is 10 people per km^2. It receives very good rainfall, but land degradation and soil erosion remain a challenge. Because of its proximity to the urban centres of Durban and Pietermaritzburg, households also obtain income from remittances, petty trading, and casual labour. Some of the main roads are R612, R56, N2 and P68. The main highway is the R56 through Ixopo to Kokstad, and the N2 from Port Shepstone.

- This zone has 306,500ha and is located in the valleys and intermediate watersheds of the two main river systems of the southern part of KwaZulu-Natal.
- The valley floors are fertile and productive, and rainfall is good but the topography is rugged and often quite steep - access is often difficult; and
- Households grow crops and keep livestock – cattle and goats – and engage in other non-farming income-generating activities.

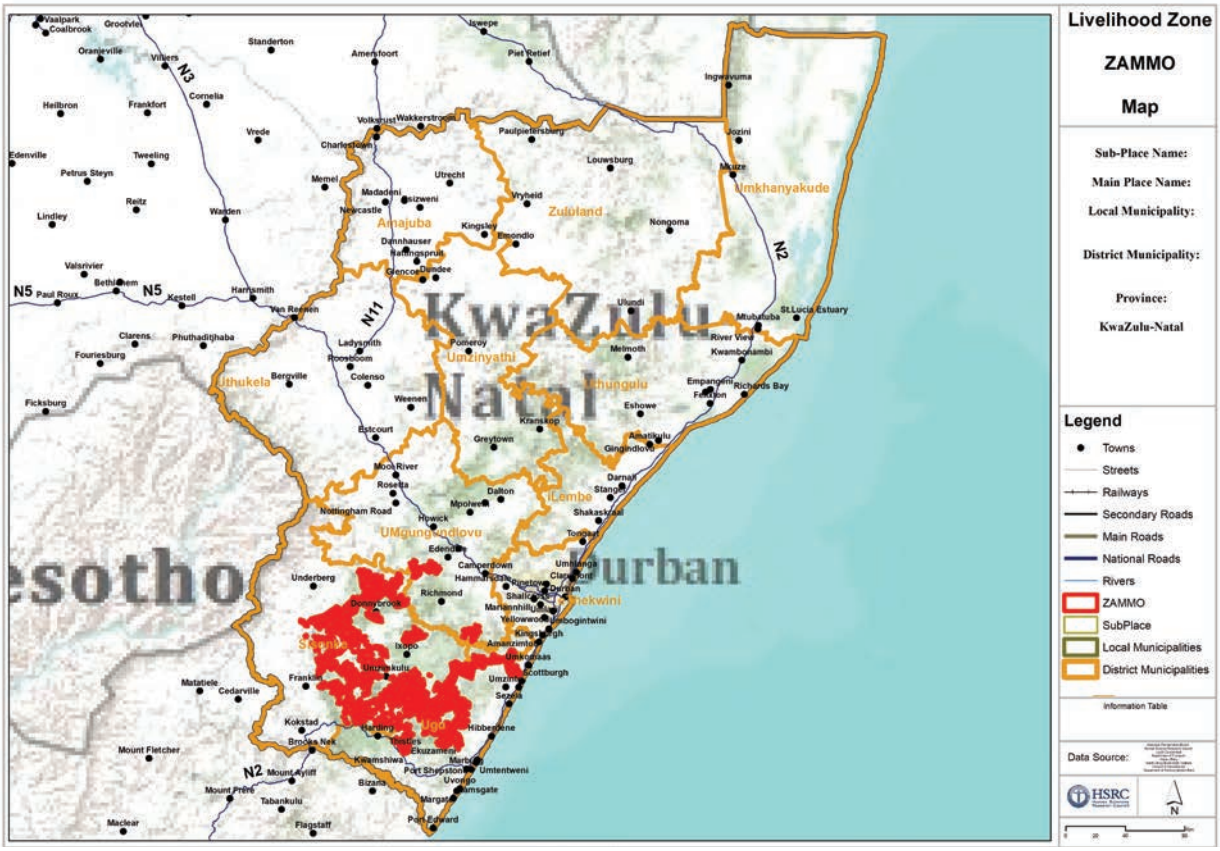


Figure 9: *Map of Mzimkhulu-Mkhomazi Midland Open Access Mixed Farming Livelihood Zone (ZAMMO)*

Most of the zone receives rainfall ranging from 700 to 1000mm per annum. The temperature ranges from 8°C to 37°C. Fertile well-drained soils characterize the zone and the land capability is classified as 'high potential agricultural area, especially for livestock production'. The main crops that are grown for food are maize, sugarcane, beans, potatoes, and vegetables. The area is grassland and suitable for livestock production especially dairy and beef production.

Figure 10: *Livelihood zone provincial location*

Wealthier households keep cattle, sheep, a nd goats which make use of the extensive grazing in the surrounding veld. Households also depend on both formal and informal cash transfers. The N2 National Road serves the zone and connects the area to the Eastern Cape Province. Durban and Pietermaritzburg serve as the main administrative and business centres for people in the zone. The total population in the zone is 467,526 (Census 2011).

4.6.5 Thukela and Lebombo sparsely populated areas (ZATGL)

This livelihood zone covers iLembe, uMkhanyakude, uMzinyathi, uThukela, and uThungulu districts. It covers an area of 333,300ha. It is one of the livelihood zones close to a number of administrative centres including Nqutu, Msinga, Nkandla, Grey town, Dundee, and Jozini. The vegetation consists of bush shrubs and grassland. The topography is mountainous and lowlands with mixed soils. The main features close to and within the zone are Tugela Ferry, Lebombo Mountains, Jozini Dam, and the uMzinyathi, Mooi, Phongolo, and Tugela rivers. The population is 151,944 and is largely made up of the Zulu people. The average population density ranges from 6-10 people per km^2. Because of its proximity to some urban centres, households also obtain income from remittances, petty trading, and casual labour. The zone is serviced by a number of roads as well as feeder roads.

- Steep slopes, and poor soils; hot in summer;
- Rainfall is somewhat unreliable with dense thicket vegetation;
- Sparsely populated;
- Access difficult and land unsuitable for grazing larger stock; and
- Few households in the zone keep smaller stock and may have small fields scattered on the valley floor.

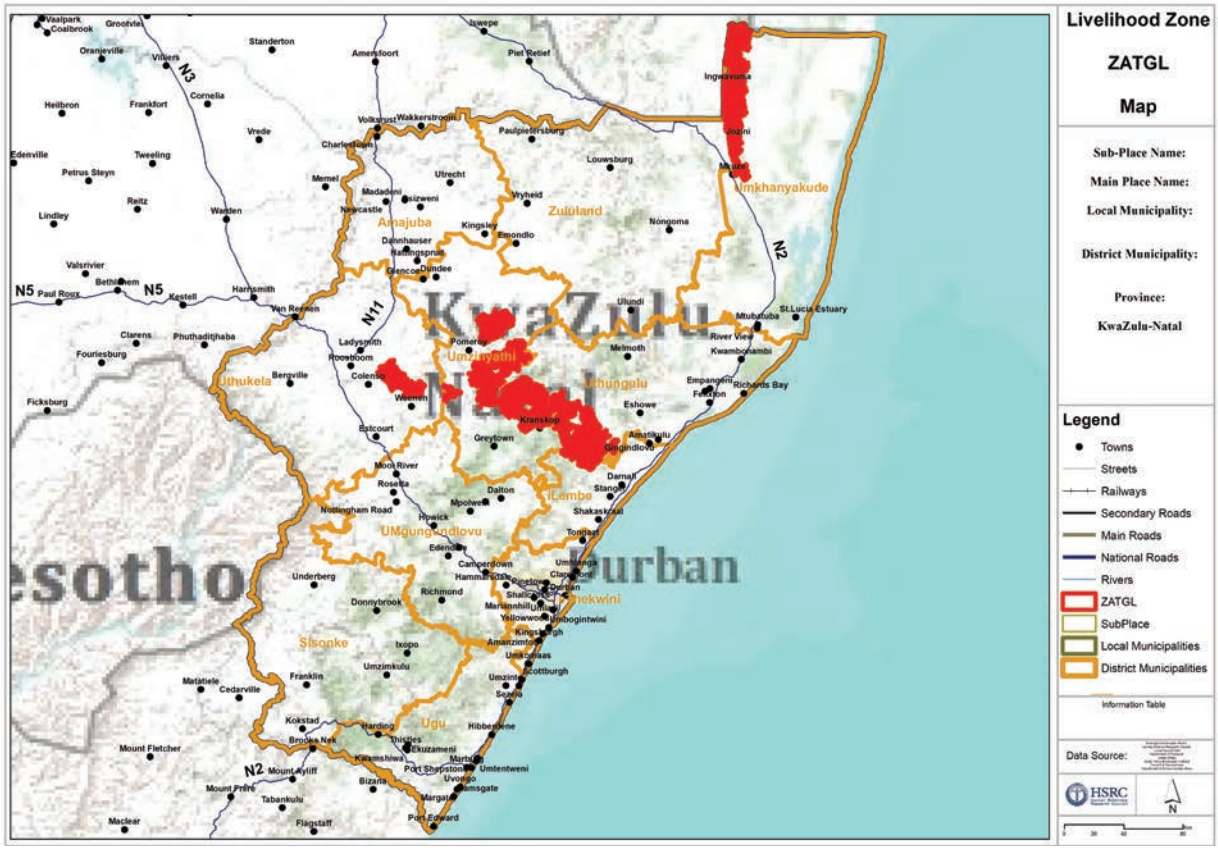


Figure 11: *Map of Thukela and Lebombo Sparsely Populated Livelihood Zone - Lebombo Section (ZATGL)*

Most of the zone receives rainfall ranging from 500 to 750mm per annum. The temperature ranges from 15°C to 29°C. Eroded poor sandy-loam fertile soils characterize the zone and the land capability is classified as 'moderate potential agricultural area'. The main crops that are grown for food are maize, beans, and vegetables.

Figure 12: *Livelihood zone provincial location*

Wealthier households keep cattle and goats which make use of the extensive grazing in the surrounding open access areas. Households also depend on both formal and informal cash transfers. Dundee, Phongola, Nqutu and a number of local municipalities serve as administrative and business centres for people in the zone. The total population in the zone is 151,944 (Census 2011).

4.7 Data Management, Weighting, and Analysis

4.7.1 Data management

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

The data was transmitted to the central database. Once all the data was collected, it was downloaded and converted into Statistical Analyses Systems (SAS) and Statistical Package for Social 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 4 035 cases, and 3 394 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 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 KwaZulu-Natal 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 4 035 people were interviewed in this province. When weighted, this total represents 11 521 536 South Africans living in KwaZulu-Natal Province of 18 years and older.

The final data set (unweighted and weighted) is disaggregated by key demographic variables of household heads.

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

District	Unweighted N	Weighted N
Ugu	861	485 671
UMgungundlovu	727	750 620
Uthukela	826	404 365
Umkhanyakude	719	374 497
King Cetshwayo	798	569 254
Harry Gwala	744	286 372
Umzinyathi	855	308 776
Amajuba	802	350 590
Zululand	816	478 855
iLembe	812	428 422
eThekwini	864	2 835 036
Total	**8 824**	**7 272 458**

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

Gender	Unweighted N	Weighted N
Male	3 994	3 351 320
Female	4 830	3 921 138
Total	**8 824**	**7 272 458**

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

Age groups	Unweighted N	Weighted N
18-24	273	1 345 299
25-34	1 124	2 062 325
35-44	1 681	1 532 702
45-54	1 759	976 811
55-64	1 843	700 669
65+	2 144	654 653
Total	**8824**	**7 272 458**

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. Weighted [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 with the general population of KwaZulu-Natal Province. Analyses of weighted data were conducted considering the multi-level sampling design and adjusting for non-responses.

5 Demographics

5.1 Characteristics of the household heads and members

5.1.1 Sex of the household heads

Table 8 depicts characteristics of household heads and members from the households that were realised. More than half (54.7%) of household heads were females, whilst 45.3% were males. The majority of the respondents were from the Black African population group (94.1%) while those aged 65 years and older constituted the highest percentage (24.3%). In terms of marital status, those who were single accounted for 46.1%. Amongst the districts, Ugu and eThekwini had the highest proportion of the household heads with 9.8% each. With regards to household members, a similar pattern existed in terms of sex and population group as it was for household heads with female accounting for more than half (55.6%), while Black Africans dominated with 95.7%. Children aged 0 to 14 years old constituted the highest percentage, with 30.2%. More than three-quarters (80.2%) of the household members were single. Zululand District had the highest percentage (10.9%) of household members, while Amajuba and Umkhanyakude had the least with 7.6% each.

Table 8: Characteristics of the sample for household heads and members in KwaZulu-Natal Province

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
Sex						
Male	45.3	[44.2-46.3]	3,994	44.4	[44.0-44.9]	17,127
Female	54.7	[53.7-55.8]	4,830	55.6	[55.1-56.0]	21,407
Total	**100**		**8,824**	**100**		**38,534**
Population group						
African	94.1	[93.5-94.5]	8,300	95.7	[95.5-95.9]	37,047
White	2.3	[2.0-2.6]	200	1.4	[1.3-1.5]	541
Coloured	1.2	[1.0-1.4]	102	0.9	[0.9-1.0]	367
Indian/Asian	2.5	[2.2-2.9]	222	2	[1.9-2.1]	769
Total	**100**		**8,824**	**100**		**38,724**
Age group						
0-14	-	-	-	30.2	[29.7-30.6]	11,291
18-24(15 -24 for HH Members)	3.1	[2.8-3.5]	273	19	[18.6-19.4]	7,124
25-34	12.7	[12.1-13.5]	1,124	16.6	[16.2-16.9]	6,197
35-44	19.1	[18.2-19.9]	1,681	12.2	[11.9-12.6]	4,574
45-54	19.9	[19.1-20.8]	1,759	8.3	[8.0-8.6]	3,097
55-64	20.9	[20.1-21.7]	1,843	6.9	[6.7-7.2]	2,600
65+	24.3	[23.4-25.2]	2,144	6.8	[6.6-7.1]	2,547
Total	**100**		**8,824**	**100**		**37,430**
Marital status						
Married/Living together	35.8	[34.8-36.8]	3,139	15.3	[15.0-15.7]	5,847
Divorced/Widowed/Separated	18.1	[17.4-19.0]	1,593	4.5	[4.3-4.7]	1,715
Single	46.1	[45.0-47.1]	4,045	80.2	[79.8-80.6]	30,541
Total	**100**		**8,777**	**100**		**38,103**
District						
Amajuba	9.1	[8.5-9.7]	802	7.6	[7.4-7.9]	2,959
Harry Gwala	8.4	[7.9-9.0]	744	7.8	[7.6-8.1]	3,039
King Cetshwayo	9	[8.5-9.7]	798	10.3	[10.0-10.6]	4,004
UMgungundlovu	8.2	[7.7-8.8]	727	7.8	[7.5-8.1]	3,022
Ugu	9.8	[9.2-10.4]	861	10.3	[10.0-10.6]	3,976
Umkhanyakude	8.1	[7.6-8.7]	719	7.6	[7.4-7.9]	2,965
Umzinyathi	9.7	[9.1-10.3]	855	10.7	[10.4-11.1]	4,164
Uthukela	9.4	[8.8-10.0]	826	8	[7.7-8.3]	3,093
Zululand	9.2	[8.7-9.9]	816	10.9	[10.6-11.2]	4,233
eThekwini	9.8	[9.2-10.4]	864	9.5	[9.2-9.8]	3,680
iLembe	9.2	[8.6-9.8]	812	9.4	[9.1-9.7]	3,631
Total	**100**		**8,824**	**100**		**38,766**

5.1.2 Education attainment of household heads

Table 9 highlights the educational attainment by the household heads. Matric qualification accounted for 38.0%, followed by those with secondary school education, with 28.5%. The older household heads, those aged 65 years and older and those aged 55 years to 64 years, had the highest percentages of no schooling, with 23.7% and 11.9%, respectively. The eThekwini District had the highest percentage (19.8%) of household heads with tertiary education, while Umzinyathi District had the highest percentage (14.5%) household heads with no education.

Table 9: Educational attainment of household heads by sex, age, and district in KwaZulu-Natal province

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	3.3	[2.4-4.5]	11.6	[9.5-14.1]	28.3	[23.5-33.7]	40.1	[36.2-44.1]	16.7	[12.0-22.8]
Female	6.5	[5.5-7.8]	16.1	[14.3-18.0]	28.7	[25.7-31.8]	36.2	[32.1-40.6]	12.5	[10.1-15.5]
Total	**5**	**[4.1-6.1]**	**14**	**[12.5-15.7]**	**28.5**	**[25.9-31.3]**	**38**	**[35.2-41.0]**	**14.5**	**[11.3-18.4]**
Age group										
18-24	2.3	[0.9-5.4]	5.5	[2.8-10.6]	28.5	[19.1-40.3]	51.2	[41.5-60.8]	12.5	[6.4-22.8]
25-34	1.5	[0.9-2.4]	4	[2.8-5.7]	27.4	[22.3-33.1]	49.5	[43.0-56.0]	17.6	[12.4-24.5]
35-44	1.6	[0.9-2.9]	9.2	[7.3-11.7]	33.3	[29.6-37.2]	39.7	[36.0-43.5]	16.2	[12.2-21.1]
45-54	4.1	[3.0-5.5]	20.1	[16.4-24.4]	31.5	[28.1-35.0]	29.1	[24.8-33.9]	15.3	[11.0-20.8]
55-64	11.9	[9.0-15.5]	35.6	[31.1-40.2]	23.6	[19.9-27.8]	17.2	[14.1-20.7]	11.8	[8.8-15.7]
65+	23.7	[19.2-28.9]	40.8	[36.0-45.7]	21.3	[15.3-28.8]	8.8	[6.2-12.3]	5.4	[3.4-8.4]
Total	**5**	**[4.1-6.1]**	**14**	**[12.5-15.7]**	**28.5**	**[25.9-31.3]**	**38**	**[35.2-41.0]**	**14.5**	**[11.3-18.4]**
District										
Amajuba	6.1	[3.0-12.1]	14.5	[9.3-21.8]	25.5	[19.1-33.1]	39.8	[32.8-47.2]	14.2	[9.5-20.6]
Harry Gwala	4	[2.7-5.9]	21.6	[16.3-28.1]	40.8	[34.1-47.8]	20.8	[14.6-28.9]	12.8	[6.8-22.8]
King Cetshwayo	8.1	[5.8-11.4]	16.1	[12.5-20.5]	24	[20.5-27.9]	37.6	[31.3-44.3]	14.1	[8.9-21.8]
UMgungundlovu	4.4	[3.0-6.3]	13.6	[9.5-19.2]	32.7	[26.8-39.2]	39	[32.7-45.7]	10.3	[6.3-16.4]
Ugu	6.8	[5.1-9.2]	22.6	[17.9-28.1]	30.1	[24.1-36.9]	32.1	[26.0-38.9]	8.3	[5.4-12.7]
Umkhanyakude	10.3	[6.1-16.8]	12.1	[8.1-17.9]	25.3	[17.9-34.4]	37.2	[23.0-54.0]	15.1	[8.3-26.0]
Umzinyathi	14.5	[10.3-19.9]	22.5	[16.0-30.7]	28.4	[22.9-34.6]	29.4	[22.5-37.3]	5.2	[3.4-8.0]
Uthukela	6.9	[4.3-10.9]	12.4	[9.1-16.6]	31.3	[25.9-37.2]	35.8	[30.9-41.0]	13.7	[10.0-18.4]
Zululand	8.3	[5.4-12.6]	16.9	[13.5-21.0]	29	[23.0-35.7]	36.5	[28.4-45.4]	9.4	[5.0-16.9]
eThekwini	1.3	[0.6-2.8]	9.3	[7.1-12.2]	26.6	[21.0-33.1]	42.9	[37.3-48.7]	19.8	[12.7-29.5]
iLembe	7.1	[4.9-10.2]	21	[15.8-27.3]	32.3	[27.2-37.9]	32.4	[25.9-39.7]	7.2	[4.9-10.5]
Total	**5**	**[4.1-6.1]**	**14**	**[12.5-15.7]**	**28.5**	**[25.9-31.3]**	**38**	**[35.2-41.0]**	**14.5**	**[11.3-18.4]**

5.1.3 Education attainment of household members aged 7 years and older

Table 10 shows the educational attainment by the household members aged 7 years and older. A similar trend was noticed as was for household heads, as those with matric qualification accounted for 30.9% followed by those with secondary school education, with 30.3%. The older household members, those aged 65 years and older and those aged 55 years to 64 years, had the higher percentages of no schooling, with 22.7% and 11.7%, respectively. When considering those aged 20 years and older, 4.8% of household members did not have any form of schooling, while 40.4% 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	2.6	[2.2-2.9]	26.3	[24.5-28.1]	31.3	[29.7-33.0]	31	[29.3-32.8]	8.9	[7.2-10.9]
Female	4.5	[4.0-5.2]	26.1	[24.8-27.3]	29.5	[28.3-30.8]	30.8	[29.4-32.2]	9.1	[7.8-10.7]
Total	**3.7**	**[3.2-4.1]**	**26.1**	**[24.8-27.5]**	**30.3**	**[29.1-31.5]**	**30.9**	**[29.6-32.2]**	**9**	**[7.6-10.7]**
Age group										
7-14	1.1	[0.7-1.7]	84.8	[83.4-86.1]	13.3	[12.1-14.6]	0.6	[0.4-0.9]	0.2	[0.1-0.3]
15-24	0.6	[0.4-0.8]	6.3	[5.4-7.3]	50.4	[48.3-52.6]	38	[36.1-40.0]	4.7	[3.9-5.6]
25-34	0.6	[0.4-1.0]	4.2	[3.6-5.0]	25.8	[23.8-27.9]	54.4	[52.1-56.8]	14.9	[12.7-17.4]
35-44	1.3	[1.0-1.8]	8.3	[7.2-9.5]	33.5	[30.9-36.3]	42.8	[40.0-45.7]	14	[11.5-17.0]
45-54	4.5	[3.6-5.5]	18.3	[15.9-21.1]	31	[28.4-33.7]	30.9	[27.7-34.2]	15.3	[11.9-19.6]
55-64	11.7	[9.7-14.1]	32.7	[28.9-36.7]	26.2	[23.0-29.7]	18	[15.0-21.5]	11.3	[8.7-14.7]
65+	22.2	[18.6-26.2]	38.1	[34.1-42.2]	22.2	[16.9-28.7]	10.7	[8.0-14.3]	6.8	[4.6-10.0]
Total	**3.7**	**[3.2-4.1]**	**26.1**	**[24.8-27.5]**	**30.3**	**[29.1-31.6]**	**30.9**	**[29.6-32.2]**	**9**	**[7.6-10.7]**
District										
Amajuba	4	[2.9-5.6]	23.2	[21.1-25.4]	28.3	[25.8-30.8]	33.8	[31.0-36.8]	10.7	[7.7-14.7]
Harry Gwala	4.2	[3.3-5.4]	33.9	[31.2-36.6]	35.6	[33.1-38.2]	21.4	[18.8-24.3]	4.9	[3.5-6.8]
King Cetshwayo	4.2	[3.1-5.7]	27.1	[24.1-30.2]	26.5	[24.4-28.8]	32.8	[29.9-35.9]	9.4	[6.8-12.8]
UMgungundlovu	3.5	[2.6-4.7]	26.6	[23.9-29.5]	30.9	[28.4-33.6]	30	[27.6-32.5]	9	[6.4-12.5]
Ugu	3.8	[3.2-4.5]	33.4	[30.2-36.7]	30.8	[28.9-32.8]	25.9	[23.5-28.4]	6.2	[4.4-8.7]
Umkhanyakude	8.3	[6.7-10.3]	28.1	[24.7-31.7]	28.3	[26.1-30.7]	26	[23.8-28.3]	9.3	[6.0-14.1]
Umzinyathi	9.3	[7.5-11.5]	34.2	[31.5-37.0]	30.7	[29.1-32.5]	21.3	[18.4-24.5]	4.5	[3.0-6.7]
Uthukela	5.3	[4.4-6.3]	25.9	[23.6-28.3]	31.2	[28.5-34.0]	29.2	[26.9-31.8]	8.4	[6.4-11.1]
Zululand	5.3	[4.3-6.5]	32.5	[30.2-34.9]	32.6	[30.4-35.0]	24.9	[22.4-27.5]	4.7	[3.2-6.9]
eThekwini	1.4	[1.0-1.9]	20.6	[18.3-23.0]	30.1	[27.3-33.1]	36.5	[34.4-38.8]	11.4	[8.2-15.8]
iLembe	5.5	[4.2-7.2]	31.7	[29.1-34.4]	31	[28.5-33.6]	24.2	[21.8-26.8]	7.6	[4.9-11.7]
Total	**3.7**	**[3.2-4.1]**	**26.1**	**[24.8-27.5]**	**30.3**	**[29.1-31.6]**	**30.9**	**[29.6-32.2]**	**9**	**[7.6-10.7]**

5.1.4 Employment Status

Table 11 shows that among the household heads and members who were economically active, 48.0% and 67.8% respectively were unemployed. A higher proportion (57.0%) of female household heads were unemployed compared to their male counterparts, with 38.2% being unemployed. For household members, a similar pattern exists. About 71% of female household members were unemployed, compared to 63.9% of males. Among the youth, those aged 34 years and younger, the unemployment rate was 52.6% and 78.5% for household heads and members, respectively. Younger people (18 to 24 years for household heads and 15 to 24 years for household members) had the highest unemployment rate with 66.4% and 92.1%, respectively. The highest unemployment rate for household heads and members was reported in Zululand District, with 72.2% and 81.9%, 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	61.8	[57.1-66.3]	38.2	[33.7-42.9]	36.1	[33.6-38.7]	63.9	[61.3-66.4]
Female	43	[38.9-47.3]	57	[52.7-61.1]	29	[27.1-31.0]	71	[69.0-72.9]
Total	**52**	**[48.3-55.6]**	**48**	**[44.4-51.7]**	**32.2**	**[30.2-34.3]**	**67.8**	**[65.7-69.8]**
Age group								
18-24 (15 -24 for HH Members)	33.6	[24.6-44.1]	66.4	[55.9-75.4]	7.9	[6.6-9.5]	92.1	[90.5-93.4]
25-34	54.2	[47.6-60.6]	45.8	[39.4-52.4]	36.3	[33.6-39.2]	63.7	[60.8-66.4]
35-44	64	[59.8-68.0]	36	[32.0-40.2]	49.6	[46.8-52.4]	50.4	[47.6-53.2]
45-54	58	[52.4-63.4]	42	[36.6-47.6]	50.7	[47.2-54.3]	49.3	[45.7-52.8]
55-64	36.4	[32.3-40.8]	63.6	[59.2-67.7]	32.2	[28.9-35.6]	67.8	[64.4-71.1]
Total	**52**	**[48.3-55.6]**	**48**	**[44.4-51.7]**	**32.2**	**[30.2-34.3]**	**67.8**	**[65.7-69.8]**
District								
Amajuba	53	[43.6-62.2]	47	[37.8-56.4]	32	[27.7-36.6]	68	[63.4-72.3]
Harry Gwala	42.9	[34.9-51.3]	57.1	[48.7-65.1]	24.9	[20.2-30.2]	75.1	[69.8-79.8]
King Cetshwayo	48.6	[40.3-56.9]	51.4	[43.1-59.7]	27.6	[23.9-31.5]	72.4	[68.5-76.1]
UMgungundlovu	44.4	[34.5-54.8]	55.6	[45.2-65.5]	31.3	[26.4-36.6]	68.7	[63.4-73.6]
Ugu	49.6	[40.3-58.8]	50.4	[41.2-59.7]	30.5	[25.6-35.8]	69.5	[64.2-74.4]
Umkhanyakude	43.6	[35.5-52.2]	56.4	[47.8-64.5]	27.1	[22.5-32.1]	72.9	[67.9-77.5]
Umzinyathi	36.6	[28.0-46.0]	63.4	[54.0-72.0]	18.2	[14.2-23.0]	81.8	[77.0-85.8]
Uthukela	54.7	[44.6-64.4]	45.3	[35.6-55.4]	28.7	[24.5-33.2]	71.3	[66.8-75.5]
Zululand	27.3	[18.4-38.5]	72.7	[61.5-81.6]	18.1	[15.0-21.6]	81.9	[78.4-85.0]
eThekwini	61.2	[54.2-67.7]	38.8	[32.3-45.8]	39.3	[35.4-43.2]	60.7	[56.8-64.6]
iLembe	57.5	[49.7-65.0]	42.5	[35.0-50.3]	33.4	[27.7-39.6]	66.6	[60.4-72.3]
Total	**52**	**[48.3-55.6]**	**48**	**[44.4-51.7]**	**32.2**	**[30.2-34.3]**	**67.8**	**[65.7-69.8]**

At local municipality level, Maphumulo, Ndwendwe, Nkandla, Nongoma, Nqutu, Ulundi, and uPongolo local municipalities fell under the highest band (82.3%-91.3%) of unemployed household members (Figure 13). Mkhambathini local municipality fell under the lowest band of 18.2% of household members being unemployed.

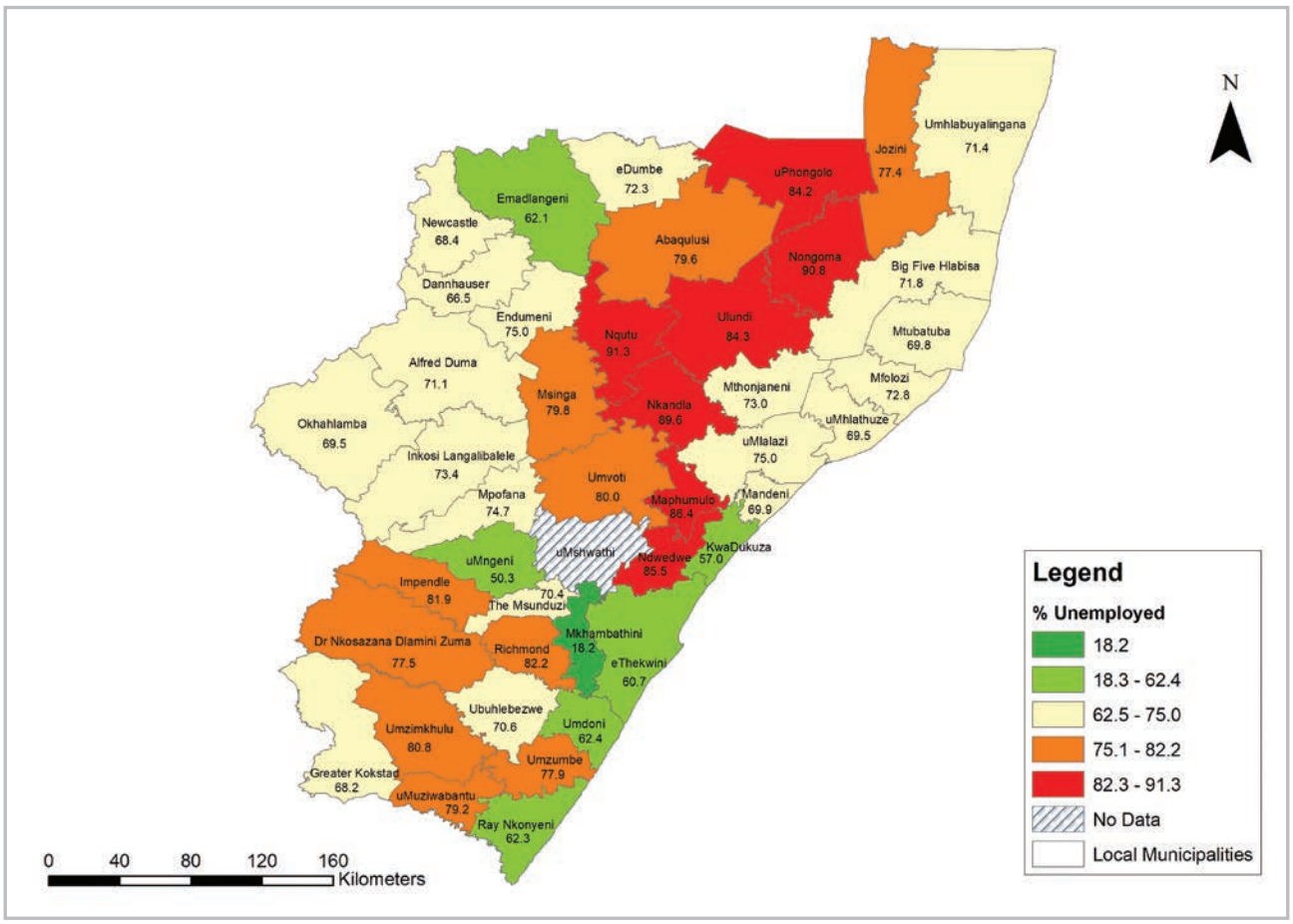


Figure 13: *Employment status of household members disaggregated by local municipality in KwaZulu-Natal Province*

5.1.5 Household Income

Table 12 shows household income disaggregated by household head sex, age, and district. The highest percentage (27.9%) was recorded among households which earned more than R6 000, followed by those who earned between R1 501 and R3 000, with 26.8%. Male-headed households had a significantly higher percentage (33.3%) household income of more than R6 000, compared to female-headed ones with 23.1%; thedifference was significantly based on the none overlapping confidence intervals. Households headed by those aged 55 to 64 years old had the highest percentage of household income of more than R6 000, with 30.5%. Zululand District had the highest percentage (22.7%) of households which had no income or earned less than R1 500, while eThekwini had the highest percentage (35.0%) of households which earned more than R6 000.

Table 12: Household income disaggregated by sex, age, and district in KwaZulu-Natal Province

	No income or <R1500		R1501-R3000		R3001-R4500		R4501-R6000		>R6000	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	15.4	[13.2-17.8]	21.2	[19.2-23.5]	17.4	[15.3-19.7]	12.7	[11.1-14.4]	33.3	[29.7-37.1]
Female	17.4	[15.8-19.2]	31.7	[29.3-34.1]	16.5	[15.0-18.1]	11.3	[9.8-12.9]	23.1	[20.5-25.9]
Total	**16.5**	**[14.8-18.3]**	**26.8**	**[24.9-28.7]**	**16.9**	**[15.5-18.4]**	**11.9**	**[10.8-13.1]**	**27.9**	**[25.2-30.8]**
Age group										
18-24	35.9	[27.0-45.8]	19.5	[12.0-30.1]	22.4	[11.4-39.3]	7.3	[3.8-13.7]	14.8	[8.9-23.7]
25-34	28	[23.0-33.6]	20.9	[17.7-24.5]	15.8	[12.6-19.7]	11.7	[9.4-14.4]	23.7	[18.9-29.2]
35-44	21.1	[18.2-24.3]	19.9	[16.9-23.3]	16.7	[13.6-20.3]	12	[9.8-14.7]	30.3	[26.6-34.2]
45-54	20.4	[17.2-24.0]	25.3	[22.5-28.4]	12.3	[10.3-14.6]	11.8	[9.5-14.5]	30.3	[26.8-33.9]
55-64	13.4	[11.3-15.7]	28.8	[25.5-32.4]	16	[13.7-18.5]	11.3	[9.3-13.7]	30.5	[26.3-35.0]
65+	3.5	[2.5-5.0]	35.8	[31.5-40.2]	21.8	[19.0-25.0]	13.2	[10.8-16.0]	25.7	[21.9-29.9]
Total	**16.5**	**[14.8-18.3]**	**26.8**	**[24.9-28.7]**	**16.9**	**[15.5-18.4]**	**11.9**	**[10.8-13.1]**	**27.9**	**[25.2-30.8]**
District										
Amajuba	14.7	[11.6-18.4]	26	[22.8-29.5]	16.1	[13.6-18.9]	14.4	[12.0-17.2]	28.8	[23.4-34.9]
Harry Gwala	17.1	[13.1-22.1]	33	[28.4-37.9]	21.4	[16.4-27.5]	12.2	[9.7-15.2]	16.4	[12.4-21.3]
King Cetshwayo	14.2	[10.7-18.8]	32.5	[26.8-38.8]	12.5	[10.0-15.7]	8.3	[6.8-10.0]	32.4	[24.8-41.1]
UMgungundlovu	15.2	[10.8-21.0]	23.1	[18.5-28.5]	17.4	[13.8-21.7]	13.7	[11.1-16.7]	30.6	[22.4-40.3]
Ugu	12.8	[9.9-16.4]	29.1	[25.4-33.1]	20	[16.4-24.2]	13.1	[10.0-16.9]	24.9	[18.9-32.0]
Umkhanyakude	22.5	[17.8-28.0]	33	[27.5-39.1]	13.6	[11.0-16.8]	8.1	[6.0-10.8]	22.8	[16.4-30.8]
Umzinyathi	18.3	[14.1-23.3]	37.3	[32.8-42.1]	19.5	[16.2-23.2]	10.5	[7.7-14.0]	14.5	[9.6-21.1]
Uthukela	14.8	[12.5-17.6]	25.6	[22.0-29.5]	18.5	[16.2-20.9]	14	[11.1-17.4]	27.2	[22.5-32.4]
Zululand	22.7	[17.8-28.4]	34.7	[30.0-39.7]	15.9	[13.8-18.2]	11.2	[8.9-14.0]	15.6	[12.0-19.9]
eThekwini	15.5	[11.8-20.0]	21	[17.2-25.4]	16.3	[12.9-20.3]	12.2	[9.7-15.3]	35	[28.9-41.7]
iLembe	18.9	[14.6-24.2]	28.6	[24.9-32.7]	19.6	[16.0-23.7]	11.7	[9.4-14.6]	21.1	[15.6-27.9]
Total	**16.5**	**[14.8-18.3]**	**26.8**	**[24.9-28.7]**	**16.9**	**[15.5-18.4]**	**11.9**	**[10.8-13.1]**	**27.9**	**[25.2-30.8]**

5.1.6 Sources of Income

Table 13 shows that majority of household heads had salaries and wages as their source of income, with 39.9%. The majority of household members relied on social welfare grants (including old age grant) as their source of income, with 38.7%.

Table 13: Sources of income of household heads and members in KwaZulu-Natal Province

Source of income	%	%
Salaries and wages	39.9	17.7
Social welfare grants (including old age grant)	22.9	38.7
Net profit from business or professional practice/activities or commercial farming	7.0	2.8
Alimony, maintenance, and similar allowances from divorced spouse, family members, etc., living elsewhere	2.6	0.5
Regular allowances/remittances received from non-Household members	2.2	0.5
Regular receipts from pension from previous employment and pension from annuity funds	2.0	1.3
Other	1.7	0.7
Source of income	**%**	**%**
Income from small-scale farming	0.5	0.2
Income from letting of fixed property	0.3	0.1
Income from share trading	0.1	0.0
Dividends on shares (e.g., unit trusts)	0.0	0.0
Interest received and/or accrued on deposits, loans, savings certificates	0.0	0.0
Royalties	0.0	0.0

Further breakdown of social welfare grants as source of income of household heads and members disaggregated by sex, age, and district is explored in Table 14. Significantly more female household heads (29.9%) relied on social welfare grants as source of income, compared to their male counterparts with only 15.0% reporting social welfare grants as their source of income. A similar pattern is noticed at household members level as there were more females (40.8%) who relied on social welfare grants as source of income, compared to their male counterparts with 36.2%. Umzinyathi District had the highest proportion of household heads and members who relied on social welfare grants as their source of income with 36.7% and 55.0%, respectively.

Table 14: Social welfare grants as source of income of household heads and members disaggregated by sex, age, and district in KwaZulu-Natal Province

	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	15	[12.5-17.9]	3,981	36.2	[34.0-38.5]	17,061
Female	29.9	[26.6-33.4]	4,808	40.8	[38.7-42.9]	21,317
Total	**22.9**	**[20.3-25.8]**	**8,789**	**38.7**	**[36.7-40.7]**	**38,378**
Age group						
0-14	-	-	-	68	[64.6-71.1]	11,276
18-24 (15 -24 for HH Members)	13.4	[8.6-20.3]	259	29.3	[27.1-31.7]	7,110
25-34	14.2	[10.5-19.0]	1,112	13.8	[12.1-15.7]	6,189
35-44	12.5	[9.7-15.9]	1,680	13.3	[11.4-15.5]	4,563
45-54	12.3	[10.0-15.0]	1,756	14.4	[12.5-16.7]	3,094
55-64	40.7	[36.6-45.0]	1,841	41.4	[37.4-45.6]	2,599
65+	89	[84.6-92.3]	2,141	85.9	[80.7-89.9]	2,544
Total	**22.9**	**[20.3-25.8]**	**8,789**	**38.9**	**[36.9-40.8]**	**37,375**
District						
Amajuba	22.9	[17.7-29.1]	800	36.9	[33.6-40.3]	2,949
Harry Gwala	27.1	[20.0-35.7]	740	47.2	[42.5-51.9]	3,022
King Cetshwayo	25.3	[19.8-31.7]	797	38.3	[33.7-43.2]	3,970
UMgungundlovu	30.3	[24.4-36.9]	717	39.5	[35.5-43.7]	3,006
Ugu	31.5	[25.3-38.3]	857	46.4	[41.6-51.3]	3,941
Umkhanyakude	21.1	[14.0-30.5]	717	38.7	[34.6-43.0]	2,934
Umzinyathi	36.7	[27.7-46.7]	853	55	[51.2-58.7]	4,126
Uthukela	22.3	[18.5-26.6]	824	40.2	[36.8-43.7]	3,076
Zululand	34	[27.9-40.6]	814	50.9	[47.0-54.8]	4,185
eThekwini	16.1	[11.5-21.9]	862	31.4	[27.8-35.3]	3,646
iLembe	19.8	[14.5-26.4]	808	39	[33.6-44.6]	3,594
Total	**22.9**	**[20.3-25.8]**	**8,789**	**38.7**	**[36.7-40.7]**	**38,449**

Figure 14 shows that Maphumulo and Nqutu local municipalities fell under the highest band (57.0% to 65.5%) of household members who had social welfare grants as source of income. Mkhambathini District recorded the least percentages (16.3%) of household members who had social welfare grants as source of income.

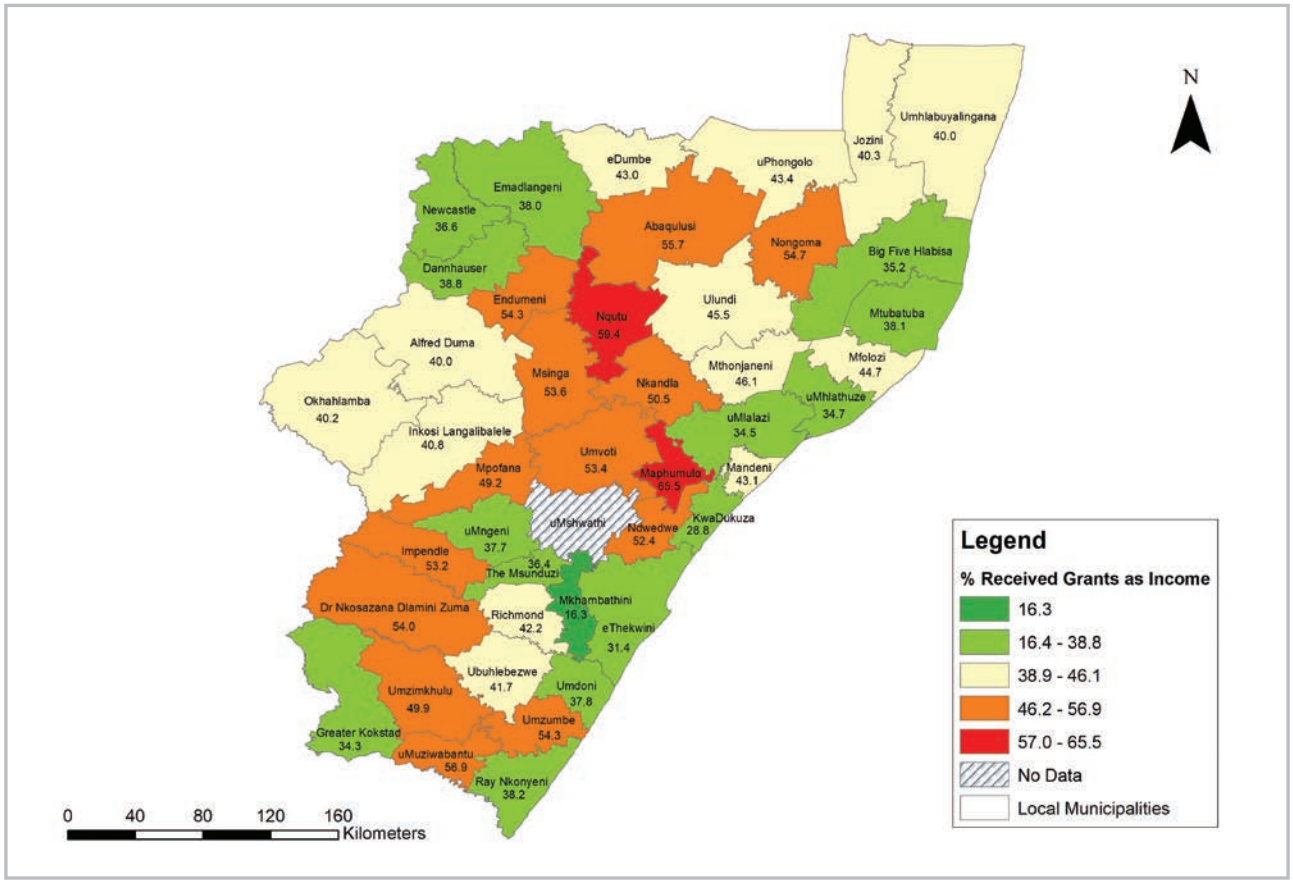


Figure 14: *Social welfare grants as source of income of household members disaggregated by local municipality in KwaZulu-Natal Province*

Table 15 shows household heads and members who reported receiving any social grant(s) during the 12 months preceding the survey disaggregated by sex, age, and district. Similar trends were noticed in those who reported social welfare grants as their source of income. The majority of elderly household heads (87.4%) and members (84.0%) received social grant in the last 12 months prior to the survey. About 71% of children aged 14 years and younger received social grants in the year preceding the survey. uMzinyathi had the highest proportion of household heads and members who had received social grants during the 12 months preceding the survey, with 34.2% and 53.9% respectively.

Table 15: Household heads and members reported receiving any social grant(s) during 12 months prior to survey disaggregated by sex, age, and district in KwaZulu-Natal Province

	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	[11.0-17.4]	3,981	10.1	[9.2-11.1]	17,049
Female	17.2	[14.5-20.3]	4,810	11.7	[10.7-12.8]	21,304
Total	**15.7**	**[13.6-18.0]**	**8,791**	**11**	**[10.2-11.8]**	**38,353**
Age group						
0-14	-	-	-	1.5	[1.0-2.3]	11,248
18-24 (15 -24 for HH Members)	17.8	[12.1-25.3]	261	15.1	[13.5-16.9]	7,110
25-34	21	[16.5-26.4]	1,113	19.5	[17.8-21.3]	6,188
35-44	15.8	[13.1-19.0]	1,680	17.4	[15.5-19.6]	4,565
45-54	15.9	[13.0-19.2]	1,757	16.4	[14.3-18.7]	3,093
55-64	8.6	[6.1-12.0]	1,841	8.5	[6.9-10.4]	2,598
65+	1.8	[1.0-3.2]	2,139	1.7	[1.2-2.5]	2,540
Total	**15.7**	**[13.6-18.0]**	**8,791**	**11.1**	**[10.3-11.9]**	**37,342**
District						
Amajuba	15	[10.5-21.0]	800	9.8	[8.1-11.9]	2,948
Harry Gwala	13	[8.4-19.5]	742	9.9	[7.8-12.4]	3,024
King Cetshwayo	13.3	[9.1-19.2]	797	11.4	[9.7-13.3]	3,969
UMgungundlovu	18.3	[13.0-25.1]	714	9.7	[7.8-12.1]	2,989
Ugu	18.2	[13.0-24.9]	859	10.9	[9.3-12.7]	3,952
Umkhanyakude	11	[6.2-18.9]	717	9.5	[7.6-11.7]	2,928
Umzinyathi	16.9	[13.0-21.8]	854	12.2	[10.4-14.3]	4,142
Uthukela	6.8	[4.9-9.3]	824	7.9	[6.5-9.6]	3,085
Zululand	20.2	[14.4-27.6]	815	14.6	[12.5-17.0]	4,211
eThekwini	15.8	[11.5-21.3]	861	10.8	[9.1-12.8]	3,636
iLembe	19.5	[14.9-25.2]	808	12.7	[10.6-15.1]	3,594
Total	**15.7**	**[13.6-18.0]**	**8,791**	**11**	**[10.1-11.8]**	**38,478**

In terms of grant type, the dominant grant for household heads was the old-age grant which accounted for 53.8%, while the child support grant was the dominant grant with 64.2% for household members (Table 16). Social relief distress was the second dominant grant in among household heads with 26.5%, while the old-age grant was the second dominant grant among household members with 19.7%.

Table 16: Social grant type received by household heads and members during 12 months prior to survey in KwaZulu-Natal Province

Grant type	Household heads (%)	Household members (%)
Old age	53.8	19.7
Social relief destress	26.5	13.2
Child support	13.8	64.2
Disability	5.6	3.4
Foster care	1.0	0.5
Care dependency	0.3	0.2
Grant-in-aid	0.1	0.1
War veterans	0.0	0.0

Table 17 shows household heads and members who reported receiving social relief during 12 months prior to survey. About 15% of household heads and 11% of household members reported receiving social relief during 12 months prior to the survey. Those aged 18 to 24 years old had the highest proportion of household heads (17.8%) while those aged 25-34 years old had the highest proportion (19.5%) of household members who received social relief during 12 months prior to the survey. Uthukela District had the lowest percentage (6.8%) of household heads who received social relief during a year prior to the survey, which was far much lower than the provincial average of 15.7%.

Table 17: Social grant type received by household heads and members during 12 months prior to survey in KwaZulu-Natal Province

	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	[11.0-17.4]	3,981	10.1	[9.2-11.1]	17,049
Female	17.2	[14.5-20.3]	4,810	11.7	[10.7-12.8]	21,304
Total	**15.7**	**[13.6-18.0]**	**8,791**	**11**	**[10.2-11.8]**	**38,353**
Age group						
0-14	-	-	-	1.5	[1.0-2.3]	11,248
18-24 (15 -24 for HH Members)	17.8	[12.1-25.3]	261	15.1	[13.5-16.9]	7,110
25-34	21	[16.5-26.4]	1,113	19.5	[17.8-21.3]	6,188
35-44	15.8	[13.1-19.0]	1,680	17.4	[15.5-19.6]	4,565
45-54	15.9	[13.0-19.2]	1,757	16.4	[14.3-18.7]	3,093
55-64	8.6	[6.1-12.0]	1,841	8.5	[6.9-10.4]	2,598
65+	1.8	[1.0-3.2]	2,139	1.7	[1.2-2.5]	2,540
Total	**15.7**	**[13.6-18.0]**	**8,791**	**11.1**	**[10.3-11.9]**	**37,342**
District						
Amajuba	15	[10.5-21.0]	800	9.8	[8.1-11.9]	2,948
Harry Gwala	13	[8.4-19.5]	742	9.9	[7.8-12.4]	3,024
King Cetshwayo	13.3	[9.1-19.2]	797	11.4	[9.7-13.3]	3,969
UMgungundlovu	18.3	[13.0-25.1]	714	9.7	[7.8-12.1]	2,989
Ugu	18.2	[13.0-24.9]	859	10.9	[9.3-12.7]	3,952
Umkhanyakude	11	[6.2-18.9]	717	9.5	[7.6-11.7]	2,928
Umzinyathi	16.9	[13.0-21.8]	854	12.2	[10.4-14.3]	4,142
Uthukela	6.8	[4.9-9.3]	824	7.9	[6.5-9.6]	3,085
Zululand	20.2	[14.4-27.6]	815	14.6	[12.5-17.0]	4,211
eThekwini	15.8	[11.5-21.3]	861	10.8	[9.1-12.8]	3,636
iLembe	19.5	[14.9-25.2]	808	12.7	[10.6-15.1]	3,594
Total	**15.7**	**[13.6-18.0]**	**8,791**	**11**	**[10.1-11.8]**	**38,478**

Figure 15 shows that Big Five Hlabisa, Dannhauser, Dr Nkosazana Dhlamini Zuma, eDumbe, and Emadangeni local municipalities were in the lowest band (4.3% to 6.2%) of household members who received social relief during the year preceding the survey. Abaqulusi, Umvoti, Umzimkhulu, Umzumbe, and uPongolo local municipalities were in the highest band (14.8% to 18.5%) of household members who received social relief during the year preceding the survey.

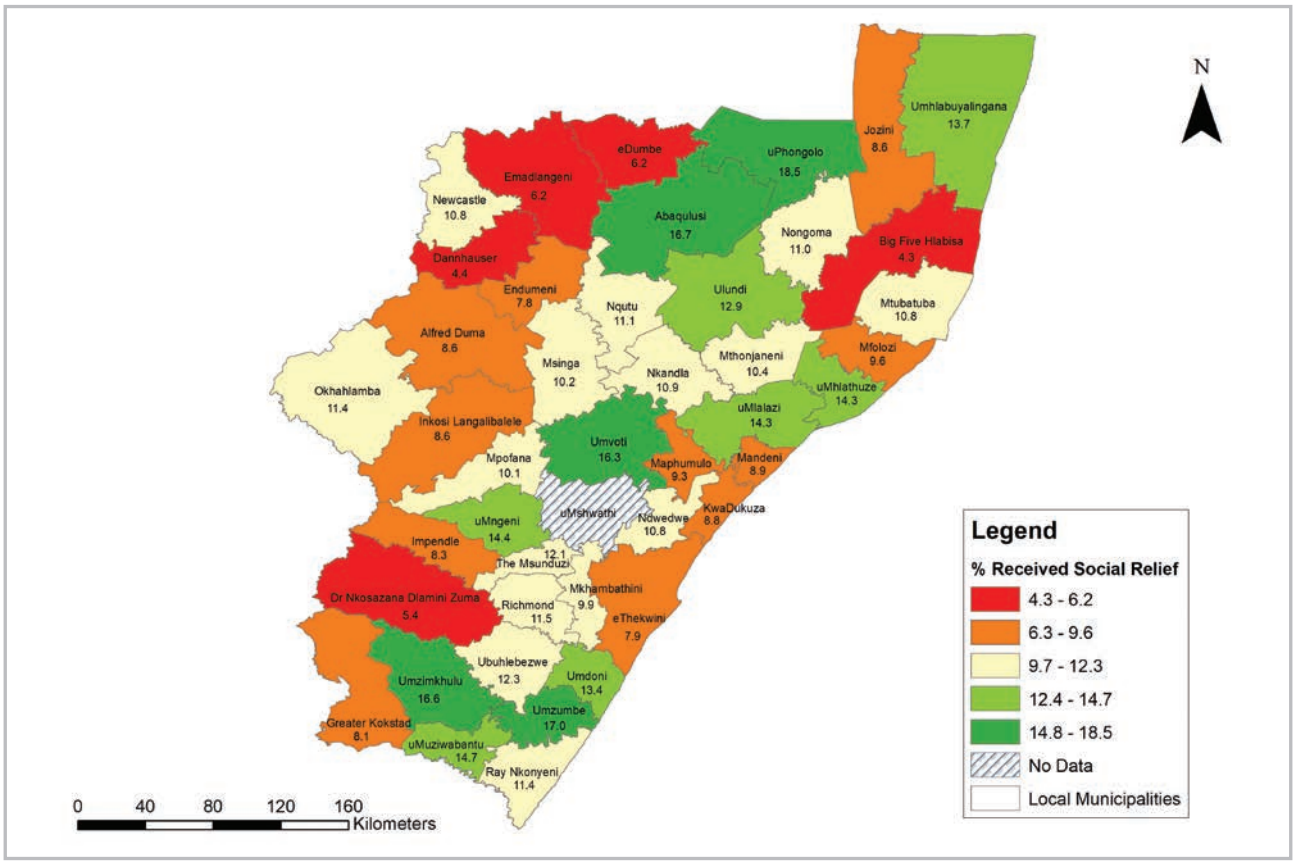


Figure 15: Household members who received any social relief during 12 months prior to survey by local municipality in KwaZulu-Natal Province

The COVID-19 social relief grant was the dominant social relief type for both household heads and members, with 83.6% and 84.4% respectively (Table 18). Cash was the second most dominant grant with 31.5% of household heads and 29.1% of household members reporting having received it. Food accounted for 3.0% and 2.1% for household heads and members, respectively.

Table 18: Household heads and members reported receiving social relief during 12 months prior to survey disaggregated by sex, age, and district in KwaZulu-Natal Province

Social Relief Type	Household heads (%)	Household members (%)
COVID-19	83.6	84.4
Cash	31.5	29.1
Food	3.0	2.1
Other	0.2	0.2
Blankets	0.1	0.1
Clothes	0.0	0.0

Further breakdown of COVID-19 grant received by household members indicates that 85.4% of female members received this social relief grant, compared to 83.1% of their male counterparts (Table 19). Those aged 25 to 34 years old had the highest proportion with 88.0%, followed by those aged 45 to 54 years old with 86.5%. Zululand District had the highest percentage (91.2%) of household members who received COVID-19 social relief grant during the 12 months prior to the survey. Umkhanyakude District had the lowest proportion of household members who received the COVID-19 social relief grant, with 79.2%.

Table 19: Social relief type received by household heads and members during 12 months prior to survey in KZN Province

	Yes		No		Total
	%	95% CI	%	95% CI	n
Sex					
Male	83.1	[77.7-87.3]	16.9	[12.7-22.3]	1,834
Female	85.4	[82.2-88.2]	14.6	[11.8-17.8]	2,639
Total	**84.4**	**[80.9-87.4]**	**15.6**	**[12.6-19.1]**	**4,473**
Age group					
0-14	77.3	[65.8-85.8]	22.7	[14.2-34.2]	283
15-24	86.1	[80.1-90.6]	13.9	[9.4-19.9]	1,112
25-34	88	[84.8-90.6]	12	[9.4-15.2]	1,270
35-44	84.5	[79.8-88.2]	15.5	[11.8-20.2]	855
45-54	86.5	[81.5-90.3]	13.5	[9.7-18.5]	550
55-64	76.3	[66.1-84.1]	23.7	[15.9-33.9]	247
65+	45.7	[31.2-61.1]	54.3	[38.9-68.8]	81
Total	**84.8**	**[81.3-87.7]**	**15.2**	**[12.3-18.7]**	**4,398**
District					
Amajuba	80.1	[68.0-88.4]	19.9	[11.6-32.0]	295
Harry Gwala	86.6	[75.9-93.0]	13.4	[7.0-24.1]	312
King Cetshwayo	83.6	[76.8-88.7]	16.4	[11.3-23.2]	473
UMgungundlovu	87.9	[73.8-94.9]	12.1	[5.1-26.2]	312
Ugu	81.8	[73.6-87.9]	18.2	[12.1-26.4]	437
Umkhanyakude	79.2	[70.3-86.0]	20.8	[14.0-29.7]	307
Umzinyathi	85.7	[75.0-92.3]	14.3	[7.7-25.0]	528
Uthukela	84.9	[74.6-91.5]	15.1	[8.5-25.4]	246
Zululand	91.2	[84.7-95.1]	8.8	[4.9-15.3]	649
eThekwini	83.7	[74.6-90.0]	16.3	[10.0-25.4]	412
iLembe	81.5	[75.9-86.0]	18.5	[14.0-24.1]	506
Total	**84.5**	**[80.9-87.4]**	**15.5**	**[12.6-19.1]**	**4,477**

5.1.7 Discussion

It is always important to give context of the demographic characteristics of the current study population in relation to other recent nationally representative surveys. For those aged 20 years and older, 4.8% of household members did not have any form of schooling compared to 5.7% in 2020, while 40.4% had matric education compared to 39.3% in 2020 (GHS, 2020).

The unemployment rate for household heads and members who were economically active from the current study was 55.5% and 69.6%, respectively, which is higher than the provincial official unemployment rate from the third quarter of the Quarterly Labour Force Survey in 2021 which was 28.7% (QLFS, 2021).

According to the General Household Survey, a larger percentage of households received salaries compared to grants as a source of income in KwaZulu-Natal (55.4% versus 55.2%) in 2020. In most households, heads (39.9%) relied on salaries as their source of income while in contrast the majority of household members (38.7%) relied on social welfare grants (including old-age grant) as their source of income. The provincial average of 39.4% of household members reported receiving social grant is in line with the KwaZulu-Natal average for household population of 39.1% and 38.9% in 2016 and 2020, respectively (SADHS, 2016; GHS, 2020). In terms of grant type, the child support grant was the most common type of grant with 64.2% of household members receiving this grant. Although this was also the case in 2016, the percentage of the household population that received the child grant in this province was lower, at 27.3% (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, 84.5% of household members reported having received this grant in KwaZulu-Natal in the current study. This is higher than the provincial average of 4.6% of individuals who accessed the COVID-19 grants in 2020 (GHS, 2020). The reason behind this might be due to the fact that the grant was being gradually rolled out as the pandemic was progressing. In addition, for 2020 statistics, only those aged 18 years and older were counted, whereas all household members were included in the current study.

5.2 Dwellings and services

Housing types

In the choice of 11 dwelling types (Table 20) indicated in the questionnaire administered in KwaZulu-Natal Province, most respondents (77.5%) indicated that they lived in formal dwellings (house/ brick/concrete structure) on a separate stand or yard on a farm. Two other common forms of house types were dwelling/ house/ flat/ room in backyard occupied by 9.4% of households, and traditional dwelling/hut/structure made of traditional materials occupied by 5.6% of households in KwaZulu-Natal. Flat or apartment in a block of flats are the third most common housing typology in the province (Table 20).

Table 20: Types of dwellings occupied by households in KwaZulu-Natal Province

Dwelling types (n=8783)	Number (n)	Percentage (%)
Formal dwelling/ House or brick/concrete block structure on a separate stand or yard or on a farm	6,850	77.5
Traditional dwelling/Hut/Structure made of traditional materials	775	5.6
Flat or apartment in a block of flats	104	3.3
Cluster house in security complex	2	0.1
Townhouse (semi-detached house in a complex)	3	0.0
Semi-detached house	17	0.2
Formal dwelling /House/ Flat/Room in backyard	720	9.4
Informal dwelling/Shack in backyard	90	1.2
Informal dwelling/Shack not in backyard	183	2.2
Room/Apartment on a property or an apartment in a larger dwelling, servant quarters /granny at/cottage	32	0.3
Other	7	0.2

5.3 Access to water service

5.3.1 Households main source of drinking water

Table 21 shows drinking water sources used by households in KwaZulu-Natal. The predominant source of water in KwaZulu-Natal was tap water in the dwelling (44.8%), followed by tap water in the yard (28.3%) (Table 20). The third most common source of water in KZN was public/communal tap (8.1%). Flowing water/stream/river were a source of drinking water for around 6.5% of the households in KwaZulu-Natal. About 4% of the households' main source of drinking water was watercarrier/tanker.

Table 21: Main source of drinking water in KwaZulu-Natal Province

Drinking water source (n=8804)	Number (n)	Percentage (%)
Piped (tap) water in dwelling/house	2,532	44.8
Piped (tap) water in yard	2,847	28.3
Public/communal tap	964	8.1
Flowing water/stream/river	952	6.5
Water-carrier/tanker	424	4.0
Borehole outside yard	285	1.9
Neighbour's tap	156	1.4
Other	125	1.1
Rain-water tank in yard	121	1.0
Borehole in yard	120	0.9
Stagnant water/dam/pool	117	0.8
Well	69	0.5
Spring	45	0.3
Water vendor (charge involved)	47	0.3

A higher proportion of male-headed households (49.8%) had access to piped water in the dwelling than female-headed households (39.9%) (Table 22). In terms of the distribution of water sources across the district, eThekwini District (74.6%) had the highest proportion of households using piped (tap) water in dwelling/house, while Harry Gwala District had the least (12.8%). Ugu (21.9%) takes the lead with the proportion of households which indicated using communal taps as their main source of water, followed by Harry Gwala District (17.7%) and Uthukela District (17.1%). The Amajuba District leads with the highest proportion of households that access water from the tap in the yard (53.5%), followed by Uthukela (36.8 %) and City of Zululand (36.1 %) districts.

Table 22: Households main source of water disaggregated by sex of household head and districts in KwaZulu-Natal Province

		Male	Female	Ugu	UMgungundlovu	Uthukela	Umkhanyakude	King Cetshwayo	Harry Gwala	Umzinyathi	Amajuba	Zululand	iLembe	eThekwini
Piped (tap) water in dwelling/ house	%	**49.8**	**39.9**	**24.8**	**37.9**	**21.4**	**16.3**	**30.8**	**12.8**	**13.5**	**40.9**	**18.5**	**30.1**	**74.6**
	95% CI	[43.4-56.3]	[34.1-46.0]	[15.1-37.9]	[26.7-50.5]	[12.5-34.1]	[8.8-28.4]	[20.3-43.9]	[7.3-21.6]	[6.7-25.6]	[31.7-50.8]	[11.6-28.2]	[20.0-42.7]	[65.0-82.3]
Piped (tap) water in yard	%	**27.3**	**29.3**	**26.6**	**46.8**	**36.8**	**31.0**	**26.8**	**23.2**	**13.7**	**53.5**	**36.1**	**35.2**	**19.5**
	95% CI	[23.4-31.6]	[25.7-33.3]	[18.5-36.7]	[37.3-56.5]	[26.3-48.6]	[20.4-44.1]	[19.4-35.8]	[16.1-32.1]	[7.0-24.9]	[44.2-62.7]	[25.7-48.0]	[25.8-45.8]	[13.5-27.4]
Borehole in yard	%	**1.0**	**0.9**	**0.6**	**1.4**	**1.4**	**7.4**	**0.6**	**0.4**	**0.8**	**0.5**	**0.3**	**1.8**	**0.1**
	95% CI	[0.6-1.5]	[0.5-1.5]	[0.2-1.9]	[0.6-3.0]	[0.5-3.8]	[3.7-14.4]	[0.2-2.2]	[0.1-1.1]	[0.4-1.7]	[0.2-1.3]	[0.1-1.1]	[0.5-5.8]	[0.0-0.9]
Rainwater tank in yard	%	**1.0**	**0.9**	**2.4**	**0.5**	**1.3**	**3.1**	**2.5**	**2.5**	**0.6**	**0.0**	**1.4**	**1.4**	**0.0**
	95% CI	[0.7-1.5]	[0.6-1.3]	[1.3-4.4]	[0.1-3.3]	[0.4-3.5]	[1.6-5.6]	[1.3-4.9]	[1.2-5.2]	[0.1-2.6]		[0.7-2.7]	[0.5-4.2]	
Neighbour's tap	%	**1.2**	**1.6**	**2.3**	**1.2**	**2.2**	**3.0**	**1.1**	**2.1**	**1.5**	**1.0**	**1.8**	**1.8**	**0.9**
	95% CI	[0.9-1.7]	[1.2-2.2]	[1.3-3.8]	[0.5-3.2]	[1.3-3.6]	[1.5-5.8]	[0.6-2.3]	[1.2-3.8]	[0.4-4.6]	[0.5-2.3]	[0.7-4.3]	[0.8-4.0]	[0.4-1.9]
Public/ communal tap	%	**7.0**	**9.2**	**21.9**	**3.5**	**17.1**	**9.7**	**7.3**	**17.7**	**13.9**	**1.0**	**12.5**	**11.3**	**3.0**
	95% CI	[5.5-8.9]	[7.3-11.5]	[14.5-31.7]	[1.3-9.4]	[10.7-26.1]	[6.1-15.1]	[3.4-15.2]	[10.9-27.5]	[8.3-22.3]	[0.5-2.1]	[6.9-21.8]	[6.4-19.2]	[1.6-5.9]
Water-carrier/ tanker	%	**3.9**	**4.2**	**7.5**	**2.9**	**1.9**	**0.4**	**20.7**	**4.4**	**2.2**	**0.5**	**6.1**	**5.8**	**1.1**
	95% CI	[2.6-5.8]	[2.9-5.9]	[3.9-13.9]	[0.8-10.6]	[0.8-4.6]	[0.1-1.6]	[12.3-32.8]	[1.7-10.6]	[1.2-4.0]	[0.1-3.5]	[2.4-14.8]	[2.6-12.1]	[0.2-5.3]
Water vendor (charge involved)	%	**0.3**	**0.3**	**0.1**	**0.0**	**0.5**	**1.5**	**0.3**	**0.2**	**1.7**	**0.0**	**1.4**	**0.0**	**0.0**
	95% CI	[0.1-0.6]	[0.2-0.7]	[0.0-0.9]		[0.1-1.9]	[0.6-3.6]	[0.1-1.1]	[0.0-1.6]	[0.5-5.6]		[0.3-7.0]		
Borehole outside yard	%	**1.6**	**2.1**	**0.2**	**0.4**	**5.2**	**6.2**	**2.2**	**2.7**	**14.1**	**0.3**	**3.6**	**0.8**	**0.0**
	95% CI	[1.1-2.3]	[1.5-3.1]	[0.0-1.6]	[0.1-1.6]	[2.5-10.4]	[3.5-10.9]	[0.7-6.2]	[1.3-5.4]	[8.5-22.6]	[0.0-1.7]	[1.5-8.4]	[0.3-2.8]	
Flowing water/ stream/river	%	**4.9**	**8.0**	**8.0**	**3.3**	**6.1**	**15.0**	**5.1**	**25.8**	**31.8**	**1.5**	**12.8**	**9.9**	**0.2**
	95% CI	[3.6-6.5]	[6.2-10.1]	[4.3-14.6]	[1.2-8.6]	[2.9-12.3]	[8.1-26.1]	[2.3-10.9]	[16.9-37.2]	[22.5-42.8]	[0.2-10.0]	[7.3-21.6]	[4.2-21.5]	[0.0-1.6]
Stagnant water/dam/ pool	%	**0.6**	**1.1**	**1.3**	**0.0**	**2.5**	**4.4**	**0.6**	**3.2**	**1.7**	**0.3**	**1.4**	**0.1**	**0.0**
	95% CI	[0.4-1.0]	[0.7-1.6]	[0.6-2.6]		[1.1-5.5]	[1.9-10.0]	[0.2-1.8]	[1.5-6.4]	[0.6-4.8]	[0.0-1.7]	[0.4-4.6]	[0.0-1.0]	
Well	%	**0.3**	**0.6**	**0.6**	**0.9**	**1.8**	**0.6**	**0.2**	**2.3**	**0.8**	**0.4**	**0.4**	**0.4**	**0.0**
	95% CI	[0.2-0.7]	[0.4-1.1]	[0.1-4.2]	[0.2-3.9]	[0.7-4.5]	[0.2-1.9]	[0.0-1.6]	[0.8-6.5]	[0.1-4.0]	[0.1-2.6]	[0.1-1.4]	[0.1-3.0]	
Spring	%	**0.2**	**0.4**	**0.1**	**0.1**	**1.7**	**0.5**	**0.4**	**1.5**	**0.8**	**0.1**	**0.6**	**0.1**	**0.0**
	95% CI	[0.1-0.4]	[0.2-0.8]	[0.0-0.9]	[0.0-0.8]	[0.5-5.4]	[0.2-1.5]	[0.1-2.5]	[0.6-3.8]	[0.3-2.1]	[0.0-0.9]	[0.1-3.0]	[0.0-1.0]	
Other	%	**0.9**	**1.4**	**3.6**	**1.0**	**0.3**	**0.7**	**1.2**	**1.1**	**2.9**	**0.0**	**3.0**	**1.2**	**0.4**
	95% CI	[0.6-1.4]	[0.9-2.0]	[1.8-7.4]	[0.4-3.0]	[0.1-1.0]	[0.2-2.5]	[0.5-3.1]	[0.4-2.9]	[1.2-6.8]		[1.4-6.5]	[0.4-3.2]	[0.1-1.4]

Water sources were further categorized into 'improved' and 'unimproved' following the WHO & UNICEF Joint Monitoring Programme (JMP) definition. 'Improved' drinking water sources include piped water (in dwelling and yard or plot), public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater (WHO, 2017). The results of our study show that the majority (90.7%) of the households in KwaZulu-Natal are using improved water sources. Table 23 depicts access to improved and unimproved water sources by sex of the household and district. The results show that male-headed households (93%) had the highest access to improved water sources than female-headed households (88.5%). eThekwini District had the highest proportion (99.3%) of households with access to improved water sources, followed by Amabuja (97.7%) and UMgungundlovu (94.6%). Umzinyathi District had the lowest proportion (61.9%) of the households using improved water sources, followed closely followed by Harry Gwala (66%).

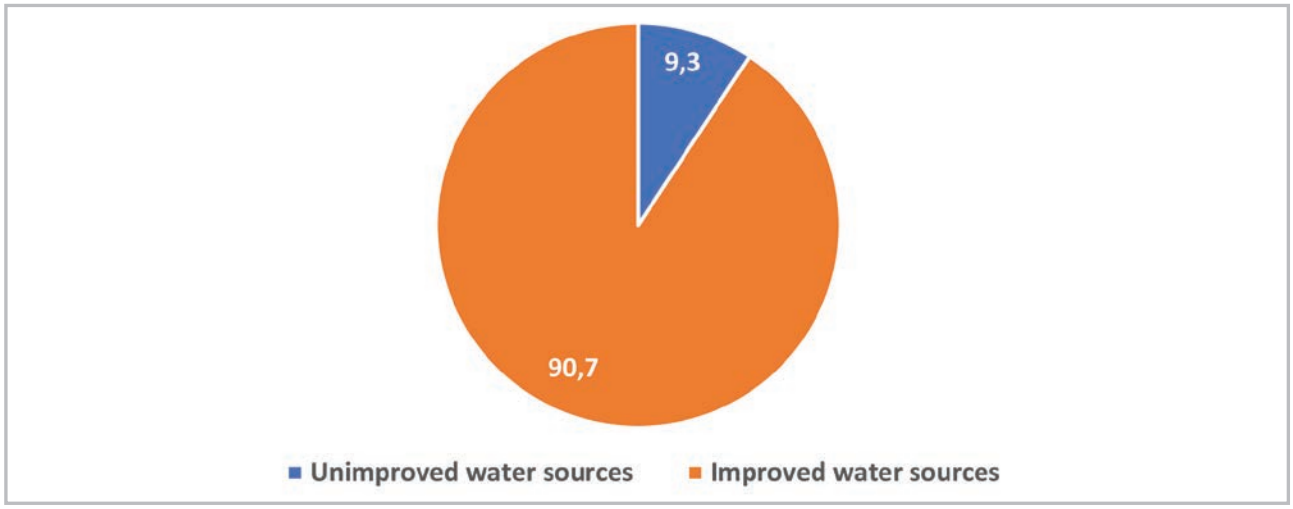


Figure 16: *Proportion of households using improved and unimproved water sources in KwaZulu-Natal Province*

Table 23: Improved and unimproved water sources disaggregated by sex of the household head and district in KwaZulu-Natal Province

	Unimproved		Improved	
	%	95% CI	%	95% CI
Household head sex				
Male	7	[5.3-9.0]	93	[91.0-94.7]
Female	11.5	[9.1-14.3]	88.5	[85.7-90.9]
District				
Ugu	13.7	[8.0-22.5]	86.3	[77.5-92.0]
UMgungundlovu	5.4	[2.3-12.2]	94.6	[87.8-97.7]
Uthukela	12.4	[6.2-23.0]	87.6	[77.0-93.8]
Umkhanyakude	21.2	[12.3-34.1]	78.8	[65.9-87.7]
King Cetshwayo	7.6	[3.9-14.3]	92.4	[85.7-96.1]
Harry Gwala	34	[23.4-46.5]	66	[53.5-76.6]
Umzinyathi	38.1	[27.2-50.4]	61.9	[49.6-72.8]
Amajuba	2.3	[0.3-14.5]	97.7	[85.5-99.7]
Zululand	18.2	[10.5-29.7]	81.8	[70.3-89.5]
iLembe	11.8	[5.3-24.3]	88.2	[75.7-94.7]
eThekwini	0.7	[0.2-2.6]	99.3	[97.4-99.8]

The main water source supplier for almost all the households in KwaZulu-Natal (81.3%) was the municipality (Figure 17). About 12.6% of the households indicated that they were not supplied water by a water scheme. Other water schemes supplied water for about 4.9% of the households in KwaZulu-Natal.

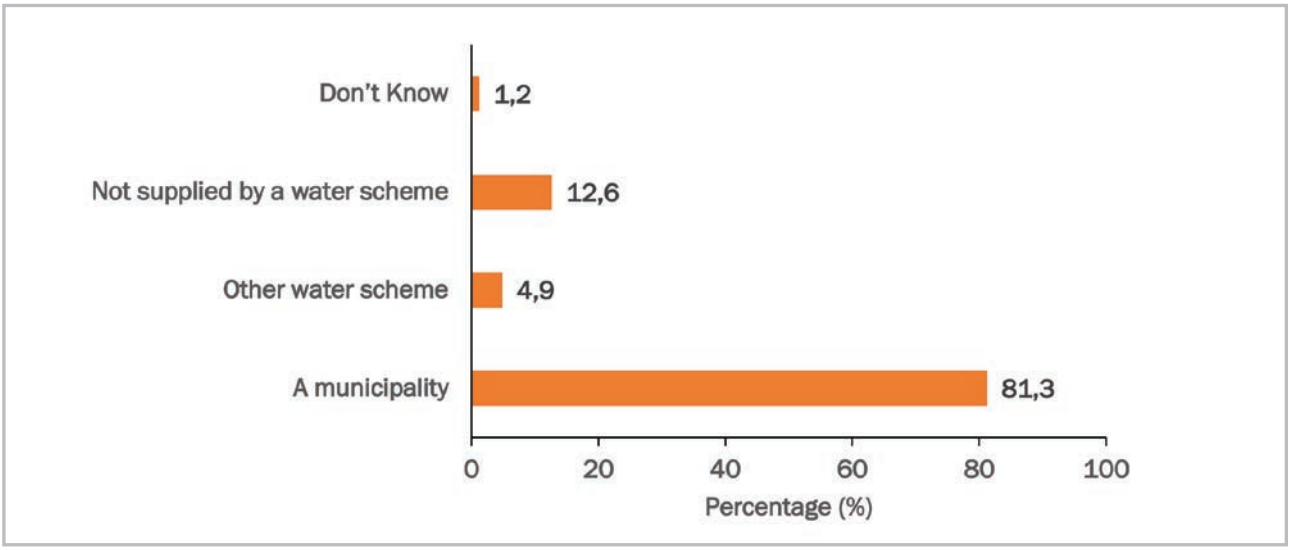


Figure 17: *Sources of water supplier in KZN Province (n=3853)*

5.3.2 Payment for water services

Of those households that reported the municipality as their main source of drinking water, only 43.3% of households paid for it (Figure 18). A slightly higher proportion of male-headed households (40.4%) indicated paying for water services, as compared to female-headed (38.8%) households (Table 24). A comparison of the payment of water services by the district showed that Amajuba District had the highest proportion of households that paid for their water services (53.2%), closely followed by eThekwini (51.6%) - while Umzinyathi (84.2%) had the highest proportion of those who did not pay (Table 24). Umzinyathi District (84.2%) had the highest proportion of households which indicated not paying for water services.

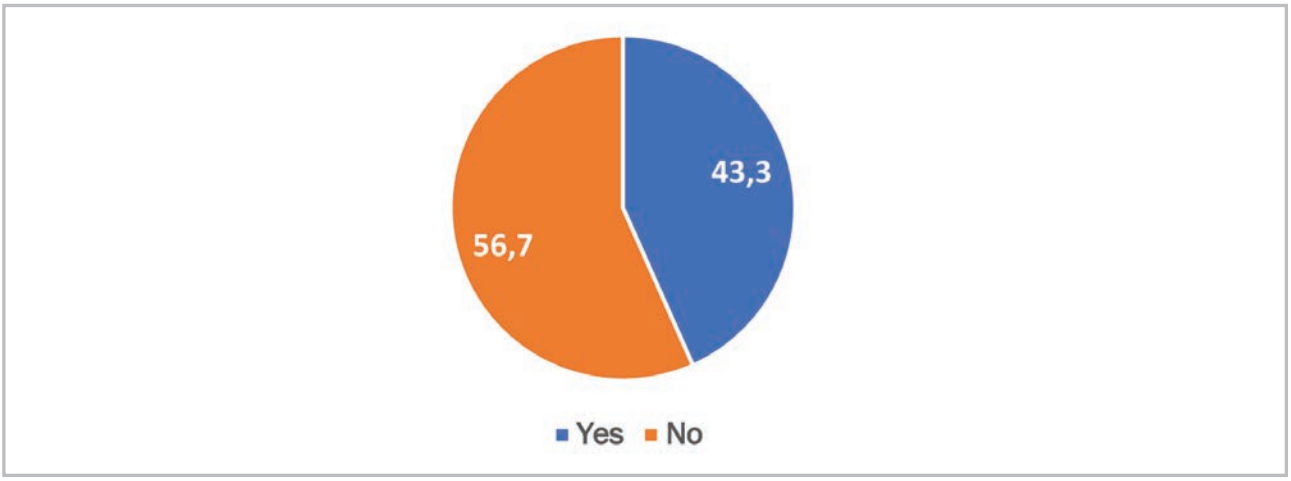


Figure 18: *Payment of water services by households in KwaZulu-Natal Province (n=3850)*

Table 24: Payment of water services disaggregated by district and household head sex in KwaZulu-Natal Province

	Yes		No		Don't Know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	40.4	[35.4-45.7]	55.9	[50.6-61.2]	3.6	[2.6-5.0]
Female	38.8	[34.9-42.9]	56.8	[52.6-61.0]	4.4	[3.3-5.7]
District						
Ugu	32.6	[25.2-41.0]	63.9	[55.3-71.7]	3.5	[1.9-6.3]
UMgungundlovu	22.4	[15.7-30.8]	75.8	[67.4-82.5]	1.8	[1.0-3.3]
Uthukela	47.6	[40.0-55.2]	50.2	[43.1-57.3]	2.3	[0.9-5.9]
Umkhanyakude	40.9	[35.5-46.6]	51.2	[45.3-57.1]	7.9	[4.7-12.8]
King Cetshwayo	33.3	[25.5-42.2]	61.6	[53.0-69.5]	5.1	[2.7-9.3]
Harry Gwala	25.1	[18.8-32.5]	71.1	[63.1-77.9]	3.9	[1.5-9.9]
Umzinyathi	13.4	[9.6-18.3]	84.2	[79.2-88.3]	2.4	[1.2-4.9]
Amajuba	53.2	[46.1-60.2]	43.2	[37.1-49.4]	3.6	[1.8-6.9]
Zululand	20.4	[15.6-26.1]	77.7	[71.8-82.6]	1.9	[1.0-3.8]
iLembe	38.2	[30.4-46.7]	53.4	[44.5-62.1]	8.4	[4.8-14.3]
eThekwini	51.6	[42.7-60.3]	44.3	[35.3-53.8]	4.1	[2.3-7.2]

5.4 Sanitation and Hygiene

Improved access to water and sanitation is among the sustainable development targets, and South Africa is among the countries that must report on progress in terms of the achievement of the specified targets. The indicator for toilet types shows that eleven of these exist in South Africa and most households in KwaZulu-Natal (47.4%) have access to a flush toilet connected to public sewerage (Table 25). The second most common type of toilet was a pit latrine toilet without ventilation pipe (28.1%) followed by pit latrine / toilet without ventilation (15.1%). Flush toilets connected to a septic or conservancy tank were used by 5.5% of households in KwaZulu-Natal. There were only few households still using bucket toilets (collected by municipality) (0.1%) and chemical toilets (1.5%).

Table 25: Type of toilet facility used by households

Toilet types (n=8727)	Number (n)	Percentage (%)
Flush toilet connected to a public sewerage system	2,735	47.5
Flush toilet connected to a septic or conservancy tank	361	5.5
Pour flush toilet connected to a septic tank (or septage pit)	90	1.0
Chemical toilet	161	1.5
Pit latrine/toilet with ventilation pipe	3,378	28.1
Pit latrine/toilet without ventilation pipe	1,841	15.1
Bucket toilet (collected by municipality)	7	0.1
Bucket toilet (emptied by household)	15	0.2
Ecological Sanitation Systems (e.g., urine diversion)	9	0.1
Open defecation (e.g., no facilities, field, bush)	114	0.9
Other	16	0.2

The majority of male-headed households (53.8 %) used a flush toilet connected to a public sewerage system, compared to female-headed households (41.4 %) (Table 26). eThekwini District had the highest proportion (8.3%) of the households that used flush toilets connected to a septic or conservancy tank, followed by the iLembe (7.8%), with the least being Zululand (1.4%). Zululand District takes a lead with the highest proportion of households which indicated using pit latrines without ventilation (35%), while Harry Gwala lead the highest proportion of households which indicated using pit latrine/toilet with ventilation pipe (57.5%). Again, iLembe District had the highest proportion of households that pour flush toilets connected to a septic tank (or septage pit) (4.8%).

Table 26: Type of toilet facility used by the households by sex of the household head and district

		Male	Female	Ugu	UMgungundlovu	Uthukela	Umkhanyakude	King Cetshwayo	Harry Gwala	Umzinyathi	Amajuba	Zululand	iLembe	eThekwini
Flush toilet connected to a public sewerage system	**%**	**53.8**	**41.4**	**20.8**	**44.6**	**25.7**	**17.8**	**30.4**	**14.5**	**16.8**	**56.4**	**14.9**	**29.3**	**78.1**
	95% CI	[46.6-60.8]	[35.4-47.7]	[11.1-35.6]	[30.1-60.0]	[14.3-41.7]	[9.2-31.5]	[18.9-45.0]	[6.8-28.5]	[7.7-32.8]	[42.1-69.7]	[6.7-29.7]	[18.7-42.9]	[67.6-85.9]
Flush toilet connected to a septic or conservancy tank	**%**	**5.4**	**5.4**	**3.9**	**3.2**	**1.5**	**3.3**	**4.5**	**3.8**	**1.9**	**5.1**	**1.4**	**7.8**	**8.3**
	95% CI	[3.9-7.5]	[3.8-7.6]	[2.2-6.8]	[1.8-5.8]	[0.8-2.9]	[1.9-5.5]	[2.8-7.2]	[1.3-10.6]	[0.6-6.6]	[3.0-8.7]	[0.6-3.0]	[5.2-11.6]	[5.0-13.5]
Pour flush toilet connected to a septic tank (or septage pit)	**%**	**0.8**	**1.2**	**0.6**	**0.5**	**0.0**	**0.9**	**0.7**	**0.3**	**0.2**	**0.7**	**1.1**	**4.8**	**1.0**
	95% CI	[0.5-1.4]	[0.7-2.1]	[0.2-2.4]	[0.2-1.6]		[0.5-1.7]	[0.4-1.5]	[0.1-1.2]	[0.1-0.9]	[0.3-1.7]	[0.3-4.1]	[3.0-7.5]	[0.4-2.7]
Chemical toilet	**%**	**1.5**	**1.6**	**8.9**	**0.1**	**0.0**	**0.1**	**4.3**	**2.8**	**0.1**	**0.0**	**0.0**	**1.7**	**0.8**
	95% CI	[0.9-2.6]	[1.0-2.5]	[5.1-15.1]	[0.0-0.9]		[0.0-0.9]	[2.0-9.0]	[1.1-6.8]	[0.0-0.8]			[0.4-6.5]	[0.2-2.6]
Pit latrine/toilet with ventilation pipe	**%**	**24.2**	**31.8**	**43.4**	**34.7**	**39.4**	**43.1**	**46.3**	**57.5**	**47.2**	**25.4**	**43.6**	**34.5**	**7.6**
	95% CI	[20.0-29.1]	[27.4-36.6]	[33.7-53.7]	[22.9-48.8]	[31.3-48.1]	[34.5-52.0]	[34.8-58.1]	[46.5-67.9]	[38.8-55.8]	[17.0-36.2]	[32.8-55.1]	[25.3-45.0]	[3.5-15.8]
Pit latrine/toilet without ventilation pipe	**%**	**12.9**	**17.3**	**19.7**	**16.8**	**31.1**	**30.5**	**12.8**	**19.3**	**31.8**	**12.3**	**35.0**	**20.4**	**3.7**
	95% CI	[10.5-15.7]	[14.7-20.2]	[14.2-26.5]	[10.7-25.4]	[23.5-39.8]	[24.0-37.9]	[7.8-20.4]	[13.8-26.3]	[25.5-38.7]	[7.2-20.3]	[26.4-44.8]	[15.0-27.2]	[1.9-7.2]
Bucket toilet (collected by municipality)	**%**	**0.0**	**0.1**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	95% CI	[0.0-0.1]	[0.0-0.3]	[0.1-2.1]					[0.1-0.9]					
Bucket toilet (emptied by household)	**%**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.4**	**1.1**	**0.1**
	95% CI	[0.0-0.5]	[0.0-0.3]					[0.0-0.8]	[0.0-0.8]			[0.1-2.6]	[0.3-4.1]	[0.0-0.8]
Ecological Sanitation Systems (e.g., urine diversion)	**%**	**0.1**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	95% CI	[0.0-0.7]	[0.0-0.3]	[0.1-6.5]										
Open defecation (e.g., no facilities, field, bush)	**%**	**0.9**	**0.9**	**0.6**	**0.0**	**2.2**	**3.9**	**0.8**	**1.3**	**1.5**	**0.0**	**3.5**	**0.4**	**0.2**
	95% CI	[0.6-1.4]	[0.6-1.3]	[0.2-1.5]		[0.8-5.8]	[2.1-7.0]	[0.3-2.2]	[0.4-3.9]	[0.7-3.2]		[1.6-7.7]	[0.1-1.5]	[0.0-1.6]
Other	**%**	**0.1**	**0.2**	**0.6**	**0.0**	**0.1**	**0.4**	**0.0**	**0.2**	**0.4**	**0.0**	**0.1**	**0.1**	**0.1**
	95% CI	[0.1-0.2]	[0.1-0.5]	[0.3-1.3]		[0.0-0.9]	[0.1-1.2]		[0.0-1.0]	[0.1-1.1]		[0.0-0.9]	[0.0-0.7]	[0.0-0.7]

Types of toilet facilities used by households were further divided into 'improved' and 'unimproved' based on the WHO & UNICEF Joint Monitoring Programme (JMP) definition. 'Improved' toilets include flushed or flushed to septic tanks, piped sewer systems, pit latrines, VIP latrines, and pit latrines with slabs. Meanwhile, 'unimproved' toilets consist of shared facilities or none (bush or field); flush toilets or pour-flush toilets that go elsewhere (not to septic tanks or pit latrines); pit latrines without slabs; bucket systems; and hanging toilets (WHO, 2017). The results of the study show that almost all households in KwaZulu-Natal had access to improved toilet types. All households in UMgungundlovu (100%) and Amajubawere (100%) districts were using toilet types (Table 27). Umkhanyakude District (95.7%) had the lowest proportion of households using improved sanitation (Table 27).

Table 27: Proportion of households using improved and unimproved toilet types by the sex of the household head and district

	Unimproved sanitation		Improved sanitation	
	%	95% CI	%	95% CI
Household head sex				
Male	1.2	[0.8-1.8]	98.8	[98.2-99.2]
Female	1.3	[0.9-1.8]	98.7	[98.2-99.1]
District				
Ugu	1.7	[1.0-3.0]	98.3	[97.0-99.0]
UMgungundlovu	0		100	
Uthukela	2.3	[0.9-5.9]	97.7	[94.1-99.1]
Umkhanyakude	4.3	[2.4-7.5]	95.7	[92.5-97.6]
King Cetshwayo	0.9	[0.4-2.4]	99.1	[97.6-99.6]
Harry Gwala	1.8	[0.8-4.0]	98.2	[96.0-99.2]
Umzinyathi	1.9	[1.0-3.6]	98.1	[96.4-99.0]
Amajuba	0		100	
Zululand	4	[1.7-9.2]	96	[90.8-98.3]
iLembe	1.5	[0.5-4.8]	98.5	[95.2-99.5]
eThekwini	0.4	[0.1-1.4]	99.6	[98.6-99.9]

When asked if the household was paying for public sewerage services, only 31.6% of households responded 'yes', while 66.1 % said 'no' (Figure 19). Around 22.5% of the households indicated that they were receiving free sanitation services (Figure 19).

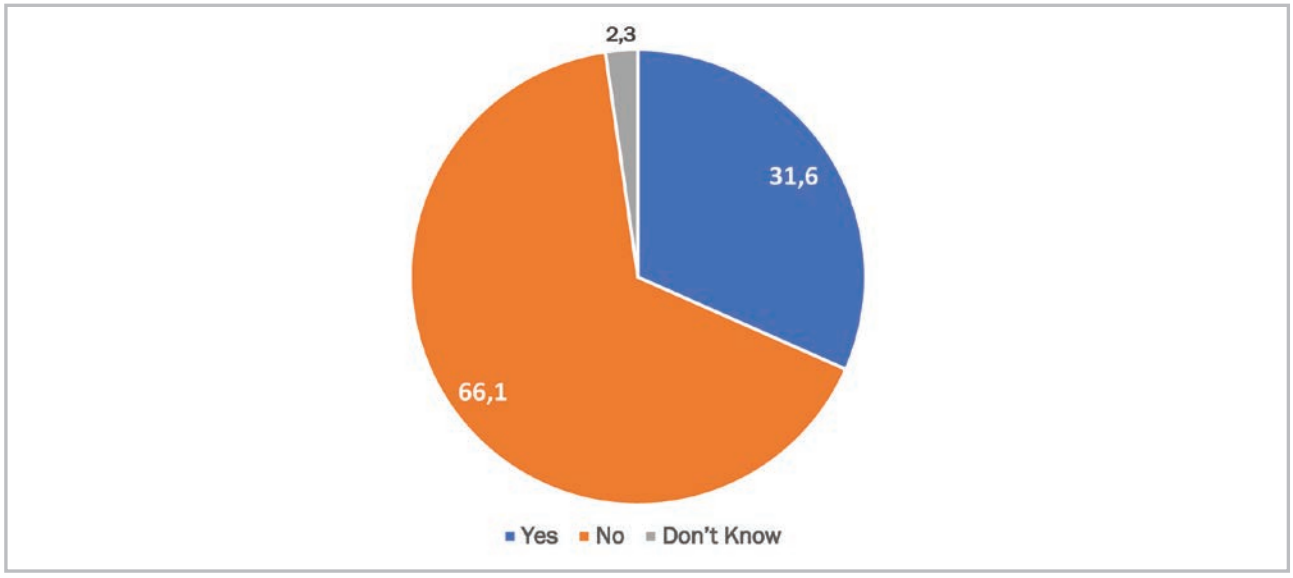


Figure 19: *Proportion of households paying for public sewerage (n=6199)*

Figure 20 shows the proportion of households receiving free sanitation services. The results of the study show that the majority (72.8%) of the households do not receive free sanitation services. About 4.6% did not know if their household were receiving free sanitation services.

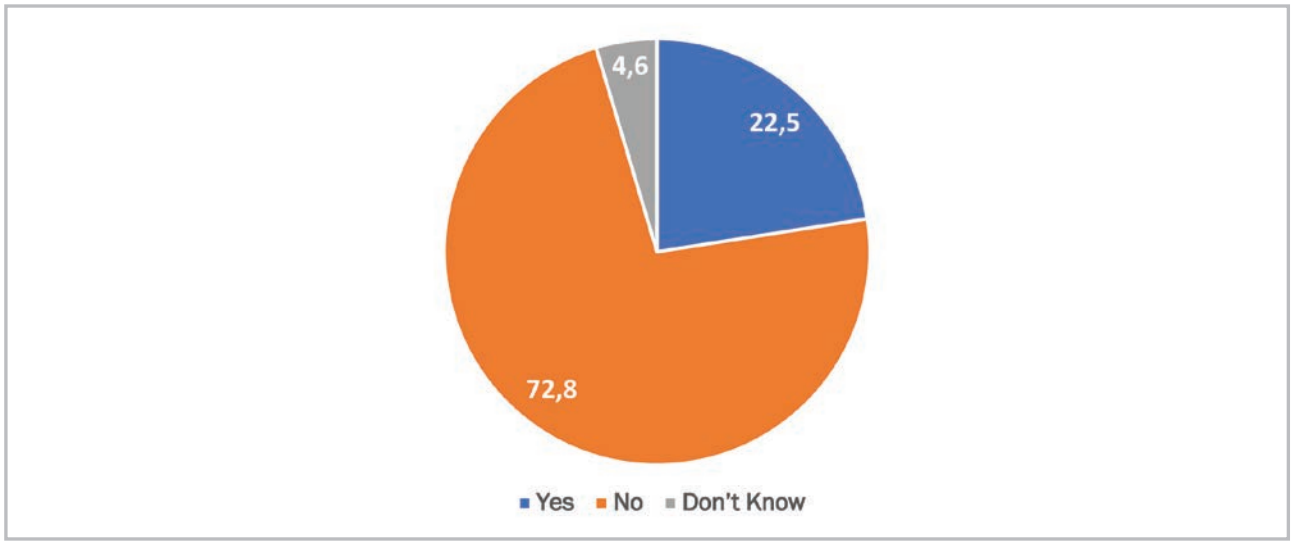


Figure 20: *Proportion of households receiving free sanitation services (n=2733)*

A slightly higher proportion of female-headed households (24.9%) were receiving free sanitation services than male-headed households (20.7%) (Table 28). There was an equal distribution between Harry Gwala District (25.3%) and eThekwini (25.3%) for households receiving free sanitation services, followed by Umkhanyakude (24.5%) and Amajuba (24%) districts (Table 30), while Umzinyathi District (97.1%) had the highest proportion of households who did not receive free sanitation (Table 28).

Table 28: 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	20.7	[15.2-27.6]	75.1	[67.1-81.7]	4.2	[2.5-7.1]
Female	24.9	[20.1-30.5]	69.9	[63.0-76.0]	5.2	[3.0-8.9]
District						
Ugu	18.1	[7.9-36.4]	77.5	[60.0-88.8]	4.3	[1.8-9.9]
UMgungundlovu	18	[9.6-31.0]	81.4	[68.8-89.7]	0.6	[0.2-2.1]
Uthukela	20.3	[9.2-39.1]	77.2	[58.9-88.9]	2.4	[0.5-10.9]
Umkhanyakude	24.5	[13.1-41.1]	69.4	[53.5-81.8]	6.1	[3.9-9.3]
King Cetshwayo	15.6	[8.8-26.3]	78.6	[68.5-86.2]	5.7	[3.0-10.8]
Harry Gwala	25.3	[17.9-34.5]	74.7	[65.5-82.1]	0	
Umzinyathi	2.2	[0.7-6.3]	97.1	[92.8-98.9]	0.7	[0.1-5.5]
Amajuba	24	[18.2-31.0]	74.2	[66.4-80.7]	1.7	[0.8-3.9]
Zululand	7.5	[2.7-19.5]	91	[77.2-96.8]	1.5	[0.4-5.6]
iLembe	13.6	[8.0-22.4]	80.8	[70.6-88.0]	5.6	[2.1-14.1]
eThekwini	25.3	[18.2-34.0]	69	[58.6-77.8]	5.7	[3.0-10.4]

5.4.1 Refuse removal

Municipalities are required to ensure an adequate level of environmental health and safety and eleven indicators were used to measure the levels of refuse removal (Table 29). Most of the households (37%) had their refuse removed by local authority / private company at least once a week. About 12.1% of the households had refuse removed by community members contracted by municipality at least once a week, while 1.6% used a communal refuse dump (Table 28).

Table 29: Households rubbish disposal

Refuse removal (n=8699)	Number (n)	Percentage (%)
Removed by local authority/private company at least once a week	1,904	37.0
Own refuse dump	4,318	33.9
Removed by community members, contracted by municipality at least once a week	795	12.1
Other	537	4.5
Dump or leave rubbish anywhere	490	4.0
Removed by community members, contracted by municipality less than once a week	171	2.6
Communal container/central collection point	135	2.3
Removed by local authority/private company less often than once a week	123	1.6
Communal refuse dump	191	1.6
Removed by community members at least once a week	29	0.3
Removed by community members, less often than once a week	6	0.1

More male-headed (40.3%) than female-headed (33.7%) households had to refuse removed by a local company at least once a week (Table 30). A higher proportion of female headed households (38.8%) indicated using their own dump to dispose their rubbish than male headed households (28.8 %). Amajuba District had the highest proportion of households whose refuse was removed by community members, contracted by the municipality at least once a week (19%), followed by eThekwini (17.7) and Umngungundlovu (14.2%) districts. Umkhanyakude District (4%) had the highest proportion of households which used communal refuse dump.

Table 30: Households rubbish disposal methods by sex of the household head and district

		Household head sex		District										
		Male	Female	Ugu	UMgungundlovu	Uthukela	Umkhanyakude	King Cetshwayo	Harry Gwala	Umzinyathi	Amajuba	Zululand	iLembe	eThekwini
Removed by local authority/private company at least once a week	%	**40.3**	**33.7**	**13.8**	**23.3**	**17.1**	**8.4**	**21**	**9.9**	**11.1**	**31.6**	**9.2**	**28.2**	**67.4**
	95% CI	[34.4-46.6]	[28.4-39.5]	[6.9-25.7]	[15.3-33.9]	[9.0-29.8]	[3.3-19.7]	[12.1-34.0]	[4.4-20.9]	[5.0-22.9]	[22.2-42.7]	[4.0-19.6]	[18.7-40.1]	[60.3-73.9]
Removed by local authority/private company less often than once a week	%	**1.6**	**1.6**	**0.7**	**4.8**	**0.1**	**0.4**	**1.1**	**1.6**	**1.3**	**1.5**	**1.4**	**2.5**	**1.4**
	95% CI	[1.1-2.5]	[1.0-2.5]	[0.2-1.8]	[2.4-9.6]	[0.0-0.8]	[0.1-1.3]	[0.2-5.2]	[0.6-4.2]	[0.4-4.1]	[0.8-3.0]	[0.4-4.3]	[1.3-4.7]	[0.7-2.6]
Removed by community members, contracted by municipality at least once a week	%	**13.9**	**10.5**	**4.4**	**14.5**	**5.3**	**4.4**	**10**	**3.6**	**4.8**	**19**	**5.7**	**11.3**	**17.7**
	95% CI	[11.3-17.1]	[8.5-12.8]	[2.0-9.5]	[9.3-21.9]	[2.2-12.4]	[2.2-8.4]	[6.0-16.1]	[1.4-8.8]	[2.1-10.5]	[12.8-27.4]	[2.4-12.9]	[7.3-17.1]	[13.5-22.8]
Removed by community members, contracted by municipality less than once a week	%	**2.6**	**2.7**	**0.6**	**2.2**	**2.8**	**1.8**	**0.7**	**1.7**	**0.1**	**6.4**	**0.2**	**0.9**	**4.2**
	95% CI	[1.8-3.7]	[1.8-4.0]	[0.2-1.9]	[0.9-5.3]	[1.1-6.9]	[0.8-4.1]	[0.2-2.0]	[0.5-5.3]	[0.0-0.9]	[3.8-10.7]	[0.1-0.9]	[0.4-2.0]	[2.6-6.7]
Removed by community members at least once a week	%	**0.3**	**0.3**	**0.1**	**0**	**0**	**1.3**	**0.7**	**0**	**0**	**0**	**0**	**1.4**	**0.2**
	95% CI	[0.1-0.8]	[0.1-0.7]	[0.0-0.7]			[0.4-3.7]	[0.1-4.6]					[0.4-4.9]	[0.1-0.9]
Removed by community members, less often than once a week	%	**0**	**0.1**	**0**	**0**	**0**	**0.1**	**0.3**	**0.2**	**0**	**0**	**0**	**0.2**	**0**
	95% CI	[0.0-0.1]	[0.0-0.3]				[0.0-0.9]	[0.0-2.2]	[0.0-1.1]				[0.0-1.5]	
Communal refuse dump	%	**1.7**	**1.5**	**1.6**	**0.7**	**3.8**	**4**	**2.8**	**0.5**	**0.7**	**2.2**	**0.8**	**6**	**0.5**
	95% CI	[1.2-2.4]	[1.1-2.1]	[0.7-3.8]	[0.2-2.4]	[2.1-6.7]	[2.5-6.4]	[1.3-5.8]	[0.1-2.0]	[0.3-1.7]	[1.1-4.4]	[0.4-1.7]	[3.0-11.6]	[0.1-1.6]
Communal container/central collection point	%	**3.1**	**1.5**	**2.6**	**2.1**	**0.5**	**0.5**	**1.1**	**1.8**	**0.3**	**1.3**	**0.3**	**2.5**	**3.8**
	95% CI	[1.0-9.8]	[0.6-3.8]	[0.9-7.3]	[0.5-9.4]	[0.2-1.2]	[0.1-2.0]	[0.4-3.1]	[0.7-4.4]	[0.1-1.4]	[0.3-5.2]	[0.1-1.1]	[1.1-5.4]	[0.7-18.6]
Own refuse dump	%	**28.8**	**38.8**	**62.1**	**40.6**	**59.6**	**70.4**	**53.1**	**67**	**58.1**	**33.8**	**62.9**	**36**	**2.8**
	95% CI	[23.7-34.5]	[33.3-44.7]	[50.0-72.9]	[27.5-55.1]	[47.2-70.9]	[59.3-79.6]	[39.6-66.1]	[54.0-77.9]	[45.6-69.7]	[21.3-48.9]	[50.6-73.7]	[25.0-48.7]	[1.2-6.4]
Dump or leave rubbish anywhere	%	**3.6**	**4.4**	**5.1**	**3.8**	**10.2**	**8**	**4.2**	**6.3**	**8.8**	**3.7**	**6.4**	**4.7**	**1**
	95% CI	[2.6-4.8]	[3.4-5.7]	[2.9-9.0]	[1.6-8.8]	[6.8-15.1]	[5.7-11.3]	[2.4-7.5]	[3.0-12.8]	[4.6-16.0]	[1.5-8.5]	[3.4-11.9]	[2.3-9.4]	[0.2-5.3]
Other	%	**4**	**5**	**9**	**8**	**0.6**	**0.7**	**5**	**7.5**	**14.7**	**0.5**	**13**	**6.3**	**1**
	95% CI	[3.0-5.4]	[3.9-6.3]	[6.8-11.7]	[4.6-13.5]	[0.1-2.8]	[0.2-2.2]	[3.0-8.3]	[4.0-13.5]	[9.6-21.9]	[0.1-2.5]	[8.2-20.1]	[3.6-10.6]	[0.4-2.7]

Figure 21 shows the proportion of households receiving free refuse removal services. About 43% of households in KwaZulu-Natal had access to free refuse removal services, while 55.2% indicated that they were not receiving free refuse removal services.

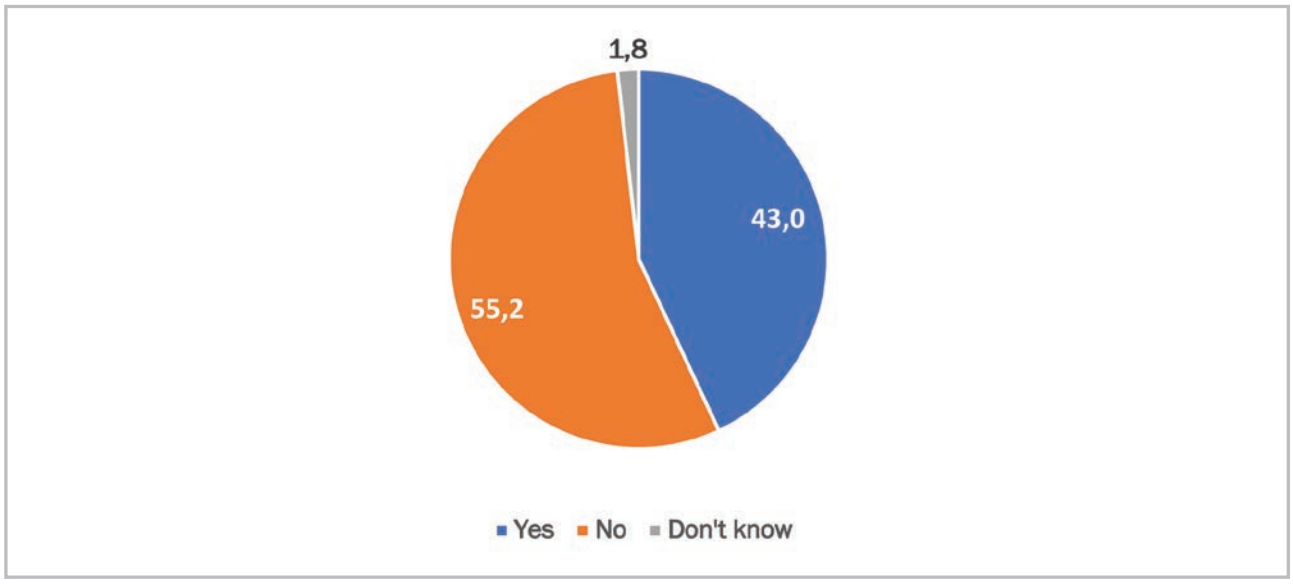


Figure 21: *Proportion of households receiving free refuse removal services (n=3015)*

5.5 Energy

5.5.1 Access to electricity

Overall, 95.3% of households in KwaZulu-Natal Province had access to electricity (Figure 22). There's almost an equal distribution between female-headed households (95.4%) and male-headed households (95.2%) who had access to electricity (Table 31). King Cetshwayo had the highest proportion of households with access to electricity (96.9%), closely followed by Ugu (96.6%), and iLembe (95.4%) districts. Umkhanyakude (17%) had the highest proportion of households with no access to electricity, followed by Umzinyathi (12.5%).

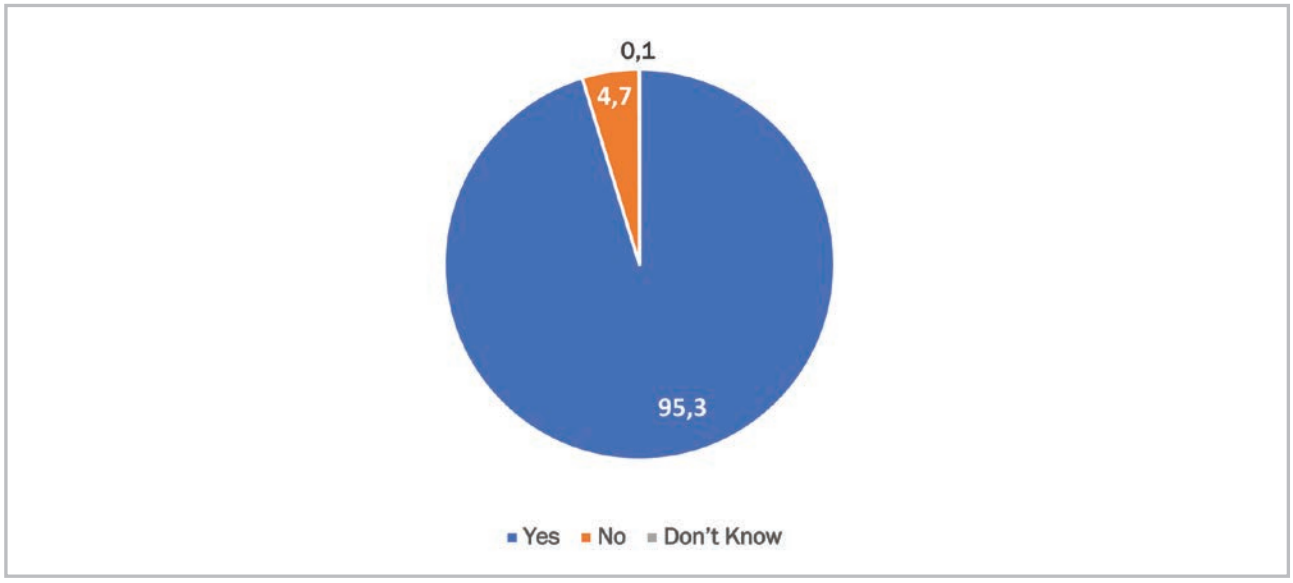


Figure 22: *Proportion of households with access to electricity (n=8800) in KwaZulu-Natal Province*

Table 31: Access to electricity disaggregated by household head, sex, and district in KZN Province

	Yes		No		Don't know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	95.2	[93.8-96.2]	4.8	[3.8-6.1]	0.1	[0.0-0.1]
Female	95.4	[94.1-96.4]	4.6	[3.6-5.8]	0.1	[0.0-0.2]
Districts						
Ugu	96.6	[94.5-97.9]	3.3	[2.0-5.3]	0.1	[0.0-0.8]
UMgungundlovu	95.1	[91.1-97.3]	4.8	[2.6-8.8]	0.1	[0.0-1.0]
Uthukela	93.2	[89.0-95.9]	6.8	[4.1-11.0]	0	
Umkhanyakude	83	[73.0-89.9]	17	[10.1-27.0]	0	
King Cetshwayo	96.9	[95.2-98.0]	3	[1.9-4.6]	0.1	[0.0-0.9]
Harry Gwala	93.9	[92.0-95.3]	6.1	[4.7-8.0]	0	
Umzinyathi	87.5	[79.3-92.8]	12.5	[7.2-20.7]	0	
Amajuba	93.4	[83.8-97.5]	6.3	[2.4-15.6]	0.3	[0.1-1.0]
Zululand	91.3	[84.6-95.2]	8.5	[4.7-15.0]	0.2	[0.1-0.9]
iLembe	95.4	[93.2-96.9]	4.6	[3.1-6.8]	0	
eThekwini	98.5	[97.5-99.1]	1.5	[0.9-2.5]	0	

Figure 23 shows that 89.3% of the households in KwaZulu-Natal Province indicated that they were receiving free electricity as part of the Free Basic Electricity Programme (FBE), while 10.1% did not receive free electricity. Under this programme, qualifying households receive 50 kWh per month. Few households received free electricity in each district. iLembe District (16.4%) had the highest proportion of households receiving free electricity, followed by Umkhanyakude District (11.5%). Zululand District (94.2%) had the highest proportion of the households who did not receive free electricity (Table 35).

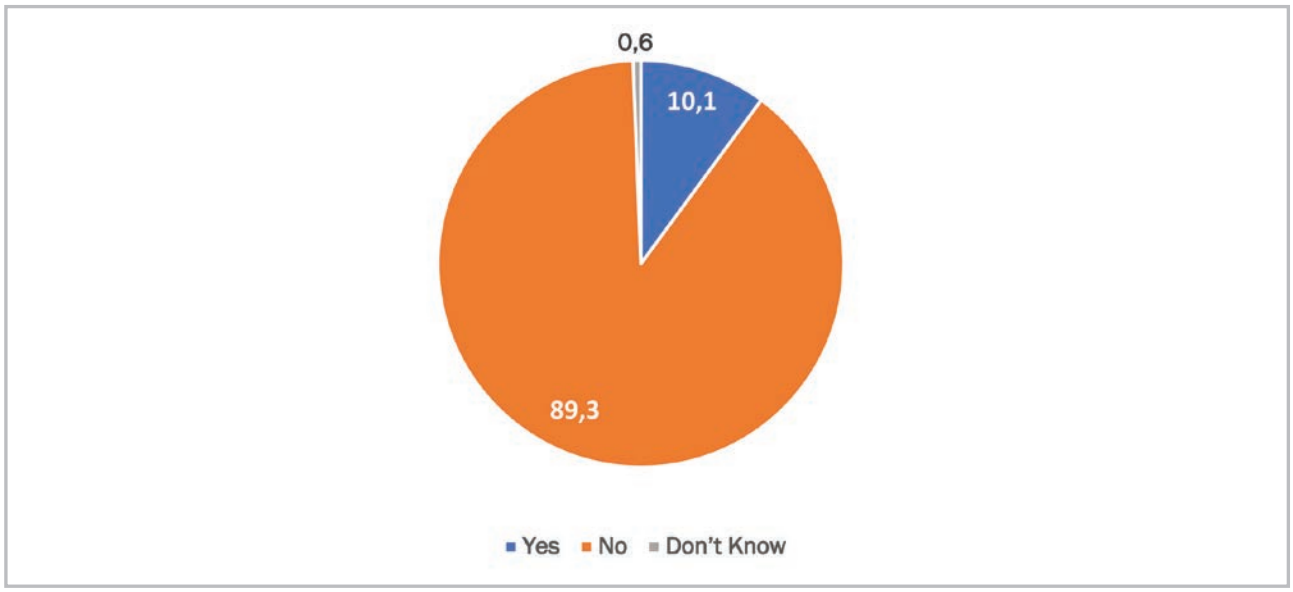


Figure 23: *Proportion of households receiving free electricity (n=8201) in KwaZulu-Natal Province*

Table 32: Households receiving free electricity disaggregated by sex of the household head and district in KwaZulu-Natal

	Yes		No		Don't know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	9.8	[7.8-12.1]	89.9	[87.6-91.9]	0.3	[0.1-0.7]
Female	10.5	[9.0-12.2]	88.6	[86.9-90.1]	0.9	[0.6-1.4]
District						
Ugu	6.8	[5.3-8.9]	92.7	[90.5-94.4]	0.5	[0.2-1.1]
UMgungundlovu	11.1	[7.2-16.6]	88.7	[83.2-92.5]	0.3	[0.1-1.0]
Uthukela	6.4	[4.2-9.8]	93.3	[89.6-95.8]	0.2	[0.0-1.7]
Umkhanyakude	11.5	[7.7-16.7]	86.5	[80.8-90.7]	2	[1.1-3.8]
King Cetshwayo	10.1	[7.4-13.7]	89.3	[85.7-92.2]	0.5	[0.2-1.3]
Harry Gwala	9	[5.8-13.7]	90.8	[86.1-94.1]	0.2	[0.0-1.0]
Umzinyathi	6.3	[3.6-10.7]	93.4	[89.2-96.1]	0.3	[0.1-1.0]
Amajuba	10.6	[7.0-15.8]	88.9	[83.3-92.8]	0.5	[0.2-1.7]
Zululand	5.8	[3.9-8.5]	94.2	[91.5-96.1]	0	
iLembe	16.4	[12.2-21.5]	82.1	[77.0-86.2]	1.6	[0.8-3.1]
eThekwini	11	[8.1-14.9]	88.3	[84.4-91.3]	0.7	[0.3-1.4]

5.5.2 Energy sources for cooking, lighting, water heating, and space heating in KwaZulu-Natal Province

Energy sources were categorized into cooking lighting, water heating, and space heating (Table 33). The majority of the household's main source of energy for cooking was electricity from mains (85.6%). The second most common energy source for cooking was wood (8.2%) followed by Gas (4.4%).

Table 33: Household's main source of energy for cooking, lighting, water heating, and space heating in KwaZulu-Natal

	Cooking	Lighting	Water heating	Space
	%	%	%	%
Electricity from mains	85.6	98.3	88.3	66.7
Other source of electricity (e.g., Generator)	0.4	0.5	0.7	0.5
Gas	4.4	0.0	1.3	0.7
Paraffin	0.2	0.0	0.1	0.1
Wood	8.2	0.1	7.8	6.8
Coal	0.2		0.2	0.2
Animal dung	0.0		0.0	
Solar energy	0.1	0.2	0.7	0.1
Other	0.8	0.8	0.7	0.8
None	0.0		0.3	24.0
Candles		0.2		

In comparison, slightly more male-headed households (88.3%) used electricity from the mains as the main source of energy for cooking than female-headed households (83%). A higher proportion of female-headed households (10.7%) used wood as the main source of energy for cooking than male headed households (5.7%) (Table 34). In terms of the distribution of the source of energy for cooking across the districts, Amajuba (95.7%) had the highest proportion of households which use electricity from the mains as main source of energy for cooking, followed by eThekwini (91.2%) and UMgungundlovu (90.9%). There is almost an equal distribution of male-headed (4.6%) and female-headed (4.2%) households using gas for cooking, lighting, water heating, and space heating (Table 34). In terms of energy sources for lighting, most households use electricity from mains (98.3%) and less than 5% of households use gas for cooking, lighting, water heating and space heating (Table 34).

Table 34: Source of energy for cooking disaggregated by sex of the household head and district in KwaZulu-Natal Province

		Household head sex		Districts										
		Male	Female	Ugu	UMgungundlovu	Uthukela	Umkhanyakude	King Cetshwayo	Harry Gwala	Umzinyathi	Amajuba	Zululand	iLembe	eThekwini
Electricity from mains	%	**88.3**	**83**	**83.7**	**90.9**	**83**	**79.5**	**82.3**	**62.3**	**66.7**	**95.7**	**74.9**	**86.1**	**91.2**
	95% CI	[85.8-90.4]	[80.3-85.5]	[77.1-88.7]	[86.6-93.9]	[75.0-88.8]	[72.4-85.2]	[74.8-88.0]	[53.1-70.7]	[57.4-74.9]	[94.2-96.9]	[64.3-83.2]	[78.6-91.3]	[86.8-94.2]
Other source of electricity (e.g. generator, etc.)	%	**0.4**	**0.5**	**0.5**	**0.3**	**0**	**1.4**	**0.2**	**0.7**	**0.3**	**0.3**	**0.1**	**0.1**	**0.6**
	95% CI	[0.2-0.8]	[0.3-1.0]	[0.2-1.2]	[0.1-1.1]		[0.6-3.6]	[0.0-1.1]	[0.3-1.9]	[0.1-1.0]	[0.1-1.0]	[0.0-0.9]	[0.0-0.9]	[0.3-1.3]
Gas	%	**4.6**	**4.2**	**3.9**	**3.5**	**1.6**	**2.2**	**4.6**	**2.1**	**4.9**	**2.4**	**5**	**4.1**	**5.7**
	95% CI	[3.3-6.3]	[3.2-5.4]	[2.5-5.9]	[2.4-5.1]	[0.8-3.0]	[1.2-3.9]	[3.0-7.1]	[1.2-3.5]	[3.0-7.8]	[1.5-3.7]	[3.5-7.2]	[2.3-7.1]	[3.8-8.6]
Paraffin	%	**0.1**	**0.4**	**0.1**	**0**	**0.4**	**0**	**0.5**	**0.1**	**0.2**	**0.4**	**0**	**0.1**	**0.3**
	95% CI	[0.0-0.2]	[0.2-0.9]	[0.0-0.8]		[0.1-1.5]		[0.2-1.6]	[0.0-0.8]	[0.1-0.9]	[0.1-1.2]		[0.0-0.9]	[0.1-1.0]
Wood	%	**5.7**	**10.7**	**10.7**	**5.2**	**15**	**16.6**	**12**	**31.6**	**26.3**	**1.1**	**19.3**	**8.5**	**0.6**
	95% CI	[4.3-7.4]	[8.7-13.0]	[6.3-17.4]	[2.7-9.7]	[9.2-23.4]	[11.3-23.7]	[7.4-19.0]	[23.0-41.6]	[18.1-36.6]	[0.5-2.1]	[11.6-30.3]	[4.4-15.5]	[0.2-1.9]
Coal	%	**0.1**	**0.2**	**0.1**	**0**	**0**	**0**	**0.2**	**0.4**	**1.3**	**0.1**	**0.5**	**0.3**	**0**
	95% CI	[0.1-0.3]	[0.1-0.3]	[0.0-0.8]				[0.0-1.5]	[0.2-1.3]	[0.5-3.0]	[0.0-1.0]	[0.2-1.3]	[0.1-1.2]	
Animal dung	%	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.4**	**0**	**0.1**	**0**	**0**
	95% CI		[0.0-0.2]							[0.1-2.6]		[0.0-1.0]		
Solar energy	%	**0.2**	**0**	**0.3**	**0.1**	**0.1**	**0**	**0**	**0**	**0**	**0**	**0**	**0.5**	**0.1**
	95% CI	[0.1-0.6]		[0.0-2.2]	[0.0-0.9]	[0.0-0.8]							[0.1-3.1]	[0.0-0.8]
Other	%	**0.6**	**0.9**	**0.6**	**0**	**0**	**0.3**	**0.1**	**2.6**	**0**	**0**	**0**	**0.3**	**1.4**
	95% CI	[0.2-2.5]	[0.2-3.6]	[0.3-1.3]			[0.0-2.0]	[0.0-0.8]	[0.4-16.2]				[0.1-1.2]	[0.2-8.2]
None	%	**0**	**0**	**0.1**	**0**	**0**	**0**	**0**	**0.2**	**0**	**0**	**0**	**0**	**0**
	95% CI	[0.0-0.1]	[0.0-0.1]	[0.0-0.8]					[0.0-1.1]					

Table 35 shows that the most common source of energy for water heating for almost all households in KwaZulu-Natal Province was electricity from the mains (88.3%) followed by wood (7.8%). Other sources of electricity accounted for less than 8%. In comparison, more male-headed households (90.6%) used electricity from the mains to heat their water, compared to female-headed households (86.0%) (Table 35). Amajuba District (96.2%) had the highest proportion of households using electricity from the mains as the main source of energy for water heating, followed by eThekwini (93.6%) and uMgungundlovu (93.5%) (Table 35). Harry Gwala District (68.6%) had the lowest proportion of households which indicated using electricity as the main source of energy for water heating. Harry Gwala District (26.3%) had the highest proportion of households which indicated using wood as the main source of energy for water heating followed by Umzinyathi (20.8%). Other sources of energy used for water heating in the province include gas, paraffin, wood, coal, animal dung, and solar energy.

Table 35: Source of energy for water heating disaggregated by sex of the household head and district in KwaZulu-Natal Province

		Household head sex		District										
		Male	Female	Ugu	UMgungundlovu	Uthukela	Umkhanyakude	King Cetshwayo	Harry Gwala	Umzinyathi	Amajuba	Zululand	iLembe	eThekwini
Electricity from mains	%	**90.6**	**86**	**89.3**	**93.5**	**81.6**	**78**	**85.2**	**68.6**	**76.2**	**96.2**	**78.2**	**87.2**	**93.6**
				[84.6-92.7]	[89.7-95.9]	[73.7-87.5]	[72.0-83.1]	[78.4-90.2]	[59.2-76.6]	[68.7-82.3]	[94.5-97.4]	[69.9-84.6]	[80.4-91.9]	[89.1-96.3]
Other source of electricity (e.g. generator, etc.)	%	**0.4**	**0.9**	**0.3**	**0.7**	**0.5**	**0.5**	**0.1**	**0.7**	**0.4**	**0.8**	**0.1**	**0.5**	**1**
	95% CI	[0.2-0.8]	[0.5-1.5]	[0.1-1.1]	[0.3-1.8]	[0.2-1.3]	[0.2-1.3]	[0.0-0.8]	[0.3-1.6]	[0.1-1.2]	[0.4-1.6]	[0.0-0.8]	[0.1-2.0]	[0.5-2.0]
Gas	%	**1.3**	**1.1**	**0.8**	**1.2**	**0.8**	**0.4**	**1.9**	**0.8**	**1.4**	**1.5**	**1.9**	**1.7**	**1.3**
	95% CI	[0.8-2.2]	[0.7-1.6]	[0.3-2.3]	[0.5-2.5]	[0.2-2.7]	[0.1-2.9]	[1.0-3.5]	[0.3-1.7]	[0.7-2.5]	[0.7-3.0]	[1.1-3.4]	[0.9-3.2]	[0.6-2.8]
Paraffin	%	**0.1**	**0.1**	**0.1**	**0**	**0.4**	**0**	**0.2**	**0.2**	**0**	**0.3**	**0.1**	**0**	**0.1**
	95% CI	[0.0-0.5]	[0.0-0.2]	[0.0-0.8]		[0.1-1.5]		[0.1-0.9]	[0.0-1.1]		[0.1-1.0]	[0.0-0.9]		[0.0-0.8]
Wood	%	**5.4**	**10**	**8.8**	**4.4**	**16.1**	**16.8**	**12.1**	**26.3**	**20.8**	**1.1**	**18**	**9.5**	**0.9**
	95% CI	[4.2-6.9]	[8.2-12.2]	[5.5-13.8]	[2.3-8.3]	[10.2-24.4]	[12.1-22.8]	[7.5-19.0]	[18.6-35.9]	[14.9-28.1]	[0.6-2.0]	[11.8-26.7]	[5.3-16.4]	[0.4-2.1]
Coal	%	**0.1**	**0.3**	**0**	**0.1**	**0.1**	**0.7**	**0.2**	**0.7**	**0.6**	**0**	**0.6**	**0.3**	**0**
	95% CI	[0.0-0.3]	[0.2-0.4]		[0.0-0.9]	[0.0-1.0]	[0.2-2.1]	[0.0-1.5]	[0.3-1.6]	[0.2-2.1]		[0.3-1.4]	[0.1-1.2]	
Animal dung	%	**0**	**0.1**	**0**	**0**	**0**	**0**	**0**	**0**	**0.5**	**0**	**0.1**	**0**	**0**
	95% CI		[0.0-0.3]							[0.1-3.4]		[0.0-1.0]		
Solar energy	%	**1**	**0.4**	**0.6**	**0.1**	**0.1**	**0.2**	**0**	**0**	**0**	**0.1**	**0**	**0.5**	**1.4**
	95% CI	[0.3-3.6]	[0.1-1.2]	[0.2-2.0]	[0.0-0.9]	[0.0-0.9]	[0.0-1.2]				[0.0-0.8]		[0.1-3.2]	[0.3-5.5]
Other	%	**0.6**	**0.8**	**0.1**	**0**	**0**	**0.3**	**0**	**2.6**	**0**	**0**	**0**	**0.2**	**1.4**
	95% CI	[0.1-2.5]	[0.2-3.7]	[0.0-0.8]			[0.0-2.0]		[0.4-16.3]				[0.0-1.1]	[0.2-8.2]
None	%	**0.3**	**0.3**	**0**	**0**	**0.3**	**3.1**	**0.2**	**0.1**	**0.1**	**0**	**0.8**	**0.2**	**0.2**
	95% CI	[0.2-0.7]	[0.2-0.6]			[0.1-1.1]	[1.4-6.7]	[0.0-1.1]	[0.0-0.9]	[0.0-0.9]		[0.3-2.6]	[0.1-0.9]	[0.1-0.9]

Most of the households in KwaZulu-Natal Province indicated using electricity from the mains as the main source of energy for space heating (Table 36). Nearly a quarter of the households indicated that they do not use anything for space heating. The second most common source of energy for space heating was wood (6.8%). Female-headed households (8.5%) had higher proportion of households whose main source of energy for space heating is wood when compared to male-headed (5%) (Table 36). uMgungundlovu District (79.4%) had the highest proportion of households whose main source of energy for space heating was electricity, followed by Amajuba (73.9%). Umzinyathi (27.2%) had the highest proportion of the households using wood as the main source for space heating. Ugu District (29.8%) had the highest proportion of households which indicated that they use nothing for space heating. uMgungundlovu District (1.6%) had the highest proportion of households using gas as the main source of energy for space heating, closely followed by UMzinyathi (1.3%) and Zululand (1.2%) districts (Table 36).

Table 36: Main source of energy for space heating disaggregated by sex of the household head and district in KwaZulu-Natal Province

		Household head sex		District										
		Male	Female	Ugu	UMgungundlovu	Uthukela	Umkhanyakude	King Cetshwayo	Harry Gwala	Umzinyathi	Amajuba	Zululand	iLembe	eThekwini
Electricity from mains	%	**68.3**	**65.2**	**62.1**	**79.4**	**61.9**	**65**	**71.8**	**49.2**	**54**	**73.9**	**56.4**	**67.2**	**68.3**
	95% CI	[64.4-71.9]	[62.4-67.9]	[56.1-67.7]	[73.6-84.2]	[55.5-68.0]	[56.6-72.6]	[64.3-78.3]	[40.5-58.0]	[46.4-61.4]	[67.1-79.7]	[50.3-62.4]	[58.9-74.5]	[62.0-74.0]
Other source of electricity (e.g., generator, etc.)	%	**0.6**	**0.5**	**0.2**	**0**	**0.4**	**0.5**	**0.5**	**1.2**	**0.3**	**1**	**0.3**	**0.5**	**0.7**
	95% CI	[0.3-1.2]	[0.3-0.9]	[0.1-0.9]		[0.1-1.1]	[0.2-1.4]	[0.2-1.5]	[0.6-2.3]	[0.1-1.1]	[0.5-2.0]	[0.1-1.0]	[0.2-1.2]	[0.3-1.7]
Gas	%	**0.9**	**0.5**	**0.6**	**1.6**	**0.5**	**1.2**	**0.7**	**0.2**	**1.3**	**0.4**	**1.2**	**0.5**	**0.5**
	95% CI	[0.6-1.6]	[0.3-0.9]	[0.2-1.5]	[0.7-3.7]	[0.2-1.6]	[0.5-2.6]	[0.2-2.3]	[0.0-1.3]	[0.4-4.1]	[0.1-1.1]	[0.4-3.2]	[0.2-1.3]	[0.2-1.4]
Paraffin	%	**0.1**	**0.1**	**0.1**	**0**	**0.4**	**0**	**0**	**0.4**	**0.3**	**0**	**0.5**	**0**	**0**
	95% CI	[0.0-0.2]	[0.1-0.2]	[0.0-0.8]		[0.1-1.0]			[0.1-1.2]	[0.1-1.0]		[0.2-1.5]		
Wood	%	**5**	**8.5**	**6.5**	**5.2**	**13.2**	**13.7**	**6.8**	**23.2**	**27.2**	**2.2**	**18.6**	**9.3**	**0.1**
	95% CI	[3.9-6.5]	[6.9-10.5]	[4.1-10.2]	[2.7-9.7]	[8.7-19.5]	[9.1-20.2]	[4.2-10.9]	[15.7-32.9]	[19.6-36.3]	[0.9-5.2]	[12.3-27.1]	[5.2-15.9]	[0.0-0.8]
Coal	%	**0.1**	**0.2**	**0.1**	**0**	**0**	**0.3**	**0**	**1**	**1.7**	**0**	**0**	**0.2**	**0**
	95% CI	[0.0-0.3]	[0.1-0.3]	[0.0-0.8]			[0.1-1.2]		[0.3-3.4]	[0.7-4.3]			[0.0-1.1]	
Candles	%	**0**	**0**	**0**	**0**	**0**	**0.2**	**0**	**0**	**0**	**0**	**0**	**0.2**	**0**
	95% CI		[0.0-0.1]				[0.0-1.0]						[0.0-1.1]	
Animal dung	%	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.5**	**0**	**0**	**0**	**0**
	95% CI	[0.0-0.1]	[0.0-0.2]							[0.1-3.4]				
Solar energy	%	**0.2**	**0**	**0.3**	**0.1**	**0.1**	**0**	**0**	**0**	**0**	**0**	**0.1**	**0**	**0.2**
	95% CI	[0.1-0.9]	[0.0-0.1]	[0.0-2.2]	[0.0-0.9]	[0.0-0.9]						[0.0-1.0]		[0.0-1.4]
Other	%	**0.7**	**0.9**	**0.2**	**0**	**0**	**0.2**	**0**	**2.6**	**0**	**0**	**0**	**0**	**1.6**
	95% CI	[0.2-2.5]	[0.2-3.7]	[0.1-0.9]			[0.0-1.1]		[0.4-16.2]					[0.3-7.8]
None	%	**24**	**24**	**29.8**	**13.7**	**23.5**	**19**	**20.2**	**22.1**	**14.8**	**22.6**	**22.8**	**22.2**	**28.5**
	95% CI	[20.2-28.2]	[21.8-26.4]	[25.5-34.4]	[10.0-18.4]	[19.6-27.9]	[13.8-25.6]	[15.5-25.9]	[16.0-29.9]	[10.4-20.6]	[17.5-28.6]	[17.4-29.2]	[17.1-28.4]	[22.9-34.9]

5.6 Energy

In KwaZulu-Natal Province, 39.6% of the households indicated that they were registered as indigent households; 56,4% of the households indicated that they were not registered as indigent households and 4.0% households indicated they did not know if they were registered as indigent households or not (Figure 24).

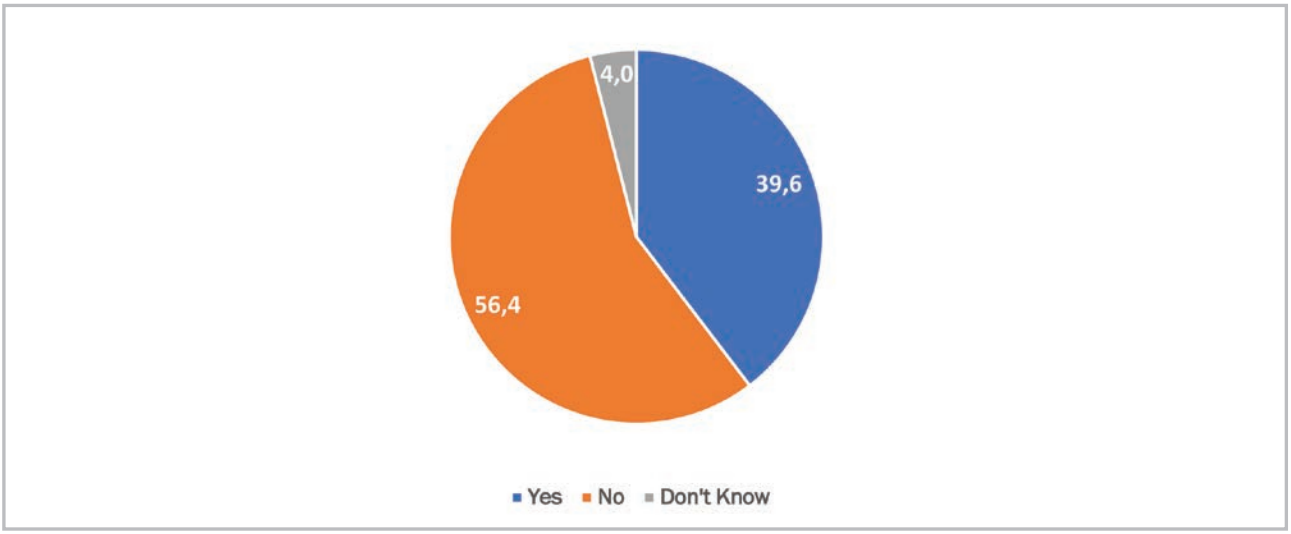


Figure 24: *Proportion of the household registered as indigent (n=8791) in KZN Province*

A higher proportion of male-headed (40.4%) than female-headed (38.8%) households were registered as indigent in KwaZulu-Natal Province. However, the variance between male- and female-headed households is (1.6%) (Table 37). Amajuba District (53.2%) had the highest proportion of households registered as indigent, followed by eThekwini (51.6%) and uThukela (47.6%) districts. uMzinyathi District had the lowest proportion of households registered as indigent (13.4%).

Table 37: Households registered as indigent disaggregated by sex of the household head and district in KwaZulu-Natal Province

	Yes		No		Don't Know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	40.4	[35.4-45.7]	55.9	[50.6-61.2]	3.6	[2.6-5.0]
Female	38.8	[34.9-42.9]	56.8	[52.6-61.0]	4.4	[3.3-5.7]
District						
Ugu	32.6	[25.2-41.0]	63.9	[55.3-71.7]	3.5	[1.9-6.3]
UMgungundlovu	22.4	[15.7-30.8]	75.8	[67.4-82.5]	1.8	[1.0-3.3]
Uthukela	47.6	[40.0-55.2]	50.2	[43.1-57.3]	2.3	[0.9-5.9]
Umkhanyakude	40.9	[35.5-46.6]	51.2	[45.3-57.1]	7.9	[4.7-12.8]
King Cetshwayo	33.3	[25.5-42.2]	61.6	[53.0-69.5]	5.1	[2.7-9.3]
Harry Gwala	25.1	[18.8-32.5]	71.1	[63.1-77.9]	3.9	[1.5-9.9]
Umzinyathi	13.4	[9.6-18.3]	84.2	[79.2-88.3]	2.4	[1.2-4.9]
Amajuba	53.2	[46.1-60.2]	43.2	[37.1-49.4]	3.6	[1.8-6.9]
Zululand	20.4	[15.6-26.1]	77.7	[71.8-82.6]	1.9	[1.0-3.8]
Lembe	38.2	[30.4-46.7]	53.4	[44.5-62.1]	8.4	[4.8-14.3]
eThekwini	51.6	[42.7-60.3]	44.3	[35.3-53.8]	4.1	[2.3-7.2]

6 Agriculture

6.1 Agriculture and Production Systems

This section focuses on the food availability dimension which tries to unpack how food is produced within the province by various households. Most households in the African context rely on agriculture as the primary source of food, hence they engage in crop, fruit, vegetable, and livestock production to provide food for their households. Therefore, this section will characterize land ownership and access, as well as agriculture production trends across the different districts in KwaZulu-Natal Province.

Findings from the HEA focus group discussions indicate that agricultural production and value chains have a critical role in household food and nutrition security. The figure below depicts a seasonal calendar developed from the group discussions by participants.

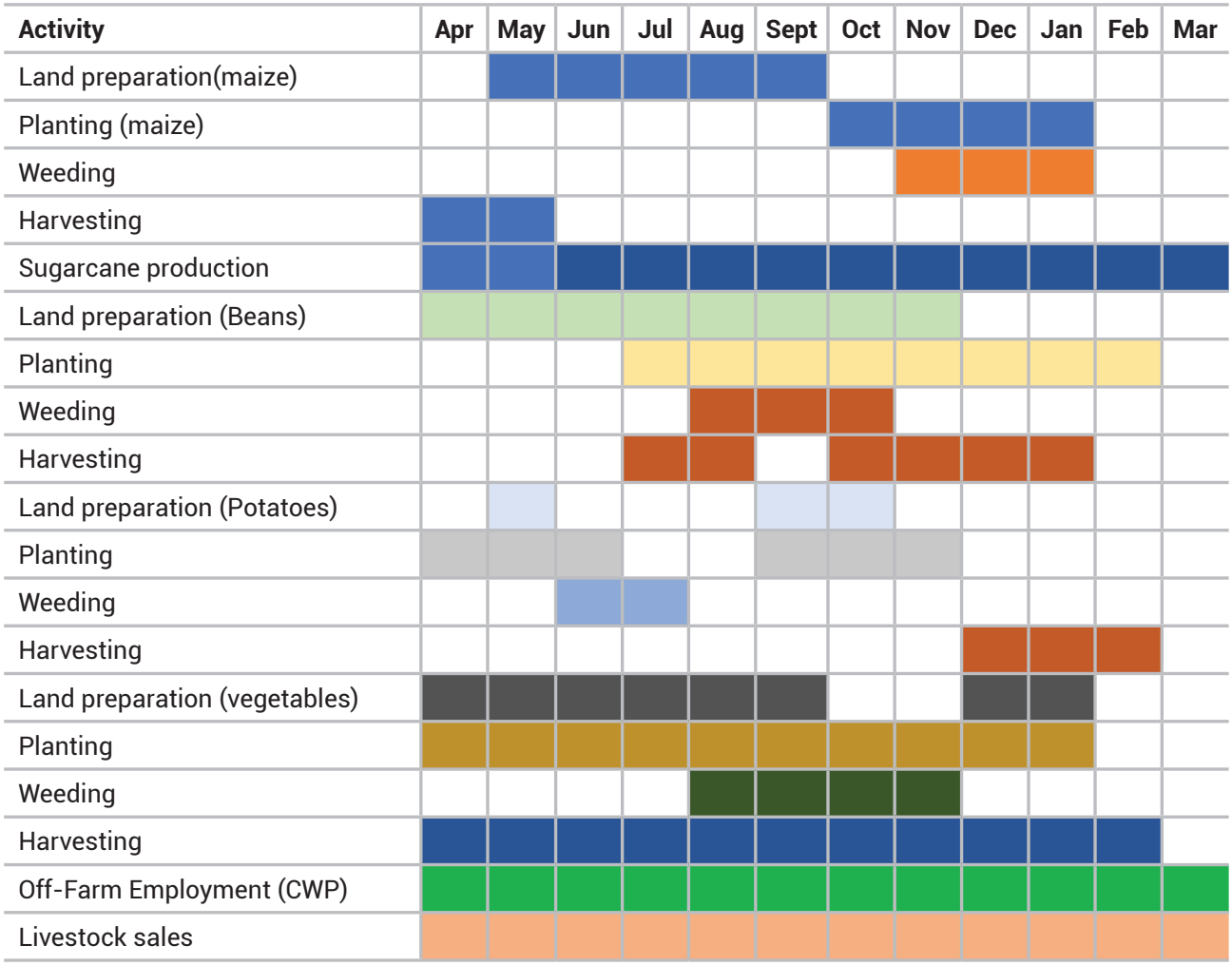


Figure 25: *Seasonal calendar*

In a normal year, the rain season starts from September to February and is characterised by land preparation, planting, and weeding. Much of the rural life in the zone is still determined by agricultural seasons, although this has been augmented by formal employment, mining, and social grants, which are all-year-round contributors to people's livelihoods. Livelihoods information is organised temporally by consumption year,

which begins with the start of the main dry harvest and runs through to just before the next year's main dry harvest. In this zone, the main dry harvest begins in April, so the consumption year begins that month and runs up until the end of the following March. The livelihood strategies presented in this document also apply to a particular year, one that is neither very good nor bad, but is 'typical' or occurs frequently.

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

6.1.1 Household access to land in KwaZulu-Natal Province

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).

Overall, access to land by households in the Kwazulu-Natal Province is fairly high (Figure 26) with at least 60% of households in seven out of eleven district municipalities reporting having access to land. The district with the least number of households with access to land is eThekwini which recorded 31%. It should be noted that most of the land in the Kwazulu-Natal Province is owned through a dual land tenure system. Within the uMgungundlovu District, the largest type of landownership is characterised as privately owned commercial farmland of which a substantial portion is owned by corporate entities within the timber and sugar cane industries. The Ingonyama Trust is known to be the second largest landowner in the uMgungundlovu District, with other land ownership categories including state and parastatal land ownership; and to a lesser extent church-owned land.

The district with the highest percentage (95%) of access to the land is the Zululand District. The district is predominately rural, with commercial farmland surrounded by protected areas, towns, and scattered rural settlement with traditional authorities' areas e.g., about 99% of the land in Nongoma local municipality falls with the Ingonyama Trust, whereas 80% of land within the AbaQulisi Municipality belongs to the white population group, with AbaQulisi having the highest land claims in the province (i.e., the target for the national government was that 30% of that land must be transferred to Black communities in 2014).

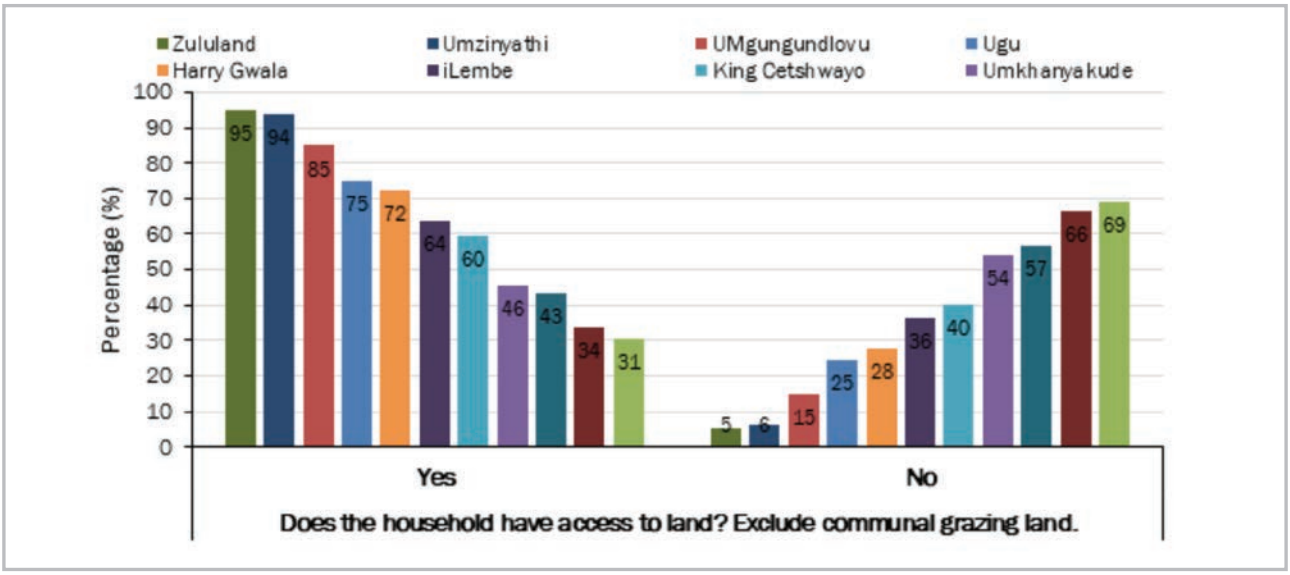


Figure 26: *Household access to land in KwaZulu-Natal Province*

Disaggregated by gender, female-headed households were on average having a higher percentage when it comes to access to land (Figure 27). This is more pronounced among females in Zululand, with 70%. Amajuba is the only district municipality in the province with the highest percentage of male-headed households with more access to land (55%) than females in KwaZulu-Natal Province.

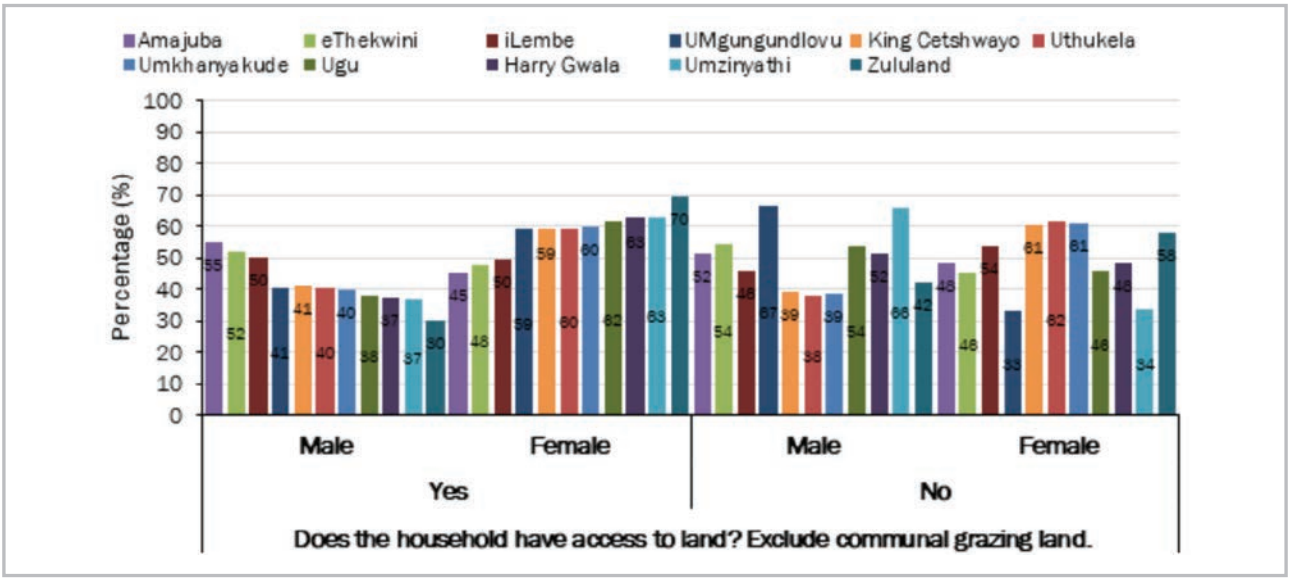


***Figure 27:** Land access disaggregated according to household head sex in KwaZulu-Natal Province*

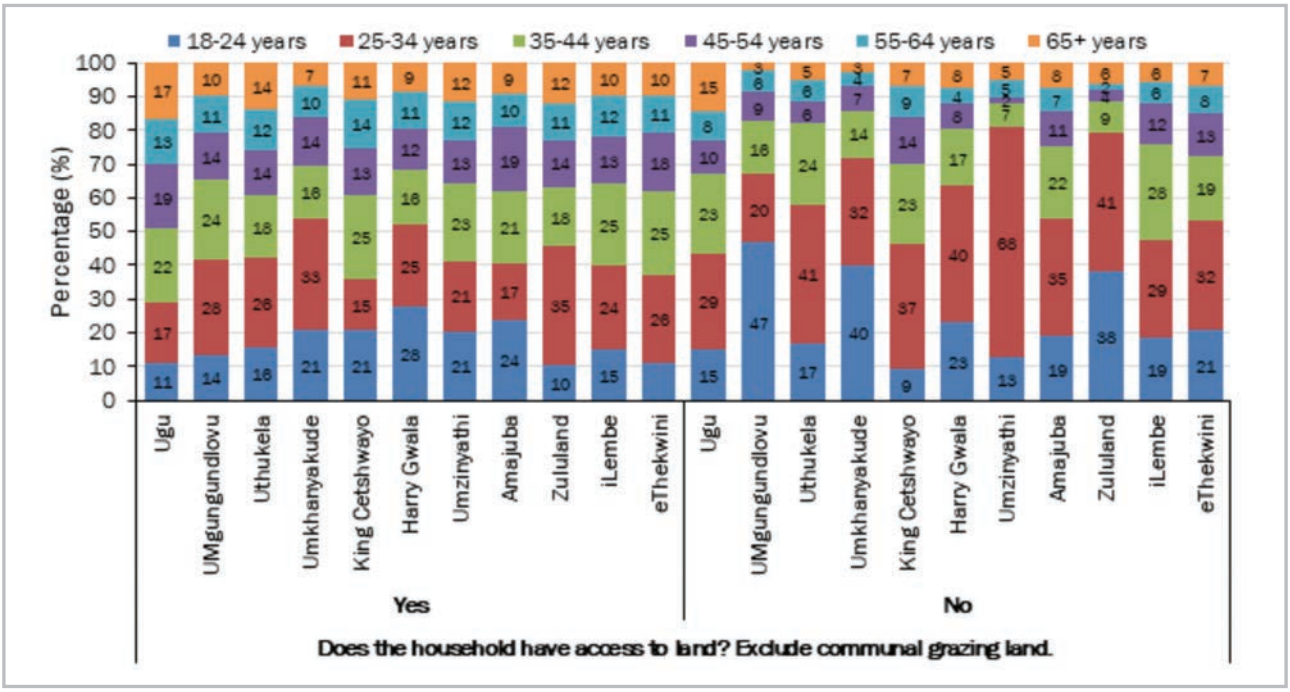


***Figure 28:** Access to land disaggregated according to age in KwaZulu-Natal Province*

Land access varied disproportionately according to the different age categories as shown in Figure 28. Entirely, all the respondents in the 18-24 years age category have extremely limited access to land and across the eleven districts, except for the Amajuba and Harry Gwala districts, wherein 24% and 28% of the 18-24 years age group have access to the land, respectively. It should be noted that as is expected, 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 increase in age, that is why in all the districts, the age group between 25-44 years have the highest percentage of access to land. It should be noted that this is the most economically active age group which is able to purchase land from income generated.

6.1.2 Land tenure system among households in KwaZulu-Natal Province

Results from the household survey show that of the land that they access to, most of it is owned by the households (Figure 29), with Amajuba households at the forefront with 96%, followed by iLembe and King Cetshawayo with 91% of the household owning the land they have access to, respectively. There is, however, a small percentage of households who reside on land which is owned by the State i.e., all the nine municipalities except for uMgungundlovu and Umzinyathi (both with 2%), have reported a percentage of their households having access to state-owned land. In all the districts, a higher percentage in all the households have access to land which is less than 500m^2. This result indicates that the majority of the reported land owned is merely for residential purposes and not enough for agriculture production purposes (Figure 29). Ownership of the land in this context is a small area for dwelling, with extremely limited backyard farming or gardening. Ugu, Zululand, and Amajuba district municipalities have the largest percentage (23%) of Households with yards bigger than 500m^2 but less than 1000m^2.

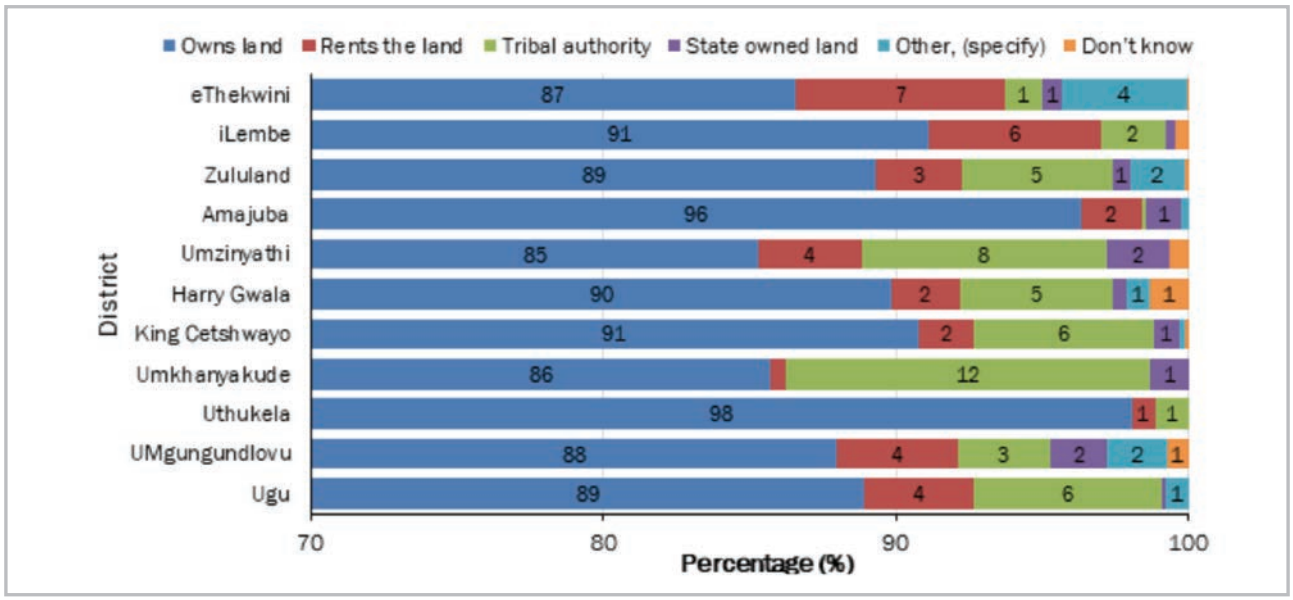


Figure 29: Land tenure system among households in the KwaZulu-Natal Province

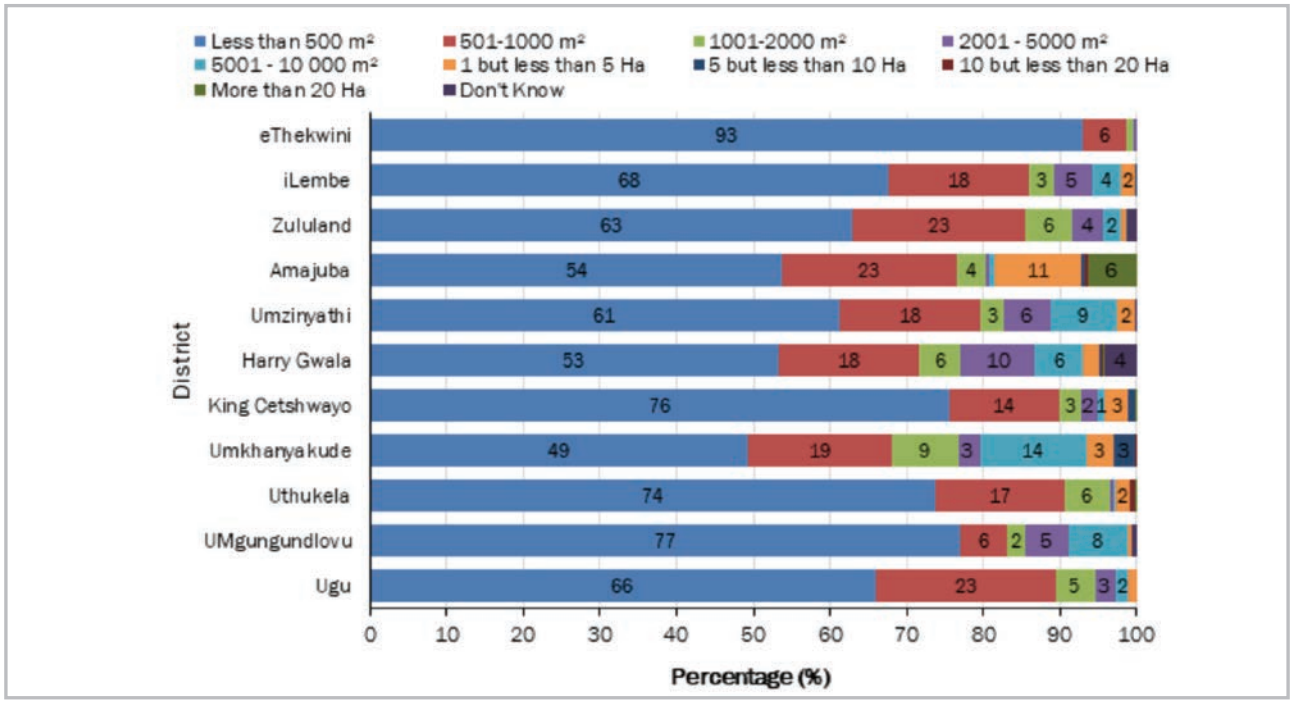


Figure 30: The approximated agricultural land size accessed by households in KwaZulu-Natal Province

6.1.3 Use of land for food production or other agricultural products

Within the province, the percentage of households who use the land for food and agricultural production is high (Figure 31). King Cetshwayo has the highest percentage (81%) of households who have access to land using if for agricultural purposes (Figure 31), followed by uThukela and uMkhanyakude with 67%. eThekwini has the lowest number of households (19%) practising agriculture on their land, the low level of involvement of eThekwini might be ascribed to the fact that it is urbanised and the only metro municipality in the province, with much of the land being used by the logistics and services sector.

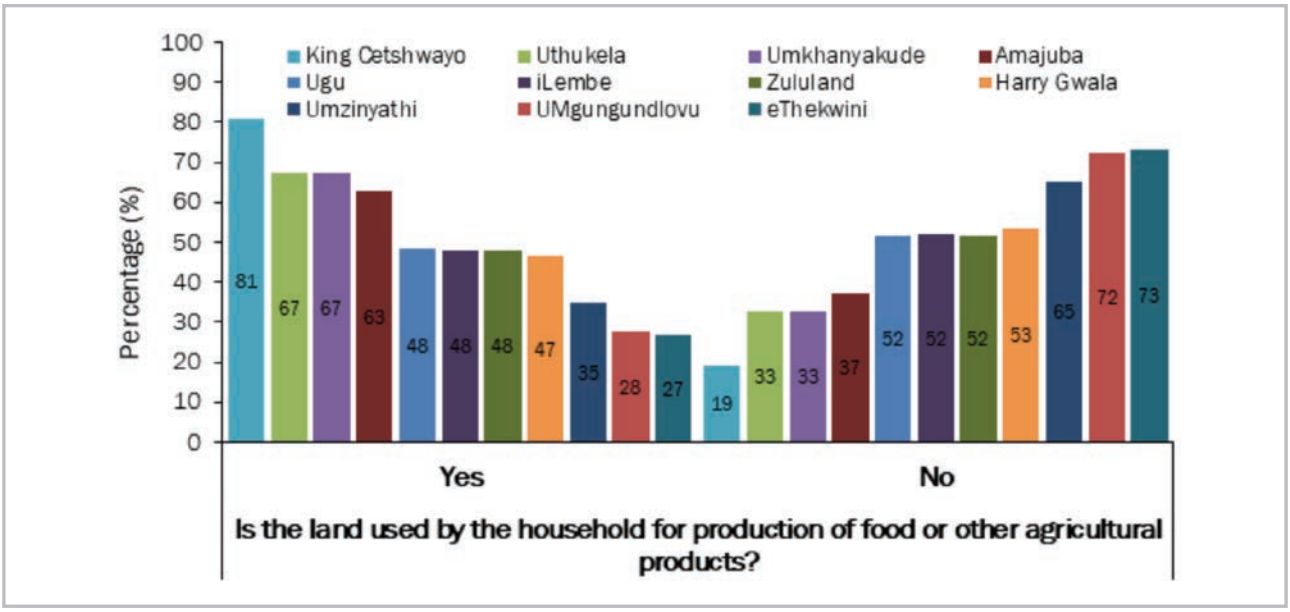


Figure 31: Land use for food and other agricultural production in KwaZulu-Natal Province

6.1.4 Crop and livestock production

Households in the KwaZulu-Natal Province are practising livestock production at a slightly lower rate (Figure 32). UMzinyathi, Harry Gwala, and uThukhela districts are the only districts with a slighly higher percentage of live stock production at 68%, 64%, and 61%, respectively (Figure 32). The three districts are mainly rural , hence they are at the forefront of livestock production.

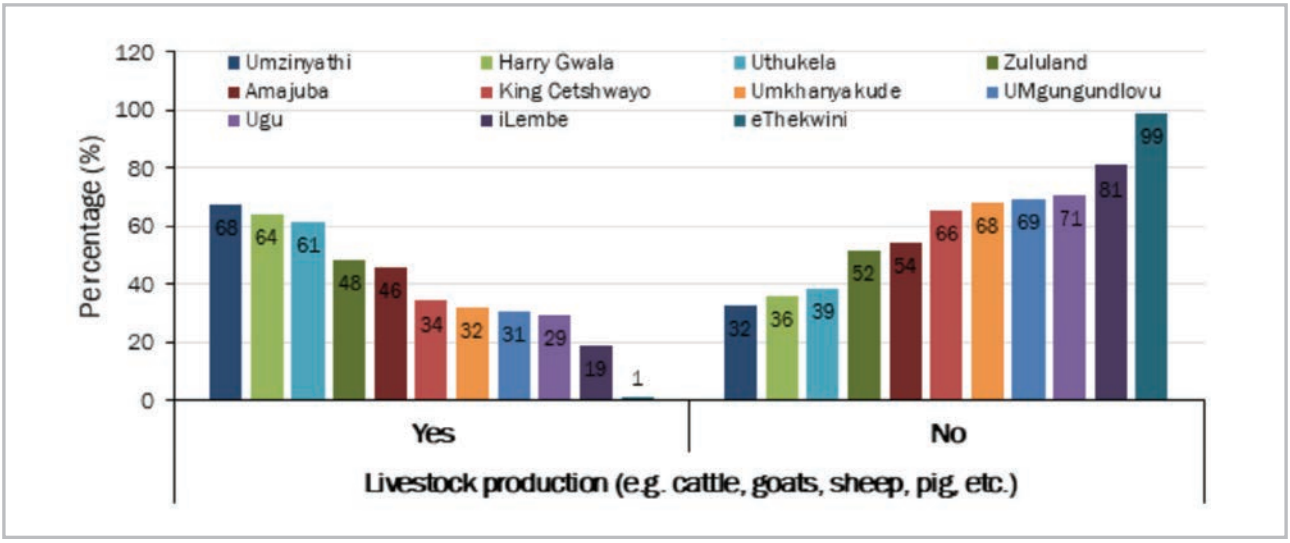


Figure 32: Livestock production disaggregated by district in Kwazulu-Natal Province

Generally, poultry production is practised by a slightly higher number of households in the KwaZulu-Natal Province. The results showed that only Metro municipality households have the lowest (10%) level of poultry production within the province (Figure 33). When compared with livestock production, poultry production is widely practised in the province; this might be ascribed to the reason that in general poultry production requires less space compared to livestock production.

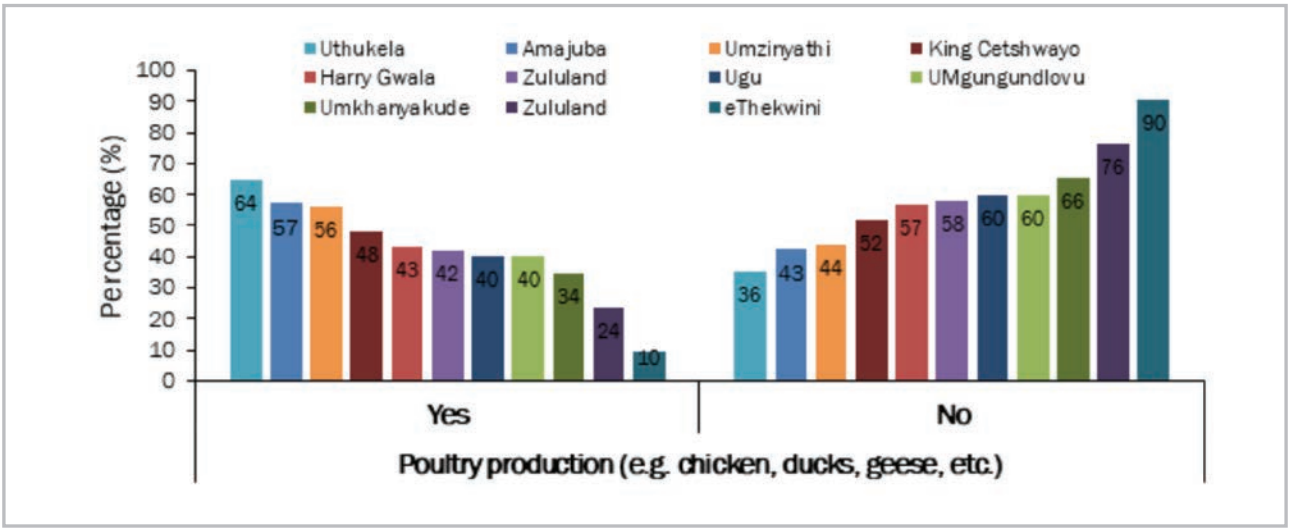


Figure 33: *Poultry production disaggregated by district in KwaZulu-Natal Province*

Households in the KwaZulu-Natal Province reported an extremely low percentage of engagement in grain crop production, with Harry Gwala and uGu districts reporting to have some fairly moderate level of engagement in crop production at 41% and 30%, respectively (Figure 34). Such low levels of grain production can be ascribed to the fact that the province is well known for its high production of sugar cane and it only produces 5% of the country's maize crop on average.

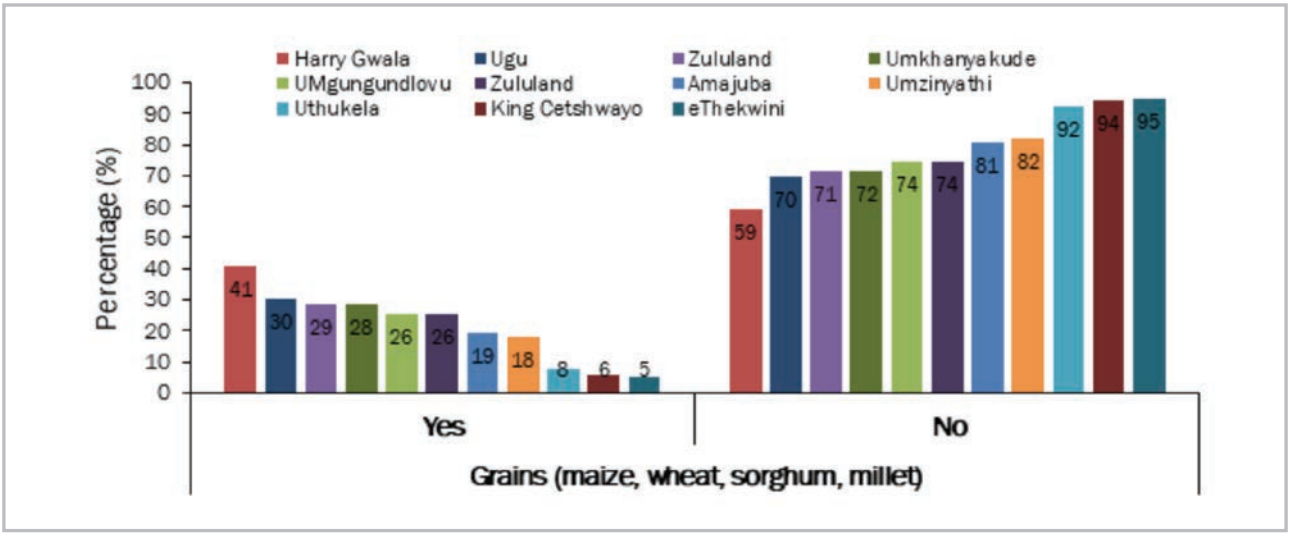


Figure 34: *Household involvement in crop production*

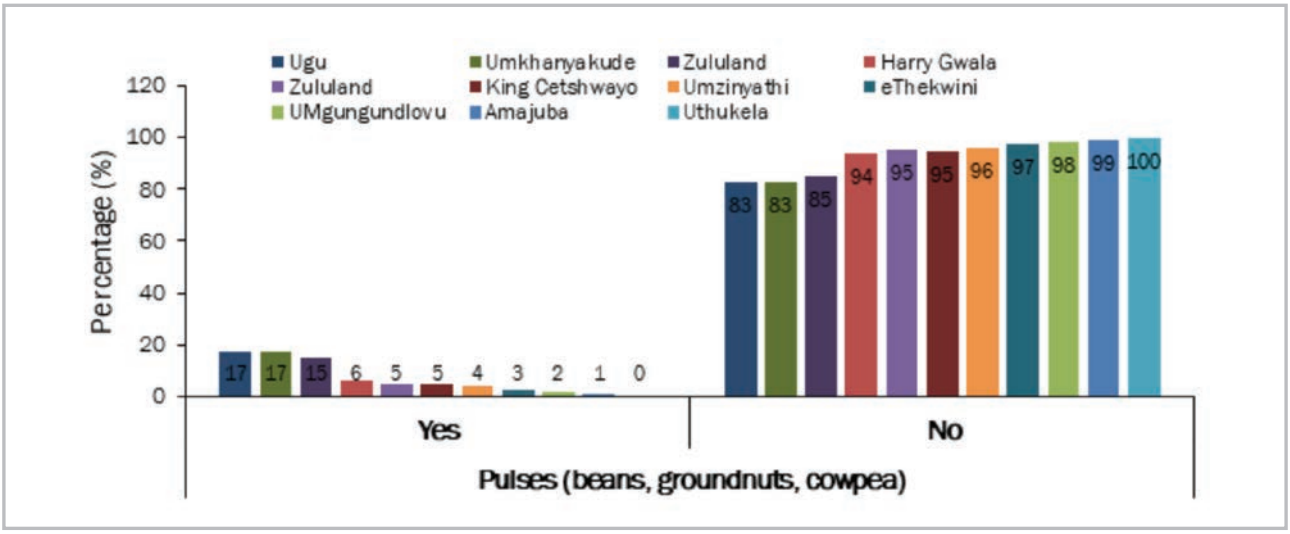


Figure 35: *Pulses production by district*

The production of pulses was reported to be extremely low in the KwaZulu-Natal Province within all the eleven districts (Figure 35). Only Ugu and uMgungundlovu district municipalities have been reported to be at the forefront of practising pulse production within the province, but at a much lower level of about 17%.

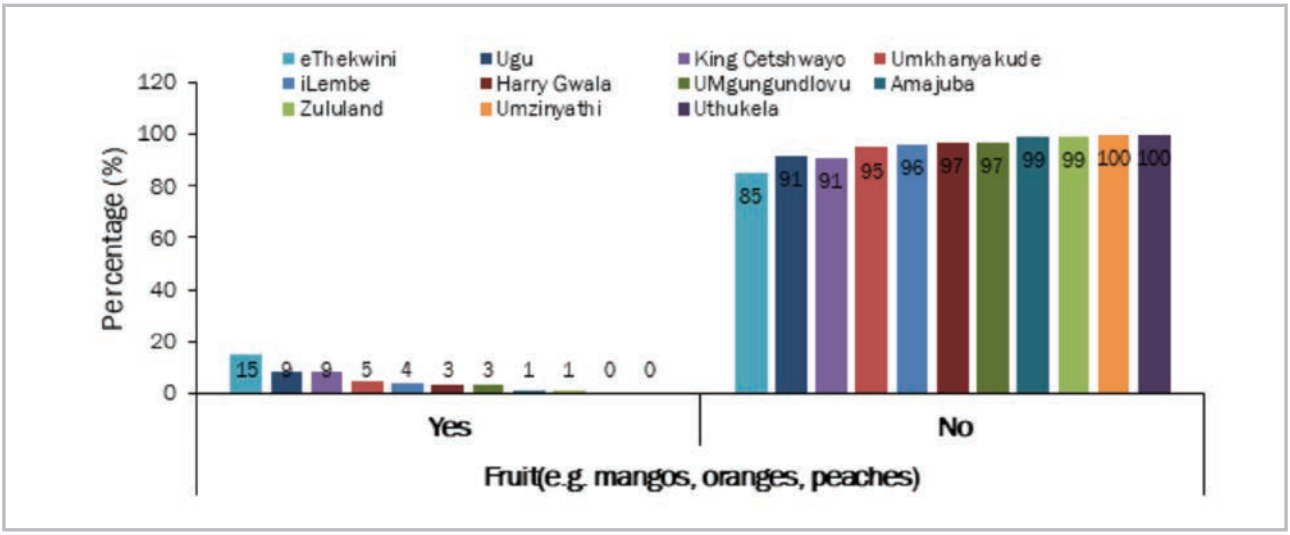


Figure 36: *Household fruit production in KwaZulu-Natal Province*

Fruit production was reported to be low in all the districts in KwaZulu-Natal Province (Figure 36). The highest engagement in fruit production has been reported to be 15% in eThekwini. It should be noted that the province is known to be producing subtropical and some low levels of citrus fruits.

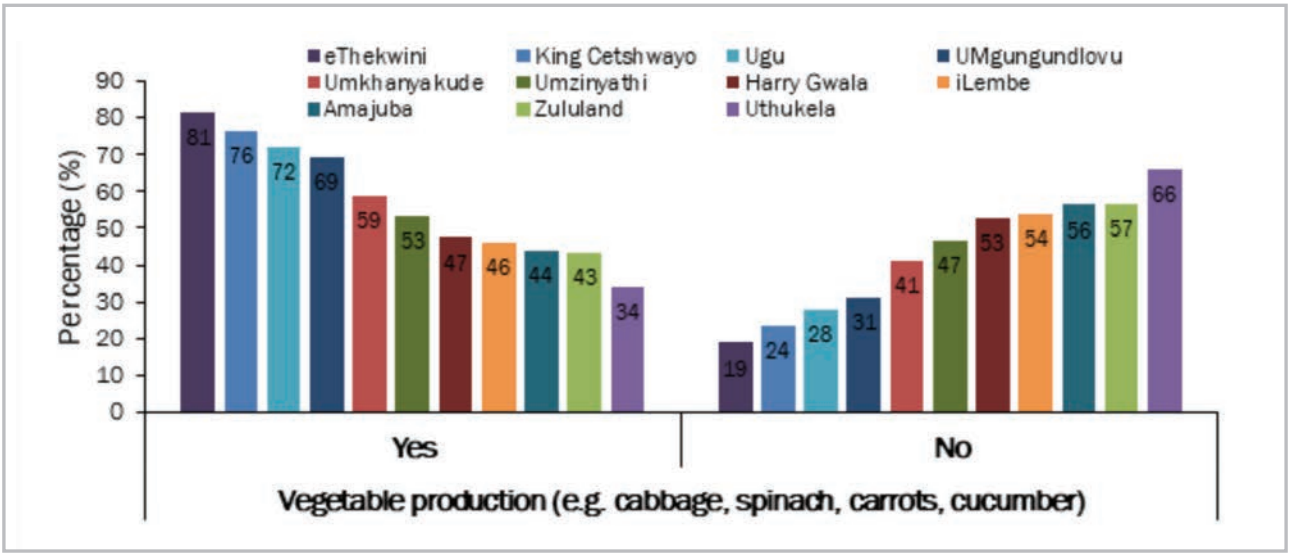


Figure 37: *Household vegetable production in KwaZulu-Natal Province*

6.1.5 Major crops grown

Crop production plays a major role in supplementing food availability among the rural households in KwaZulu-Natal Province. Both qualitative and quantitative data show 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.

6.2 Wealth Breakdown, Food, and Income Sources

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

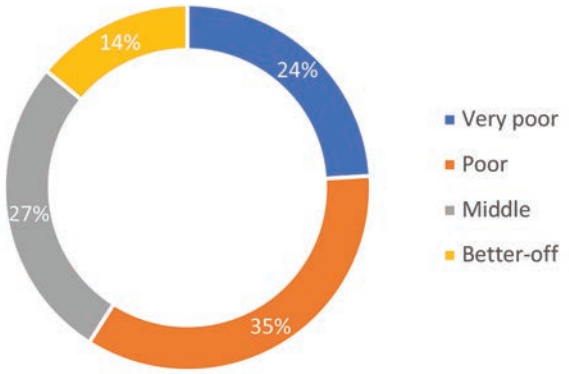
The analysis showed that geography plays a critical role in determining household's options for obtaining food and income in a society. However, it is not the only factor that determines the pattern of livelihood. While geography tends to define a household's options for obtaining food and income, the 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. Results emerging from the HEA focus group discussions indicate that most of the households in open access livelihood zones of the province are 'poor' and 'very poor'. This result is a cause for concern with regards to government interventions, and they need to be tailor-made for the province.

6.2.1 South coast intensive open access cropping (ZASCO) of eThekwini and Ugu 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.



Category	Item	Wealth Group (typical value in brackets)			
		'Very poor'	'Poor'	'Middle'	'Better off'
Hh Size		8-12 (10)	7-9 (8)	5-7 (6)	2-6 (4)
Land (Ha)	Owned	0-1 (¼)	¼-1 (0.7)	1-3 (1½)	1-3 (2)
	Cultivated	0-1 (0.2)	¼-1 (½)	1-1.5 (1.3)	1-1.5 (1.3)
Livestock (head)	Cattle	(2-4)3	4-8 (6)	8-12 (10)	10-20 (15)
	Goats	3-7 (5)	6-10(8)	7-19 (13)	17-23 (20)
Income	Main	Grants	Grants	Formal employ	Formal employ
	Annual (R)	68,367	77,054	233,711	358,034

Figure 38: Wealth breakdown in the ZASCO Livelihood Zone

Land holdings increase with wealth, but not as exponentially as the factors listed above (0.25ha for the poorest against 1ha 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 R358,034 compared to the R68,367 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R233,711 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 69% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock products.

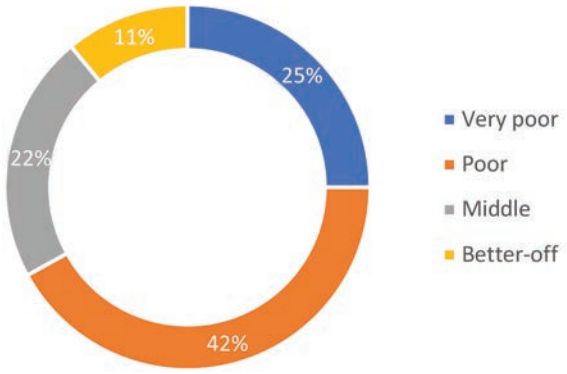
'Better-off' households can develop slightly more land and real livestock for sale, using savings from their other income sources to afford inputs and better livestock management (including labour). Similarly, they derive cash benefit from their animals. 'Middle' households also sell livestock or livestock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

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

6.2.2 Open Access Low Intensity Rain-fed Cultivation (ZALRC)

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.



Category	Item	Wealth Group (typical value in brackets)			
		'Very poor'	'Poor'	'Middle'	'Better off'
Hh Size		8-10 (9)	6-8 (7)	5-7 (6)	4-6 (5)
Land (Ha)	Owned	0-1 (¼)	¼-1 (0.7)	1-3 (1½)	1-3 (2)
	Cultivated	0-1 (0.2)	¼-1 (½)	1-3 (1.3)	1-3 (2)
Livestock (head)	Cattle	(1-3)2	2-10 (6)	11-12 (12)	10-20 (15)
	Goats	2-6 (4)	6-10(8)	5-15 (10)	20-50 (25)
Income	Main	Grants	Grants	Formal employ	Formal employ
	Annual (R)	59,837	74,971	153,908	265,473

Figure 39: Wealth breakdown in the ZALRC 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 R265,473 compared to the R59,837 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R153,908 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 67% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock products.

'Better-off' households can develop slightly more land and real livestock for sale, using savings from their other income sources to afford inputs and better livestock management (including labour). Similarly, they

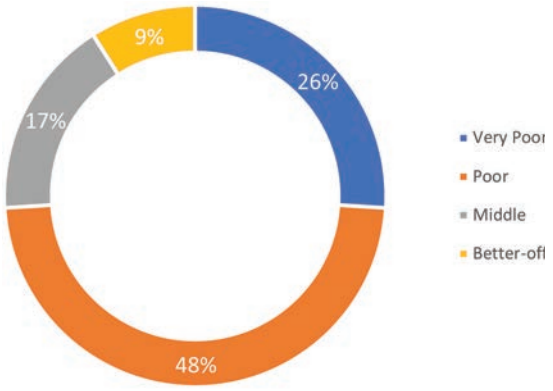
derive cash benefit from their animals. Middle households also sell livestock or livestock products. During the COVID-19 lockdown restrictions, the 'poor' and 'very poor' households are the ones who suffer the most impacts of food insecurity.

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

6.2.3 Coastal Open Access Non-crop Income (ZACNI) of iLembe, Sisonke, Ugu, uMgungundlovu, uMkhanyakude, uMzinyathi, and uThungulu 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.



Category	Item	Wealth Group (typical value in brackets)			
		'Very poor'	'Poor'	'Middle'	'Better off'
Hh Size		8-10 (9)	6-8 (7)	4-6 (5)	4-6 (5)
Land (Ha)	Owned	0-1 (¼)	¼-1 (0.7)	1-3 (1½)	2-4 (3)
	Cultivated	0-1 (0.2)	¼-1 (½)	1-1.5 (1.3)	1-3 (2)
Livestock (head)	Cattle	(0-5)3	5-8 (6)	10-20 (15)	25-35 (30)
	Goats	3-7 (5)	14-15(12)	15-25 (20)	20-40 (30)
Income	Main	Grants	Grants	Formal employ	Formal employ
	Annual (R)	53,863	64,134	257,624	424,408

Figure 40: *Wealth breakdown in the ZACNI Livelihood Zone*

Land holdings increase with wealth, but not as exponentially as the factors listed above (0.2ha for the poorest against 3ha 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 R424,408 compared to the R53,863 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R257,624 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 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 products.

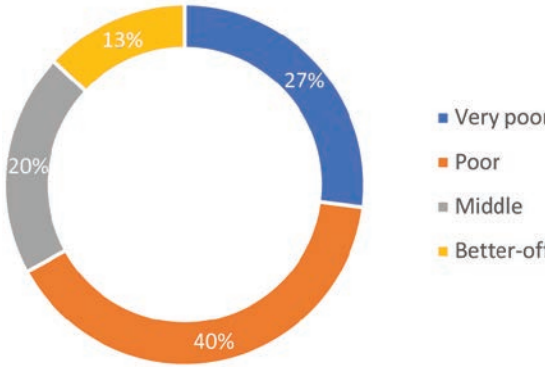
'Better-off' households can develop slightly more land and real livestock for sale, using savings from their other income sources to afford inputs and better livestock management (including labour). Similarly, they derive cash benefit from their animals. Middle households also sell livestock or livestock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

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

6.2.4 Mzimkhulu–Mkhomazi midlands open access Mixed farming (ZAMMO)

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.



Category	Item	Wealth Group (typical value in brackets)			
		'Very poor'	'Poor'	'Middle'	'Better off'
Hh Size		8-10 (9)	7-9 (8)	5-7 (6)	4-6 (5)
Land (Ha)	Owned	0-1 (¼)	¼-1 (0.7)	0.5-1.5 (1)	1-3 (2)
	Cultivated	0-1 (0.2)	¼-1 (½)	0.5-1.5 (1)	0.5-1.5 (1)
Livestock (head)	Cattle	(0-4)2	3-7 (5)	8-12 (10)	5-15 (10)
	Goats	0-2 (1)	2-4(3)	5-15 (10)	10-20 (15)
Income	Main	Grants	Grants	Formal employ	Formal employ
	Annual (R)	57,130	73,700	179,179	310,655

Figure 41: *Wealth breakdown in the ZAMMO Livelihood Zone*

Land holdings increase with wealth, but not as exponentially as the factors listed above (0.3ha 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 R310,655 compared to the R57,130 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R179,179 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 67% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock products.

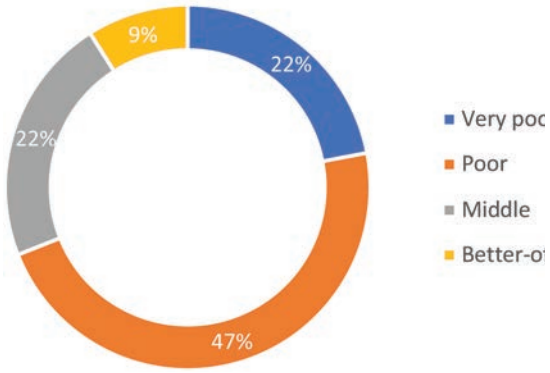
'Better-off' households can develop slightly more land and real livestock for sale, using savings from their other income sources to afford inputs and better livestock management (including labour). Similarly, they derive cash benefit from their animals. 'Middle' households also sell livestock or livestock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

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

6.2.5 Thukela and Lebombo sparsely populated (ZATGL)

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.



Category	Item	Wealth Group (typical value in brackets)			
		'Very poor'	'Poor'	'Middle'	'Better off'
Hh Size		8-12 (10)	6-8 (7)	4-6 (5)	4-6 (5)
Land (Ha)	Owned	0-1 (¼)	¼-1 (0.7)	1-2 (1.5)	1-3 (2)
	Cultivated	0-1 (0.2)	¼-1 (½)	1-2 (1.5)	1-2 (2)
Livestock (head)	Cattle	(3-5)4	6-10 (8)	10-20 (15)	20-40 (30)
	Goats	4-6 (5)	6-10(8)	10-20 (15)	20-40 (30)
Income	Main	Grants	Grants	Formal employ	Formal employ
	Annual (R)	55,163	63,842	199,626	337,806

Figure 42: *Wealth breakdown in the ZATGL Livelihood Zone*

Land holdings increase with wealth, but not as exponentially as the factors listed above (0.2ha 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 R337,806 compared to the R55,163 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R199,626 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 69% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock products.

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

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

6.2.6 Sources of Food for ZASCO of eThekwini and Ugu districts

Figure 43 was generated from HEA focus group discussions spread sheet data depicting sources of food for households within the ZASCO livelihood zone in the province. Crop production contributed about 4% and 15% of the food sources for the 'very poor' and 'poor' wealth groups respectively. Food purchases contributed about 78% and 88% of the food needs for the middle and better-off households respectively. Despite the rainfall and some 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 30% to 40% across the wealth groups. The 'very poor' and 'poor' households also accessed food from food aid from both state and non-state actors implementing various safety net programmes. The 'very poor' and 'poor' households could hardly cover their basic food and livelihoods needs in normal times, leaving little financial ability to invest in their children's needs such as education. About 96% and 95% of the 'very poor' and 'poor' households' food needs were drastically affected by COVID-19 restrictions, leaving them vulnerable to food insecurity.

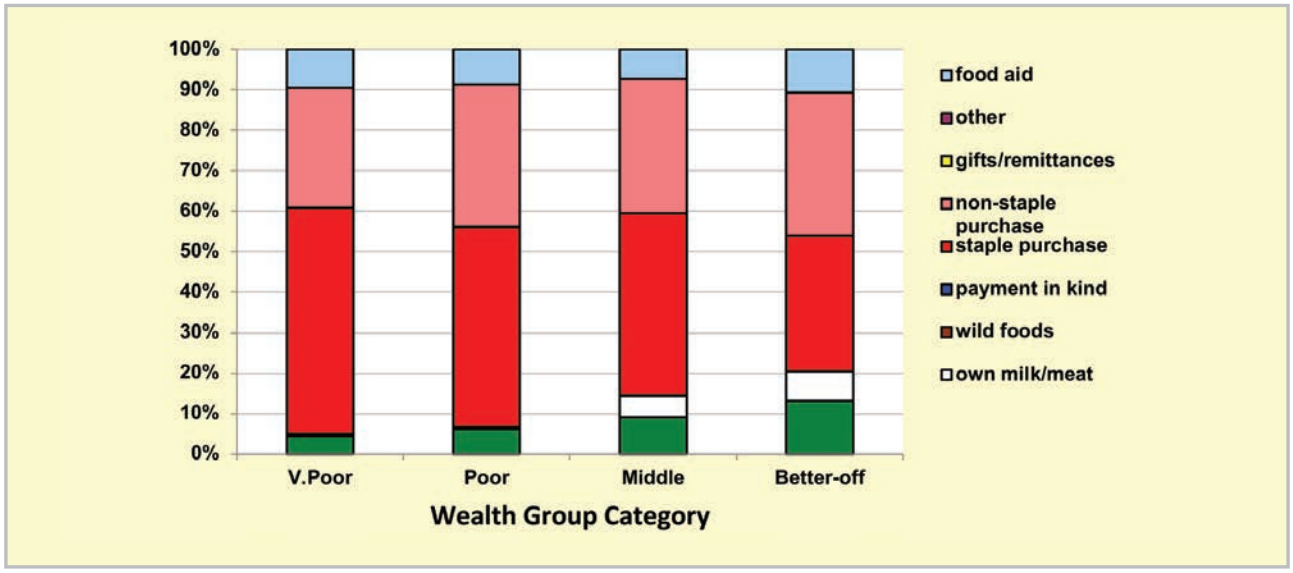


Figure 43: *Sources of food in ZASCO (expressed as percentage of minimum average food energy needs) for each wealth group*

Wealthier households have capital for inputs and hired labour, ensuring their crops are planted and weeded in time as well as being protected from pests. 'Middle' and 'better-off' households obtained a tiny proportion of their food needs from their livestock (6% to 8%); this was usually from cow milk and occasional slaughter for meat. Dairy production in this zone is not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) is milked for consumption.

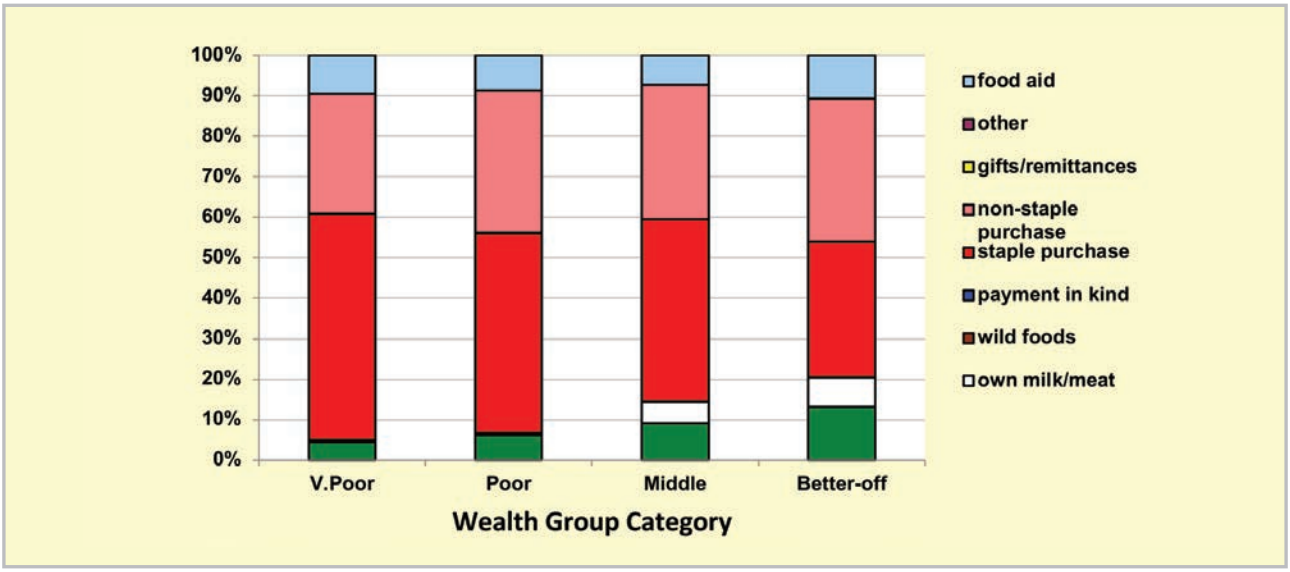


Figure 44: *Sources of food in ZASCO (expressed as percentage of overall total food energy needs) for each wealth group*

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

6.2.7 Gender analysis of who produces food in ZASCO of eThekwini and Ugu districts

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

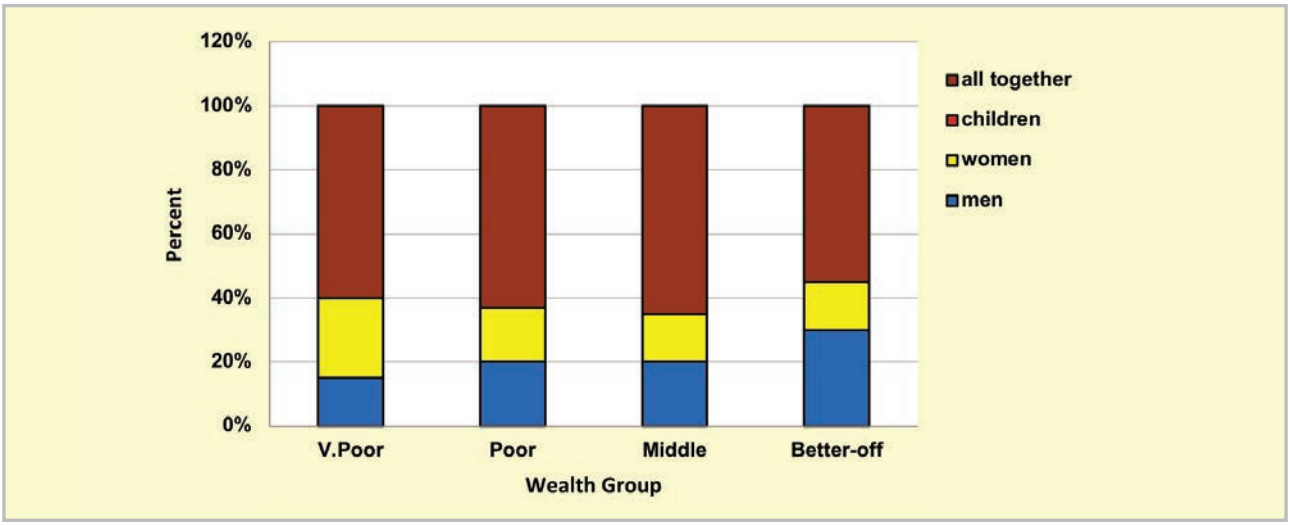


Figure 45: *Gender breakdown of who produces food in the zone for each wealth group*

The results indicated that men and women altogether contributed significantly to generate food. This was about 60% across all wealth groups. Women appear to contribute significantly to 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. As a result, addressing the gender gap in development including agriculture could raise the scale of economic activities, crop production, boost agricultural yield, overall GDP, and a significant proportion of people out of poverty. Further, there has been a general inadequacy among all the gender structures at all levels to maintain a collective and sustained response to gender and youth empowerment issues

6.2.8 Sources of cash income in ZASCO of eThekwini and Ugu districts

Cash incomes varied considerably across wealth groups, with the 'better-off' earning R358,034 per annum, five times as much as the 'very poor', who earned only R68,367 per annum. Figure 46 shows this distribution - it must be noted that the bars in the figure are not quartiles, they represent wealth groups and wealth groups are not distributed evenly.

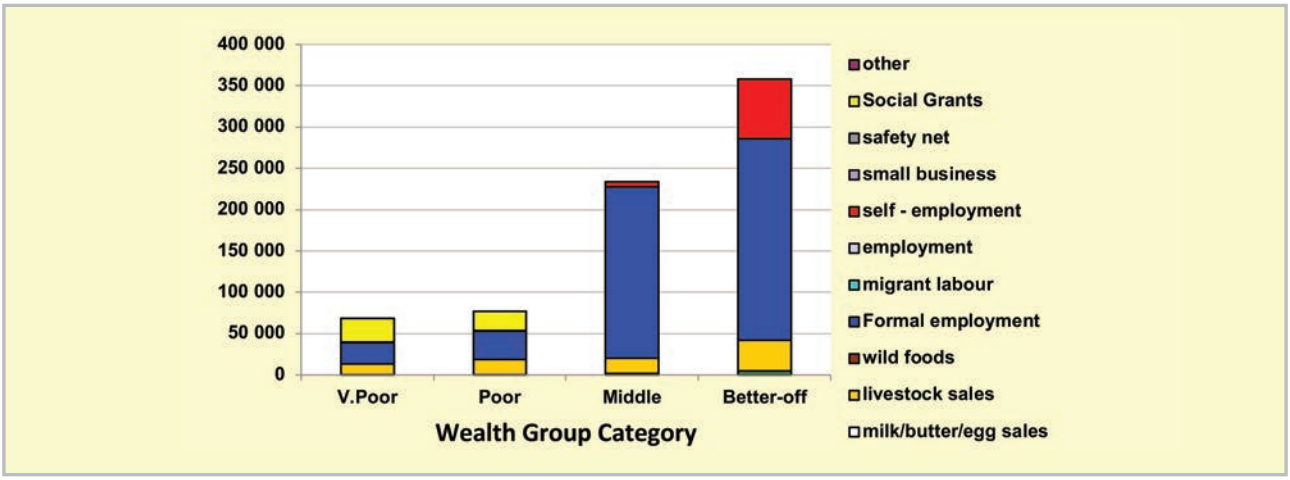


Figure 46: *Sources of annual cash income by wealth group in ZALAN*

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

For the 'very poor' and 'poor', grants made up 42% and 30% of total cash income, respectively; the remainder was from casual labour (mostly domestic work, agricultural piece work, construction jobs) and self-employment (collecting natural products for sale, weaving, making bricks, etc.). The 'poor' earn small amounts of income through livestock sales (usually goats), gifts/ remittances, and employment. This, coupled with a small income from the formal sector, was what distinguishes their livelihoods from that of the 'very poor'. The analysis showed that poor households would lose up to half of their income sources due to COVID-19 lockdowns and any movement restrictions in the area. Income from casual labour would not be available during the pandemic lockdowns, leading to a worsening food security situation for the 'very poor' and 'poor' households who comprise of most of the population in this area.

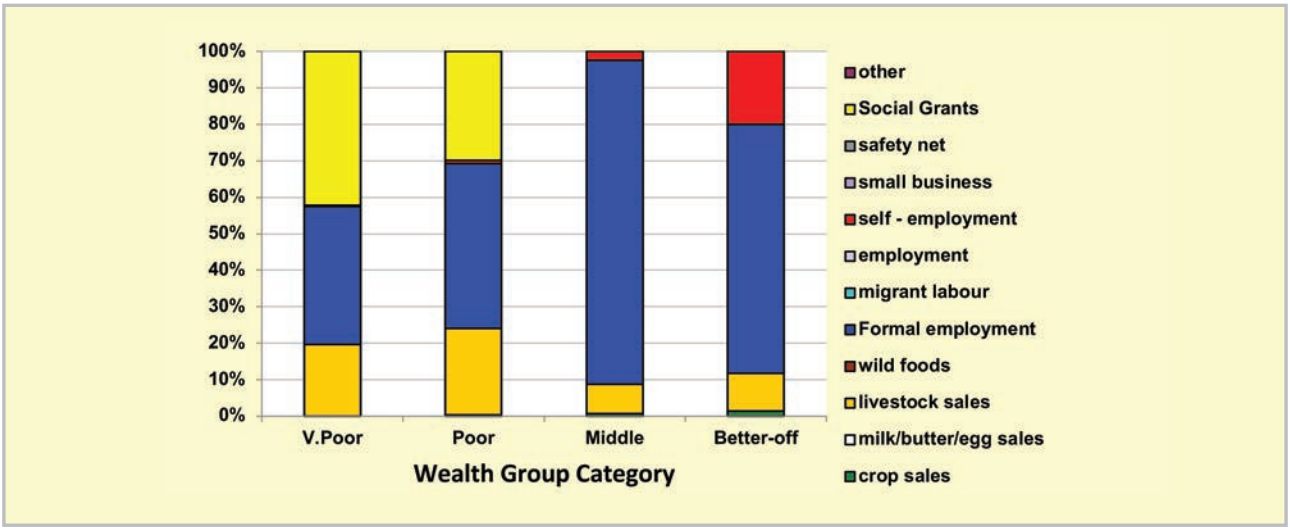


Figure 47: *Sources of annual cash income as a percentage of total, by wealth group in ZASCO*

The 'middle' and 'better-off' gain their cash from a formal wage or salary for the better part of their income. The 'middle' and 'better-off' wealth groups also have employment opportunities and businesses which contribute to their improved livelihood and welfare. These well-off households were able to cushion their food availability and access even during lockdowns as they can buy in bulk and store during any unforeseen event or crisis.

The earnings from livestock products are very low for the 'very poor' and 'poor' households, which is lost productivity. This is very significant among 'middle' and 'better-off' households (R19,002 and R37,464, respectively). The number of cows that are milked compared with those likely to be lactating is low and this is due to a few factors: lack of economic incentives for milking, lack of time by the cattle-owners (because they are full-time employed), and minimal herd management.

6.2.9 Sources of food and income in ZARLC of uMkhanyakude, Zululand, uThungulu, iLembe, and uMgungundlovu districts

Purchases were the largest source of people's food, contributing about 64% to 85% of minimum food energy needs. The contribution from staple food purchases decreased steadily as households get wealthier. Conversely, the contribution from non-staple food purchases and livestock products increased with increasing wealth. Most households and all wealth groups also consume food from their own crop production, although this was only about 4% for the 'very poor' because they 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 livestock products and own crop production, at about 21% to 44% of their minimum needs, respectively. The analysis showed that about 85% and 75% of the food purchases which needed to be obtained on almost a daily basis from local markets were affected for the 'very poor' and 'poor' households in this area during COVID-19 lockdowns. This exacerbated the food insecurity level of the 'poor' and 'very poor' households in these districts.

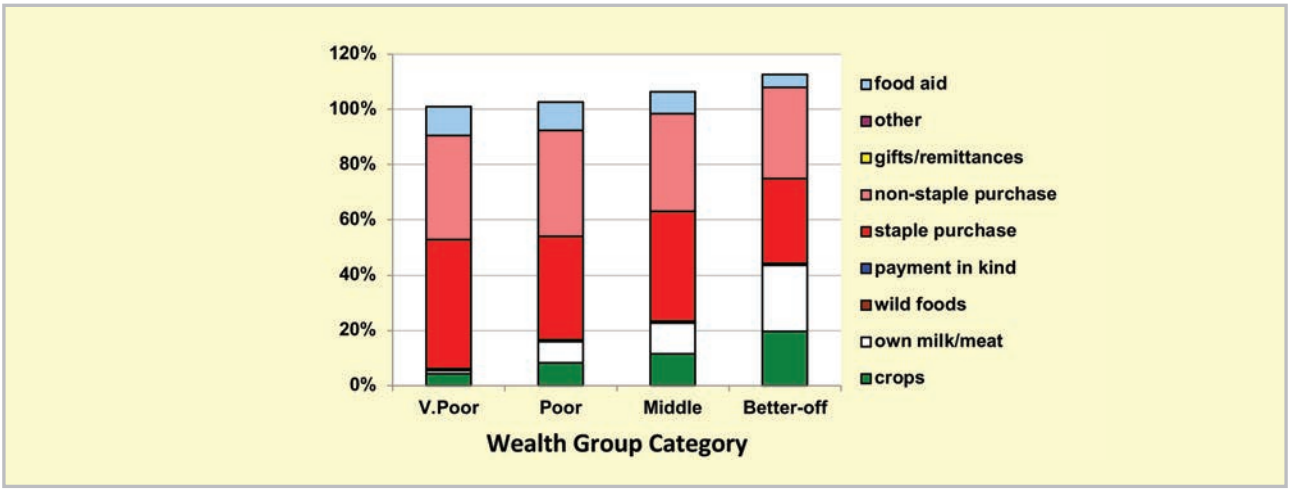


Figure 48: *Sources of food in ZARLC (expressed as percentage of minimum average food energy needs) for each wealth group*

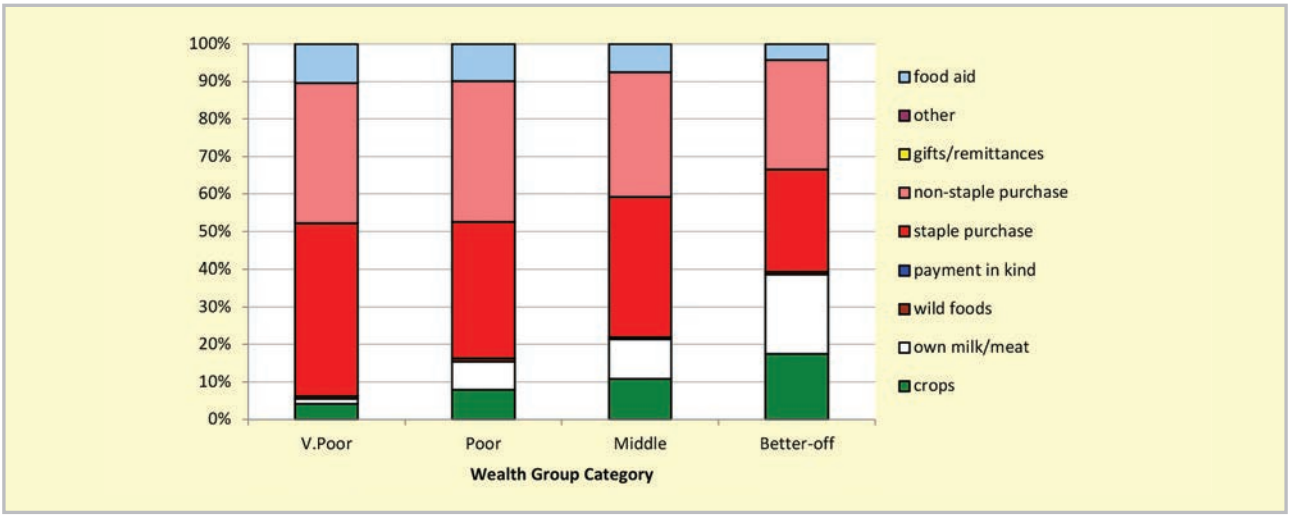


Figure 49: *Food source as contribution to the total in ZARLC Livelihood Zone*

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

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

6.2.10 Gender breakdown of who produces food

Policy makers recognize the need for a participatory and inclusive approach in improving access to food and income in the communities. 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.

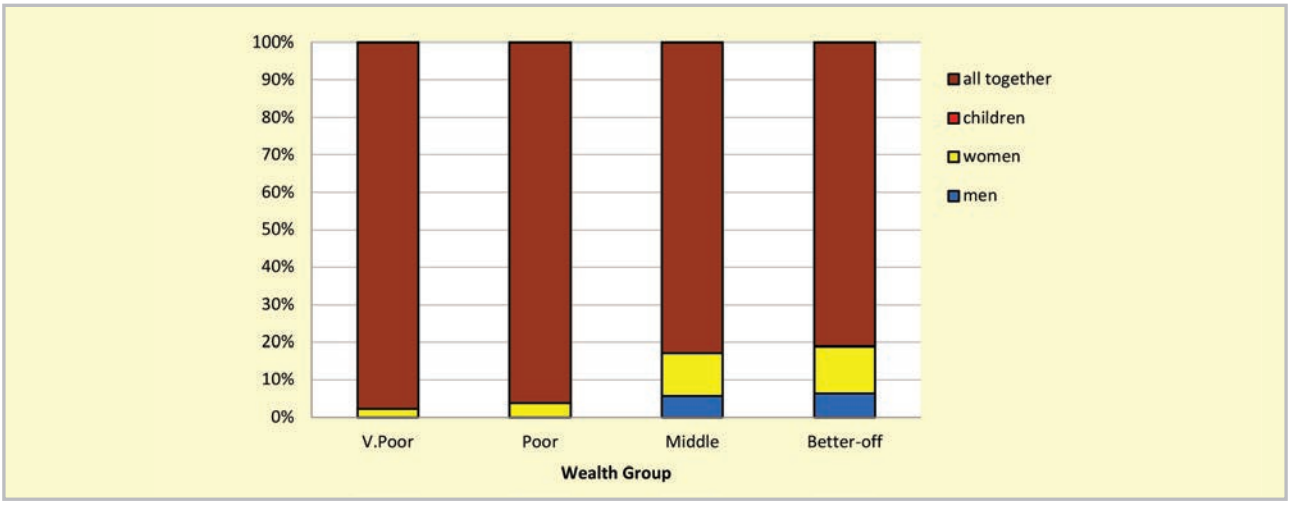


Figure 50: *Gender breakdown of who produces food in the zone for each wealth group in ZARLC*

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 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. Addressing the 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.

6.2.11 Sources of cash in ZARLC of uMkhanyakude, Zululand, uThungulu, iLembe and uMgungundlovu districts

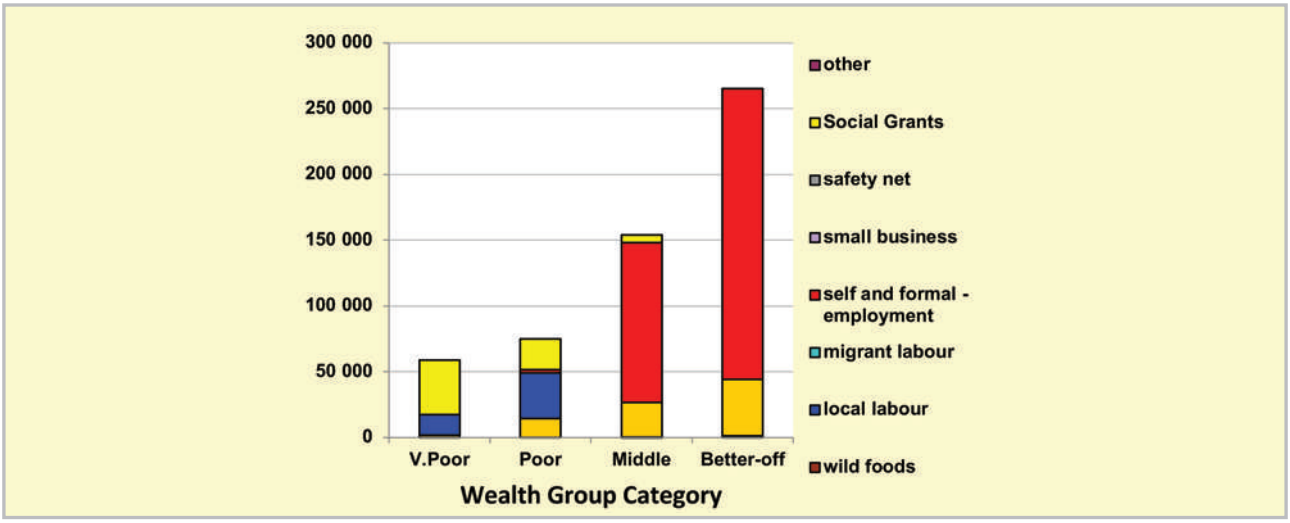


Figure 51: *Sources of annual cash income by wealth group in ZARLC*

Cash incomes vary considerably across wealth groups, with the 'better-off' earning R265,473 per annum, more than four times as much as the 'very poor', who earn R59,837 per annum. Figure 52 shows this distribution as the bars represent wealth groups.

The main sources of cash incomes in the zone are formal and self-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.

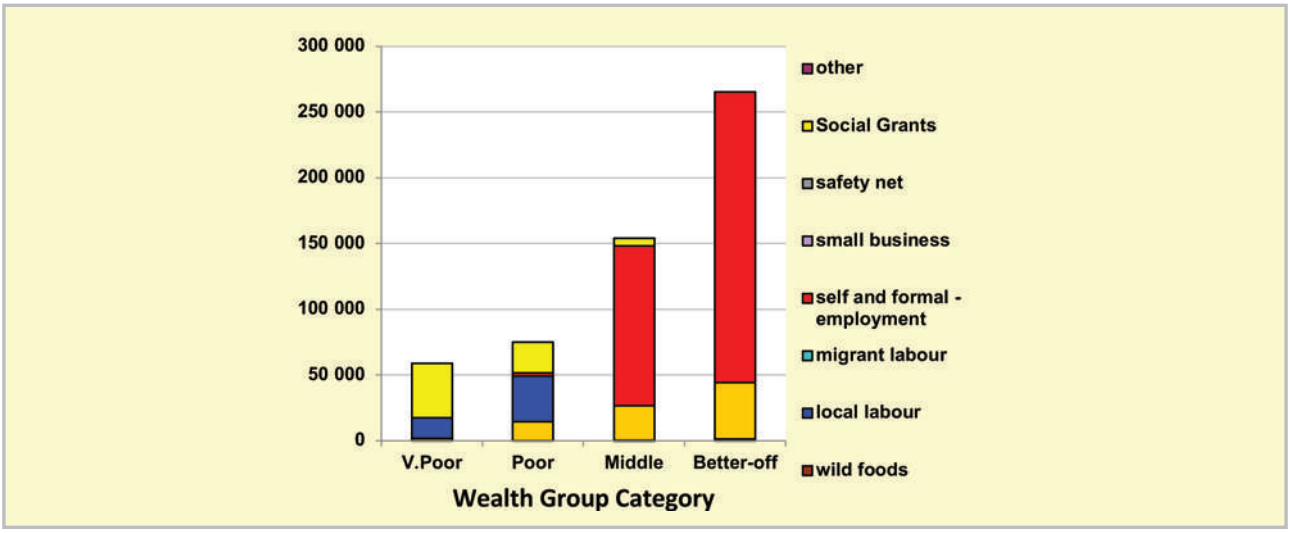


Figure 52: *Sources of annual cash income as a percentage of total, by wealth group in ZARLC*

For the 'very poor' and 'poor', grants make up 70% and 31% of total cash income, respectively; the remainder coming from casual labour (mostly domestic work, agricultural piece work, construction jobs, etc.) and formal 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. The earnings from livestock products are low, 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.

6.2.12 Sources of food and income in ZACNI of iLembe, Sisonke, Ugu, uMgungundlovu, uMkhanyakude, uMzinyathi and uThungulu districts

Despite the good rainfall and fertile soils, purchases still make up the largest portion of people's sources of food. Food purchases contribute 60% to 85% of food energy needs. Conversely, the contribution to food energy of non-staple food purchases increased with increasing wealth, from 29% for the 'very poor', to 45% for the 'better-off'.

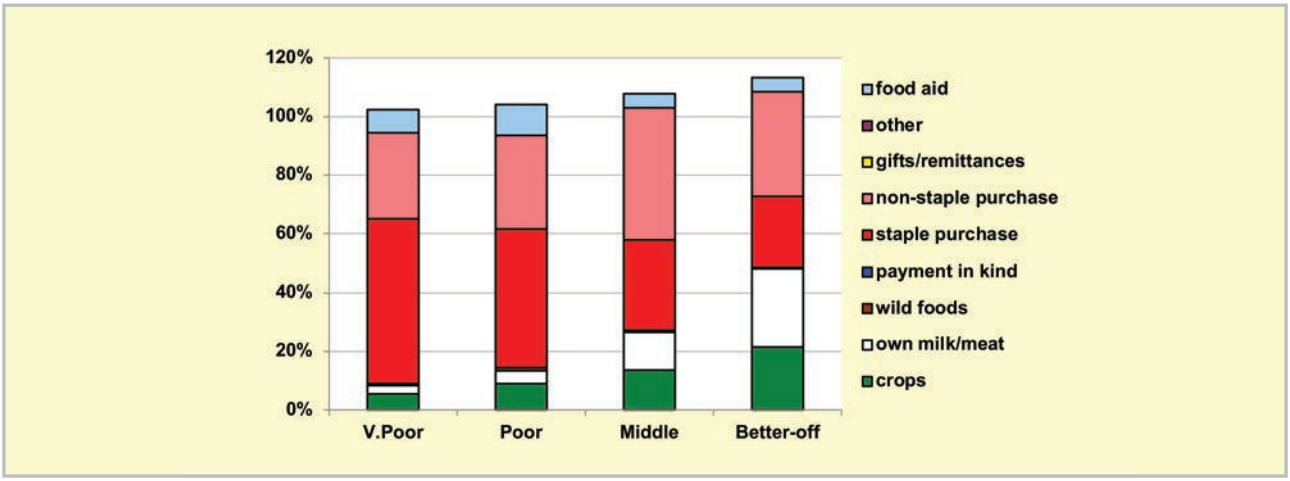


Figure 53: *Sources of food in ZACNI (expressed as percentage of minimum average food energy needs) for each wealth group*

The contribution to food energy needs from own crop production increased with increasing wealth, from 5% for the 'very poor' to 21% for the 'better-off' in the zone. The breakdown into staple and non-staple did not follow any pattern with wealth; the contribution from staple purchases being about 24% to 56%. Yields in the zone were low, given the fertility and land capability - 'very poor' and 'poor' households obtain only 800kg/Ha, this rose to 1,200kg/Ha for the 'middle', and 1,800kg/Ha for the 'better-off'. Wealthier households had capital for inputs and hired labour, ensuring their crops were planted and weeded in time, as well as being protected from pests.'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (3% and 27%, respectively); this was usually from cow's milk and occasional slaughter for meat. Dairy production in this zone was not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) was milked for consumption.

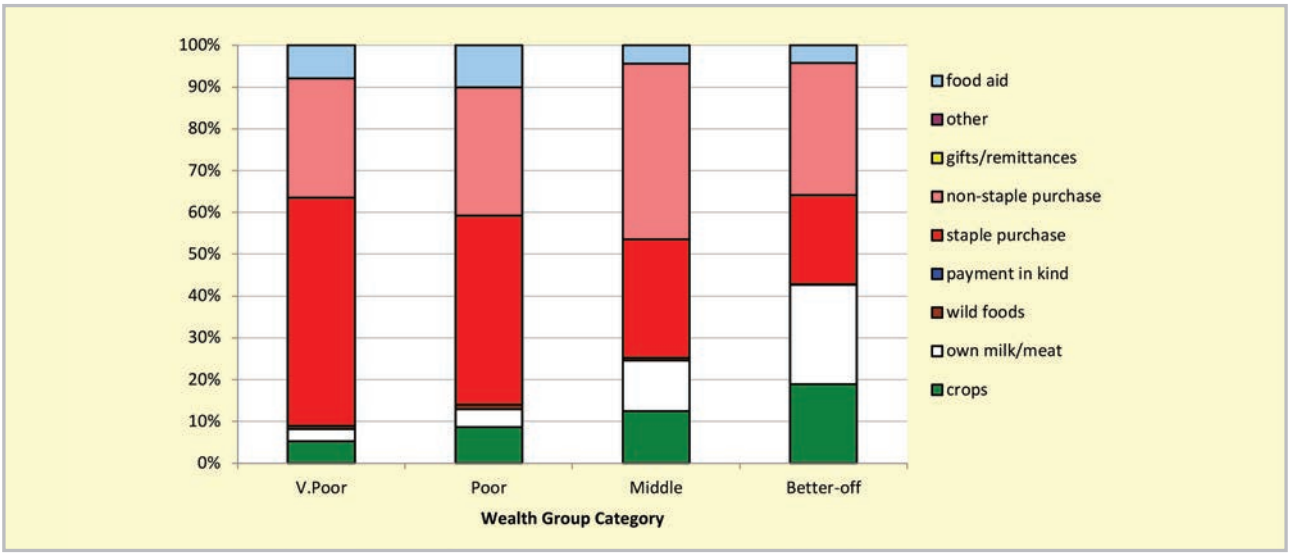


Figure 54: *Sources of food as overall to the total by Wealth Breakdown in ZACNI*

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

6.2.13 Sources of cash in ZACNI of iLembe, Sisonke, Ugu, uMgungundlovu, uMkhanyakude, uMzinyathi and uThungulu districts

Cash incomes varied considerably across wealth groups, with the 'better-off' earning R424,408 per annum, more than four times as much as the 'very poor', who earn only R53,863 per annum. Figure 55 shows this distribution.

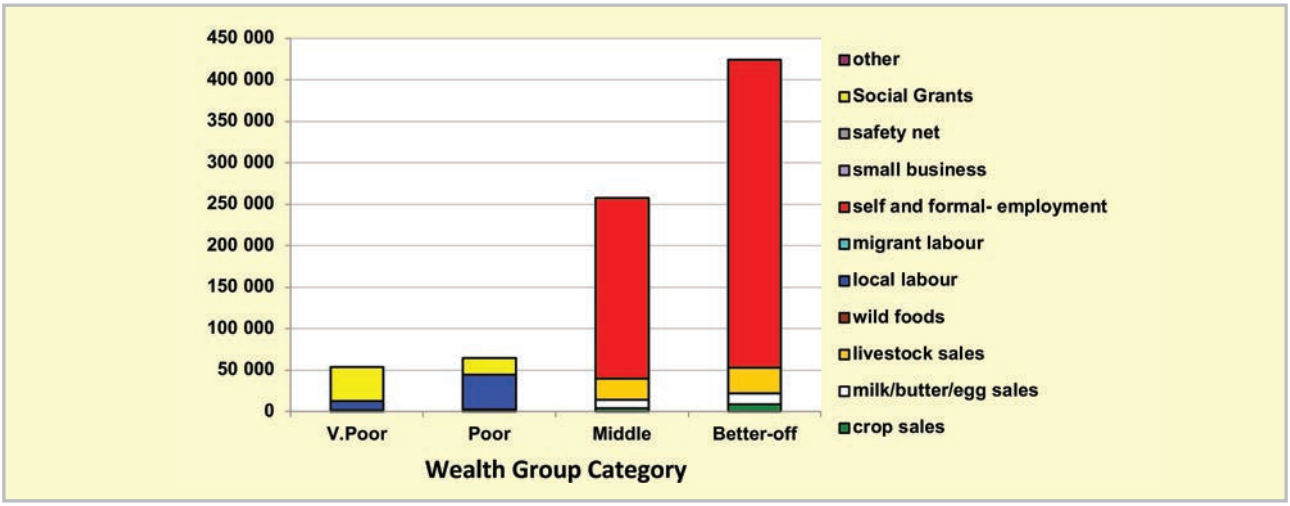


Figure 55: *Sources of annual cash income by wealth group in ZACNI*

The main sources of cash incomes in the zone were: formal employment - for the 'middle' and 'better-off' - and cash grants for the 'poor' and 'very poor'. This is in keeping with most surveys that ask for the main livelihood source. 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 55 above.

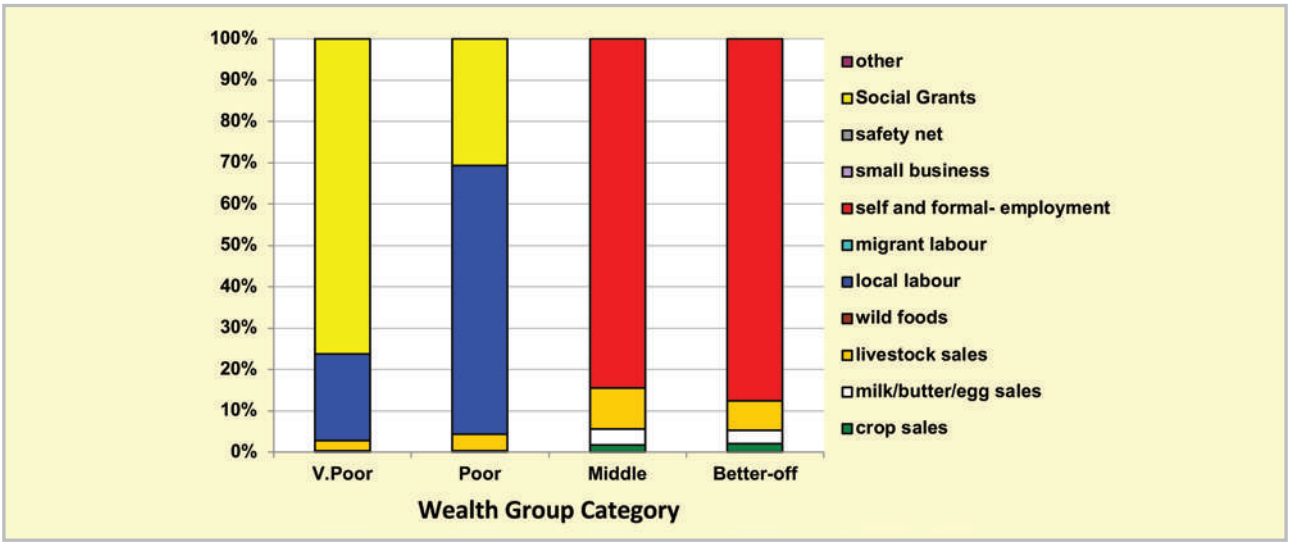


Figure 56: *Sources of annual cash income as a percentage of total, by wealth group in ZACNI*

For the 'very poor' and 'poor', grants make up 76% and 30% of total cash income, respectively; the remainder comes from casual labour (mostly domestic work, agricultural piece work, construction, and mining related jobs) and self-employment (collecting natural products for sale, weaving, making bricks, trading in mineral related products, etc.). This income was mostly affected during COVID-19 lockdowns, leaving the 'poor' and 'very poor' hopeless and food insecure. The 'poor' earn small amounts of income through livestock sales (usually goats) and local labour (65%) and remittances. This, coupled with a small income from the formal sector annually and self-employment, is what distinguishes their livelihoods from that of the 'very poor'. 'Middle' and 'better-off' households also gain a little cash from grants (for example, pensions and fostering are not means-tested and the probability of a household having a pensioner in it is about one in two).

6.2.14 Sources of food and income in ZAMMO of Harry Gwala, eThekwini, uMgungundlovu and Ugu districts

Despite the good rainfall and fertile soils, purchases still make up the largest portion of people's sources of food. Food purchases contribute 68% to 86% of food energy needs. Conversely, the contribution to food energy of non-staple food purchases increased with increasing wealth, from 38% to 43% across the wealth groups.

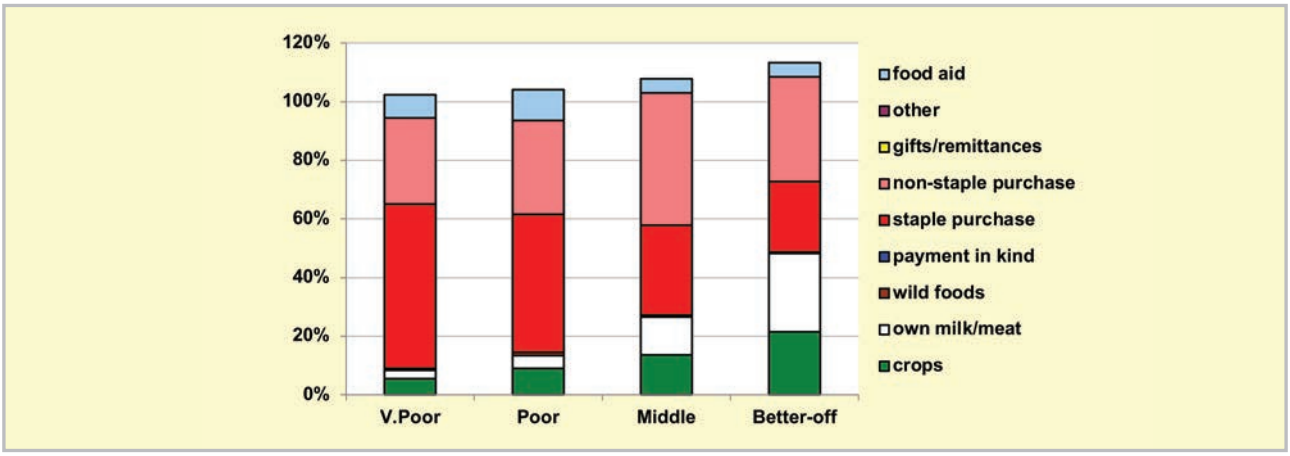


Figure 57: *Sources of food in ZAMMO (expressed as percentage of minimum average food energy needs) for each wealth group*

The contribution to food energy needs from own crop production increased with increasing wealth, from 3% for the 'very poor' to 15% for the 'better-off' in the zone. The breakdown into staple and non-staple did not follow any pattern with wealth; the contribution from staple purchase being about 28% to 47%. Yields in the zone were low, given the fertility and land capability - 'very poor' and 'poor' households obtain only 850kg/Ha, this rose to 1,300kg/Ha for the 'middle', and 1,800kg/Ha for the 'better-off'. Wealthier households had capital for inputs and hired labour, ensuring their crops were planted and weeded in time, as well as being protected from pests.

'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (11% and 23%, respectively); this was usually from cow's milk and occasional slaughter for meat. Dairy production in this zone was not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) was milked for consumption.

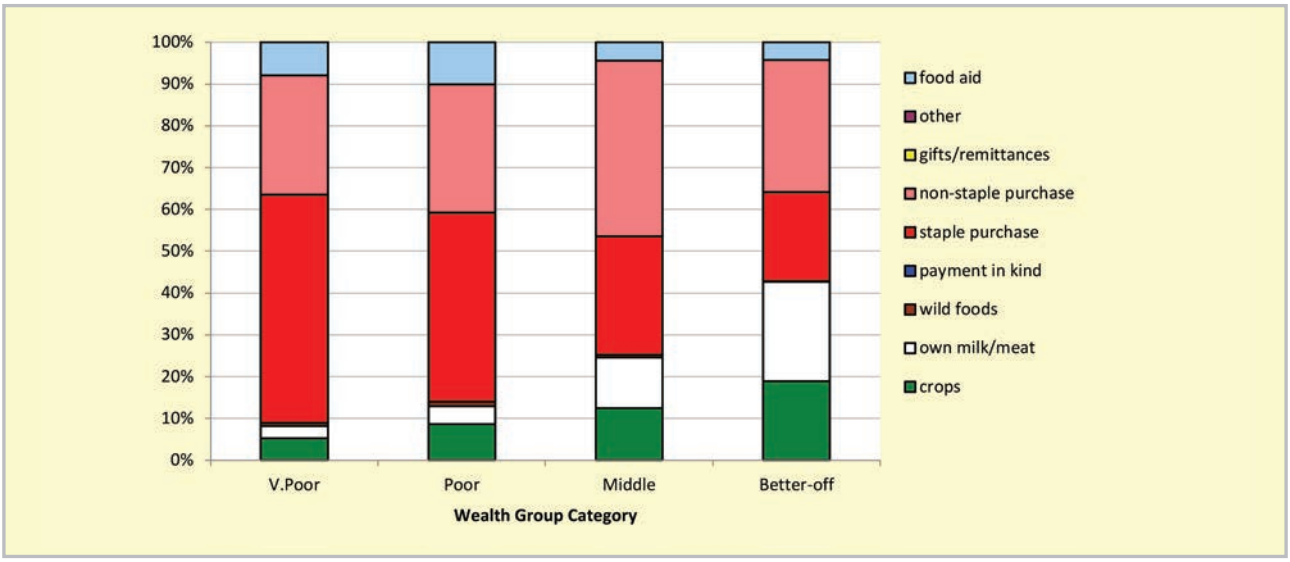


Figure 58: *Sources of food as overall to the total by Wealth Breakdown in ZAMMO*

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

6.2.15 Sources of cash in ZAMMO of Harry Gwala, eThekwini, uMgungundlovu and Ugu districts.

Cash incomes varied considerably across wealth groups, with the 'better-off' earning R310,665 per annum, more than five times as much as the 'very poor', who earn only R57,130 per annum. Figure 59 shows this distribution.

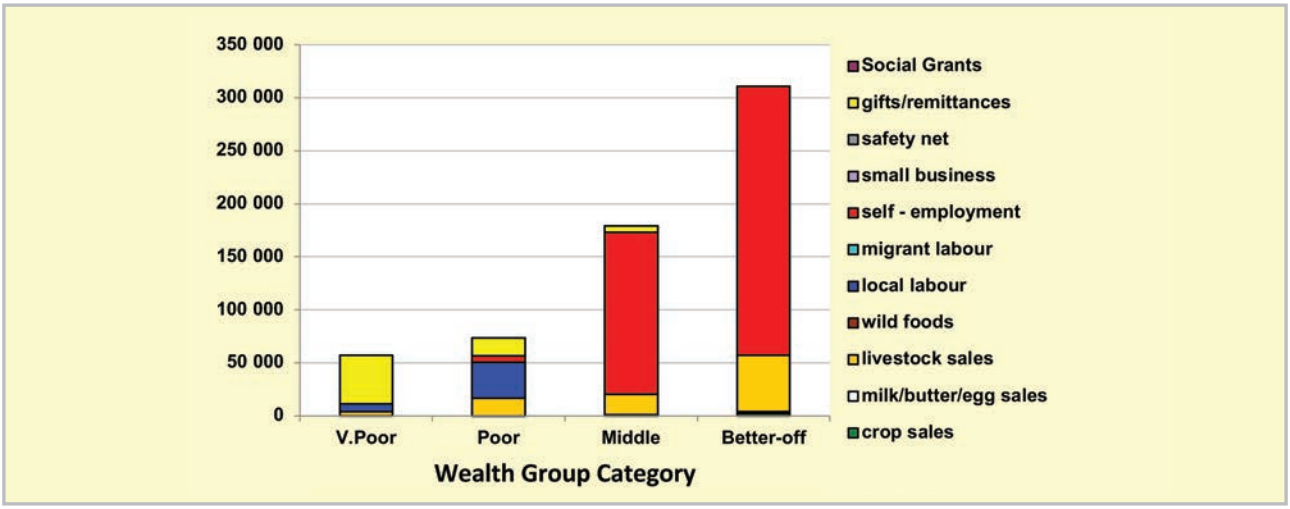


Figure 59: *Sources of annual cash income by wealth group in ZAMMO*

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

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 60.

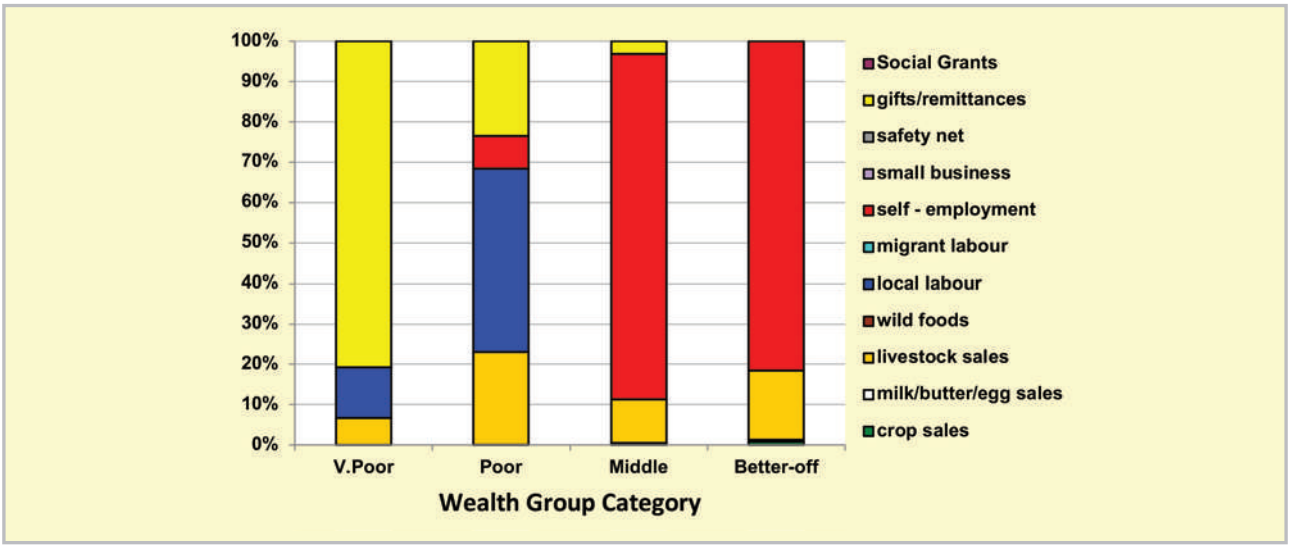


Figure 60: *Sources of annual cash income as a percentage of total, by wealth group in ZAMMO*

For the 'very poor' and 'poor', grants make up 80% and 23% of total cash income, respectively; the remainder comes from casual labour (mostly domestic work, agricultural piece work, construction, and mining related jobs) and self-employment (collecting natural products for sale, weaving, making bricks, trading in mineral related products, etc.). This income was mostly affected during COVID-19 lockdowns, leaving the 'poor' and 'very poor' hopeless and food insecure. The 'poor' earn small amounts of income through livestock sales (usually goats) and local labour (43%) and remittances. This, coupled with a small income from the formal sector annually and self-employment, is what distinguishes their livelihoods from that of the 'very poor'. 'Middle' and 'better-off' households also gain a little cash from grants (for example, pensions and fostering are not means-tested and the probability of a household having a pensioner in it is about one in two).

6.2.16 Sources of food and income in ZATGL of iLembe, uMkhanyakude, uMzinyathi, uThukela and uThungulu districts

Despite the good rainfall and some fertile soils, purchases still make up the largest portion of people's sources of food. Food purchases contribute 64% to 84% of food energy needs. Conversely, the contribution to food energy of non-staple food purchases increased with increasing wealth, from 31% for the 'poor', to 37% for the 'better-off'.

The contribution to food energy needs from own crop production increased with increasing wealth, from 4% for the 'very poor' to 20% for the 'better-off' in the zone. The breakdown into staple and non-staple did not follow any pattern with wealth; the contribution from staple purchases being about 25% to 50%. Yields in the zone were low, given the fertility and land capability - 'very poor' and 'poor' households obtain only 700kg/Ha, this rose to 1,300kg/Ha for the 'middle', and 1,800kg/Ha for the 'better-off'. Wealthier households had capital for inputs and hired labour, ensuring their crops were planted and weeded in time, as well as being protected from pests.'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (3% and 30%, respectively); this was usually from cow's milk and occasional slaughter for meat. Dairy production in this zone was not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) was milked for consumption.

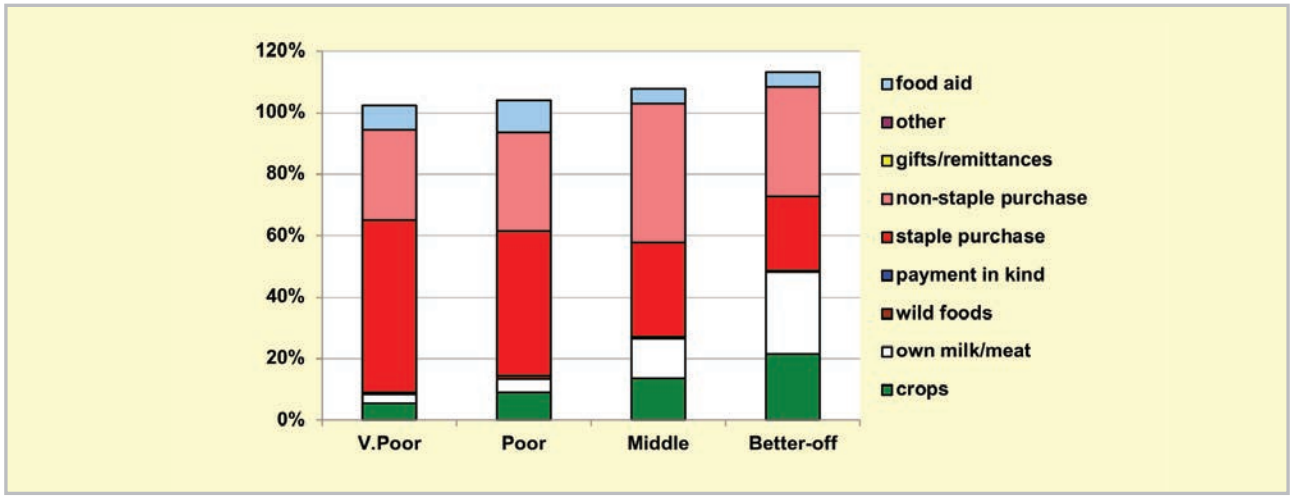


Figure 61: *Sources of food in ZATGL (expressed as percentage of minimum average food energy needs) for each wealth group*

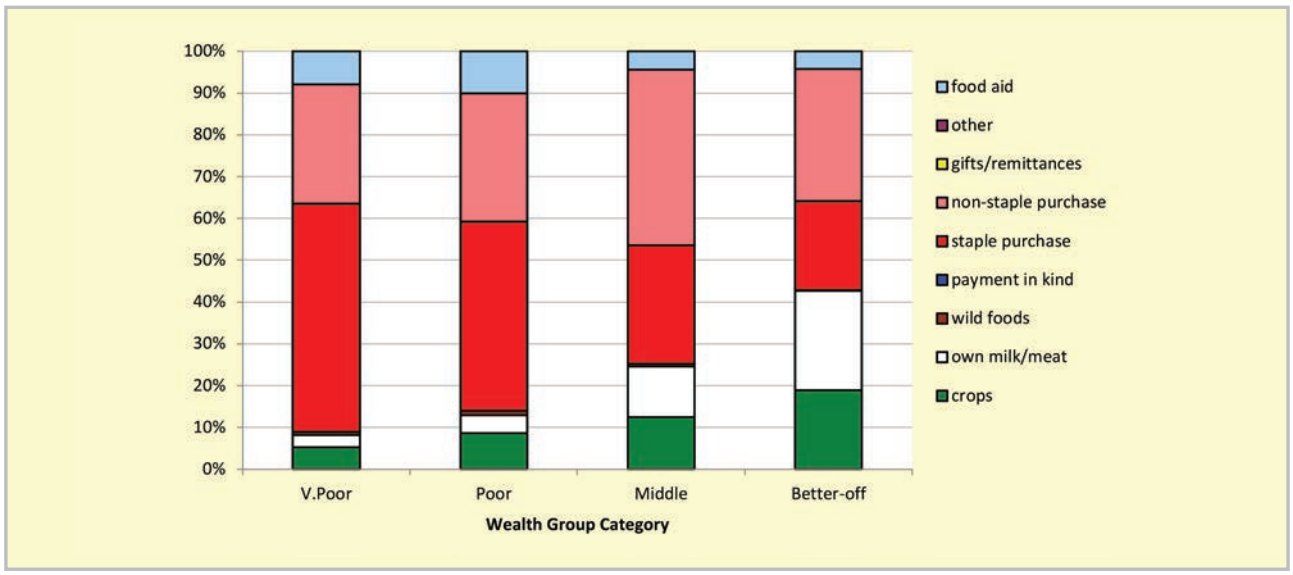


Figure 62: *Sources of food as overall to the total by Wealth Breakdown in ZATGL*

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

6.2.17 Sources of cash in ZATGL of iLembe, uMkhanyakude, uMzinyathi, uThukela and uThungulu districts

Cash incomes varied considerably across wealth groups, with the 'better-off' earning R424,408 per annum, more than six times as much as the 'very poor', who earn only R53,863 per annum. Figure 63 shows this distribution.

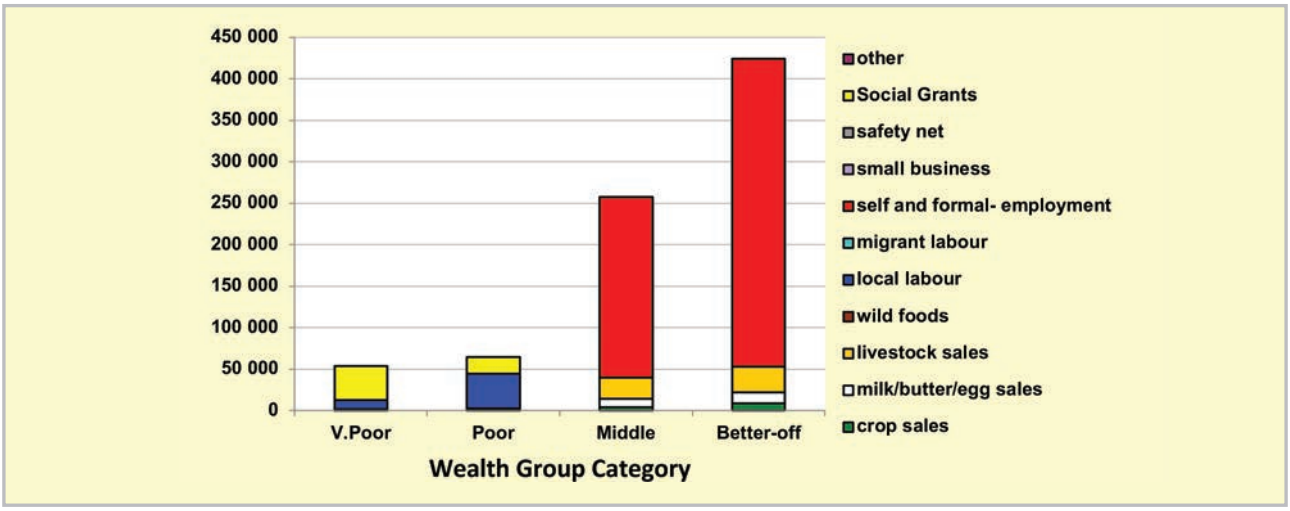


Figure 63: *Sources of annual cash income by wealth group in ZATGL*

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

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 64.

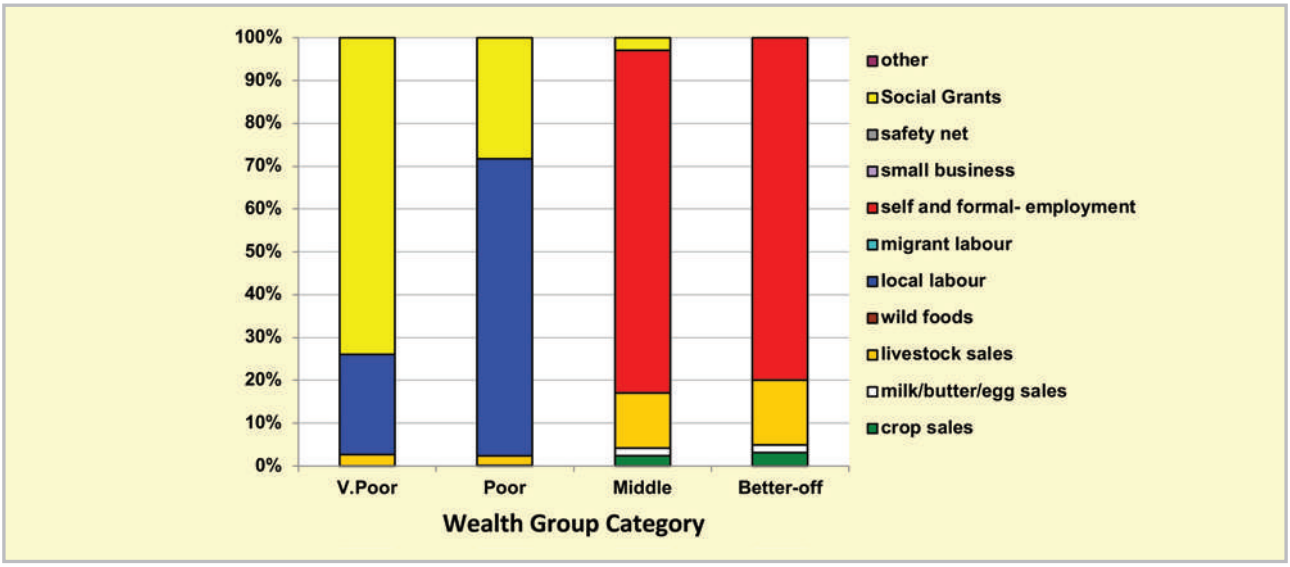


Figure 64: *Sources of annual cash income as a percentage of total, by wealth group in ZATGL*

For the 'very poor' and 'poor', grants make up 74% and 28% of total cash income, respectively; the remainder comes from casual labour (mostly domestic work, agricultural piece work, construction, and mining related jobs) and formal and self-employment (collecting natural products for sale, weaving, making bricks, trading in mineral related products, etc.). This income was mostly affected during COVID-19 lockdowns, leaving the 'poor' and 'very poor' hopeless and food insecure. The 'poor' earn small amounts of income through livestock

sales (usually goats) and local labour (66%) and remittances. This, coupled with a small income from the formal sector annually and self-employment, is what distinguishes their livelihoods from that of the 'very poor'.

The 'middle' and 'better-off' gain their cash from formal and self-employment (R165,912 and R166,800 annually, respectively) and a formal wage or salary for the better part of their income. Some 'middle' households may have a member that works seasonally on the commercial farms, but earnings typically amount to almost R126,000 per annum, while the 'better-off' earn around R168,000 per annum. 'Middle' and 'better-off' households also gain a little cash from grants (for example, pensions and fostering are not means-tested and the probability of a household having a pensioner in it is about one in two).

6.2.18 Hazards, vulnerabilities, and response strategies in KwaZulu-Natal Province

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

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

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

6.3 Access to agriculture extension services, road infrastructure and markets

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

6.3.1 Access to road infrastructure

Access to infrastructure such as roads is critical in enhancing food and nutrition security. Both females and males reported prominent levels of access to good roads with the 25-34 age category having 79% of the respondents indicating that the roads are in good condition. (Table 38) Across the eleven districts, good road access was high with the highest (90%) being recorded in eThekwini whilst the least was reported in Zululand district (65%).

Table 38: Access to road infrastructure by households in KwaZulu-Natal Province

		Poor road Infrastructure			
		Yes		No	
	N	Row N %	N	Row N %	
Sex of household head	Male	315	20	1098	80
	Female	387	18	1487	82
Household head age	18 - 24	9	19	34	81
	25 - 34	35	21	154	79
	35 - 44	99	21	370	79
	45 - 54	156	18	532	82
	55 - 64	169	18	680	82
	65+	223	19	785	81
District	Ugu	74	19	309	81
	UMgungundlovu	23	10	205	90
	Uthukela	46	19	203	81
	Umkhanyakude	79	21	288	79
	King Cetshwayo	76	22	259	78
	Harry Gwala	54	17	247	83
	Umzinyathi	113	28	291	72
	Amajuba	20	11	163	89
	Zululand	138	35	263	65
	iLembe	65	22	234	78
	eThekwini	14	10	128	90

6.3.2 Access to markets by households

Within the province, the households indicated that they have access to the markets (Table 39). Disaggregated by district, Uthukela District had the highest access to the market with 95% whilst King Cetshwayo had the least access to markets with 83%. Generally, all the districts had relatively better access to markets probably because of the good road networks.

Table 39: Access to market by households in KwaZulu-Natal Province

		Lack of market access			
		Yes		No	
		N	Row N %	N	Row N %
Sex of household head	Male	156	12	1263	88
	Female	175	9	1705	91
Household head age	18 - 24	3	6	39	94
	25 - 34	22	10	167	90
	35 - 44	46	10	424	90
	45 - 54	77	13	613	87
	55 - 64	80	9	775	91
	65+	99	10	914	90
District	Ugu	51	13	331	87
	UMgungundlovu	17	7	214	93
	Uthukela	11	5	237	95
	Umkhanyakude	41	11	329	89
	King Cetshwayo	60	17	276	83
	Harry Gwala	37	13	268	87
	Umzinyathi	28	7	376	93
	Amajuba	15	8	168	92
	Zululand	30	7	374	93
	iLembe	26	9	272	91
	eThekwini	15	10	128	90

6.3.3 Access to extension services by households in KwaZulu-Natal Province

Access to agricultural extensions services has been reported to be extremely low in the entire KwaZulu-Natal Province (Figure 65) Crop production was reported to be extremely low in the earlier sections and there is extremely low percentage (3%) of households reporting to have receiving seedlings and fertilizers for free and it does influence the low level of households' involvement in crop production. The situation is also worsened by the size of the stand and extensive commercial sugar cane production in the province. Only about 3% of the households (Figure 65) have reported to have received support when it comes to Training and advisory services about agricultural activities. Aggregated by district, uMkhanyakude has the highest percentage (10%) of households with access to agricultural extension services (Table 40).

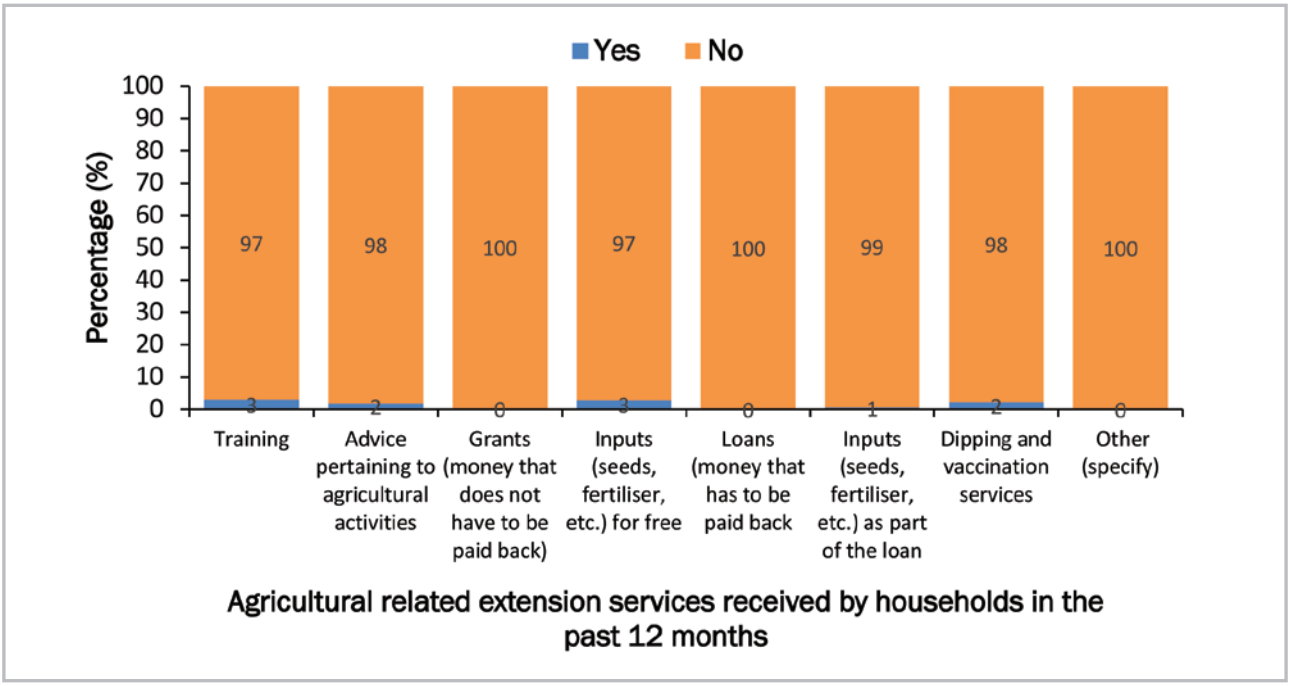


Figure 65: *Access to extension services by households in KwaZulu-Natal Province*

Table 40: Household access to agricultural extension services in KwaZulu-Natal Province

		Extension services			
		No access		Access	
		N	Row N %	N	Row N %
Sex of household head	Male	1275	94	94	6
	Female	1695	95	112	5
Household head age	18 - 24	42	98	1	2
	25 - 34	172	95	13	5
	35 - 44	431	97	19	3
	45 - 54	624	95	41	5
	55 - 64	762	94	56	6
	65+	899	94	76	6
District	Ugu	351	94	24	6
	UMgungundlovu	221	97	6	3
	Uthukela	219	91	23	9
	Umkhanyakude	318	90	34	10
	King Cetshwayo	313	97	10	3
	Harry Gwala	274	93	19	7
	Umzinyathi	355	92	32	8
	Amajuba	169	95	9	5
	Zululand	354	92	29	8
	iLembe	264	93	18	7
	eThekwini	137	99	2	1
Sex of household head	Male	1275	94	94	6
	Female	1695	95	112	5
Household head age	18 - 24	42	98	1	2
	25 - 34	172	95	13	5
	35 - 44	431	97	19	3
	45 - 54	624	95	41	5
	55 - 64	762	94	56	6
	65+	899	94	76	6
District	Ugu	351	94	24	6
	UMgungundlovu	221	97	6	3
	Uthukela	219	91	23	9
	Umkhanyakude	318	90	34	10
	King Cetshwayo	313	97	10	3
	Harry Gwala	274	93	19	7
	Umzinyathi	355	92	32	8
	Amajuba	169	95	9	5
	Zululand	354	92	29	8
	iLembe	264	93	18	7
	eThekwini	137	99	2	1

6.4 Discussion

Seasonal variation

The results depicted by the seasonal calendar developed from HEA focus group discussions in KwaZulu-Natal 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 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 KwaZulu-Natal 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

Access to land by households in the KwaZulu-Natal Province is fairly high (Figure 65) with at least 60% of households in seven out of eleven district municipalities reporting having access to land. The district with the least number of households with access to land is eThekwini Metro Municipality, recording 31%. This is in sharp contrast to other provinces such as Gauteng. Most households reported that they own land, their land mostly ranges from $500m^2$-$1000m^2$ in size which is also used for agricultural purposes and residence. This is buttressed by Nieuwoudt and Groenewald (2003) who noted that land holdings in most former homelands of KwaZulu-Natal are generally small in size and are mainly used for subsistence farming. Securing land rights for communities has been shown to improve production and household food security (Prosterman, 2013). In South Africa, as a country, 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 KwaZulu-Natal 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. The 18-24 years age group in KwaZulu-Natal reported the least land access across the eleven districts, which calls for a need to empower the youths with land ownership since it is the category currently plagued by high levels of unemployment. This would result in increased participation by youths in agriculture income generating projects and improved food availability at the household level. Land access is more pronounced among female-headed households. This result is similarly echoed by Murugani et al. (2014) who argued that in KwaZulu-Natal Province, land access is mediated by traditional authorities (chiefs) where women have mostly secondary property rights as wives. Contrary to this traditional notion, land access among females was more compared to males. 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

Livestock production is reported to be common across the eleven districts in KwaZulu-Natal Province. It involves cattle, goats, poultry, and sheep were more commonly reared for sale and consumption as food. Crop production in form of maize, beans, potatoes, and vegetables production is commonly practised across the eleven districts. Sugar cane is commonly practised in commercials farms. High-value crops (HVCs), also known as horticultural crops or non-traditional crops, are also grown for food, nutrition, human health, and wellbeing and they include fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops in urban settings which constitutes urban agriculture although on a very limited scale - as similarly reported by Materechera and Scholes (2021).

7 Household Food and Nutrition Security 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 (HFIAS)

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 KwaZulu-Natal Province was 8.8, with a range of 0 to 27.

Interpreting this continuous score in terms of its food security implications is not straightforward, necessitating the need to generate categorical indicators of food insecurity (Coates et al., 2007). However, when the HFIAS score is used to categorise households into four levels of food (in)security status (i.e., food secure, mildly food insecure, moderately food insecure, and severely food insecure), the picture becomes less rosy. The food secure category are those households that do not experience food access conditions, and rarely worry about not having enough food. Households in the mildly food insecure category worry about not having enough food sometimes or often, are unable to eat preferred foods, and rarely eat some foods considered undesirable. These households have not cut back on food quantities and have not experienced most severe access food challenges such as running out of food, going to bed hungry, or going the whole day and night without eating. A moderately food insecure household frequently consumes food that is of low quality, and/or sometimes or often eats undesirable foods, and/or rarely or sometimes reduces quantities of food consumed (i.e., reducing the size of meals or number of meals). A severely food insecure household not only cuts back on meal size or 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 66 presents the proportion of the prevalence of food insecurity among the sampled households. The overall results showed that the majority of the households (70.4%) in KwaZulu-Natal Province experienced food insecurity and 29.6% of households were food secure. Figure 68 shows that 17.1% of the households were severely food insecure, 29.3% of the surveyed households were moderately food insecure, and 24% of the households were mildly food insecure. Overall, the findings of this study slightly differ from the findings of the Stats SA, (2021) 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 COVID19 pandemic which may have severely impacted on households' purchasing power and thus increased the proportions of food insecure households. The results are in line with most of the food security findings which generally indicate that a significant proportion of households' experience food access challenges in South Africa. For example, in 2016, SAVAC commissioned a study on livelihoods, food, and nutrition security in which more households were found to be food insecure than those that were food secure (Ngidi et al., 2016; Ngidi and Kajombo, 2017).

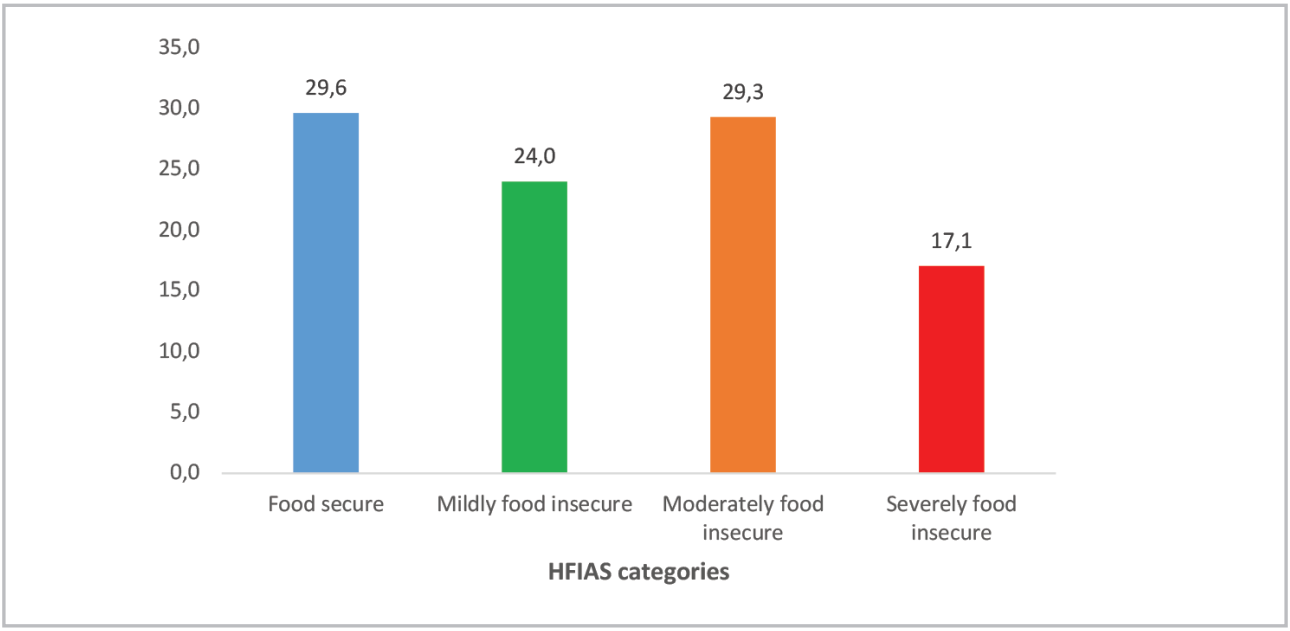


Figure 66: *The categorized food security situation, using HFIAS*

Table 41 and Figure 67 shows that the food security status of households was found to be varied by sex and age of household head, as well as by district. The results show that male-headed households were slightly more food secure than female-headed households, with 35% of the male-headed households found to be food secure, compared to 24% of female-headed households. Similarly, Negesse et al. (2020), also found that severity of food insecurity among female-headed households in Ethiopia was higher as compared with their men counterparts. In any category of the HFIAS but mild food insecurity, female-headed households experienced higher levels of food insecurity. Severe food insecurity was experienced by 14% of the male-headed households compared to 20% of the female-headed households that fell within the same category. Approximately 26% and 33% of male-headed and female-headed households experienced moderate food insecurity, respectively. About 25% and 25% of male-headed and female-headed households experienced mild food insecurity, respectively.

Table 41: District level and gendered food security situation as determined by HFIAS in KwaZulu-Natal Province

		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	%	N	%	N	%	N	%
Sex of the Household Head	Male	1142	35	877	25	988	26	616	14
	Female	906	24	1001	23	1486	33	1001	20
Household head age	18-24	80	44	46	29	34	13	36	15
	25-34	325	35	242	26	249	26	150	13
	35-44	417	26	375	28	448	30	287	16
	45-54	393	30	328	21	515	30	366	19
	55-64	370	29	392	20	545	31	376	20
	65+	430	27	471	25	655	31	380	17
District	Ugu	184	25	224	29	279	36	82	11
	UMgungundlovu	196	32	155	22	199	29	113	16
	Uthukela	225	30	193	25	199	26	144	19
	Umkhanyakude	179	28	146	21	177	27	155	24
	King Cetshwayo	187	27	177	24	215	30	141	19
	Harry Gwala	147	23	171	24	230	33	144	20
	Umzinyathi	145	19	139	18	284	35	219	28
	Amajuba	254	34	171	23	203	27	115	15
	Zululand	104	14	162	21	223	30	255	35
	iLembe	196	27	146	20	251	33	156	20
	eThekwini	256	35	198	26	216	27	94	12

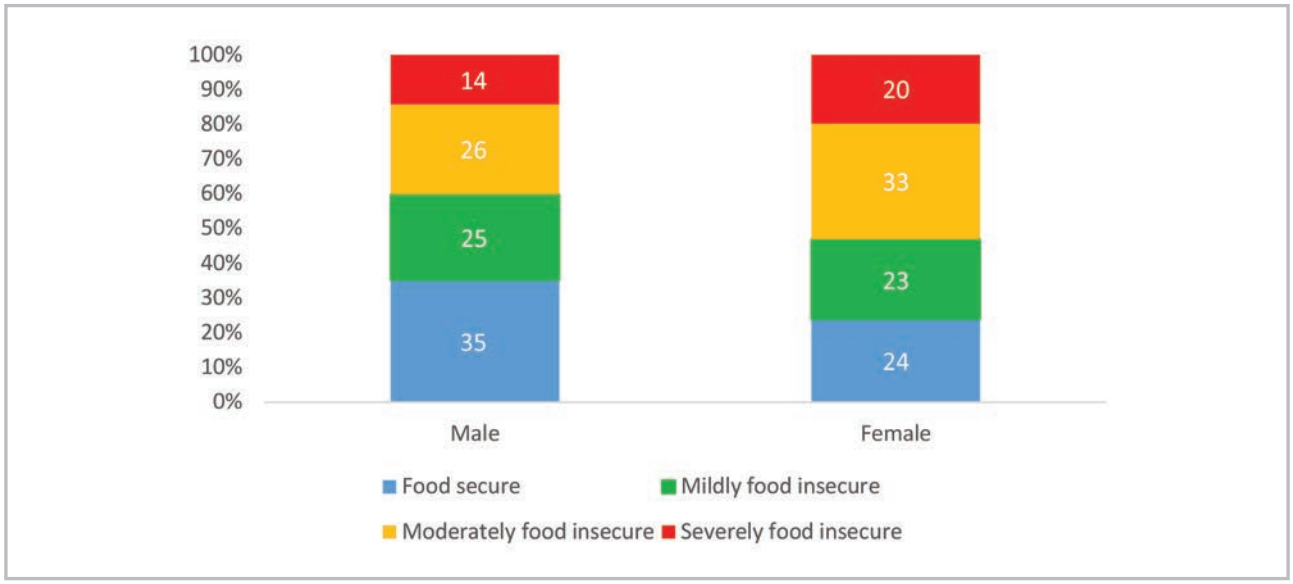


Figure 67: *Food security status disaggregated by sex of household head in KwaZulu-Natal Province*

Table 41 and Figure 68 show that households headed by the 18-24 years age group had the highest proportion of households (44%) who were food secure. They were followed by those households headed by the 25-34 years age group, with 35% of the households headed by this age group found to be food secure. The least food secure age group was found to be the 35-44 and 65+ years age groups, where 26% and 27% of the household heads in these age groups were found to be food secure. The age groups that were found to be the least severely food insecure were 25-34 and 18-24, with 13% and 15% of the households headed by these age groups found to be severely food insecure. The most severely food insecure age group was found to be in the 55-64 years, followed by 45-54 age groups, with 20% and 19% of the households in these age groups being severely food insecure.

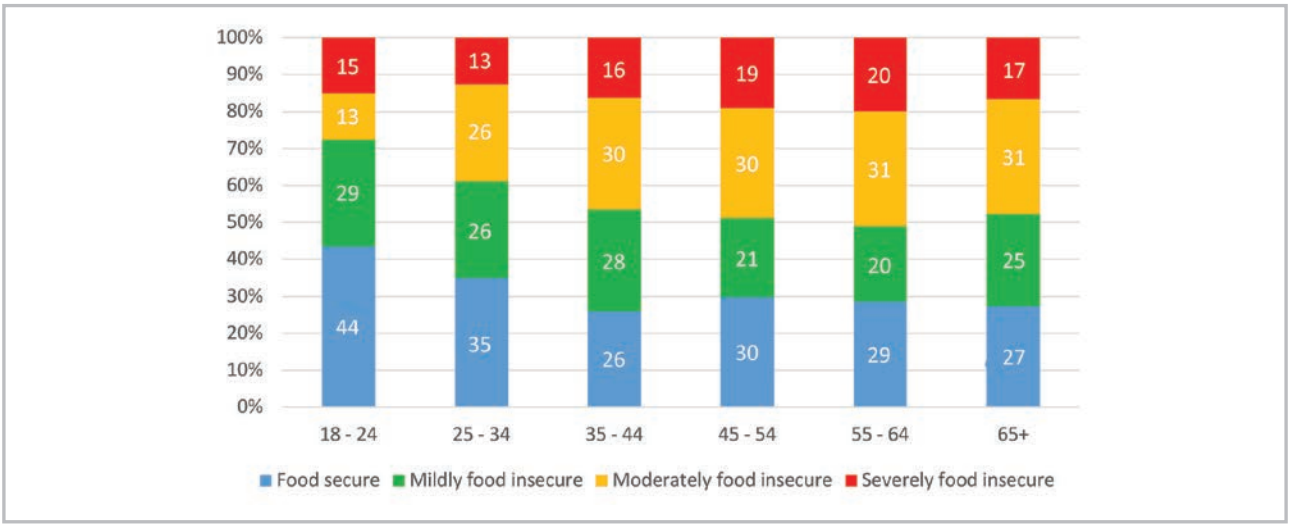


Figure 68: *Food security status by age group of household head*

Table 41 and Figure 68 show that the eThekwini had the highest proportion of households that were food secure (35%), followed by the Amajuba and uMgungundlovu districts, with 34% and 32% of the households that were found to be food secure, respectively. The least food secure districts were found to be Zululand and uMzinyathi, with 14% and 19% of the households found to be food secure in each of these two districts. The Zululand District also had the highest proportion of households experiencing severe food insecurity. About 35% of the households in the Zululand District were severely food insecure. This was followed by households from uMzinyathi District, with 28% of the households from this district experiencing the severely food insecurity. About 24% of the households in uMkhanyakude District also experienced severe food insecurity while another 20% of the severely food insecure households were also each from iLembe and Harry Gwala districts. The Ugu and eThekwini districts experienced the least food severe food insecurity compared to other provinces, with 11% and 12% of the households in these districts reported to have experienced severe food insecurity, respectively. However, moderate food insecurity was largely experienced by households from Ugu District, where 36% of the households were moderately food insecure. This was followed by households from the uMzinyathi, where 35% of the households from this district were reported to have experienced moderate food insecurity. Mild food insecurity was largely experienced by households from the Ugu District, where 29% of the households from this district experienced mild food insecurity.

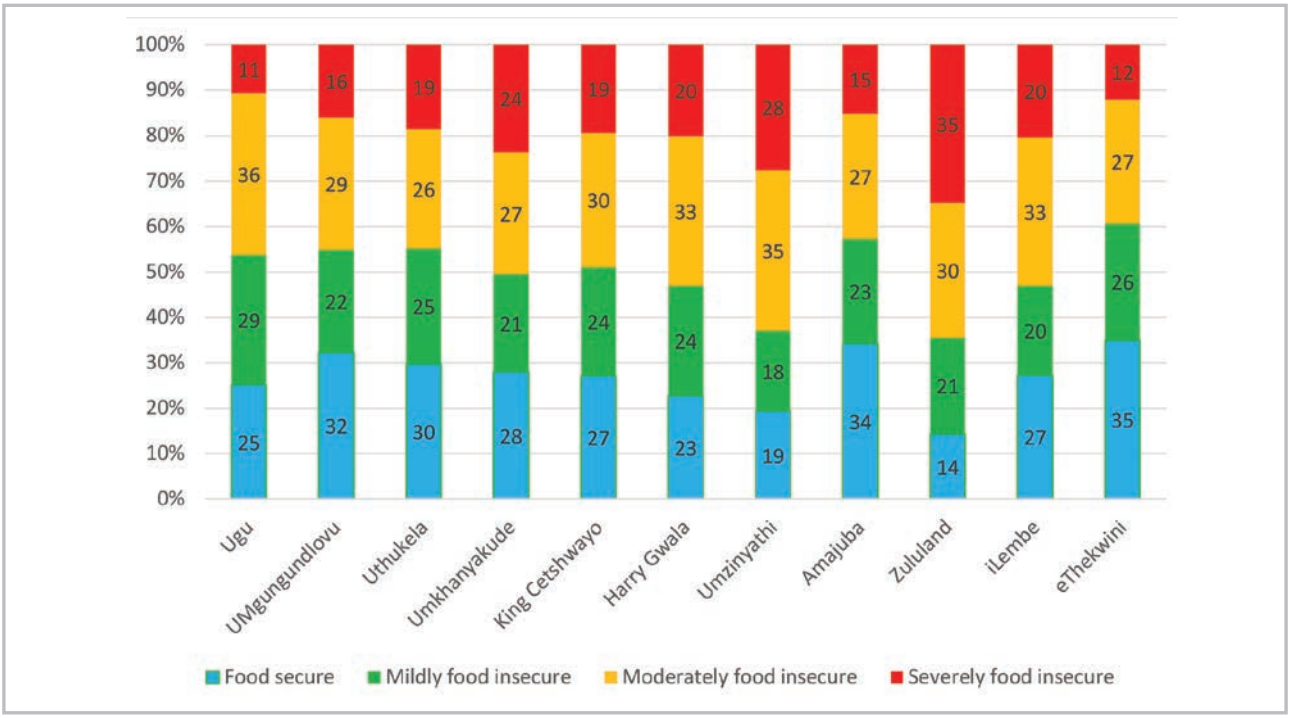


Figure 69: *Food security status by district*

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 70 presents the results of the HHS scale, showing that most of the sampled households experienced little to no hunger (80.2%). About 15.5% of the households and 4.3%, respectively, experienced moderate hunger and severe hunger. While a considerable 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 KwaZulu-Natal Province (Figure 70).

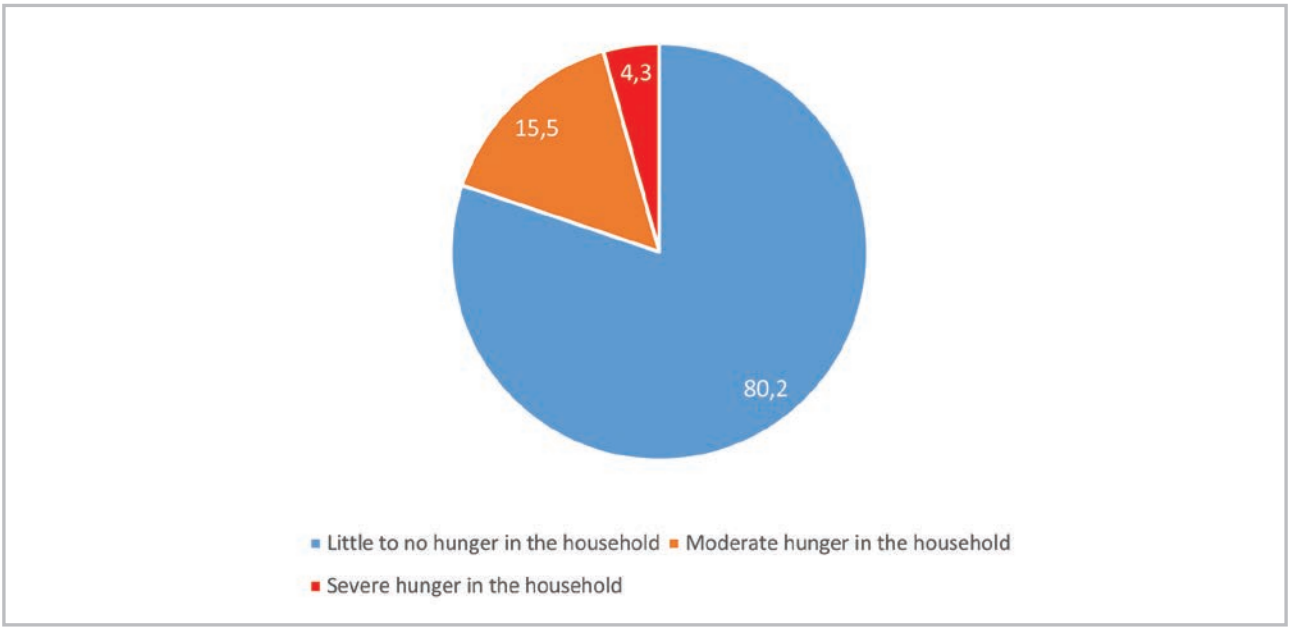


Figure 70: *Household Hunger experiences of in KZN Province*

Table 42 presents the hunger status of households disaggregated by sex, age, and district. Table 41 and Figure 71 show that the hunger status generally did differ between male-headed and female-headed households across all the categories of the HHS. Female-headed households generally experienced more hunger than male-headed households in the province.

Table 42: Food security situation as measured by Household Hunger Scale (HHS) in KZN Province

		Little to no hunger in the household		Moderate hunger in the household		Severe hunger in the household	
		N	%	N	%	N	%
Sex of the household head	Male	3216	84	587	13	176	4
	Female	3595	77	916	18	301	5
Household head age	18-24	170	84	26	13	10	3
	25-34	858	83	160	14	42	3
	35-44	1320	81	261	14	88	5
	45-54	1310	79	336	16	110	5
	55-64	1387	77	347	18	106	5
	65+	1669	81	359	15	116	4
District	Ugu	736	85	112	13	13	2
	UMgungundlovu	596	83	110	14	21	3
	Uthukela	638	78	148	18	40	5
	Umkhanyakude	514	72	148	20	57	8
	King Cetshwayo	622	78	148	18	28	3
	Harry Gwala	581	79	132	17	31	4
	Umzinyathi	615	72	165	19	75	9
	Amajuba	662	83	103	13	37	4
	Zululand	534	65	178	22	104	13
	iLembe	620	76	147	18	45	5
	eThekwini	724	84	114	13	26	3

Table 42 and Figure 71 indicated that 84% of the male-headed households experienced little to no hunger compared to 77% of the female-headed households. The proportion of female-headed households (18%) was higher than that of male-headed (13%) in the moderate hunger category. Severe hunger in the household was slightly higher among female-headed (5%) than among male-headed households (4%).

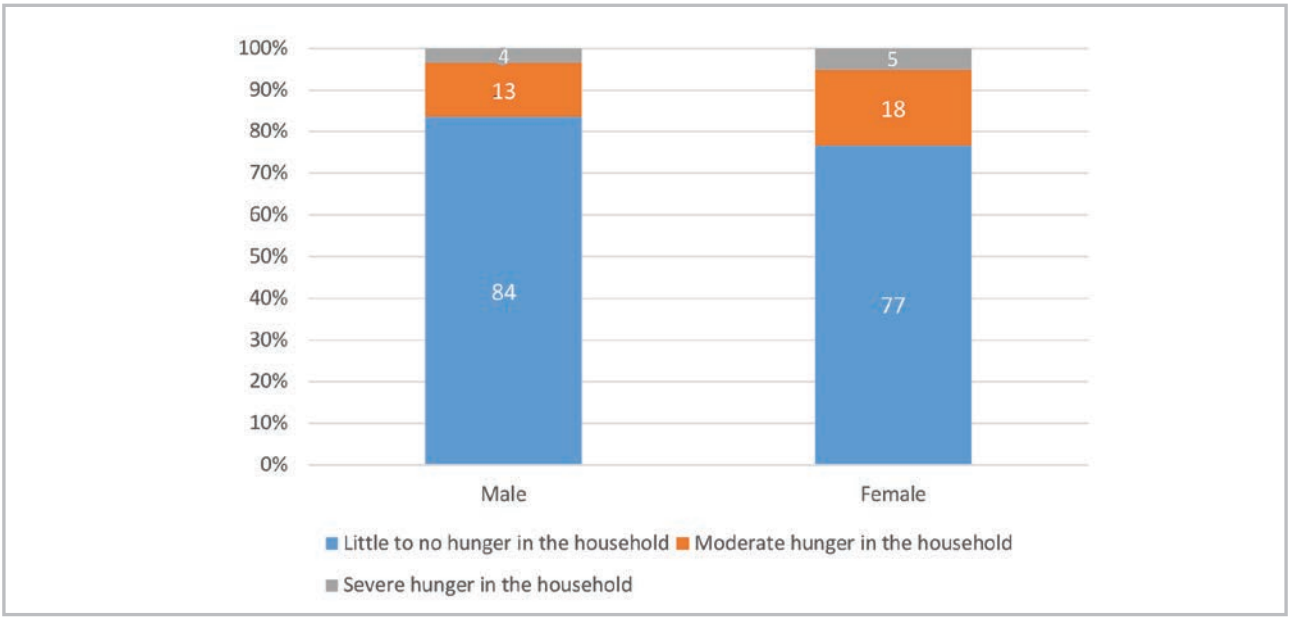


Figure 71: *Household hunger status disaggregated by sex of household head in KwaZulu-Natal Province*

The most food secure age group was found to be 18-24 years, with 84% of the households headed by this age group experiencing little to no hunger in the household. This was followed by household heads in the age group of 25-34 years (Figure 72). Households in the age group of 55-64 years experienced relatively more moderate hunger compared to the other age groups, with 18% of the households in this age category experiencing moderate hunger. This was followed by households in the age categories of 45-54 years, where 16% from each of the household heads in this age groups experienced moderate hunger in their households. Severe hunger in the household was largely experienced by 35-44; 45-54 and 55-64 years age groups, with 5% of the household heads in each of this age groups found to be experiencing severe hunger.

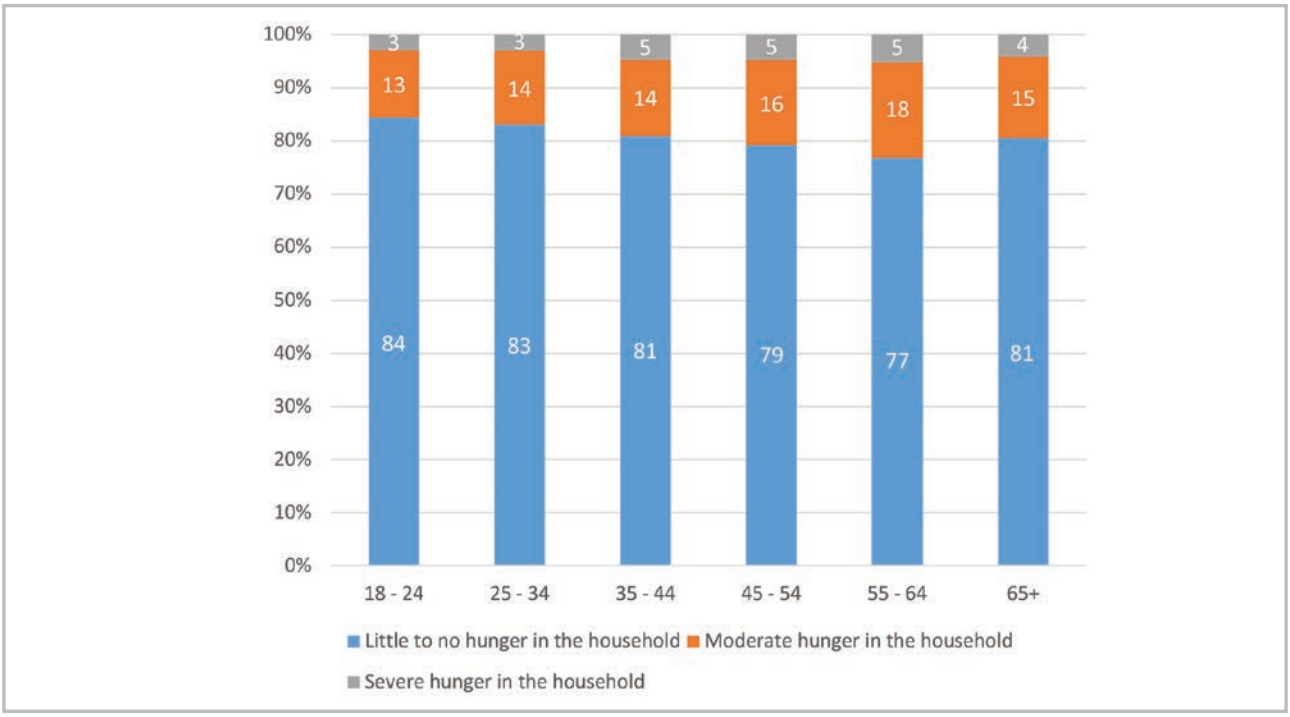


Figure 72: *Household hunger status disaggregated by age group of household head in KwaZulu-Natal Province*

There were some variations in the hunger status of households across the eleven districts in the KwaZulu-Natal Province. In terms of the HHS, the Ugu District is the most food-secure district with 85% of the households found to have experienced little to no hunger. This was followed by the eThekwini District with 84% of the households from this district found to have experienced little to no hunger. Generally, households across all districts did not

experience too much hunger with more 70% or more of the households in all districts, but Zululand, experiencing little to no hunger (Figure 73). More households in Zululand District experienced moderate levels of hunger compared to the other ten districts, with 22% of the household heads reportedly experiencing moderate hunger. Overall, there were also differences in the proportion of households who experienced severe hunger in the eleven districts, ranging from 2% in the Ugu District to 13% in Zululand District.

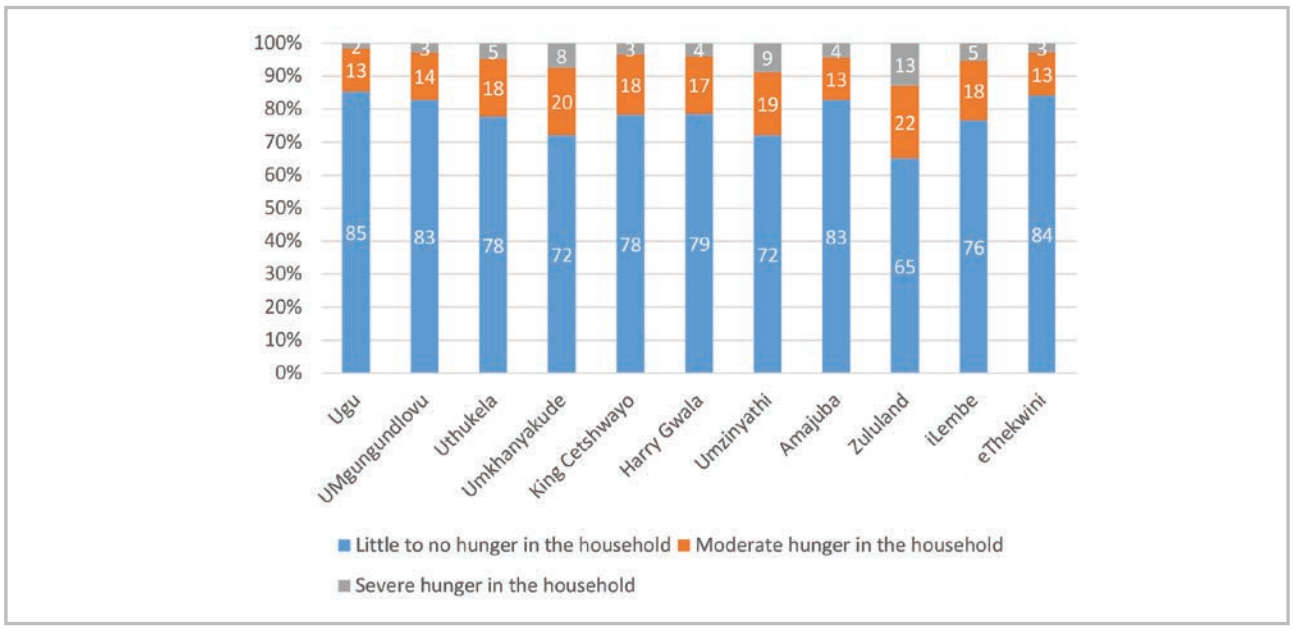


Figure 73: *Household hunger status by district*

7.3 Household Dietary Diversity Score (HDDS)

HDDS measures the economic ability of a household to access a variety of foods (Kennedy, 2011). Higher levels of HDDS imply improved chances of 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 74 shows that on average, the households in KwaZulu-Natal Province consumed more than 7 out of 12 food groups, which suggests above-average dietary diversity levels. Using the cut-offs suggested by Kennedy (2011), 81.5% of households consumed highly diverse diets (more or equal to 6 food groups) whilst 15.6% and 2.9% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively.

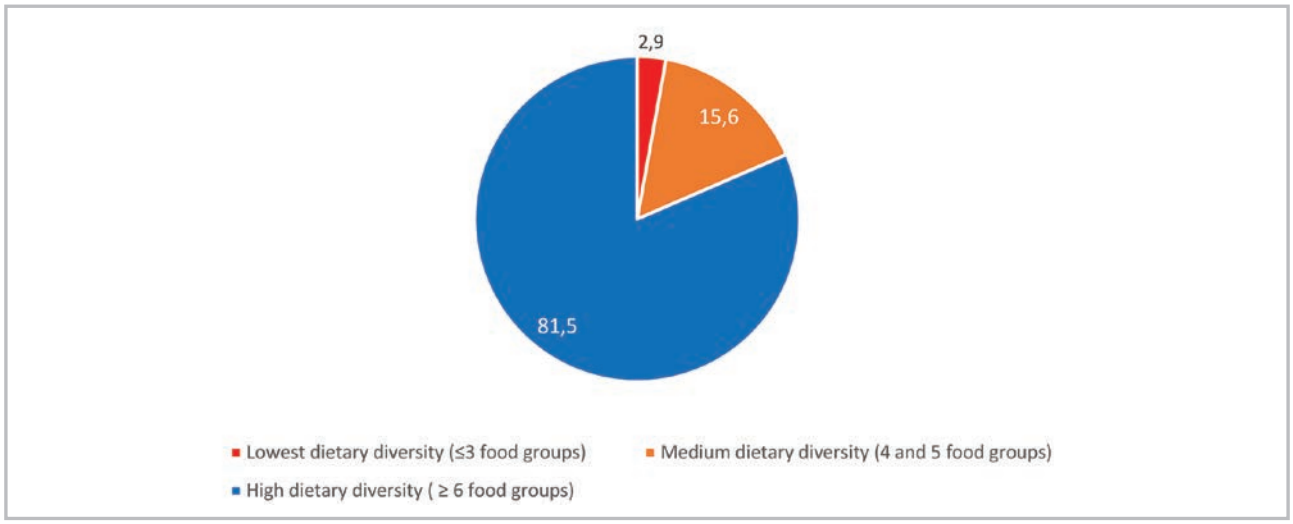


Figure 74: *Household Dietary Diversity Scores in KwaZulu-Natal Province*

The results in Table 43 and Figure 75 show that 3% of both the male-headed and female-headed households had the lowest dietary diversity. Slightly more male-headed (82%) than male-headed (81%) households were in the category of highest dietary diversity, suggesting that they had better access to diversified food. Male-headed and female-headed households consumed about 4 and 5 food groups (medium dietary diversity), with 15% and 16% of the households, respectively, reported to have consumed medium dietary diversity. 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 43: Household Dietary Diversity Scores in KwaZulu-Natal Province

		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 Household head	Male	138	3	696	15	3132	82
	Female	180	3	890	16	3728	81
Household head age	18-24	9	3	37	15	159	82
	25-34	38	3	189	18	828	79
	35-44	44	2	299	15	1324	83
	45-54	67	3	303	14	1380	83
	55-64	63	3	352	17	1417	80
	65+	92	3	387	15	1661	81
District	Ugu	17	2	116	13	723	85
	UMgungundlovu	22	3	165	22	531	75
	Uthukela	33	4	142	17	647	78
	Umkhanyakude	41	6	140	20	537	74
	King Cetshwayo	28	4	108	14	658	83
	Harry Gwala	32	4	171	22	538	73
	Umzinyathi	25	3	195	23	631	74
	Amajuba	21	3	100	12	678	85
	Zululand	57	7	213	26	544	67
	iLembe	32	4	145	17	631	79
	eThekwini	11	1	94	11	754	88

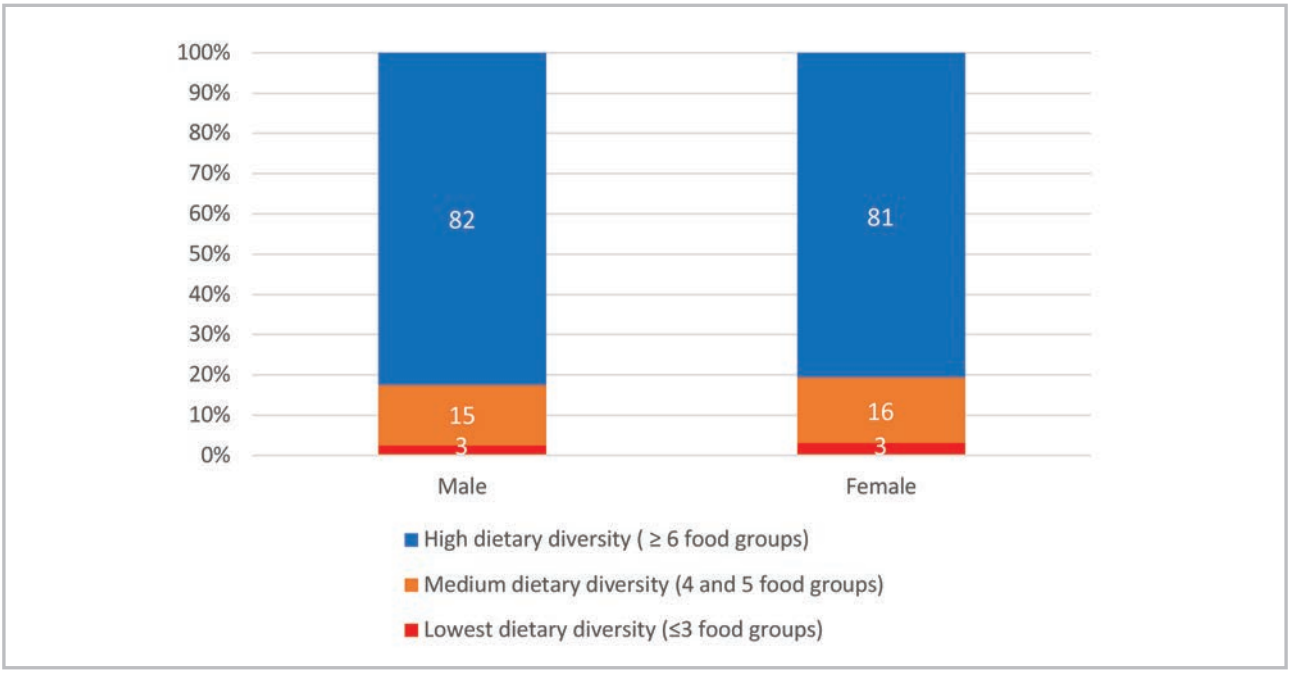


Figure 75: *Dietary Diversity Score category disaggregated by sex of household in KZN Province*

In terms of the age groups, most of all age groups generally consumed a high dietary diversity, with results showing all age groups having a higher percentage of 79% or above of households that consumed highly diversified food. Results of the age groups also show that household heads aged 35-44 and 45-54 years were the ones that largely consumed the highest dietary diversity, with 83% of the households from this age group found to have each consumed highest dietary diversity (Figure 76). Household age group aged 25-34 years were the least food secure households. Generally, households from different districts had the highest dietary diversity with 67% or more found to be in the category of high dietary diversity (Figure 77). Households in the eThekwini District had the highest dietary diversity, with 88% of the households from this district having consumed highest dietary diversity. Most households with lowest dietary diversity were in the Zululand 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 on the previous day it was pension day.

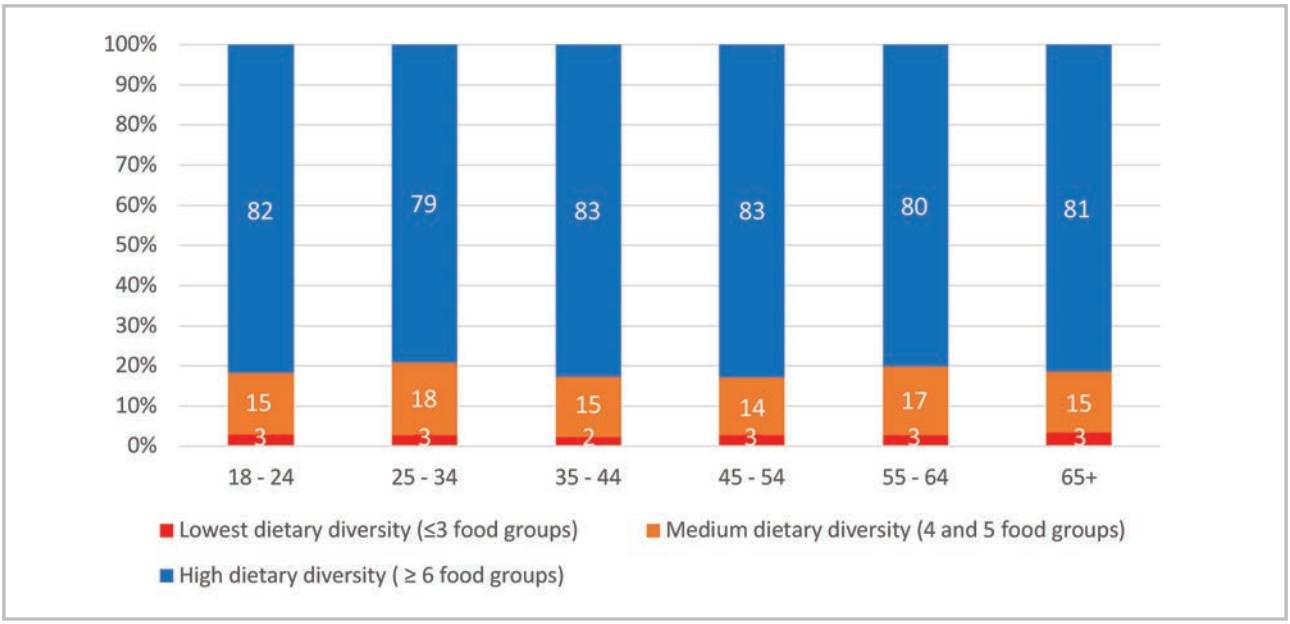


Figure 76: *Dietary diversity category disaggregated by age of household head in KwaZulu-Natal Province*

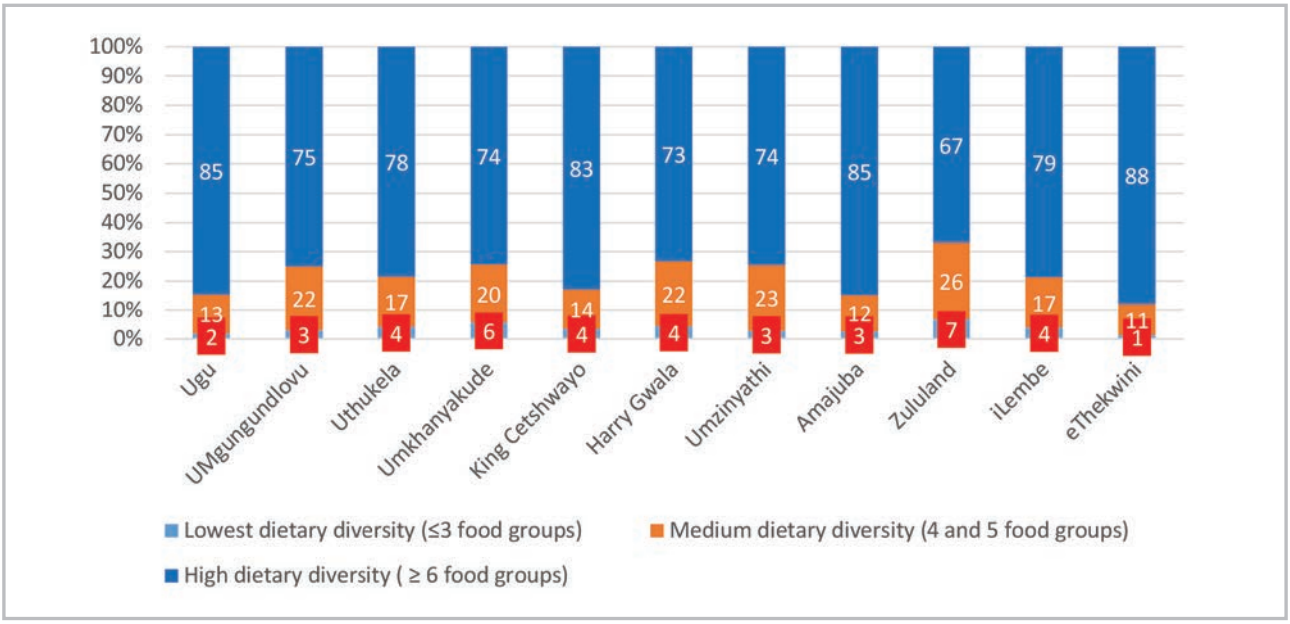


Figure 77: *Dietary diversity category disaggregated by district in KwaZulu-Natal Province*

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 micro-nutrients even when consuming a diverse diet.

Figure 78 shows the food groups and their frequency of consumption by the households. The figure shows that the most popular food groups were cereals, condiments, oils and fats, sugars, other vegetables, meat, roots and tubers, milk and milk products, other fruits, orange fresh vegetables, eggs, and pulses and nuts. The least consumed food groups were dark leafy vegetables, fish and see foods, organ meat, and orange-coloured fruits. Figure 78 shows that the most consumed food groups were mostly the less healthy ones, providing a different light to Figure 78, which gives an impression of a highly diverse and healthy diet.

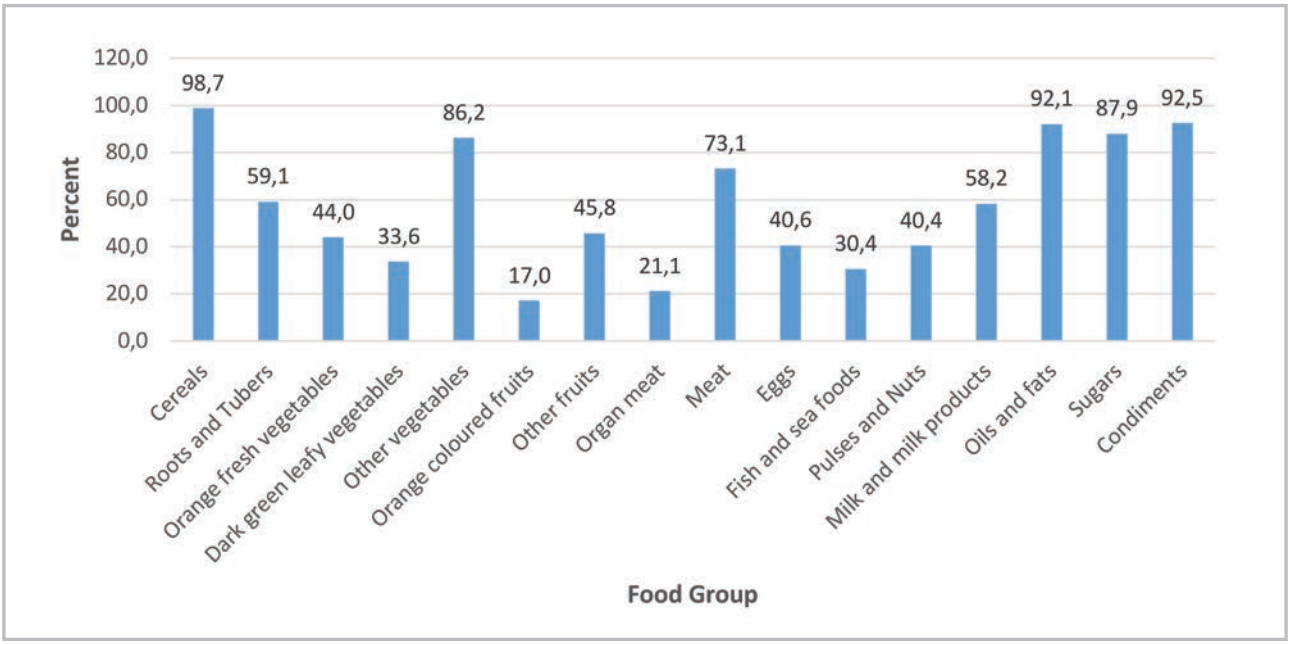


Figure 78: *Frequency of food group consumption in KwaZulu-Natal Province*

7.4 Food consumption score

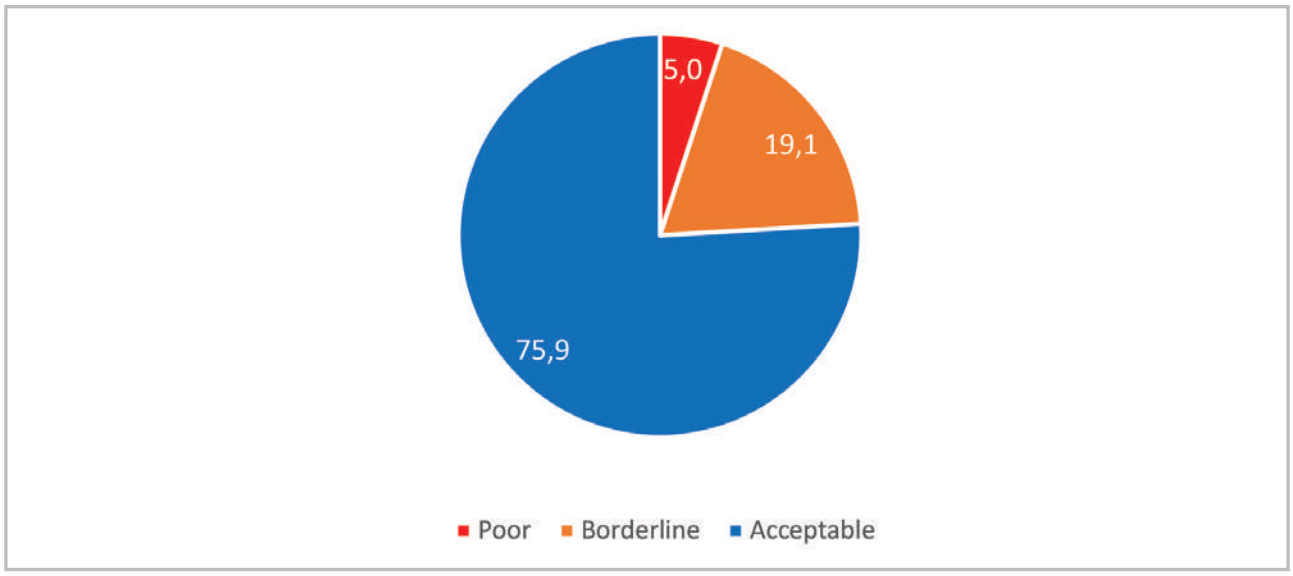


Figure 79: *Food consumption score*

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 79 shows that about 75.9% of the households were consuming adequately (acceptable) diversified diets and about 19.1% 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 5.0% of the households consumed poor diets.

Results in Table 44 presents the food consumption score categories according to sex, age, and district.

Table 44: Food Consumption Score disaggregated by sex, age of household head, and district in KwaZulu-Natal Province

		Poor		Borderline		Acceptable	
		N	%	N	%	N	%
Sex of household head	Male	42	4	164	16	681	81
	Female	60	4	234	22	684	73
Household head age	18-24	4	6	6	11	22	84
	25-34	12	5	50	21	150	74
	35-44	14	3	78	21	258	76
	45-54	23	3	70	14	291	82
	55-64	18	4	92	19	298	77
	65+	29	5	96	21	333	74
District	Ugu	8	5	27	16	127	79
	UMgungundlovu	11	9	35	18	131	72
	Uthukela	3	2	25	15	135	83
	Umkhanyakude	34	24	32	24	78	53
	King Cetshwayo	9	5	24	15	140	80
	Harry Gwala	8	6	25	22	87	72
	Umzinyathi	6	4	73	40	99	56
	Amajuba	12	6	57	27	144	67
	Zululand	8	5	33	23	99	71
	iLembe	16	9	28	15	144	77
	eThekwini	4	2	41	18	182	81

Table 44 and Figure 80 present the results showing the relationship between 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 81% of the male-headed households were found to have consumed acceptable diets compared to 73% of the female-headed households. Female-headed households were found in slightly higher proportions in the borderline category. About 4% of both male-headed and female-headed were consumed poor diets.

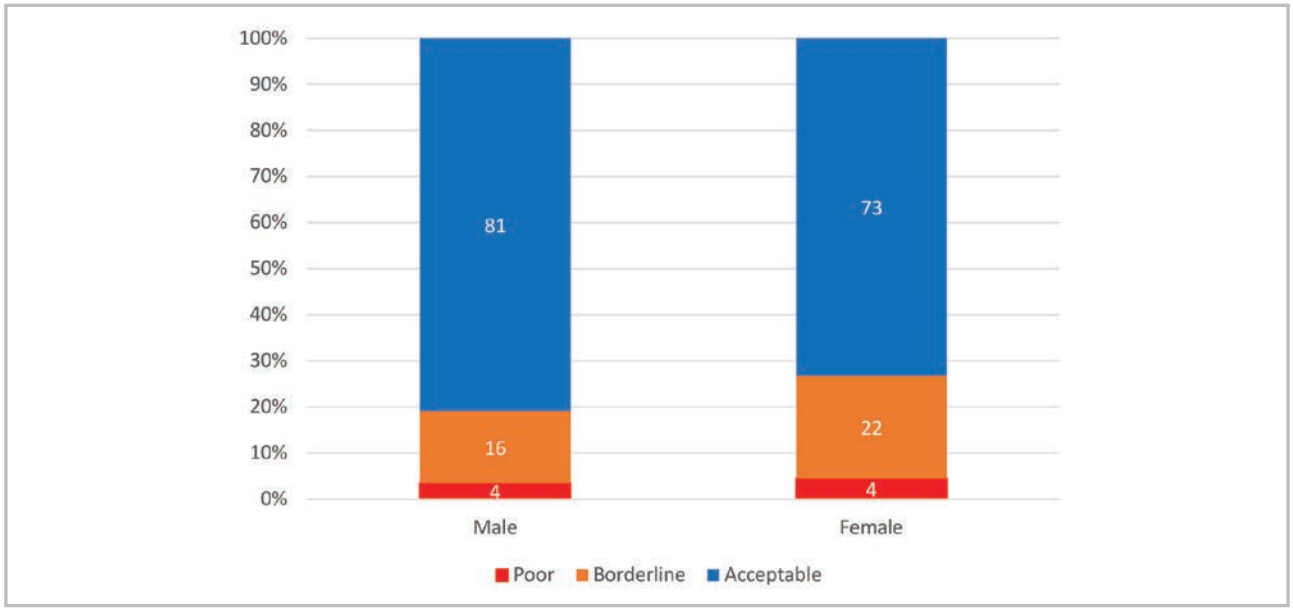


Figure 80: *Food consumption category disaggregated by sex of household head in KwaZulu-Natal Province*

The relationship between the age of household head and the chances of consuming acceptable diets was not linear (Figure 81). The proportion of households who consumed acceptable diets across the age groups ranged from 74% to 84%. The most households that consumed acceptable diets were in the age group 18-24 years, with 84% of the household heads found to have consumed acceptable diets. This was followed by households in the age group 45-54, with 82% of the households in this age group having consumed the acceptable diets. The most households in the borderline were in the age groups of 25-34, 35-44 and 65+ years, followed by households in the age group of 55 -64 years. Most households with poor diets were in the age group of 18-24, with 6% of the households in this age category found to have consumed poor diets.

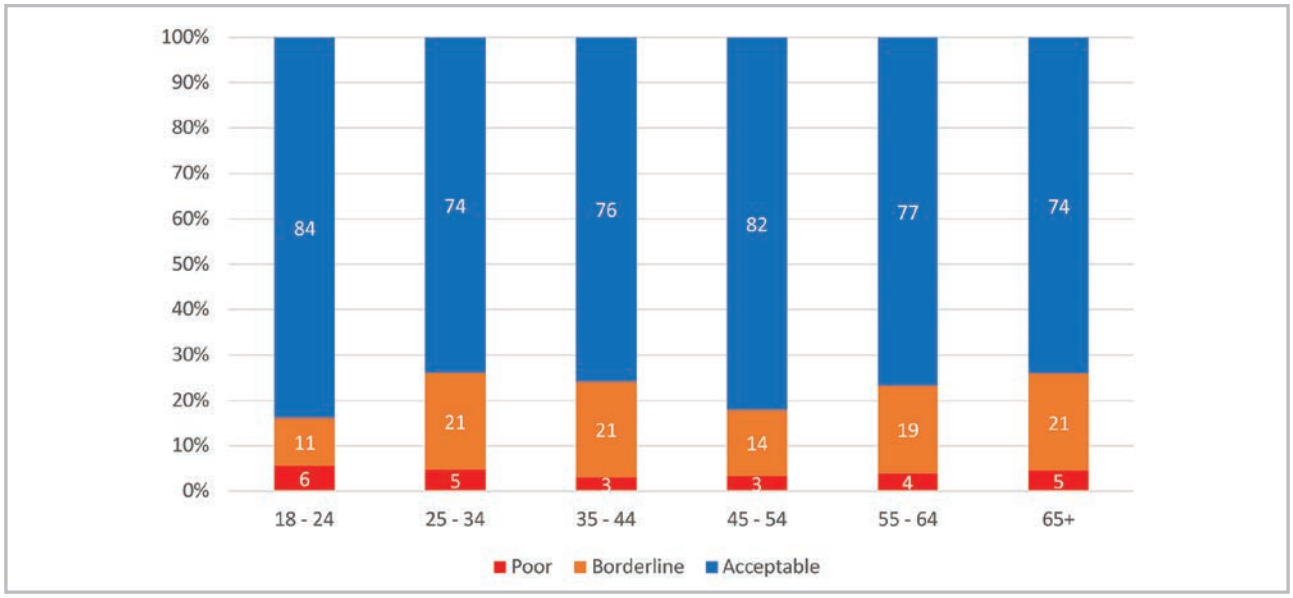


Figure 81: *Food consumption category by age of household head*

Regarding the districts, it was found that more households with poor diets were found in the uMkhanyakude District, where 24% of the households were found in this category. This was followed by households from the uMgungundlovu and iLembe districts, with 9% of the households from each district in this category (Figure 82). Households from the eThekwini and Ugu districts consumed diverse diets compared to the other districts, with 81% and 79% of the households from these districts in this category, respectively. The highest number of households on the borderline were from uMzinyathi District, followed by households from uMkhanyakude District.

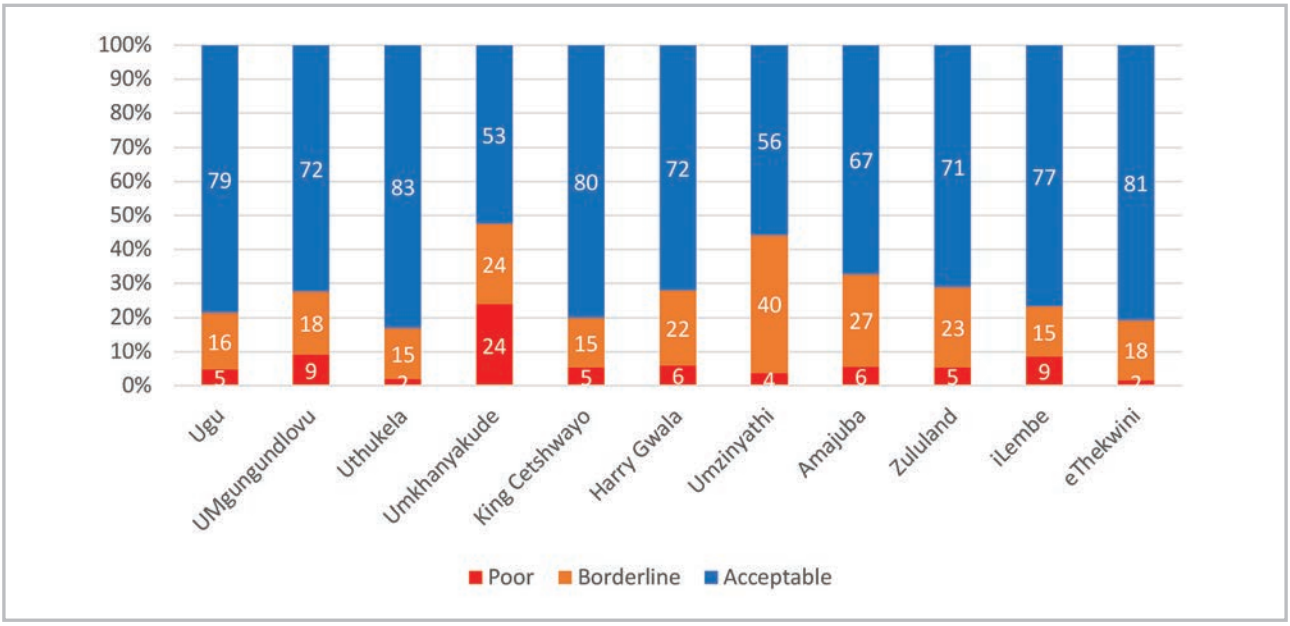


Figure 82: *Food consumption category disaggregated by district in KwaZulu-Natal Province*

7.5 Food expenditure

The food expenditure approach captures food security in terms of the amounts of money spent by a household to acquire food, and whether or not that amount is above or below the food poverty line. The food poverty line, commonly referred to as the 'extreme' poverty line, refers to the amount of money that an individual will need to afford the minimum required daily energy intake (Stats SA, 2021). In 2021, the food poverty line was R624 per person per month (Stats SA, 2021). On average, the households' food expenditure per person per month in the KwaZulu-Natal Province was R757.02, which is higher than the food poverty line. Using the 2021 food poverty line (i.e., R624), Figure 66 shows that 56% of the households were below the food poverty line. This indicates very high levels of food poverty, which supports the results of the HFIAS.

The food expenditure and poverty levels varied by sex and age group (Table 45). The Table shows that a higher proportion of female-headed households (59.9%) were below the food poverty compared to male-headed households (53.7%). Across the age-groups, the results show food poverty was more prevalent among households headed by the 55-64 years age group, and among those headed by heads at least 65 years old. Food poverty was relatively less prevalent among households headed by those in the 18-24 years age group.

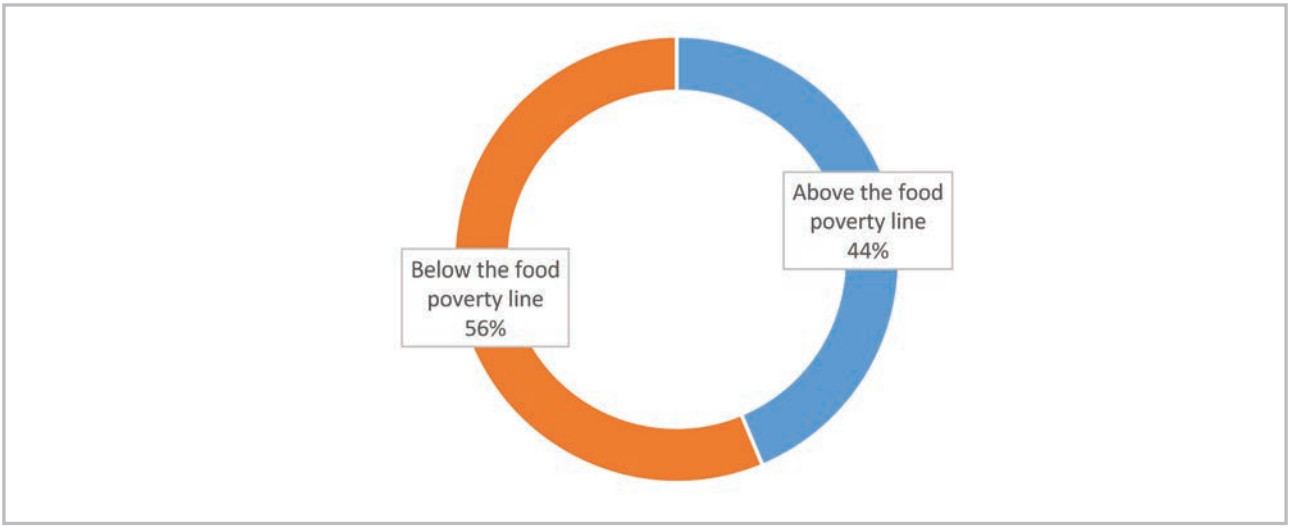


Figure 83: *Food poverty levels in the KwaZulu-Natal Province*

Table 45: Food expenditure per capita per month disaggregated by sex and age group in KwaZulu-Natal Province

Variable		Percentage above FPL	Percentage below FPL
All sample		**35.2**	**64.8**
Household head Sex	Male	43.9	55.1
	Female	26.8	73.2
Household head Age group	18-24	54.1	45.9
	25-34	47.9	52.1
	35-44	37.8	62.2
	45-54	33.0	67.0
	55-64	29.4	70.6
	65+	30.8	69.2
District	Ugu	29.7	70.3
	UMgungundlovu	39.8	60.2
	Uthukela	35.4	64.6
	Umkhanyakude	28.5	71.5
	King Cetshwayo	30.3	69.7
	Harry Gwala	34.5	65.5
	Umzinyathi	27.3	72.7
	Amajuba	39.1	60.9
	Zululand	22.3	77.7
	iLembe	33.3	66.7
	eThekwini	30.0	60.0

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 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 45 presents the results. The table shows that significant relationships were found between household food security status and some demographics and socio-economic factors such as gender, age of household heads/ acting head, access to irrigation, improved water source, sanitation, social grants, household size, markets, education level of household head/ acting head, and involvement in agricultural production.

Table 46: Relationship of food security and socio-economic factors in KwaZulu-Natal Province

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
HH Sex	Male	35.1	64.9	***
	Female	23.8	76.2	
HH Age	Mean age (years)	51.1	52.3	***
HH age group	18-24	43.5	56.5	***
	25-34	34.9	65.1	
	35-44	25.9	74.1	
	45-54	29.8	70.2	
	55-64	28.5	71.2	
	65+	27.4	72.6	
Marital status	Married	34.5	65.5	***
	Unmarried	26.2	73.8	
District	Ugu	25.1	74.9	***
	UMgungundlovu	32.3	67.7	
	Uthukela	29.7	70.3	
	Umkhanyakude	28.0	72.0	
	King Cetshwayo	27.1	72.9	
	Harry Gwala	22.8	77.2	
	Umzinyathi	19.3	80.7	
	Amajuba	34.3	65.7	
	Zululand	14.4	85.6	
	iLembe	27.3	72.7	
	eThekwini	35.0	65.0	
HH education level	No schooling	11.5	88.5	***
	Primary	13.5	86.5	
	Matric	30.1	69.9	
	Tertiary	67.1	32.9	
Household size	mean	3.3	4.5	***
HH employment status	Employed	40.1	59.9	***
	Unemployed	23.8	76.2	
Access to social grants	Beneficiary	19.6	80.4	***
	Non-beneficiary	34.8	65.5	
Access to land	Yes	23.7	76.3	***
	No	38.3	61.7	
Involved in farming activities	Yes	21.8	78.2	***
	No	32.8	67.2	
Access to irrigation	Yes	22.0	78.0	***
	No	23.2	76.8	
Access to extension	Yes	26.2	73.8	***
	No	20.7	79.3	
Access to markets	Yes	22.0	78.0	***
	No	17.5	82.5	
Access to road infrastructure	Yes	23.4	76.6	***
	No	14.0	86.0	
Location type	Urban, formal & informal	36.1	63.9	***
	Rural, Traditional areas	19.3	80.7	
	Farms	23.2	76.8	
Access to improved water sources	Yes	31.0	69.0	***
	No	14.1	85.9	
Access to improved sanitation	Yes	29.7	70.3	***
	No	8.5	91.5	

The Table 46 shows female-headed households were significantly more likely to be food insecure than male-headed households. Among male households, 64.9% were food insecure, while 76.2% were food insecure 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 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 insecure category marginally higher than that of those in the food secure category. The non-linear negative relationship exists between age of household head and food security status, with the proportion of food insecure households increasing progressively as the household head become older, until 35-44. From then, food insecurity decreases, albeit marginally. This result suggests that levels of food insecurity are the highest among households headed by those in the 35–44 years bracket. This finding was not unexpected, since one would expect the household heads in the prime years (late 30s and early-50s) to have access to more opportunities than the older or younger people.

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 mouths to feed, thus a greater burden than in smaller ones. While bigger households imply a cheaper, reliable, and committed source of labour, the results suggest that the consumption burden dominates the labour availability dimension.

Table 46 shows a positive and significant relationship between the education level of heads of household heads and household food security. The proportion of food secure households increased significantly as education levels also increased. For example, while 11.5% of households headed by people with no education were food secure, 67.1% 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 lead to higher economic and welfare outcomes. Also, higher education among farming communities, such as those in the farming regions of the KwaZulu-Natal 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 household 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 in the KwaZulu-Natal Province. Among those with access to land, 23.7% were food secure, while 38.3% were food secure among those with no access to land. This result suggests that households that have access to land experience higher level levels of food insecurity. Households that were involved in agriculture were characterised by marginally higher levels of food security than those not engaged in farming activities, indicating that farming does not play a huge role when it comes to food security in the province. Contrary to expectations, however, households with access to irrigation had a marginally smaller proportion of food secure households (22.0%) in comparison to households with no access to irrigation (23.2%). Households in urban areas (36.1%) reported higher levels of food security than those in farms (23.2%) or rural areas (19.3%) areas.

Employment was significantly associated with increased chances of a household being food secure. While 40.1% of households among those headed by employed household heads were food secure, only 23.8% of those headed by unemployed heads were food secure. This is in line with expectations. Employment plays an

important role in alleviating the scourge of poverty and food insecurity. Households that were dependent on social grants were more likely to be food insecure than those not dependent on social grants. This indicates that social grants are well-targeted, benefiting the food insecure, whose situation would have been worse without social grants. However, the social grants are not enough to lift households out of food insecurity, as food insecurity remains prevalent among the social grant dependent households.

Access to infrastructure (such as roads), basic services (such as improved water sources and sanitation), and support/ institutional services (extension, market) play a positive role in improving the food security status of households. The results show that among the proportion of food secure households was higher among those who reported to have access to all-weather roads than among those with no access to better roads. Similarly, there was a higher proportion of food secure households among those with access to improved water or sanitation than those without access. Access to extension and markets were also associated with higher proportions of food secure households. These results were expected, since for example, access to good roads is expected to result in reduced transport costs to and from the market, whether to buy (inputs, food, etc.), or to sell output. Those located near accessible roads have better access to market information (prices of inputs, food items, commodities), and thus are in a better position to achieve better transactions and savings.

7.7 Discussion

The food and nutrition security situation in the KwaZulu-Natal Province continues to be a cause for concern. The food access indicators have shown that a considerable proportion of households still face difficulties in accessing food, with the Household Food Insecurity Access Score (HFIAS), indicating that more than half of the households (70.4%) in KwaZulu-Natal Province experienced food insecurity, with only 29.6% found to be food secure. This figure is considerably higher when compared with previous studies, such as Stats SA (2020) who reported, in the General Household Survey, that 16.8.% of the households in KwaZulu-Natal Province were experiencing food access difficulties.

The HFIAS also showed that 17.1% of the households were severely food insecure, 29.3% of the surveyed households were moderately food insecure, while 24% of the households were mildly food insecure. This household food security situation is not strange, bearing in mind that the data was collected during the COVID-19 pandemic times. This implies the effects of COVID-19 measures may have affected both food availability and access in the study area. While the higher food insecurity figures reported in this study could also be possibly because the study largely focussed on open access livelihood zones and these are generally rural communities which are traditionally more food insecure, hence one would expect higher food insecurity levels there. Overall, these results are in line with most of the food security findings which generally indicate that a significant proportion of households' experience food access challenges in South Africa. For example, the 2021 Global Food Security Report indicated that during the 2018-20 period, 45% of the population in South Africa were characterised by moderate food insecurity, and 19% experienced severe food insecurity. The Rapid Assessment Study on the impact of COVID-19 on food and nutrition security found that about 48.9% of individuals in South Africa have moderate to severe food insecurity.

In addition, the results of the food security status as measured by the Household Hunger Scale (HHS) showed that most of the sampled households experienced little to no hunger (80.2%). About 15.5% and 4.3% of the households experienced moderate hunger and severe hunger, respectively. While a significant proportion of households experienced food insecurity (as shown by the HFIAS results), the HHS suggests that the level of food deprivation is not very severe for most of the households in KwaZulu-Natal Province. Also, emerging results from the household survey indicate that 84% of the male-headed households experienced little to no hunger compared to 77% of the female-headed households. This situation indicates that should there be interventions, such interventions should be more tailor-made for female-headed households. The moderate hunger in the household was slightly more experienced by female-headed households compared to male-headed households while severe hunger in the household was more experienced by male-headed households compared to female-head households.

The Food Consumption Score (FCS) revealed that most households (75.9%) were consuming adequately (acceptable) diversified diets and about 19.1% 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. The findings denote the importance for the government to develop interventions that enhance access to diverse foods in most of the areas across districts as a number of these districts are on borderline diets. The most popular food groups were cereals, condiments, oils and fats, sugars, other vegetables, meat, milk and milk products, roots and tubers, orange fresh vegetables, pulses and nuts, other fruits, and sugars. The least consumed food groups were dark leafy vegetables, fish and see foods, organ meat, and orange-coloured fruits. This shows that the most consumed food groups were mostly the less healthy ones, providing a different light to what a dietary diversity score showed which gave an impression of a highly diverse and healthy diet.

8 Nutrition and Well-being

8.1 Child nutrition and well-being

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 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

8.1.2 Breastfeeding status

Data was recorded for a total of 934 children under the age of 2 years. Of those aged 0-11 months (n=422), 80.9% were ever breastfed, while 78.5% were breastfeeding at the time the survey was conducted. In children aged 12-24 months (n=512), 75.2% were ever breastfed, while 33.6% were being breastfed at the time the survey was conducted (Table 47). Exclusive breastfeeding was reported in 14.7% of all children aged 0-6 months. There was a similar prevalence of ever being breastfed between male (78.2%) and female children (77.7%). While male children appeared to have a higher prevalence of currently being breastfed (61.9%) than female children (49.9%), the differences were not significant. Reports of between 55.1% and 91.2% were recorded for children that were ever breastfed across all districts, with Zululand having a significantly lower prevalence (55.1%) of children ever being breastfed compared to Amajuba (91.2%), Harry Gwala (87.0%) and uMkhanyakude (85.9%). Reports of between 30.6% and 84.0% were recorded for children that were currently breastfeeding across all districts. uMzinyathi (77.9%) and uThukela (84.0%) had significantly higher prevalence of children that were currently being breastfed compared to uMkhanyakude (39.5%) and iLembe (45.5%). Furthermore, uThukela also had a significantly higher prevalence compared to Amajuba (30.6%). When disaggregating by district, results should be interpreted with caution as the sample sizes in some districts were small.

Table 47: Breastfeeding status among infants aged 0-24 months in KwaZulu-Natal

	Ever been breastfed			Currently breastfed1			Exclusively breastfed (0-6 months)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n
Age									
0-11 months	80.9	[72.4-87.3]	422	78.5	[67.5-86.6]	329	14.7	[6.7-29.1]	149
12-24 months	75.2	[63.9-83.8]	512	33.6	[25.5-42.8]	363	0.0		0#
Gender									
Male	78.2	[69.7-84.7]	471	61.9	[49.0-73.3]	347	14.6	[4.7-37.1]	75
Female	77.7	[67.5-85.4]	463	49.9	[40.7-59.2]	345	15.0	[7.5-27.7]	74
District									
Amajuba	91.2	[79.5-96.5]	44	30.6	[9.9-64.1]	37	-	-	8#
Harry Gwala	87.0	[77.0-93.1]	69	56.3	[37.8-73.3]	57	-	-	17#
King Cetshwayo	78.2	[62.4-88.6]	106	50.7	[28.1-73.1]	76	-	-	13#
UMgungundlovu	63.6	[45.2-78.7]	66	51.2	[33.2-68.9]	44	-	-	10#
Ugu	78.7	[69.5-85.7]	124	52.9	[38.6-66.8]	94	-	-	18#
Umkhanyakude	85.9	[75.2-92.5]	80	39.5	[22.3-59.8]	60	-	-	13#
Umzinyathi	75.3	[61.4-85.4]	99	77.9	[60.2-89.2]	73	-	-	18#
Uthukela	79.0	[51.1-93.1]	40	84.0	[64.3-93.9]	30	-	-	13#
Zululand	55.1	[36.8-72.1]	104	57.1	[32.9-78.3]	67	-	-	16#
eThekwini	82.2	[68.1-90.9]	99	60.4	[47.5-71.9]	77	-	-	13#
iLembe	72.4	[57.8-83.4]	103	45.5	[34.6-56.9]	77	-	-	10#
Total	**77.9**	**[70.8-83.7]**	**934**	**56.0**	**[48.3-63.5]**	**692**	**14.7**	**[6.7-29.1]**	**149**

1among those ever breastfed

* cell sample sizes too small to generate reasonable estimate

n<30

8.1.2.1 Time lapsed until the introduction of breastfeeding

In most infants aged 0-24months, (n=691), breastfeeding was introduced immediately (83.5%), within the first hour (12.4%) or within 24 hours (1.6%) (Table 47). Only in 0.7% 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. There were also no significant differences between gender.

Reports of between 66.1% and 97.7% were recorded for children that were immediately breastfed across all districts, with Ugu District having a significantly higher prevalence (97.7%) compared to 5 other districts, namely Harry Gwala (73.2%), King Cetshwayo (67.0%), uMzinyathi (75.7%), uThukela (66.4%), and Zululand (6.1%) (Table 47). There were also significant differences across districts for those who were breastfed within an hour, with Ugu having a significantly lower prevalence (0.7%) compared to most other districts (range: 13.7% to 32.4%). However, due to the small sample size at district level, results should be interpreted with caution.

Table 48: Time lapsed until the introduction of breastfeeding among infants aged 0-24 months in KwaZulu-Natal

	Immediately		Less than one hour		Less than 24 hours		More than 24 hours		Don't know		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age											
0-11 months	86.8	[79.5-91.8]	8.7	[5.1-14.5]	1.3	[0.4-3.9]	0.6	[0.2-2.0]	2.6	[0.7-8.6]	327
12-24 months	80.3	[65.3-89.8]	16.1	[7.2-32.2]	1.9	[0.6-5.6]	0.8	[0.3-2.2]	1.0	[0.3-3.1]	364
Gender											
Male	88.1	[81.5-92.5]	8.0	[4.5-13.7]	1.4	[0.5-3.9]	1.1	[0.4-2.6]	1.5	[0.3-6.4]	345
Female	78.8	[63.4-88.8]	16.9	[7.6-33.6]	1.8	[0.6-5.5]	0.3	[0.1-1.0]	2.1	[0.6-7.2]	346
District											
Amajuba	82.0	[56.9-94.0]	16.8	[5.5-41.4]	1.2	[0.1-9.5]	0.0		0.0		37
Harry Gwala	73.2	[56.3-85.3]	18.9	[9.2-34.9]	7.9	[1.1-39.8]	0.0		0.0		56
King Cetshwayo	67.0	[39.4-86.4]	28.9	[10.3-59.1]	2.2	[0.6-7.4]	0.0		1.8	[0.4-7.3]	77
UMgungundlovu	85.9	[59.6-96.2]	10.5	[2.0-40.6]	1.1	[0.1-7.7]	0.7	[0.1-5.7]	1.8	[0.4-8.0]	44
Ugu	97.7	[93.6-99.2]	0.7	[0.2-2.6]	1.1	[0.2-6.8]	0.5	[0.1-3.7]	0.0		93
Umkhanyakude	88.8	[77.4-94.8]	8.4	[3.3-19.6]	1.4	[0.2-9.5]	0.0		1.5	[0.4-5.0]	60
Umzinyathi	75.7	[56.2-88.3]	24.1	[11.5-43.6]	0.0		0.0		0.2	[0.0-1.8]	73
Uthukela	66.4	[42.6-84.0]	13.7	[6.6-26.4]	19.9	[4.9-54.2]	0.0		0.0		30
Zululand	66.1	[47.1-81.1]	32.4	[17.5-51.9]	0.0		1.5	[0.3-6.3]	0.0		67
eThekwini	85.7	[68.4-94.3]	9.9	[2.8-29.1]	0.9	[0.1-6.8]	0.6	[0.2-2.2]	2.9	[0.8-10.0]	77
iLembe	88.5	[75.7-95.0]	5.3	[1.5-17.3]	1.3	[0.3-5.6]	4.9	[1.5-15.0]	0.0		77
Total	**83.5**	**[75.4-89.3]**	**12.4**	**[7.2-20.4]**	**1.6**	**[0.7-3.6]**	**0.7**	**[0.3-1.5]**	**1.8**	**[0.7-4.6]**	**691**

8.1.2.2 Age at which breastfeeding was stopped

In children aged 0-24 months (n=335), breastfeeding was most often stopped between the ages of 0-3 months (21.6%), 3-6 months (26.1%) and 7-12 months (25.2%). More than 64% of mothers stopped breastfeeding before the age of 6 months (Figure 84). Only 10.6% of mothers continued to breastfeed for longer than 12 months, with only 1.2% continuing up to 24 months. Significantly more mothers of children aged 0-11 months (43.5%) stopped breastfeeding at less than 3 months compared to mothers of 12-24 year-olds (14.5%).

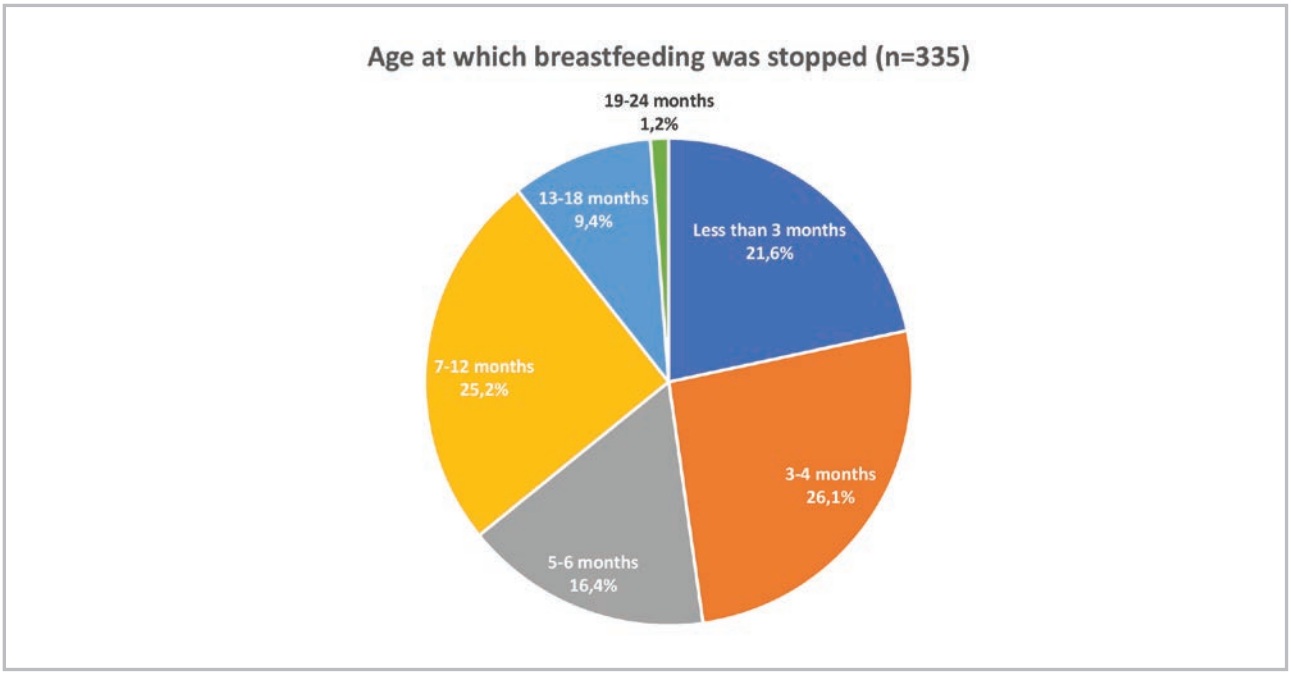


Figure 84: *Age at which breastfeeding was stopped among infants aged 0-24 months in KwaZulu-Natal*

The mean age at which breastfeeding was stopped among those currently breastfed was 6.4 months. At 3-4 months a significantly higher prevalence of girls had stopped being breastfed (38.9%) compared to boys (10.0%). Due to the small sample sizes in most districts, comparisons could not be made at a district level.

8.1.2.3 First drink other than breast milk

Infant formula (40.0%), plain water (22.0%) and gripe water (20.3%) were reported to be the most common first drink other than breast milk that was introduced to infants under 2 years of age (Figure 85). The only significant different was found in tea, where significantly more children aged 12-24 months (8.2%) were introduced to tea as a first drink compared to those aged 0-11 years (0.3%). There were, however, no significant differences found between genders (Table 49). while there were some significant differences at a district level for some of the first drinks, these should be interpreted with caution due to a small sample size.

Mothers in most districts reported that infant formula, followed by water, was the most common first drink introduced to children aged 0-24 months. However, in four districts (Amajuba, King Cetshwayo, uMgungundlovu, and uThukela), water was the most common drink followed by infant formula, It is important to note thought that district level comparisons must be interpreted with caution due to the small sample sizes.

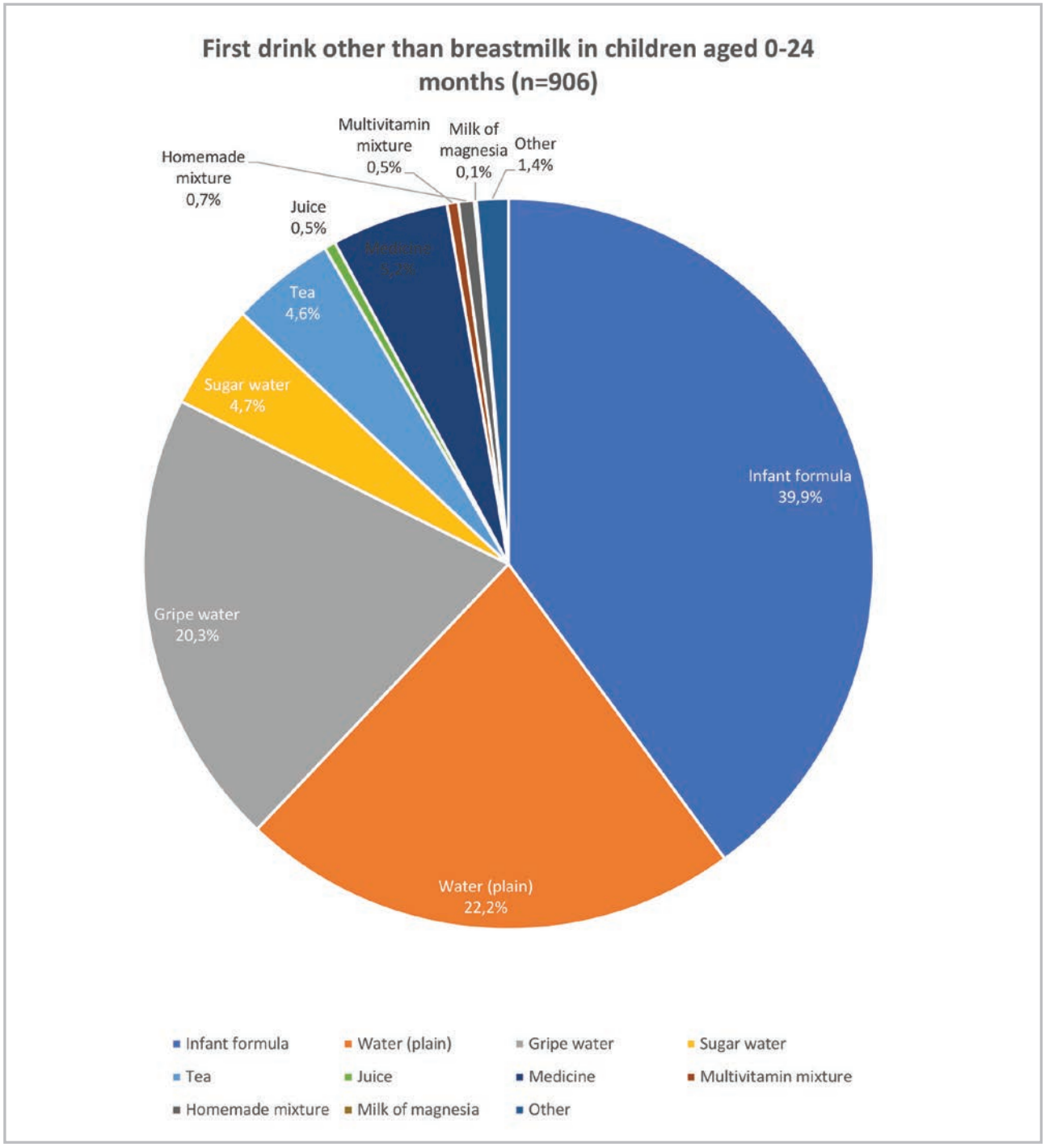


Figure 85: *First drink other than breast milk among children aged 0-24 months in KwaZulu-Natal*

Table 49: The first drink other than breast milk among children aged 0-24 months by district in KwaZulu-Natal

	Infant formula		Water (plain)		Gripe water		Sugar water		Tea		Juice		Medicine		Multi vitamin mixture		Home made mixture		Milk of magne-sia		Other		Total
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age																							
0-11 months	40.7	[27.6-55.2]	17.7	[10.5-28.3]	25.5	[16.3-37.6]	5.6	[2.4-12.4]	0.3	[0.1-1.1]	0.0		7.6	[4.1-13.6]	0.3	[0.1-1.2]	0.4	[0.1-1.8]	0.0		1.9	[0.9-4.0]	401
12-24 months	39.4	[30.4-49.1]	26.0	[17.5-36.7]	15.9	[9.4-25.5]	3.9	[2.2-7.0]	8.2	[2.5-23.5]	0.8	[0.3-2.4]	3.2	[1.6-6.2]	0.6	[0.1-2.7]	0.9	[0.1-5.5]	0.1	[0.0-0.9]	1.0	[0.3-3.7]	505
Gender																							
Male	44.8	[33.5-56.7]	21.3	[13.4-32.0]	17.3	[11.3-25.6]	4.9	[2.6-9.2]	1.1	[0.5-2.6]	0.6	[0.2-2.5]	7.8	[4.6-13.1]	0.1	[0.0-0.5]	0.4	[0.1-1.7]	0.1	[0.0-1.0]	1.5	[0.5-4.3]	458
Female	35.3	[25.7-46.2]	23.2	[14.2-35.4]	23.1	[17.7-29.5]	4.4	[2.1-9.2]	8.0	[2.1-25.7]	0.3	[0.1-1.1]	2.7	[1.2-5.7]	0.9	[0.2-2.9]	1.0	[0.2-5.9]	0.0		1.2	[0.5-3.0]	448
District - KZN																							
Amajuba	13.6	[5.1-31.4]	55.9	[23.0-84.3]	22.9	[5.7-59.4]	2.2	[0.6-8.2]	0.0		0.0		0.4	[0.1-3.6]	4.2	[0.7-20.5]	0.0		0.0		0.7	[0.1-5.6]	44
Harry Gwala	43.2	[25.1-63.4]	27.5	[12.3-50.8]	4.8	[2.1-10.7]	4.3	[1.3-13.6]	0.0		0.0		16.3	[6.0-37.3]	1.7	[0.2-12.1]	1.3	[0.3-6.1]	0.0		0.8	[0.1-6.0]	65
King Cetshwayo	31.4	[17.9-49.0]	38.8	[20.0-61.6]	15.8	[8.4-27.9]	3.6	[1.7-7.6]	1.2	[0.2-8.1]	1.0	[0.1-7.0]	7.2	[3.0-16.3]	0.0		0.0		0.0		1.0	[0.1-6.7]	102
UMgungund-lovu	31.3	[19.1-46.7]	31.6	[15.9-53.2]	17.2	[6.9-36.6]	0.8	[0.1-5.8]	2.8	[0.5-13.3]	2.8	[0.7-11.0]	7.1	[1.4-28.9]	0.0		6.4	[1.3-26.8]	0.0		0.0		64
Ugu	53.3	[37.4-68.5]	17.7	[9.9-29.6]	9.8	[5.0-18.2]	5.9	[2.1-15.2]	0.8	[0.2-3.5]	0.0		7.7	[2.7-20.1]	0.5	[0.1-2.2]	0.0		0.0		4.4	[1.4-12.8]	119
Umkha-nyakude	42.1	[22.1-65.2]	35.7	[17.0-60.0]	5.0	[1.7-13.4]	14.4	[6.4-29.4]	0.4	[0.1-3.4]	0.0		1.5	[0.3-7.5]	0.0		0.0		0.0		0.8	[0.2-3.5]	80
Umzinyathi	35.0	[22.4-50.0]	17.5	[12.0-24.8]	28.9	[19.1-41.1]	4.9	[1.5-14.9]	1.9	[0.4-9.2]	0.6	[0.1-2.6]	4.8	[1.7-12.7]	0.3	[0.0-2.6]	0.2	[0.0-1.7]	1.9	[0.4-9.2]	3.9	[0.9-14.9]	98
Uthukela	39.5	[19.6-63.5]	41.3	[19.7-66.8]	6.1	[2.3-15.2]	11.0	[3.6-29.0]	0.9	[0.1-6.7]	0.0		1.3	[0.3-5.1]	0.0		0.0		0.0		0.0		38
Zululand	49.5	[34.2-65.0]	14.7	[5.8-32.5]	16.8	[7.9-32.5]	5.3	[1.4-17.7]	5.1	[0.8-25.8]	0.0		4.3	[1.8-10.0]	0.0		1.8	[0.3-9.2]	0.0		2.5	[0.7-8.7]	104
eThekwini	40.4	[24.6-58.4]	16.4	[6.9-34.1]	25.9	[18.0-35.9]	4.0	[1.0-14.8]	7.9	[1.9-27.8]	0.3	[0.0-2.2]	3.6	[1.2-10.7]	0.6	[0.1-4.1]	0.0	[0.0-0.1]	0.0		0.8	[0.1-5.5]	92
iLembe	38.4	[27.4-50.6]	11.2	[6.9-17.5]	30.1	[19.6-43.2]	2.4	[0.5-10.3]	3.6	[1.1-11.2]	0.0		12.5	[3.9-33.5]	0.0		0.0		0.0		1.8	[0.4-7.4]	100
Total	**40.0**	**[31.8-48.8]**	**22.2**	**[15.9-30.1]**	**20.3**	**[15.6-25.9]**	**4.7**	**[2.6-8.4]**	**4.6**	**[1.5-13.6]**	**0.5**	**[0.2-1.3]**	**5.2**	**[3.2-8.3]**	**0.5**	**[0.1-1.5]**	**0.7**	**[0.2-2.7]**	**0.1**	**[0.0-0.5]**	**1.4**	**[0.7-2.8]**	**906**

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

Overall, the first drink other than breastmilk was mainly introduced at 0-1month (55.7%), followed by 2 months (13.4%). The same pattern was followed for children in both age groups with 65.0% and 14.7% of children aged 0-11 months and 48.1% and 12.3% of children aged 12-24 months, introduced to other drinks 0-1 months and 2 months, respectively, with no significant differences shown between age groups (Table 49). We can assume that the introduction of other drinks before the age of 1 month is most likely the introduction of infant formula. Of the remaining children, 7.8% of children were introduced to other drinks at 3 months and only 15.5% were introduced from 6 months of age.

When doing comparisons by gender, 57.0% of boys were introduced to other drinks before the age of one month, with 11.2% at 2 months. Girls followed a similar pattern (54.5%) at 1 month and 15.5% at two months. There were no significant differences between gender for all ages at which the first drink other than breastmilk was introduced. Furthermore, 14.1 % of boys and 16.9% of girls were introduced to other drinks from the age of 6 months. The only significant difference for gender occurred at 5 months where a significantly higher prevalence of girls (5.1%) were introduced to other milk feeds compared to only 1.0% of boys.

Similar patterns were displayed across districts, where most children were introduced to other drinks before the age of 1 month (30.8%-65.9%). This was followed by 2 months (2.2%-32.4%). While there were some significant differences at a district level, at various time periods, these results should be interpreted with caution.

Table 50: Age at which the first drink other than breast milk was introduced among infants aged 0-24 months in KwaZulu-Natal

	0-1 month		2 months		3 months		4 months		5 months		6 months		>6 months		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age															
0-11 months	65.0	[56.6-72.5]	14.7	[9.4-22.1]	8.3	[4.8-13.9]	3.3	[1.5-7.2]	3.8	[1.4-9.5]	3.6	[1.6-7.8]	1.5	[0.3-6.1]	395
12-24 months	48.1	[37.0-59.3]	12.3	[7.7-19.2]	7.4	[3.9-13.8]	5.5	[1.9-15.0]	2.5	[1.1-5.6]	10.3	[6.7-15.6]	13.8	[7.0-25.6]	503
Gender															
Male	57.0	[48.0-65.7]	11.2	[7.3-16.7]	6.4	[3.6-11.0]	6.3	[2.1-17.2]	5.1	[2.5-10.3]	9.2	[5.1-15.8]	4.9	[2.6-9.1]	453
Female	54.5	[45.8-62.9]	15.5	[10.0-23.4]	9.2	[5.0-16.3]	2.8	[1.2-6.3]	1.0	[0.5-2.1]	5.4	[3.7-7.9]	11.5	[4.7-25.8]	445
District															
Amajuba	30.8	[9.4-65.5]	32.4	[11.1-64.9]	10.8	[2.0-42.4]	4.9	[2.1-11.1]	3.6	[0.5-21.3]	16.9	[7.2-34.5]	0.7	[0.1-4.8]	44
Harry Gwala	47.6	[33.4-62.1]	17.7	[6.2-41.1]	11.1	[4.5-24.7]	3.5	[0.9-12.9]	5.3	[1.3-19.5]	8.4	[3.1-20.6]	6.5	[1.7-21.9]	64
King Cetshwayo	60.1	[43.8-74.4]	9.0	[4.7-16.6]	4.5	[1.7-11.2]	5.4	[2.0-13.3]	3.2	[0.7-13.3]	13.5	[4.9-32.1]	4.3	[1.4-12.0]	100
UMgungundlovu	59.3	[45.7-71.6]	2.2	[0.6-7.4]	7.5	[1.9-25.9]	9.1	[2.5-28.3]	1.8	[0.4-7.9]	7.7	[3.6-16.0]	12.3	[4.6-28.9]	64
Ugu	55.3	[39.0-70.5]	9.4	[3.6-22.2]	12.6	[4.8-29.2]	2.0	[0.7-6.1]	8.0	[3.8-16.1]	6.4	[3.0-12.9]	6.3	[1.6-21.7]	119
Umkhanyakude	35.0	[18.5-56.0]	28.5	[13.9-49.6]	21.8	[8.0-47.3]	5.6	[1.0-26.3]	0.0		7.0	[3.4-14.1]	2.0	[0.6-6.1]	77
Umzinyathi	65.7	[56.2-74.1]	10.7	[3.8-26.5]	2.9	[1.1-7.2]	5.6	[1.7-17.1]	2.7	[0.7-9.8]	7.3	[2.7-18.3]	5.2	[1.6-15.4]	98
Uthukela	63.6	[40.3-81.9]	19.6	[7.5-42.3]	9.1	[2.5-28.2]	0.0		3.8	[0.5-23.7]	4.0	[1.0-14.5]	0.0		39
Zululand	65.9	[47.0-80.9]	6.1	[2.1-16.2]	11.2	[3.9-28.2]	5.8	[1.9-16.8]	0.1	[0.0-0.5]	2.2	[0.7-6.1]	8.7	[2.6-25.6]	103
eThekwini	56.9	[44.9-68.2]	15.6	[9.4-24.7]	3.7	[1.4-9.1]	3.9	[0.7-19.9]	2.9	[0.7-11.0]	6.5	[2.8-14.6]	10.4	[3.6-26.6]	93
iLembe	50.1	[37.9-62.4]	7.2	[3.2-15.4]	18.6	[9.7-32.6]	3.9	[1.7-9.0]	2.7	[0.8-8.9]	7.9	[4.2-14.5]	9.5	[3.8-22.0]	97
Total	**55.7**	**[49.3-62.0]**	**13.4**	**[9.7-18.1]**	**7.8**	**[5.1-11.8]**	**4.5**	**[2.2-9.2]**	**3.0**	**[1.6-5.8]**	**7.3**	**[4.9-10.7]**	**8.2**	**[4.4-15.1]**	**898**

8.1.2.5 Milk Feeds

The mean age at which milk feeds were introduced to children was higher in those aged 12-24 months (4.3 months) and boys (3.8 months) as compared to those aged 0-11 months (2.6 months) and girls (3.3 months); however, this was only significant between age groups (Table 51). At a district level, comparisons for Amajuba and Uthukela not possible due to the small sample sizes, while there were no significant differences in mean age between districts; comparisons for the remaining districts must also be interpreted with caution.

Table 51: Mean age at introduction of milk feeds among infants 0-24 months old in KwaZulu-Natal

	Mean	95% CI	n
Age			
0-11 months	2.6	[2.0-3.2]	224
12-24 months	4.3	[3.3-5.4]	259
Gender			
Male	3.8	[2.5-5.1]	252
Female	3.3	[2.7-3.9]	231
District			
Amajuba	-	-	24#
Harry Gwala	4.0	[2.4-5.5]	35
King Cetshwayo	3.9	[2.9-4.8]	56
UMgungundlovu	4.2	[1.9-6.5]	33
Ugu	4.1	[1.1-7.1]	67
Umkhanyakude	3.8	[3.0-4.6]	42
Umzinyathi	3.4	[2.0-4.8]	36
Uthukela	-	-	14#
Zululand	2.8	[1.5-4.2]	46
eThekwini	3.4	[2.2-4.6]	65
iLembe	3.8	[2.5-5.1]	65
Total	**3.5**	**[2.8-4.2]**	**483**

* cell sample sizes too small to generate reasonable estimate

n<30

Except for breast milk, the majority of infants (75.2%) were receiving infant formula, followed by KLIM/ Nespray (11.6%), full strength cow's milk (5.9%), and other milk (7.2%) (Table 52). No significant differences were observed between age groups and gender. At a district level, comparisons for Amajuba and Uthukela were not possible due to the small sample sizes; comparisons for the remaining districts must, also be interpreted with caution. eThekwini reported a significantly higher prevalence of using full strength cow's milk (10.0%) compared to those in Ugu and iLembe (0.5% and 0.4%, respectively).

Table 52: The type of milk other than breast milk that the infant receives (among infants aged 0-24 months who are receiving milk feeds) in KwaZulu-Natal

	Cow's milk (full strength)		Cow's milk (diluted)		KLIM / Nespray		Infant formula		Other		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age											
0-11 months	5.4	[1.5-18.0]	0.0		4.3	[1.0-16.7]	80.3	[61.8-91.1]			224
12-24 months	6.3	[1.5-23.3]	0.3	[0.0-2.5]	18.0	[6.8-39.7]	70.8	[53.0-83.8]	10.1	[2.5-32.9]	259
Gender											
Male	8.4	[2.2-27.5]	0.4	[0.1-2.8]	6.4	[3.3-12.2]	80.5	[61.6-91.4]	4.4	[1.5-12.5]	252
Female	3.6	[0.7-16.5]	0.0		16.3	[5.4-39.6]	70.4	[51.9-84.0]	9.7	[4.3-20.4]	231
District											
Amajuba	-	-	-	-	-	-	-	-	-	-	24#
Harry Gwala	0.0		0.0		20.1	[5.6-51.7]	75.8	[47.1-91.7]	4.2	[0.8-18.8]	35
King Cetshwayo	0.0		0.0		9.2	[4.0-19.5]	88.8	[78.4-94.6]	2.0	[0.4-8.5]	56
UMgungund-lovu	0.9	[0.1-6.9]	0.0		2.8	[0.8-8.9]	87.1	[60.5-96.8]	9.2	[1.3-43.8]	33
Ugu	0.5	[0.1-2.4]	0.0		14.3	[3.8-41.6]	78.4	[54.3-91.7]	7.6	[2.3-22.2]	67
Umkhanyakude	3.5	[0.6-17.8]	0.0		9.6	[2.3-32.2]	86.3	[62.5-96.0]	0.6	[0.1-3.8]	42
Umzinyathi	6.1	[0.9-32.9]	0.0		9.4	[2.8-27.2]	75.0	[51.5-89.5]	9.4	[2.4-30.7]	36
Uthukela	-	-	-	-	-	-	-	-	-	-	14#
Zululand	2.9	[0.8-9.9]	0.0		5.1	[0.8-26.9]	90.5	[72.6-97.2]	1.4	[0.3-7.5]	46
eThekwini	10.0	[3.7-24.1]	0.0		14.7	[4.0-41.4]	65.1	[44.3-81.4]	10.2	[3.8-24.9]	65
iLembe	0.4	[0.0-2.7]	3.5	[0.5-21.3]	6.6	[2.5-16.3]	89.1	[73.8-96.0]	0.5	[0.1-3.5]	65
Total	**5.9**	**[2.3-14.4]**	**0.2**	**[0.0-1.3]**	**11.6**	**[4.9-25.0]**	**75.2**	**[61.7-85.1]**	**7.2**	**[3.2-15.6]**	**483**

* cell sample sizes too small to generate reasonable estimate

n<30

8.1.2.6 Solid foods

The mean age at which first semi-solid or solid foods were introduced was 5.0 months. There was a significant difference between the older and younger infants where those aged 12-24 months were first introduced to solid food at the age of 5.7 months compared to significantly lower mean age of 4.0 months in infants aged 0-11 months. There were no significant differences between gender. There was a significant difference between the mean age of introduction of solid foods in Ugu (3.7 months), which was significantly lower than both Harry Gwala (5.1 months) and eThekwini (5.3 months). However, these results must be interpreted with caution due to the small sample sizes (Table 53).

Table 53: Age of introduction of first semi-solid or solid food and the types of foods among infants 0-24 months in KwaZulu-Natal

	Mean	95% CI	sample
Age			
0-11 months	4.0	[3.5-4.4]	342
12-24 months	5.7	[5.2-6.1]	510
Gender			
Male	5.0	[4.5-5.5]	433
Female	4.9	[4.4-5.5]	419
District			
Amajuba	4.8	[4.2-5.5]	42
Harry Gwala	5.1	[4.6-5.7]	49
King Cetshwayo	4.6	[3.8-5.4]	104
UMgungundlovu	5.3	[4.8-5.9]	64
Ugu	3.7	[2.9-4.5]	120
Umkhanyakude	5.2	[4.0-6.5]	74
Umzinyathi	5.2	[4.4-6.0]	87
Uthukela	3.8	[2.3-5.3]	31
Zululand	5.0	[4.4-5.7]	94
eThekwini	5.3	[4.7-5.9]	89
iLembe	4.8	[4.1-5.4]	98
Total	**5.0**	**[4.6-5.3]**	**852**

Table 54 shows that home-made infant cereal was the first semi solid food given to most children aged 0-24 months (46.1%), followed by commercial infant cereal/porridge (32.0%) and pureed/mashed fruit/ vegetables (8.9%). Less than 2.0% of infants had cereal/ porridge supplied by the clinic and bottled/ canned baby foods as their first semi-solid foods, while 7.9% and 2.0% of mothers reported other foods and traditional baby foods as their infants' first food, respectively.

When disaggregating by age groups, the only significant finding occurred for other foods, where a significantly higher proportion of infants aged 0-11 month (17.1%) were given other foods compared to 0.7% of those aged 12-24 months.

While males appear to have a higher prevalence of being introduced to commercial cereal/porridge, females appear to have a higher prevalence of being introduced to home-made cereal/ porridge; however, these results were not significant for any of the first solid foods listed.

When disaggregating by district, significant differences were reported in commercial infant cereal where eThekwini had a significantly lower prevalence (20.8%) of using it as a fist food compared to both uMgungundlovu (53.4%) and iLembe (51.9%). Cereal/porridge received at the clinic, where only those children in the KwaZulu-Natal reported using this as a first food compared to zero children in other districts. Amajuba District had a significantly higher prevalence (31.5%) of using pureed/ mashed vegetables/fruit as a first food, compared to King Cetshwayo (0.7%). Umgungundlovu had a significantly higher prevalence of using bottled/canned baby foods (7.6%) compared to King Cetshwayo (0.2%), while Uthukela had a significantly higher prevalence of using other foods (27.1%) compared to iLembe (2.3%). However, these results must be interpreted with caution due to the small sample sizes (Table 54).

Table 54: Types of first semi-solid or solid food among infants 0-24 months in KwaZulu-Natal

	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		Other (specify)		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age (months)															
0-11 months	30.0	[21.1-40.7]	35.9	[25.5-47.8]	1.5	[0.6-3.9]	10.5	[4.4-23.4]	1.5	[0.3-7.0]	3.5	[1.3-9.0]	17.1	[6.7-37.4]	347
12-24 months	33.5	[25.2-42.9]	54.1	[42.1-65.6]	1.1	[0.3-4.2]	7.7	[4.0-14.3]	1.4	[0.4-5.6]	0.9	[0.4-2.0]	0.7	[0.3-1.7]	511
Gender															
Male	34.8	[26.3-44.5]	39.1	[29.0-50.2]	2.3	[0.9-5.6]	7.5	[2.8-18.7]	1.4	[0.4-5.4]	2.4	[0.8-6.8]	12.5	[3.9-33.2]	433
Female	29.1	[20.1-40.0]	53.1	[39.1-66.7]	0.3	[0.1-1.1]	10.4	[5.6-18.4]	1.5	[0.4-6.4]	1.7	[0.6-4.6]	3.3	[1.8-6.0]	425
District															
Amajuba	37.0	[21.3-55.9]	28.8	[11.2-56.4]	0.0		31.5	[10.2-65.0]	0.5	[0.1-3.9]	0.0		2.3	[0.5-9.5]	43
Harry Gwala	36.9	[19.6-58.5]	55.7	[35.1-74.6]	0.0		4.2	[0.7-22.2]	1.3	[0.3-5.7]	0.0		1.8	[0.2-13.1]	50
King Cetshwayo	41.6	[25.0-60.3]	48.3	[30.3-66.8]	1.7	[0.4-6.3]	0.7	[0.2-2.4]	0.2	[0.0-1.5]	1.7	[0.2-11.6]	4.8	[1.4-15.2]	103
UMgungundlovu	53.4	[37.2-69.0]	27.6	[14.9-45.4]	5.2	[0.9-24.8]	2.2	[0.4-10.8]	7.6	[1.6-29.6]	3.9	[1.1-13.0]	0.0		63
Ugu	32.0	[21.0-45.3]	41.9	[28.7-56.5]	1.3	[0.3-5.2]	8.3	[2.6-23.6]	1.9	[0.7-5.2]	4.8	[1.1-18.4]	9.8	[5.1-18.3]	117
Umkhanyakude	38.8	[23.4-56.9]	44.2	[26.4-63.6]	2.8	[0.4-18.3]	6.8	[1.9-21.3]	0.0		2.3	[0.4-12.2]	5.1	[1.9-13.2]	76
Umzinyathi	36.0	[24.8-48.8]	48.7	[33.0-64.7]	0.0		9.6	[3.3-24.5]	0.0		3.0	[0.8-10.7]	2.7	[0.8-9.0]	90
Uthukela	29.2	[12.8-53.6]	30.5	[16.1-50.1]	0.6	[0.1-4.3]	12.6	[1.8-53.0]	0.0		0.0		27.1	[8.2-60.8]	32
Zululand	42.2	[28.7-57.0]	35.1	[20.9-52.6]	0.2	[0.0-1.8]	13.6	[4.1-36.6]	0.4	[0.0-2.8]	2.2	[0.8-6.2]	6.3	[2.4-15.6]	94
eThekwini	20.8	[13.5-30.6]	54.8	[38.2-70.4]	0.6	[0.1-4.0]	9.8	[3.6-24.1]	1.2	[0.2-7.3]	1.4	[0.3-7.4]	10.9	[2.4-37.7]	93
iLembe	51.9	[37.5-66.0]	29.8	[20.2-41.5]	2.4	[0.7-7.6]	11.8	[4.6-26.9]	0.6	[0.1-2.3]	1.3	[0.3-5.1]	2.3	[0.8-6.9]	97
Total	**32.0**	**[26.1-38.5]**	**46.1**	**[37.2-55.2]**	**1.3**	**[0.5-3.0]**	**8.9**	**[5.2-15.1]**	**1.5**	**[0.5-3.9]**	**2.0**	**[1.0-4.1]**	**7.9**	**[3.1-18.9]**	**858**

8.1.3 Anthropometry (0-59 months)

This section presents the key nutrition findings for children aged 0-59 months. It presents anthropometric measures such as stunting, wasting and underweight, which are important indicators in the assessment of child health and nutrition status. It highlights both forms of moderate and severe acute malnutrition among children under the age of five. The prevalence of malnutrition remains a public health problem which results in substantial mortality and disease burden worldwide. The Lancet series (2013) reported that malnutrition accounts for 45% of all the deaths of children under the age of five. This estimate translated to 3.1 million deaths globally in 2011. It is further reported that it includes intrauterine fetal growth restriction, stunting, wasting, and micronutrient deficiency, especially of vitamin A and Zinc. This occurs along poor infant feeding practices which are indicated by suboptimum breastfeeding.

Anthropometric data was recorded for 1979 children under the age of 5 years; of these, there were a slightly higher number of boys (50.5%) than girls (49.5%) (Table 55).

Table 55: Distribution of age and sex of the sample in KwaZulu-Natal

	Boys		Girls		Total	
AGE (months)	**n**	**%**	**n**	**%**	**n**	**%**
<6	80	46.2	93	53.8	173	8.7
6-17	250	52.2	229	47.8	479	24.2
18-29	224	51.5	211	48.5	435	22.0
30-41	199	49.1	206	50.9	405	20.5
42-53	181	49.7	183	50.3	364	18.4
54-59	66	53.7	57	46.3	123	6.2
Total	**1000**	**50.5**	**979**	**49.5**	**1979**	**100.0**

8.1.3.1 Stunting

The overall prevalence of stunting for children under the age of 5 years (n=1 901) was 29.8%, of which 16.1% was severe and 13.6% was moderate stunting (Table 56 and Figure 86). The prevalence of overall stunting in the 6-17 and 18-29-month age groups (34.6% and 36.3%, respectively) was significantly higher than that of the 42-53 month age group (15.0%). While more males (35.2%) appeared to be stunted compared to females (24.3%), this was not significant. At a district level, the overall prevalence of stunting was highest in the uThukela District (55.8%); however this was not significantly different compared to other districts. King Cetshwayo, however, had a significantly higher prevalence (42.1%) of overall stunting compared to 17.7% in uMkhanyakude.

When disaggregating by severe and moderate stunting, no significant differences were recorded for moderate stunting between age groups, gender and districts.

For severe stunting however, children aged <6 months and those aged 6-17 months had a significantly higher prevalence (22.1% and 18.4%, respectively), compared to those aged 42–53 months (7.3%) (Table 55 and Figure 87). There were no significant differences between gender for severe stunting. Generally, it seems as if a slightly larger proportion of both females and males (13.9% and 18.3%, respectively) were severely stunted compared to those who were moderately stunted (10.3% and 16.9%, respectively). At a district level, there was a significantly higher prevalence of severe stunting in uThukela District (48.7%), compared to the uMkhanyakude (9.8%), uMzinyathi (14.2%), and Zululand (7.8%) districts.

Table 56: The prevalence of Stunting in children under 5 years by age, sex, and district in KwaZulu-Natal

	No stunting HAZ>=-2		All stunting HAZ<-2		Moderate stunting HAZ<-2 and >=-3		Severe stunting HAZ<-3		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age (months)									
<6	69.8	[51.8-83.2]	30.2	[16.8-48.2]	8.1	[3.2-19.0]	22.1	[11.8-37.7]	162
6-17	65.4	[56.1-73.6]	34.6	[26.4-43.9]	16.2	[9.8-25.6]	18.4	[12.9-25.5]	463
18-29	63.7	[51.7-74.2]	36.3	[25.8-48.3]	17.2	[11.8-24.5]	19.0	[9.8-33.7]	424
30-41	71.1	[61.8-78.8]	28.9	[21.2-38.2]	13.8	[8.8-21.0]	15.1	[9.4-23.5]	399
42-53	85.0	[78.6-89.7]	15.0	[10.3-21.4]	7.7	[4.4-13.2]	7.3	[4.7-11.2]	351
54-59	80.1	[65.0-89.8]	19.9	[10.2-35.0]	14.1	[6.6-27.6]	5.7	[1.3-21.4]	102
Gender									
Female	75.7	[68.8-81.5]	24.3	[18.5-31.2]	10.3	[7.6-13.9]	13.9	[8.8-21.3]	948
Male	64.8	[57.8-71.2]	35.2	[28.8-42.2]	16.9	[12.3-22.8]	18.3	[14.0-23.6]	953
District									
Amajuba	64.7	[45.7-80.0]	35.3	[20.0-54.3]	17.1	[8.5-31.4]	18.2	[7.8-36.8]	75
Harry Gwala	60.6	[46.2-73.3]	39.4	[26.7-53.8]	12.5	[6.9-21.4]	27.0	[15.2-43.2]	141
King Cetshwayo	57.9	[47.7-67.5]	42.1	[32.5-52.3]	17.6	[11.6-25.6]	24.5	[16.1-35.5]	213
UMgungundlovu	72.3	[61.1-81.2]	27.7	[18.8-38.9]	12.1	[6.4-21.5]	15.7	[9.3-25.1]	152
Ugu	61.3	[51.4-70.2]	38.7	[29.8-48.6]	18.8	[11.8-28.7]	19.9	[13.6-28.2]	218
Umkhanyakude	82.3	[69.8-90.3]	17.7	[9.7-30.2]	7.9	[3.4-17.2]	9.8	[4.3-21.1]	120
Umzinyathi	72.7	[64.4-79.7]	27.3	[20.3-35.6]	13.1	[8.3-20.1]	14.2	[9.3-21.1]	275
Uthukela	44.2	[21.2-69.9]	55.8	[30.1-78.8]	7.1	[3.0-15.7]	48.7	[23.0-75.1]	60
Zululand	77.6	[67.2-85.4]	22.4	[14.6-32.8]	14.6	[8.5-23.9]	7.8	[3.8-15.2]	252
eThekwini	74.2	[62.6-83.2]	25.8	[16.8-37.4]	11.4	[6.2-20.1]	14.4	[7.5-25.7]	164
iLembe	64.3	[54.0-73.4]	35.7	[26.6-46.0]	19.1	[12.3-28.5]	16.6	[10.0-26.3]	231
Total	**70.2**	**[65.5-74.6]**	**29.8**	**[25.4-34.5]**	**13.6**	**[10.8-17.0]**	**16.1**	**[12.7-20.3]**	**1,901**

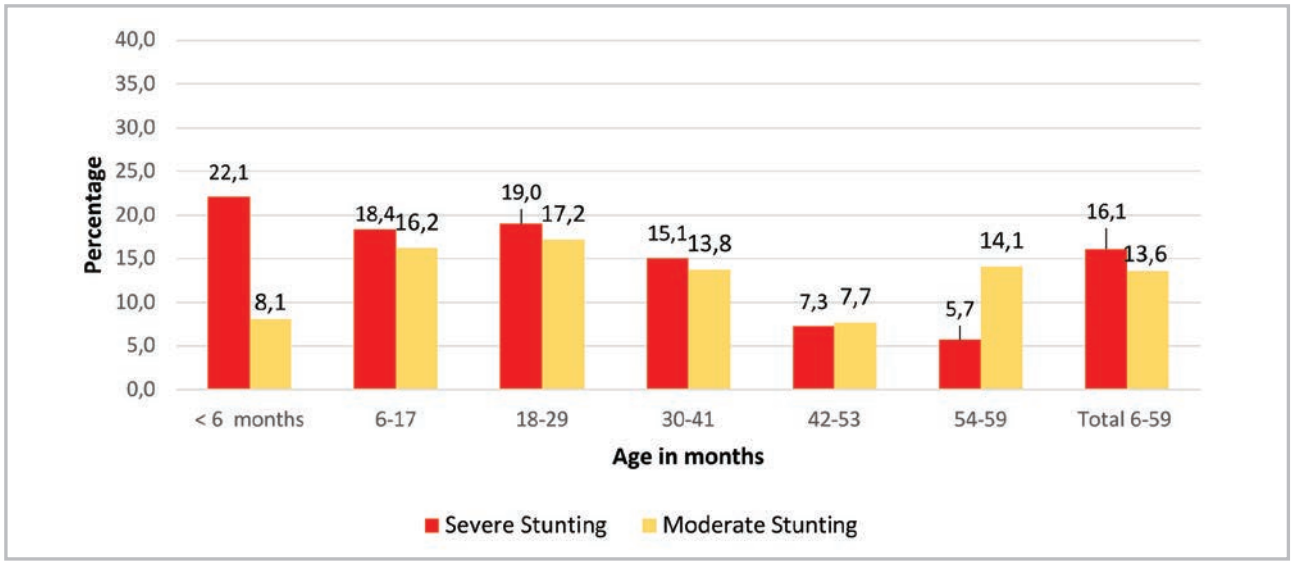


Figure 86: The prevalence of Stunting in children under 5 years by age group in KwaZulu-Natal

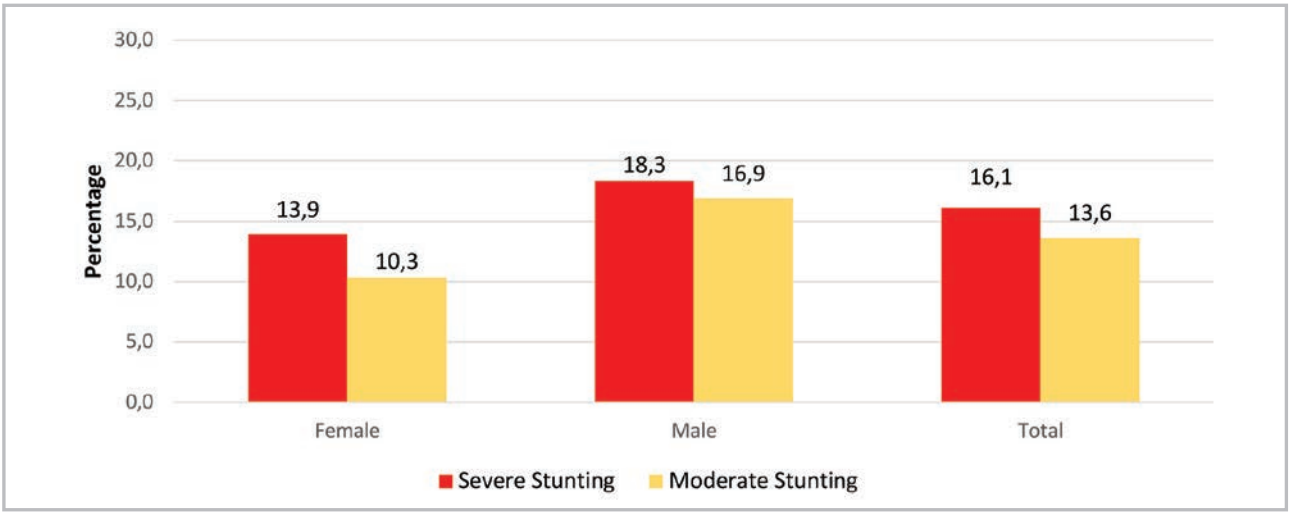


Figure 87: *The prevalence of Stunting in children under 5 years by gender in KwaZulu Nata*

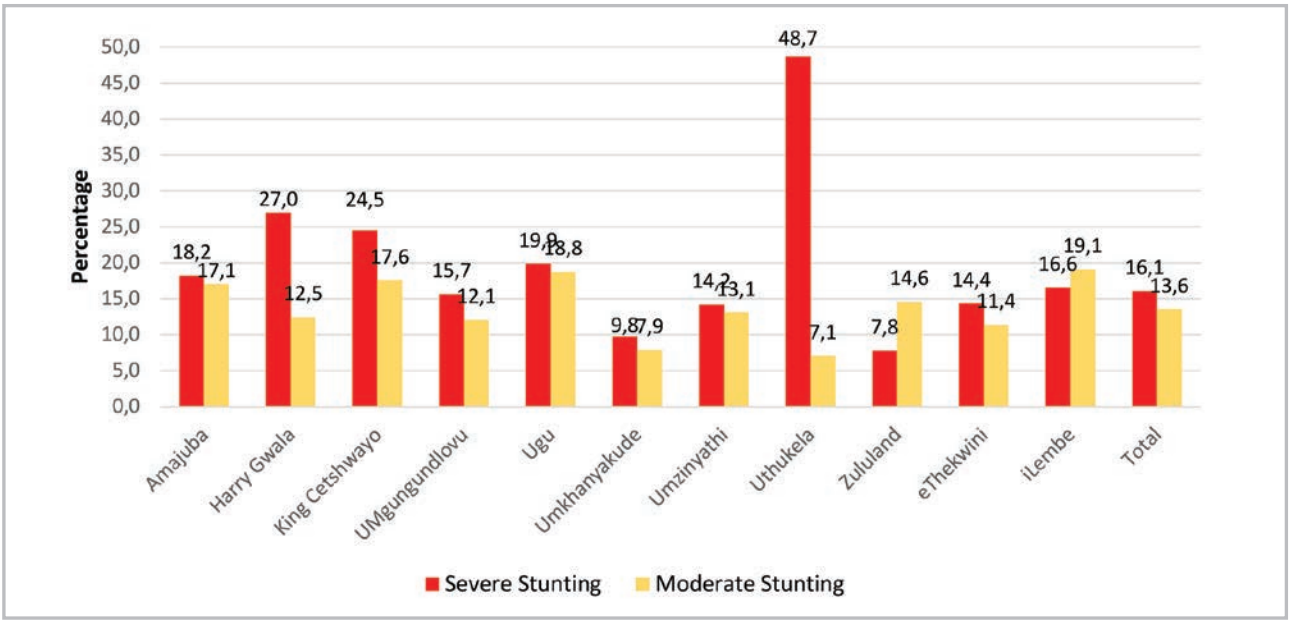


Figure 88: *The prevalence of Stunting in children under 5 years by district in KwaZulu-Natal*

8.1.3.2 Wasting

The overall prevalence of wasting for children under the age of 5 years (n=1856) was 3.1%, of which 1.4% was severe and 1.7% was moderate wasting (Table 57 and Figure 89). For overall wasting, across all age groups, the prevalence ranged from 7.0% in children aged <6 months to 2.0% in children 54-59 months. The differences between these age groups were, however, not significant. There were also no significant differences in overall wasting between genders: males (2.5%), and females (3.7%). At a district level, overall, wasting ranged from 0.9% in UMgungundlovu to 9.0% in Umkhanyakude District, with Umkhanyakude District having a significantly higher prevalence of overall wasting (9.0%) compared to UMgungundlovu (0.9%) and eThekwini (1.2%) districts (Table 56 and Figure 90).

The prevalence of moderate wasting was highest in children aged <6 months (2.9%), and lowest in the age groups 54-59months (0.8%). However, this difference was not significant (Table 56 and Figure 91). While females had a slightly higher prevalence of moderate wasting (2.0%) than males (1.3%), there were no significant differences between genders. There were however differences at a district level, where iLembe had a significantly higher prevalence of moderate wasting (6.3%) compared to Amajuba (0.3%), uMgungundlovu (0.1%) and uThukela (0.0%). uMkhanyakude also had a significantly higher prevalence (3.9%) compared to uMgungundlovu (0.1%).

Comparisons for severe wasting across gender and age groups did not reveal any significant differences. At a district level, there was a significantly higher prevalence of severe wasting in uThukela (7.6%) as compared to Zululand (0.2%). uMkhanyakude also had a significantly higher prevalence of severe wasting (5.1%) compared to Zululand and eThekwini (0.3%) (Table 57).

Table 57: The prevalence of Wasting in children under 5 years by age, sex, and district in KwaZulu-Natal

	No wasting WHZ>=-2		All wasting WHZ<-2		Moderate wasting WHZ<-2 and >=-3		Severe wasting WHZ<-3		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age (months)									
<6	93.0	[84.6-97.0]	7.0	[3.0-15.4]	2.9	[1.1-7.2]	4.1	[1.3-12.4]	155
6-17	97.3	[94.4-98.7]	2.7	[1.3-5.6]	1.2	[0.3-4.4]	1.6	[0.7-3.4]	451
18-29	97.2	[93.4-98.8]	2.8	[1.2-6.6]	2.2	[0.7-6.3]	0.6	[0.2-1.5]	415
30-41	97.7	[95.2-99.0]	2.3	[1.0-4.8]	1.7	[0.6-4.4]	0.6	[0.2-1.6]	391
42-53	97.5	[93.9-99.0]	2.5	[1.0-6.1]	0.9	[0.2-4.7]	1.6	[0.6-4.5]	346
54-59	98.0	[94.9-99.2]	2.0	[0.8-5.1]	0.8	[0.2-2.8]	1.2	[0.3-4.4]	98
Gender									
Female	96.3	[94.0-97.8]	3.7	[2.2-6.0]	2.0	[1.0-4.1]	1.6	[0.8-3.3]	921
Male	97.5	[96.1-98.5]	2.5	[1.5-3.9]	1.3	[0.6-2.5]	1.2	[0.7-2.2]	935
District									
Amajuba	97.8	[90.6-99.5]	2.2	[0.5-9.4]	0.3	[0.0-2.1]	1.9	[0.3-9.8]	71
Harry Gwala	97.9	[94.8-99.2]	2.1	[0.8-5.2]	1.3	[0.4-4.0]	0.8	[0.2-3.5]	138
King Cetshwayo	93.9	[87.6-97.2]	6.1	[2.8-12.4]	3.4	[1.1-9.5]	2.7	[0.9-7.4]	207
UMgungundlovu	99.1	[97.4-99.7]	0.9	[0.3-2.6]	0.1	[0.0-0.6]	0.8	[0.2-2.6]	151
Ugu	95.1	[86.1-98.4]	4.9	[1.6-13.9]	0.7	[0.1-4.7]	4.2	[1.2-13.7]	212
Umkhanyakude	91.0	[82.9-95.5]	9.0	[4.5-17.1]	3.9	[1.3-11.2]	5.1	[2.2-11.1]	113
Umzinyathi	96.7	[90.9-98.9]	3.3	[1.1-9.1]	1.6	[0.3-9.3]	1.6	[0.5-5.1]	272
Uthukela	92.4	[64.2-98.8]	7.6	[1.2-35.8]	0.0		7.6	[1.2-35.8]	59
Zululand	98.2	[93.7-99.5]	1.8	[0.5-6.3]	1.6	[0.4-6.4]	0.2	[0.1-0.9]	247
eThekwini	98.8	[96.4-99.6]	1.2	[0.4-3.6]	0.9	[0.3-3.3]	0.3	[0.0-2.1]	163
iLembe	92.5	[82.7-96.9]	7.5	[3.1-17.3]	6.3	[2.2-16.8]	1.2	[0.4-3.4]	223
Total	**96.9**	**[95.6-97.9]**	**3.1**	**[2.1-4.4]**	**1.7**	**[1.0-2.7]**	**1.4**	**[0.9-2.3]**	**1,856**

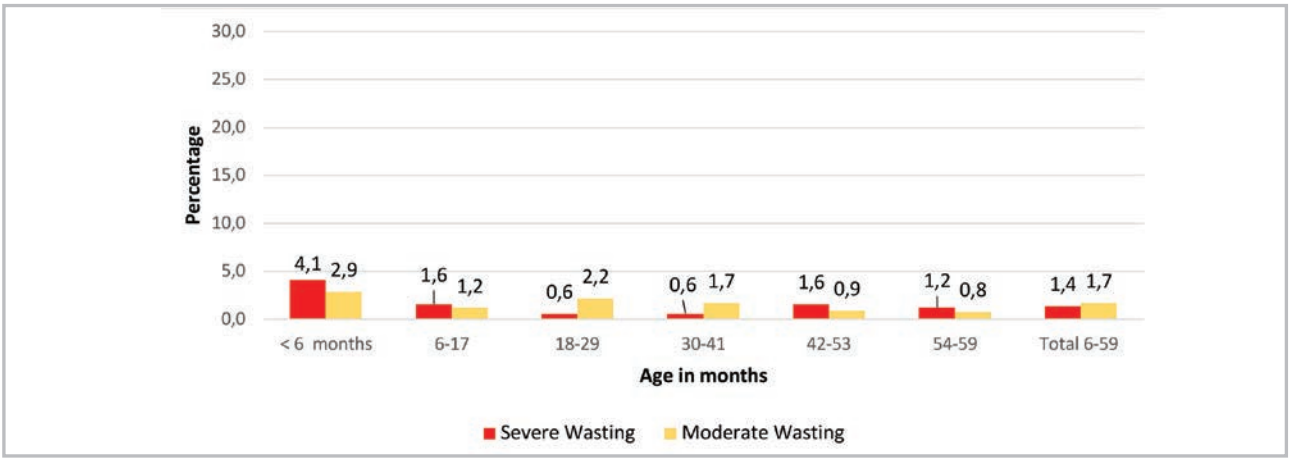


Figure 89: The prevalence of Wasting in children under 5 years by age group in KwaZulu-Natal

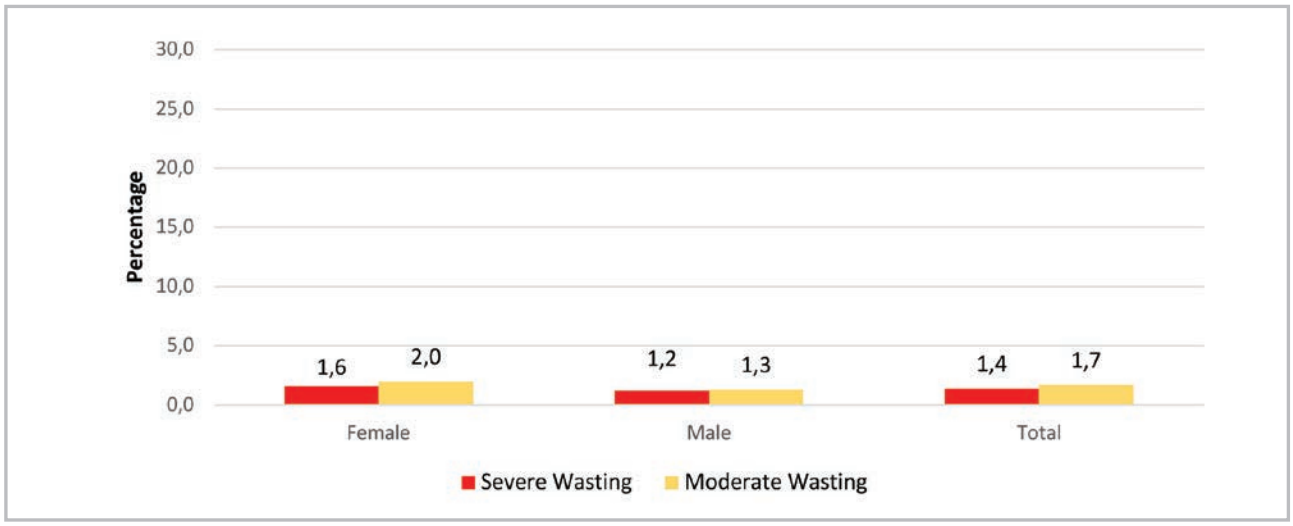


Figure 90: *The prevalence of Wasting in children under 5 years by gender in KwaZulu-Natal*

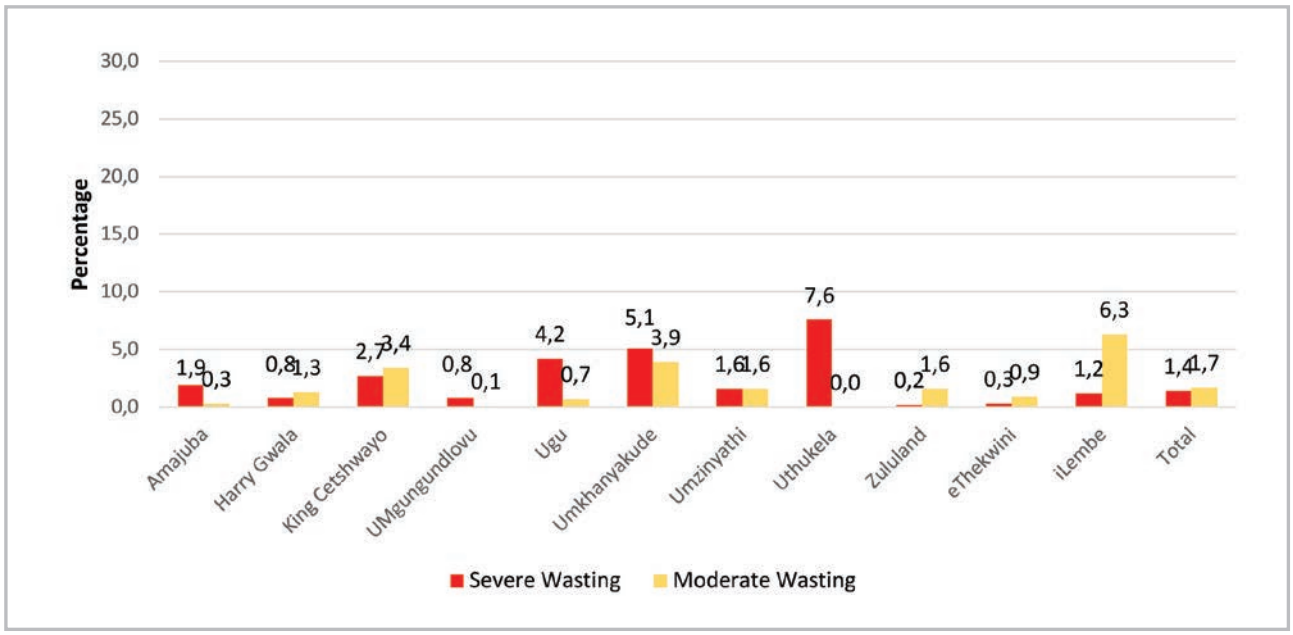


Figure 91: *The prevalence of Wasting in children under 5 years by district in KwaZulu-Natal*

8.1.3.3 Underweight

The overall prevalence of underweight for children under the age of 5 years (n=1950) was 4.8%, of which 1.8% was severe and 3.0% was moderate underweight (Table 58 and Figure 92). The prevalence of overall, moderate, and severe underweight was highest in children aged 30-41 months at 10.7%, 7.5% and 3.2%, respectively. There were significant differences in the overall and moderate categories of underweight across age groups. For overall underweight, the 30-41 month age group (10.7%) had a significantly higher prevalence compared to the 18-29 months (2.4%) and the 42-53 months (2.4%) age groups, while for moderate underweight, the prevalence was significantly higher in 30-41 months age group (7.5%) compared to the 42-53 months age group (1.2%).

Comparisons between gender showed that males had a slightly higher prevalence of overall and moderate underweight (5.0% and 3.7%) than that of females (4.5% and 2.3%, respectively) (Table 57 and Figure 93). For severe underweight, females (2.2%) had a slightly higher prevalence of compared to males (1.3%). However, there were no significant differences between genders in all categories of underweight.

At a district level, the prevalence of overall underweight ranged from 2.0% in Zululand District to 14.7% in Harry Gwala District, though there were no significant differences between them (Table 56 and Figure 94). Similarly, no significant differences were observed at a district level for moderate underweight. However,

Harry Gwala District had a significantly higher prevalence of severe underweight (12.5%) compared to the King Cetshwayo (0.5%), UMgungundlovu (1.1%), Zululand (0.5%), and the iLembe districts (1.4%).

Table 58: The prevalence of Underweight in children under 5 years by age, sex, and district in KwaZulu-Natal

	Not underweight WAZ>=-2		All Underweight WAZ<-2		Moderate underweight WAZ<-2 and >=-3		Severe underweight WAZ<-3		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age (months)									
<6	94.7	[87.8-97.8]	5.3	[2.2-12.2]	2.2	[0.9-5.2]	3.1	[0.9-10.5]	169
6-17	96.5	[92.6-98.4]	3.5	[1.6-7.4]	1.8	[0.6-5.2]	1.7	[0.5-5.0]	469
18-29	97.6	[95.7-98.7]	2.4	[1.3-4.3]	1.8	[0.8-3.7]	0.6	[0.2-1.5]	430
30-41	89.3	[80.7-94.4]	10.7	[5.6-19.3]	7.5	[3.3-16.0]	3.2	[1.1-8.7]	401
42-53	97.6	[94.9-98.9]	2.4	[1.1-5.1]	1.2	[0.5-2.6]	1.2	[0.3-4.3]	362
54-59	95.2	[82.8-98.8]	4.8	[1.2-17.2]	4.1	[0.9-17.8]	0.7	[0.1-3.5]	119
Gender									
Female	95.5	[92.3-97.4]	4.5	[2.6-7.7]	2.3	[1.0-5.0]	2.2	[1.1-4.6]	963
Male	95.0	[91.9-96.9]	5.0	[3.1-8.1]	3.7	[2.0-6.6]	1.3	[0.6-2.8]	987
District									
Amajuba	96.1	[89.7-98.6]	3.9	[1.4-10.3]	2.4	[0.8-6.8]	1.5	[0.2-9.9]	77
Harry Gwala	85.3	[65.0-94.8]	14.7	[5.2-35.0]	2.3	[1.0-5.1]	12.5	[3.6-34.9]	146
King Cetshwayo	95.9	[91.2-98.1]	4.1	[1.9-8.8]	3.6	[1.5-8.4]	0.5	[0.1-2.0]	218
UMgungundlovu	94.4	[86.3-97.8]	5.6	[2.2-13.7]	4.4	[1.4-13.4]	1.1	[0.4-3.0]	156
Ugu	93.6	[85.9-97.2]	6.4	[2.8-14.1]	2.9	[1.2-6.7]	3.5	[0.9-12.9]	218
Umkhanyakude	93.0	[82.2-97.4]	7.0	[2.6-17.8]	5.3	[1.6-16.5]	1.7	[0.4-7.9]	126
Umzinyathi	95.4	[91.8-97.4]	4.6	[2.6-8.2]	2.7	[1.3-5.4]	2.0	[0.8-4.9]	281
Uthukela	97.4	[90.6-99.3]	2.6	[0.7-9.4]	2.1	[0.4-9.4]	0.5	[0.1-3.7]	64
Zululand	98.0	[94.8-99.2]	2.0	[0.8-5.2]	1.6	[0.5-4.9]	0.5	[0.1-2.1]	259
eThekwini	95.3	[89.6-97.9]	4.7	[2.1-10.4]	3.1	[1.0-8.8]	1.6	[0.5-5.2]	166
iLembe	96.9	[94.6-98.3]	3.1	[1.7-5.4]	1.7	[0.8-3.5]	1.4	[0.5-3.3]	239
Total	**95.2**	**[93.2-96.7]**	**4.8**	**[3.3-6.8]**	**3.0**	**[1.8-4.8]**	**1.8**	**[1.0-3.1]**	**1,950**

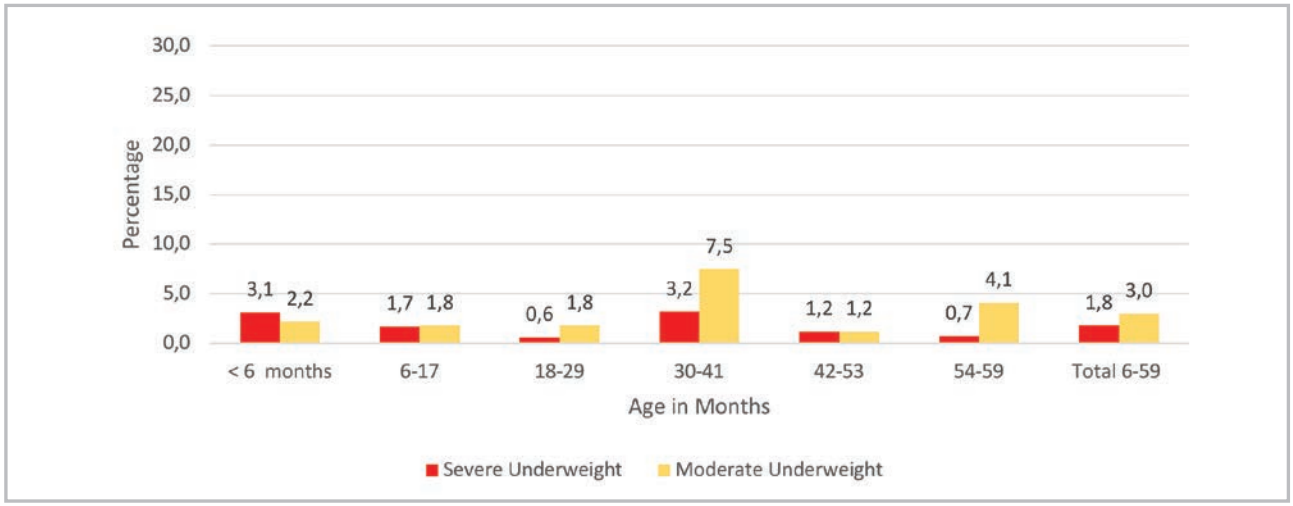


Figure 92: The prevalence of Underweight in children under 5 years by age group in KwaZulu-Natal

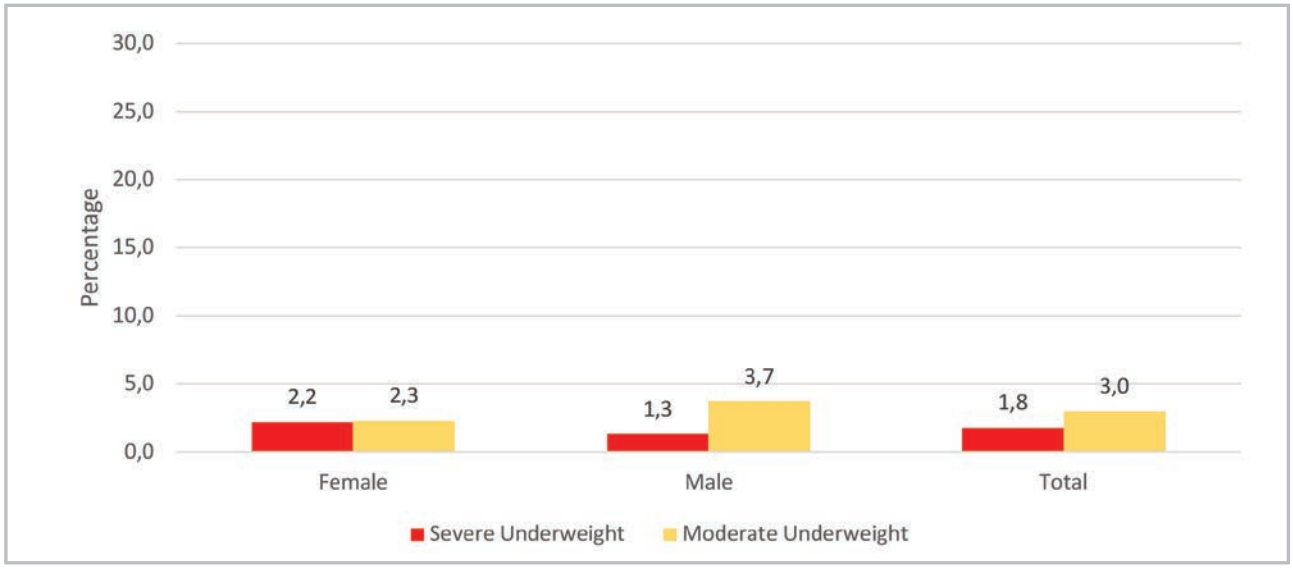


Figure 93: *The prevalence of Underweight in children under 5 years by gender in KwaZulu-Natal*

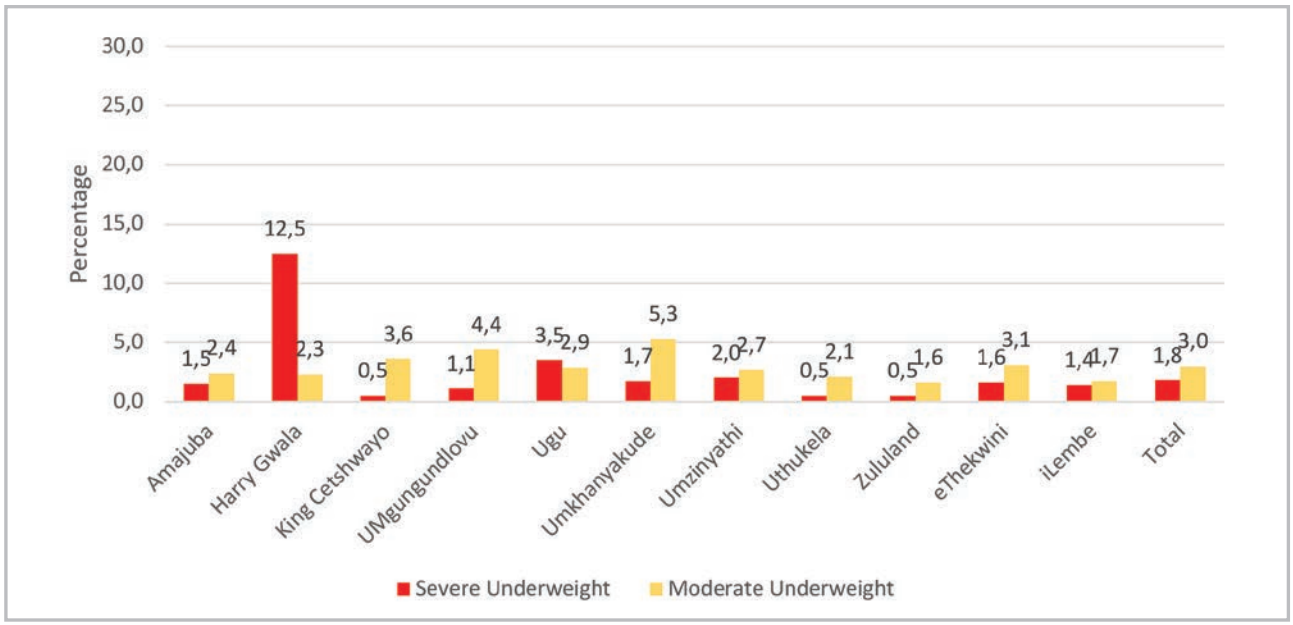


Figure 94: *The prevalence of Underweight in children under 5 years by district in KwaZulu-Natal*

8.1.3.4 Overweight

The prevalence of overall overweight for children under the age of 5 years (n=1856) was 28.4%, of which 14.3% was severe and 14.2% was moderate overweight (Table 59 and Figure 95). The prevalence of overall overweight appeared to decrease with age, with those aged 6-17 months (41.8%) having a significantly higher prevalence than those aged 30-41 months (16.5%), 42-53 months (15.1%) and 54-59 months (10.4%). Similarly, those aged 6-17 months (22.7%) had a significantly higher prevalence of moderate overweight compared to those aged 30-41 months (7.1%) and those aged 42-53 months (7.7%). For severe overweight, the <6 months (19.8%) and 6-17 months (19.1%) age groups had a significantly higher prevalence of severe overweight as compared to those aged 54-59 months (0.3%). The 6-17 months age groups (19.1%) also had a significantly higher prevalence than the 42-53 months age group (7.4%).

Males had a similar prevalence of overall overweight (28.3%) compared to females (28.6%); however, males had a higher prevalence of moderate overweight, while females had a higher prevalence of severe overweight (Table 59 and Figure 96). There were, however, no significant differences between genders across all categories of overweight.

At a district level, uThukela District reported the highest overall prevalence of overweight (51.9%), compared to the other districts - but this was not significant. However, King Cetshwayo reported a significantly higher overall prevalence of overweight (44.8%) compared to 4 other districts, namely Harry Gwala, uMzinyathi, Zululand, and iLembe (ranging from 17.0%-1.9%). There were no significant differences for moderate overweight at a district level. For severe overweight, the uThukela District (44.1%) and King Cetshwayo (28.1%) had a significantly higher prevalence of severe overweight compared to those in the Harry Gwala (6.6%), uMgungundlovu (7.6%), uMzinyathi (6.1%), and iLembe (10.3%) districts (Table 60 and Figure 97).

Table 59: The prevalence of overweight in children under 5 years by age, sex, and district in KwaZulu-Natal

	Not overweight WHZ<2		All overweight WHZ>=2		Moderate overweight WHZ>=2 and <3		Severe overweight WHZ>=3		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	n
Age (months)									
<6	67.5	[48.5-82.0]	32.5	[18.0-51.5]	12.8	[6.4-24.0]	19.8	[10.0-35.5]	155
6-17	58.2	[48.5-67.3]	41.8	[32.7-51.5]	22.7	[14.6-33.4]	19.1	[13.0-27.1]	451
18-29	66.6	[54.0-77.3]	33.4	[22.7-46.0]	16.2	[10.6-23.8]	17.2	[8.0-33.0]	415
30-41	83.5	[76.4-88.9]	16.5	[11.1-23.6]	7.1	[4.6-11.0]	9.3	[5.1-16.4]	391
42-53	84.9	[78.1-89.8]	15.1	[10.2-21.9]	7.7	[4.4-13.3]	7.4	[4.5-12.1]	346
54-59	89.6	[74.1-96.3]	10.4	[3.7-25.9]	10.1	[3.5-25.8]	0.3	[0.1-1.3]	98
Gender									
Female	71.4	[63.9-77.9]	28.6	[22.1-36.1]	12.3	[8.6-17.4]	16.3	[10.7-24.0]	921
Male	71.7	[65.0-77.6]	28.3	[22.4-35.0]	16.0	[11.4-22.0]	12.3	[8.9-16.7]	935
District									
Amajuba	75.7	[58.4-87.4]	24.3	[12.6-41.6]	18.3	[8.9-34.0]	6.0	[1.6-20.4]	71
Harry Gwala	83.0	[73.2-89.7]	17.0	[10.3-26.8]	10.4	[5.5-19.0]	6.6	[3.0-13.9]	138
King Cetshwayo	55.2	[44.8-65.1]	44.8	[34.9-55.2]	16.9	[11.5-24.0]	28.0	[18.4-40.0]	207
UMgungundlovu	75.1	[63.4-84.1]	24.9	[15.9-36.6]	17.2	[9.4-29.4]	7.6	[4.2-13.4]	151
Ugu	65.5	[55.5-74.3]	34.5	[25.7-44.5]	13.7	[9.0-20.2]	20.8	[13.1-31.3]	212
Umkhanyakude	77.1	[61.5-87.6]	22.9	[12.4-38.5]	10.9	[4.9-22.5]	12.0	[4.6-27.8]	113
Umzinyathi	78.1	[69.3-85.0]	21.9	[15.0-30.7]	15.8	[9.9-24.3]	6.1	[3.0-11.8]	272
Uthukela	48.1	[23.1-74.1]	51.9	[25.9-76.9]	7.8	[3.2-17.5]	44.1	[18.4-73.4]	59
Zululand	79.7	[70.6-86.5]	20.3	[13.5-29.4]	9.9	[6.0-15.9]	10.5	[5.7-18.5]	247
eThekwini	70.0	[58.1-79.7]	30.0	[20.3-41.9]	15.3	[8.9-25.1]	14.7	[7.7-26.1]	163
iLembe	79.3	[71.5-85.5]	20.7	[14.5-28.5]	10.4	[6.3-16.6]	10.3	[6.1-16.8]	223
Total	**71.6**	**[66.6-76.0]**	**28.4**	**[24.0-33.4]**	**14.2**	**[11.1-17.9]**	**14.3**	**[10.8-18.6]**	**1,856**

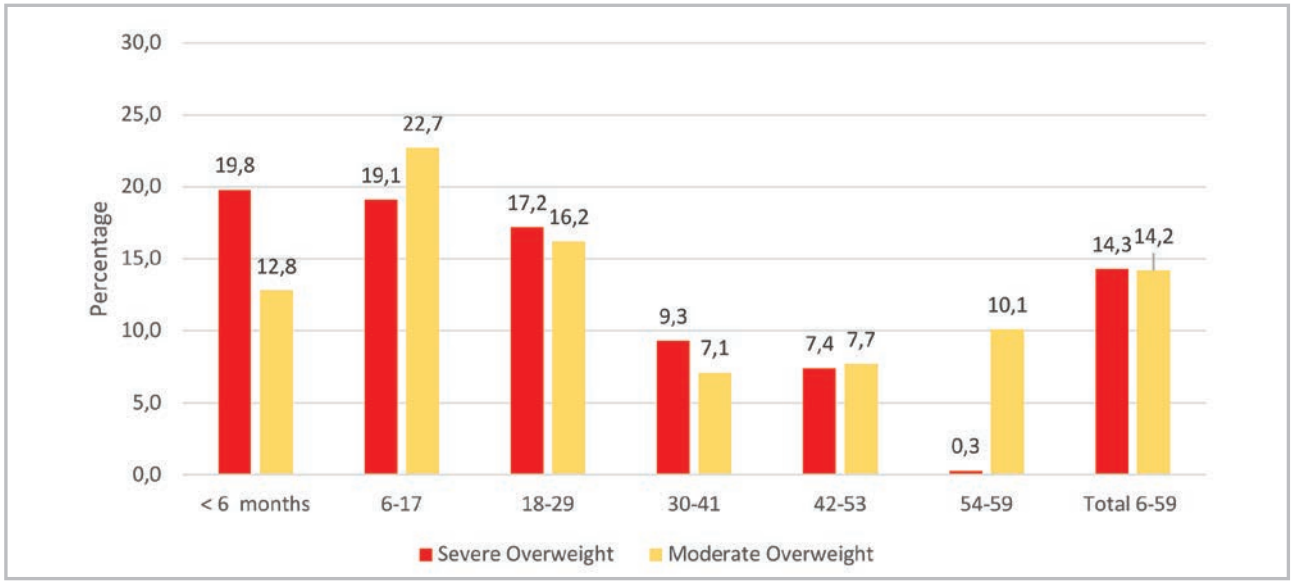


Figure 95: *The prevalence of Overweight in children under 5 years by age group in KwaZulu-Natal*

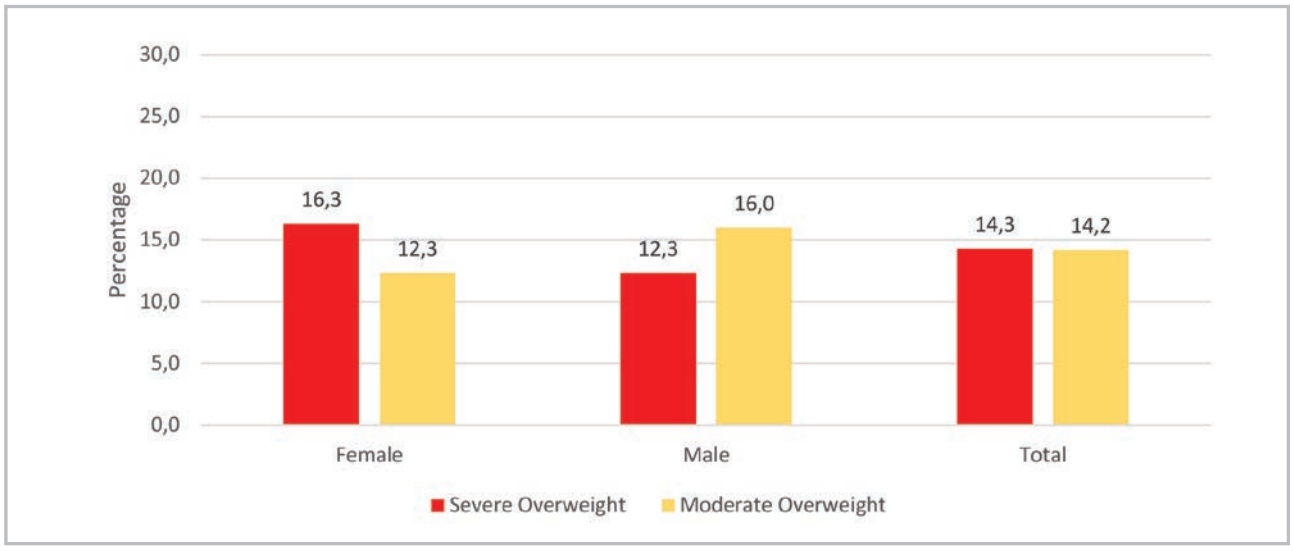


Figure 96: *The prevalence of Overweight in children under 5 years by gender in KwaZulu-Natal*

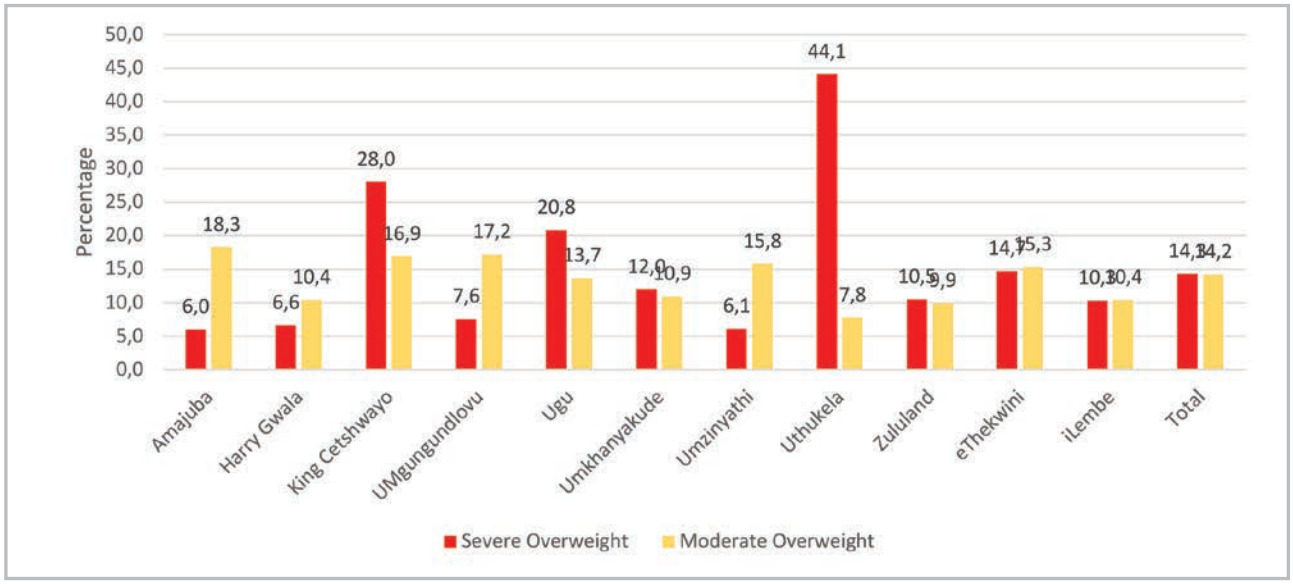


Figure 97: *The prevalence of Overweight in children under 5 years by district in KwaZulu-Natal*

8.1.4 Anthropometry (18 years and older)

8.1.4.1 Body Mass Index (BMI)

The mean BMI for adults aged 18 years and older (n=7428) in KwaZulu-Natal Province was 28.7kg/m^2. This was significantly different between males (24.5 kg/m^2; 95% CI 24.0-25.0) and females (30.8 kg/m^2; 95% CI 30.2-31.4). There were also significant differences in mean BMI between individuals of different age groups, with those aged 18-24 years having a significantly lower mean BMI (25.0 kg/m^2) than those aged 25 years and older (range 28.8-32.4 kg/m^2). Furthermore, those aged 25-34 years, also had a significantly lower mean BMI (28.8 kg/m^2) compared to those aged 45 years and older (range: 31.2-32.4 kg/m^2). There were no significant differences in mean BMI at a district level (range: 27.0-29.70 kg/m^2).

Overall, 62.0% were classified as either overweight (25.1%) or obese (36.9%). About one third (33.8%) were classified as normal weight, and 4.2% were classified as underweight (Figure 98).

When disaggregating by gender (Females n=5195, Males n=2225), the proportion of overweight appears to be slightly higher in females than in males (26.7% vs 21.6%, respectively), with no significant differences, while the prevalence of obesity was significantly higher in females than in males (48.1% vs 13.6%) (Figure 85). Overall, more than twice as many (74.8%) of females in KwaZulu-Natal Province were either overweight or obese compared to (35.2%) of males. Conversely, the prevalence of underweight in females (2.3%) was significantly lower, at nearly four times of that in males (8.1%). Similarly, the prevalence of normal weight in females was also significantly lower (22.8 %) than that of males (56.6%).

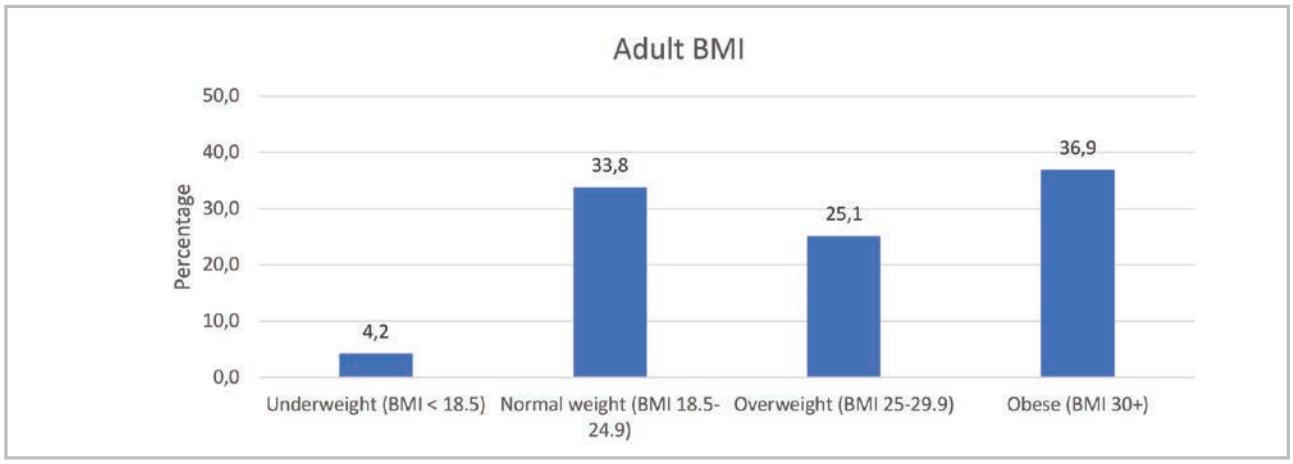


Figure 98: *Distribution of BMI in adults aged 18 years and older by districts in KwaZulu-Natal*

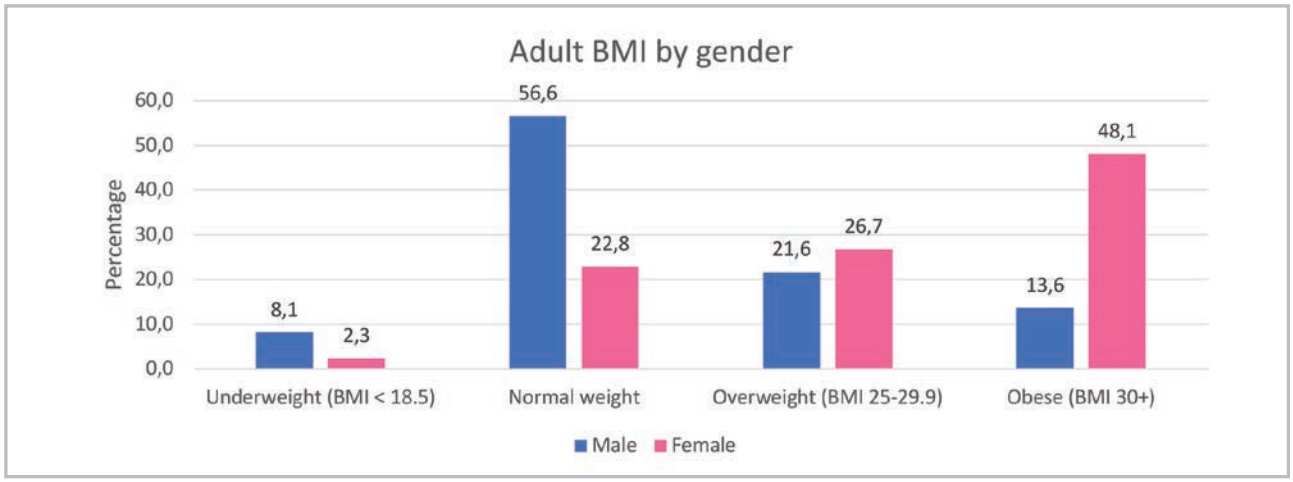


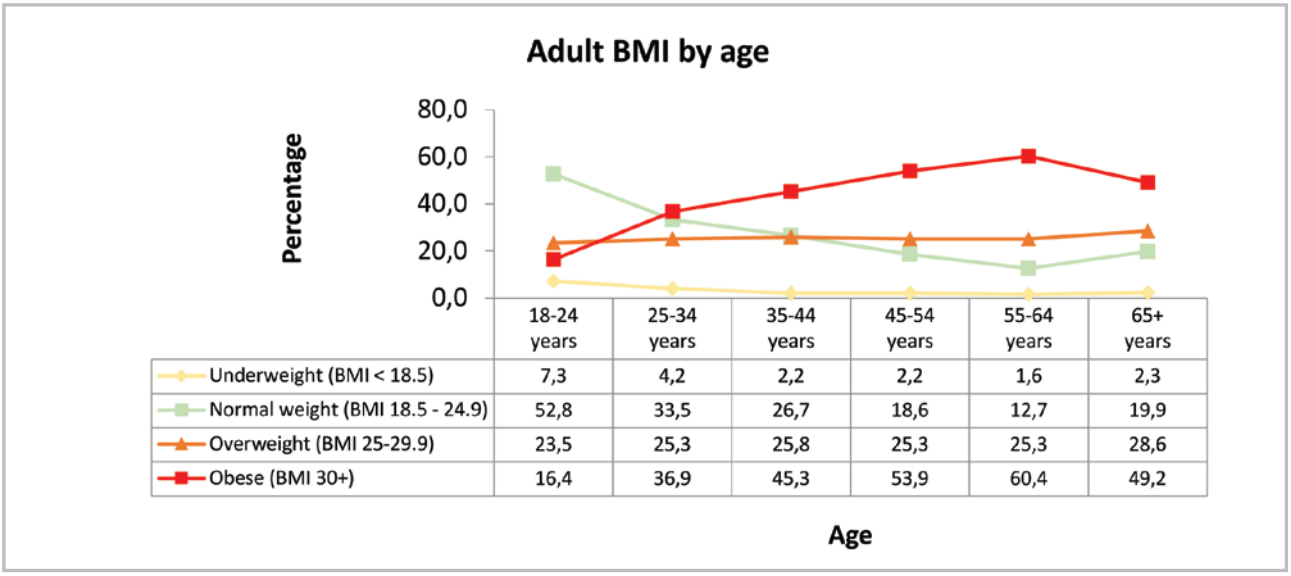
Figure 99: *Distribution of BMI in adults aged 18 years and older by gender in KwaZulu-Natal*

When disaggregating the overall adult population by age, there was no significant differences in the prevalence of overweight across all age groups. There were, however, significant differences in obesity between age groups, where those aged 18-24 years had a significantly lower prevalence of obesity (16.4%) compared to other age groups (range: 36.9%-60.4%) (Figure 100). Furthermore, those aged 25-34 years also had a significantly lower prevalence of obesity (36.9%) compared to those aged 45 years and older (range: 49.2%-60.4%) (Figure 100). For normal weight the inverse relationship was evident, where those aged 18-24 years had a significantly higher prevalence of normal weight (52.8%) compared to those all-other age groups (range: 12.7%-33.5%) and those aged 25-34 years also had a significantly higher prevalence of normal weight (33.5%) compared to those aged 45 years and older (range: 12.7%-26.7%) (Figure 100). A similar relationship was evident for underweight where those aged 18-24 years had a significantly higher prevalence of underweight (7.3%) compared to those aged 35 years and older (range: 1.6%-2.3%).

Figure 101 compares BMI differences by age group between males and females. These figures clearly illustrate that obesity is higher in females (range 23.5%-66.8%) than males (range 6.6%-29.9%) across all age categories. There were significant differences in obesity across age categories for both males and females. In females, those aged 18-24 years had a significantly lower prevalence (23.5%) compared to all other age groups (range: 49.1%-66.8%). Furthermore, females aged 25-34 years also had a significantly lower prevalence of obesity (49.1%) compared to those aged 45-64 years (range: 62.6%-66.8%). While in males, those aged 18-24 years had a significantly lower prevalence (6.6%) compared to all those aged 45 years and older (range: 26.4%-29.9%). Furthermore, males aged 25-34 years also had a lower prevalence (12.2%) compared to all those aged 55 years and older (range: 26.6%-29.9%).

The prevalence of overweight is higher in females in the 18-44 age groups, while the males have a higher prevalence in the 45 years and older age groups. There were no significant differences in overweight across age groups in both genders.

The prevalence of underweight is lower in females (0.9%-3.4%) compared to males (1.7%-12.7%) across all age categories. While there were no significant differences in underweight across age categories for females, in males, those aged 55-64 years had a significantly lower prevalence of underweight (1.7%) compared to those aged 18-24 years (12.7%).



	18-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65+ years
Underweight (BMI < 18.5)	7,3	4,2	2,2	2,2	1,6	2,3
Normal weight (BMI 18.5 - 24.9)	52,8	33,5	26,7	18,6	12,7	19,9
Overweight (BMI 25-29.9)	23,5	25,3	25,8	25,3	25,3	28,6
Obese (BMI 30+)	16,4	36,9	45,3	53,9	60,4	49,2

Figure 100: *Distribution of BMI in adults aged 18 years and older by age categories in KwaZulu-Natal*

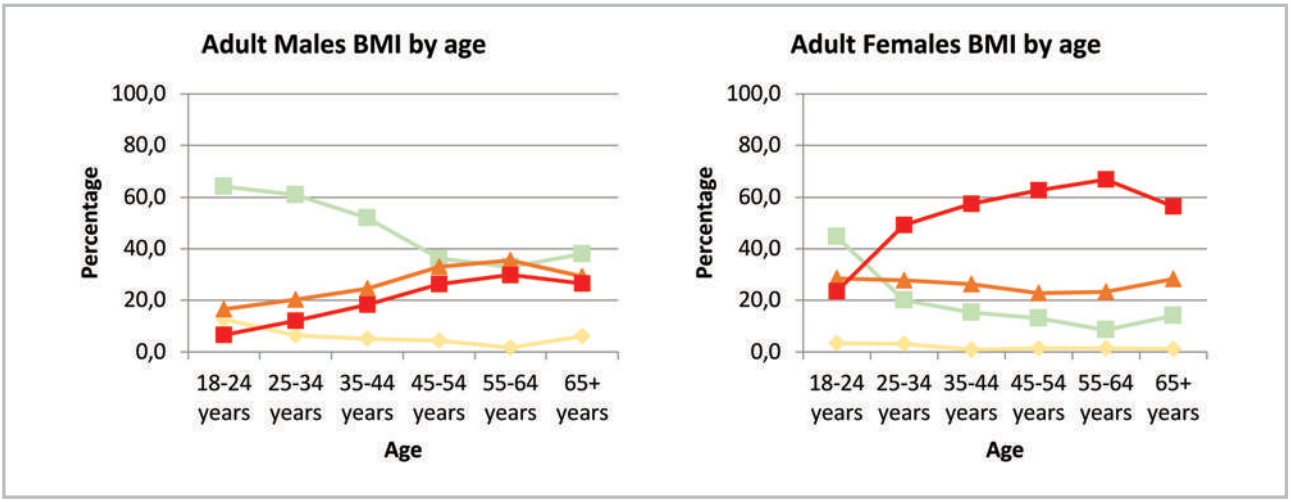


Figure 101: *Comparison of the distribution of BMI in adults aged 18 years and older by age and gender in KwaZulu-Natal*

Figure 102 shows disaggregation of BMI at a district level. While there were no significant differences in overweight at a district level, there were significant differences for both underweight and obesity at a district level. Harry Gwala District had a significantly higher prevalence of underweight (10.8%) compared to both Ugu (1.8%) and uThukela districts (1.4%), while Zululand District had a significantly higher prevalence of obesity (42.8%) compared to Amajuba District (29.8%).

Figure 103 compares district level data by gender. In both genders these figures illustrate that in all districts, females have higher rates of obesity (35.6% - 53.0%) than males (6.0%- 18.3%). The prevalence of obesity in females was significantly higher in Zululand (53.0%) compared to both Umkhanyakude (38.4%) and Amajuba (37.2%), while males in King Cetshwayo (18.3%) had a higher prevalence of obesity than those in Harry Gwala (6.0%).

While there were no significant differences in the prevalence of overweight in females at a district level, in males, those in uThukela had a significantly higher prevalence of overweight (37.8%) than those in uMgungundlovu (16.0%), Ugu (17.5%), and uMzinyathi (10.9%).

The prevalence of underweight was higher in males (range: 1.6%-15.3%) than females (range: 0.9%-9.3%) across all districts (Figure 89). While there were no significant differences in the prevalence of underweight in females at a district level, in males, those in uThukela had a significantly lower prevalence of underweight (1.6%) than those in Harry Gwala (15.3%), uMzinyathi (9.4%), and eThekwini (9.2%).

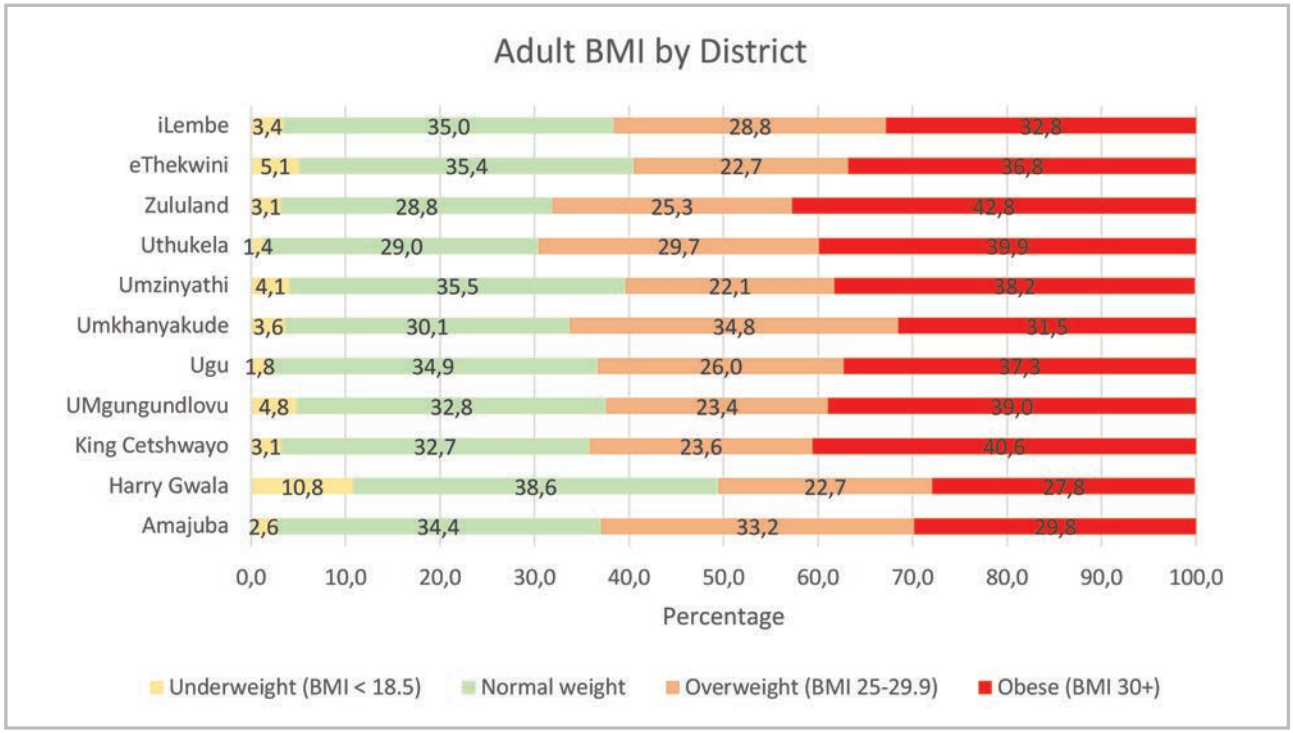


Figure 102: *Comparison of the distribution of BMI in adults aged 18 years and older by districts in KwaZulu-Natal*

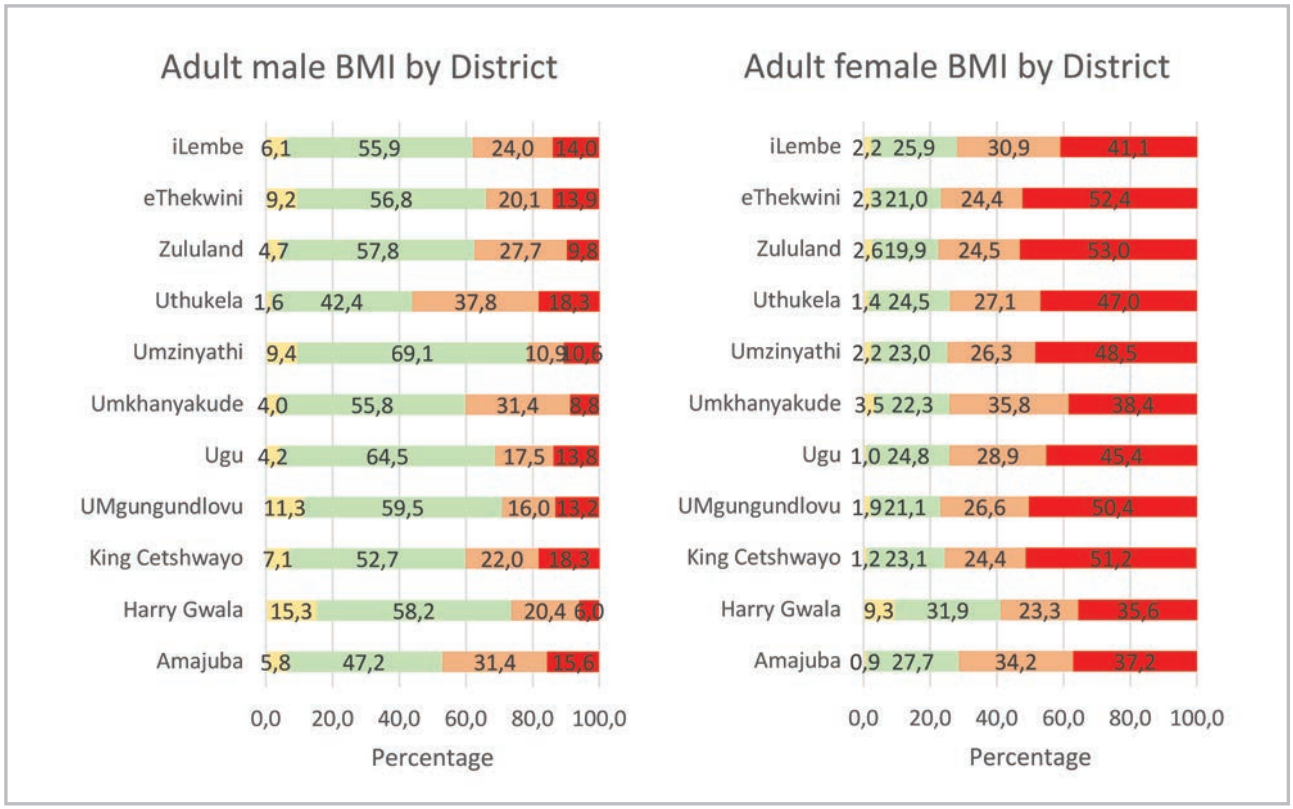


Figure 103: *Comparison of the distribution of BMI in adults aged 18 years and older by districts and gender in KwaZulu-Natal*

8.1.4.2 Waist Hip ratio

A waist hip ratio (WHR) ≥ 1 in males and ≥ 0.85 in females is indicative of increased risk of non-communicable diseases (NCDs) such as diabetes and hypertension, amongst other illnesses. The mean waist hip ratio for males (n=2238) and females (n=5235) was 0.87 (95% CI: 0.86-0.88) and 0.84 (95% CI: 0.84-0.85), respectively. However, Table 59 clearly shows that overall, a far greater proportion of females (48.9%) had a high WHR compared to only 7.7% of males.

Table 60: Waist hip ratio (WHR) of adults aged 18 years and older in KwaZulu-Natal disaggregated 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	0.84	[0.83-0.86]	2.1	[1.0-4.1]	326	0.79	[0.77-0.81]	26.8	[18.6-37.1]	534
25-34	0.86	[0.83-0.90]	9.0	[4.9-15.9]	514	0.83	[0.82-0.84]	39.6	[34.6-44.9]	1,120
35-44	0.89	[0.88-0.90]	8.0	[5.0-12.6]	479	0.86	[0.85-0.87]	56.8	[51.1-62.3]	1,046
45-54	0.92	[0.91-0.94]	14.7	[10.1-20.9]	362	0.89	[0.87-0.90]	69.4	[63.7-74.6]	864
55-64	0.94	[0.92-0.96]	21.4	[13.8-31.5]	266	0.90	[0.89-0.91]	77.1	[69.9-83.0]	857
>=65	0.94	[0.93-0.96]	22.8	[16.9-30.1]	291	0.90	[0.89-0.92]	77.5	[72.4-81.9]	814
District										
Amajuba	0.87	[0.85-0.89]	6.1	[2.6-13.6]	203	0.84	[0.82-0.85]	46.9	[40.3-53.6]	418
Harry Gwala	0.88	[0.85-0.91]	3.8	[1.9-7.3]	146	0.86	[0.85-0.88]	56.3	[47.7-64.5]	422
King Cetshwayo	0.87	[0.84-0.90]	8.0	[4.1-15.1]	210	0.84	[0.82-0.85]	45.3	[37.4-53.5]	469
UMgungund-lovu	0.89	[0.86-0.92]	17.5	[10.6-27.6]	196	0.86	[0.84-0.88]	54.5	[41.7-66.7]	478
Ugu	0.87	[0.86-0.88]	5.0	[3.2-7.7]	185	0.85	[0.84-0.87]	49.7	[42.7-56.6]	494
Umkhanyakude	0.87	[0.84-0.91]	11.3	[5.5-21.6]	151	0.82	[0.78-0.86]	31.5	[16.3-52.0]	365
Umzinyathi	0.91	[0.86-0.96]	16.3	[5.1-41.2]	225	0.88	[0.86-0.90]	61.3	[52.6-69.3]	655
Uthukela	0.87	[0.86-0.88]	2.0	[0.8-5.1]	159	0.83	[0.81-0.85]	43.6	[33.2-54.6]	454
Zululand	0.88	[0.86-0.90]	10.0	[6.0-16.2]	237	0.86	[0.84-0.87]	52.1	[44.3-59.8]	583
eThekwini	0.86	[0.84-0.88]	4.6	[2.2-9.1]	281	0.83	[0.81-0.85]	46.6	[38.1-55.4]	386
iLembe	0.88	[0.85-0.91]	13.2	[8.6-19.8]	245	0.86	[0.83-0.88]	52.9	[45.6-60.1]	511
Total	**0.87**	**[0.86-0.88]**	**7.7**	**[5.7-10.4]**	**2,238**	**0.84**	**[0.84-0.85]**	**48.9**	**[45.0-52.7]**	**5,235**

Table 60 and Figure 104 illustrate that WHR tends to increase with age in males and females, peaking in the age group 65+ years. There were significant differences between age groups in both female and males. Amongst males, those aged 65 years and older had a significantly higher prevalence of an increased WHR (22.8%) compared to those aged 18-44 years (range 2.1%-9.0%). Similar results were observed in females, where those aged 65 years and older had a significantly higher prevalence of an increased WHR (77.5%) compared to those aged 18-44 years (range 26.8%-56.8%).

At a district level, there were significant differences in the mean WHR and the proportion of those who had a high WHR among females. Females in uMzinyathi (0.83) had significantly higher mean WHR (0.88) compared to those in Amajuba, King Catshwayo, uThukela, and eThekwini (0.83-0.84), and females in uMkhanyakude

(31.5%) had significantly lower mean WHR compared to those in uMzinyathi (61.3%). While there were no significant differences in mean BMI among males, there was a significant difference in the proportion of those who had a high WHR among males at a district level. Males in uMgungundlovu had a significantly higher WHR (17.5%) compared to males in most districts (2.0%-5.0%). Males in Zululand (10.0%) and iLembe (13.2%) also had a significantly higher WHR compared to males in uThukela (2.0%). Overall, all districts indicated that a higher proportion of females have a high WHR compared to males (Table 59 and Figure 105).

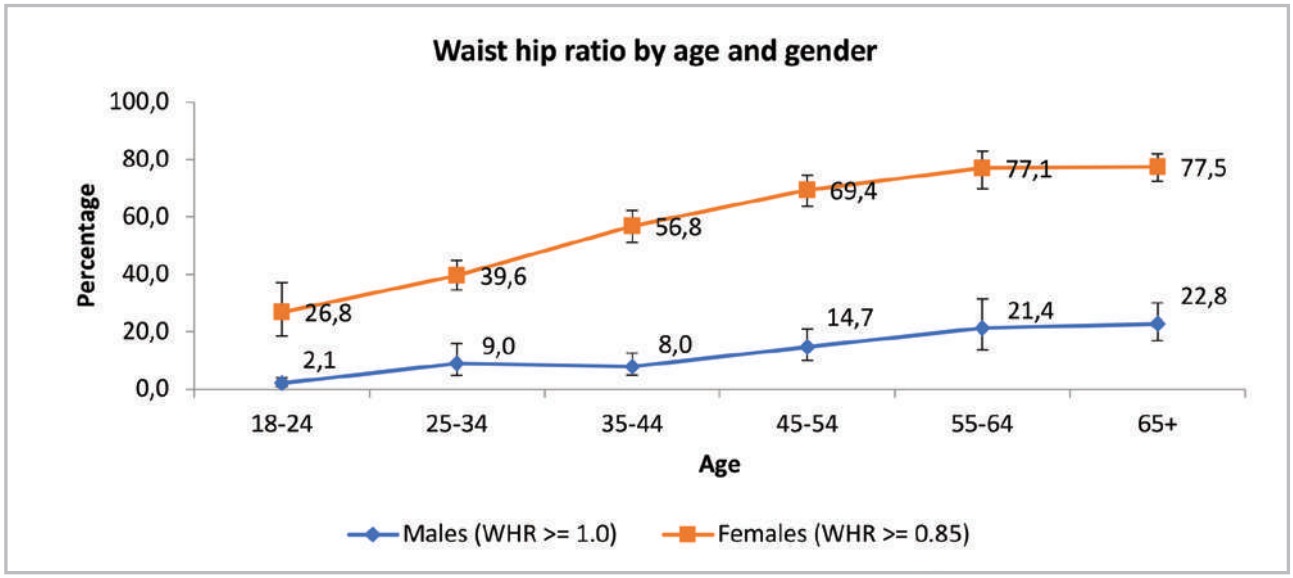


Figure 104: *Comparison of the distribution of WHR in adults aged 18 years and older by age and gender in KwaZulu-Natal Province*

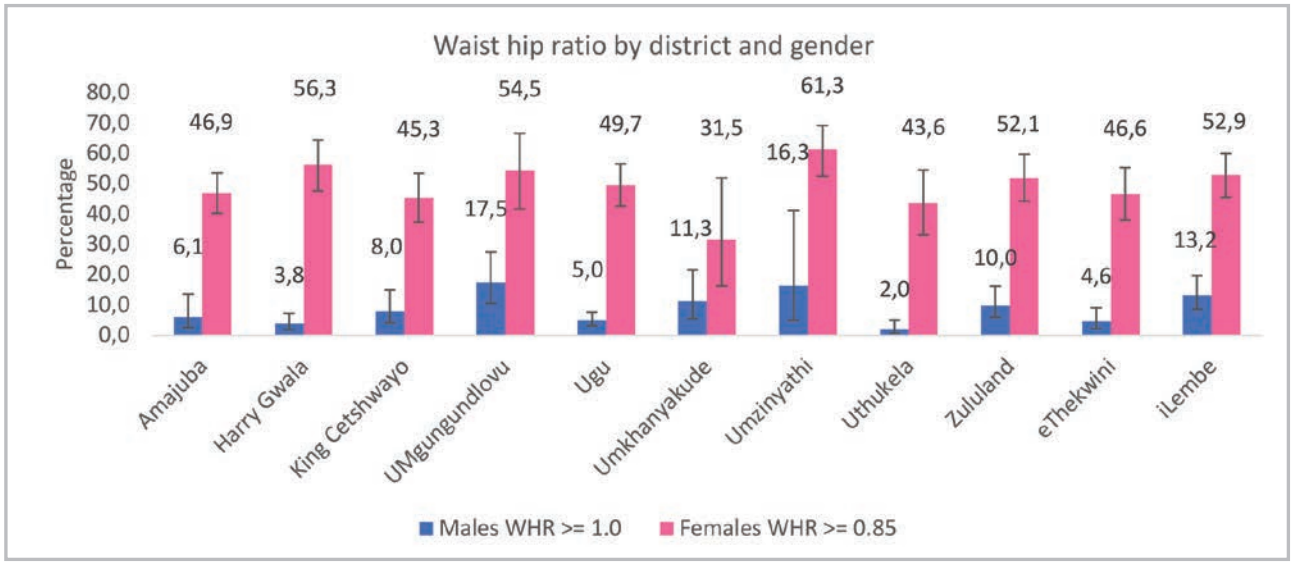


Figure 105: *Comparison of the distribution of WHR in adults aged 18 years and older by districts and gender in KwaZulu-Natal*

8.1.4.3 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 associated with dietary inadequacies (Steyn et al., 2006). The mean dietary diversity score (DDS) for children aged 0-5 years residing in KwaZulu-Natal (n=1995) was 4.16, which is indicative of an adequate dietary diversity (Table 61). Table 60 also shows that while children in five of the eleven districts have an adequate dietary diversity (DDS >4), those in the remaining six districts (Amajuba, uMgungundlovu, uMkhanyakude, uMzinyathi, uThukela, and Zululand) reported a low dietary diversity (DDS <4). District comparisons showed that eThekwini (4.53) had a significantly higher mean DDS compared to uMkhanyakude, uMzinyathi, and Zululand (range: 3.53-3.62).

Table 61: Dietary diversity scores for children aged 0-5 years in KwaZulu-Natal

	Dietary Diversity Score		Dietary Diversity Score category				
			0-3		4-9		
	Mean	95% CI	%	95% CI	%	95% CI	n
Age (months)							
0-24 months	3.55	[3.31-3.79]	47.4	[37.8-57.1]	52.6	[42.9-62.2]	786
25-60 months	4.65	[4.36-4.94]	27.3	[22.1-33.3]	72.7	[66.7-77.9]	1,209
Gender							
Male	4.16	[3.94-4.38]	37.0	[30.9-43.6]	63.0	[56.4-69.1]	1,015
Female	4.15	[3.94-4.37]	35.6	[28.8-42.9]	64.4	[57.1-71.2]	978
District							
Amajuba	3.73	[3.08-4.37]	48.0	[25.9-71.0]	52.0	[29.0-74.1]	81
Harry Gwala	4.04	[3.63-4.44]	31.0	[18.5-47.1]	69.0	[52.9-81.5]	130
King Cetshwayo	4.02	[3.67-4.37]	44.2	[33.2-55.9]	55.8	[44.1-66.8]	230
UMgungundlovu	3.90	[3.37-4.44]	34.5	[19.2-53.7]	65.5	[46.3-80.8]	152
Ugu	4.24	[3.84-4.63]	35.6	[28.0-44.0]	64.4	[56.0-72.0]	238
Umkhanyakude	3.62	[3.31-3.94]	53.6	[42.3-64.6]	46.4	[35.4-57.7]	143
Umzinyathi	3.56	[3.27-3.85]	54.8	[41.5-67.4]	45.2	[32.6-58.5]	266
Uthukela	3.68	[3.09-4.28]	36.2	[19.2-57.4]	63.8	[42.6-80.8]	64
Zululand	3.53	[3.23-3.84]	55.1	[38.7-70.4]	44.9	[29.6-61.3]	250
eThekwini	4.53	[4.27-4.80]	25.3	[18.6-33.5]	74.7	[66.5-81.4]	194
iLembe	4.38	[3.83-4.94]	37.4	[27.6-48.4]	62.6	[51.6-72.4]	247
Total	**4.16**	**[4.00-4.32]**	**36.3**	**[31.5-41.3]**	**63.7**	**[58.7-68.5]**	**1,995**

Figure 106 illustrates the proportion of the children aged 0-5 years in KwaZulu Natal Province and in the various districts who have low and acceptable DDS. Overall, 63.7% of children in KwaZulu-Natal Province reported an adequate DDS, while 36.3% have a low DDS. eThekwini had a significantly lower prevalence of children with a low DDS (25.3%) compared to uMkhanyakude, uMzinyathi, and Zululand (range: 53.6%-55.1%).

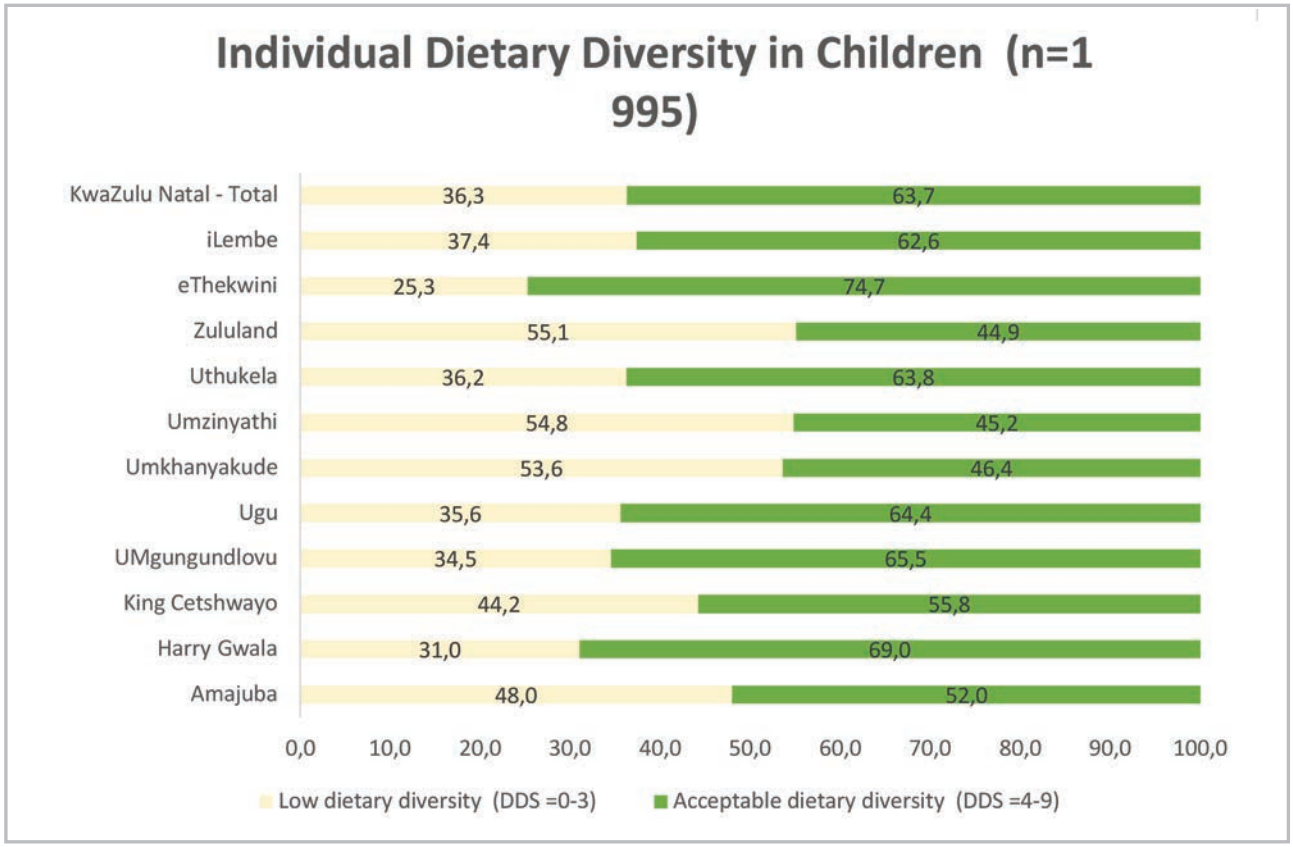


Figure 106: *Comparison of the distribution of DDS in children aged 0-5 years by districts in KwaZulu-Natal*

The mean dietary diversity score (DDS) for adults residing in KwaZulu-Natal Province (n=8834) was 4.97, which is indicative of an adequate dietary diversity (Table 61). District comparisons showed that eThekwini had the highest mean DDS (5.44) compared to uMzinyathi and Zululand districts which had the lowest (4.14 and 4.16 respectively). Table 62 shows that individuals in all of the eleven districts have an adequate dietary diversity (DDS >4), with eThekwini having a significantly higher mean DDS than six other districts. There were, however, no significant differences in mean DDS across gender and age groups.

Table 62: Mean dietary diversity scores for adults in KwaZulu-Natal

	Dietary Diversity Score		Dietary Diversity Score category				
			0-3		4-9		
	Mean	95% CI	%	95% CI	%	95% CI	n
Age group							
18-24	4.91	[4.62-5.21]	19.2	[14.4-25.1]	80.8	[74.9-85.6]	976
25-34	5.04	[4.85-5.23]	19.8	[16.2-24.0]	80.2	[76.0-83.8]	1,938
35-44	4.99	[4.78-5.19]	20.7	[17.4-24.4]	79.3	[75.6-82.6]	1,791
45-54	4.98	[4.70-5.25]	24.2	[20.0-29.0]	75.8	[71.0-80.0]	1,444
55-64	4.89	[4.61-5.16]	26.1	[21.8-31.0]	73.9	[69.0-78.2]	1,319
>=65	4.84	[4.63-5.05]	21.3	[17.5-25.8]	78.7	[74.2-82.5]	1,374
Male	5.06	[4.87-5.26]	19.9	[16.2-24.2]	80.1	[75.8-83.8]	2,761
Female	4.92	[4.74-5.10]	21.2	[18.3-24.3]	78.8	[75.7-81.7]	6,073
District							
Amajuba	5.03	[4.80-5.26]	24.8	[18.7-32.0]	75.2	[68.0-81.3]	830
Harry Gwala	4.32	[3.96-4.69]	31.6	[22.2-42.9]	68.4	[57.1-77.8]	692
King Cetshwayo	5.06	[4.76-5.35]	17.8	[13.1-23.7]	82.2	[76.3-86.9]	791
UMgungundlovu	4.60	[4.33-4.87]	20.1	[14.3-27.5]	79.9	[72.5-85.7]	708
Ugu	4.92	[4.57-5.27]	24.1	[18.2-31.2]	75.9	[68.8-81.8]	850
Umkhanyakude	4.70	[4.35-5.05]	24.3	[17.0-33.4]	75.7	[66.6-83.0]	718
Umzinyathi	4.14	[3.93-4.34]	35.0	[28.3-42.3]	65.0	[57.7-71.7]	904
Uthukela	4.75	[4.40-5.09]	25.8	[19.9-32.8]	74.2	[67.2-80.1]	802
Zululand	4.16	[3.89-4.44]	37.6	[28.0-48.3]	62.4	[51.7-72.0]	845
eThekwini	5.44	[5.13-5.76]	12.3	[8.4-17.5]	87.7	[82.5-91.6]	855
iLembe	4.78	[4.36-5.19]	29.0	[21.3-38.2]	71.0	[61.8-78.7]	847
Total	**4.97**	**[4.81-5.12]**	**20.8**	**[18.2-23.6]**	**79.2**	**[76.4-81.8]**	**8,842**

Figure 107 illustrates the proportion of the adult population in KwaZulu-Natal Province and in the various districts who have low and acceptable DDS. Overall, 79.2% of people in KwaZulu-Natal Province reported an adequate DDS, while 20.8% have a low DDS. eThekwini District reported the lowest proportion of people with low DDS (12.3%), significantly lower than seven other districts (range: 24.1-37.6%).

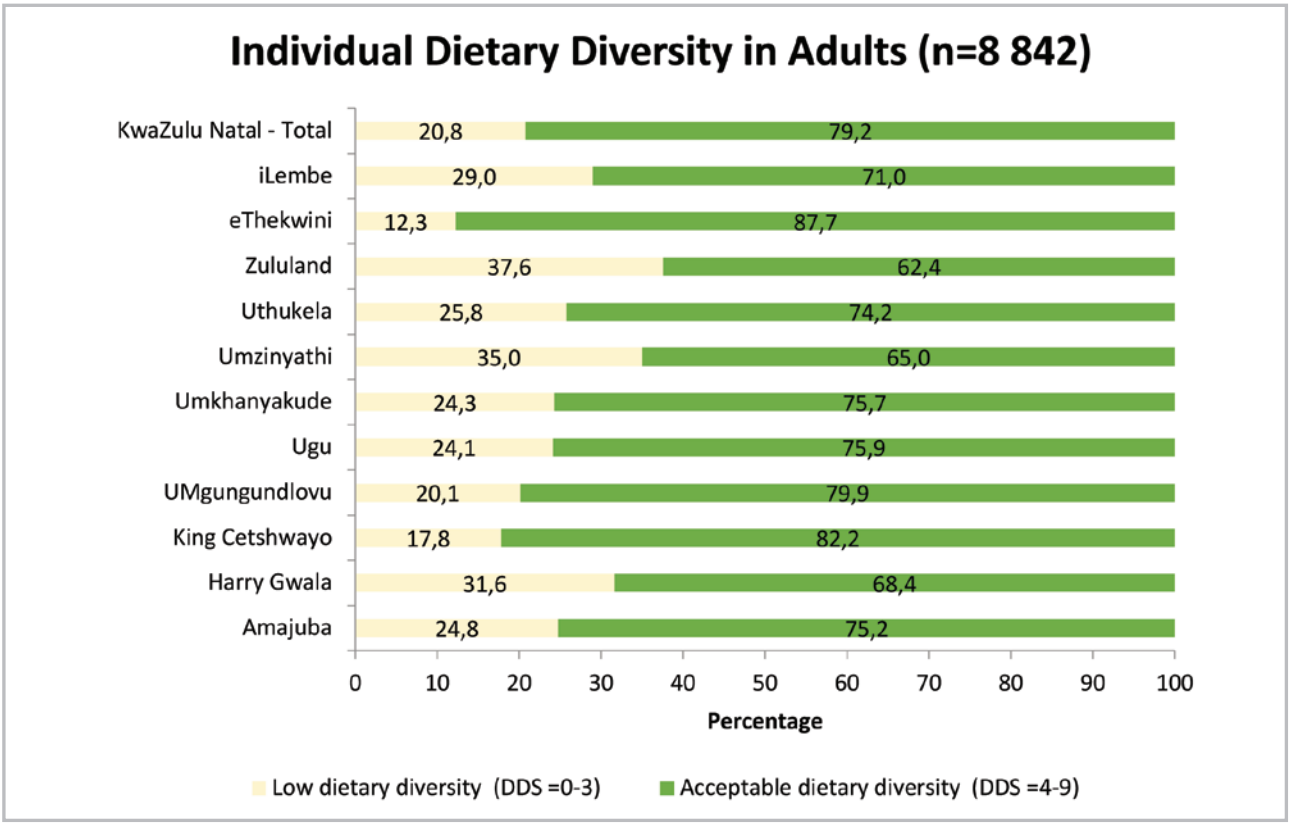


Figure 107: *Comparison of the distribution of DDS in children aged 0-5 years by districts in KwaZulu-Natal*

8.2 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.

The results of the current study indicate that 77.9% of children under 2 years were breastfed at some point in their lives, which is slightly lower than the national results reported in the SADHS in 2016 (84%).

Furthermore, the results of the current study indicate that nearly 83.5% of children aged 0-2 years in the KwaZulu-Natal Province were introduced to breastfeeding immediately after birth with a total of 95.9% being breastfed within an hour of birth. These results are higher than the national results reported by the SAHANES in 2012 (83.0%) and far higher than the national results reported by the SADHS in 2016 (67%).

Exclusive breastfeeding in KwaZulu-Natal Province was reported to be 14.7%. This should be interpreted with caution due to the small sample size. However, 14.7% is higher than the national reports in the 2003 SADHS (8.3%) and SANHANES 2012 (7.5%) and lower than that reported by Shisana et al. in 2008 (25.7%) and the 2016 SADHS (30%).

In 1998, 2003, and 2016, the SADHS reported an average duration of breastfeeding of 15.6 months, 16.6 months, and 12.2 months, respectively. SANHANES, however, showed a much lower average duration of breastfeeding (5.9 months). The average duration of breastfeeding for those who were not currently breastfed during this study was 6.4 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 0-1months. This occurred in more than half (55.7%) of children. We can assume that this is most likely the introduction of infant formula, for mothers

who may be unable to breastfeed. At 2 months, other drinks were introduced in a further 13.4% of children. Less than a fifth of children (15.5%) were first introduced to other drinks at the age of 6 months/ older. Regarding the type of drink that was first introduced, less than half (40.0%) indicated infant formula while 22.2% indicated plain water and 20.3% indicated gripe water. After 6 months, infants should be introduced to solid foods as breastmilk is no longer sufficient to meet the nutritional requirements. However, results of this study indicates that complementary feeding is initiated slightly earlier than the anticipated 6 months at 5.0 months. This is similar to the results of the SANHANES 2012 (4.5 months). The most common food introduced is homemade cereal/ porridge (46.1%) and commercial cereal/ porridge (32.0%), with only 8.9% introduced to pureed/mashed vegetables/fruit.

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 20.0% in KwaZulu-Natal Province. Four years later in 2016, the SADHS reported a slightly lower stunting prevalence at the national (27.0%) level but a much higher prevalence at the provincial (29%) level. The results of the current study appear to indicate that the stunting prevalence in KwaZulu-Natal Province is more aligned to the SADHS results and is much higher than the SANHANES provincial prevalence with a current prevalence of 29.8% in children of the same age group. These results indicate that stunting has increased over the last 10 years and as such the proportion of children experiencing chronic undernutrition in 2021 has increased. 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 KwaZulu-Natal; however, this was similar to the stunting prevalence in the age categories 0-41 months). Furthermore, the SANHANES and SADHS has 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, with 34.7% males being stunted compared to 17.0% females; however, these results were not significant. At a district level, the current study reported that stunting is more prevalent in the uThukela and King Cetshwayo districts, where between 42-56% of children were reported to be stunted; however, this was only significantly higher than one other district, uMkhanyakude (17.7%).

The national prevalence of wasting was reported to be 3.7% in 2012 (SANHANES), with a much lower provincial prevalence in KwaZulu-Natal of 0.2%. 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 higher provincial prevalence of wasting in KwaZulu-Natal of 3.1%, thereby indicating that the proportion of children experiencing acute undernutrition in KwaZulu-Natal in 2021 has increased slightly over the past 10 years. It also appears that those younger than 6 months as well as females experience a higher prevalence of wasting than their counterparts, however this was not significant. At a district level, the current study reported that wasting, is more prevalent in uMkhanyakude (9.0%), compared to uMgungundlovu (0.9%) and eThekwini (1.2%).

The prevalence of underweight in KwaZulu-Natal in the current study (4.8%) is lower than the provincial prevalence of underweight reported by the SANHANES in 2012 (8.3%). A slightly higher prevalence was also 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 much higher prevalence (28.4%) of children were overweight and that there was similar prevalence between genders.

The above trends across time seem to indicate that over the last 10 years, both chronic and acute undernutrition in children in KwaZulu-Natal has increased.

Anthropometry (18 years and older)

At a national level, the mean BMI in females were reported to be 28.9kg/m^2 in 2012 and 29.2kg/m^2 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 23.6kg/m^2. A slightly higher mean was reported for BMI in KwaZulu-Natal for females (29.5kg/m^2) and a similar mean for males (23.5kg/m^2) in 2012. Similar results were reported in 2016 (females

29.9kg/m^2 and males 24.2kg/m^2). The current study reported slight increases compared to the SANHANES for both females (30.8kg/m^2) and males (24.5kg/m^2) in KwaZulu-Natal.

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 KwaZulu-Natal was slightly higher than the national estimates for females (69.2%) and similar estimates for males (31.6%) in 2012. In 2016, the SADHS reported a similar provincial prevalence in KwaZulu-Natal in females (70.6%) and an increased prevalence in males (35.2%). Ten years later, the results of this study report a higher provincial prevalence of overweight and obesity in females (74.8%) and a higher prevalence in males (35.2%) compared to the SANHANES. For males it seems there has been no change in the prevalence when compared to the SADHS. The current study also reported a slightly higher proportion of females (48.9%) and a lower proportion of males (7.7%) with regard to a waist hip ratio larger than 0.85 and 1.0 respectively, compared to previous studies. For females, SANHANES reported 47.1% and 50.0% at a national and provincial level respectively. For males SANHANES reported 6.8% and 9.0% at a national and provincial level, respectively.

Dietary Diversity

A diet that is sufficiently diverse reflects nutrient adequacy. This statement is based on the fact that 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, Akhter, Semba et al., 2010), as well as other health issues.

In the present survey, the mean dietary diversity score of the adult population was 4.97 with 20.8% of the population having a score less than 4. The mean DDS was in the current survey is higher than that of the NCFS in 2009 (4.02) and that reported in SANHANES nationally in 2012 (4.2). However, the proportion of those with a low DDS was lower than that reported in both the SANHANES in 2012 (40%) and the NFCS in 2009 (38%). The current study further found that children have a lower mean DDS of 4.16 with a larger proportion (36.3%) of children having a score of less than 4.

8.3 Relationship of Household Food Insecurity and Malnutrition

Table 63 presents the associations between nutrition indicators and food security status, based on the Household Food Insecurity Access Scale (HFIAS). In KwaZulu-Natal, there was no significant relationships between food security and all four of the nutrition indicators (stunting, wasting, underweight, and overweight) for children aged 0-5 years.

For adults, there was also no significant relationship between household food security and obesity and overweight. There were, however, significant relationships between food security and three 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 (83.3%), than among households that did not have an underweight adult (73.5%) ($p<0.05$). Similarly, there was a 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. The prevalence of household food insecurity was higher among households that had at least one adult with an elevated WHR (79.2%), than among households that did not have one adult with an elevated WHR (70.6%) ($p<0.01$). The prevalence of food insecurity was also significantly higher (85.9%) 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 (65.2%) ($p<0.01$).

Table 63. Relationship between Household Food Insecurity and Malnutrition indicators in KwaZulu-Natal

Variables	Categories	Food security status based on the Household Hunger Scale (%)		t / Chi-square tests
		Food secure	Food insecure	
0-5 years				
Stunting	Yes	22.5	77.5	
	No	17.2	82.8	
Wasting	Yes	14.7	85.3	
	No	19.3	80.7	
Underweight	Yes	27.4	72.6	
	No	18.7	81.3	
Overweight	Yes	26.1	73.9	
	No	15.9	84.1	
Adults				
Underweight	Yes	16.7	83.3	**
	No	26.5	73.5	
Obesity / Overweight	Yes	26.0	74.0	
	No	26.5	73.5	
Increase risk of NCDs (Waist / hip ratio)	Yes	20.8	79.2	***
	No	29.4	70.6	
Individual Dietary Diversity	Low	14.1	85.9	***
	Acceptable	34.8	65.2	

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

Table 63 demonstrates South Africa's dual nutrition problem. 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).

8.4 Household health status, chronic illnesses, and diseases

The study sought to establish the disease burden and health experiences of household heads and members in the preceding year to the study and as expected the population experienced a wide range of diseases (Table 64). Most household heads reported having experienced coughs/colds/chest infections at 46.7% followed by headaches (19.5%), fever/malaria (18.6%), hypertension (8.8%), and HIV/AIDS (6.2%) in that order. Cough/cold/chest infections accounted for 45.6% of reported ailments by household members. This was followed by fever/malaria and headache at 18.2% and 14.5% respectively. 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 diseases and to the ability to prevent and indeed recover when such diseases are contracted. Specific diseases such as diabetes (at 5.3% household heads & 3.4% household members), for example, require specific diets as part of managing them and it is there important that such household have access to diverse food stuffs including medically prescribed diets.

Table 64: Disease experienced by household heads and members a year prior to the survey

	Household heads		Household members	
Disease	**n**	**%**	**n**	**%**
Cough/cold/chest infection	3,711	46.7	15,041	45.6
Headache	1,632	19.5	5,096	14.5
Fever/malaria	1,488	18.6	6,039	18.2
Hypertension	1,437	8.8	1,963	5.2
HIV/AIDS	651	6.2	1,310	3.4
Diabetes	899	5.3	1,247	3.4
Toothache or mouth infection	465	5.2	1,295	3.0
Diarrhoea	364	5.2	1,507	5.1
Abdominal pains	697	5.0	1,393	3.4
Other disease	588	4.8	1,110	3.3
Eye infection	455	3.3	909	2.3
Asthma	278	2.7	751	2.3
Skin rash	159	1.7	678	1.7
Vomiting	114	1.4	466	1.1
Paralysis	211	1.3	370	0.8
TB	170	1.1	310	0.7
Bronchitis/pneumonia/chest pain	116	0.7	221	0.5

Unweighted n and weighted percentages reported and descend sorting done based on household heads percentages.

The study found low prevalence of chronic illness (a disease that lasts for more than 3 months) at both the household head (13.3%) and household member (4.8%) levels (Figure 108). The significance of this finding is that food and nutrition security is vital to managing most chronic diseases (such as TB and diabetes) as the nutritious status of foods that people eat assists in controlling recovery processes. The prevalence of chronic diseases adds to the need for ensuring that most households are food secure.

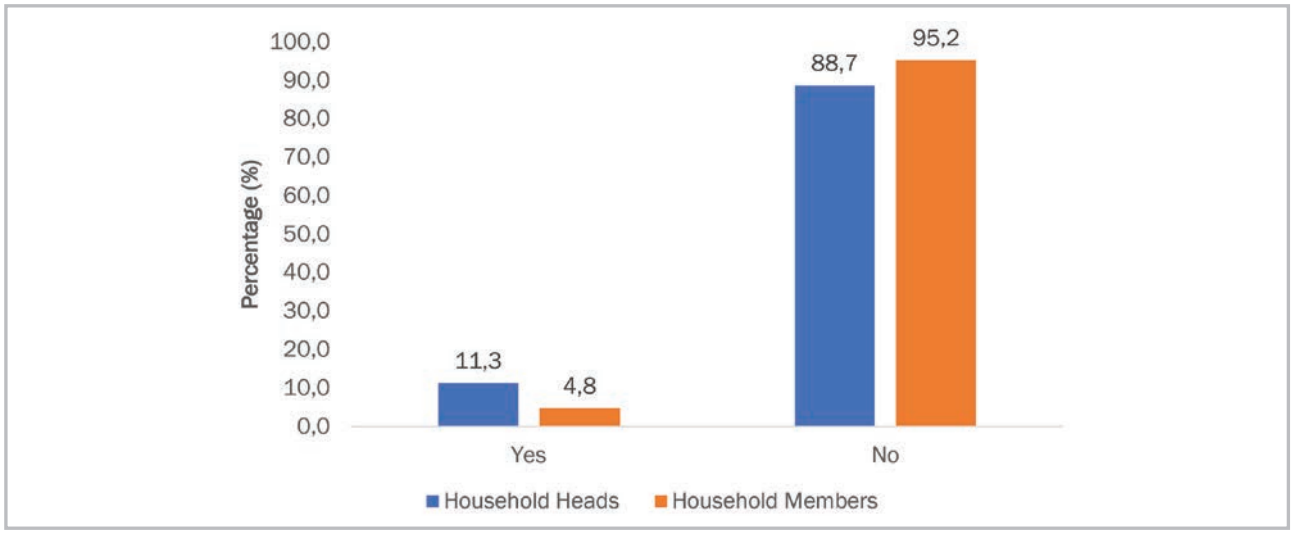


Figure 108: Household heads and members reported to having been continuously ill, for at least 3 months in the last 12 months prior to the survey

There was generally no difference in the reported or perceived health status of household heads by sex and district, but noticeable differences are observed particularly by age (Table 65). Those aged 55 years and above reported significant levels of poor or fair health compared to those younger. There were generally low percentages of household heads across districts who perceived their general health status as poor or fair (ranged from 3.2%-8.8%).

Table 65: 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	4.1	[3.2-5.3]	58.1	[53.7-62.4]	37.8	[33.2-42.6]	3,617
Female	6.5	[5.4-7.9]	58.8	[54.3-63.3]	34.6	[30.5-39.0]	4,196
Total	**5.4**	**[4.5-6.4]**	**58.5**	**[55.0-61.9]**	**36.1**	**[32.6-39.8]**	**7,813**
Population group							
African	5.3	[4.5-6.4]	58.5	[54.8-62.1]	36.1	[32.5-40.0]	7,367
White	2.7	[0.8-9.1]	52.6	[41.5-63.4]	44.7	[35.1-54.7]	184
Coloured	7.2	[2.6-18.1]	60.4	[42.8-75.7]	32.4	[18.9-49.6]	89
Indian/Asian	9	[3.5-20.9]	62.3	[45.8-76.4]	28.7	[17.1-43.9]	173
Total	**5.4**	**[4.5-6.4]**	**58.5**	**[55.0-61.9]**	**36.1**	**[32.6-39.8]**	**7,813**
Age group							
18-24	1.8	[0.8-3.8]	52.1	[41.8-62.3]	46.1	[36.0-56.5]	255
25-34	2.2	[1.3-3.5]	57.8	[51.4-63.9]	40.1	[33.9-46.6]	1,078
35-44	4	[2.6-6.2]	60.1	[55.6-64.5]	35.9	[31.4-40.5]	1,572
45-54	7.7	[5.3-11.0]	61.9	[56.9-66.6]	30.4	[26.7-34.4]	1,583
55-64	11	[8.6-14.1]	63.1	[58.3-67.7]	25.8	[22.0-30.1]	1,618
65+	19.1	[16.1-22.4]	59.5	[55.5-63.4]	21.4	[17.1-26.4]	1,707
Total	**5.4**	**[4.5-6.4]**	**58.5**	**[55.0-61.9]**	**36.1**	**[32.6-39.8]**	**7,813**
District							
Amajuba	5.6	[3.8-8.2]	52.1	[42.4-61.7]	42.3	[32.0-53.2]	739
Harry Gwala	3.2	[2.0-5.2]	61.2	[52.0-69.7]	35.6	[27.2-45.0]	673
King Cetshwayo	7	[4.6-10.4]	55.9	[48.3-63.3]	37.1	[29.6-45.3]	694
UMgungundlovu	3.4	[1.8-6.1]	61.1	[48.0-72.9]	35.5	[24.4-48.4]	653
Ugu	4.9	[3.4-6.9]	58.7	[52.3-64.8]	36.4	[30.7-42.6]	712
Umkhanyakude	6.3	[4.3-9.1]	57.9	[50.8-64.6]	35.8	[28.4-44.0]	634
Umzinyathi	6	[3.5-10.1]	71.6	[62.5-79.3]	22.4	[16.0-30.5]	751
Uthukela	8.8	[5.6-13.5]	54.5	[46.9-61.8]	36.7	[29.2-45.0]	747
Zululand	5.8	[3.8-8.7]	62	[48.3-74.1]	32.2	[21.2-45.5]	726
eThekwini	4.9	[3.3-7.3]	57.6	[50.3-64.7]	37.5	[30.2-45.3]	772
iLembe	6.9	[4.9-9.6]	57.1	[49.5-64.3]	36	[29.3-43.3]	712
Total	**5.4**	**[4.5-6.4]**	**58.5**	**[55.0-61.9]**	**36.1**	**[32.6-39.8]**	**7,813**

A similar pattern is observed across household members by sex, age, and district (Table 66). Unsurprisingly, the elderly (55-64 years and 65 years and older) had higher percentages of household members reported as having poor or fair health status with 11.7% and 20.0%, respectively. As for the household heads, household members also generally reported low proportions of poor or fair health status across districts there was not much variation across race.

Table 66: Household members reported perceived health status disaggregated by sex, age, and district in KwaZulu-Natal Province

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Sex							
Male	2.9	[2.5-3.4]	60.7	[58.1-63.2]	36.4	[33.9-39.0]	16,404
Female	4.4	[3.8-5.0]	60.6	[58.1-63.1]	35	[32.6-37.5]	20,170
Total	**3.7**	**[3.3-4.2]**	**60.6**	**[58.2-63.0]**	**35.7**	**[33.3-38.1]**	**36,574**
Population group							
Black African	3.6	[3.2-4.0]	61.3	[58.8-63.8]	35.1	[32.7-37.6]	35,116
White	4.4	[2.3-8.3]	54.2	[47.2-61.1]	41.4	[34.8-48.3]	510
Coloured	3.6	[1.7-7.5]	55.9	[38.9-71.6]	40.5	[24.7-58.6]	350
Indian/Asian	6	[2.7-12.8]	48.8	[38.7-58.9]	45.2	[33.5-57.5]	675
Total	**3.7**	**[3.3-4.2]**	**60.7**	**[58.3-63.1]**	**35.6**	**[33.3-38.0]**	**36,651**
Age group							
0-14	0.9	[0.6-1.2]	59.9	[56.7-63.0]	39.2	[36.2-42.4]	11,127
15-24	1.3	[1.0-1.8]	60.9	[57.5-64.1]	37.8	[34.6-41.2]	7,021
25-34	1.5	[1.1-2.0]	62.5	[59.9-65.0]	36	[33.5-38.7]	6,019
35-44	3.6	[2.9-4.5]	61.5	[58.5-64.5]	34.9	[31.7-38.2]	4,343
45-54	6.8	[5.3-8.6]	61	[57.3-64.6]	32.2	[29.0-35.6]	2,790
55-64	11.7	[9.9-13.7]	61.8	[58.7-64.9]	26.5	[23.6-29.6]	2,276
65+	20	[17.3-23.1]	57.6	[53.5-61.5]	22.4	[18.5-26.8]	2,034
Total	**3.7**	**[3.2-4.1]**	**60.8**	**[58.4-63.2]**	**35.5**	**[33.1-38.0]**	**35,610**
District							
Amajuba	6.5	[5.2-8.1]	56.5	[50.7-62.1]	37	[31.1-43.2]	2,821
Harry Gwala	2.3	[1.6-3.4]	64.9	[55.6-73.2]	32.8	[24.8-41.9]	2,891
King Cetshwayo	4.3	[3.3-5.6]	58.7	[54.3-63.0]	37	[32.2-42.1]	3,762
UMgungundlovu	1.6	[1.0-2.5]	68.9	[57.5-78.4]	29.5	[20.3-40.7]	2,894
Ugu	2.7	[2.0-3.7]	57.6	[53.7-61.4]	39.7	[35.8-43.7]	3,698
Umkhanyakude	5.8	[4.5-7.5]	61.1	[54.3-67.5]	33.1	[26.7-40.2]	2,799
Umzinyathi	2.3	[1.6-3.2]	65.9	[54.9-75.4]	31.9	[22.8-42.5]	3,950
Uthukela	5.6	[4.4-7.1]	61.8	[55.5-67.6]	32.7	[26.2-39.8]	2,955
Zululand	3.2	[2.4-4.3]	66	[57.5-73.6]	30.8	[23.4-39.2]	4,019
eThekwini	3.7	[2.8-4.9]	58.5	[53.8-63.0]	37.8	[33.2-42.6]	3,462
iLembe	4.7	[3.7-5.9]	56.4	[51.2-61.6]	38.9	[33.7-44.4]	3,428
Total	**3.7**	**[3.3-4.2]**	**60.7**	**[58.3-63.1]**	**35.6**	**[33.3-38.0]**	**36,679**

Figure 109 shows that only seven (7) local municipalities had household members reporting relatively high poor or fair health status (ranging from 6.0% to 8.1%). Most local municipalities had very small to no such reports.

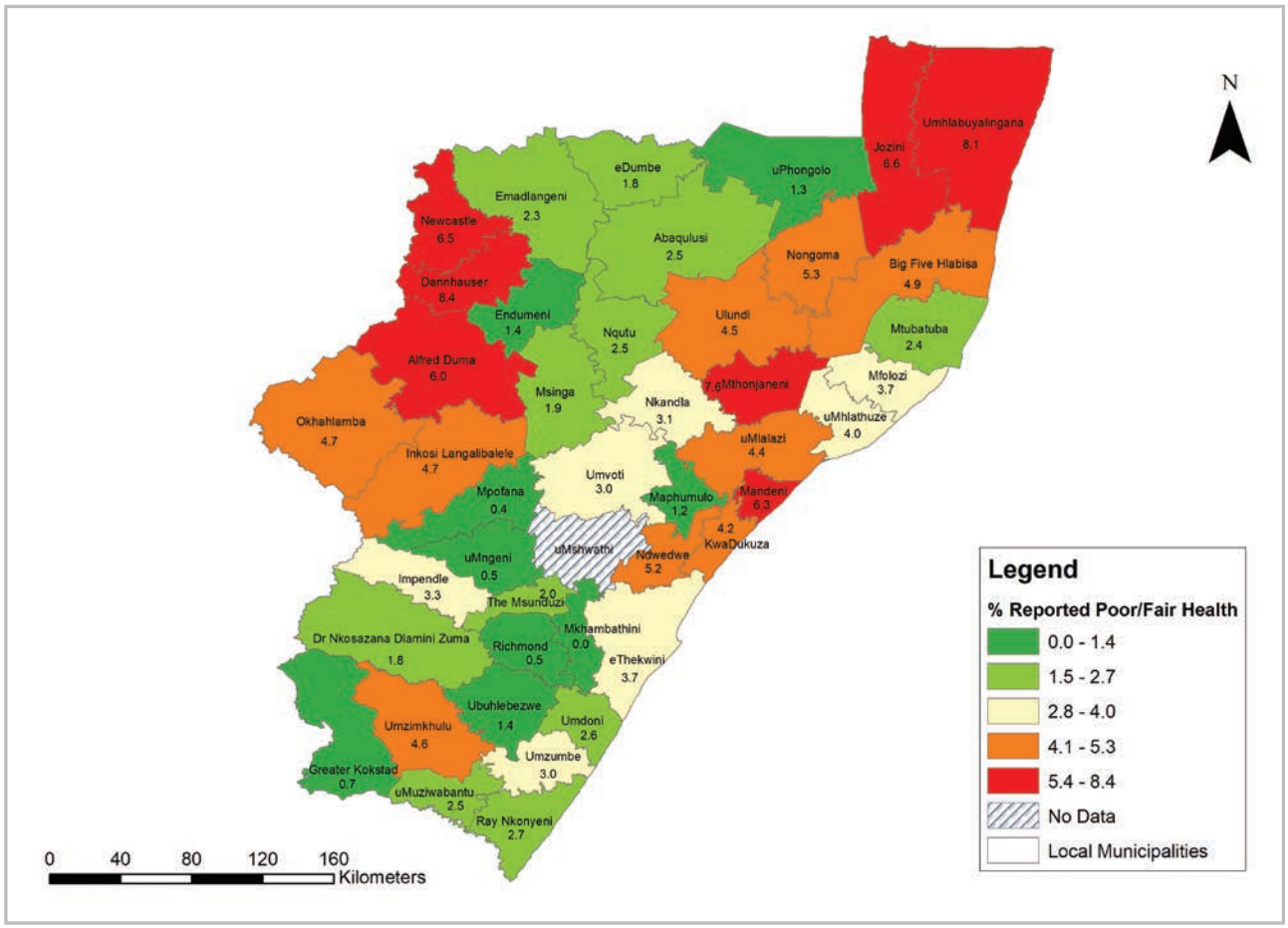


Figure 109: Household members reported perceived health status by local municipality

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

This section provides information regarding various shocks and their associated effects on household food availability. The COVID-19 coping strategies are also covered in this section bearing in mind that the survey was conducted more than a year after the COVID-19 lockdown measures were put in place, indicating that it was done when the lockdown measures were more relaxed.

8.5.1 Drought and water shortage

Shocks due to flood were moderately reported across the eleven districts of the KwaZulu-Natal province. Within the province, the three districts of iLembe, eThekwini, and uGu are the ones which have experienced the highest level of flooding shocks, with 63%, 48% and 43 %, respectively (Figure 110). Very few households in the other remaining eight districts reported to have experienced low levels of flooding in the previous 12 months (note that survey was conducted in 2022). It should be noted that KwaZulu-Natal Province is prone to flooding events, normally from tropical cyclones and storms. From 8-12 April 2022 the entire province did experience flooding from the cut off low systems, and the areas which received more intense heavy rainfall were iLembe, eThekwini, and uGu districts; hence most households in those municipalities indicated from the survey that they experienced flooding shocks (Figure 110).

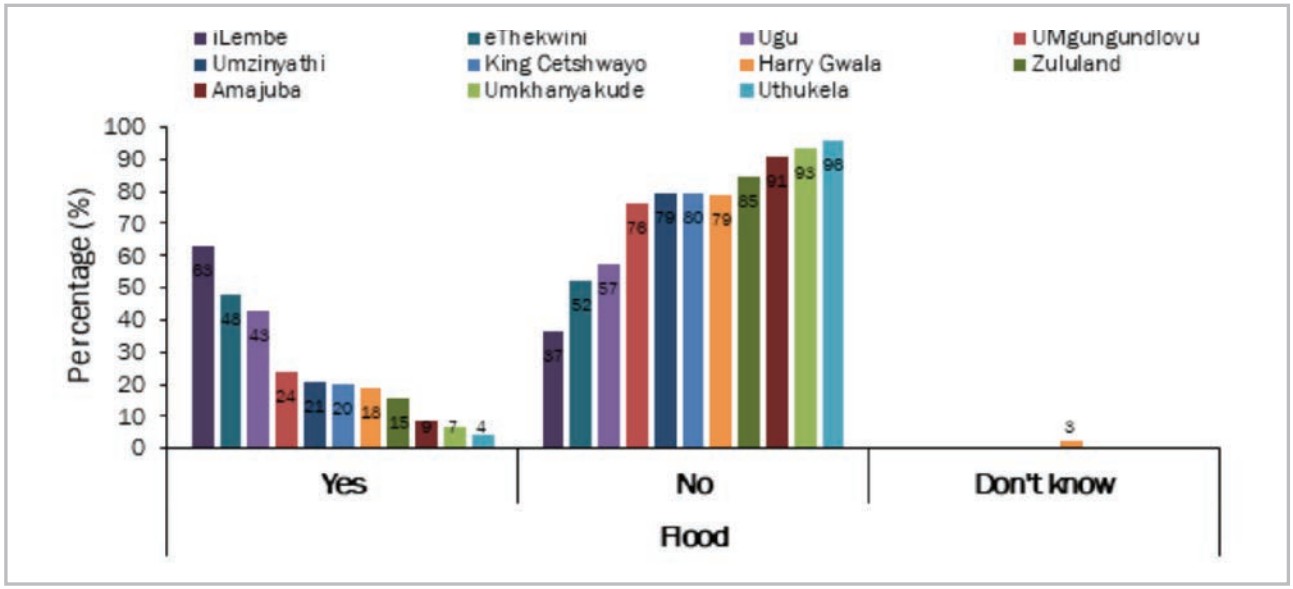


Figure 110: *Household that experience floods in the last 12 months in KwaZulu-Natal Province*

Overall, the KwaZulu-Natal Province experiences inter annual variation when it comes to drought. It experiences years with wet winters, neutral and dry seasons. as shown by the Figure 111, below in which only a handful of households in the province experienced drought shock during the study period.

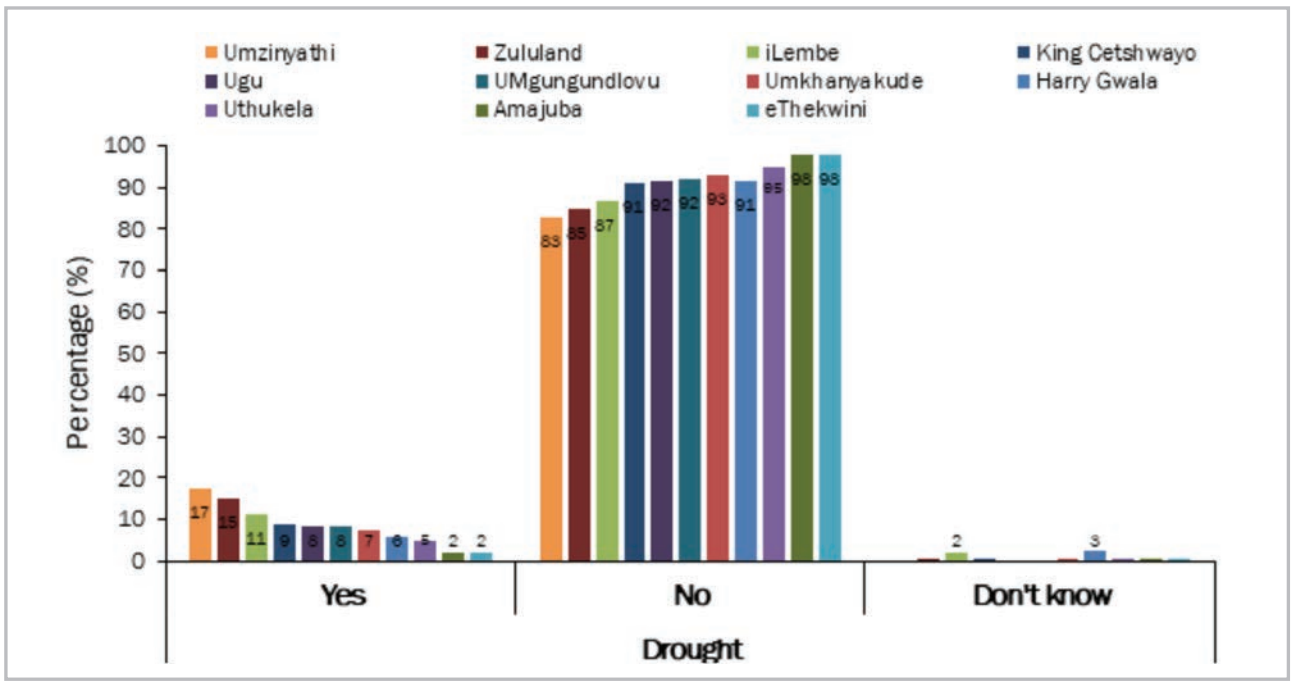


Figure 111: *Household that experience drought shock by district in the last 12 months in KwaZulu-Natal Province*

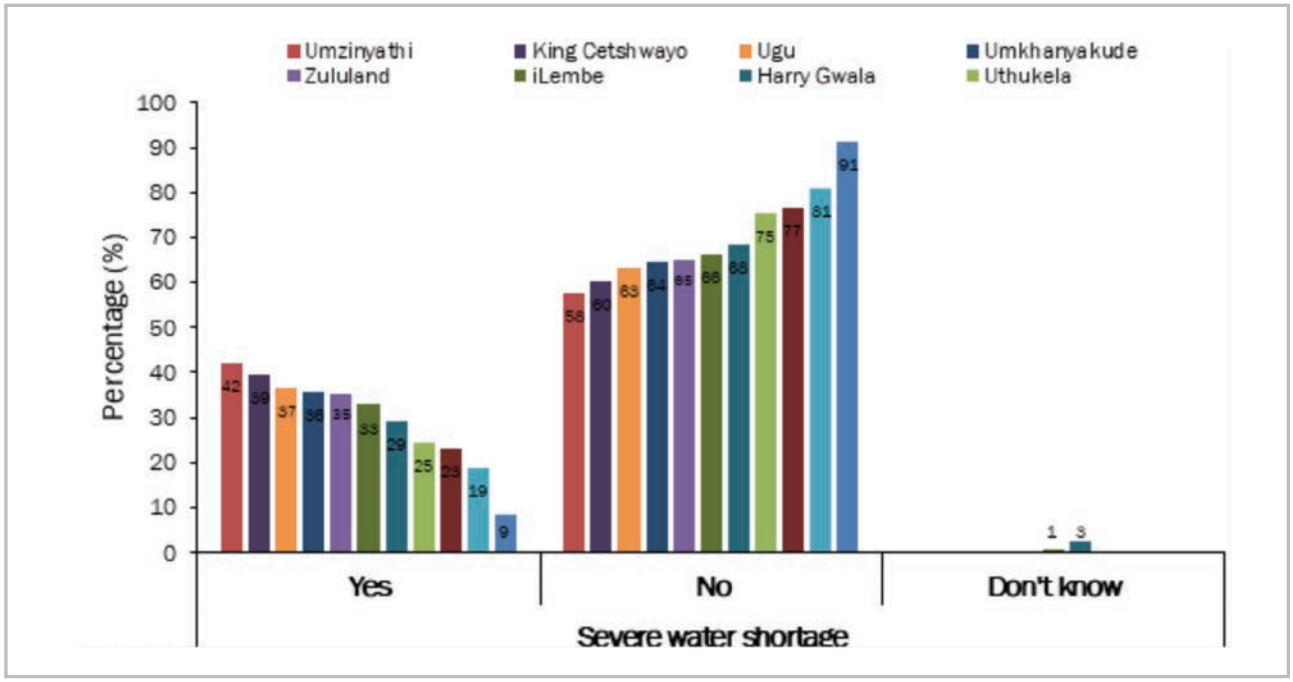


Figure 112: *Household that experience severe water shortage shock by district*

Severe water shortage is one of the shocks that was reported in most of the districts in the province (Figure 112). The April 2022 flooding could have exacerbated the water shortages in the province because of the damages to the water infrastructure.

8.5.2 Crop disease and crop failure

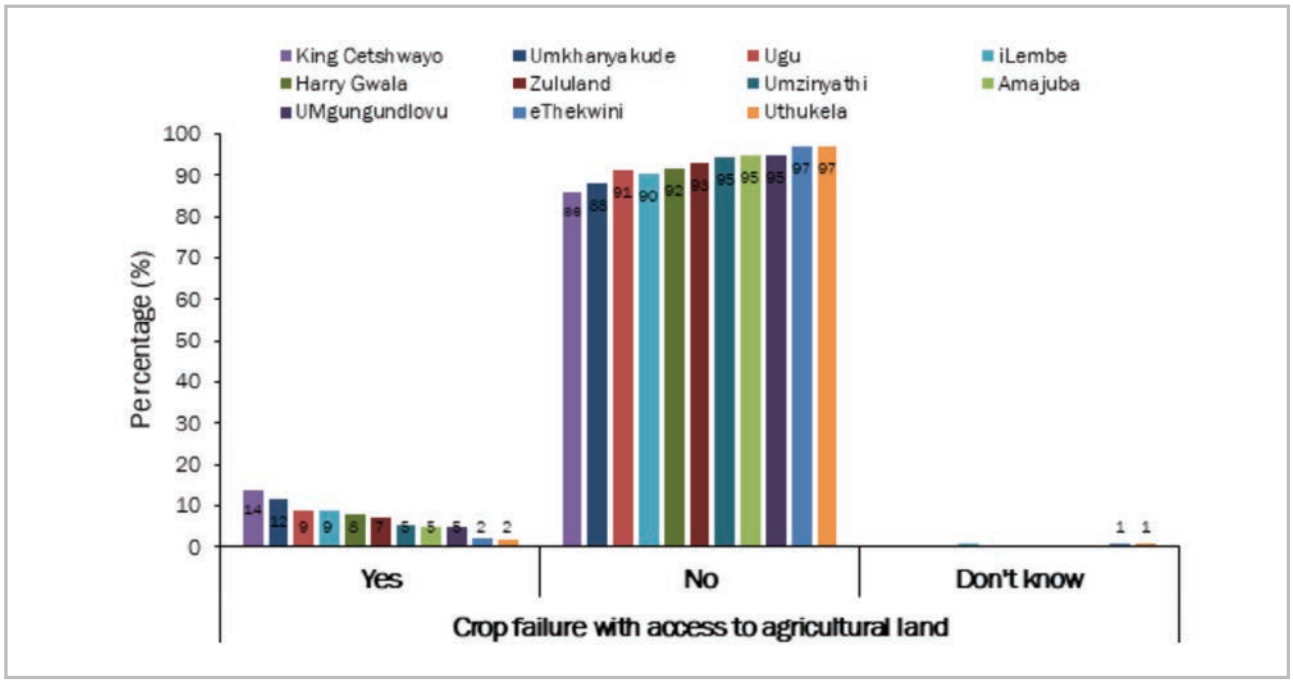


Figure 113: *Household that experience crop failure shock by district*

Crop failure and emergence of crop diseases were barely reported across the districts, with only 14 % of the households in King Cetshwayo reporting that they experienced it the most (Figure 113). The dwindling number of crop failure recorded in the KwaZulu-Natal are closely related to the fact that crop production is not hugely practised in that area across all the districts (Figure 113). On average all the districts are less involved on agricultural production activities, hence the extremely dwindling number of crop failure and disease.

8.5.3 Increase in inputs and food prices

The increase in food prices was the biggest shock experienced across all the eleven districts in the province. The highest shocks were experienced in uGu and uMzinyathi, with 94% and 92%, respectively. This is attributable to the idea that there was extremely limited food production globally and shocks such as COVID-19 pandemic would immediately trigger prices increases since the supply chains were disrupted.

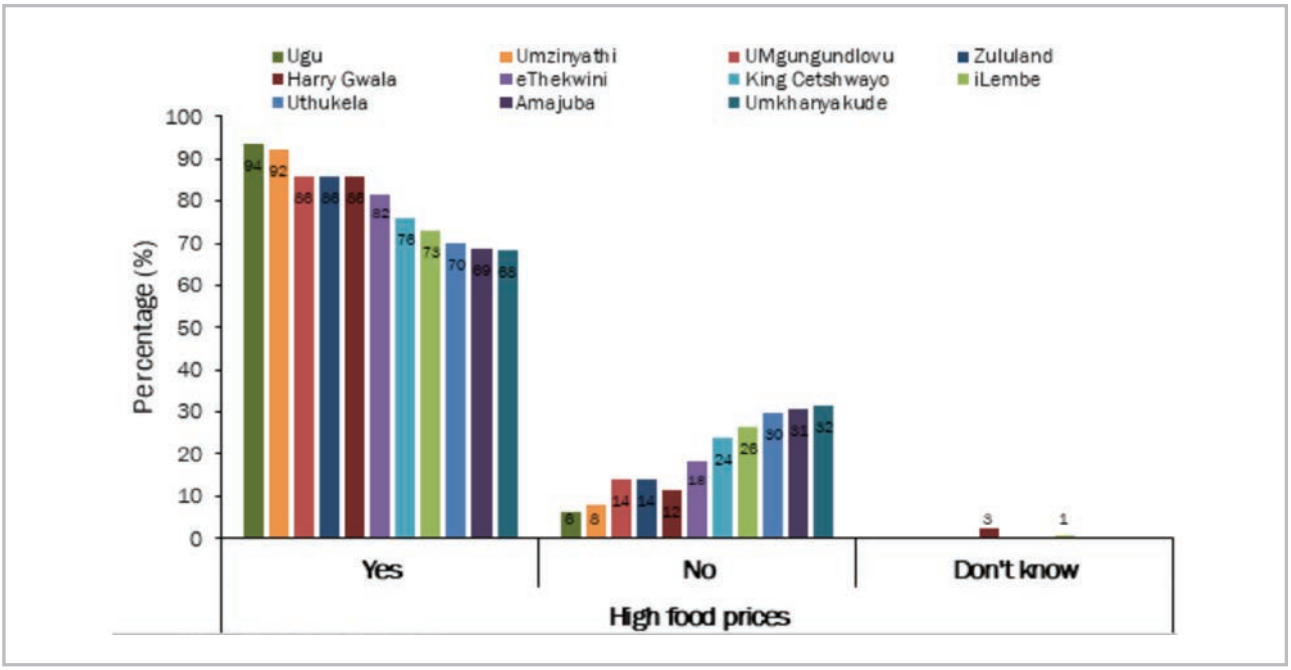


Figure 114: Household that experience high food prices shock by district

The increase in input prices were modest in almost the eleven districts (Figure 116). Only uGu and eThekwini reported higher percentage of increase in input prices, with 64% and 57%, respectively. The modest percentage of households who reported to have felt the increase in input cost is related to the fact that the households are not highly involved in agricultural production. The increase in input prices also has a direct effect on the increase in food process hence this justifies the reported increases in food prices across the four districts (Figure 114).

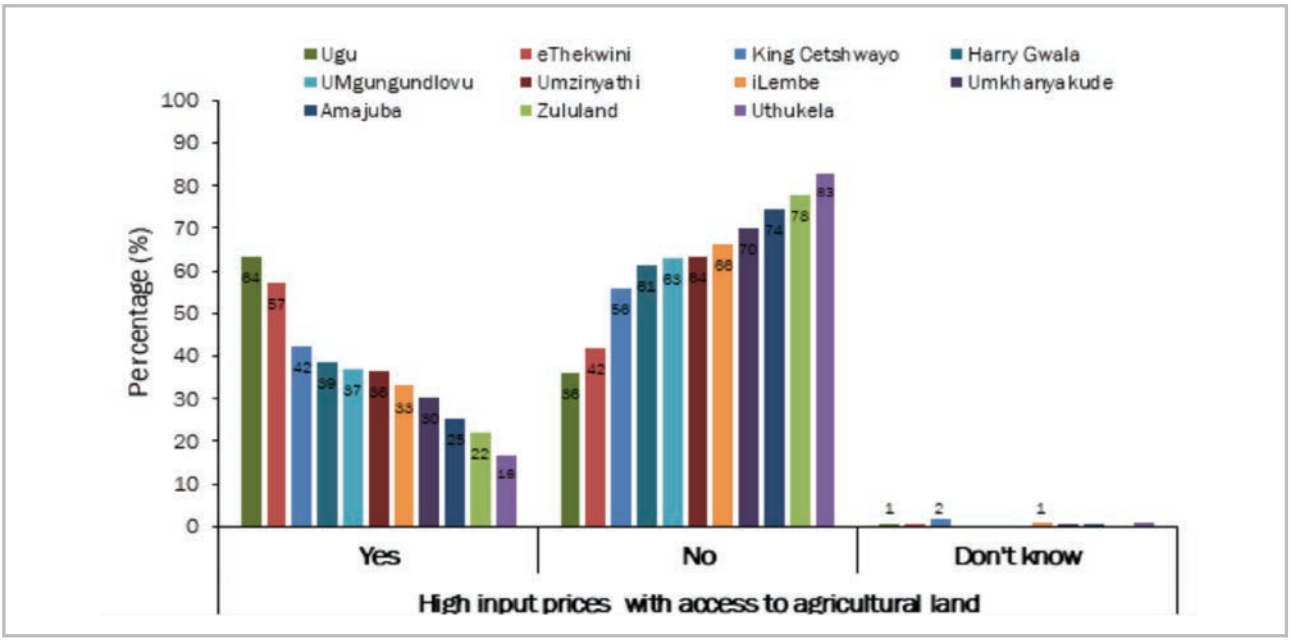


Figure 115: Household that experience high input prices shock by district

8.5.4 COVID-19 shocks and associated coping strategies

Covid-19 pandemic resulted in serious disruptions of food supply chains and production systems. uGu District had the highest percentage (48.2%) of households who were sometimes worried About their food running out before they can get money to buy some more food. Zululand had the highest percentage (42.5%) of households who reported that their food often time runs out and they did not have money to buy more (Tables 67 to 69).

Table 67: Households that worried their food would run out before we got money to buy more

District	We worried our food would run out before we got money to buy more							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	11.2	117	15.0	143	48.2	403	25.7	189
UMgungundlovu	14.8	76	15.5	112	34.2	262	35.5	269
Uthukela	14.7	115	28.5	213	37.8	344	19.0	148
Umkhanyakude	20.1	125	14.6	142	42.1	296	23.2	155
King Cetshwayo	15.7	129	18.6	132	38.0	338	27.7	195
Harry Gwala	17.5	66	14.1	115	43.6	332	24.8	229
Umzinyathi	7.6	70	11.4	114	35.0	304	46.0	365
Amajuba	20.7	164	19.7	179	43.6	324	16.0	133
Zululand	10.5	64	11.0	145	36.0	299	42.5	306
iLembe	14.4	134	12.1	103	40.6	344	33.0	227
eThekwini	19.2	142	23.1	183	35.8	355	21.9	182

Table 68: Households whose food did not last, and they did not have money to get more

District	The food that we bought just did not last, and we did not have money to get more							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	15.3	155	19.4	171	41.6	353	23.7	175
UMgungundlovu	15.6	88	15.2	112	38.1	290	31.2	229
Uthukela	16.4	136	31.2	233	35.3	320	17.1	133
Umkhanyakude	22.0	152	21.8	144	35.4	283	20.8	138
King Cetshwayo	17.9	157	16.4	134	41.4	333	24.3	171
Harry Gwala	20.0	85	16.0	133	39.4	317	24.7	207
Umzinyathi	8.1	77	11.3	114	43.0	371	37.6	291
Amajuba	24.9	199	20.4	175	41.5	315	13.2	111
Zululand	9.2	68	12.3	139	36.9	316	41.6	291
iLembe	15.0	151	12.8	109	46.6	351	25.6	196
eThekwini	26.2	198	20.3	179	34.6	320	18.9	166

Table 69: Households who could not afford sufficient and nutritious food because the price of food increased

District	We couldn't afford sufficient and nutritious food because the price of food increased							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	18.5	178	18.6	172	40.1	337	22.8	166
UMgungundlovu	15.5	85	14.7	111	42.8	308	27.0	215
Uthukela	15.8	126	30.5	215	35.1	322	18.6	159
Umkhanyakude	23.9	155	14.3	140	36.1	280	25.7	143
King Cetshwayo	18.8	167	15.8	130	41.7	333	23.6	165
Harry Gwala	14.5	82	15.5	124	44.9	331	25.0	204
Umzinyathi	7.8	71	10.9	112	43.3	365	38.0	305
Amajuba	21.3	169	19.6	177	42.1	319	17.1	135
Zululand	8.2	53	9.9	115	41.0	355	40.9	291
iLembe	16.7	149	13.3	110	43.1	350	26.9	198
eThekwini	29.0	229	19.2	163	32.6	298	19.2	173

During the covid-19 period, most households were unable to eat healthy and nutritious foods as shown in the table below (Table 70) where 38.6 % of the respondents in the Zululand District reported that often times they were unable to eat healthy and nutritious food (Table 70).

Table 70: Households which were unable to eat healthy and nutritious food

District	You were unable to eat healthy and nutritious food							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	15.5	160	18.2	175	43.5	355	22.8	167
UMgungundlovu	15.1	82	19.2	132	38.1	306	27.6	198
Uthukela	17.0	144	30.4	213	33.9	310	18.6	157
Umkhanyakude	21.5	149	15.3	142	42.1	279	21.1	148
King Cetshwayo	16.6	156	16.2	126	44.1	347	23.1	167
Harry Gwala	12.3	79	21.0	145	44.0	320	22.8	197
Umzinyathi	7.7	76	11.7	112	50.0	408	30.6	257
Amajuba	24.2	189	24.1	171	34.2	303	17.6	137
Zululand	8.4	58	11.7	138	41.3	350	38.6	268
iLembe	13.6	136	13.3	125	44.1	342	28.9	204
eThekwini	28.0	205	20.2	178	33.0	312	18.8	167

Table 71: Households which could not access the cheap and affordable food market, because they were shut down due national lockdown restrictions

District	We couldn't access the cheap and affordable food market, because they were shut down due national lockdown restrictions							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	21.5	200	18.8	186	37.1	303	22.5	164
UMgungundlovu	15.5	84	14.7	115	41.6	301	28.3	219
Uthukela	18.0	160	24.3	179	37.2	313	20.5	170
Umkhanyakude	33.3	182	16.7	173	28.8	231	21.2	132
King Cetshwayo	22.3	191	17.9	144	37.6	312	22.3	148
Harry Gwala	17.5	103	17.7	136	42.3	307	22.6	195
Umzinyathi	8.8	79	15.6	121	40.4	368	35.3	283
Amajuba	23.4	190	14.4	136	44.6	319	17.6	154
Zululand	9.4	55	11.6	129	38.7	352	40.3	275
iLembe	16.9	159	16.7	120	39.5	319	26.8	209
eThekwini	31.2	253	18.5	164	28.6	267	21.7	179

Most households across the districts reported that sometimes they could not access cheap and affordable food markets since they were shut down because of COVID-19 national lockdown restrictions. However, this was mostly experienced in Zululand (Table 72).

Table 72: Household heads who were hungry but did not eat

District	You were hungry but did not eat							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	51.4	480	20.5	167	18.5	152	9.6	56
UMgungundlovu	39.1	270	16.7	137	29.5	210	14.7	99
Uthukela	36.0	307	29.6	243	24.8	209	9.6	64
Umkhanyakude	32.4	277	31.8	167	24.3	204	11.5	66
King Cetshwayo	49.5	400	18.8	147	22.3	177	9.3	71
Harry Gwala	43.1	299	22.7	162	24.8	201	9.3	77
Umzinyathi	37.7	296	23.2	170	21.6	223	17.4	163
Amajuba	40.6	352	23.9	178	26.2	194	9.3	75
Zululand	32.3	274	11.4	150	32.9	211	23.4	174
iLembe	46.2	384	15.4	124	26.2	198	12.1	98
eThekwini	60.6	511	19.5	155	16.2	149	3.8	47

Table 73: Household head who had to skip a meal

District	You had to skip a meal							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	36.9	334	26.3	228	23.8	208	13.0	86
UMgungundlovu	30.7	193	18.1	145	31.5	237	19.8	142
Uthukela	28.9	234	28.6	232	28.9	256	13.6	102
Umkhanyakude	31.6	254	27.9	146	29.4	221	11.0	97
King Cetshwayo	31.1	274	29.1	198	26.4	230	13.4	93
Harry Gwala	30.6	195	26.3	193	29.9	239	13.2	114
Umzinyathi	24.1	198	17.2	152	38.1	308	20.6	193
Amajuba	34.3	292	23.5	169	31.2	249	11.0	90
Zululand	26.0	172	13.5	179	33.5	259	27.1	203
iLembe	35.9	302	18.3	148	29.3	234	16.5	123
eThekwini	44.1	360	26.2	216	22.7	206	7.1	81

Although skipping a meal was least reported In the districts of the KwaZulu-Natal Province, in uMgungundlovu households' heads did report that the often skipped a meal and it was the highest percentage (19.8%) compared to other districts (Table 73). In eThekwini Metro Municipality 44.1% of Household heads never had to skip meals. This is also attributable to the fact that these are not major food crop producing districts since they mostly rely on formal employment, in the commercial agricultural sector, services sector, aviation, manufacturing, mining, and tourism; hence households would rely entirely on buying food which was limited due to restricted markets and high food price.

Table 74 Households who ran out of food in KwaZulu-Natal Province

District	Your household ran out of food							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	52.6	462	21.9	180	14.4	139	11.1	76
UMgungundlovu	42.6	291	13.8	115	29.0	197	14.5	113
Uthukela	39.2	327	26.0	211	25.1	214	9.7	72
Umkhanyakude	32.3	275	27.1	148	24.0	215	16.6	78
King Cetshwayo	43.7	367	23.3	173	23.7	184	9.3	71
Harry Gwala	45.2	298	21.2	151	21.2	190	12.4	101
Umzinyathi	39.3	293	19.6	150	22.1	233	19.1	175
Amajuba	45.3	386	21.4	151	23.6	187	9.7	76
Zululand	34.0	263	11.9	150	28.7	212	25.4	185
iLembe	42.2	342	16.5	135	27.2	218	14.1	110
eThekwini	57.0	482	21.0	157	14.6	144	7.4	80

In the KZN Province, a significant proportion of households reported that they often ran out of food particularly

in Zululand 25% and Umzinyathi 19%. Several districts had over 20% of households reporting to have sometimes ran out of food. These include UMgungundlovu 29%, Zululand 28,7%, iLembe 27%, UMgungundlovu 24% followed by King Cetshwayo, Amajuba, Umzinyathi and Haryy Gwala respectively (Table 74).

Table 75: Household heads who went without eating for a whole day

District	You went without eating for a whole day							
	Never		Rarely		Sometimes		Often	
	%	N	%	N	%	N	%	N
Ugu	72.9	646	11.9	103	9.6	82	5.6	23
UMgungundlovu	52.5	381	12.7	95	22.9	150	11.9	87
Uthukela	56.3	456	22.8	182	16.1	140	4.8	42
Umkhanyakude	41.5	367	23.7	140	27.7	150	7.1	57
King Cetshwayo	68.8	524	10.9	104	15.6	123	4.7	43
Harry Gwala	65.8	446	12.1	99	14.4	125	7.7	68
Umzinyathi	56.3	440	11.8	96	15.0	157	16.9	156
Amajuba	60.5	486	19.1	145	15.0	118	5.4	48
Zululand	46.7	400	7.5	92	23.5	156	22.3	160
iLembe	60.6	506	11.4	81	18.8	137	9.1	78
eThekwini	77.5	656	11.4	91	8.6	79	2.5	35

Results show that it was exceedingly rare for the household heads to go without eating for the entire day (Table 75). However, in Zululand District the households' heads (22.3%) had reported that they often went a full day without consuming food during the COVID-19 pandemic.

10 Recommendations

- The results have shown relatively high levels of access to land, and low participation of households in farming activities. Most households depend on food purchases, crop production, livestock. These results suggest that addressing food insecurity in KwaZulu-Natal should focus on strategies to increase agriculture production systems among households. However, the focus group discussion showed opportunities in intensive food production activities such as vegetables, dairy, and poultry. Agro-processing and value addition have a potential of increasing the participation of youths in agri-food value chains since cereal and horticultural crops are produced though at a subsistence level.
- Water shortage and recurrent drought emerged as part of major shocks. This implies that there is need for a well thought-out water provision programme in KwaZulu-Natal Province for household use and for agriculture production purposes. Possible interventions could be construction of dams for irrigation and domestic water reticulation systems at the household level.
- Another major shock reported were floods especially in iLembe and eThekwini districts where destruction of property, loss of livelihoods and loss of life.
- 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 as a crucial, food security programmes 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 by way of providing inputs and market opportunities. In KwaZulu-Natal Province, most families rely on subsistence agriculture for food.
- 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: Although most households reported relatively high levels of access to land, there is a need for deliberate land apportionment to empower the vulnerable group, especially the youth. Competing priorities for land pose a threat to agriculture production, considering this, the government is tasked to provide priorities of land. People seem to prefer obtaining big pieces of land and use it to build houses rather than for food production. This will increase and sustain agricultural production in rural areas of South Africa. It has potential to allow agriculture to serve as significant sources of income for households.
- Investment in post-harvest agro-processing: Most households were found to be involved in agricultural activities; to 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 reduce 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 of informal traders.

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