

National Food and Nutrition Security Survey

REPORT SOUTH AFRICA



National Food and Nutrition Security Survey National Report

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List of Abbreviations

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

NFNSS	National Food and Nutrition Security Survey
NIDS	National Income Dynamic Survey
NISIS	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
ZAHM	Highveld Open Access Mixed Income (ZAHMI) Livelihood Zone



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This report is based on information gathered from specific Small Area Layers (SALs) located throughout South Africa's nine provinces. A Small Area Layer is the smallest geographic unit that is typically assigned to a single enumerator during a census or enumeration. For the National Food and Nutrition Security Survey, 35 visiting points (households) made up the SAL. Except for Limpopo Province whose SALs had 20 visiting points (households). The findings presented in this report provide a baseline assessment of South Africa's current state of food and nutrition security. The data was gathered at the peak of Covid-19 in Limpopo, Mpumalanga, and North West provinces. The overall effects of strict Covid-19 restrictions are likely to have an influence on the results presented in these three provinces due to the limited movements and interaction among people. Data collection in the rest of the provinces was done in less restrictive Covid-19 lockdown measures however the post covid effects may have influenced the overall outcome on some of the food security and nutrition indicators. This research project has benefited from the valuable insights and input of a Technical Advisory Group (TAG) that provided comments and reviewed the final research reports. Ultimately, the contents of this research project are the responsibility of the authors and principal researchers involved. Users of this research should exercise their judgment and discretion when interpreting the findings and recommendations presented herein.

Foreword by the Director General

Introduction

South Africa is remarkably one of the countries that explicitly recognizes the right to food in its foundational document, the Constitution. Section 27 (1) (b) of the Constitution states that everyone has the right to have access to sufficient food and water and that the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of each of these rights.

Improving food and nutrition security is, therefore, a priority for the country. Detailed data on the status and trends for food insecurity and malnutrition is essential for effective policy decisions, planning, and targeting of interventions.

South Africa is a signatory of the Dar Es Salaam Declaration on Agriculture and Food Security. Under this declaration, the Southern African Development Community (SADC) Secretariat was mandated by all SADC Heads of State to enhance coordination of the vulnerability assessment and analysis activities taking place in various member states. This was based on a clear recognition that accurate food insecurity and vulnerability assessments are vital for enabling coherent planning, policy development, advocacy, and targeting of food security interventions. The mandate given to SADC resulted in the formation of the Regional Vulnerability Assessment and Analysis (RVAA) Programme and National Vulnerability Assessment Committees (NVACs).

Vulnerability assessments are, therefore, conducted through the National Vulnerability Assessment Committees (NVACs). In South Africa, the South African Vulnerability Assessment Committee (SAVAC) is responsible for conducting the vulnerability assessments and analysis. The DALRRD serves as the secretariat and chair of the SAVAC. SAVAC plays a crucial role in identifying the main drivers of food insecurity in South Africa, and advising on targeted interventions. By conducting vulnerability assessments, the committee gains a better understanding of the socio-economic factors that contribute to food insecurity and ensure that resources and policies are effectively directed towards addressing these root causes. The DALRRD provides support as the secretariat and, likewise, coordinates the SAVAC partners towards ensuring that the Committee is well-equipped to drive the development of innovative solutions that tackle food insecurity assessment head-on.

The Food and Nutrition Security Challenge: South Africa's Food Security Status

According to Statistics South Africa (StatsSA), 80% (14,2 million) of nearly 17,9 million households in SA in 2021 reported adequate access to food, while 15% (2,6 million) and 6% (1,1 million) reported inadequate and severely inadequate access to food, respectively. These numbers highlight the significant disparities in food security within the country. Rural areas, in particular, face challenges such as limited access to resources and infrastructure, which contribute to higher levels of household food insecurity. Unemployment, poverty, and the effects of climate change, which disproportionately affect rural regions, increase these disparities. Furthermore, the Covid-19 pandemic has exacerbated the issue, as lockdowns and the economic crisis have resulted in job losses and higher food prices.

Noting that the current food system for the country is still shaped by historical legacies that present an urgent need for transformation, smallholder and subsistence producers still find it difficult to compete.

Why Food and Nutrition Security Data Matters

The South African food security context differs from most SADC countries in that the country is maintaining its ability to meet national food requirements and has a relatively diverse and robust macro-economic environment. However, household food access remains highly variable and dependent on a range of factors, especially economic factors.

As such, South Africa as a country needs to continuously measure and monitor the household food insecurity and vulnerability situation as well as identifying the pockets of vulnerability to food insecurity. It is against this background that DALRRD appointed the Human Sciences Research Council (HSRC) to conduct the National Food and Nutrition Security Survey (NFNSS) at the sub-national level.

The survey intended to capture baseline information on livelihoods, food and nutrition security scenarios, and causes. It was further aimed at identifying the geographical location of the 13,65 million individuals with inadequate and severely inadequate access to food at a sub-national level - as reported by the GHS, 2018.

The survey, conducted during 2021/22, further captured the underlying causes and the severity of households' vulnerability. The inefficiencies that had to be addressed included inadequate information at the sub-national level, as most of the information is at macro level.

Availability of Data at the Sub-national Level – A Gleam of Hope

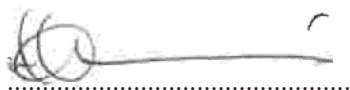
The survey, being the first of its kind, has provided DALRRD and provincial departments of agriculture (PDAs) with critical data that will be used to develop appropriate interventions for food and nutrition security at a sub-national level. This survey and the database further provide a platform that will be used to constantly monitor household vulnerabilities to food insecurity as part of the SADC VAA.

The DALRRD is pleased to present the first food and nutrition security baseline for the country for purposes of:

- Informing policy and programmes that aim to alleviate poverty, food and nutrition insecurity, livelihood vulnerability, and food insecurity among South Africans;
- Enabling the authorities to understand better where these challenges are in terms of geographical location as well as factors that drive change;
- Assisting authorities in identifying the most effective response measures based on evidence.

This final report should be read in conjunction with the nine provincial reports to ensure a comprehensive understanding of the food and nutrition security picture at a broader level. It is the DALRRD's hope that these results will provide the required initial guidance on how to address the current food and nutrition security challenges at the household level, which is the core area of focus.

Furthermore, the report will unearth the actual challenge of where food and nutrition insecure communities are located, as opposed to the usual method of providing selective support either due to accessibility or to convenience.



Mr R.M Ramasodi

Director General: Department of Agriculture, Land Reform, and Rural Development

Executive Summary

Food and nutrition security is one of the fundamental strategic imperatives of the government of South Africa. To demonstrate government commitment, South Africa's Constitution (Sections 27, 28, and 35) clearly confirms the people's right to adequate food access. To assure food and nutrition security at the household level numerous policies, programmes, and intervention measures such as social grant systems - including child support grants, school feeding schemes, farmer support programs, and many others - have been developed and implemented in the past.

These programmes are mirrored in the National Policy on Food and Nutrition Security, and subsequently the National Food and Nutrition Security Policy Implementation Plan of 2018-2023. Despite these innovations, food insecurity is still a major concern and a reality for 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.

Of concern is that South Africa has undergone a nutritional transition that is characterized by the triple burden of malnutrition (in which households are simultaneously experiencing undernutrition), hidden hunger, and overweight/obesity due to the consumption of nutrient-poor diets. This is in stark contrast to the assertion that South Africa is food secure at the national level. To correct the situation through targeted interventions, the distribution of food-insecure households across districts within the provinces of South Africa needs to be determined. This has been a concern for the Department of Agriculture, Land Reform, and Rural Development (DALRRD) in the past, as well as members of the South African Vulnerability Assessment Committee (SAVAC). SAVAC is made up of various government departments tasked with the responsibility of improving the state of household food security through targeted interventions.

To develop such interventions, current data at lower geographic levels (i.e., districts and municipalities) and contextual scientific evidence are critical. Accordingly, the DALRRD commissioned a National Food and Nutrition Security Survey (NFNSS) which sought to provide a baseline assessment of the state of food and nutrition security across districts and livelihood zones in South Africa. In addition, the survey aimed to examine the link between food security and nutrition using various indicators, and to assess the impact of Covid-19 on household food security.

This national report is an inaugural full scale baseline assessment of Food and Nutrition Security conducted across all the nine provinces of South Africa. The survey adopted the SAVAC endorsed methodological framework for measuring food insecurity. The approach blended both qualitative and quantitative components of assessing household food security. The approach thus incorporated the household economy approach (HEA) and the continuum of food and nutrition security (FNS).

Of the targeted 46 585 visiting points (VPs), 96.4% were valid. Of these valid VPs, 74.2% were realized. A total of 34 575 people were interviewed across the country; when weighted, this total represented 42 238 465 South Africans, 18 years and older. Key internationally accepted food security indicators such as the Household Food Insecurity Access Score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and Household Dietary Diversity Score (HDDS) were used to reflect the different dimensions of FNS in South Africa (Table 1).

Descriptive analysis of aggregated national data reflected variable levels of the intensity of food insecurity across all nine provinces, with severe food insecurity being more prevalent in North West Province. Within KwaZulu-Natal Province, the districts of Zululand and uMkhanyakude having the lowest dietary diversity (i.e., 7% and 6%, respectively). Notably, uMkhanyakude, uMgungundlovu, and iLembe districts had poor food consumption scores of 24% and 9%, respectively. The prevalence of malnutrition in some of the provinces is a cause for concern.

Overall, many households across all provinces of South Africa were food insecure. The HFIAS revealed that only 36.5% of households were food secure, with the remaining 63.5% being food insecure. Of those who were food insecure, 17.5% were experiencing severe food insecurity. The HHS on the other hand demonstrated that over 79.2 % of households were experiencing little to no hunger, while 15.3% and 5.6% of households were experiencing moderate to severe hunger. While this might indicate that the food insecurity situation in South Africa is not acute, the FCS and HDDS reflected that over 58.1% (FCS) and 80.8% (HDDS) of households consumed an acceptable combination of food groups. Despite this, the FCS reflected that 18.6% of households consumed poor diets, while 23.3% consumed borderline diets. Generally, the national overview of households indicated that some households survive on nutrient-poor food groups.

There was increased evidence of acute food insecurity in households that were headed by elderly people. A number of demographic and socio-economic factors such as gender, age of the household head, access to resources like irrigation, water sources, sanitation, social grants, as well as exogenous factors (such as household size, markets, household head's education level and involvement in agricultural production) were found to significantly influence the food security status of households. The findings showed a positive correlation between improved status of household food security and employment, higher education status, and access to social amenities.

The percentage of food-secure households was positively correlated to the average household education levels, and it grew in line with the household head's educational attainment. As an illustration, more than two thirds (71.0%) of households headed by persons with higher education were guaranteed to be food secure, compared to 23.7% of homes led by people without formal education. Additionally, it has been demonstrated that educated people have greater options and better chances of success in their endeavours, which increases their social welfare. Access to land and participation in farming activities were found not to have any impact on the households' level of food security.

Access to land remains one of the key factors that require deep interrogation within the food security discourse. Compared to households with access to land and those engaged in farming activities, those without either of these factors were more likely to experience food insecurity. Food security was found to be present in 30.4% of people with access to land and in 40.1% of people without such access, a contradictory discovery to the usual school of thought on land issues. Those engaged in farming activities made up 25.3% of the population; this is lower than the 38.8% for non-farmers. While increasing social protection programs (such as social grants) and fostering work possibilities remain crucial, land-based livelihood solutions help to alleviate the problem of food insecurity. Without these programmes food insecurity would have gotten worse. However, more needs to be done to conscientize households to use land for productive purposes.

Between 79% and 89% of children under two years of age were breastfed at some point in their lives. The national prevalence of overall stunting, wasting, and underweight in children aged 0-5 years is 28.8%, 5.3%, and 7.8% respectively (compared to 28.6%, 3.7%, and 6.8% in 2012 and 27.0%, 3.0%, and 6.0% in 2016). This indicates that the proportion of children experiencing both acute and chronic undernutrition has increased slightly over the past 10 years. Over the same period, the combined prevalence of overweight and obesity in adult females has increased slightly from 64% to 67.9%, while that of adult males has increased substantially

from 30.7% to 38.2%. Across the provinces, overall, the Northern Cape Province remains the highest risk with an overall prevalence of stunting of 48.3%, a severe stunting prevalence of 16.6%, a severe wasting prevalence of 21.8%, and severe underweight prevalence of 22.4%. The nutrition indicators for both children and adults showed some significant correlations with the food security status of households. In children stunting, underweight, and overweight were significantly correlated with food security status. In adults underweight, obesity/overweight, and individual dietary diversity showed some significant correlations with the food security status of households.

The findings also demonstrated that the Covid-19 pandemic and the lockdown measures put in place to stop its spread caused significant disruptions to the supply of food to households. The main shock felt by most provinces was the spike in food prices. The picture was that most households were frequently concerned about running out of food before having enough money to purchase additional food. This concern differed across provinces, with Gauteng Province (15.6%) having the least number of households who were worried about the supply of food.

To ameliorate the situation, several recommendations have been proposed in this report. These recommendations revolve around:

- acknowledging the diversity in South Africa's food system which is reflected across the nine provinces,
- the development of strategies to increase household incomes,
- increasing household income through employment,
- motivating the youth to participate in agriculture,
- development of a clear path for ensuring household access to water,
- enhancing household food safety through food banks,
- enhancing household access to land,
- intensification of promotion of domestic food production through vegetable gardens,
- improved awareness of consumption of health food groups, and
- full-scale implementation of healthy lifestyle programmes through self-reliance and production of household food.

Table 1: National Statistics Dashboard for Food and Nutrition Security Indicators disaggregated by province

FOOD SECURITY INDICATORS (%)												
PROVINCE	Household Food Insecurity Access Scale (HFIAS)			Household Hunger Scale (HHS)			Household Dietary Diversity Score (HDDS)			Food Consumption Score (FCS)		
	Food Secure	Mild/ Moderate	Severe	Little/No	Moderate	Severe	Highest	Medium	Lowest	Acceptable	Borderline	Poor
Western Cape	45.0	37.0	17.0	81.0	13.0	6.0	83.0	12.0	5.0	72.0	16.0	11.0
Eastern Cape	27.0	53.0	20.0	78.0	16.0	5.0	78.0	16.0	7.0	62.0	23.0	15.0
Northern Cape	35.0	44.0	21.0	74.0	19.0	7.0	81.0	13.0	6.0	51.0	25.0	24.0
Free State	32.0	46.0	22.0	74.0	19.0	7.0	68.0	23.0	9.0	37.0	38.0	25.0
KwaZulu-Natal	30.0	53.0	17.0	80.0	15.0	4.0	82.0	16.0	3.0	76.0	19.0	5.0
North West	27.0	48.0	25.0	69.0	21.0	10.0	76.0	17.0	6.0	43.0	32.0	25.0
Gauteng	49.0	37.0	14.0	82.0	12.0	5.0	84.0	14.0	3.0	74.0	16.0	10.0
Mpumalanga	30.0	48.0	22.0	72.0	20.0	7.0	84.0	13.0	4.0	47.0	30.0	23.0
Limpopo	37.0	50.0	12.0	84.0	13.0	3.0	82.0	15.0	4.0	41.0	25.0	34.0
National	36.5	46.0	17.5	79.2	15.3	5.6	80.8	14.9	4.3	58.1	23.3	18.6

DISTRICTS	NUTRITION INDICATORS (%)											
	STUNTING			WASTING			UNDERWEIGHT			BMI		
	All	Moderate	Severe	All	Moderate	Severe	All	Moderate	Severe	Underweight	Overweight	Obese
Western Cape	46.4	20.8	25.7	3.8	0.8	3.0	5.3	2.7	2.6	3.8	28.8	32.6
Eastern Cape	33.3	15.4	17.9	3.8	1.3	2.4	5.3	3.1	2.1	8.0	25.6	32.5
Northern Cape	46.2	30.4	15.8	23.8	4.8	19.0	27.6	8.8	18.8	20.7	16.8	26.9
Free State	32.1	19.2	12.9	4.3	2.7	1.6	11.4	7.4	4.0	12.5	22.0	27.4
KwaZulu-Natal	27.5	12.3	15.3	2.1	1.3	0.8	4.4	2.8	1.6	4.0	24.3	39.4
North West	30.3	18.0	12.3	5.3	3.0	2.4	14.4	9.7	4.7	10.7	18.6	25.2
Gauteng	23.9	13.0	10.9	6.8	3.4	3.5	7.7	3.6	4.1	3.0	28.5	30.9
Mpumalanga	21.8	9.4	12.4	7.4	2.5	4.9	8.4	4.0	4.3	5.2	24.7	30.5
Limpopo	14.9	6.6	8.3	6.6	1.9	4.7	8.8	2.9	5.9	7.5	22.5	30.8
South Africa	28.8	14.0	14.8	5.3	2.1	3.2	7.7	3.9	3.7	6.0	25.3	32.1

Legend

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

Food security is attained when all members of the household consistently consume enough food that meets their individual dietary needs (FAO, 1996). Under the current South African Constitution, all citizens are guaranteed the right to access enough food. To realise this, the government of South Africa enacted the National Policy on Food and Nutrition Security in 2014. Despite the solid plan and the legislative, constitutional, and policy frameworks for food and nutrition security, a significant proportion of South Africa's population still faces food and nutrition challenges - which 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, there are many families and individuals that go to bed on empty stomachs (Stats SA, 2019). This is increasingly becoming worse, with an estimated 1 in 5 South African households not having enough food to eat (Wits, 2023).

Food security is multi-dimensional¹ and needs to be addressed in the context of several realities faced by the country such as land access, high levels of unemployment, inefficient use of natural resources, the ever-increasing population (currently estimated at around 65 million, which implies high demand for food supplies), and the reality of climate change. The country's national food system has been hit hard by Covid-19 and climate induced shocks such as floods and recurrent droughts. The country's food security status is worrying. The high unemployment rate across the country and the subsequent decline of household income, together with unsustainable reliance of many households on social grants as their sole source of income (see provincial reports), is a cause for concern. This requires appropriate, effective, and efficient planning to advance policy and practice that address the country's vulnerability to food insecurity.

Such planning needs to be supported by up-to-date data at lower geographic levels (such as districts and municipalities) and scientific evidence that is contextual and relevant to the realities faced by households. To increase the understanding of the status of food security in South Africa, the Department of Agriculture, Land Reform, and Rural Development (DALRRD) commissioned the National Food and Nutrition Security Survey (NFNSS), which sought to provide baseline data on food and nutrition security in South Africa. The objectives of the NFNSS were:

- a) To provide a baseline assessment of the food and nutrition security situation at household level in the respective livelihood zones of all provinces in South Africa in terms of:
 - i. Availability: to determine food availability at household level.
 - ii. Access: to determine food access at household level.
 - iii. Food Utilisation: to determine individual food consumption within the household and compile anthropometric measurements.
 - iv. Food Stability: to assess household food stability with respect to food supply, price changes, shocks, and the coping mechanisms.
- b) To analyse the link between food security and nutrition and explore reasons for people's vulnerability.
- c) To assess the impact of Covid-19 on food security and nutrition at household level in South Africa.
- d) To make recommendations for planning and targeting of interventions for food and nutrition security.

Based on information collected from households and reported in individual reports of the nine provinces of the country, this national report provides a synthesis of findings derived from the national consolidated data-set. It highlights the vulnerabilities of households to hunger and food insecurity at a national level.

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

The food system in South Africa has seen significant changes since the advent of democracy. The country's shift from being a net exporter of agricultural goods to being a net importer of food is one of the notable changes that have inevitably affected household food security. This transformation is partially a result of concentrated control of the food manufacturing and delivery industries, rapid urbanization, and trade liberalization. Positive and negative effects of these changes have been expressed in the South African food chain with direct implications to household food security. It is, therefore, important to comprehend these changes in order to develop effective and appropriate interventions.

The concerning state of food and nutrition vulnerability in South Africa has been exacerbated by policy failure, which has been compounded by both the prevailing economic hardships - which are a result of global and local economic downturn and have led to a high rate of unemployment - and the outbreak of Covid-19 with the associated lockdown measures implemented by the government to contain its spread. To intervene under similar circumstances, 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.

As revealed by provincial findings (see provincial reports), understanding the existing heterogeneity in the food system is a guarantor of effective food security interventions. Infusing heterogeneity in the food system demonstrates the respect for cultural heritage, and promotes cultural diversity. Different cultures have unique culinary traditions and local specialties that depend on specific crops and ingredients. Preserving these traditional foods and farming practices not only honours cultural identity but also contributes to the overall diversity of the food system. Furthermore, heterogeneity in the food system encompasses the variety of foods produced, the methods used to grow them, and the genetic diversity within species.

In order to evaluate the effects and contributions of the policies and programmes that have been developed since 1994, the year South Africa transitioned to democracy, so as to improve both national and household food security, it is critical to compare the status of household food security before and after South Africa's transition to democracy. To do this, the DALRRD commissioned a nationwide food security and nutrition survey. The survey sought to develop a deeper understanding of the state of food security and hunger at household level. The ultimate objective is to develop targeted programmes and intervention measures that address prevalent problems with the hope of improving the state of household food security.

DALRRD is the secretariat for the South African Vulnerability Assessment Committee (SAVAC), which it also chairs. 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.

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

The survey utilized the SAVAC-endorsed methodology for assessing food insecurity and vulnerability. The approach integrates qualitative and quantitative research elements for assessing food security. The usage of this approach improves methodological and data triangulation. In general, it can be claimed that the framework uses the Household Economy Approach and the continuum of food security.

3.1 Food Security Continuum

The continuum of food security expands on the iterative understanding of the issue of food insecurity. By concentrating on both individual and household experiences, it considers the right to food and brings together the economic, social, environmental, and political components of food insecurity. The continuum of food and nutrition security is depicted in Figure 1, below.

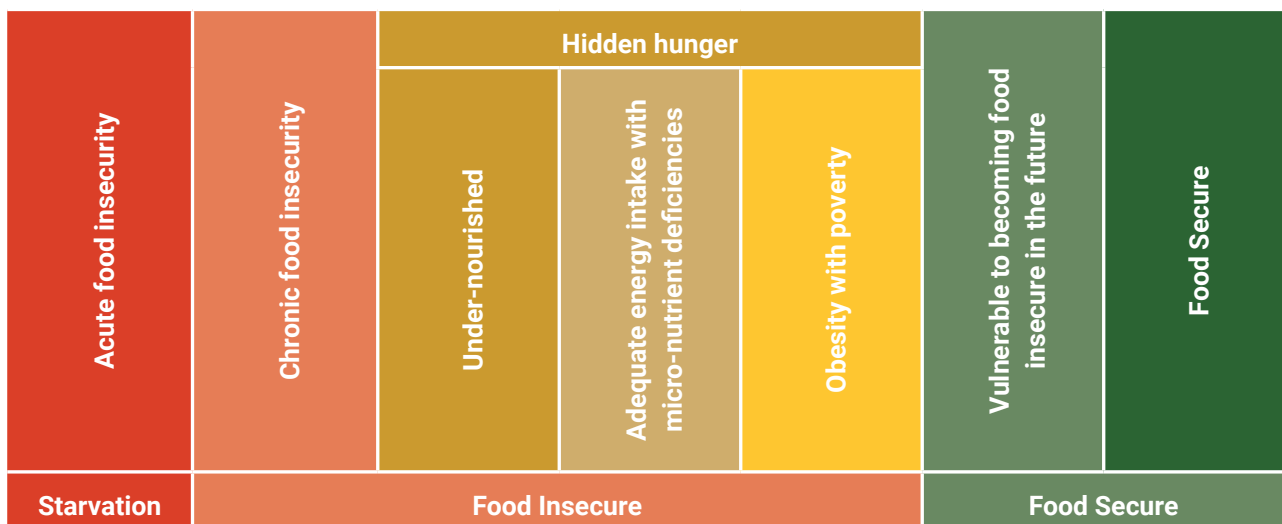


Figure 1: Food Security Continuum (Hendriks, 2016)

A set of indicators were taken into account to track household food security and nutrition status. These included the Household Food Insecurity Access Score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and Dietary Diversity Score (DDS) and anthropometric measurements to determine the proportion of households experiencing food insecurity by employing different Food Security Continuum categories.

3.2 Indicators of Food and Nutrition Security Measurement

Various metrics were used to calculate the degree of food and nutrition security (FNS) in households. Due to FNS's multi-dimensionality, it is challenging to fully represent each of its dimensions with a single indication. There are now multiple complimentary indicators that each focus on one or more of the four characteristics of FNS (availability, access, usage or nutrition, and stability), as opposed to a perfect single indicator of FNS (Hendriks et al., 2016). The availability of sufficient amounts of food in acceptable quality - whether from domestic production, imports, or charitable donations - is referred to as the food availability dimension.

This report focused on the availability, access, and utilisation dimensions of food. Food access refers to a household's or an individual's ability to obtain suitable foods for a wholesome diet in a manner that is socially acceptable. The food utilisation pillar focuses on households' capacity to choose, store, prepare, distribute, and consume food in ways that promote appropriate nutritional absorption for all household members. In order to achieve a state of nutritional well-being where all members' physiological demands are met, this dimension concentrates on how households use food through proper diets, clean water, sanitation, and health care.

The food stability pillar emphasizes that in order for a population, home, or individual to be food secure, they must always have access to enough food. They should not run the risk of going without food because of cyclical occurrences or unexpected shocks (such an economic or environmental crisis). Studies that looked into the relationships between various FNS indicators in South Africa and elsewhere discovered that these relationships ranged from relatively weak within FNS dimensions (comparing indicators of the same dimension) to relatively strong across FNS dimensions (comparing indicators of the different dimensions).

Thus, it is crucial that a variety of FNS indicators be recorded in order to properly track the many dimensions of FNS. The approach suggested using standardized and acceptable food and nutrition measuring indicators, understanding that there is not a single ideal, widely accepted metric that fully captures all aspects of food poverty. Through the food security continuum, an array of indicator tools was used, and these were complemented with the HEA as indicated in Table 2.

Table 2: Tools that were used for both the quantitative and qualitative methods

	Baseline Assessment Indicators	Tools	Instrument: Section	
Food Security Continuum	Availability	<ul style="list-style-type: none"> • Production • Post-Harvest 	6	*** Household Economic Approach
	Access	<ul style="list-style-type: none"> • Hunger Scale (12months) • Hunger Scale (4Weeks) • HFIAS 	7 A, B, C, D 9	
	Stability	<ul style="list-style-type: none"> • Food expenditure • Key Informant Interviews • Shocks 	8, 11, 12	
	Utilisation	<ul style="list-style-type: none"> • HDD • Anthropometry Measurements 	Individual Nutrition Questionnaire	

**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 Household Economy Approach (HEA) is widely used in several Southern African Developing Community (SADC) nations. It is a livelihoods-based vulnerability assessment technique. In addition to providing a forecast analysis for food security and livelihood outcomes in the context of a dynamic environment, this technique offers an understanding of how individuals make a living (livelihood systems), which is crucial for planning and formulation of targeted interventions. The information gathered in this method is based on the use of semi-structured interviews and rapid evaluation procedures to ascertain the distribution of wealth and means of subsistence in various regions. Key informant interviews and focus groups were used in several livelihood zones for this qualitative aspect of the food security and nutrition evaluation.

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 Probability Proportional to Size. Across the nine provinces, the study selected a total of 1 382 SALs. The second stage was a simple random selection of households within each selected SAL/Cluster, and for this study, 35 households per SAL were selected. Then in each household, an average of three persons (household head, mother/caregiver, and child under five years old) were selected.

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

4.2 Determination of the Geographical Area (strata) for Household Sample Design

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

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 country has 84 Open Access rural Livelihood Zones that have people living in them. The LHZ strata can cover several districts or cross over several provinces. This means a district will not necessarily have all the livelihood zones. A GIS (Geographic Information System) function was used to overlay the administrative boundaries with the livelihood zones (as illustrated in Figure 2).

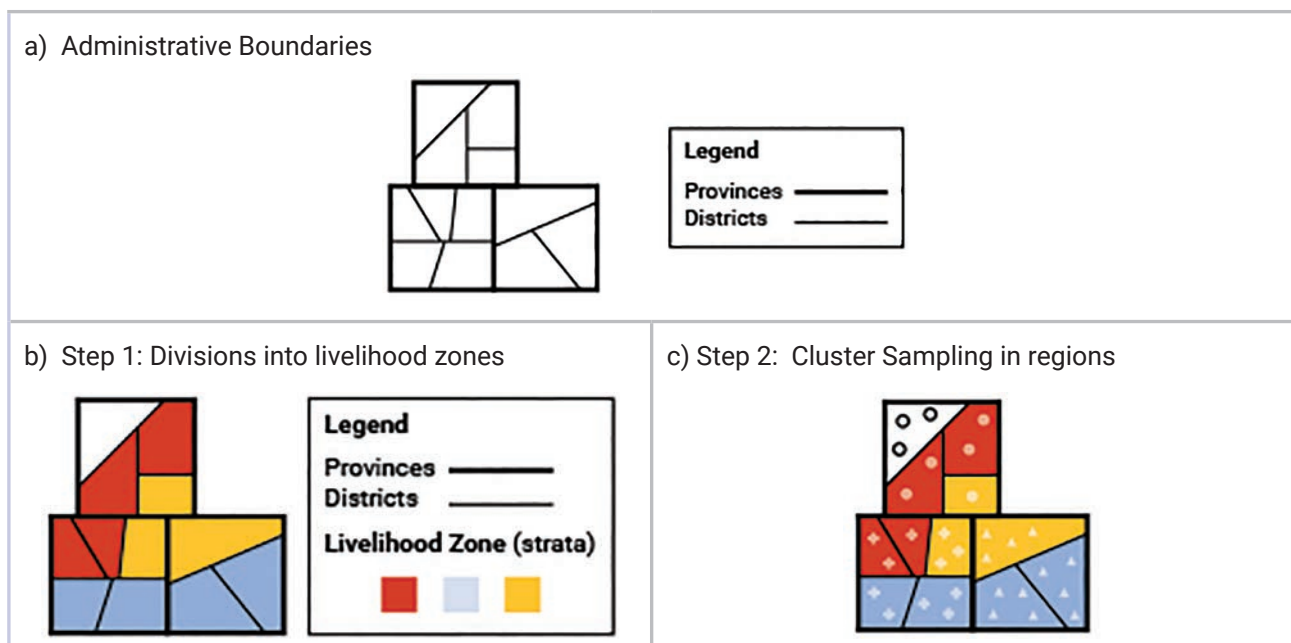


Figure 2: Schematic representation of the overlay of administrative boundaries and LHZ

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

4.3.2 Participant exclusion criteria

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

4.4 Sample Size Estimation

The estimated sample size was intended to inform the process of monitoring significant changes in South Africa's food and nutritional security over time, specifically between rounds of food and nutritional security. Furthermore, it was not the intention of the survey to provide exact district-level estimates of the prevalence of malnutrition. The main purpose of gathering information on nutrition and/or anthropometric measurements was to evaluate the levels of food security and nutrition and the relationship between the two. The projected prevalence of the food security outcome indicators as listed in Section 3.2 served as the foundation for the sample design. This was deemed enough to determine the minimal sample size necessary to establish a connection between the nutritional status of children and the level of food security in households.

To enhance precision in the estimation of the main outcome indicators, the Standardised Monitoring and Assessment of Relief and Transitions 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, insecure areas, or rejection of some original clusters. Likewise, households within each cluster were reserved to compensate for non-response or refusal. The inaccessible areas were replaced by the cluster with the same characteristics. This approach was adopted to ensure unbiased selection and to maintain the precision of the study outcomes.

4.4.1. Determining sample 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 3. Due to the many different indicators that could be used to measure food security, a proportion of 50% was considered to get the largest sample desired for analysis of multiple indicators of food security at district level.

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

- 95% degree of confidence (Z Score=1.96);
- P is the prevalence of food insecurity measures for each province; if missing, we assume a P of 50%, which will yield the required sample size which is desired for the 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 3: Food Security indicators

Parameters for food security	Value	Value	Value
Estimated Prevalence of food insecurity (%)	50%	50%	50%
± Desired precision	5%	6.5%	7%
Design Effect (<i>if applicable</i>)	1.5	1.5	1.5
% Non-response Households	15%	15%	15%
% Confidence interval	95%	95%	95%
% Power	80%	80%	80%
Households per district (strata)	678	401	346
TOTAL SAMPLE	35 256	20 852	17 992

A sample of 401 households per stratum (district) provided the required estimate of food insecurity of 50% (SANHANES, 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 all the provinces, each with a peculiar average of 480 households per district (Table 3). A lower precision, e.g., 7%, recommended for lower geographies, yielded 346 households per region.

4.4.2. Determining sample for nutritional indicators survey

The sample did not aim at providing an estimate of malnutrition at lower geographical levels. The goal was to establish the link between food security and nutrition. It was estimated that a sample of 106 children under five years of age for each stratum (district) and converted into 366 households provides the required estimate of stunting of 21.5% (SANHANES, 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 levels. The recommended precision ranged between 2-10% for higher geographies (e.g., province) and between 10-20% for lower geographies (municipalities).

Table 4: Parameters for nutritional indicators

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

This survey was conducted in 1382 SALs, across the nine provinces in the country. Within each SAL, a random sample of 30-35 visiting points was identified. One household was to be selected at each visiting point. 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 Section 4.3). These include the head of the household and/ or the person responsible for food procurement and food preparation, as well as the biological mother of any children under the age of five years and all children between the ages of 0-5 years. The study had estimated that, on average, each household will yield three people. The total sample was thus 46 585 households. The survey managed to get 3 148 children under the age of two across all the nine provinces in the country.

4.4.3. Sampling procedure: Selecting clusters

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

The study adopted the World Food Program (WFP) Technical Guideline, which defines a cluster based on SALs, cluster size, or the number of household 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.

4.4.3.1. Household response rate

The Eastern Cape Province recorded the highest realisation with 86.8%, while North West Province accounted for the least percentage with 60.5%.

Table 5a: Household response rate disaggregated by province in South Africa

PROVINCE	Total VPs	Valid VPs		Interviewed		Refused		Absent/Other	
	n	n	%	n	%	n	%	n	%
Western Cape	5180	5039	97.3%	3899	75.3%	568	11.0%	572	11.0%
Eastern Cape	7035	6883	97.8%	6104	86.8%	183	2.6%	596	8.5%
Northern Cape	4515	4256	94.3%	3069	68.0%	242	5.4%	945	20.9%
Free State	4795	4620	96.4%	2916	60.8%	425	8.9%	1279	26.7%
KwaZulu-Natal	10955	10500	95.8%	8824	80.5%	489	4.5%	1187	10.8%
North West	3430	3250	94.8%	2074	60.5%	216	6.3%	960	28.0%
Gauteng	5810	5623	96.8%	4035	69.4%	802	13.8%	786	13.5%
Mpumalanga	2485	2393	96.3%	1611	64.8%	228	9.2%	567	22.8%
Limpopo	2380	2349	98.7%	2043	85.8%	50	2.1%	256	10.8%
Total	46585	44913	96.4%	34 575	74.2%	3203	6.9%	7148	15.3%

4.4.3.2 Delimitation of the Household Economic Approach (HEA)

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

4.5 Field Data Collection

The data collection process in the field was preceded by a 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 would ensure that the fieldwork was consistent, rigorous and that it upheld 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:

- 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 1 382 Small Area Layer (SALs) with a total of 35 households in each visiting point were pre-selected 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, while the care giver or the mother was targeted as a respondent for individual nutrition questions for adults and children within the household. The food utilisation dimension involved anthropometric measurements such as height, weight, etc. (See Table 1). Data collection was done using tablets that were linked to the central server, where data was deposited through real-time streaming that took place under strict supervision.

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

A broader understanding of livelihood strategies.

Problem specification and understanding of the coping strategies.

4.5.4.1 Food security livelihood zoning

The study adopted the South African Livelihood Zone classification, which was developed by the Department of Agriculture, Forestry and Fisheries (which is now referred to as the Department of Agriculture Land Reform and Rural Development) through the SAVAC secretariat. Essentially, the zoning was done by developing a 'tree' or hierarchy of criteria for determining livelihoods. Each level was divided into new sub-categories based on the characteristics of a geographical area. There are 119 coded livelihood zones in the Republic of South Africa. Of these, six are 'official zones', restricted or protected areas; four encompass agroforestry or sugar plantations; five are urban 'business areas', commercial, industrial, or service areas; and the balance of 104 are 'proper' livelihood zones where people live. Out of these remaining 104 zones, 20 are in urban areas.

4.5.4.2 Zonal district key informant interview

This interview primarily looks at the administrative key informants in the area. It provided insights on the key characteristic patterns of people's livelihoods and in this context, it validated the existing classified livelihood zones that have been developed.

4.5.4.3 Market visit and trade interview

The interview targeted 'market visit' and 'traders' in the selected area of study. Understanding the characteristics and dynamics at the markets and traders provided insights on the acquisition and consumption patterns in the area of study.

4.5.4.4 Community level interview: Focus group discussion

Discussions were undertaken with community representatives (key informants) to develop wealth breakdown¹¹ for the selected community or study area. This process disaggregated the community population and households into common 'access' groups, which allowed key informants to isolate important differences in households' assets, capital, vulnerabilities to different shocks and to estimate numbers of people who will be affected by different changes. Key informants from each community managed to identify participants for each wealth group, based on the wealth characteristics which were established based on the local definition of wealth. Community leaders assisted with organising 4-6 people from each wealth group from different households. At least half of the participants or groups were women.

4.5.4.5 Wealth group level key informant interview

This focus group consisted of people from the specific wealth groups. They were asked individually to describe their land, livestock, and/or sources of income. They represented people at their level of wealth rather than talking about themselves personally.

4.6 HEA Sampled Livelihood Zones

4.6.1 Selection criteria

The first point of determination of livelihoods was land tenure. Two broad categories of tenure were defined as these are what determines livelihoods: exclusive access and open access. Land tenure influences asset distribution: freehold tenure encourages heavy capital investment with resultant improvements in productivity, but it restricts ownership to a small set of farmers or owners; while open access permits a greater degree of sharing and equitable access but limits access to capital and the ensuing productivity benefits to be derived therefrom. Regarding livelihoods, exclusive access farms have a strong business approach with workers who are dependent on them for employment, while in open access systems there is usually a pattern where there are more independent farmers. However, some are more successful than others; there was a variation in dependence on production vis-a-vis employment or other sources of livelihood.

Enumeration Areas were once again used to differentiate between exclusive and open access, although the resultant divisions of land were tested with overlays from the farms database. The focus in this study was on open access livelihood zones.

4.6.2 Distribution of livelihood zones

The qualitative study covered thirty livelihood zones spread across the nine provinces (Table 5b). Communities were sampled from open access livelihood zones in the same areas where quantitative data was conducted. Table 5b: Distribution of livelihood zones across the provinces (GP = Gauteng, WC = Western Cape, NW= North West, NC = Northern Cape, KZN = KwaZulu-Natal, LP = Limpopo, MP = Mpumalanga, FS = Free State, EC = Eastern Cape)

HEA Sampled Rural Livelihoods								
GP	WC	NW	NC	KZN	LP	MP	FS	EC
ZHGR	ZAWSC	ZANWC	ZAOCCG	ZATGL	ZANOC	ZABOL	ZACHO	ZAHWC
ZAHVC	ZAVIN	ZAHMI	ZANWC	ZACNI	ZALOI	ZAHIC	ZAOCC	ZAMIO
ZAMWF	ZAOUT			ZARLC	ZANOF	ZAHMI	ZAKOL	ZALAN
			ZAHMI	ZASCO				ZACHO
	ZAMWF							ZAKUK

Note: Ten communities (villages) were sampled in each LZ, ten key informant interviews and forty wealth group discussions were conducted in each livelihood zone.

¹ A wealth group is a grouping of people based on local definitions of wealth and a quantification of assets within communities.

Map of Livelihood Zones across provinces



4.7 Data Management, Weighting, and Analysis

4.7.1 Data management

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



The data was transmitted to the central database. Once all the data was collected, it was downloaded and converted into Statistical Analyses Systems (SAS) and Statistical Package for Social Scientist (SPSS) for further manipulation. Data management included data-cleaning exercise. 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 were 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 in each of the nine provinces to validate the methodology and fill in the missing gaps in the data. Captured data and validated data that contains 46 585 cases, and 34 575 variables were converted to (SPSS) for descriptive analyses and exploration of data quality. Verified and cleaned data were further converted to Stata and SAS for further detailed exploratory analyses, cross-tabulations, weighting, and analyses.

4.7.2. Data weighting

The data were weighted to take 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 ration 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 national population. These benchmark variables for persons and province 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 South Africa National 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 34 575 people were interviewed in this study. When weighted, this total represents 42 238 465 South Africans of 18 years and older. The final data set (weighted and unweighted) are disaggregated by key demographic variables of household heads.

Table 6: Weighted and unweighted numbers (N's) for household head respondents disaggregated by province in South Africa

Province	Unweighted N	Weighted N
Western Cape	3 899	5 259 177
Eastern Cape	6 104	4 368 252
Northern Cape	3 069	900 915
Free State	2 916	2 025 677
KwaZulu-Natal	8 824	7 691 068
North West	2 074	2 868 062
Gauteng	4 035	11 939 261
Mpumalanga	1 611	3 242 087
Limpopo	2 043	3 943 966
Total	34 575	42 238 465

Table 7: Weighted and unweighted N's for household head respondents disaggregated by gender in South Africa

Gender	Unweighted N	Weighted N
Male	17 380	20 307 791
Female	17 195	21 930 674
Total	34 575	42 238 465

Table 8: Weighted and unweighted N's for household heads respondents disaggregated by race in South Africa

Gender	Unweighted N	Weighted N
Black African	27 810	33 377 737
Coloured	4957	3 794 767
Indian/Asian	345	1 236 074
Indian/Asian	345	1 236 074
Other (Specify)	5	5
No Answer	4	4
Total	34 575	42 238 465

Table 9: Weighted and unweighted N's for household heads disaggregated by age in South Africa

Gender	Unweighted N	Weighted N
18-24	1 187	8 457 717
25-34	4 359	11 109 993
35-44	6 367	8 799 578
45-54	7 082	5 818 606
55-64	7 285	4 124 741
65+	8 267	3 767 321
No Answer	28	160509
Total	34 575	42 238 465

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 for age, race, age group, and province, was done to ensure that the estimates of the food and nutrition survey variables were aligned to the general population of South Africa. Analyses of weighted data were conducted taking into account the multi-level sampling design, and adjusting for non-responses.

5.1 Demographics of the Respondents

5.1.1 Characteristics of the household heads and members

Table 10 depicts characteristics of household heads and members from the households that were realised. More than half (50.3%) of household heads were males. The majority were the Black African population group (80.5%), while those aged 65 years and older constituted 23.9%. In terms of marital status, those who were married and single accounted for around 39% each. KwaZulu-Natal recorded the highest percentage with 25.5%, while Mpumalanga accounted for the least proportion with 4.7%. With regards to household members, 54.5% of household members were females and 81.1% were Black Africans. Children aged 0-14 years old constituted the highest percentage of household members, with 29.0%. Almost three quarters (73.9%) of household members were single. In terms of province, similar patterns that were experienced with household heads existed, with KwaZulu-Natal recording the highest percentage with 28.9%, while Mpumalanga accounted for the least proportion with 4.9%.

Table 10: Characteristics of the sample for household heads and members in South Africa

Variable	Household heads			Household members		
	%	95% CI		%	95% CI	n
Sex						
Male	50.3	[49.7-50.8]	17,380	45.5	[45.2-45.7]	60,650
Female	49.7	[49.2-50.3]	17,195	54.5	[54.3-54.8]	72,743
Total	100.0		34,575	100.0		133,393
Population group						
African	80.5	[80.0-80.9]	27,810	81.1	[80.8-81.3]	108,321
White	4.3	[4.1-4.5]	1,490	2.9	[2.8-3.0]	3,909
Coloured	14.3	[13.9-14.6]	4,932	15.2	[15.0-15.3]	20,249
Indian/Asian	1.0	[0.9-1.1]	334	0.9	[0.8-0.9]	1,152
Total	100.0		34,566	100.0		133,631
Age group						
0-14	-	-	-	29.0	[28.7-29.2]	37,638
18-24(15-24 for HH Members)	3.4	[3.2-3.6]	1,187	17.9	[17.7-18.2]	23,318
25-34	12.6	[12.3-13.0]	4,359	15.7	[15.5-15.9]	20,357
35-44	18.4	[18.0-18.8]	6,367	12.1	[11.9-12.2]	15,669
45-54	20.5	[20.1-20.9]	7,082	9.4	[9.3-9.6]	12,234
55-64	21.1	[20.7-21.5]	7,285	8.2	[8.1-8.4]	10,701
65+	23.9	[23.5-24.4]	8,267	7.7	[7.6-7.9]	10,051
Total	100.0		34,547	100.0		129,968

Variable	Household heads			Household members		
	%	95% CI		%	95% CI	n
Marital Status						
Married/Living together	39.7	[39.2-40.3]	13,486	20.1	[19.9-20.3]	26,460
Divorced/Widowed/Separated	20.9	[20.5-21.4]	7,102	6.1	[5.9-6.2]	7,988
Single	39.3	[38.8-39.9]	13,353	73.9	[73.6-74.1]	97,336
Total	100.0		33,941	100.0		131,784
Province						
Western Cape	11.3	[10.9-11.6]	3,899	11.1	[10.9-11.3]	14,899
Eastern Cape	17.7	[17.3-18.1]	6,104	17.0	[16.8-17.2]	22,790
Northern Cape	8.9	[8.6-9.2]	3,069	9.0	[8.9-9.2]	12,134
Free State	8.4	[8.1-8.7]	2,916	7.3	[7.2-7.5]	9,824
KwaZulu-Natal	25.5	[25.1-26.0]	8,824	28.9	[28.7-29.2]	38,766
North West	6.0	[5.8-6.3]	2,074	6.0	[5.9-6.2]	8,079
Gauteng	11.7	[11.3-12.0]	4,035	9.6	[9.5-9.8]	12,907
Mpumalanga	4.7	[4.4-4.9]	1,611	4.9	[4.8-5.0]	6,556
Limpopo	5.9	[5.7-6.2]	2,043	6.1	[5.9-6.2]	8,135
South Africa	100.0		34,575	100.0		134,090

5.1.2 Education attainment of household heads

Table 11 highlights the education attainment by the household heads. Secondary school education accounted for around 32%, followed by those with matric qualification, at 30.8%. The older household heads, those aged 65 years and older and those aged 55 years to 64 years, had higher percentages of no schooling with 15.7% and 8.1%, respectively. Gauteng had the highest percentage (33.8%) of household heads with tertiary education, while KwaZulu-Natal had the highest percentage of (38.7%) household heads with matric qualification. Mpumalanga had the highest percentage (9.2%) of household heads with no education.

Table 11: Educational attainment of household heads disaggregated by sex, age, and province in South Africa

Variable	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	2.9	[2.3-3.6]	11	[9.4-12.9]	30.5	[27.4-33.8]	31.3	[28.7-33.9]	24.3	[20.0-29.2]
Female	4.7	[3.9-5.5]	15.9	[13.4-18.7]	33	[30.2-35.8]	30.3	[27.8-33.0]	16.1	[13.8-18.8]
Total	3.8	[3.3-4.4]	13.6	[11.8-15.6]	31.8	[29.5-34.2]	30.8	[28.9-32.7]	20.1	[17.2-23.3]
Age group										
18-24	1.7	[0.9-3.1]	9.2	[5.3-15.5]	35.5	[28.5-43.2]	36.3	[29.9-43.2]	17.4	[11.0-26.3]
25-34	2	[1.0-3.8]	7	[4.9-9.9]	31.2	[27.6-35.1]	37.4	[33.8-41.2]	22.4	[18.7-26.6]
35-44	1.7	[1.2-2.5]	8.4	[6.8-10.4]	33.4	[30.2-36.7]	31.6	[29.0-34.4]	24.9	[20.4-29.9]
45-54	2.8	[2.2-3.5]	14.5	[12.5-16.7]	31.6	[28.6-34.7]	29	[26.2-32.0]	22.1	[18.1-26.9]
55-64	8.1	[6.6-9.9]	28.6	[25.4-32.0]	28	[25.1-31.2]	20.2	[17.4-23.3]	15.1	[12.3-18.5]
65+	15.7	[13.5-18.2]	33.6	[30.2-37.2]	28	[24.3-32.0]	12.4	[10.4-14.8]	10.3	[7.8-13.5]
Total	3.8	[3.3-4.4]	13.3	[11.6-15.2]	31.9	[29.6-34.3]	30.8	[28.9-32.8]	20.1	[17.2-23.4]
Province										
Western Cape	3.1	[1.4-6.9]	13.2	[9.2-18.5]	33	[25.7-41.3]	30.8	[25.9-36.2]	19.9	[10.9-33.6]
Eastern Cape	5.9	[4.1-8.5]	25.8	[17.7-36.0]	35.7	[29.4-42.6]	23.1	[18.7-28.3]	9.4	[7.1-12.5]
Northern Cape	5.2	[3.3-8.0]	18.8	[16.7-21.2]	46.2	[34.5-58.5]	23.4	[16.2-32.4]	6.4	[3.7-10.9]
Free State	3.5	[2.6-4.7]	16.3	[13.3-19.8]	38.4	[33.3-43.7]	32.5	[27.9-37.5]	9.3	[6.9-12.6]
KwaZulu-Natal	3.1	[2.3-4.3]	12.1	[10.0-14.5]	26.8	[22.9-31.2]	38.7	[34.8-42.7]	19.3	[13.3-27.0]
North West	8.5	[6.4-11.2]	16.9	[10.9-25.3]	40.2	[33.5-47.3]	25.9	[20.4-32.4]	8.5	[5.9-12.2]
Gauteng	1.0	[0.6-1.4]	5.8	[4.4-7.7]	27.2	[22.2-32.9]	32.2	[27.9-36.8]	33.8	[27.0-41.3]
Mpumalanga	9.2	[7.1-11.8]	11.5	[9.3-14.1]	35.1	[29.8-40.9]	29.2	[25.5-33.2]	15	[10.7-20.8]
Limpopo	4.4	[3.0-6.5]	25.6	[17.1-36.3]	34	[27.9-40.7]	24.3	[19.1-30.3]	11.7	[9.3-14.8]
South Africa	3.8	[3.3-4.4]	13.6	[11.8-15.6]	31.8	[29.5-34.2]	30.8	[28.9-32.7]	20.1	[17.2-23.3]

5.1.3 Education attainment of household members

Table 12 shows the education attainment by the household members aged 7 years and older. A similar trend was noticed as was for household heads, as those with secondary school education accounted for 32.0%, followed by those with matric qualification with 29.6%. The older household members, those aged 65 years and older and those aged 55 years to 64 years, had higher percentages of no schooling with 16.7% and 7.2%, respectively. When considering those aged 20 years and older, 2.9% of household members did not have any form of schooling, while 37.8% had matric education.

Table 12: Educational attainment of household members aged 7 and older disaggregated by sex, age, and province in South Africa

Variable	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	2.4	[1.7-3.2]	24.4	[23.0-25.9]	32.1	[30.2-34.0]	28.9	[26.7-31.1]	12.3	[10.5-14.4]
Female	2.9	[2.5-3.4]	22.2	[20.7-23.7]	31.9	[30.3-33.6]	30.2	[28.5-32.0]	12.7	[11.1-14.5]
Total	2.7	[2.3-3.1]	23.2	[22.0-24.5]	32	[30.6-33.5]	29.6	[28.1-31.1]	12.5	[11.0-14.3]
Age group										
7-14	3.3	[2.6-4.0]	85	[83.3-86.5]	11	[9.7-12.5]	0.7	[0.5-1.0]	0.1	[0.0-0.1]
15-24	0.8	[0.6-1.1]	8.9	[7.5-10.5]	46.3	[43.1-49.5]	38.4	[35.4-41.6]	5.5	[4.6-6.7]
25-34	1.8	[0.9-3.6]	6.6	[5.5-7.9]	30.7	[28.2-33.4]	40.6	[38.0-43.2]	20.3	[17.7-23.2]
35-44	1.6	[1.3-2.1]	8.1	[7.1-9.3]	34.5	[31.9-37.2]	34.4	[31.9-37.0]	21.3	[17.9-25.3]
45-54	2.6	[2.1-3.2]	14.4	[12.2-17.1]	30.8	[28.2-33.4]	30.7	[28.1-33.5]	21.5	[17.8-25.7]
55-64	7.2	[5.9-8.8]	25.6	[22.5-28.9]	30.1	[26.9-33.5]	20.2	[17.4-23.2]	16.9	[13.4-21.1]
65+	16.7	[12.8-21.3]	30.6	[27.1-34.4]	26.3	[22.7-30.3]	15.2	[11.8-19.3]	11.2	[8.1-15.4]
Total	2.7	[2.3-3.1]	23.2	[22.0-24.5]	32	[30.6-33.5]	29.6	[28.1-31.1]	12.5	[10.9-14.3]
Province										
Western Cape	2.2	[0.8-5.8]	22	[19.1-25.2]	33.8	[29.1-38.7]	29	[25.7-32.6]	13	[7.8-20.8]
Eastern Cape	3.2	[2.0-5.2]	32.2	[28.6-36.0]	38.4	[36.1-40.7]	19.9	[17.0-23.2]	6.3	[4.7-8.4]
Northern Cape	2.8	[2.0-3.8]	29.3	[27.3-31.4]	40.8	[34.8-47.0]	22.1	[18.1-26.6]	5.1	[3.3-7.8]
Free State	1.8	[1.4-2.3]	25.6	[23.5-27.8]	37.2	[34.4-40.2]	28	[25.1-31.2]	7.4	[5.7-9.5]
KwaZulu-Natal	1.6	[1.3-2.0]	19.9	[18.0-21.9]	28.9	[26.1-31.9]	38.6	[35.6-41.6]	11	[8.6-14.1]
North West	4.8	[3.8-6.0]	25.8	[23.1-28.8]	37.5	[34.3-40.8]	25.6	[22.5-28.9]	6.4	[4.7-8.5]
Gauteng	0.7	[0.4-1.3]	14.1	[12.7-15.7]	27.7	[24.2-31.5]	33.8	[31.1-36.6]	23.6	[19.3-28.6]
Mpumalanga	4.5	[3.5-5.8]	25.3	[22.9-28.0]	33.2	[30.2-36.5]	28.1	[26.1-30.2]	8.8	[6.9-11.3]
Limpopo	7.9	[6.8-9.3]	40.2	[36.0-44.5]	29.9	[26.7-33.4]	15.4	[12.3-19.0]	6.6	[5.5-7.9]
South Africa	2.7	[2.3-3.1]	23.2	[22.0-24.5]	32.0	[30.6-33.5]	29.6	[28.1-31.1]	12.5	[10.9-14.3]

5.1.4 Employment status

Table 13 shows that among the household heads and members who were economically active 47.3% and 64.4%, respectively, were unemployed. A higher proportion (60.7%) of female household heads were unemployed compared to their male counterparts, with 33.2% being unemployed. For household members, a similar pattern exists with 69.1% of female household members being unemployed, compared to 58.5% of males. Among the youth, those aged 34 years and younger, the unemployment rate was 52.5% and 72.8% for household heads and members, respectively. The younger household heads (18-24 years) had the highest unemployment rate with 68.2%, followed by those aged between 55 and 64 years old with 62.9%. A similar pattern was noticed among household members, with younger household members recording the rate of 86.8% while those aged between 55 and 64 years old followed with 64.1%. The highest unemployment rate for both household heads and members was reported in Limpopo with 68.6% and 80.6%, respectively. The Eastern Cape was the second province with the highest unemployment rate of 63.7% and 77.1% for household

heads and members, respectively. The lowest unemployment rate was reported in Gauteng with 34.0% for household heads and 53.0% for household members. KwaZulu-Natal was the second province with the lowest unemployment rate of household heads with 42.6%, while the Western Cape was the second province with the lowest unemployment rate of household members with 57.3%.

Table 13: Employment status of household heads and members disaggregated by sex, age, and province in South Africa

Variable	Household heads				Household members			
	Employed		Unemployed		Employed		Unemployed	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex								
Male	66.8	[63.4-70.0]	33.2	[30.0-36.6]	41.5	[39.1-44.0]	58.5	[56.0-60.9]
Female	39.3	[36.0-42.6]	60.7	[57.4-64.0]	30.9	[28.8-33.1]	69.1	[66.9-71.2]
Total	52.7	[49.9-55.6]	47.3	[44.4-50.1]	35.6	[33.6-37.6]	64.4	[62.4-66.4]
Age group								
18-24(15 -24 for HH Members)	31.8	[25.2-39.2]	68.2	[60.8-74.8]	13.2	[11.3-15.3]	86.8	[84.7-88.7]
25-34	56.8	[52.7-60.7]	43.2	[39.3-47.3]	42.8	[40.1-45.6]	57.2	[54.4-59.9]
35-44	64.5	[60.8-68.0]	35.5	[32.0-39.2]	54.8	[51.5-58.0]	45.2	[42.0-48.5]
45-54	61.5	[57.8-65.1]	38.5	[34.9-42.2]	55.5	[51.8-59.2]	44.5	[40.8-48.2]
55-64	37.1	[33.4-40.9]	62.9	[59.1-66.6]	35.9	[31.2-40.8]	64.1	[59.2-68.8]
Total	52.8	[49.9-55.6]	47.2	[44.4-50.1]	35.6	[33.6-37.6]	64.4	[62.4-66.4]
Province								
Western Cape	53.0	[43.6-62.1]	47.0	[37.9-56.4]	42.7	[36.5-49.1]	57.3	[50.9-63.5]
Eastern Cape	36.3	[30.3-42.7]	63.7	[57.3-69.7]	22.9	[18.9-27.4]	77.1	[72.6-81.1]
Northern Cape	44.6	[39.5-49.7]	55.4	[50.3-60.5]	29.8	[25.8-34.1]	70.2	[65.9-74.2]
Free State	46.0	[39.6-52.6]	54.0	[47.4-60.4]	30.2	[26.7-33.9]	69.8	[66.1-73.3]
KwaZulu-Natal	57.4	[52.3-62.4]	42.6	[37.6-47.7]	34.3	[31.5-37.2]	65.7	[62.8-68.5]
North West	42.1	[30.9-54.2]	57.9	[45.8-69.1]	30.7	[25.6-36.3]	69.3	[63.7-74.4]
Gauteng	66.0	[60.3-71.2]	34.0	[28.8-39.7]	47.0	[42.2-51.8]	53.0	[48.2-57.8]
Mpumalanga	47.8	[41.7-54.0]	52.2	[46.0-58.3]	31.0	[26.8-35.5]	69.0	[64.5-73.2]
Limpopo	31.4	[26.6-36.7]	68.6	[63.3-73.4]	19.4	[16.7-22.5]	80.6	[77.5-83.3]
South Africa	52.7	[49.9-55.6]	47.3	[44.4-50.1]	35.6	[33.6-37.6]	64.4	[62.4-66.4]

At district level, Alfred Nzo, Chris Hani, Joe Gqabi, O.R. Tambo, Umzinyathi, Zululand, Capricorn, Vhembe, and Waterberg fell under the highest band (77.9% to 86.1%) of unemployed household members (Figure 3). City of Johannesburg, City of Tshwane, Sarah Baartman, Central Karoo, and Overberg were under the lowest band (46.8 to 54.5%) of household members being unemployed.

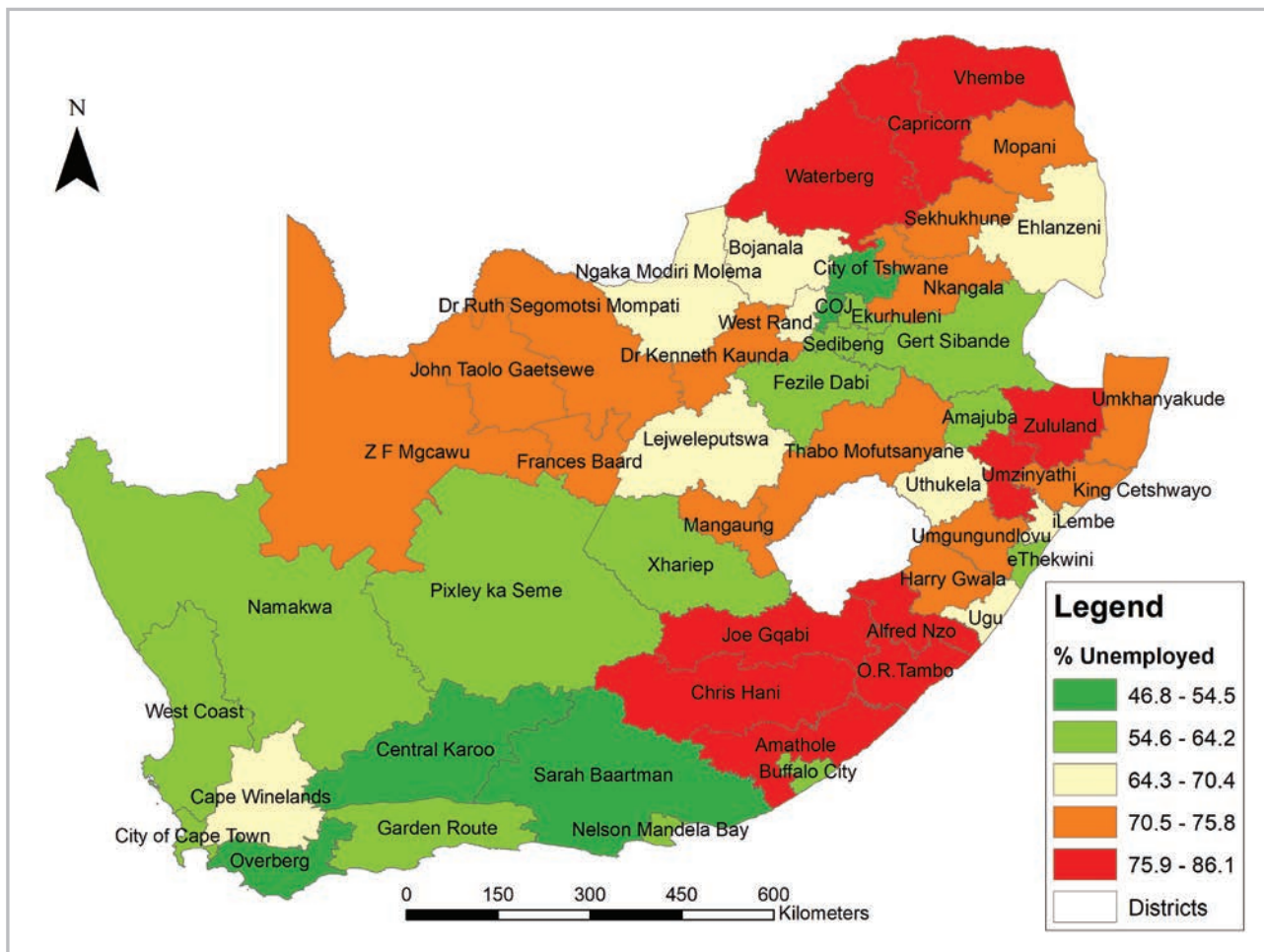


Figure 3: Employment status of household members disaggregated by district in South Africa

5.1.5 Household income

Table 14 shows household income by household head sex, age, and province. The highest percentage (28.1%) was recorded among households which earned between R1 501 and R3 000, followed by those which earned more than R6 000 - with 27.0%. Male-headed households had significantly higher percentage (32.6%) of household income with more than R6 000, compared to female-headed ones with 21.0%; the difference was significant based on the none overlapping confidence intervals. Households headed by those aged from 35-44 years old had the highest percentage of household income of more than R6 000 - with 32.1%. North West Province had the highest percentage (25.4%) of households which had no income or earned less than R1 500, while Western Cape had the highest percentage (38.7%) of households which earned more than R6 000.

Table 14: Household income disaggregated by sex, age, and province in South Africa

Variable	No income or <R1500		R1501-R3000		R3001-R4500		R4501-R6000		>R6000	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	17.6	[16.3-18.9]	22.4	[21.3-23.6]	16.1	[15.2-17.1]	11.3	[10.5-12.1]	32.6	[30.5-34.8]
Female	19.1	[18.0-20.2]	34.2	[33.0-35.4]	16.2	[15.3-17.1]	9.5	[8.9-10.3]	21.0	[19.5-22.6]
Total	18.3	[17.4-19.3]	28.1	[27.1-29.1]	16.2	[15.5-16.9]	10.4	[9.9-11.0]	27.0	[25.3-28.7]
Age group										
18-24	39.2	[34.9-43.8]	24.6	[21.0-28.6]	14.7	[11.3-18.8]	8.8	[6.6-11.8]	12.7	[10.0-16.0]
25-34	27.8	[25.6-30.1]	21.9	[20.2-23.8]	13.9	[12.3-15.7]	11.1	[9.9-12.5]	25.2	[22.4-28.3]
35-44	24.7	[23.0-26.6]	20.4	[18.9-22.0]	13.2	[12.0-14.6]	9.5	[8.6-10.6]	32.1	[29.2-35.1]
45-54	23	[21.3-24.7]	22.5	[21.1-23.9]	12.7	[11.6-13.9]	10.7	[9.6-11.8]	31.2	[28.9-33.5]
55-64	14.4	[13.2-15.7]	32.2	[30.5-34.0]	16.4	[15.2-17.8]	9.4	[8.4-10.4]	27.6	[25.4-30.0]
65+	4	[3.3-4.7]	39.9	[38.1-41.8]	22.8	[21.4-24.3]	11.7	[10.6-12.8]	21.6	[19.8-23.6]
Total	18.3	[17.3-19.3]	28.1	[27.1-29.1]	16.2	[15.5-16.9]	10.4	[9.9-11.0]	27	[25.4-28.7]
Province										
Western Cape	12.9	[9.5-17.2]	17.4	[14.6-20.5]	17.1	[14.7-19.8]	13.9	[11.6-16.6]	38.7	[32.1-45.8]
Eastern Cape	16.5	[15.1-18.0]	35.0	[32.9-37.2]	17.9	[16.6-19.2]	10.3	[9.4-11.3]	20.3	[17.6-23.4]
Northern Cape	17.8	[15.4-20.5]	30.7	[28.4-33.1]	18.4	[16.7-20.2]	9.7	[8.4-11.2]	23.4	[20.2-26.9]
Free State	21.0	[18.5-23.7]	33.2	[31.0-35.5]	16.9	[15.3-18.6]	10.6	[9.1-12.4]	18.3	[16.0-20.9]
KwaZulu-Natal	16.5	[14.8-18.2]	26.8	[24.9-28.7]	16.9	[15.5-18.4]	11.9	[10.9-13.1]	27.9	[25.2-30.8]
North West	25.4	[22.8-28.1]	35.7	[32.5-39.0]	16.6	[14.7-18.7]	8.3	[6.8-10.1]	14	[11.7-16.6]
Gauteng	16.6	[14.0-19.5]	21.7	[19.4-24.3]	13.1	[11.4-14.9]	10.2	[9.0-11.6]	38.4	[33.5-43.6]
Mpumalanga	24.0	[21.5-26.8]	28.6	[26.3-31.0]	15.5	[13.6-17.7]	10.3	[9.1-11.7]	21.5	[18.1-25.4]
Limpopo	23.2	[20.8-25.8]	39.1	[36.4-41.8]	18.6	[16.6-20.8]	6.3	[5.2-7.8]	12.7	[10.9-14.9]
South Africa	18.3	[17.4-19.3]	28.1	[27.1-29.1]	16.2	[15.5-16.9]	10.4	[9.9-11.0]	27.0	[25.3-28.7]

5.1.6 Sources of income

Table 15 shows that the majority of household heads had salaries and wages as their source of income - with 40.7%, followed by social welfare grants - with 23.2%. A majority of household members relied on social welfare grants (including old age grant) as their source of income - with 31.0%. This was followed by salaries and wages - with 20.5%.

Table 15: Sources of income of household heads and members in South Africa

	Household heads	Household members
Source of income	%	%
Salaries and wages	40.7	20.5
Social welfare grants (including old age grant)	23.2	31.0
Net profit from business or professional practice/activities or commercial farming	6.3	2.6
Alimony, maintenance, and similar allowances from divorced spouse, family members, etc., living elsewhere	3.1	1.2
Regular allowances/remittances received from non- Household members	2.5	0.9
Regular receipts from pension from previous employment and pension from annuity funds	2.4	1.1
Other	2.4	1.2
Income from letting of fixed property	0.6	0.2
Income from small-scale farming	0.3	0.1
Dividends on shares (e.g., unit trusts)	0.2	0.1
Interest received and/or accrued on deposits, loans, savings certificates	0.2	0.1
Income from share trading	0.1	0.0
Royalties	0.0	0.0

Further breakdown of social welfare grants as source of income for household heads and members by sex, age, and district is explored in Table 16. Significantly, more female household heads (31.5%) relied on social welfare grants as source of income compared to their male counterparts, with 14.3% reporting social welfare grants as their source of income. A similar pattern is noticed at household members level as there were more females (33.6%) who relied on social welfare grants as source of income compared to their male counterparts with 27.8%. Limpopo had the highest proportion (45.4%) of household heads, while the Northern Cape had the highest proportion (43.3%) of household members who relied on social welfare grants as their source of income.

Table 16: Social welfare grants as source of income of household heads and members disaggregated by sex, age, and province

Variable	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	14.3	[12.6-16.2]	17,049	27.8	[25.5-30.1]	60,031
Female	31.5	[28.9-34.1]	16,955	33.6	[31.7-35.7]	72,030
Total	23.2	[21.4-25.2]	34,004	31.0	[29.1-32.9]	132,061
Age group						
0-14	-	-	-	54.7	[51.0-58.3]	37,416
18-24(15 -24 for HH Members)	13.3	[9.9-17.7]	1,125	22.4	[20.3-24.7]	23,151
25-34	15.4	[13.0-18.2]	4,254	14.3	[12.7-16.1]	20,193
35-44	13.7	[11.8-15.9]	6,272	14.8	[13.0-16.7]	15,558
45-54	14.9	[13.0-17.0]	6,989	15.2	[13.4-17.3]	12,165
55-64	39.9	[36.7-43.2]	7,188	37.8	[34.0-41.7]	10,633
65+	80.4	[76.3-84.0]	8,169	77.8	[73.1-81.9]	10,004
Total	23.0	[21.2-24.8]	33,997	31.2	[29.4-33.1]	129,120
Province						
Western Cape	17.7	[13.4-23.0]	3,895	26.8	[22.4-31.7]	14,822
Eastern Cape	26.6	[23.7-29.8]	6,086	42.2	[37.7-46.8]	22,605
Northern Cape	34.9	[30.4-39.6]	3,061	43.3	[36.6-50.2]	12,065
Free State	31.8	[26.8-37.3]	2,908	36.0	[32.2-40.0]	9,796
KwaZulu-Natal	20.9	[17.0-25.4]	8,789	29.9	[26.3-33.7]	38,468
North West	32.2	[25.8-39.4]	2,061	29.3	[25.2-33.7]	7,993
Gauteng	13.5	[10.5-17.3]	4,022	20.8	[17.1-25.1]	12,836
Mpumalanga	31.6	[26.9-36.7]	1,581	36.5	[33.1-40.0]	6,478
Limpopo	45.4	[37.5-53.5]	1,601	42.2	[39.1-45.3]	7,366
South Africa	23.2	[21.4-25.2]	34,004	31.0	[29.1-32.8]	132,429

Figure 4 shows that Capricorn, Vhembe, Fezile Dabi, Lejweleputswa, Frances Baard, Amathole, Chris Hani, Alfred Nzo, O.R. Tambo, Umzinyathi, and Zululand districts fell under the highest band (42.4% to 50.9%) of household members who had social welfare grants as source of income. City of Johannesburg, City of Tshwane, Ekurhuleni, and Cape Winelands recorded the least percentages of household members who had social welfare grants as source of income as they were under the least band of 19.4% to 20.9%.

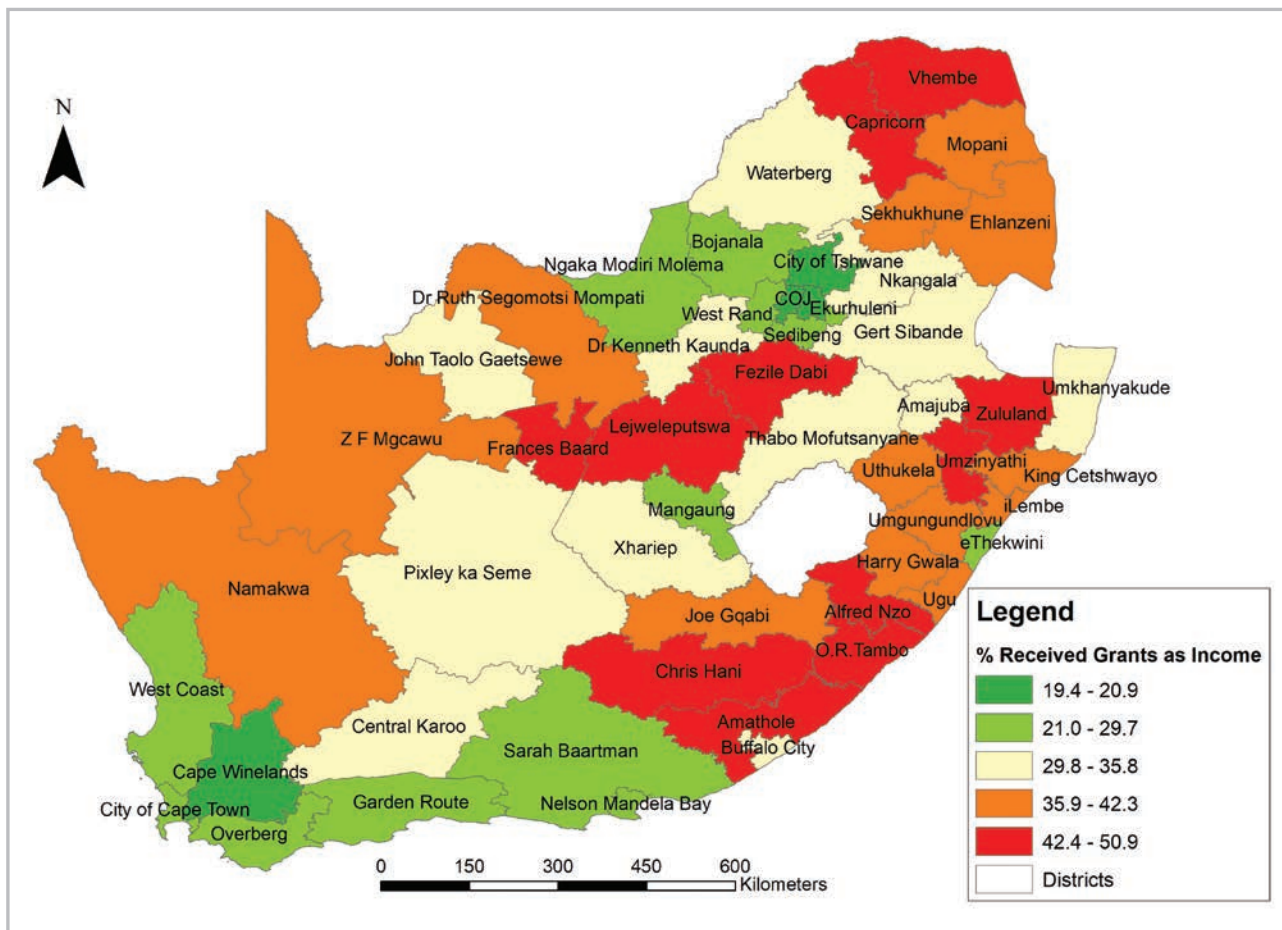


Figure 4: Social welfare grants as source of income of household members disaggregated by district in South Africa

5.1.7 Access to social grants

Table 17 shows household heads and members reported as receiving any social grant(s) during 12 months preceding the survey by sex, age, and province. Similar trends were noticed as those who reported social welfare grants as their source of income. A majority of elderly household heads (79.6%) and members (77.5%) received a social grant in the last 12 months prior to the survey. About 58% of children aged 14 and younger received social grants in a year preceding to the survey. Limpopo had the highest proportion (45.5%) of household heads while the Northern Cape had the highest proportion (46.1%) of household members who had received social grants during 12 months preceding the survey.

Table 17: Household heads and members reported receiving any social grant(s) during 12 months prior to survey disaggregated by sex, age, and province

Variable	Household heads received social welfare grants a year prior survey			Household members received social welfare grants a year prior survey		
	%	95% CI	n	%	95% CI	n
Sex						
Male	15.1	[13.0-17.5]	17,094	28.7	[26.2-31.4]	59,991
Female	31.5	[28.9-34.2]	16,959	34.4	[32.4-36.4]	71,997
Total	23.6	[21.6-25.7]	34,053	31.8	[29.8-33.9]	131,988
Age group						
0-14	-	-	-	57.6	[53.7-61.3]	37,344
18-24 (15 -24 for HH Members)	16.3	[12.0-21.9]	1,132	23	[20.9-25.3]	23,139
25-34	15	[12.6-17.7]	4,261	14.4	[12.7-16.2]	20,173
35-44	14.6	[12.6-17.0]	6,288	15.2	[13.3-17.3]	15,563
45-54	14.5	[12.7-16.6]	6,999	14.7	[13.0-16.7]	12,157
55-64	38.7	[35.8-41.7]	7,197	36	[32.5-39.6]	10,625
65+	79.6	[75.4-83.3]	8,165	77.5	[72.7-81.7]	9,982
Total	23.3	[21.4-25.3]	34,042	32.1	[30.2-34.2]	128,983
Province						
Western Cape	17.5	[13.1-23.0]	3,884	25.8	[21.6-30.5]	14,824
Eastern Cape	27.8	[24.7-31.2]	6,083	43.2	[36.6-50.1]	22,651
Northern Cape	37.4	[28.8-46.8]	3,051	46.1	[38.1-54.3]	12,085
Free State	32.6	[27.7-37.8]	2,906	39.1	[35.6-42.8]	9,810
KwaZulu-Natal	20.0	[16.4-24.3]	8,794	31.3	[27.8-35.1]	38,657
North West	35.1	[27.4-43.7]	2,067	32.2	[28.0-36.7]	8,065
Gauteng	12.8	[9.6-16.9]	4,025	20.5	[16.8-24.7]	12,852
Mpumalanga	33.8	[29.0-39.0]	1,569	38	[34.8-41.3]	6,471
Limpopo	45.5	[37.3-53.9]	1,674	42.6	[39.4-45.8]	7,705
South Africa	23.6	[21.6-25.7]	34,053	31.8	[29.9-33.9]	133,120

In terms of grant type, the dominant grant for household heads was old age grant which accounted for 48.5%, while the child support grant was dominant grant with 67.3% for household members (Table 18). Social relief distress was the second dominant grant for both household heads and members, with 27.9% and 18.0% respectively.

Table 18: Social grant type received by household heads and members during 12 months prior to survey

Grant type	Household heads (%)	Household members (%)
Old age	48.5	13.0
Social relief distress	27.9	18.0
Child support	23.6	67.3
Disability	5.0	3.7
Foster care	0.7	0.8
Grant-in-aid	0.7	0.3
Care dependency	0.5	0.4
War veterans	0.0	0.0

Table 19 shows household heads and members who reported receiving social relief during 12 months prior to survey. About 15% of household heads and 12.6% of household members reported receiving social relief during 12 months prior to survey. Females recorded higher percentages with 18.4% and 13.3% for household heads and members, respectively. The youth, those aged 18-24 and 25-34 years old, had around 18% of household heads who received social relief during 12 months prior to the survey each. The Western Cape Province had the lowest percentages of household heads and members who received social relief during a year prior to the survey, with 5.7% and 4.7% respectively. These were lower than the provincial average of 15.3 and 12.6%, respectively.

Table 19: Household heads and members who reported receiving social relief during 12 months prior to survey disaggregated by sex, age, and province in South Africa

Variable	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	12.0	[10.3-14.0]	17,122	11.2	[10.1-12.3]	60,056
Female	18.4	[16.2-20.9]	16,977	13.3	[12.1-14.6]	72,069
Total	15.3	[13.8-17.0]	34,099	12.3	[11.3-13.4]	132,125
Age group						
0-14	-	-	-	6.1	[4.9-7.6]	37,359
18-24 (15 -24 for HH Members)	17.6	[13.7-22.4]	1,136	16.4	[14.6-18.4]	23,165
25-34	18.2	[15.3-21.4]	4,266	17.1	[15.6-18.9]	20,212
35-44	14.2	[12.3-16.3]	6,293	14.7	[13.2-16.4]	15,579
45-54	15.1	[13.1-17.3]	7,011	14.1	[12.3-16.1]	12,177
55-64	10.9	[9.2-12.9]	7,206	9.8	[8.2-11.6]	10,637
65+	7.3	[5.9-9.0]	8,176	6.7	[5.3-8.3]	9,995
Total	15.1	[13.6-16.7]	34,088	12.6	[11.6-13.6]	129,124

Variable	Household heads received social relief a year prior survey			Household members received social relief a year prior survey		
	%	95% CI	n	%	95% CI	n
Province						
Western Cape	5.7	[3.9-8.3]	3,893	4.7	[3.7-6.0]	14,845
Eastern Cape	15.6	[12.0-20.1]	6,092	8.7	[7.5-10.2]	22,631
Northern Cape	20.8	[14.4-29.2]	3,065	13.8	[11.4-16.5]	12,082
Free State	24.9	[21.4-28.9]	2,908	22.0	[19.3-24.9]	9,806
KwaZulu-Natal	13.6	[10.8-17.0]	8,791	10.9	[9.4-12.8]	38,509
North West	26.3	[19.7-34.2]	2,068	17.2	[14.6-20.2]	8,036
Gauteng	8.8	[6.4-11.9]	4,023	7.8	[6.3-9.7]	12,835
Mpumalanga	19.0	[14.7-24.4]	1,583	17.2	[14.3-20.4]	6,501
Limpopo	37.2	[29.1-46.0]	1,676	30.4	[25.8-35.4]	7,687
South Africa	15.3	[13.8-17.0]	34,099	12.6	[11.6-13.7]	132,932

Figure 5 shows that City of Johannesburg, Sarah Baartman, and all Western Cape districts had the lowest band (2.4% to 6.0%) of household members who received social relief during the year preceding the survey. Fezile Dabi, Lejweleputswa, and all Limpopo districts fell under the highest band (20.1% to 40.6%) of household members who received social relief during the year preceding the survey.

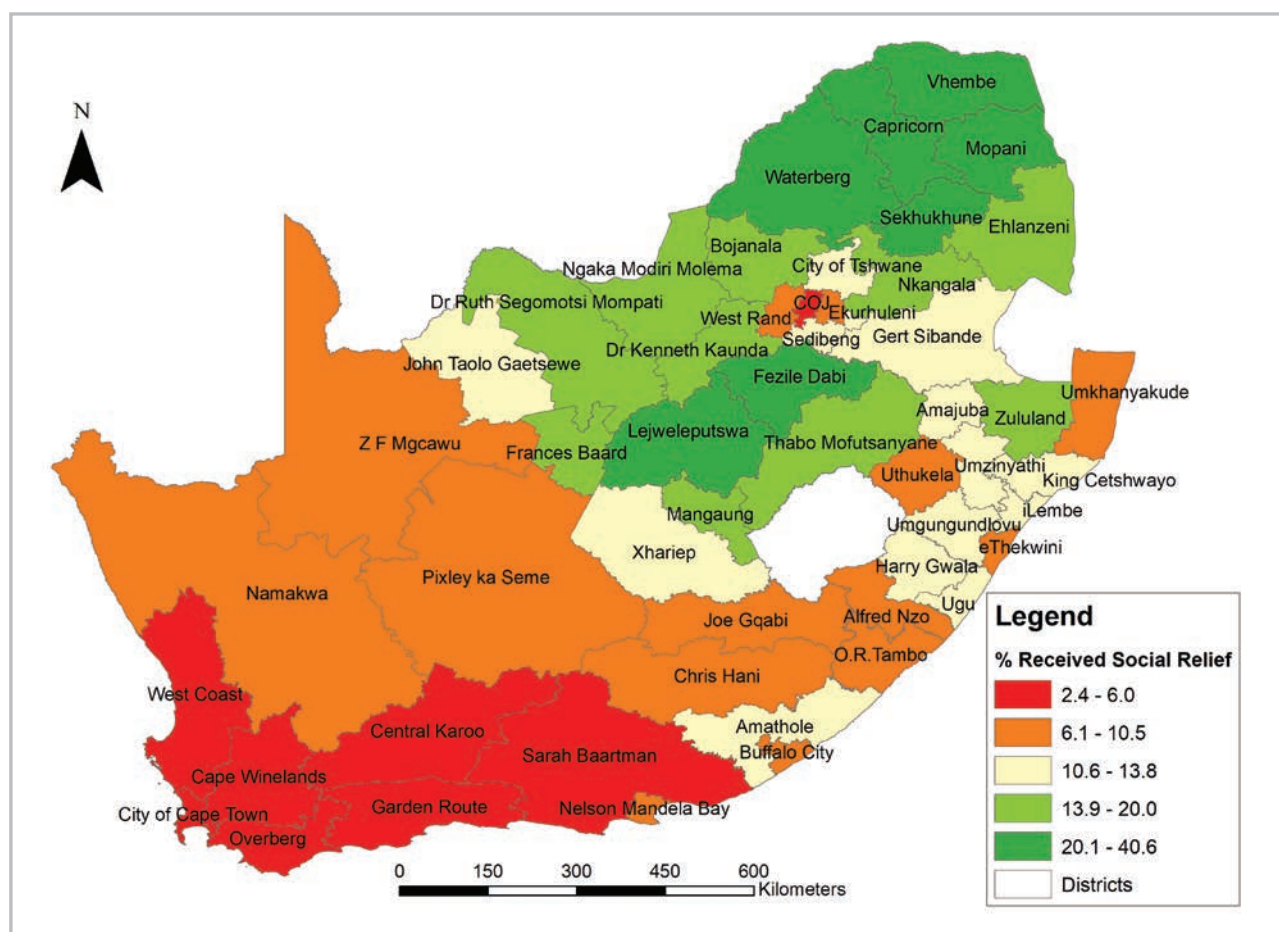


Figure 5: Household members who received any social relief during 12 months prior to survey disaggregated by district in South Africa

Table 20 shows that 16.5% of households across the country received social relief distress. A higher proportion (18.1%) of female-headed households received social relief distress compared to 15.1% of male-headed households which were reported as receiving social relief distress. Households headed by individuals aged between 45 and 54 years old recorded the highest proportion (19.9%) of households that received social relief distress. These were followed by households headed by youngest group with 17.4%. The Free State Province had the highest percentage of households that received social relief distress with 30.3%, followed by Mpumalanga with 26.4%. The Western Cape Province had the lowest proportion of households that received social relief distress - with 8.7%.

Table 20: Household social relief distress disaggregated by sex, age, and province in South Africa

Variable	Yes		No		Don't Know		Total n
	%	95% CI	%	95% CI	%	95% CI	
Sex							
Male	15.1	[14.1-16.2]	84.6	[83.5-85.6]	0.3	[0.2-0.4]	17,111
Female	18.1	[17.1-19.1]	81.6	[80.6-82.6]	0.3	[0.2-0.5]	16,986
Total	16.5	[15.7-17.4]	83.2	[82.3-84.0]	0.3	[0.2-0.4]	34,097
Age group							
18-24	17.4	[14.6-20.5]	82.3	[79.1-85.1]	0.3	[0.1-1.5]	1,138
25-34	15.7	[14.1-17.5]	83.8	[82.1-85.5]	0.4	[0.2-0.8]	4,273
35-44	15.8	[14.3-17.5]	84	[82.3-85.5]	0.2	[0.1-0.4]	6,290
45-54	19.9	[18.5-21.4]	79.9	[78.4-81.3]	0.2	[0.1-0.4]	7,004
55-64	16.5	[15.2-17.9]	83.2	[81.8-84.6]	0.2	[0.1-0.5]	7,206
65+	14.4	[13.1-15.8]	85.2	[83.8-86.5]	0.4	[0.3-0.7]	8,175
Total	16.5	[15.7-17.4]	83.2	[82.3-84.0]	0.3	[0.2-0.4]	34,086
Province							
Western Cape	8.7	[7.0-10.7]	91.1	[89.0-92.8]	0.3	[0.1-0.8]	3,895
Eastern Cape	9.2	[8.3-10.2]	90.8	[89.8-91.7]	0.1	[0.0-0.2]	6,091
Northern Cape	21.0	[18.5-23.6]	78.8	[76.2-81.3]	0.2	[0.1-0.5]	3,064
Free State	30.3	[26.9-34.0]	69.4	[65.7-72.8]	0.3	[0.1-0.5]	2,907
KwaZulu-Natal	17.3	[15.2-19.6]	82.5	[80.2-84.6]	0.2	[0.1-0.4]	8,797
North West	22.0	[18.9-25.5]	77.5	[73.9-80.8]	0.4	[0.2-0.9]	2,063
Gauteng	15.0	[13.1-17.2]	84.8	[82.7-86.7]	0.2	[0.1-0.4]	4,023
Mpumalanga	26.4	[22.8-30.4]	73.3	[69.3-76.9]	0.3	[0.1-0.8]	1,582
Limpopo	17.4	[15.3-19.7]	81.5	[79.1-83.6]	1.1	[0.7-1.7]	1,675
South Africa	16.5	[15.7-17.4]	83.2	[82.3-84.0]	0.3	[0.2-0.4]	34,097

The Covid-19 social relief grant was the dominant social relief type for both household heads and members, with 68.8% and 65.7% respectively (Table 21). Cash was the second most dominant grant, with 45.5% of household heads and 46.3% of household members reported as having received it. Food accounted for 6.0% and 5.4% for household heads and members, respectively.

Table 21: Social relief type received by household heads and members during 12 months prior to survey in South Africa

Social Relief Type	Household heads (%)	Household members (%)
Covid-19	68.8	65.7
Cash	45.5	46.3
Food	6.0	5.4
Blankets	0.4	0.2
Other	0.3	0.2
Clothes	0.2	0.1

Further breakdown of Covid-19 grants received by household heads and members indicates that 70.5% of female heads and 66.5% of female members received the Covid-19 grant, compared to 66.0% and 62.4% of their male counterparts, respectively (Table 22). Those aged 25-34 years old had the highest proportions, with 74.8% for household heads and 76.3% for household members. KwaZulu-Natal had the highest percentage of household heads and members who received the Covid-19 social relief grant during 12 months prior to the survey, with 81.4% and 83.6% respectively. The North West Province had the lowest proportion (55.1%) of household heads who received the Covid-19 social relief grant, while Mpumalanga recorded the lowest percentage of household members - with 53.0%.

Table 22: Household heads and members reported receiving Covid-19 grant during 12 months prior to survey disaggregated by sex, age, and province in South Africa

Variable	Household heads received COVID-19 grants a year prior to survey			Household members received COVID-19 grants a year prior survey		
	%	95% CI	n	%	95% CI	n
Sex						
Male	66.0	[59.4-72.1]	2,016	62.4	[58.0-66.6]	6,710
Female	70.5	[64.4-75.8]	2,571	66.5	[62.1-70.6]	9,314
Total	68.8	[63.9-73.2]	4,587	64.8	[61.0-68.4]	16,024
Age group						
0-14	-	-	-	33.6	[25.8-42.5]	1,714
18-24 (15 -24 for HH Members)	65.6	[52.5-76.7]	246	65.8	[60.1-71.1]	3,686
25-34	74.8	[67.4-81.0]	770	76.3	[72.3-79.9]	3,877
35-44	64.2	[57.3-70.6]	999	67.9	[62.4-73.0]	2,656
45-54	71.0	[65.3-76.1]	1,198	71.9	[66.9-76.4]	2,047
55-64	63.3	[57.1-69.1]	807	62.9	[56.5-68.8]	1,153
65+	50.4	[42.5-58.3]	563	50.5	[41.2-59.8]	657
Total	68.1	[63.5-72.4]	4,583	64.4	[60.8-67.9]	15,790

Variable	Household heads received COVID-19 grants a year prior to survey			Household members received COVID-19 grants a year prior to survey		
	%	95% CI	n	%	95% CI	n
Province						
Western Cape	56.0	[32.6-77.1]	178	67.8	[56.1-77.6]	619
Eastern Cape	74.9	[60.0-85.6]	517	72.1	[61.6-80.6]	1,684
Northern Cape	74.8	[62.9-83.9]	381	68.9	[59.2-77.1]	1,441
Free State	68.3	[58.3-76.8]	605	59.7	[49.2-69.4]	1,995
KwaZulu-Natal	81.4	[69.7-89.2]	1,086	83.6	[75.7-89.3]	4,485
North West	55.1	[40.0-69.3]	415	60.5	[49.8-70.3]	1,338
Gauteng	69.9	[58.8-79.1]	540	62.0	[52.7-70.4]	1,555
Mpumalanga	57.6	[45.4-68.9]	307	53.0	[42.0-63.7]	1,097
Limpopo	70.0	[57.3-80.1]	558	60.8	[50.3-70.3]	2,014
South Africa	68.8	[63.9-73.2]	4,587	65.7	[61.9-69.3]	16,228

Figure 6 shows that Cape Winelands, West Coast, Sarah Baartman, Lejweleputswa, Fezile Dabi, Sedibeng, West Rand, City of Tshwane, Ehlanzeni, and Mopani fell under the lowest category (38.8% to 51.4%) of household members who received the Covid-19 grant during the year preceding the survey. Chris Hani, O.R. Tambo, Mangaung, Harry Gwala, iLembe, Ugu, Umgungundlovu, and Zululand districts fell under the highest band (82.3% to 92.6%) of household members who received the Covid-19 grant during the year preceding the survey.

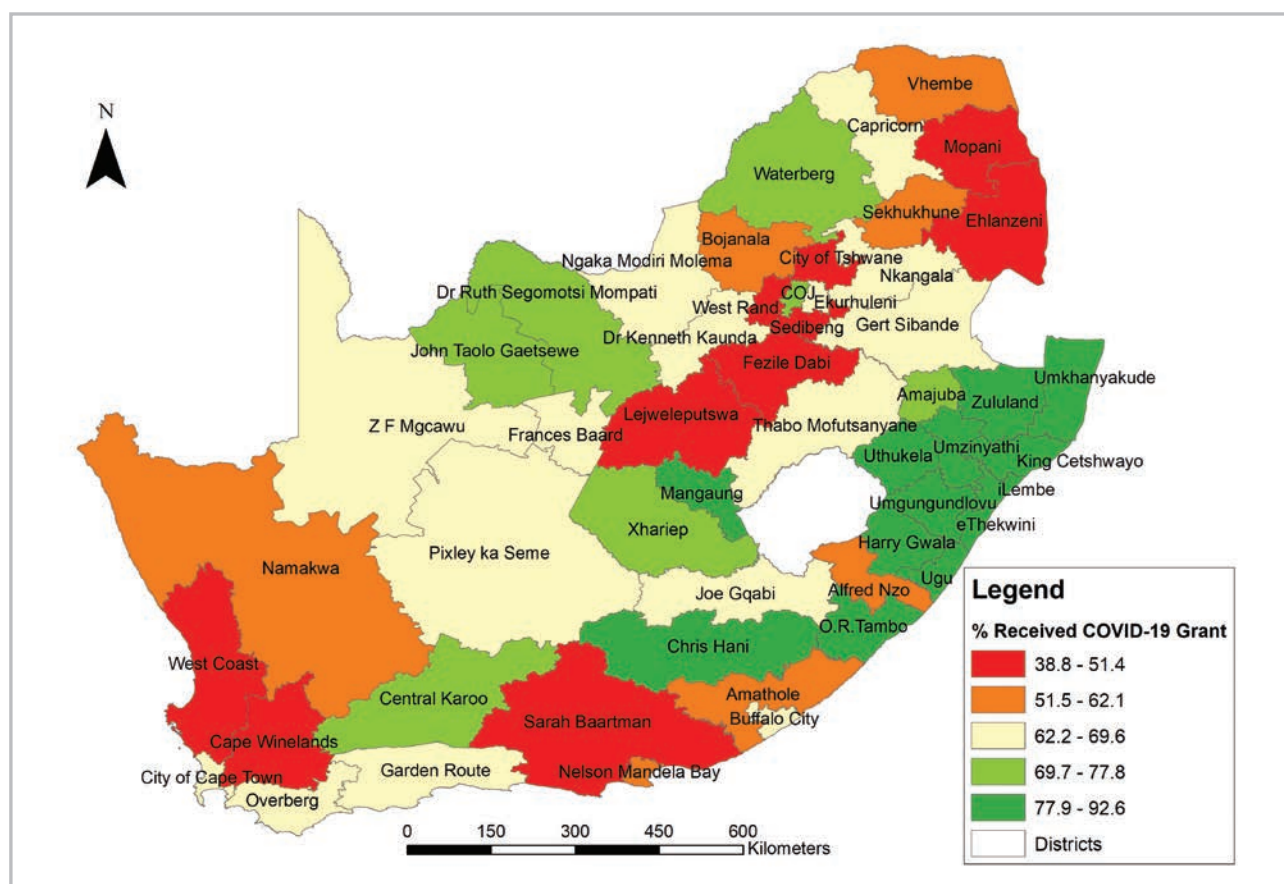


Figure 6: Household members who received any social relief during 12 months prior to survey disaggregated by district in South Africa

5.1.8 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, 2.9% of household members did not have any form of schooling compared to 2.9% in 2020, while 37.8% had matric education compared to 36.0% in 2020 (GHS, 2020).

The unemployment rate for household heads and members who were economically active from the current study was 47.3% and 64.4% respectively, which is higher than the national official unemployment rate from the third quarter of the Quarterly Labour Force Survey in 2021 which was 32.6% (QLFS, 2021).

In the current study, the majority (40.7%) of household heads relied on salaries as their source of income, while in contrast the majority (31.0%) of household members relied on social welfare grants (including old age grant) as their source of income. This is in line with the General Household Survey where a larger percentage of household heads received salaries compared to grants as a source of income (57.6% versus 52.9%) in 2020 (GHS, 2020). The national average of 31.8% of household members reported receiving social grants is in line with the national average for household population of 34.5% and 34.9% in 2016 and 2020, respectively (NDoH, Stats SA, SAMRC, and ICF, 2019; GHS, 2020).

In terms of grant type, the child support grant was the most common type of grant, with 67.3% of household members receiving this grant. Although this was also the case in 2016, the percentage of the household population that received child grant was lower - with 24.0% (NDoH, Stats SA, SAMRC, and ICF, 2019). Unsurprisingly, children and the elderly were more likely than other age groups to receive any type of grants. In terms of the Covid-19 grant, 65.7% of household members were reported as having received this grant across the country in the current study. This is higher than the national average of 4.3% of individuals who accessed the Covid-19 grants in 2020 (GHS, 2020). The reason behind this might be the fact that the grant was being gradually rolled out as the pandemic was progressing. In addition, for 2020 statistics, only those aged 18 years and older were counted, whereas all household members were included in the current study.

5.2 Dwellings and Services

5.2.1 Housing types

The most common housing typology was formal dwellings, described as brick/concrete block structures on a separate stand on a farm or yard (77.5%) (Table 23). The second most common housing typologies were formal dwelling /House/ Flat/Room in the backyard (6.2%). Informal dwellings (5.6%) were also reported among the common housing topologies occupied by households. Less than 5 % of the households indicated living in traditional dwellings.

Table 23: Types of dwellings occupied by households in South Africa

Dwelling types (n=34 098)	Number (n)	Percentage (%)
Formal dwelling/ House or brick/Concrete block structure on a separate stand or yard or on a farm	26,968	77.5
Formal dwelling /House/ Flat/Room in backyard	1,729	6.2
Informal dwelling/Shack not in backyard, e.g., on an informal/squatter settlement or on a farm	1,979	5.6
Traditional dwelling/Hut/Structure made of traditional materials	1,632	3.2
Flat or apartment in a block of flats	473	3.0
Informal dwelling/Shack in backyard	879	2.6
Room/Apartment on a property or an apartment in a larger dwelling, servants quarters/granny, at/cottage	182	0.8

Dwelling types (n=34 098)	Number (n)	Percentage (%)
Other	122	0.6
Semi-detached house	72	0.2
Cluster house in security complex	28	0.2
Town house (semi-detached house in a complex)	22	0.1
Caravan/Tent	12	0.0

5.3 Access to Water Service

5.3.1 Households main source of drinking water

Table 24 shows the main sources of drinking water in South Africa. The most common source of drinking water in South Africa is piped (tap) water in dwelling/house, making up to 44.9% of all water sources. For 9.4% of the households, the main source of drinking water was public/communal tap. Boreholes accounted for 5% of all water sources.

Table 24: Main source of drinking water in South Africa

Drinking water source (n=34 257)	Number (n)	Percentage (%)
Piped (tap) water in dwelling/house	13,155	44.9
Piped (tap) water in yard	10,491	27.3
Public/communal tap	3,629	9.4
Borehole in yard	934	3.4
Flowing water/stream/river	1,734	3.2
Neighbour's tap	715	2.2
Water-carrier/tanker	864	2.1
Rain-water tank in yard	874	2.1
Borehole outside yard	619	1.6
Water vendor (charge involved)	405	1.5
Others	379	1.3
Stagnant water/dam/pool	235	0.4
Spring	111	0.3
Well	112	0.2

Table 25 shows the main source of drinking water disaggregated by the sex of household heads and provinces in South Africa. More male-headed households were reported to use piped (tap) water in dwelling/house compared to female-headed households. In terms of distribution across the provinces, the predominately urban provinces such as the Western Cape Province (77.6%) and Gauteng (72.9%) had the highest proportion of households with access to piped (tap) water in dwelling/houses, while predominantly rural provinces such as Limpopo Province (6.6%), North West (12.3 %), and Mpumalanga (21.4%) had the lowest proportion of households with piped (tap) water in dwelling/house as the main source of drinking water. The Free State Province had the highest proportion of households whose main source of drinking water was piped (tap) water in the yard. Limpopo Province (16.6%) had the highest proportion of households with boreholes in the yard, compared to the other provinces. The Eastern Cape Province (12.9%) had the highest proportion of households which indicated using flowing water/stream/river as the main source of drinking water, followed by KwaZulu-Natal (6.5%).

Table 25: Households main source of water disaggregated by sex of household head and province in South Africa

		Male	Female	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo
Piped (tap) water in dwelling/house	%	47.6	41.9	77.6	33.8	35.1	34.5	44.8	12.3	72.9	21.4	6.6
	95% CI	[44.9-50.3]	[39.4-44.5]	[68.6-84.6]	[28.4-39.6]	[30.6-40.0]	[30.1-39.3]	[39.0-50.8]	[9.4-16.1]	[67.4-77.7]	[16.6-27.0]	[4.4-9.9]
Piped (tap) water in yard	%	26.6	28.2	12.6	17.4	38.4	53.8	28.3	40.5	21	47.3	29.9
	95% CI	[24.8-28.5]	[26.4-30.1]	[9.6-16.4]	[14.5-20.6]	[34.1-42.9]	[49.0-58.5]	[24.8-32.1]	[33.8-47.5]	[17.3-25.2]	[40.0-54.8]	[24.9-35.5]
Borehole in yard	%	3.4	3.3	0.3	0.8	4.2	2.3	0.9	9.2	0.4	4.1	16.6
	95% CI	[2.9-4.1]	[2.7-3.9]	[0.1-0.6]	[0.4-1.4]	[2.5-6.8]	[1.2-4.4]	[0.6-1.4]	[6.6-12.8]	[0.2-0.8]	[2.3-7.4]	[13.2-20.6]
Rain-water tank in yard	%	1.9	2.3	0.4	12.7	0.3	0	1	0.3	0	0.8	0.6
	95% CI	[1.5-2.3]	[1.9-2.9]	[0.2-1.1]	[10.2-15.8]	[0.1-0.6]		[0.7-1.3]	[0.1-0.7]	[0.0-0.1]	[0.3-1.7]	[0.3-1.2]
Neighbour's tap	%	2.2	2.2	1.2	1.2	2.3	1.5	1.4	7.1	0.5	4.2	5.6
	95% CI	[1.8-2.7]	[1.9-2.6]	[0.4-3.6]	[0.9-1.7]	[1.5-3.5]	[0.9-2.6]	[1.1-1.8]	[5.1-9.9]	[0.2-1.0]	[2.9-6.0]	[4.3-7.3]
Public/communal tap	%	9	9.9	6.6	14	15.1	3	8.1	16.4	4.2	7.7	19.7
	95% CI	[7.6-10.5]	[8.7-11.3]	[3.1-13.7]	[10.9-17.7]	[10.7-20.9]	[1.6-5.6]	[6.5-10.0]	[12.1-21.8]	[2.0-8.6]	[4.8-12.1]	[16.1-24.0]
Water-carrier/tanker	%	2.1	2.2	0.7	1.9	0.9	2.1	4	2.9	0.2	5.7	2.2
	95% CI	[1.7-2.6]	[1.8-2.7]	[0.3-1.9]	[1.4-2.6]	[0.5-1.9]	[1.1-4.2]	[2.8-5.7]	[1.7-5.1]	[0.1-0.5]	[3.3-9.6]	[1.3-3.6]
Water vendor (charge involved)	%	1.4	1.7	0.1	1	1.3	0.4	0.3	3.5	0.3	2.2	7.4
	95% CI	[1.2-1.8]	[1.3-2.1]	[0.0-0.2]	[0.7-1.5]	[0.8-1.9]	[0.2-0.9]	[0.2-0.6]	[2.1-5.5]	[0.2-0.6]	[1.0-4.6]	[5.6-9.8]
Borehole outside yard	%	1.5	1.6	0.1	0.8	1.3	1.7	1.9	4.3	0.2	2.9	3.9
	95% CI	[1.2-1.9]	[1.3-2.0]	[0.0-0.3]	[0.5-1.4]	[0.7-2.7]	[0.9-3.3]	[1.3-2.6]	[2.6-6.9]	[0.0-0.5]	[1.7-5.1]	[2.5-5.8]
Flowing water/stream/river	%	2.2	4.4	0	12.9	0.2	0.1	6.5	0.2	0	0.6	2.1
	95% CI	[1.8-2.7]	[3.6-5.3]	[0.0-0.1]	[9.8-16.7]	[0.0-1.4]	[0.0-0.3]	[5.1-8.3]	[0.0-0.7]		[0.2-1.8]	[0.9-5.0]
Stagnant water/dam/pool	%	0.4	0.5	0.1	1.6	0.3	0	0.8	0	0	0.1	0.5
	95% CI	[0.3-0.5]	[0.4-0.7]	[0.0-0.2]	[1.0-2.4]	[0.1-1.1]	[0.0-0.1]	[0.6-1.2]			[0.0-0.5]	[0.2-1.1]
Well	%	0.2	0.2	0	0.3	0	0	0.5	0.2	0	0.2	0.4
	95% CI	[0.1-0.3]	[0.2-0.3]	[0.0-0.1]	[0.1-0.6]	[0.0-0.3]		[0.3-0.8]	[0.0-0.7]		[0.1-0.5]	[0.2-1.0]
Spring	%	0.2	0.3	0	1.1	0.1	0	0.3	0	0	0.2	0.3
	95% CI	[0.2-0.4]	[0.2-0.4]		[0.7-1.7]	[0.0-0.5]	[0.0-0.3]	[0.2-0.6]			[0.1-0.9]	[0.1-1.1]
Other	%	1.3	1.3	0.4	0.6	0.5	0.4	1.1	3.1	0.3	2.8	4.2
	95% CI	[1.1-1.7]	[1.0-1.6]	[0.2-0.8]	[0.4-1.0]	[0.2-1.1]	[0.2-0.9]	[0.8-1.6]	[1.9-5.0]	[0.1-0.7]	[1.6-4.8]	[3.0-5.8]

Based on the WHO & UNICEF Joint Monitoring Programme (JMP) definition, water sources were categorized into improved and unimproved. Improved drinking water sources include piped water (in dwelling and yard or plot), public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater collection (WHO, 2017). Overall, 95.5% of households in South Africa had access to improved water sources. A total of 99.7% of households in Gauteng Province had access to improved water services, followed by the Free State and Western Cape provinces with 99.5% (Figure 7). Compared to all other provinces, the Eastern Cape Province had the lowest proportion of households with access to improved water sources (Figure 7).

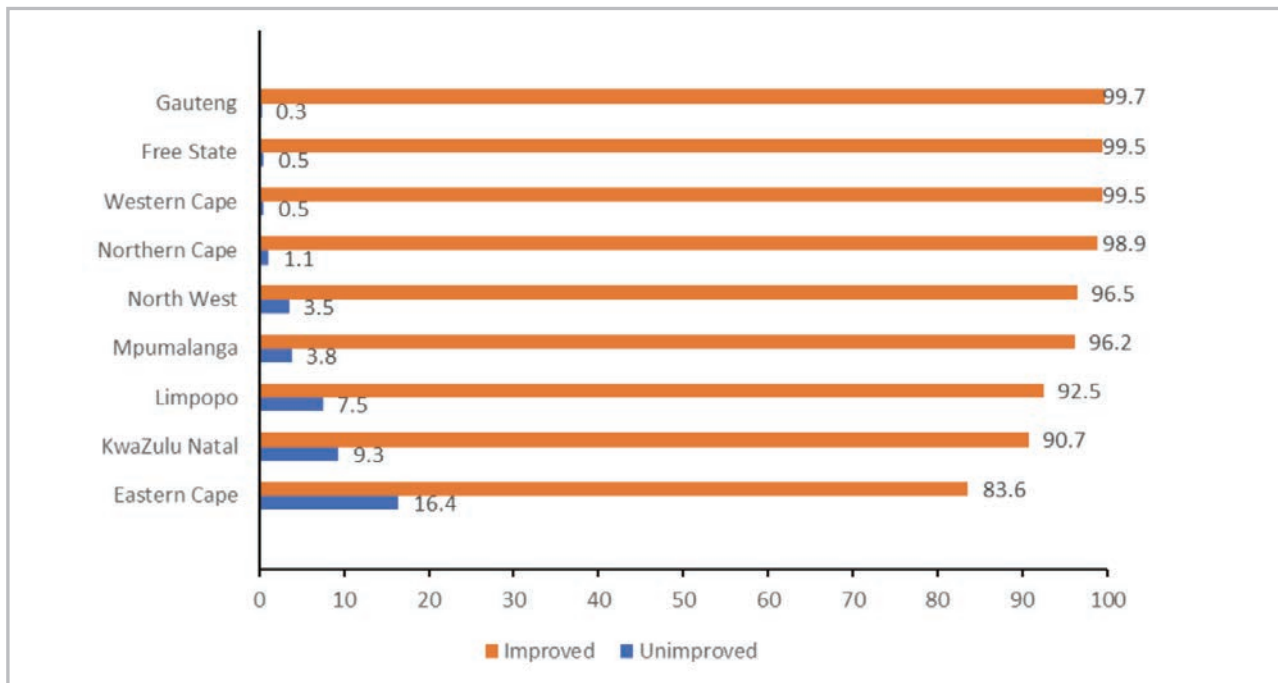


Figure 7: Households access to improved water sources across provinces in South Africa

Figure 8 shows that the majority (83.4%) of the households' main source of drinking water was supplied by the municipality. About 5.3% of the households' water is supplied by other water schemes.

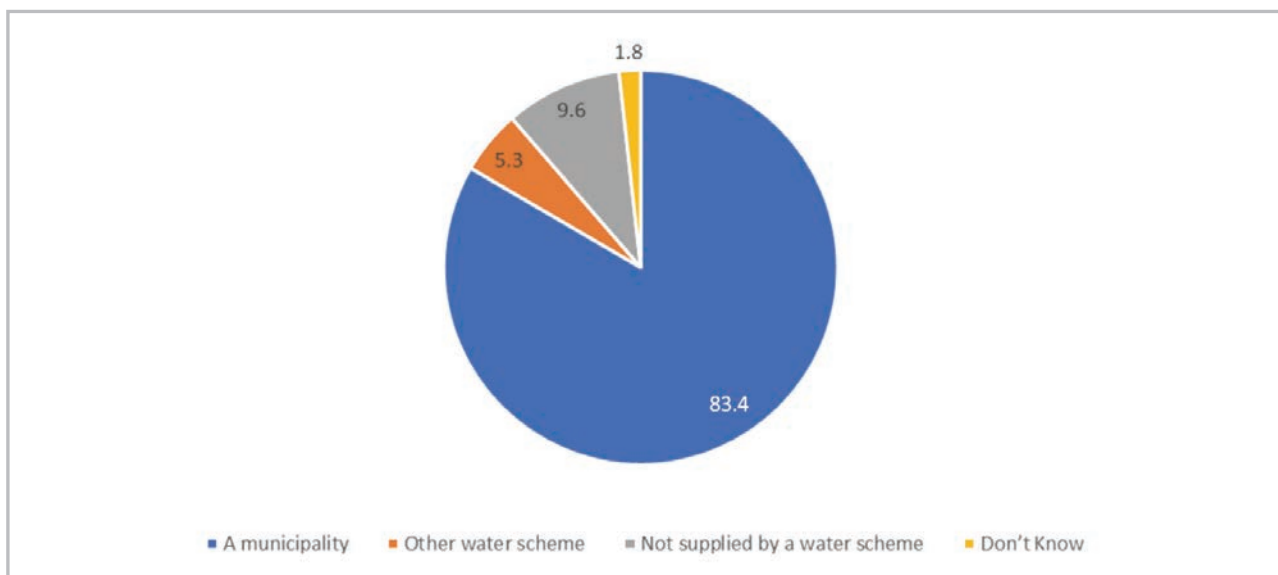


Figure 8: Water supplier (n= 32,037) among households in South Africa

5.3.2 Payment for water services

Of the households that indicated municipality as the supplier of their main source of drinking water, only 46.2% paid for water services. A comparison of the payment of water services by provinces showed that the Western Cape Province (67.1%) had the highest proportion of households that paid for their water services, followed by Gauteng Province (64%) (Figure 9). The North West (27.8%) and Mpumalanga provinces (28.9%) had the highest proportion of those who did not pay for their supplied water. The findings also highlighted that more male-headed households (48.9%) pay for water services, compared to female-headed households (43.2%).

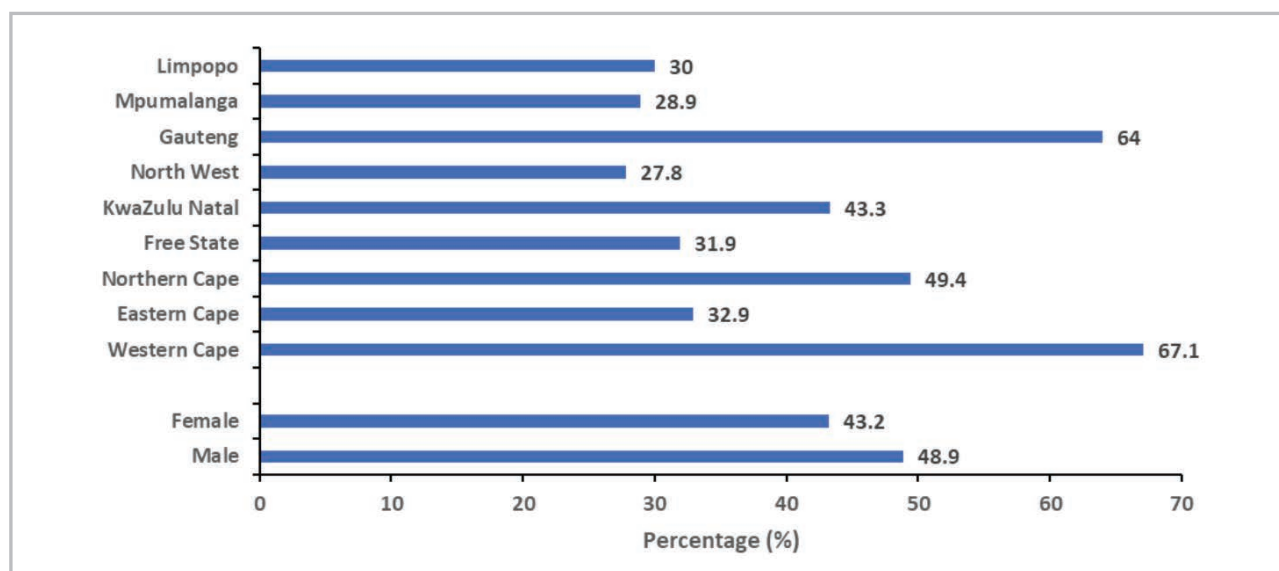


Figure 9: Payment of water services disaggregated by district and household head sex in South Africa

5.4 Sanitation and Hygiene

Table 26 shows the different types of toilet facilities used by the South African households. Flush toilets connected to a public sewerage system were the most common toilet facility used by the households, accounting for 57.8% of all toilet types (Table 26). About 18.8% used pit latrine/toilet with a ventilation pipe. The third most common toilet type in South Africa was pit latrine/toilet without ventilation pipe (15.7%). Around 1.1% of the households practised open defecation (Table 26).

Table 26: Types of toilet facility used by households in South Africa

Toilet types (n=33 567)	Number (n)	Percentage (%)
Flush toilet connected to a public sewerage system	17,728	57.8
Pit latrine/toilet with ventilation pipe	7,740	18.8
Pit latrine/toilet without ventilation pipe	5,395	15.7
Flush toilet connected to a septic or conservancy tank	1,113	3.8
Open defecation (e.g., no facilities, veld, bush)	489	1.1
Bucket toilet (collected by municipality)	352	1.0
Pour flush toilet connected to a septic tank (or septage pit)	234	0.7
Chemical toilet	254	0.6
Other	113	0.3
Bucket toilet (emptied by household)	125	0.2
Ecological Sanitation systems (e.g., urine diversion)	24	0.1

Table 27 highlights that predominately urban province, i.e., the Western Cape Province (93%) and Gauteng Province (87.4%), had the highest proportion of households using flush toilets connected to a public sewerage system, while rural provinces, i.e., Limpopo Province (40.3%), Eastern Cape (36.4%), and North West (30.5%) had the highest proportion of households using pit latrine/toilet with ventilation pipe. The Free State Province had 2.6% of households using bucket toilet (collected by municipality), while the Northern Cape Province had 1.6% of households using bucket toilet (emptied by household) - this was the highest compared to all the other provinces. The Northern Cape Province (3.3%) also had a higher number of households practising open defecation (e.g., no facilities, field, bush) as compared to all other provinces. There was a high number of male-headed households (60.8%) using flush toilet connected to a public sewerage system than female-headed households across all provinces (54.5%).

Table 27: Type of toilet facility used by the households disaggregated by sex of the household head and province in South Africa

Amenity		Household head sex		Province								
		Male	Female	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo
Flush toilet connected to a public sewerage system	%	60.8	54.5	93	41.8	63.6	68.6	47.5	28.6	87.4	28.9	15.8
	95% CI	[58.0-63.5]	[51.7-57.2]	[87.9-96.0]	[35.5-48.5]	[56.2-70.4]	[60.8-75.6]	[41.2-53.9]	[21.1-37.5]	[82.0-91.4]	[21.0-38.3]	[10.3-23.5]
Flush toilet connected to a septic or conservancy tank	%	3.7	3.8	2.5	2	5.1	1.9	5.5	6	3.1	5.8	3.5
	95% CI	[3.1-4.3]	[3.2-4.6]	[1.4-4.5]	[1.5-2.8]	[3.6-7.0]	[1.2-2.8]	[4.0-7.5]	[4.4-8.1]	[2.1-4.4]	[4.2-8.0]	[2.4-5.1]
Pour flush toilet connected to a septic tank (or seepage pit)	%	0.6	0.7	0.5	0.5	1	0.3	1	1.6	0.3	1.3	0.5
	95% CI	[0.5-0.9]	[0.5-1.0]	[0.1-2.3]	[0.2-1.1]	[0.6-1.4]	[0.1-0.6]	[0.7-1.6]	[1.0-2.5]	[0.1-0.6]	[0.8-2.1]	[0.2-1.3]
Chemical toilet	%	0.6	0.6	0.1	0.4	0.6	0.1	1.5	1.5	0.5	0	0
	95% CI	[0.4-0.9]	[0.4-0.9]	[0.0-0.3]	[0.2-0.7]	[0.2-1.5]	[0.0-0.3]	[1.0-2.3]	[0.6-3.7]	[0.2-1.0]	[0.0-0.3]	
Pit latrine/toilet with ventilation pipe	%	16.7	21	0.7	36.4	12.4	5.6	28.1	30.5	2.6	18.5	40.3
	95% CI	[15.4-18.2]	[19.4-22.8]	[0.3-1.3]	[31.6-41.6]	[8.9-17.1]	[4.1-7.7]	[23.9-32.7]	[25.2-36.4]	[1.6-4.2]	[14.6-23.1]	[35.1-45.6]
Pit latrine/toilet without ventilation pipe	%	14.5	17.1	0.6	15.6	9.8	18	15.1	28.2	3.3	44.1	37.9
	95% CI	[13.1-15.9]	[15.6-18.7]	[0.2-1.9]	[13.3-18.2]	[7.1-13.5]	[13.2-24.2]	[12.8-17.8]	[22.8-34.3]	[1.7-6.2]	[37.3-51.2]	[33.0-42.9]
Bucket toilet (collected by municipality)	%	1.2	0.8	0.8	0.7	1.7	2.6	0.1	0.2	2.5	0	0.2
	95% CI	[0.6-2.3]	[0.5-1.4]	[0.3-1.9]	[0.2-2.4]	[0.8-3.6]	[1.4-5.0]	[0.0-0.2]	[0.1-0.6]	[1.0-5.9]		[0.0-1.0]
Bucket toilet (emptied by household)	%	0.2	0.2	0.5	0.1	1.6	0.7	0.1	0	0.1	0.2	0
	95% CI	[0.1-0.4]	[0.1-0.3]	[0.2-1.3]	[0.1-0.3]	[0.9-2.9]	[0.3-1.5]	[0.1-0.4]	[0.0-0.2]	[0.1-0.4]	[0.1-0.6]	
Ecological Sanitation Systems (e.g., urine diversion)	%	0.1	0	0	0	0	0	0.1	0.5	0	0	0
	95% CI	[0.0-0.2]	[0.0-0.1]	[0.0-0.1]	[0.0-0.1]	[0.0-0.3]		[0.0-0.5]	[0.1-2.0]	[0.0-0.1]		
Open defecation (e.g., no facilities, field, bush)	%	1.2	0.9	1.1	2.2	3.3	1.8	0.9	1.9	0.2	0.7	0.8
	95% CI	[0.9-1.7]	[0.7-1.2]	[0.3-3.6]	[1.4-3.5]	[2.0-5.5]	[0.8-3.8]	[0.6-1.3]	[0.7-5.3]	[0.1-0.8]	[0.3-1.4]	[0.4-1.5]
Other	%	0.3	0.3	0.2	0.2	0.9	0.3	0.2	1	0	0.5	1
	95% CI	[0.2-0.4]	[0.2-0.5]	[0.1-0.7]	[0.1-0.3]	[0.5-1.6]	[0.2-0.7]	[0.1-0.3]	[0.5-1.7]	[0.0-0.1]	[0.2-1.0]	[0.5-1.9]

Types of toilet facilities used by provinces 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 tank, 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). Overall, 97.3 % of the households were using improved toilet types. KwaZulu-Natal Province (98.8%) had the highest proportion of households with improved toilet types, closely followed by Mpumalanga Province (98.7%), and Limpopo Province (98%). The Northern Cape Province (92.5%) had the lowest proportion of households using improved sanitation facilities (Figure 10).

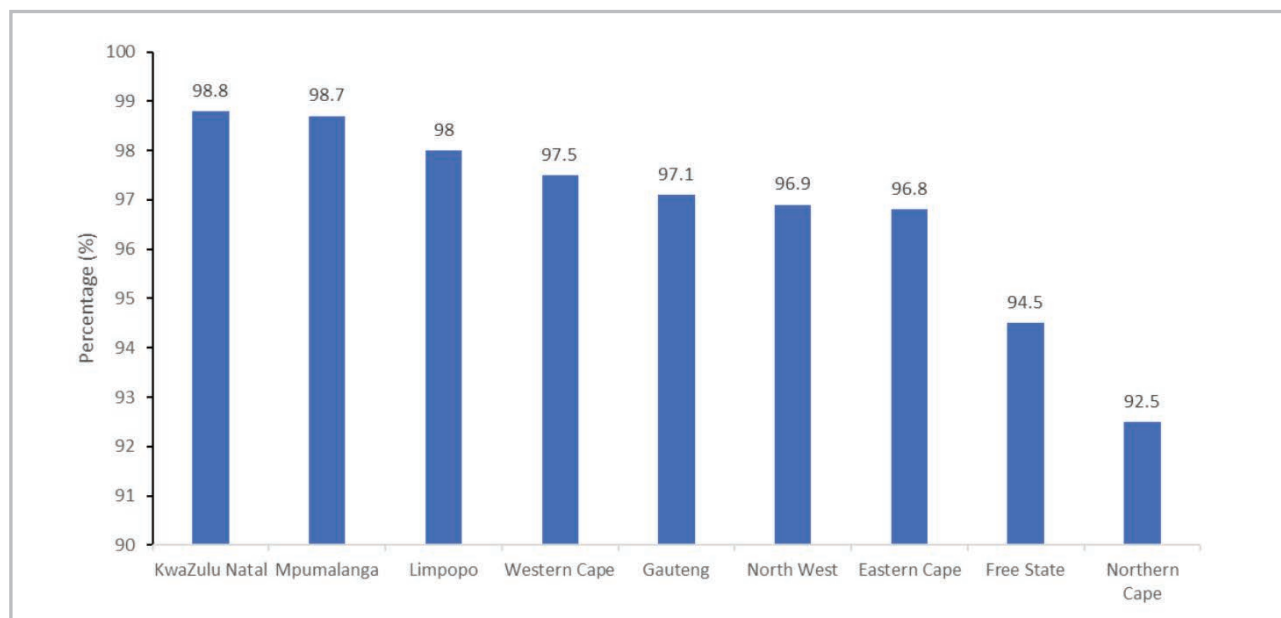


Figure 10: Proportion of households using improved toilet types disaggregated by province in South Africa

The majority (59.5%) of households indicated that they are not paying for public sewerage in the country, while only 37.7% were reported to be paying. When asked whether the households receive free sanitation as part of the South African government’s free basic services policy, only 29.4% responded yes. About 3.7% of the respondents did not know if their households received free sanitation services or not.

5.4.1 Refuse removal

Table 28 shows rubbish disposal methods used by households in South Africa. Most households have their refuse removed by local authority/private company at least once a week (39.1%). About 28.3% of households disposed of rubbish in their own refuse dump (Table 28). Communal refuse dumps were used to dispose of rubbish by 4.3% of the households.

Table 28: Households rubbish disposal options in South Africa

Rubbish disposal methods (n=33,649)	Number (n)	Percentage (%)
Removed by local authority/private company at least once a week	11,326	39.1
Own refuse dump	11,307	28.3
Removed by community members, contracted by municipality at least once a week	4,328	14.4
Dump or leave rubbish anywhere	2,248	6.0
Communal refuse dump	1,531	4.3
Other	1,128	2.7

Rubbish disposal methods (n=33,649)	Number (n)	Percentage (%)
Removed by local authority/private company less often than once a week	666	2.0
Removed by community members, contracted by municipality less than once a week	487	1.3
Communal container/central collection point	373	1.3
Removed by community members at least once a week	169	0.4
Removed by community members, less often than once a week	86	0.2

Table 29 shows that a higher proportion of households' rubbish removed by local authority/private company at least once a week was in Gauteng Province (62.5%), followed by the Western Cape (49.1%), and Free State (42.2%). The Western Cape (40.8%) had a high proportion of households who had their waste removed by community members, contracted by municipality, at least once a week; while the Eastern Cape (6.1%) and Limpopo (6.3%) were the lowest. Limpopo Province (67.6%) also had the highest percentage of households having their own refuse dump, followed by the Eastern Cape and Mpumalanga provinces (Table 29). Most households who dumped or left rubbish anywhere were from the Free State Province (18.3%). More than half (59.3%) of the households in South Africa indicated that they were not receiving free refuse removal services, whilst only 38.7% of households received free refuse removal services.

Table 29: Households rubbish disposal methods disaggregated by sex of the household head and province in South Africa

	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo
Removed by local authority/private company at least once a week	49.1	31.9	35.3	42.2	37.0	29.0	62.5	17.2	7.7
Removed by local authority/private company less often than once a week	1.3	1.4	2.0	3.4	1.6	1.8	2.6	2.2	1.7
Removed by community members, contracted by municipality at least once a week	40.8	6.1	16.8	8.7	12.1	7.8	17.2	9.4	6.3
Removed by community members, contracted by municipality less than once a week	1.1	0.7	1.0	2.7	2.6	0.2	1.5	1.0	0.1
Removed by community members at least once a week	0.2	0.2	2.3	0.3	0.3	0.7	0.6	0.1	0.0
Removed by community members, less often than once a week	0.2	0.1	0.4	1.0	0.1	0.1	0.4	0.2	0.1
Communal refuse dump	1.4	1.9	4.8	5.8	1.6	7.1	5.6	9.9	5.3
Communal container/central collection point	0.7	0.4	1.1	1.6	2.3	0.6	1.1	1.2	1.7
Own refuse dump	2.5	49.5	27.4	14.7	33.9	33.3	3.4	46.5	67.6
Dump or leave rubbish anywhere	1.8	3.4	6.9	18.3	4.0	14.0	4.7	8.2	6.5
Other	1.0	4.5	2.0	1.2	4.5	5.3	0.3	4.0	3.0

5.5 Energy

5.5.1 Access to electricity

The proportion of households with access to electricity across the country. The study findings highlight that most of the households in South Africa responded 'yes' to having access to electricity (93.3 %), while only 6.7% did not.

Figure 11 shows the proportion of households with access to electricity across provinces in South Africa. The Western Cape (95.7%) was the highest province to have access to electricity, closely followed by KwaZulu-Natal (95.3%); while in the Free State Province only 89.9% had access to electricity within the province, which was the lowest among other provinces.

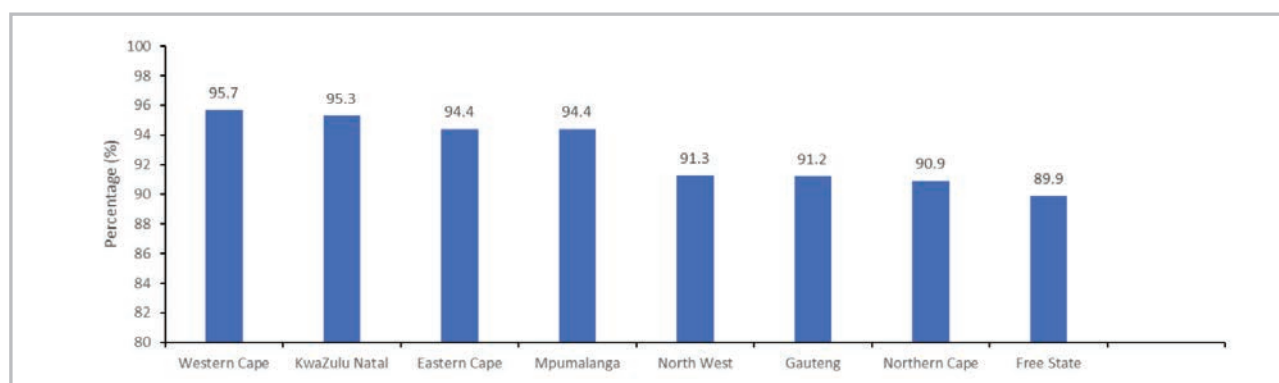


Figure 11: Access to electricity disaggregated by province in South Africa

The results of this study show that only 19.8% of the households in South Africa indicated that they were receiving free electricity as part of the Free Basic Electricity Programme. Under this programme, qualifying households receive 50 kWh per month.

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

Energy sources were categorized into cooking, lighting, water heating, and space heating (Table 30). The results show that the most common energy source for lighting was electricity from the mains (98.6%), closely followed by water heating (90.1%). The second most common energy source for cooking was gas and wood (5%). Only 3.4% of the households reported using coal as the main energy source, despite Mpumalanga Province being the leading coal producer in Africa. Less than 1% of the households were using paraffin as the main energy source for cooking.

Table 30: Household's main source of energy for cooking, lighting, water heating, and space heating in South Africa

Sources of energy	Cooking	Lighting	Water heating	Space Heating
Electricity from mains	88.0	98.6	90.1	64.9
Other source of electricity (e.g., generator)	0.4	0.5	0.6	0.4
Gas	5.0		1.3	2.4
Paraffin	0.8	0.1	0.6	3.3
Wood	5.0		4.5	5.2
Coal	0.4	0.1	0.4	0.9
Candles	0	0.3	0	0
Solar energy	0.1	0.2	0.5	0.1
Other, specify	0.3	0.3	0.3	0.3
None	0	0	1.7	22.5

Table 31 shows the source of energy for cooking disaggregated by province in South Africa. The study findings highlighted that most of the households using electricity from mains as the main source of energy for cooking are from Gauteng Province (94.8%), followed by the Free State (92.3%). A high proportion of households from Mpumalanga Province (12.2%) used wood as the main energy source for cooking, and only 3.5% used coal despite the province being the leading coal producer in Africa (Table 31). The Eastern Cape Province (7.7%) had the highest proportion of households using gas for cooking, followed by the Northern Cape Province (6.5%).

Table 31: Source of energy for cooking disaggregated by provinces in South Africa

	Electricity from mains	Other source of electricity (e.g., generator)	Gas	Paraffin	Wood	Coal	Candles	Animal dung	Solar energy	Other	None
Western Cape	89.5	0.4	9	0.4	0.6	0	0	0	0.1	0.1	0
Eastern Cape	80.1	0.5	7.7	1.2	9.9	0.1	0	0	0.1	0.4	0
Northern Cape	89.2	0.7	6.5	0.4	2.7	0	0	0	0.3	0.1	0.1
Free State	92.3	0.5	4.8	1	0.9	0.3	0	0	0	0	0
KwaZulu-Natal	85.6	0.4	4.4	0.2	8.2	0.2	0	0	0.1	0.8	0
North West	89.5	0.6	1.9	1.7	6.1	0.1	0	0	0	0.1	0
Gauteng	94.8	0.4	3.4	0.9	0.2	0.1	0	0	0.1	0	0
Mpumalanga	79.5	0.3	3	0.8	12.2	3.5	0	0.1	0	0.4	0.1
Limpopo	87.3	0	6.2	0.5	5.9	0	0	0	0	0	0

Table 32 shows the source of energy for water heating disaggregated by sex of the household head and provinces. The results show that Gauteng Province (97.1%) had a high proportion of households who indicated electricity from the mains as the main energy source for water heating, closely followed by the Western Cape (93.4%), the Northern Cape (93.4%), and the Free State (93.3%). Mpumalanga Province (10.2%) was reported to have a high proportion of households using wood as an energy source for water heating, compared to the other provinces. There was a high proportion of male-headed (91.2%) households compared to female-headed (88.8%) households who used electricity from mains as the source of energy for water heating (Table 32).

Table 32: Source of energy for water heating disaggregated by sex of the household head and province in South Africa

		Household head sex		Province								
		Male	Female	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo
Electricity from mains	%	91.2	88.8	93.4	85.3	93.4	93.3	88.3	83.6	97.1	78.3	87.5
	95% CI	[90.3-92.0]	[87.7-89.8]	[91.3-95.1]	[83.2-87.2]	[91.0-95.2]	[91.1-94.9]	[86.1-90.1]	[79.6-86.9]	[96.1-97.8]	[74.6-81.6]	[79.8-92.6]
Other source of electricity (e.g., generator, etc.)	%	0.6	0.7	0.7	0.6	0.5	0.4	0.7	0.6	0.7	0.6	0.7
	95% CI	[0.4-0.8]	[0.5-0.9]	[0.4-1.4]	[0.4-0.9]	[0.3-0.9]	[0.3-0.8]	[0.4-1.0]	[0.3-1.2]	[0.4-1.0]	[0.3-1.1]	[0.2-2.8]
Gas	%	1.5	1.1	2.2	2.1	1.5	1	1.3	0.6	0.7	1.3	1.1
	95% CI	[1.2-1.8]	[0.9-1.4]	[1.5-3.2]	[1.6-2.7]	[1.0-2.1]	[0.6-1.6]	[0.9-1.8]	[0.3-1.3]	[0.5-1.2]	[0.7-2.5]	[0.3-3.4]
Paraffin	%	0.7	0.6	0.3	1.2	0.3	1	0.1	1.3	0.7	0.7	0.5
	95% CI	[0.5-0.9]	[0.5-0.8]	[0.1-1.4]	[0.9-1.6]	[0.1-0.7]	[0.6-1.6]	[0.1-0.3]	[0.6-2.6]	[0.4-1.2]	[0.3-1.3]	[0.1-2.1]
Wood	%	3.3	5.7	0.8	8.2	3.2	1	7.7	5.6	0.2	10.2	5.4
	95% CI	[2.9-3.9]	[5.0-6.5]	[0.5-1.3]	[6.6-10.2]	[1.8-5.5]	[0.6-1.6]	[6.3-9.5]	[3.4-9.0]	[0.1-0.4]	[7.6-13.5]	[2.6-10.8]
Coal	%	0.2	0.5	0	0.1	0	0.1	0.2	0.2	0.2	3	0
	95% CI	[0.2-0.4]	[0.3-0.7]	[0.0-0.3]	[0.0-0.2]		[0.0-0.4]	[0.1-0.3]	[0.0-0.7]	[0.1-0.5]	[1.8-5.1]	
Animal dung	%	0	0.1	0	0.1	0.1	0	0	0	0	0.2	0
	95% CI	[0.0-0.1]	[0.0-0.1]		[0.0-0.2]	[0.0-0.4]		[0.0-0.1]			[0.0-0.6]	
Solar energy	%	0.7	0.4	0.9	0.5	0.8	0.6	0.7	0.1	0.3	0.7	1
	95% CI	[0.4-1.1]	[0.3-0.6]	[0.5-1.5]	[0.3-0.9]	[0.4-1.8]	[0.3-1.2]	[0.2-2.2]	[0.0-0.9]	[0.2-0.6]	[0.2-2.8]	[0.3-3.7]
Other	%	0.3	0.3	0.1	0.5	0	0	0.7	0.1	0	0.2	0
	95% CI	[0.1-0.6]	[0.1-0.8]	[0.0-0.2]	[0.2-1.0]	[0.0-0.2]	[0.0-0.3]	[0.2-3.1]	[0.0-0.3]	[0.0-0.3]	[0.1-1.0]	
None	%	1.6	1.9	1.5	1.5	0.2	2.7	0.3	8	0.2	4.8	3.8
	95% CI	[1.3-1.9]	[1.5-2.3]	[0.9-2.6]	[1.0-2.1]	[0.1-0.5]	[1.4-5.0]	[0.2-0.6]	[5.7-11.0]	[0.1-0.4]	[3.1-7.4]	[1.4-10.0]

Table 33 shows that the predominant energy source for space heating was electricity from the mains disaggregated by the province, with KwaZulu-Natal Province being the highest (66.7%), followed by Limpopo Province (64%). Wood was mainly used by 11.8% of the Eastern Cape Province for space heating. Male-headed households (66.3%) had the highest proportion of households using electricity from the mains, with female-headed households at 63.5%.

Table 33: Main source of energy for space heating disaggregated by sex of the household head and province in South Africa

		Household head sex		Provinces								
		Male	Female	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo
Electricity from mains	%	66.3	63.5	63.5	40.9	57.9	48.6	66.7	61.6	87	49	64
	95% CI	[64.4-68.1]	[61.7-65.2]	[59.5-67.3]	[38.3-43.6]	[54.3-61.3]	[44.0-53.2]	[63.8-69.5]	[55.1-67.8]	[84.2-89.4]	[43.8-54.2]	[50.7-75.4]
Other source of electricity	%	0.4	0.4	0.2	0.4	0.3	0.2	0.5	0.3	0.4	0.3	0
	95% CI	[0.3-0.6]	[0.2-0.5]	[0.1-0.7]	[0.2-0.7]	[0.2-0.6]	[0.1-0.6]	[0.3-0.9]	[0.1-0.8]	[0.2-0.7]	[0.1-0.8]	
Gas	%	2.7	2	5.9	3.1	3	4.7	0.7	0.3	1.9	2.2	0
	95% CI	[2.2-3.2]	[1.7-2.5]	[4.3-7.9]	[2.5-4.0]	[2.3-3.9]	[3.6-6.2]	[0.5-1.1]	[0.1-0.7]	[1.3-2.8]	[1.5-3.3]	
Paraffin	%	2.7	3.9	5.4	10.2	0.5	13.6	0.1	0.3	1	0.3	0
	95% CI	[2.3-3.2]	[3.4-4.5]	[3.5-8.2]	[8.8-11.8]	[0.3-1.0]	[11.2-16.5]	[0.0-0.2]	[0.1-0.7]	[0.5-1.8]	[0.1-0.8]	
Wood	%	4.8	5.7	3.4	11.8	7.3	7	6.8	4.6	0.5	6.8	2.7
	95% CI	[4.2-5.4]	[5.1-6.5]	[2.3-5.1]	[9.9-14.1]	[5.5-9.5]	[5.3-9.2]	[5.5-8.4]	[3.0-6.8]	[0.3-0.9]	[4.7-9.7]	[1.2-5.9]
Coal	%	0.9	0.8	0.2	0.3	1	1.6	0.1	0.4	0.4	6.5	0
	95% CI	[0.6-1.2]	[0.6-1.1]	[0.1-0.6]	[0.2-0.5]	[0.6-1.8]	[0.9-2.9]	[0.1-0.3]	[0.2-1.0]	[0.1-1.1]	[4.5-9.4]	
Candles	%	0	0	0	0	0	0	0	0	0	0	0
	95% CI	[0.0-0.1]	[0.0-0.0]					[0.0-0.1]		[0.0-0.3]		
Animal dung	%	0	0	0	0	0	0	0	0	0	0.2	0
	95% CI	[0.0-0.1]	[0.0-0.1]		[0.0-0.2]			[0.0-0.1]			[0.1-0.7]	
Solar energy	%	0.2	0	0.1	0	0.6	0	0.1	0	0.1	0	0.3
	95% CI	[0.1-0.3]	[0.0-0.1]	[0.0-0.3]	[0.0-0.2]	[0.2-1.5]	[0.0-0.1]	[0.0-0.5]		[0.0-0.3]	[0.0-0.3]	[0.0-2.0]
Other	%	0.3	0.3	0.1	0.2	0.1	0	0.8	0.1	0.1	0.4	1
	95% CI	[0.2-0.6]	[0.1-0.8]	[0.0-0.6]	[0.1-0.5]	[0.0-0.3]		[0.2-3.0]	[0.0-0.6]	[0.0-0.4]	[0.2-0.9]	[0.3-3.6]
None	%	21.8	23.3	21.2	33	29.4	24.1	24	32.4	8.5	34.2	32.1
	95% CI	[20.2-23.4]	[21.9-24.7]	[17.5-25.5]	[30.8-35.2]	[26.4-32.6]	[20.2-28.6]	[21.4-26.9]	[26.8-38.6]	[6.7-10.8]	[29.6-39.0]	[21.7-44.6]

5.6 Indigent Households

South Africa adopted an indigent policy in 2001, the policy constitutionally obliges the municipalities to provide poor households with free basic services or substantially subsidised rates. These households need to be registered with the municipality as indigent households. In response to the question: 'Is this household registered on the indigent register with a local municipality?' 56.9% of the households responded 'yes'. About 3%.8 did not know whether the household was registered or not.

In terms of the distribution of households registered as indigent across the provinces, the Northern Cape Province had the highest proportion of households which indicated that they were registered as indigent, followed by the Western Cape Province (Figure 12). The North West Province had the lowest proportion of households registered as indigent, followed by Gauteng and Mpumalanga provinces, respectively.

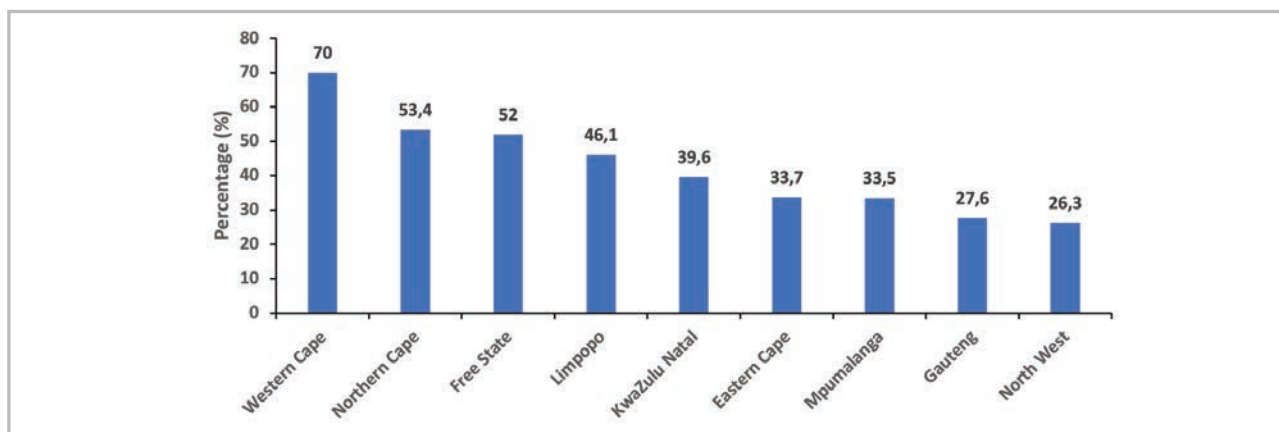


Figure 12: Proportion of households registered as indigent in South Africa

6.1 Agriculture and Production Systems

Since rural livelihood zones and rural life is determined by agricultural seasons, the information is organised 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 most open access livelihood zones, the main dry harvest begins in March, so the consumption year begins that month and runs up until the end of the following February. The livelihood strategies presented in this document apply to a particular year - one that is neither very good nor bad but is 'typical' or occurs frequently. This is referred to as the reference year.

Activity	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Dry harvest & threshing	■	■	■	■								
Land preparation (maize)						■	■	■	■	■	■	
Land preparation (Vegetables)	■	■	■	■	■	■	■					■
Ploughing & planting (maize)							■	■	■	■	■	
Ploughing & planting (Vegetables)	■	■	■	■	■	■	■					■
Weeding (maize)									■	■	■	■
Weeding (Vegetables)	■	■	■	■	■	■	■	■				
Harvesting (vegetables)		■	■	■	■	■						
Casual Labour (domestic work, crop fields, herding & public works)									■	■	■	■
Off-Farm Employment			■	■	■	■			■	■	■	■
Livestock sales			■	■	■			■	■	■	■	
Purchases	■	■	■	■	■	■	■	■	■	■	■	■

Figure 13: Seasonal Calendar for South Africa

Farming has two main seasons: one for cereals (maize), and the other for vegetables. The land for maize cropping is prepared in late winter and spring, with ploughing and planting taking place from September to January, depending on the timing of the rains. Weeding (a period of intense activity and one in which work opportunities increase) takes place from November to February, with the dry harvest (another period for employment) beginning in March.

Vegetable farming is stretched out longer and vegetables are planted more continuously, to bring a steady income. Land preparation takes place through autumn, winter, and spring up to September, with planting happening at the same time. They are tended and weeded through the same seasons up until October, by which time harvesting is completed.

The peak period for casual work availability is from November to February, while off-farm work is also available during winter from May to August. Livestock sales tend to peak in winter from May to July, and in spring or early summer, from October to January. The latter is often to pay for summer expenses such as the Christmas holiday season.

6.1.1 Household access to land

In South Africa, there is a dual system in terms of 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 entire country varies greatly across provinces (see Fig 14). The Free State and the Eastern Cape are the two provinces with the highest percentage of households who have access to land in the entire country, sitting at 67% each (Figure 14). The province with the least number of households with access to land is Western Cape, sitting at 23%.

It should be noted that a large portion of land in both the Eastern Cape and the Free State is used for agricultural activities. Agricultural activities are so intensive in the Xhariep District of the Free State Province, with a constituency of 21% of the main land use in the area. Agriculture and livestock farming is widespread across the entire Free State Province; game, sheep, and ostrich farming dominates the agricultural landscape.

Agriculture is also a very crucial sector in the Free State Province. It is not only important for food security, but it also contributes to extensive employment in the area. About 90% of the cherry fruits in South Africa are produced in the Free State Province. Other deciduous and tropical fruits are produced in the region as well. Maize is also very prominent in Thabo Mafutsayane District.

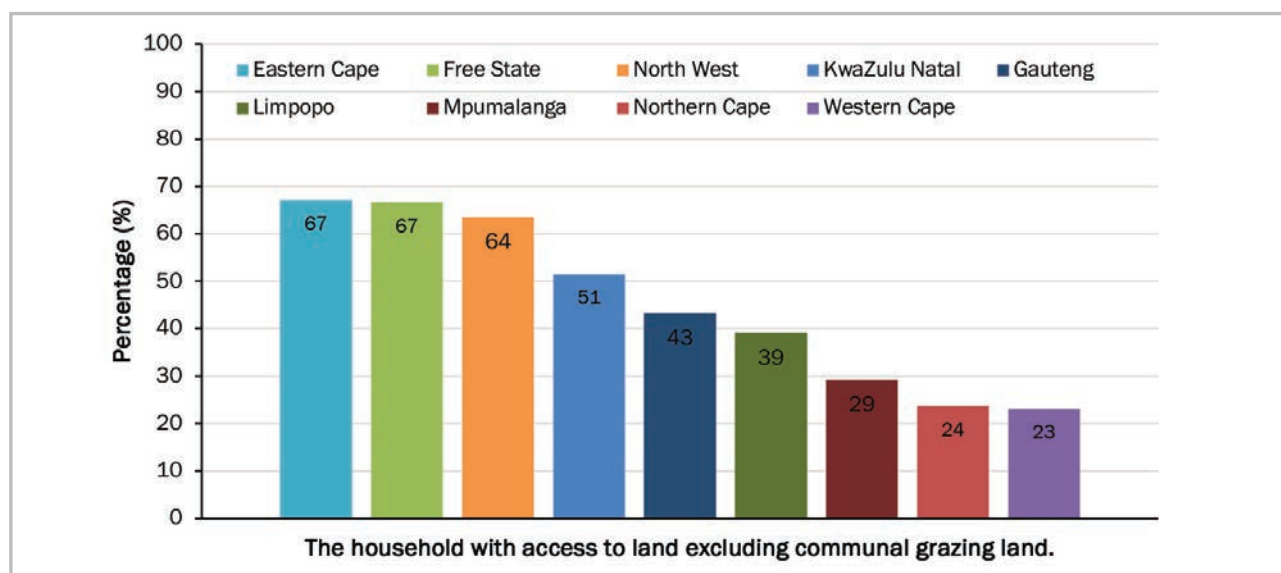


Figure 14: Household access to land in South Africa

Disaggregated by gender, both female- and male-headed households were, on average, having access to land; however, this is a little bit pronounced among females in the Eastern Cape (64%), Limpopo (61%), and Mpumalanga (60%). The highest number of males having access to land are in the Western Cape (57%), followed by the Northern Cape and the Free State, with 54%.

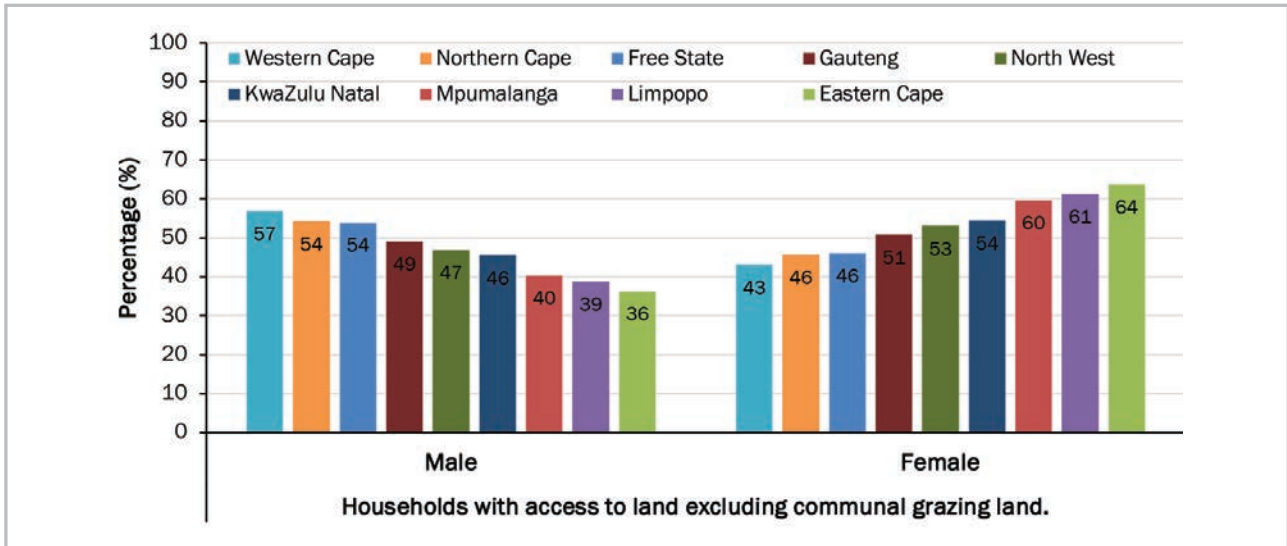


Figure 15: Land access disaggregated according to household head sex in South Africa

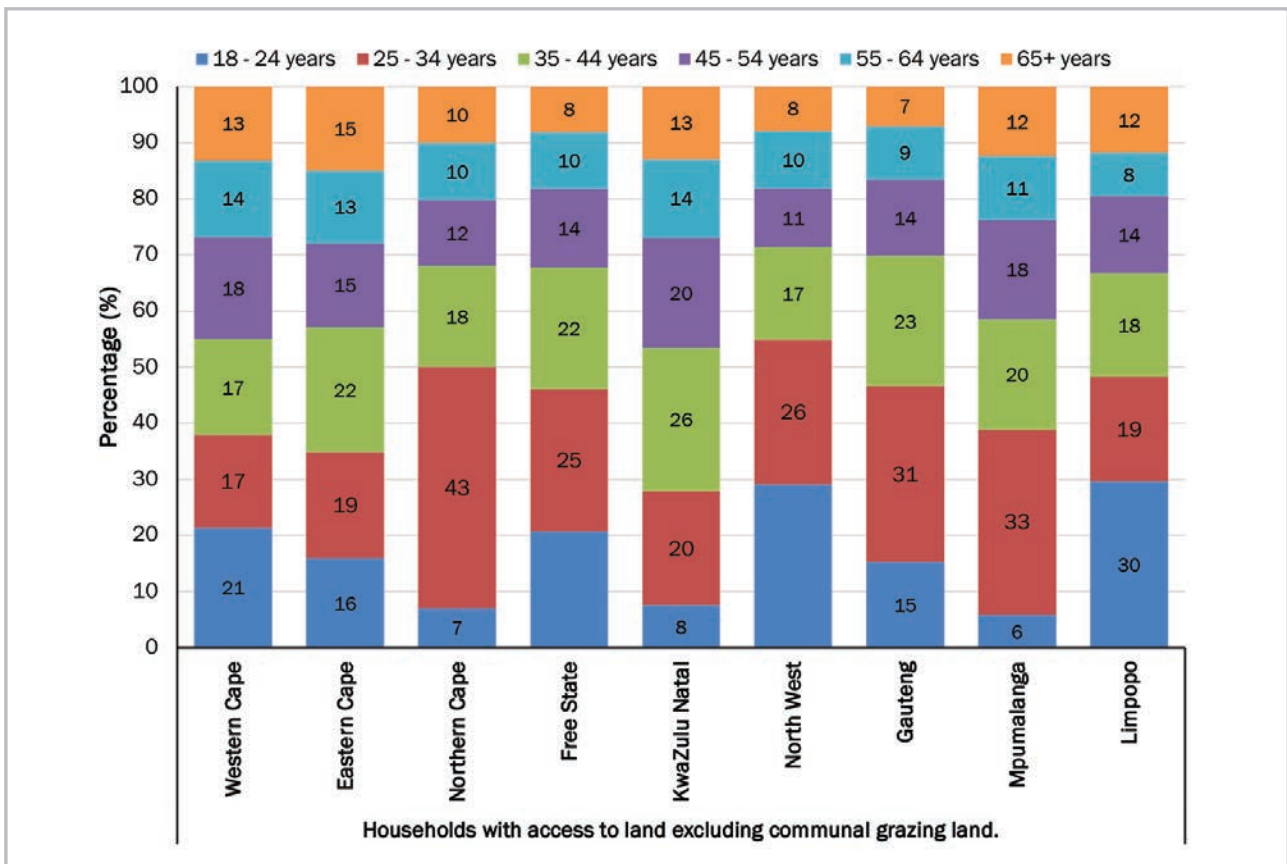


Figure 16: Access to land disaggregated according to age

Land access varied disproportionately according to the different age categories, as shown in Figure 16. Almost entirely, all the respondents in the 18-24 years age category have extremely limited access to land across the nine provinces. It should be noted that as is expected in a well-functioning society, low levels of child/youth-headed households are expected to have access to land, hence the extremely low levels of the youth with access to land. As expected, access to land increased with an increase in age, hence the age group between 25-44 years have the highest percentage of access to land.

6.1.2 Land tenure system

Results from the household survey show that of the land that they have access to, most of it is owned by the households (Figure 17), with households in both the Eastern Cape and Limpopo at the front with 95 % and 91 %, respectively. There is, however, a small percentage of households who reside on land which is owned by the State. Within the mostly urbanised provinces there is a moderate number of households who stay in rented land, whereas in provinces which are constituted by a higher percentage of rural areas, renting is extremely low. In all the provinces, almost all the households have access to land which is less than 500m². This result indicates that much of the land reported as owned is merely for residential purposes and not enough for agriculture production purposes (Figure 18). Ownership of the land in this context is a small area for dwelling, with extremely limited backyard farming or gardening.

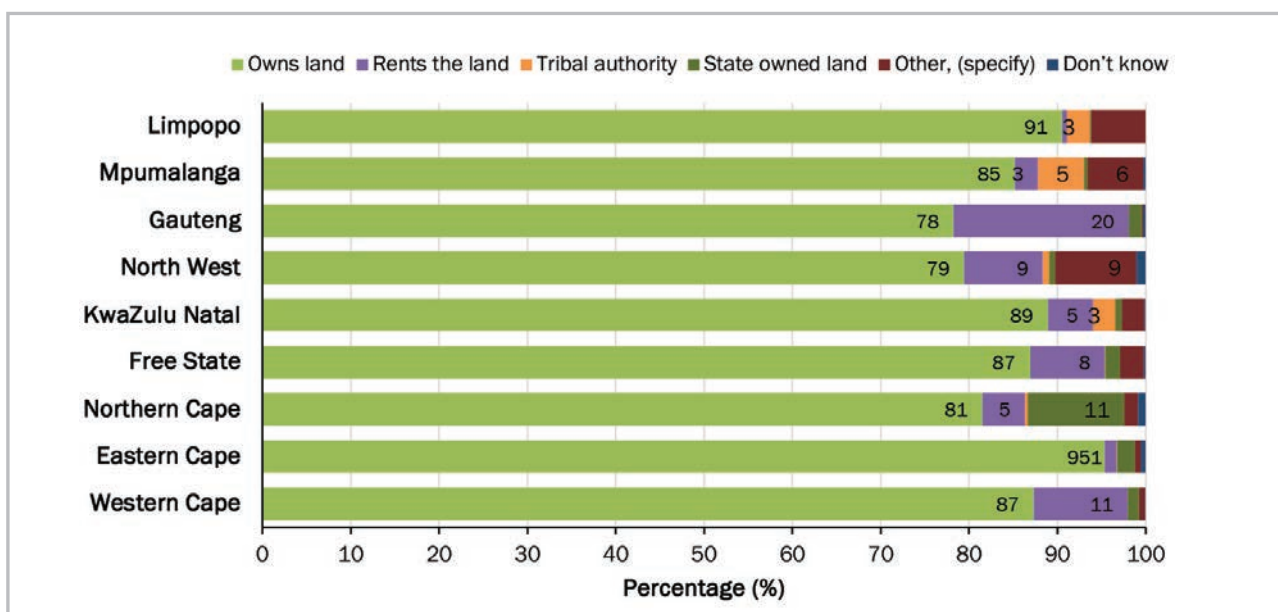


Figure 17: Land tenure in South Africa disaggregated by province

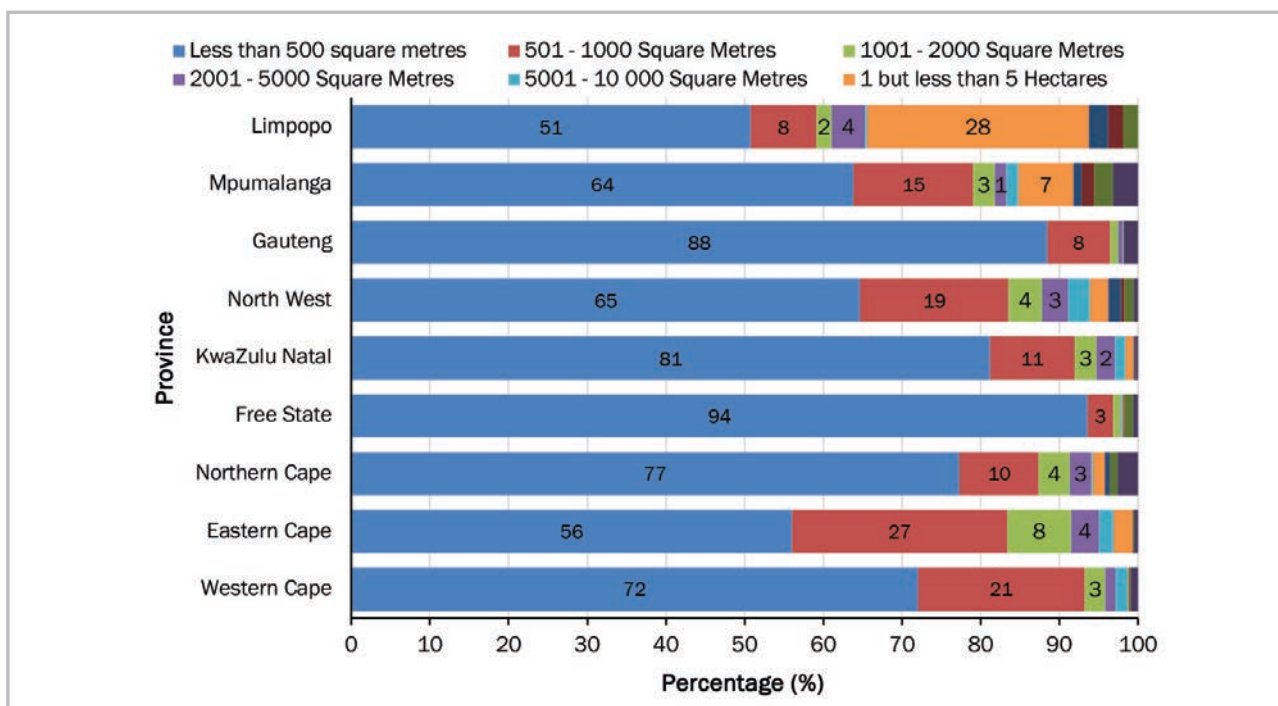


Figure 18: The approximated agricultural land size accessed by households in South Africa

6.1.3 Use of land for food production or other agricultural products

Within the provinces, the number of households who use the land for food and agricultural production is higher within the provinces which are constituted of the former homelands. Limpopo Province is at the forefront of households who use the land for food production, at 90% (Figure 19). It should be noted that a higher percentage (above 86% in most of the provinces) of households have reported that their yards are less than 500m², hence the low level of households practising agriculture. Therefore, the land that was regarded as 'owned' was primarily meant for residential purposes, with no adequate opportunities for backyard farming. The low level of involvement of the households in agricultural activities on their land might be influenced by the high concentration of commercial farms and mines in the provinces.

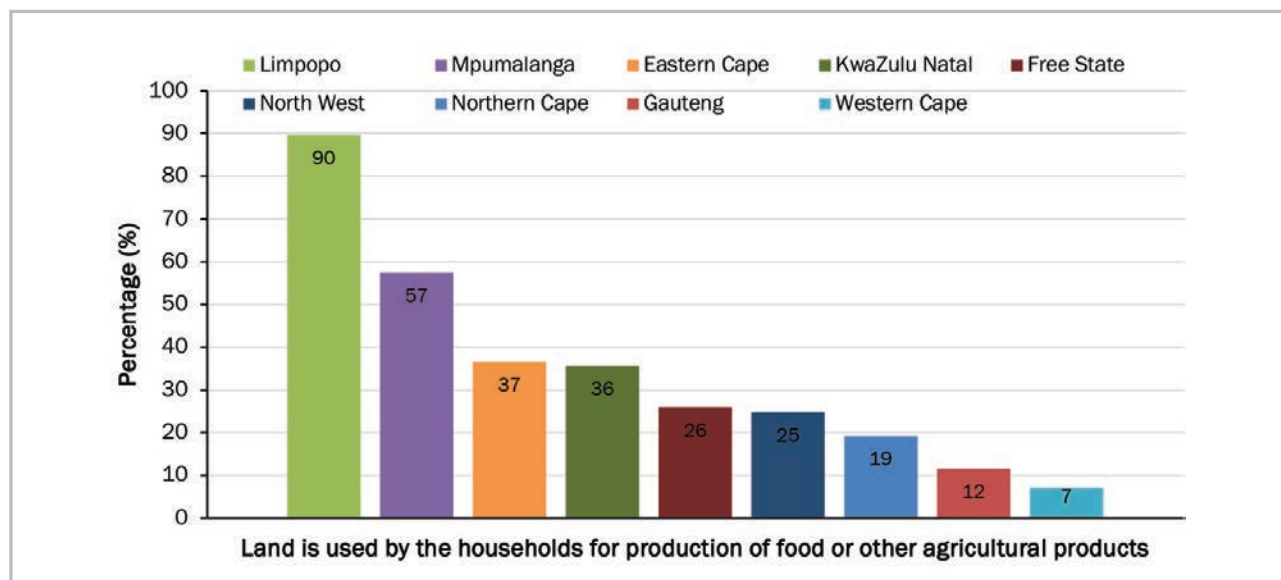


Figure 19: Land use for food and other agricultural production in South Africa

6.1.4 Crop and livestock production

Households in the Eastern Cape Province were practising livestock production at a higher rate compared to food and crop production (Figures 20 and 21). They also have the highest proportion (64%) of the households who had access to land and using it for live stock production. This is largely because the province is well known for livestock farming. The low level of participation by households in livestock production in the Free State Province can be attributed to the high proportion of commercial farms and mining activities in the area, which forms part of the alternative livelihood activities.

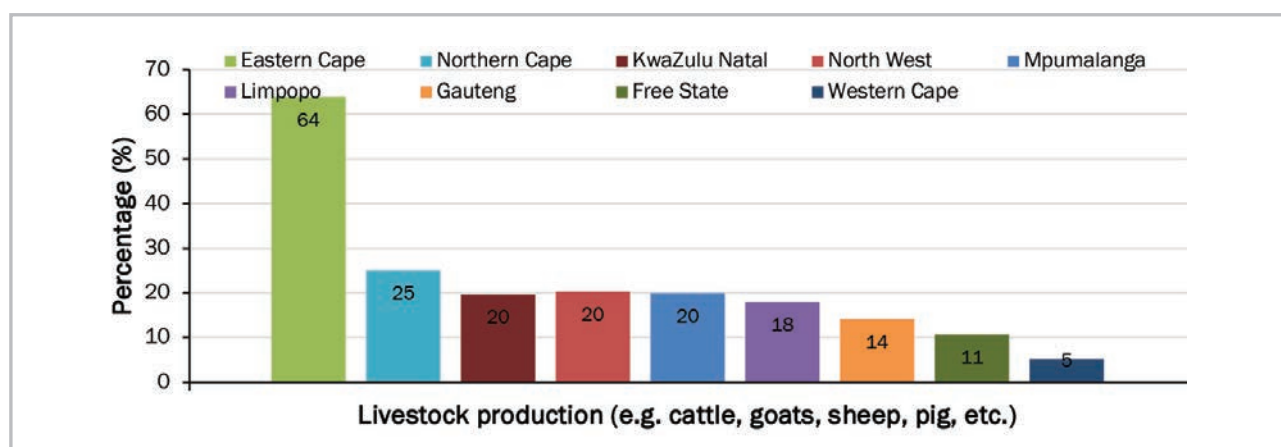


Figure 20: Livestock production disaggregate by province in South Africa

Generally, poultry production is practised by a fairly average number of households in most provinces. The results indicate that the Eastern Cape has the highest proportion of households who practice poultry production, followed by the Northern Cape and the North West provinces, in that order. The least level of poultry production was reported in the Western Cape Province, with only 3% of the households engaged in poultry production (Figure 28).

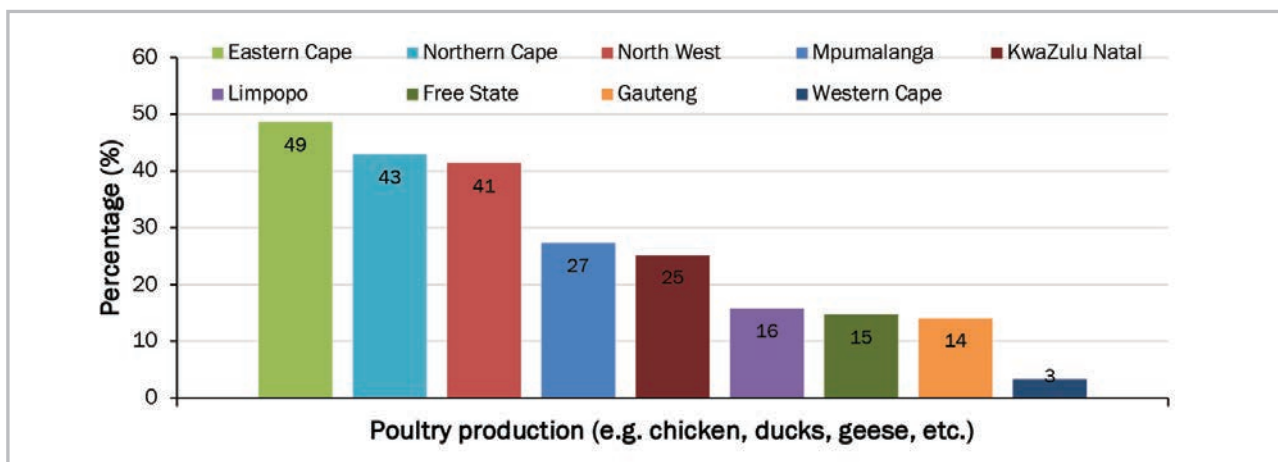


Figure 21: Poultry production disaggregated by province in South Africa

Households in Limpopo Province reported a higher percentage of engagement in grain crop production at 76%, with Gauteng, Mpumalanga, and North West provinces reporting to have some fairly high level of engagement in crop production, pegged at 47%, 34%, and 28%, respectively (Figure 22). Such low levels of grain production can be attributed to the fact that most of the households have smaller yards (less than 500m²) which are not adequate for cropping activities. Even though the Free State Province is traditionally known for its high production of high value crops and maize since it is part of the Vaal Maize Triangle (there is also the availability of a good climate which is conducive for maize and high value crops production), the households have not been extensively practising production of such crops. The other reason could be the abundance/ availability of such crops at cheaper prices since the commercial farms report high yields of such products.

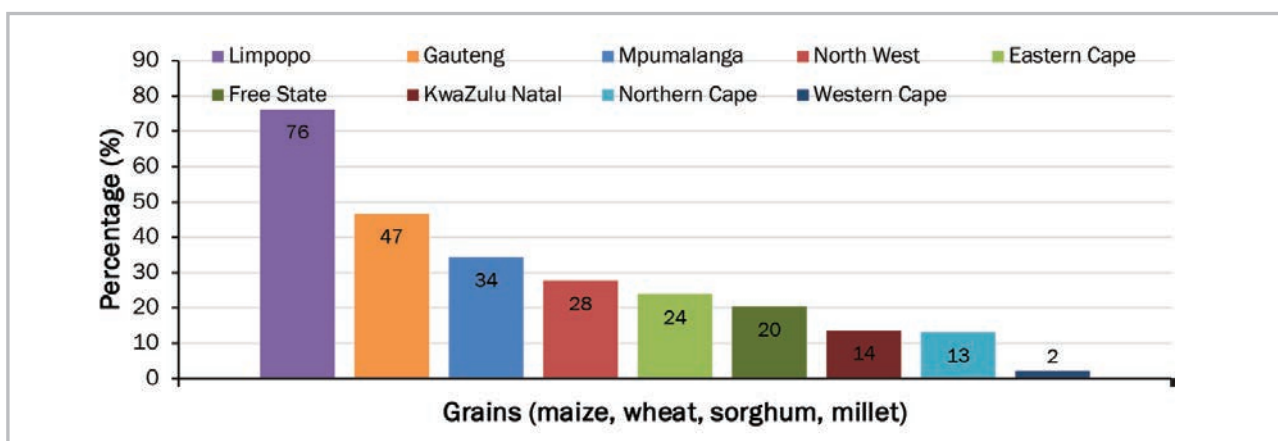


Figure 22: Household involvement in grain production in South Africa

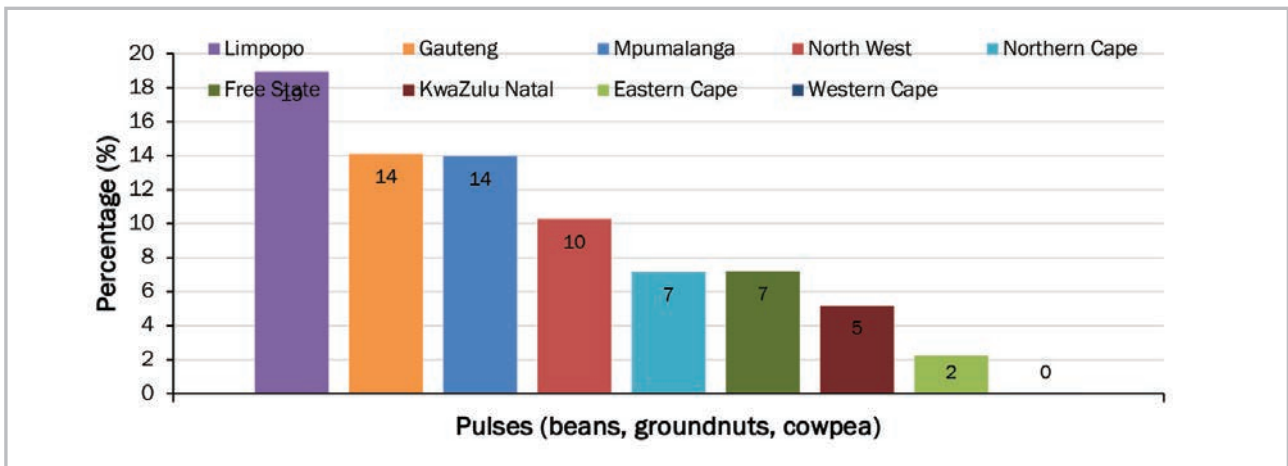


Figure 23: Pulses Production disaggregated by province in South Africa

The production of pulses was reported to be the least practised by most households in the Eastern Cape Province (Figure 24). More than 97% of the households in the province do not produce pulses. Within the Western Cape Province, all the households reported not to be involved in pulse production.

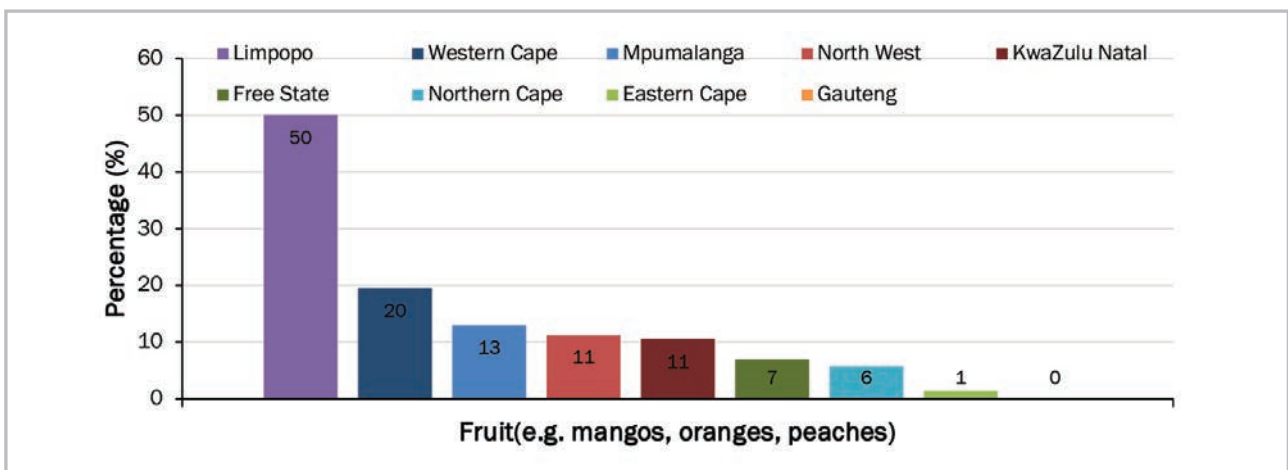


Figure 24: Household fruit production disaggregated by province in South Africa

Fruit production was reported to be extremely low in all the provinces, with the exception of Limpopo Province. It should be noted that Limpopo Province is popularly known for producing tropical fruits such as mangoes, avocados, among others.

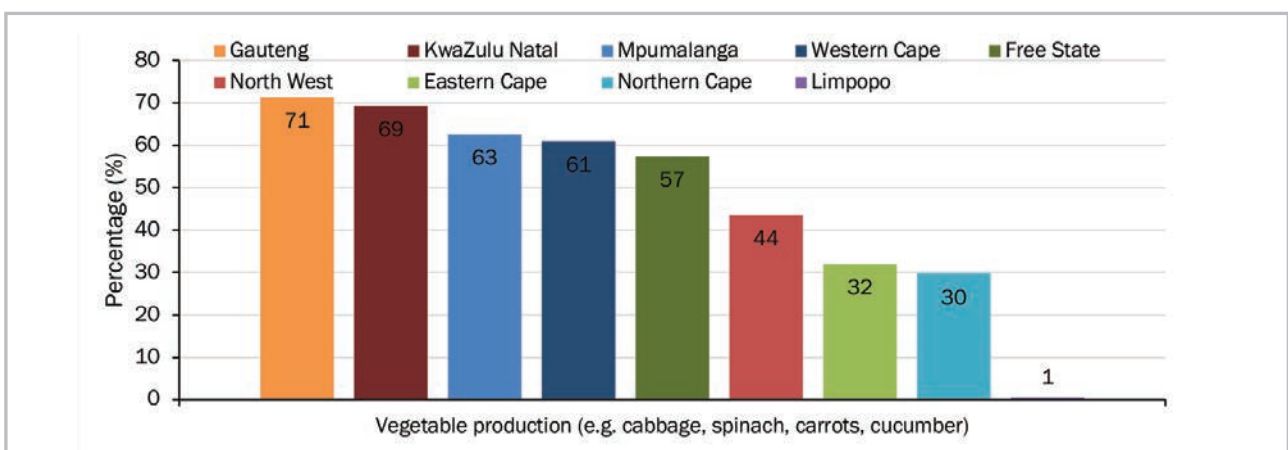


Figure 25: Level of vegetable production disaggregated by province in South Africa

6.1.5 Major crops grown

Crop production plays a major role in supplementing food availability among the rural households in South Africa. Both qualitative and quantitative data show that maize, beans, potatoes, and vegetables are the major crops grown in the open-access livelihood zones in South Africa. Hence, agricultural extension services are a requirement for both livestock and crops producers in South Africa. Limpopo and Mpumalanga provinces emerged as the major crop producers in South Africa.

6.2 Wealth Breakdown, Food, and Income Sources

Wealth is determined by four factors across the livelihood zones in the provinces:

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

Land holdings increase with wealth but not as exponentially as the factors listed above (3ha across the wealth groups). Households within 'very poor' and 'poor' wealth groups own less than 1ha of land in Limpopo, North West, Northern Cape, Mpumalanga, Free State, Eastern Cape, Western Cape, and Gauteng. This limited landholding size coupled with low access to inputs and extension services limits most poor households from utilizing their land to improve crop production.

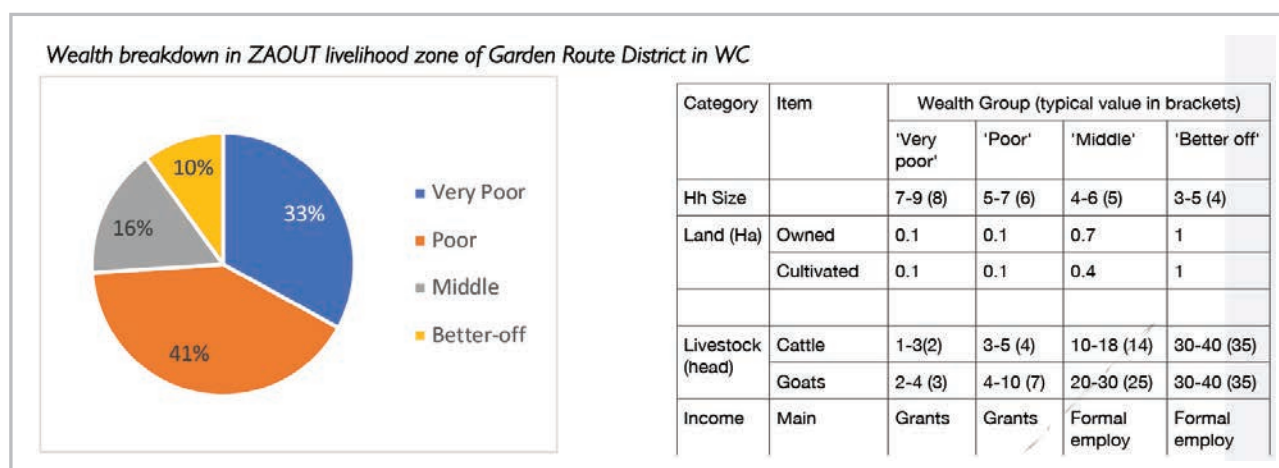


Figure 26: Wealth breakdown in ZAOUT livelihood zone of Garden Route District in WC

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 R48 826, compared to the R60 953 of the 'very poor' households. Some provinces, including Limpopo and Mpumalanga, have a higher average annual income for the 'better-off' households (R1 005 598 and R706 418, respectively). Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R238 187 are referred to as the 'middle'. Those who depend primarily on grants are described as the 'poor' and 'very poor'; collectively, they are about 29% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock. 'Better-off' households are able to develop slightly more land and produce crops for sale, using savings from their other income sources to afford inputs (including labour). Similarly, they derive a small cash benefit from their animals. Middle households also sell crops and livestock or livestock products. During the Covid-19 lockdown restrictions, the poor and very poor households were the ones who suffered the worst impacts of food insecurity.

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

6.3 Livelihood Strategies for Obtaining Food Across Wealth Groups

Table 34 below was generated from overall HEA focus group discussions spreadsheet data depicting sources of food for households within all livelihood zones for the qualitative study. Sources of food are expressed in terms of contribution to the minimum human food energy needs, which is 8 800 kJ/person/day. Wealthier households may consume considerably more than this, for example 12 144 kJ/person/day, which is 138% of minimum food needs. Some of this consumption may be wasted; for example, when food is thrown away or incompletely eaten. Even the poorest households may consume slightly more than the minimum requirement, for example 111%, or 9 768 kJ/person/day.

Results indicate that crop production contributed about 9% and 13% of the food sources for the 'very poor' and 'poor' wealth groups, respectively. Food purchases contributed about 73% and 70% of the food needs for the 'middle' and 'better-off' households, respectively. Despite the good rainfall and fertile soils, purchases still make up a significant portion of people's sources of food. The contribution to food energy from non-staple food purchases increased steadily from 26% to 30% across the wealth groups.

Table 34: Livelihood strategies for obtaining food in South Africa

Livelihood strategies for obtaining food	Wealth Breakdown Categories			
	Very Poor	Poor	Middle	Better-off
Crops	9%	13%	17%	20%
Own milk/meat	1%	5%	17%	26%
Wild foods including fishing and hunting	1%	0%	1%	1%
Payment in kind	4%	3%	0%	0%
Food assistance	13%	12%	6%	3%
Staple purchase	47%	43%	39%	34%
Non-staple purchase	26%	27%	29%	30%
Other	0%	0%	0%	1%
Total	101%	104%	109%	115%

Source: HEA Qualitative Output. ***Above 100% are due to multiple options

The 'very poor' and 'poor' households also accessed food from food aid (12%) 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 90% and 87% of the 'very poor' and 'poor' households' food needs were drastically affected by Covid-19 restrictions, leaving them vulnerable to food insecurity.

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 needs from their livestock (17% to 26%); this was usually from cow's milk, and occasional slaughter of livestock 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) are milked for consumption.

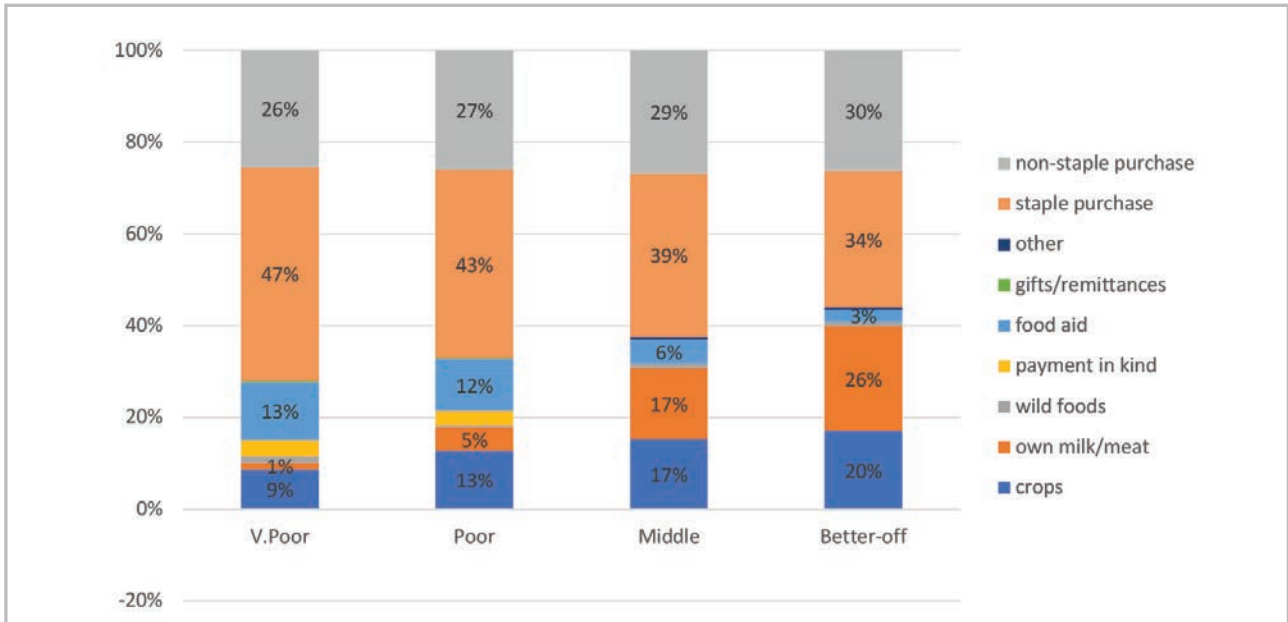


Figure 27: Sources of food disaggregated by wealth groups in South Africa

KwaZulu-Natal, Eastern Cape, and Gauteng provinces registered a significant proportion of ‘very poor’ households who struggle to obtain sufficient food throughout the consumption period. These are supported by both community members through gifts/ remittances and humanitarian support interventions including food parcels. The results also show that urbanization has affected the ability of rural households to produce food and complement their energy needs, especially in Gauteng and Western Cape provinces.

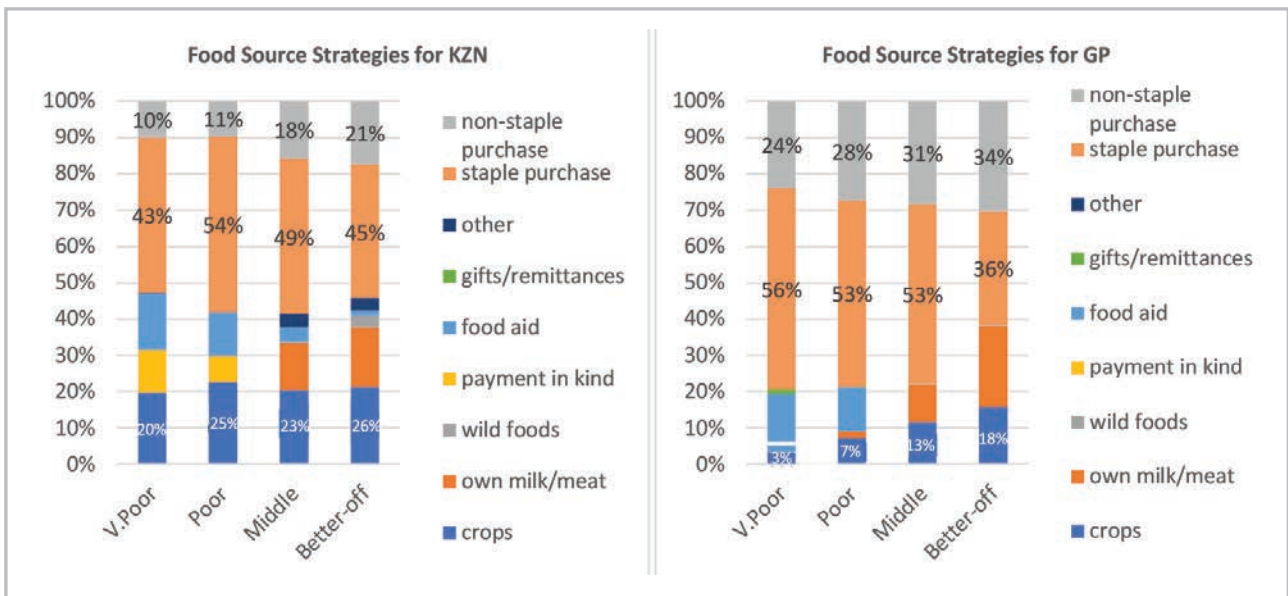


Figure 28: Food sources in KwaZulu-Natal and Gauteng provinces

6.4 Gender Breakdown of Who Produces/ Generates Food

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.

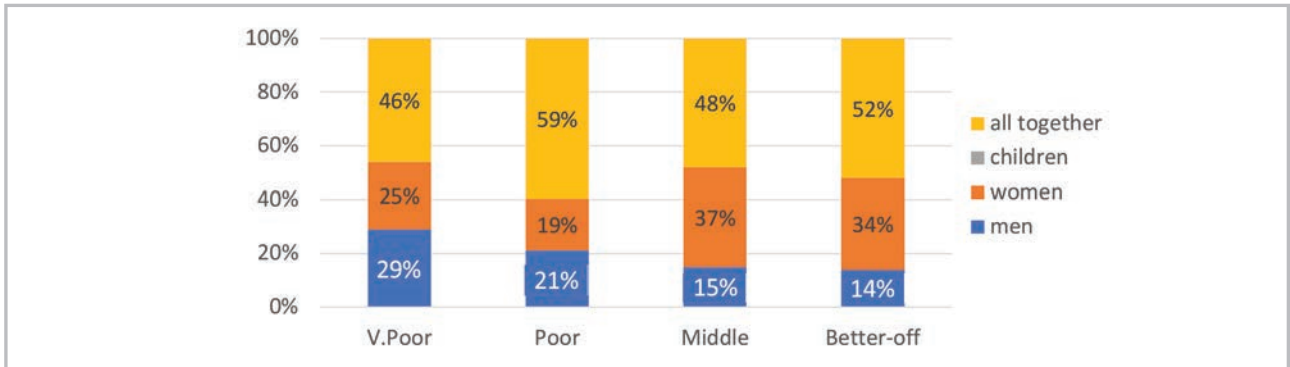


Figure 29: Gender breakdown of who produces food in the zones across all provinces for each wealth group

The results indicate that men and women altogether contribute significantly to generating food. This was at about 51% across all wealth groups.

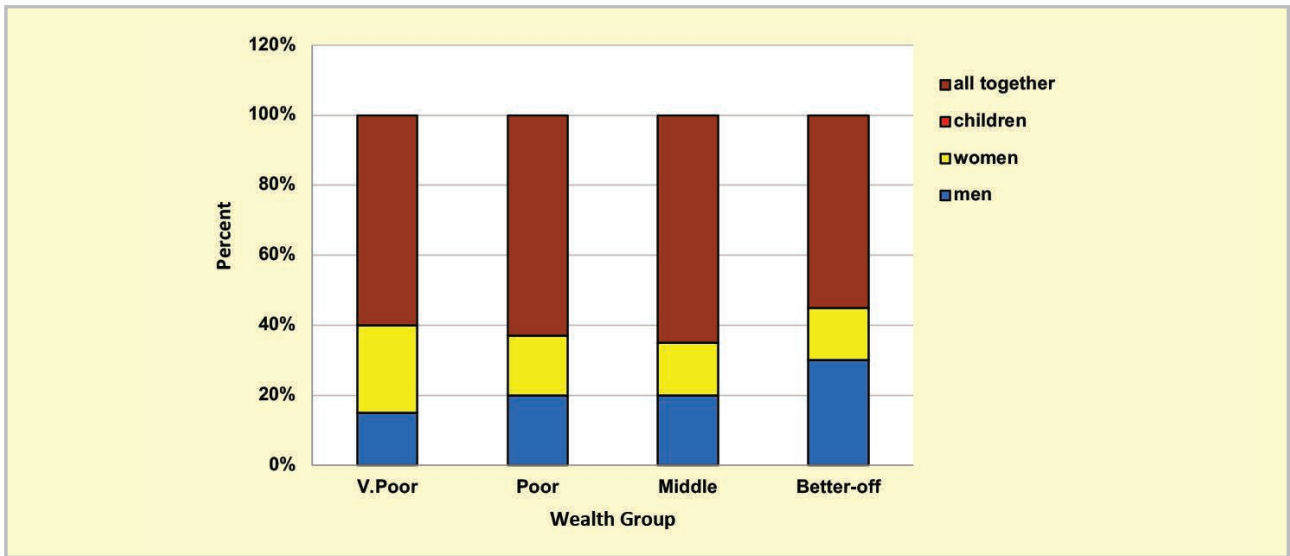


Figure 30: Gender breakdown of who produces food in selected livelihood zones for each wealth group

Women appeared to contribute significantly to production of food among the ‘very poor’ and ‘poor’ households across provinces. The situation in Gauteng, Western Cape, and North West provinces shows a different picture. The contribution of all household members to food production is higher than the rest of the other provinces. The results in the Western Cape, for instance, indicated that young adults, men, and women altogether contribute significantly to generating food among the ‘poor’ and ‘very poor’ households in most districts and municipalities in the livelihood zones.

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 agriculture and development. These include HIV and AIDS, poor youth participation in development agenda, gender-based violence (GBV), increased environmental degradation, climate change, and high levels of poverty. Women still face many challenges - including the burden of care, which takes away much of their time for

productive work. They also have poor access to extension services, information, inputs, and markets. Hence, addressing the gender gap in development (including agriculture) could raise the scale of economic activities and crop production, and boost agricultural yield and overall GDP. It would also lift a significant proportion of people out of poverty. Further, there has been a general inadequacy among all the gender structures at all levels in maintaining a collective and sustained response to gender and youth empowerment issues.

6.5 Income Source Strategies

6.5.1 Sources of cash income across the provinces

Cash incomes vary considerably across wealth groups, with the 'better-off' earning R487 826 on average per annum, eight times as much as the 'very poor', who earn only R60 953 per annum. Table 35 and Figure 31 below show 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.

The main sources of cash incomes for the 'middle' and 'better-off' in the zones are: formal and self-employment (R90 210 and R238 570, respectively), social grants (R21 436 and R17 202), informal employment (R16 442 and R27 521), and gifts and remittances (R16 565 and R16 667)—for the 'very poor' and 'poor' households. This is in keeping with most surveys that ask for the main livelihood source.

However, the point of this enquiry was to gain an understanding of how all livelihood sources come together to make up an income. This is essential because it enables practitioners to link a hazard (such as a price change) to outcomes and it enables other users to see potential areas of intervention. By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 31.

Table 35: Sources of overall national annual cash income by wealth group

Income Source / Strategy	Wealth Breakdown Categories			
	Very Poor	Poor	Middle	Better-off
Crop sales	55	158	13,797	38,958
Milk/butter/egg sales	605	1,767	8,286	23,391
Livestock sales	4,444	9561	42,072	88,404
Wild foods	129	90	191	144
Formal and Informal employment	16,442	27,521	67,850	81,953
Migrant labour	73	41	0	0
Self -employment	1,041	1,889	90,210	238,570
Small business	162	120	1110	597
Social grants	21,436	17,202	4,858	1,969
Gifts / remittances	16,565	16,667	9,814	13,838
Total	60,953	75,016	238,187	487,826

Source: HEA Qualitative Output

For the 'very poor' and 'poor', grants make up 35% and 20% of total cash income, respectively; with the remainder coming from casual labour (mostly domestic work, agricultural piece work, construction jobs) and self-employment (collecting natural products for sale, weaving, making bricks, etc.). The 'poor' earn small amounts of income through livestock sales (R9 561) - usually goats (3%); petty trading (0.2%); and remittances (22%). This, coupled with a small income from the formal sector (R27 521 annually or 37%) is what distinguishes their livelihoods from that of the 'very poor'.

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

The earnings from livestock products are relatively small, which is lost earnings. The numbers of cows that are milked compared with those likely to be lactating is low, and this is due to a number of factors: pests and diseases, lack of livestock extension services including dipping, lack of economic incentives for milking, lack of time by the cattle-owners (because they are full-time employed), and minimal herd management.

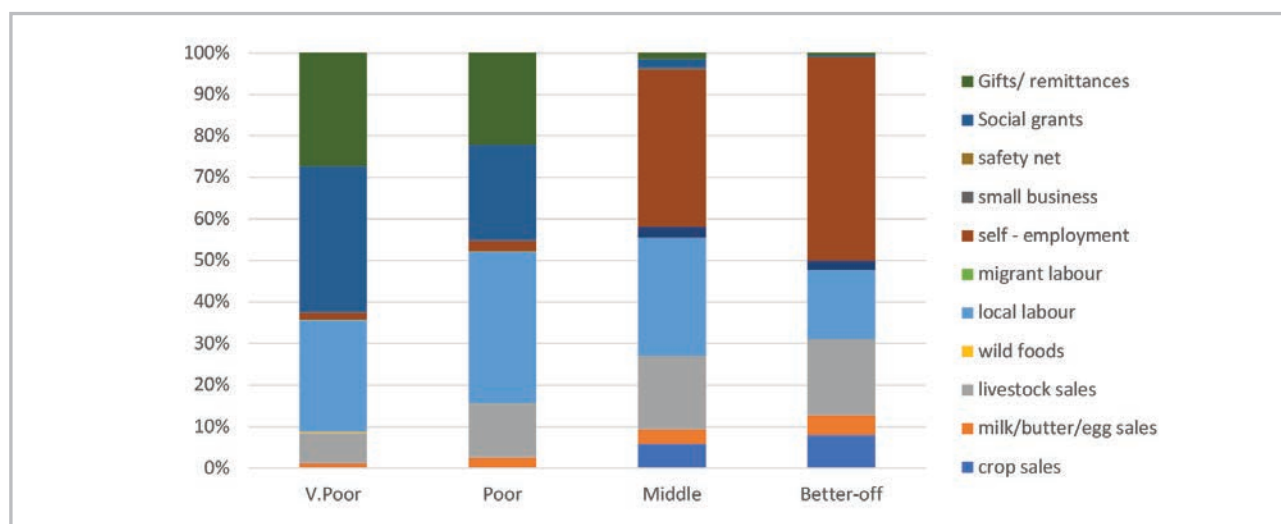


Figure 31: Sources of overall national annual cash income by wealth group

Disaggregation of sources of income across some livelihood zones showed that some 'poor' and 'very poor' households in other provinces including KwaZulu-Natal, Mpumalanga, Gauteng, Limpopo, and Free State have lower than overall household income for the 'poor' and 'very poor' wealth groups.

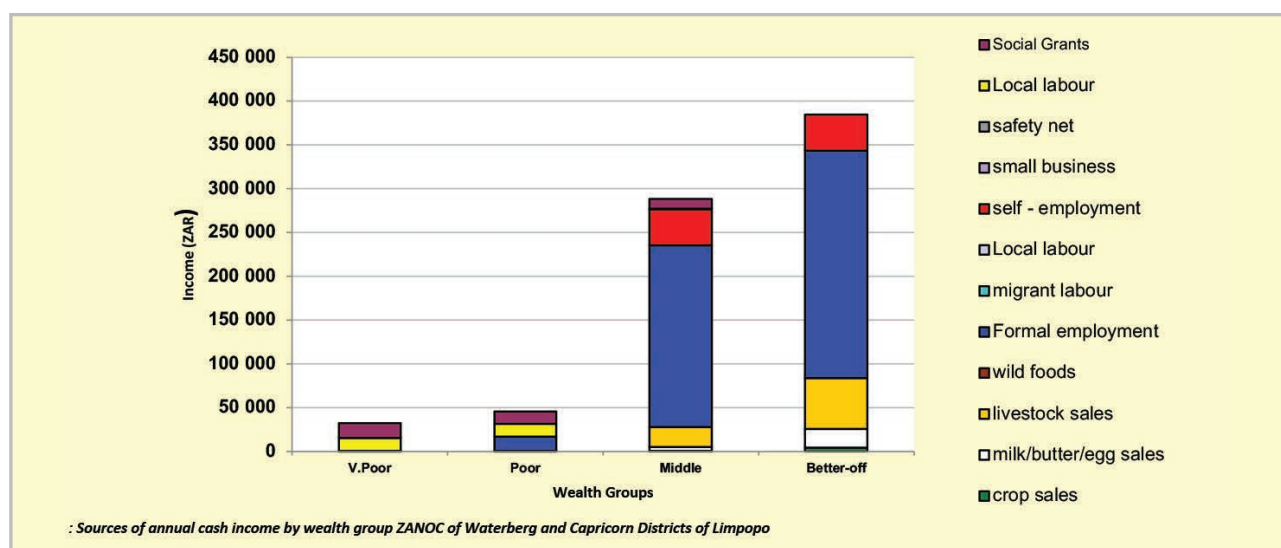


Figure 32: Sources of annual cash income by wealth group ZANOC of Waterberg and Capricorn districts of Limpopo

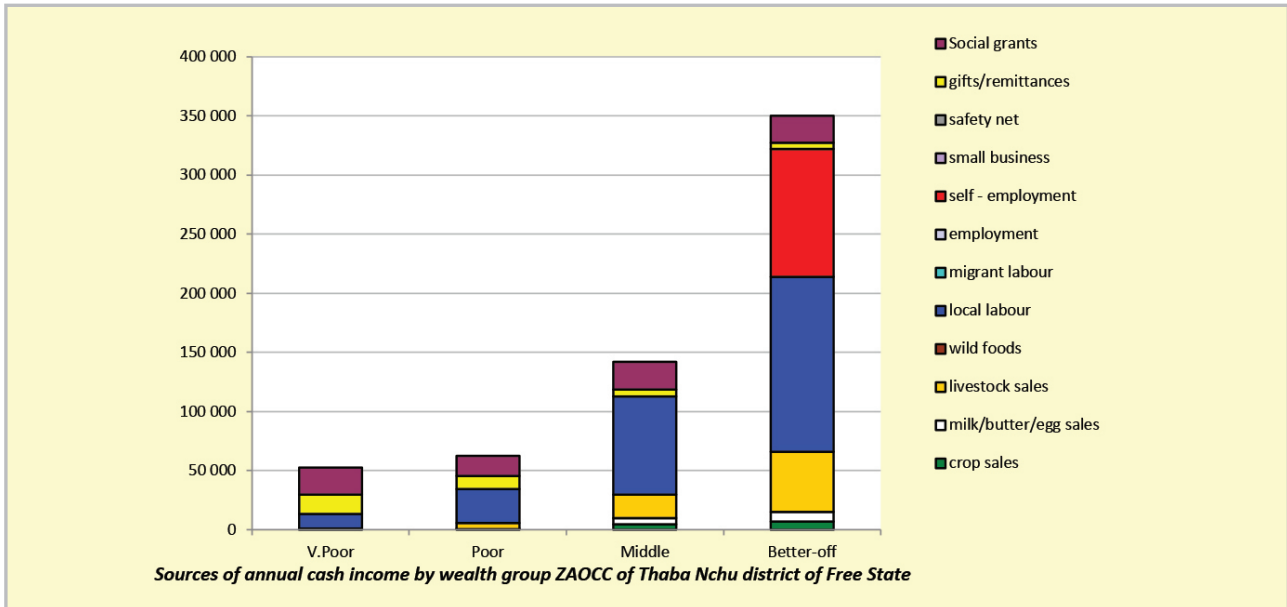


Figure 33: Sources of annual cash income by wealth group ZAOC of Thaba Nchu District of Free State

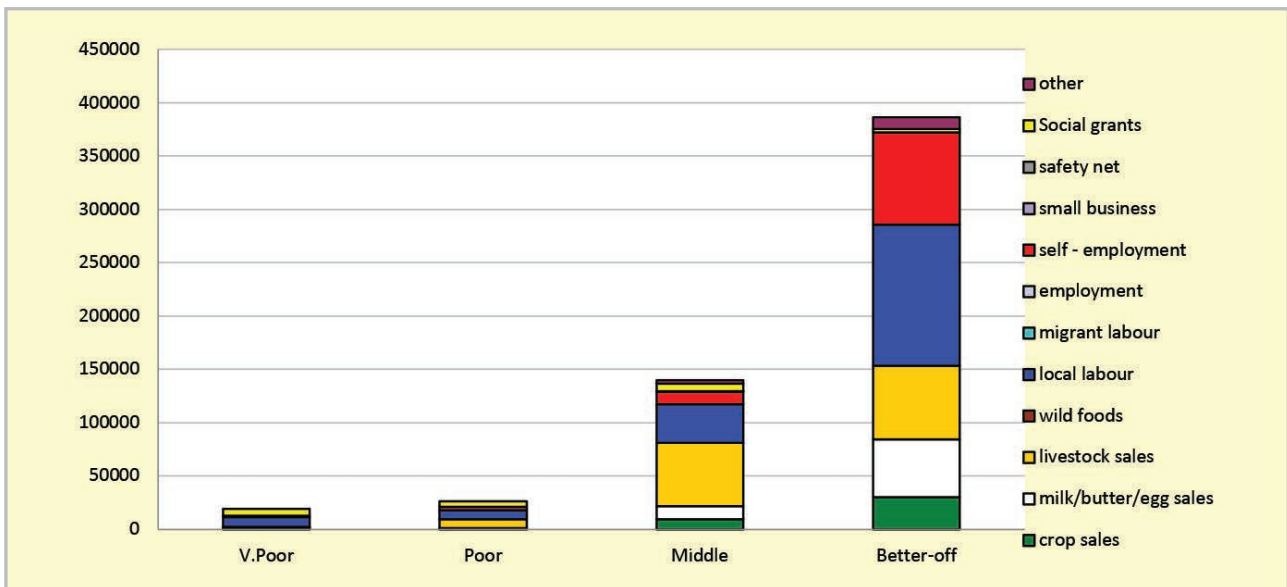


Figure 34: Sources of annual cash income by wealth group in ZAHIC of Nkangala and Gert Sibande districts of Mpumalanga Province

The main sources of cash incomes in the zone are employment—for the ‘middle’ and ‘better off’; and cash grants for the ‘poor’ and ‘very poor’. This is in keeping with most surveys that ask for the main livelihood source. However, the point of this enquiry was to gain an understanding of how all livelihood sources come together to make up an income. This is essential because it enables practitioners to link a hazard (such as a price change) to outcomes, and it enables other users to see potential areas of intervention. By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 35 below.

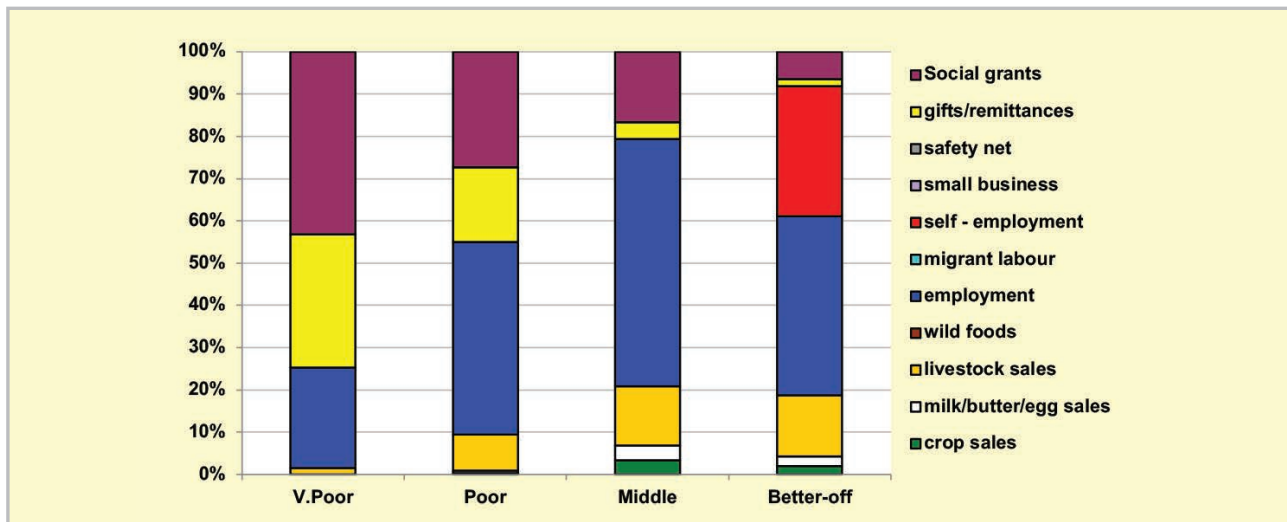


Figure 35: Sources of annual cash income as a percentage of total, by wealth group

For the ‘very poor’ and ‘poor’, grants made up 42% and 26% of total cash income, respectively; the remainder was from casual labour, employment (mostly domestic work, agricultural piece work, and 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 and gifts/ remittances. This, coupled with a small income from the formal sector (R12 000 annually) was what distinguishes their livelihoods from that of the ‘very poor’. The analysis showed that poor households would lose up to 56% 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 worsening the food security situation for the ‘very poor’ and ‘poor’ households who comprise of most of the population in this area.

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

The earnings from livestock products were very low for the ‘very poor’ and ‘poor’ households, which is lost productivity. The numbers 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.

6.5.2 Hazards, vulnerabilities, and response strategies

Since households are dependent on markets for most of their food, they are 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. However, unless food prices also rise simultaneously, households will manage crop losses by prioritising more cash for 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.

6.6 Access to Agriculture Extension Services, Road Infrastructure, and Markets

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

6.6.1 Access to road infrastructure

Access to infrastructure such as roads is critical in enhancing food and nutrition security. Both females and males reported high levels of access to roads, with the 18-24 years age category having above 80% of access (Table 36). Across the five districts, road access was relatively good, with the highest (93%) being recorded in Xhariep District, whilst the least was reported in Fezile Dabi District (84%).

Table 36: Access to road infrastructure by households disaggregated by sex, age, and province in South Africa

		Poor road Infrastructure			
		Yes		No	
		N	Row N %	N	Row N %
Sex of Household Head	Male	824	14	4190	86
	Female	873	14	4635	86
Age of Household Head	18-24	25	9	204	91
	25-34	112	13	743	87
	35-44	240	13	1322	87
	45-54	358	14	1834	86
	55-64	414	15	2061	85
	65+	526	15	2549	85
Province	Western Cape	18	6	192	94
	Eastern Cape	387	24	1281	76
	Northern Cape	77	18	331	82
	Free State	98	14	665	86
	KwaZulu-Natal	702	19	2590	81
	North West	143	9	1588	91
	Gauteng	2	5	28	95
	Mpumalanga	115	9	1177	91
	Limpopo	220	14	1285	86

6.6.2 Access to the market

Within the Free State, both females and males had an equal share when it comes to access to the market, with both reporting above 88% access. Aggregated by district (Table 37), there is an ease access to market in the area, with Lejweleputswa having 96% access to the market. Access to the market is largely influenced by road networks, hence all the district households have reported having good access to the road infrastructure (Table 37).

Table 37: Access to market by households disaggregated by sex, age, and province in South Africa

		Lack of market access			
		Yes		No	
		N	Row N %	N	Row N %
Sex of Household Head	Male	458	9%	4572	91%
	Female	436	8%	5083	92%
Age of Household Head	18-24	12	3%	217	97%
	25-34	63	7%	793	93%
	35-44	136	8%	1431	92%
	45-54	188	9%	2001	91%
	55-64	215	8%	2277	92%
	65+	272	9%	2811	91%
	Province	Western Cape	19	8%	193
Eastern Cape		139	9%	1530	91%
Northern Cape		50	12%	360	88%
Free State		69	10%	694	90%
KwaZulu-Natal		331	10%	2973	90%
North West		75	4%	1661	96%
Gauteng		3	10%	27	90%
Mpumalanga		98	8%	1194	92%
Limpopo		162	10%	1352	90%

6.6.3 Access to road agricultural extension services

Access to agricultural extension services has been reported to be extremely low across all the provinces within South Africa (Table 38). This is exacerbated by the limited number of households involved in agricultural practices, as well as the limited size of arable land.

Table 38: Access to agriculture extension services by households disaggregated by sex, age, and province in South Africa

		Access to extension services			
		No access		Access	
		N	Row N %	N	Row N %
Sex of Household Head	Male	4645	95%	297	5%
	Female	5125	95%	269	5%
Age of Household Head	18-24	227	99%	4	1%
	25-34	837	97%	36	3%
	35-44	1473	96%	70	4%
	45-54	2035	95%	119	5%
	55-64	2270	94%	153	6%
	65+	2810	95%	181	5%
	Province	Western Cape	178	85%	27
Eastern Cape		1517	94%	101	6%
Northern Cape		340	87%	48	13%
Free State		687	96%	29	4%
KwaZulu-Natal		2975	95%	206	5%
North West		1767	97%	48	3%
Gauteng		25	93%	1	7%
Mpumalanga		1261	97%	44	3%
Limpopo		1355	93%	89	7%

6.7 Discussion

In South Africa, there is a dual system in terms of land rights, i.e., statutory law vested in the Constitution and customary law vested mostly in patrilineal tribal traditions and customs (Toulmin, 2008). The Free State and the Eastern Cape provinces have the highest proportion of households with access to land across South Africa, sitting at 67% each. The province with the least proportion of households with access to land is reported to be the Western Cape, which recorded a paltry 23%. This is in line with studies that indicate that in the Western Cape, the land is mainly owned by commercial farmers, with very limited smallholder farming communities (Akinyemi and Muchunye, 2019). It is not only important for food security, but it also contributes to extensive employment in the area. Almost entirely, all the respondents in the 18-24 years age category have extremely limited access to land across the nine provinces. These results point to the need for land allocation for youths, accompanied by programmes that enhance their skills and funding for income generation. In terms of land tenure system, households in both the Eastern Cape and Limpopo have the highest proportion of owning land, with 95% and 91%, respectively; however, the size of the land is mostly for residential purposes (less than 500m²).

Limpopo Province has the highest proportion (90%) of households that utilize the available land for agricultural production. This is consistent with previous studies that have described Limpopo Province as the garden of South Africa, where most vegetables and fruits are produced and marketed. It should be noted that a higher percentage (above 86% in most of the provinces) of households have reported that their yards are less than 500m², hence the low level of households practising agriculture. The majority of the land owned in South Africa is solely for residential purposes. This is buttressed by Groenewald and Nieuwoudt (2003) who argue that land

holding in former homelands in most parts of South Africa are generally very small and are mainly used for residential purposes and, to some extent, subsistence farming. Interventions that promote the interest and desire to engage in agricultural activities will need to be developed and implemented across all provinces in South Africa, primarily targeting the youths and women.

Livestock production was commonly practised in the Eastern Cape as similarly reported by Materechera and Scholes (2021); whilst pulses (groundnuts, beans, etc.), and grain production (wheat, maize, sorghum, etc.) are prominently practised in Limpopo, Gauteng, and Mpumalanga. Literature also argues that in South Africa, high-value crops (HVCs), also known as horticultural crops or non-traditional crops, are grown for food, nutrition, and human health and wellbeing; these include fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (Materechera and Scholes, 2021).

Most urban and rural households across all the provinces reported high engagement in vegetable and fruit production - with Gauteng and KZN provinces recording the highest proportions. This is mainly because households were resorting to backyard farming and locally available empty spaces in townships and peri-urban areas. This shows the emergence of small-scale rural, peri-urban, and urban food production that was also triggered by the Covid-19 pandemic where household food production became a low hanging coping mechanism. Fruit production was not commonly practised except in Limpopo and Western Cape provinces. This is mainly attributable to the fact that fruit production is mainly practised by commercial farmers in the Western Cape who were not part of the respondents. Agriculture extension services were reported to be very low and almost non-existent in some communities across all the provinces. This probably explains the extremely limited engagement in agriculture-related practices, especially for those with access to land. There is a need to strengthen agriculture extension services in both rural and urban communities where backyard farming has become prominent

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

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 national average HFIAS score was 8.3, 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 36 presents the proportion of the prevalence of food insecurity among the sampled households. The overall results showed that most of the households (63.5%) at the national level experienced food insecurity and 36.5% of households were food secure. Figure 44 shows that 17.5% of the households were severely food insecure, 26.7% of the surveyed households were moderately food insecure, and 19.3% of the households were mildly food insecure. Overall, the findings of this study slightly differ from the findings of 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 the Covid-19 pandemic which may have severely impacted on households' purchasing power and thus increased the proportion 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).

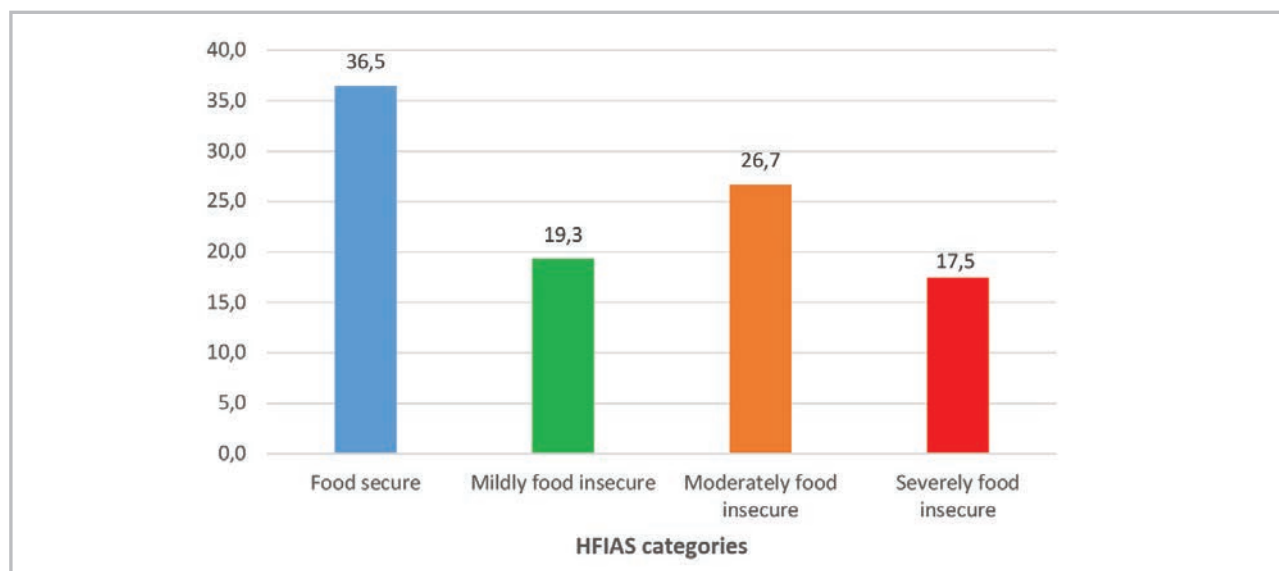


Figure 36: The categorized food security situation, using HFIAS

Table 39 and Figure 37 show that the food security status of households was found to be varied by sex and age of household head, as well as by province. The results show that male-headed households were slightly more food secure than female-headed households, with 41% of the male-headed households found to be food secure, compared to 31% 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 to their male counterparts. In any category of the HFIAS, female-headed households experienced higher levels of food insecurity. Severe food insecurity was experienced by 16% of the male-headed households, compared to 19% of the female-headed households that fell within the same category. Approximately 24% and 29% of male-headed and female-headed households experienced moderate food insecurity, respectively. About 19% and 20% of male-headed and female-headed households experienced mild food insecurity, respectively.

Table 39: Provincial level and gendered food security situation as determined by HFIAS in South Africa

		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	%	N	%	N	%	N	%
Sex of the Household Head	Male	5764	41	3071	19	4140	24	2826	16
	Female	4054	31	3245	20	4973	29	3409	19
Household head age	18-24	346	40	178	20	185	22	181	18
	25-34	1364	40	783	20	912	21	734	18
	35-44	1874	37	1157	20	1608	25	1131	18
	45-54	1891	35	1195	18	1952	28	1414	19
	55-64	1889	35	1354	19	2033	28	1378	18
	65+	2284	35	1571	20	2301	29	1319	16

		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	%	N	%	N	%	N	%
Province	Western Cape	1512	45	607	15	916	22	623	17
	Eastern Cape	1427	27	1259	22	1765	31	1145	20
	Northern Cape	932	35	518	18	779	26	600	21
	Free State	858	32	526	19	726	27	599	22
	KwaZulu-Natal	2073	30	1886	24	2475	29	1618	17
	North West	481	27	330	18	581	30	517	25
	Gauteng	1592	49	648	17	898	20	604	14
	Mpumalanga	423	30	265	18	449	30	324	22
	Limpopo	670	37	333	18	633	32	246	12

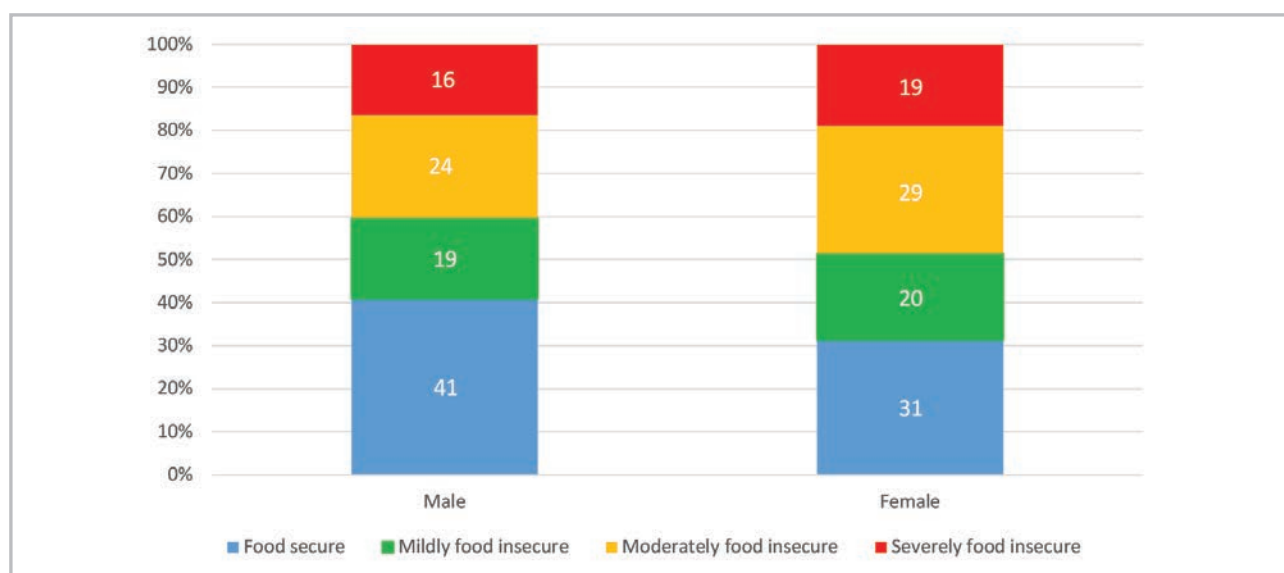


Figure 37: Food security status disaggregated by sex of household head in South Africa

Table 39 and Figure 38 show that households headed by the 18-24 and 25-34 years age groups had the highest proportion of households (40% each) who were food secure. These were followed by those households headed by the 35-44 years age group, with 37% of the households headed by this age group being found to be food secure. The least food secure age groups were found to be the 45-54, 55-64 and 65+ years age groups, with all these age groups being found to have 35% each of the food secure household heads. The age groups that were found to be the least severely food insecure were 65+, with 16% of the households headed by this age group found to be least severely food insecure. The most severely food insecure age group was found to be in the 45-54 years range, with 19% of the households in this age group being in the most severely food insecure category.

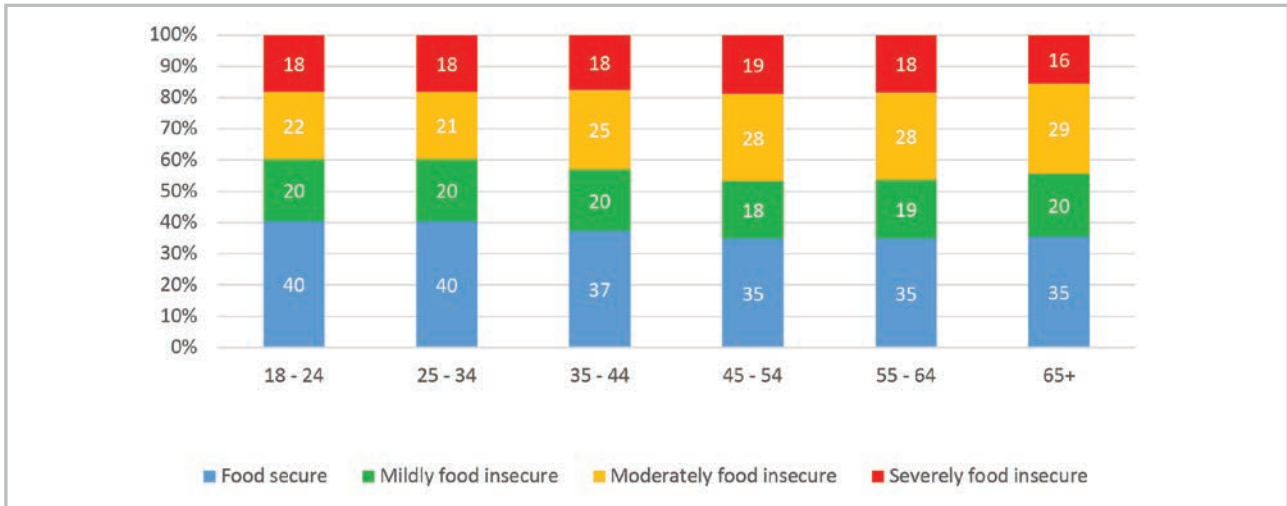


Figure 38: Food security status disaggregated by age group of households' head in South Africa

Table 39 and Figure 39 show that Gauteng Province had the highest proportion of households that were food secure (49%), followed by the Western Cape and Limpopo provinces, with 45% and 37% of the households, respectively. The least food secure provinces were found to be the Eastern Cape and the North-West, with each having 27% of the households found to be food secure. The North West Province also had the highest proportion of households experiencing severe food insecurity. About 25% of the households in the North West Province were severely food insecure. This was followed by households from the Free State and Mpumalanga, with 22% of the households from each of these provinces experiencing severe food insecurity. About 21% of the households in the Northern Cape also experienced severe food insecurity, while another 20% of the severely food insecure households were from the Eastern Cape. Limpopo and Gauteng provinces experienced the least severe food insecurity compared to other provinces, with 12% and 14% of the households in these provinces reported to have experienced severe food insecurity, respectively. However, moderate food insecurity was largely experienced by households from Limpopo Province, where 32% of the households were moderately food insecure. This was followed by households from the Eastern Cape, where 31% of the households from this province were reported to have experienced moderate food insecurity. Mild food insecurity was largely experienced by households from KwaZulu-Natal Province, where 24% of the households from this province experienced mild food insecurity.

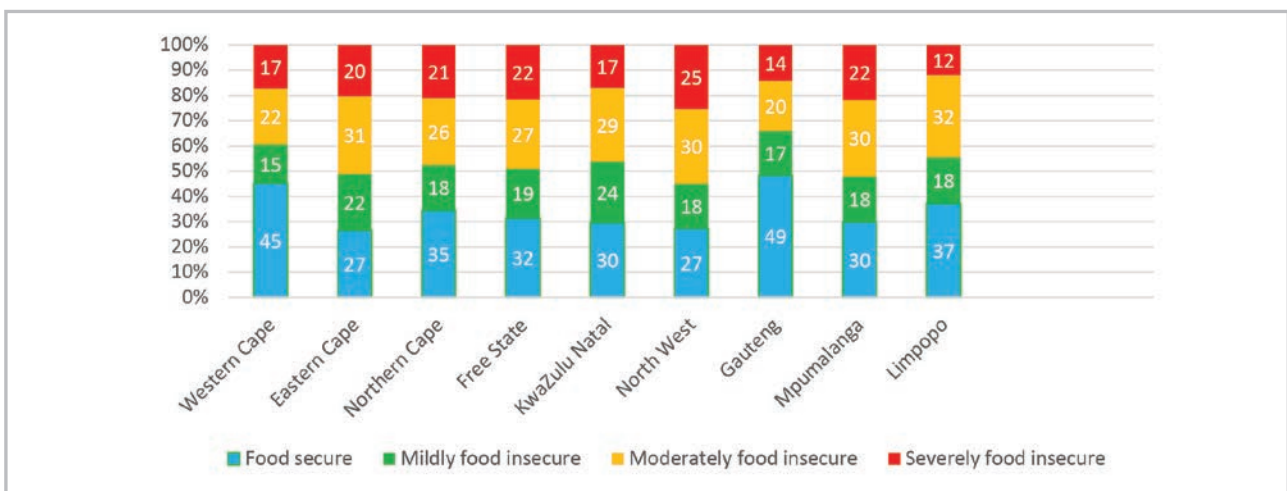


Figure 39: Food security status disaggregated by provinces in South Africa

7.2 Household Hunger Situation

The Household Hunger Scale (HHS) is a household food deprivation scale that is derived from selected HFIAS questions for use mainly in situations of high food insecurity levels. Figure 48 presents the results of the HHS

scale, showing that most of the sampled households experienced little to no hunger (79.2%). About 15.3% of the households and 5.6%, 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 at a national (Figure 40).

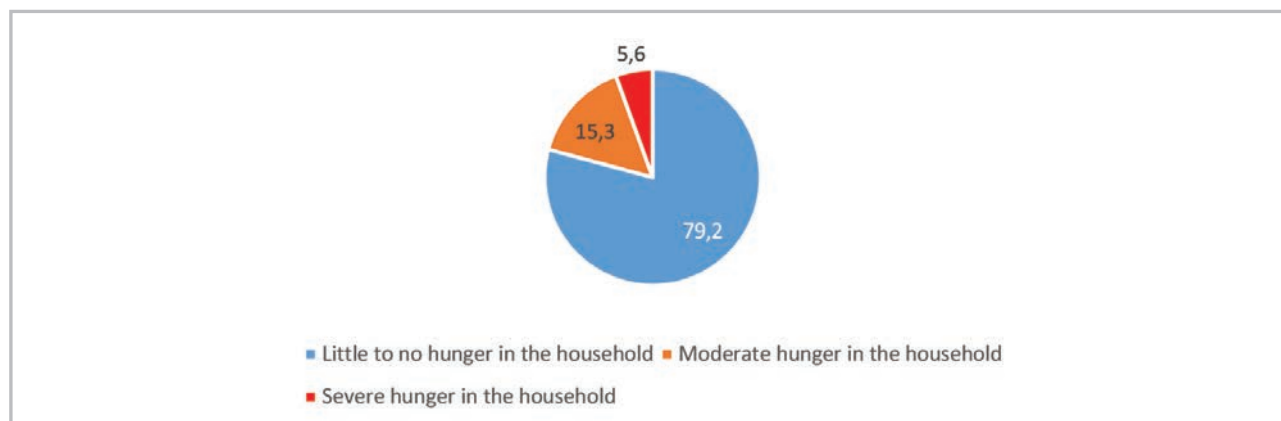


Figure 40: Hunger experiences of households in South Africa

Table 40 presents the hunger status of households disaggregated by sex, age, and district. Table 40 and Figure 41 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 South Africa.

Table 40: Food security situation, using HHS disaggregated by sex, age, and 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	13508	80	2637	14	994	6
	Female	12783	78	3201	17	1065	6
household head age	18-24	744	79	143	14	75	7
	25-34	3161	79	679	15	268	6
	35-44	4779	79	1049	15	400	6
	45-54	5229	78	1303	16	463	6
	55-64	5488	78	1282	16	437	6
	65+	6503	81	1315	15	390	4
Province	Western Cape	3137	81	569	13	193	6
	Eastern Cape	4765	78	1008	16	331	5
	Northern Cape	2256	74	596	19	217	7
	Free State	2148	74	551	19	217	7
	KwaZulu-Natal	6839	80	1507	15	478	4
	North West	1386	69	482	21	206	10
	Gauteng	3241	82	567	12	227	5
	Mpumalanga	1156	72	333	20	122	7
	Limpopo	1689	84	276	13	78	3

Table 40 and Figure 41 indicate that 80% of the male-headed households experienced little to no hunger, compared to 78% of the female-headed households. The proportion of female-headed households (17%) was higher than that of male-headed (14%) in the moderate hunger category. Severe hunger in the household was found to be 6% for both female-headed and male-headed households.

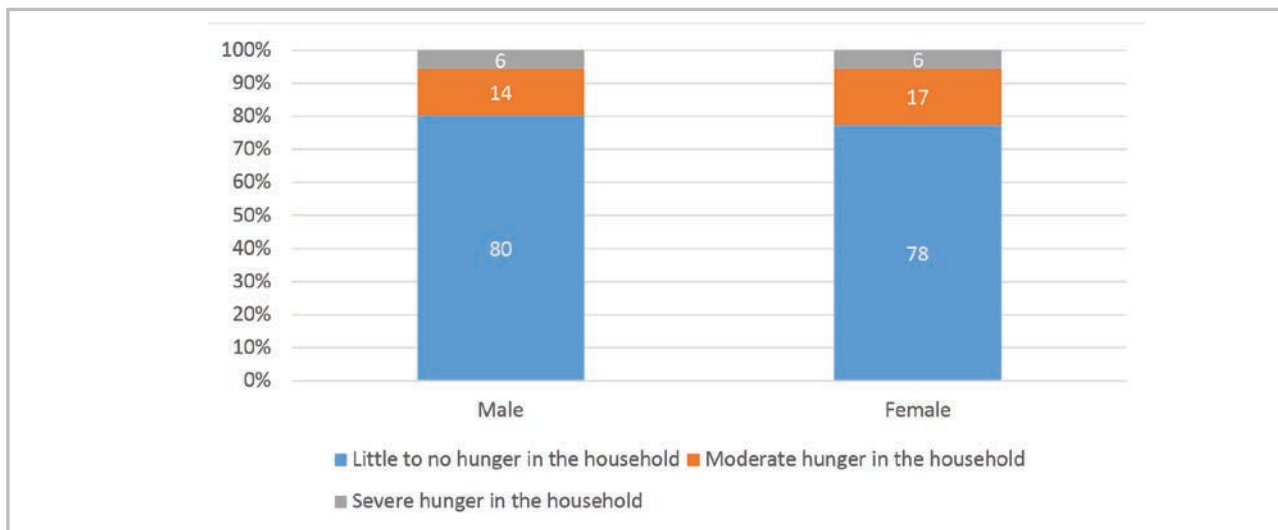


Figure 41: Household hunger status disaggregated by sex of household head in South Africa

The most food secure age group was found to be the 65+ years, with 81% 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 groups of 18-24, 25-34, and 35-44 years (Figure 42), where 79% of each age group were found to be food secure. Households in the age group of 45-54 and 55-64 years experienced relatively more moderate hunger compared to the other age groups, with 16% of the households in this age category experiencing moderate hunger. This was followed by households in the age categories of 25-34, 35-44, and 65+ years, where 15% from each of the household heads in these age groups experienced moderate hunger in their households. Severe hunger in the household was largely experienced by households in the 18-24 years age group, with 7% of the household heads in this age group found to be experiencing severe hunger.

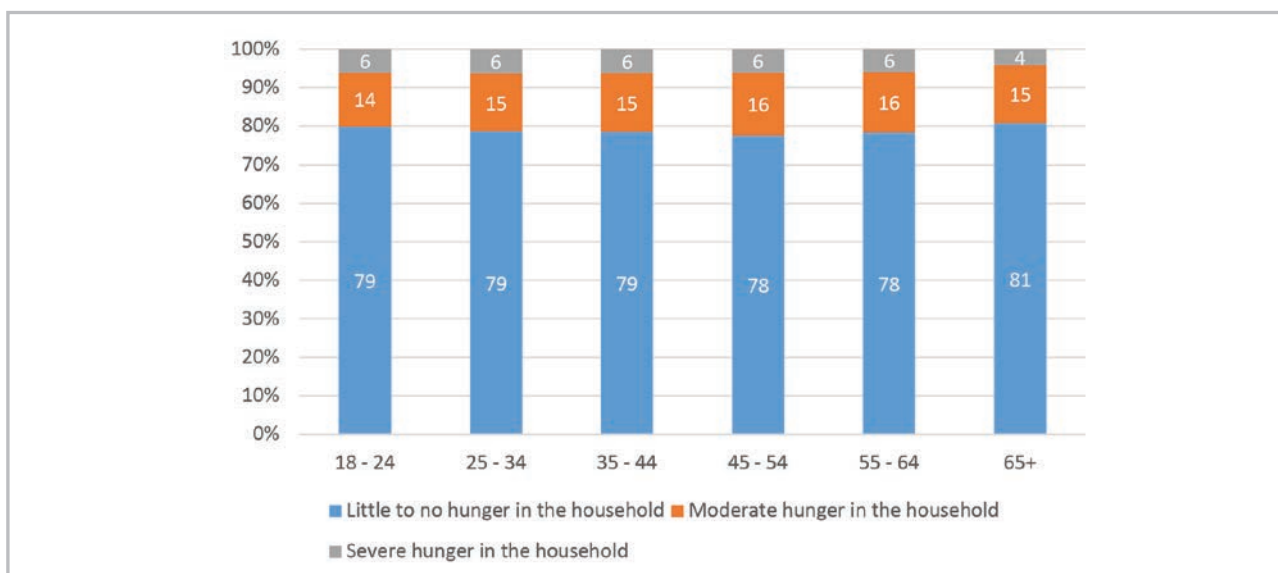


Figure 42: Household hunger status disaggregated by age group of household head in South Africa

There were some variations in the hunger status of households across the nine provinces in the country. In terms of the HHS, Limpopo Province is the most food-secure province, with 84% of the households found to have experienced little to no hunger. This was followed by the Gauteng Province with 82% of the households

from this province found to have experienced little to no hunger. Generally, households across all provinces did not experience too much hunger with 70% or more of the households in all provinces, except the North West Province, experiencing little to no hunger (Figure 51). More households in Mpumalanga Province experienced moderate levels of hunger compared to the other eight provinces, with 21% of the household heads reportedly experiencing moderate hunger. Overall, there were also differences in the proportion of households who experienced severe hunger in the nine provinces, ranging from 3% in Limpopo Province to 10% in the North West Province.

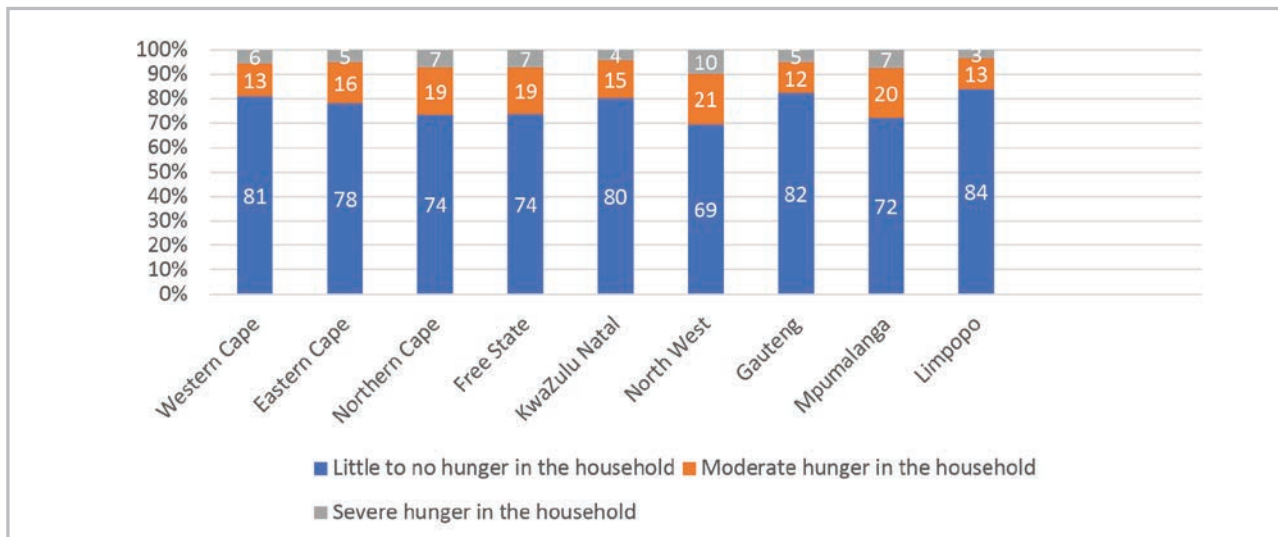


Figure 43: Household hunger status disaggregated by provinces in South Africa

7.3 Household Dietary Diversity Score

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 44 shows that on average, the households in South Africa consumed more than 6 out of 12 food groups, which suggests above-average dietary diversity levels. Using the cut-offs suggested by Kennedy (2011), 80.8% of households consumed highly diverse diets (more or equal to 6 food groups), whilst 14.9% and 4.3% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively.

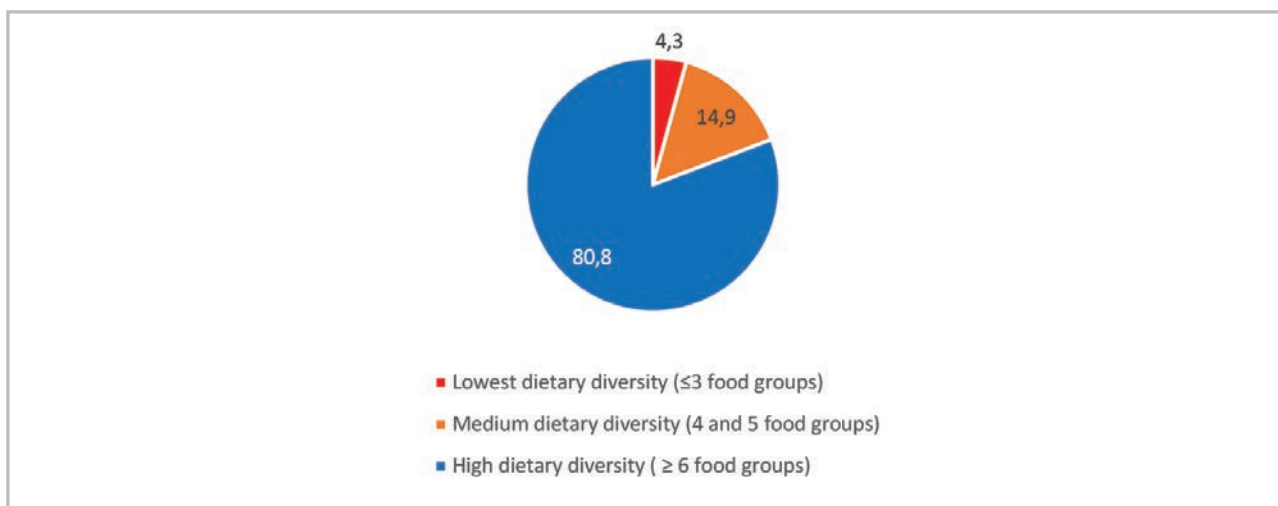


Figure 44: Household Dietary Diversity Scores in South Africa

The results in Table 41 and Figure 45 show that 4% of both the male-headed and female-headed households had the lowest dietary diversity. Likewise, about 81% of both male-headed and female-headed households were in the category of highest dietary diversity, suggesting that both male-headed and female-headed households had better access to diversified food. Male-headed and female-headed households consumed about 4 and 5 food groups (medium dietary diversity), with 15% of both male-headed and female-headed households 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 41: Household Dietary Diversity Scores disaggregated by sex, age, and province in South Africa

		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	844	4	2746	15	13378	81
	Female	865	4	2743	15	13284	81
Household head age	18-24	49	3	151	17	756	80
	25-34	215	5	677	16	3178	79
	35-44	279	4	1038	15	4864	81
	45-54	358	4	1129	15	5454	81
	55-64	382	5	1150	15	5612	80
	65+	405	4	1274	14	6434	82
Province	Western Cape	164	5	470	12	3257	83
	Eastern Cape	398	7	962	16	4724	78
	Northern Cape	196	6	407	13	2455	81
	Free State	257	9	661	23	1978	68
	KwaZulu-Natal	319	3	1589	16	6872	82
	North West	135	6	377	17	1522	76
	Gauteng	126	3	588	14	3304	84
	Mpumalanga	58	4	213	13	1314	84
	Limpopo	68	4	278	15	1501	82

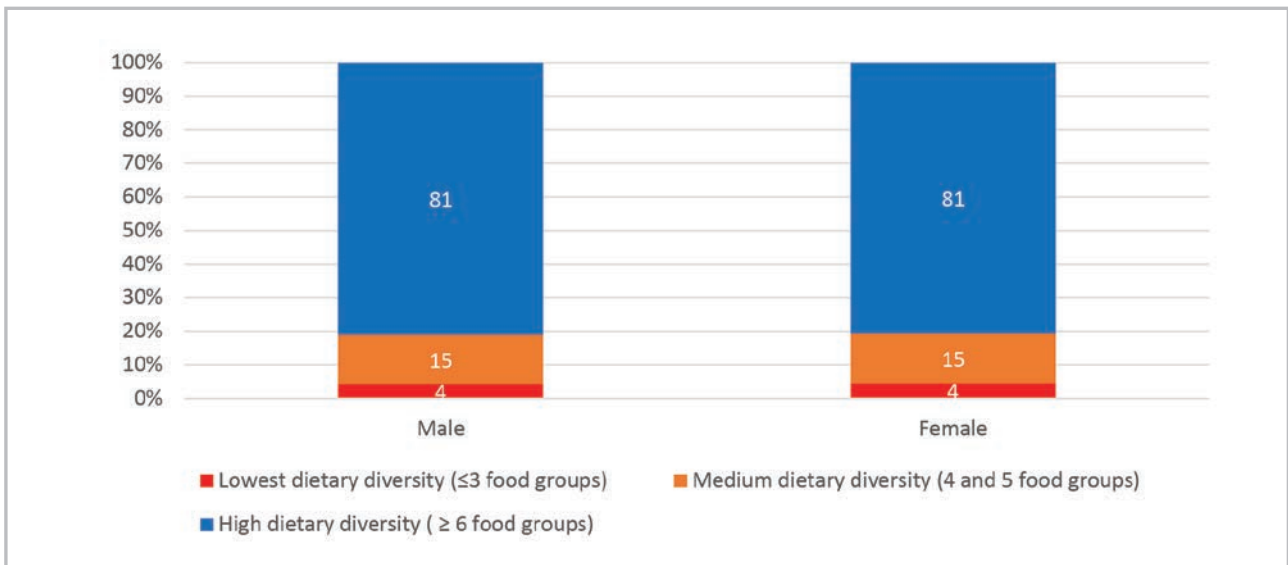


Figure 45: Dietary Diversity Score category disaggregated by sex of household in South Africa

In terms of the age groups, most 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 65+ years were the ones that slightly consumed the highest dietary diversity, with 82% of the households from this age group found to have each consumed highest dietary diversity (Figure 46). Household age group aged 25-34 years were slightly the least food secure households. Generally, households from different provinces had the highest dietary diversity, with 68% or more found to be in the category of high dietary diversity (Figure 46). Households in the Western Cape Province had the highest dietary diversity, with 83% of the households from this province having consumed highest dietary diversity. Most households with lowest dietary diversity were in the Free State. These results should be taken with caution because with a 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.

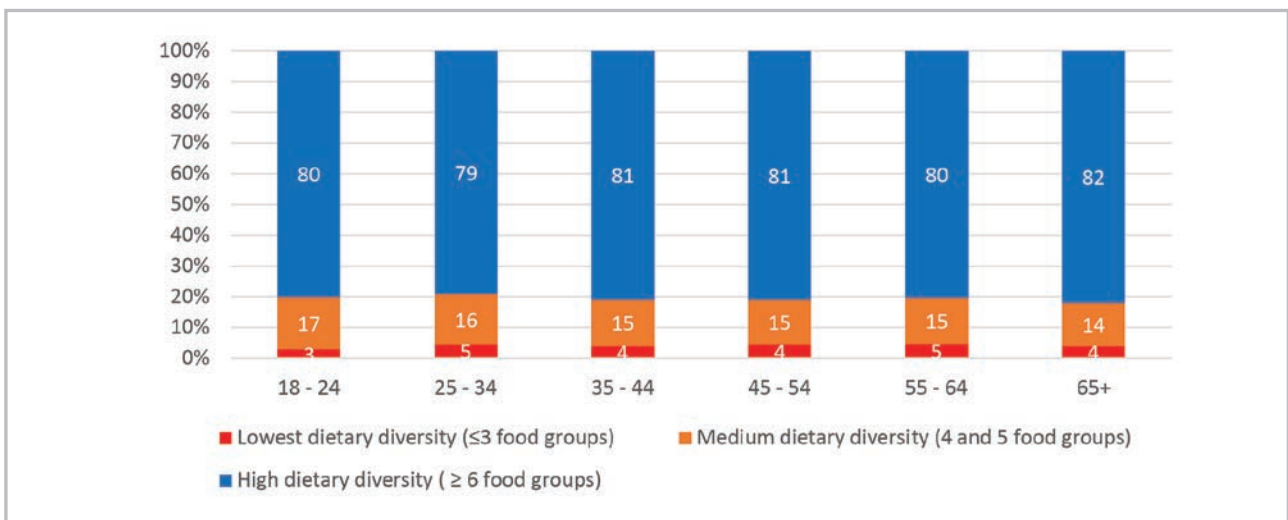


Figure 46: Dietary diversity category disaggregated by age of household head in South Africa

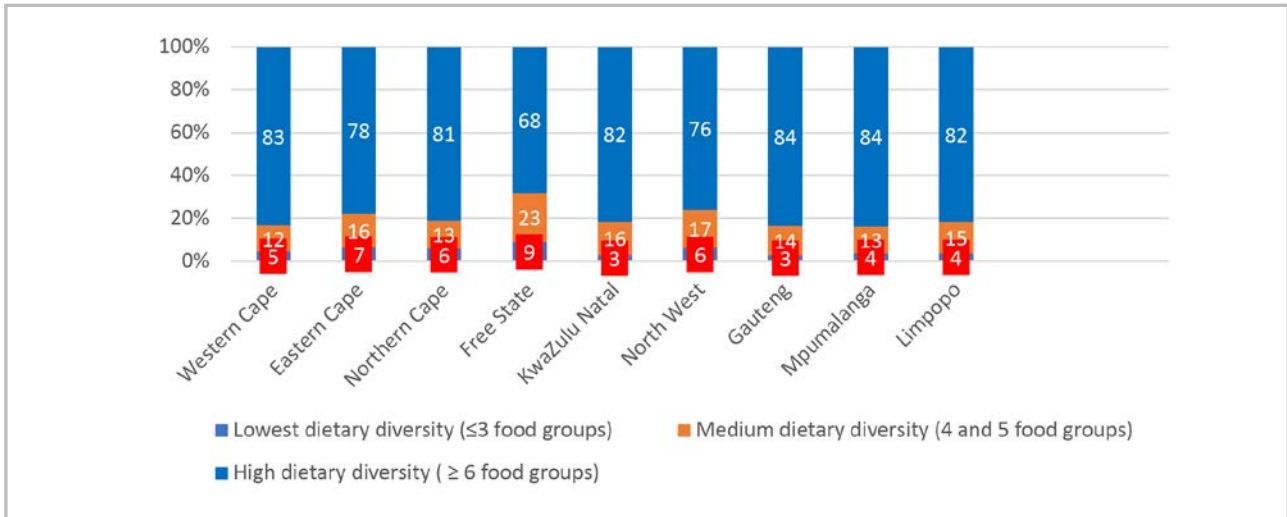


Figure 47: Dietary diversity category disaggregated by provinces in South Africa

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 48 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, organ meat, milk and milk products, orange fresh vegetables, roots and tubers, eggs, and other fruits. The least consumed food groups were dark leafy vegetables, fish and sea foods, pulses and nuts, meat, and orange-coloured fruits.

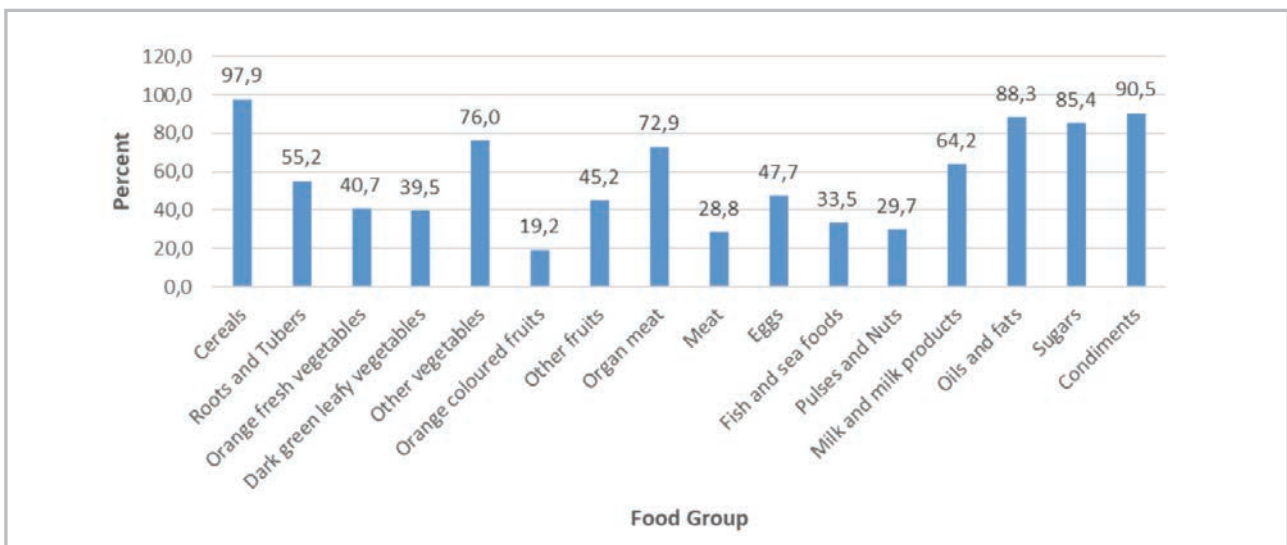


Figure 48: Frequency of food group consumption in South Africa

7.4 Food Consumption Score

Food Consumption Scores (FCS) 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 49 shows that about 58.1% of the households were consuming adequately (acceptable) diversified diets, and about 23.3% 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 18.6% of the households consumed poor diets.

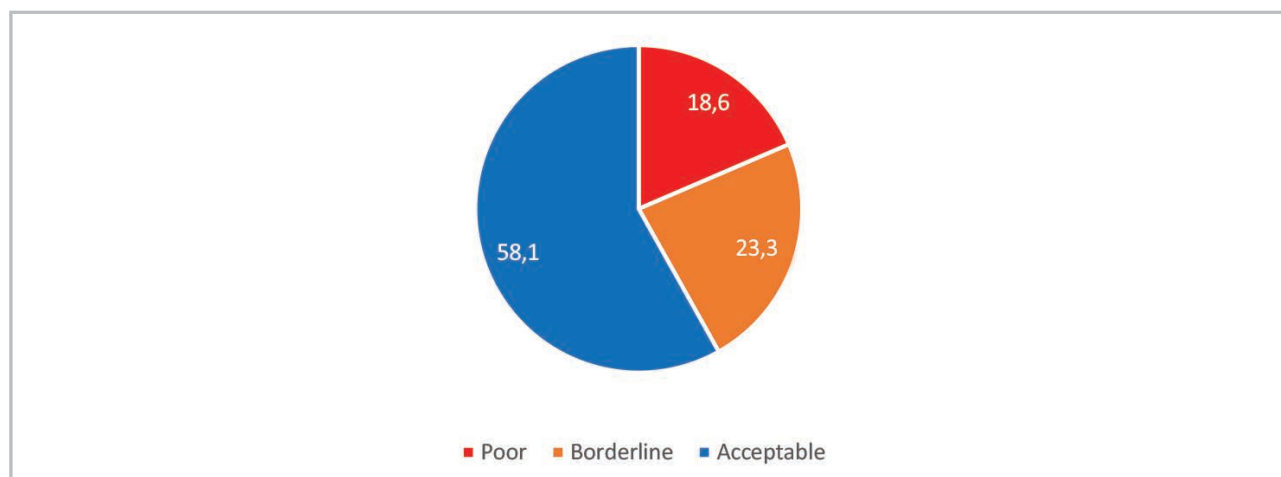


Figure 49: Food consumption score in South Africa

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

Table 42: Food Consumption Score by sex, age of household head, and province in South Africa

		Poor		Borderline		Acceptable	
		N	%	N	%	N	%
Sex of household head	Male	1236	17	1704	22	4221	61
	Female	1299	19	1822	24	3745	56
Household head age	18-24	96	25	112	24	194	51
	25-34	312	19	454	26	875	55
	35-44	454	16	606	22	1497	62
	45-54	492	16	746	24	1646	60
	55-64	525	19	697	22	1682	59
	65+	588	19	857	23	1951	58
Province	Western Cape	155	11	275	16	1218	72
	Eastern Cape	392	15	582	23	1549	62
	Northern Cape	415	24	423	25	762	51
	Free State	366	25	559	38	500	37
	KwaZulu-Natal	119	5	400	19	1361	76
	North West	288	25	385	32	518	43
	Gauteng	160	10	288	16	1112	74
	Mpumalanga	235	23	303	30	451	47
	Limpopo	516	34	376	25	597	41

Table 42 presents the results showing the relationship between sex of household head and food consumption category. The results indicate that male-headed households had slightly more acceptable diets compared to female-headed households. About 61% of the male-headed households were found to have consumed acceptable diets compared to 57% of the female-headed households. Female-headed households were found in slightly higher proportions in the borderline category. About 19% of the male-headed households, compared to 17% of the female-headed households, consumed poor diets.

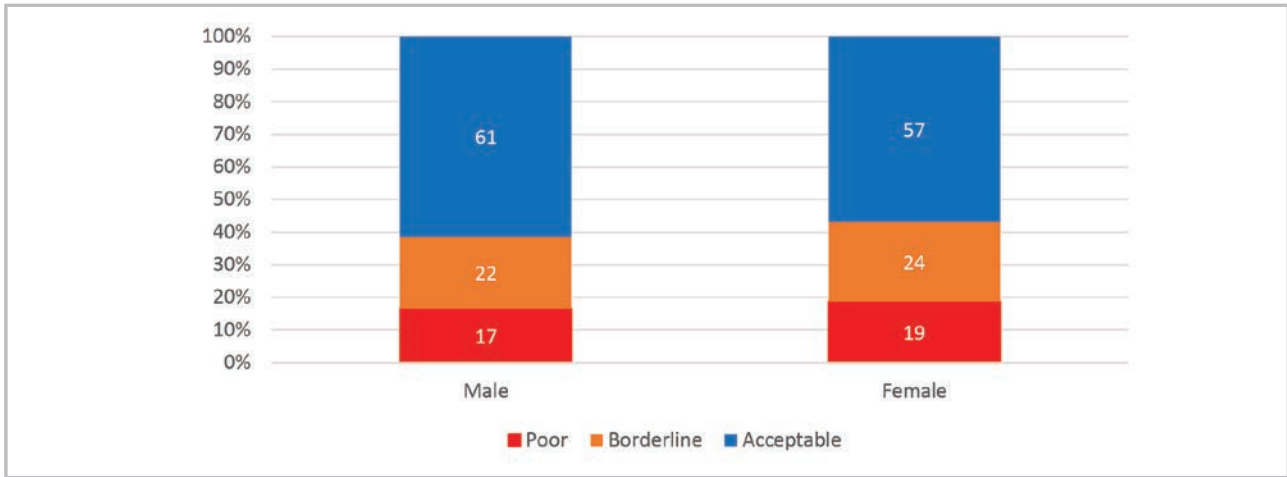


Figure 50: Food consumption category disaggregated by sex of household head in South Africa

The relationship between the age of household head and the chances of consuming acceptable diets was not linear (Figure 51). The proportion of households who consumed acceptable diets across the age groups ranged from 51% to 62%. The most households that consumed acceptable diets were in the age group 35-44 years, with 62% of the household heads found to have consumed acceptable diets. This was followed by households in the age group 45-54, with 60% of the households in this age group having consumed the acceptable diets. Most households in the borderline were in the age groups of 25-34 years, followed by households in the age group of 18-24 years. Most households with poor diets were also in the age group of 18-24, with 54% of the households in this age category found to have consumed poor diets.

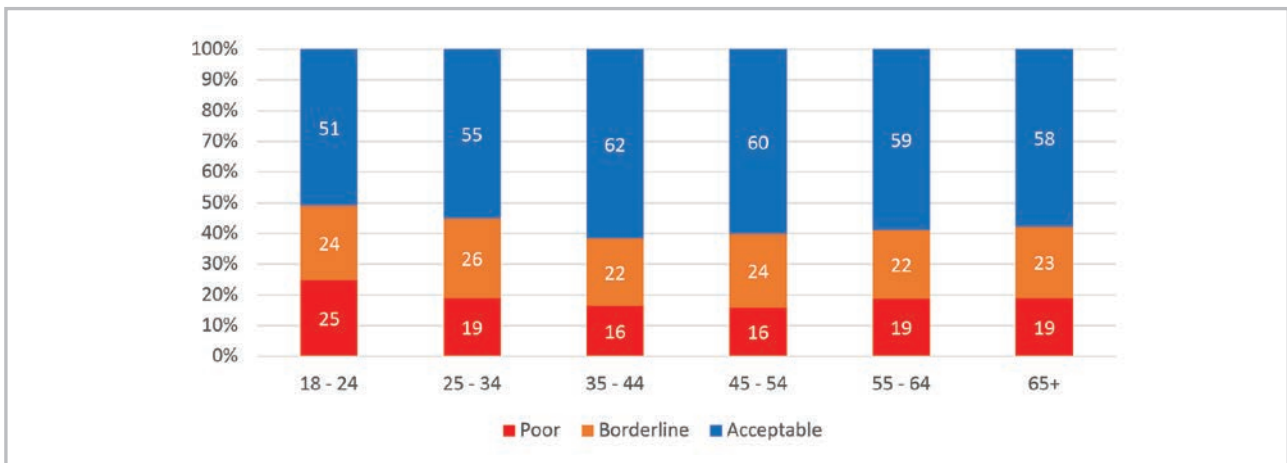


Figure 51: Food consumption category disaggregated by age of household head in South Africa

Regarding the provinces, more households with poor diets were found in the Limpopo Province, where 34% of the households fell into this category. This was followed by households from the North West and Free State provinces, with 25% of the households from each province in this category (Figure 52). Most households from KwaZulu-Natal, Gauteng, and Western Cape provinces consumed diverse diets compared to the other provinces, with 76%, 74%, and 73% of the households from these provinces in this category, respectively. The highest number of households on the borderline were from the Free State Province, followed by households from the North West Province, where 38% and 32% of the households were found to be on the borderline.

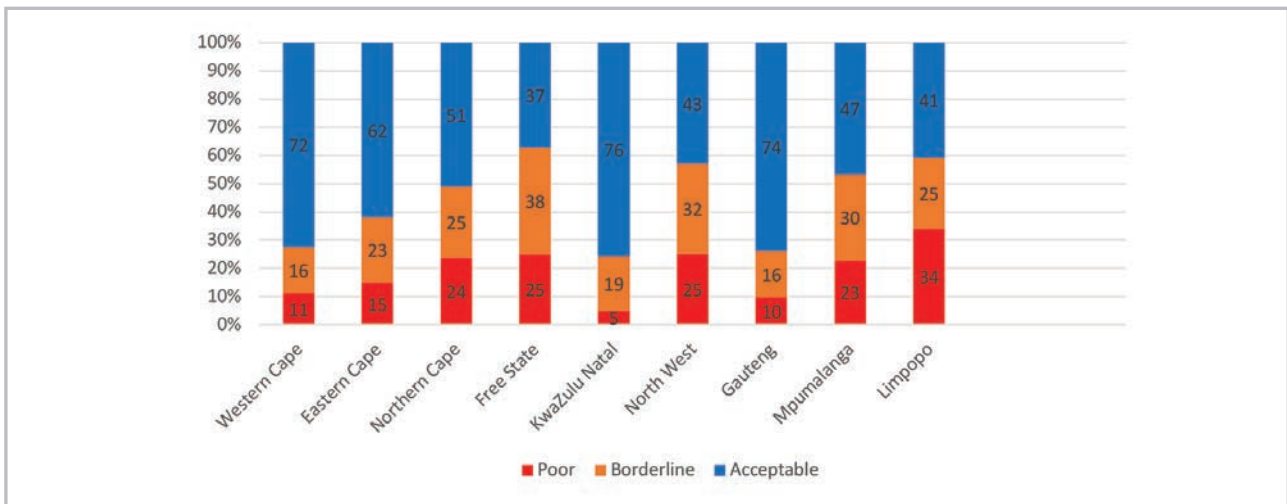


Figure 52: Food consumption category disaggregated by province in South Africa

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 South Africa was R660.82, which is marginally higher than the food poverty line. Using the 2021 food poverty line (i.e., R624), Figure 53 shows that 64.7% of the households were below the food poverty line. This indicates very high levels of food poverty, which supports the results of the HFIAS.

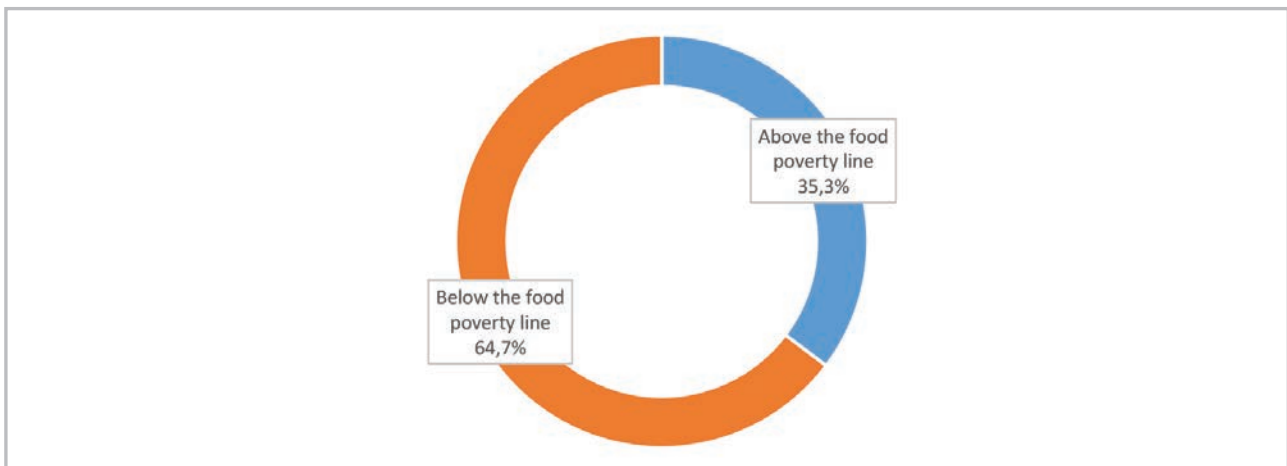


Figure 53: Food poverty levels among households in South Africa

The food poverty levels varied by sex, age group, and province (Table 43). The table shows that a higher proportion of female-headed households (70.9%) were below the food poverty line compared to male-headed households (59.1%). 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. Food poverty was more prevalent in Limpopo (74.3%), Mpumalanga (74.1%), and Free State (72.5%) provinces, and relatively less prevalent in Gauteng (56.3%) and Western Cape (57.6%) provinces.

Table 43: Food expenditure per capita per month disaggregated by sex and age group in South Africa

Variable		Percentage above FPL	Percentage below FPL
All sample		35.3	64.7
Household head Sex	Male	40.9	59.1
	Female	29.1	70.9
Household head Age group	18-24	49.8	50.2
	25-34	44.5	55.5
	35-44	37.5	62.5
	45-54	33.1	66.9
	55-64	30.6	69.4
	65+	31.8	68.1
Province	Western Cape	42.4	57.6
	Eastern Cape	31.0	69.0
	Northern Cape	28.7	71.3
	Free State	27.5	72.5
	KwaZulu-Natal	35.3	64.7
	North West	31.7	68.3
	Gauteng	43.7	56.3
	Mpumalanga	25.9	74.1
	Limpopo	25.7	74.3

7.5

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 44 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 head/ acting head, access to irrigation, improved water source, sanitation, social grants, household size, markets, education level of household head/ acting head, and involvement in agricultural production.

Table 44: Relationship of food security and socio-economic factors in South Africa

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
HH Sex	Male	40.9	59.1	***
	Female	31.3	68.7	
HH age	Mean age (years)	51.0	52.1	***
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	71.5	
	65+	27.4	72.6	
Marital status	Married	41.9	58.1	***
	Unmarried	32.2	67.8	
Province	Western Cape	45.2	54.8	***
	Eastern Cape	26.6	73.8	
	Northern Cape	34.5	65.5	
	Free State	31.6	68.4	
	KwaZulu-Natal	29.6	70.4	
	North West	27.3	72.7	
	Gauteng	48.5	51.5	
	Mpumalanga	29.9	70.1	
	Limpopo	37.2	62.8	
HH education level	No schooling	23.2	76.8	***
	Primary	21.0	79.0	
	Matric	35.2	74.8	
	Tertiary	71.0	29.0	
Household size	Mean	3.2	3.9	***
HH employment status	Employed	50.8	49.2	***
	Unemployed	28.5	71.5	
Access to social grants	Beneficiary	25.4	74.6	***
	Non-beneficiary	42.5	57.5	
Access to land	Yes	30.4	69.6	***
	No	40.1	59.9	
Involved in farming activities	Yes	25.3	74.7	***
	No	38.8	61.2	
Access to irrigation	Yes	27.9	72.1	***
	No	21.6	78.1	
Access to extension	Yes	34.1	65.9	***
	No	26.0	74.0	

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
Access to markets	Yes	26.7	73.3	**
	No	27.0	73.0	
Access to road infrastructure	Yes	27.7	72.3	***
	No	20.8	79.2	
Access to improved water sources	Yes	15.4	84.6	***
	No	36.5	63.5	
Access to improved sanitation	Yes	18.4	81.6	***
	No	35.6	63.5	

Table 44 shows female-headed households were significantly more likely to be food insecure than male-headed households. Among male-headed households, 59.1% were food insecure, while 68.7% 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 various reasons; 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 services, training, information, and inputs, which limits the livelihood options for females – thus compounding the food security plight of their households.

The age of a household head also significantly varied with the food status of their household, with the average age of households in the food secure category marginally lower than that of those in the food insecure category. The relationship between age and food insecurity was positive, with the proportion of food insecure households increasing as the age of household heads increased. Household led by married heads fared better in terms of food access (41.9%) than those headed by unmarried ones (32.2%). This is because married heads pool resources with their spouses, leading to better chances of food security. 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. While bigger households can be a potential source of labour, the results suggest that the consumption burden dominates the labour availability dimension.

Table 44 shows a positive and significant relationship between the education level of household heads and household food security. The proportion of food secure households increased significantly as education levels also increased. For example, while about 23.7% of households headed by people with no schooling were food secure, more than two thirds (71.0%) of households headed by people with tertiary qualifications were food secure. Educated people have higher opportunities and better chances of success in their endeavours, which leads to higher welfare. Also, higher education among farming communities 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 their area or sectors. This leads to higher productivity, food production, and incomes. Even though increasing education is associated with increasing chances of being food secure, the results indicate that it is only after a household head attains a tertiary qualification that education plays a decided role in ensuring food security. The food insecure households dominate among those with education level attainments of matric and below, with food secure households becoming the majority only for those headed by people who attained at least a tertiary qualification.

Employment was positively and significantly associated with food security. While 50.8% of households among those headed by employed household heads were food secure, only 28.5% of those headed by unemployed heads were food secure. Employment remains a crucial pathway in alleviating the scourge of poverty and food insecurity. However, that a significant proportion of households (49.2%) headed by employed household

heads were food insecure suggests that the earnings of the employed are not enough to lift their households out of food insecurity. Further, given that the survey was done during the period of Covid-19 and lockdown restrictions, this also captures the fact that there were also concerns, even among those gainfully employed, about food access. Households which benefitted from social grants experienced higher levels of food insecurity (74.6%) than those who did not benefit from social grants (57.5%). This result has two main implications. First, it suggests that social grants are well-targeted, as they are benefitting households that are poorer. Second, it suggests that social grants have not been able to uplift households out of food insecurity.

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. Households with no access to land, and those not involved in farming activities, were more likely to be food secure compared to those with access to land and involved in farming activities. Among those with access to land, 30.4% were food secure, while 40.1% were food secure among those with no access to land. Among those involved in farming activities, 25.3% were food secure, lower than the 38.8% among those not involved in farming activities. These results imply that land-based livelihood strategies, such as farming, are last resort livelihood activities - with those households with limited alternative activities resorting to farming. It should be clear that the result does not indicate that access to land or involvement in farming activities leads to food insecurity, which is a fallacy of causation, but that households facing challenges in accessing food resort to farming activities. Without engaging in farming activities, their food insecurity situation would have been worse. Similarly, the result showing that households who reported to have access to land for farming activities were likely to be those who experienced higher levels of food insecurity suggests that food insecurity is more prevalent among farming communities. Households with access to land for farming activities are often located in rural areas, where livelihood opportunities are very limited. While access to land provides a potential livelihood option, these are often small pieces of land often located in areas with poor soil quality, and the productivity of the farming activities remain low, due to factors such as rudimentary farming methods, poor pest and disease management practices, inadequate extension advisory services, etc.

The results show that access to irrigation and extension services has the potential to improve the food security status of households. Access to reliable water through irrigation reduces the chances of crop failure and increases the likelihood of farming households investing in other complementary inputs (such as improved seeds, fertilisers, pesticides, etc.) that lead to better yields. Those households who interact with extension officials access information on better farming methods. Also, access to extension services means better chances of benefitting from government support interventions.

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

Improved sanitation facilities are facilities that ensure hygienic separation of human excreta from human contact. They include a flush or pour-flush toilet or latrine, piped sewer system, septic tank pit latrine, ventilated improved pit latrine, pit latrine with slab, and composting toilet. The results showed that water and sanitation have a significant positive role in household food security. Progress in the WASH sector is assessed through the level of access to WASH services, and the quality and functionality of those services. Equity analyses focus on the degree to which progress in WASH has been pro-poor, and the allocation of budget in relation to need and location. The areas that need improvements in the sector relate to coordination and improved service

delivery. Communities indicated that there is also limited consultations by government and development partners during the development of WASH programmes and interventions. This results in limited alignment of partner projects with district priorities. For example, some partners support sanitation and hygiene activities falling under their project impact areas, and not district sanitation and hygiene priority areas. About two-thirds of the challenges reported were in the areas of coordination and delivery of WASH interventions. The results suggest that there is a need for government to promote projects and programmes that provide and encourage access to improved water sources and good hygiene practices, such as the use of latrines and washing hands with soap after using the toilet.

7.6 Discussion

The food and nutrition security situation at the national level 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 (63.5%) in South Africa experienced food insecurity, with only 36.5% found to be food secure. This figure of food insecurity is higher when compared with previous studies, such as Stats SA (2020) who reported, in the General Household Survey, that 20.6% of households at the national level were experiencing food access difficulties.

The HFIAS also showed that 17.5% of the households were severely food insecure, 26.7% of the surveyed households were moderately food insecure, while 19.3% of the households were mildly food insecure. The household food security situation is not strange, bearing in mind that the data was collected during the Covid-19 pandemic. This implies that the effects of Covid-19 measures may have affected both food availability and access in the study, in the different provinces. The higher food insecurity figures reported in this study could also be attributed to the challenges in open access livelihood zones which are by and large rural communities and traditionally more food insecure due to limited climate adaptation strategies, leading to higher food insecurity levels. 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 (79.2%). About 15.3% and 5.6% 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 nationally, the level of food deprivation is not very severe for most of the households. In terms of the gender analysis, the findings indicated that 80% of the male-headed households experienced little to no hunger, compared to 78% of the female-headed households. This situation indicates that should there be interventions, such interventions should slightly be more tailor-made for female-headed households. 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 experienced equally by male-headed and female-head households.

The Food Consumption Score (FCS) revealed that most households (58.1%) were consuming adequately (acceptable) diversified diets and about 23.3% 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 provinces, as a number of these districts are on borderline diets. The most popular food groups were cereals, condiments, oils and fats, sugars, other vegetables, organ meat, milk and milk products, fresh vegetables, roots and tubers, eggs, and other fruits. The least consumed food groups were dark leafy vegetables, fish and sea foods, pulses and nuts, 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 the dietary diversity score showed; it gave an impression of a highly diverse and healthy diet.

8.1 Child Nutrition

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

8.1.1 Infant feeding practices

Breastfeeding status

Data was recorded for a total of 3 148 children under the age of 2 years. Of those aged 0-11 months (n=1 469), 84.0% were ever breastfed, while 77.7% were breastfeeding at the time the survey was conducted. In children aged 12-24 months (n=1 679), 82.0% were ever breastfed, while 46.5% were being breastfed at the time the survey was conducted (Table 45). There were significantly more children aged 0-11 months (77.7%) that were breastfeeding at the time the survey was conducted as compared to children aged 12-24 months (46.5%).

Exclusive breastfeeding was reported in 22.2% of all children aged 0-6 months (n=543). While there were no significant differences across provinces, Mpumalanga and North West reported the highest proportion of exclusive breastfeeding, 32.6% and 30.8% respectively, compared to KwaZulu-Natal with the lowest proportion (10.3%) (Table 45 and Figure).

Female children appeared to have a higher prevalence of being ever breastfed, while male children appeared to have a higher prevalence of currently being breastfed; however, the differences were not significant.

Reports of between 79.1% and 87.1% were recorded for children that were ever breastfed across all provinces, with no significant differences between provinces. Gauteng and Western Cape provinces reported the highest proportion of children ever breastfed (87.1% and 86.3%, respectively), while KwaZulu-Natal and the North West reported lower proportions of 79.1% and 80.1%, respectively. Mpumalanga and the Western Cape reported the highest proportion of children who were currently being breastfed (75.1% and 74.8% respectively, compared to 52.0%-69.2% of children in the other provinces (Table 45 and Figure 54).

Table 45: Breastfeeding status among infants aged 0-24 months in South Africa

	Ever been breastfed			Currently breastfed ¹			Exclusively breastfed (0-6 months)		
	%	95% CI	N	%	95% CI	n	%	95% CI	n
Age									
0-11 months	84.0	[79.1-87.9]	1,469	77.7	[68.9-84.6]	1,213	22.2	[14.2-33.0]	543
12-24 months	82.0	[75.8-86.8]	1,679	46.5	[38.6-54.7]	1,315			
Gender									
Male	81.1	[74.8-86.1]	1,613	65.3	[58.1-71.8]	1,285	11.1	[5.4-21.6]	277
Female	85.2	[80.4-89.0]	1,528	57.0	[48.5-65.1]	1,238	34.3	[20.5-51.4]	265
Province									
Western Cape	86.3	[74.0-93.3]	332	74.8	[51.6-89.2]	280.0	24.2	[4.7-67.3]	62
Eastern Cape	83.9	[68.7-92.5]	503	62.7	[46.9-76.2]	407.0	25.0	[13.2-42.3]	82
Northern Cape	85.6	[80.8-89.4]	334	69.2	[56.4-79.6]	279.0	22.1	[9.9-42.3]	58
Free State	85.1	[75.7-91.3]	210	62.7	[50.6-73.5]	177.0	26.4	[10.2-53.0]	39
KwaZulu-Natal	79.1	[68.5-86.8]	934	54.4	[44.9-63.7]	692.0	10.3	[2.9-30.6]	149
North West	80.1	[68.6-88.1]	221	60.2	[46.6-72.3]	184.0	30.8	[6.3-74.5]	38
Gauteng	87.1	[78.6-92.6]	241	52.0	[36.2-67.4]	198.0	30.0	[10.0-62.4]	40
Mpumalanga	80.6	[64.8-90.4]	180	75.1	[62.9-84.3]	144.0	32.6	[15.1-56.9]	32
Limpopo	84.2	[72.9-91.3]	193	63.5	[47.7-76.8]	167.0	21.3	[6.5-51.1]	43
Total	82.9	[79.0-86.3]	3,148	61.4	[55.8-66.7]	2,528	22.2	[14.2-33.0]	543

¹among those ever breastfed

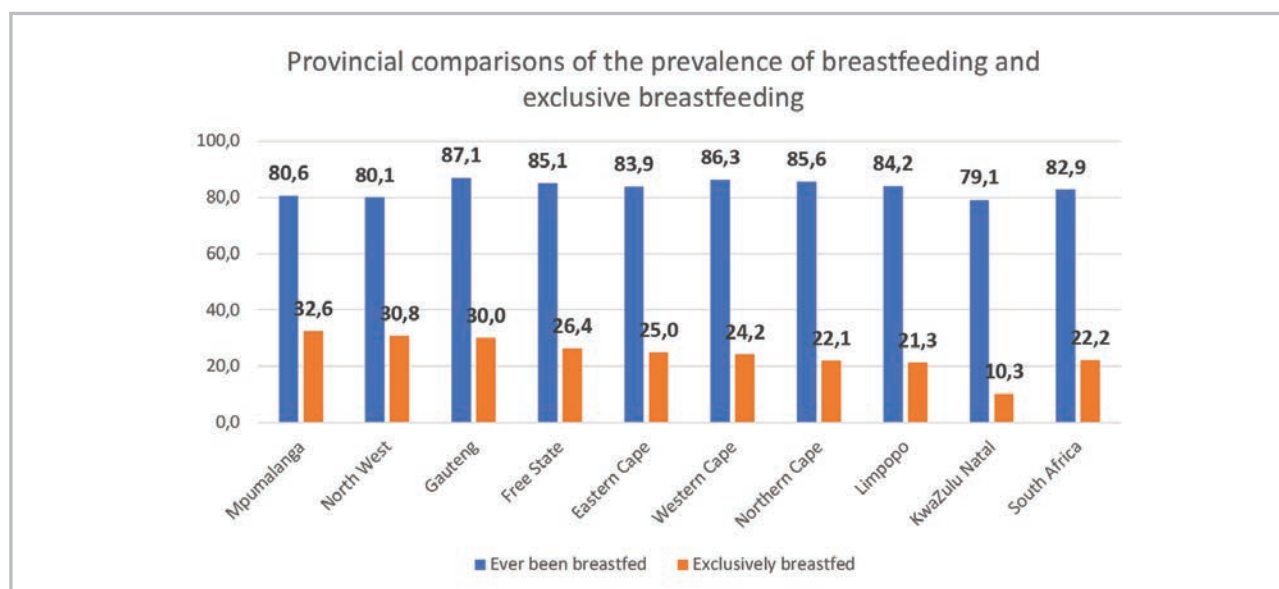


Figure 54: Provincial comparisons of the prevalence of breastfeeding and exclusive breastfeeding among infants aged 0-24 months in South Africa

8.1.1.1 Time lapsed until the introduction of breastfeeding

In most infants aged 0-24 months, (n=2 523), breastfeeding was introduced immediately (78.0%), within the first hour (11.3%) or less than 24 hours (4.9%) (Table 46).

Only in 1.6% of cases was breastfeeding introduced more than 24 hours after birth. There were no significant differences reported between children aged 0-11 months and 12-24 months. Neither were there any significant differences reported between male and female children.

At a provincial level, the Western Cape Province reported a significantly higher proportion of children that were breastfed immediately (94.0%), compared to the Eastern Cape (62.3%), Free State (72.6%), North West (69.8%), Gauteng (74.5%) and Limpopo (70.3%) (Table 46). The Eastern Cape reported a significantly higher number of cases (23.6%) that did not know when breastfeeding was initiated as compared to all the other provinces (0.0-1.9%) except KwaZulu-Natal (2.8%) (Table 46).

Table 46: Time lapsed until the introduction of breastfeeding among infants aged 0-24 months in South Africa

	Immediately		Less than one hour		Less than 24 hours		More than 24 hours		Don't know		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age											
0-11 months	82.2	[77.0-86.4]	10.3	[7.1-14.7]	3.9	[2.6-6.0]	1.8	[1.0-3.0]	1.8	[0.7-4.6]	1,209
12-24 months	74.1	[63.7-82.4]	12.2	[7.4-19.6]	5.8	[3.2-10.3]	1.4	[0.5-3.6]	6.4	[1.2-28.7]	1,314
Gender											
Male	77.7	[67.3-85.5]	9.4	[6.4-13.5]	3.8	[2.3-6.3]	1.9	[0.9-3.8]	7.2	[1.5-27.9]	1,283
Female	79.0	[71.3-85.1]	12.5	[7.6-20.0]	6.2	[3.4-10.8]	1.2	[0.5-2.8]	1.1	[0.4-3.5]	1,235
Province											
Western Cape	94.0	[86.1-97.5]	3.6	[0.9-13.7]	2.2	[0.6-7.1]	0.2	[0.0-1.1]	0.0	[0.0-0.0]	280
Eastern Cape	62.3	[43.9-77.8]	8.3	[3.4-18.7]	5.0	[1.7-13.4]	0.7	[0.2-2.6]	23.6	[6.2-59.1]	403
Northern Cape	81.2	[74.0-86.7]	13.5	[8.8-20.1]	2.3	[1.0-5.0]	1.9	[0.6-5.5]	1.2	[0.5-2.9]	279
Free State	72.6	[62.8-80.6]	17.8	[10.7-28.3]	7.1	[4.2-11.6]	2.2	[0.8-6.3]	0.3	[0.1-1.3]	177
KwaZulu-Natal	83.7	[70.7-91.6]	11.5	[4.8-25.2]	1.3	[0.3-4.7]	0.7	[0.3-2.1]	2.8	[0.9-8.8]	691
North West	69.8	[54.6-81.6]	17.5	[9.5-30.0]	8.8	[4.1-18.0]	3.3	[1.1-9.1]	0.6	[0.1-2.6]	184
Gauteng	74.5	[62.6-83.6]	16.2	[9.2-26.9]	7.6	[4.0-13.9]	1.1	[0.3-4.3]	0.7	[0.1-3.8]	199
Mpumalanga	87.7	[75.5-94.3]	4.4	[1.3-13.6]	4.3	[1.1-15.9]	3.4	[0.9-12.5]	0.2	[0.0-1.2]	143
Limpopo	70.3	[54.0-82.7]	13.8	[6.1-28.2]	10.2	[2.6-32.3]	3.8	[0.9-14.3]	1.9	[0.6-5.4]	167
Total	78.0	[71.9-83.1]	11.3	[8.2-15.3]	4.9	[3.3-7.4]	1.6	[0.9-2.6]	4.2	[1.1-15.4]	2,523

8.1.1.2 Age at which breastfeeding was stopped

Among children aged 0-24 months (n=1031), breastfeeding was often stopped between the ages of 0-3 months (25.7%) and 7-12 months (24.9%). More than 60.0% of mothers stopped breastfeeding before the age of 6 months, while 25.7% stopped breastfeeding before 3 months; 19.7% stopped between 3-4 months, and 16.5% stopped between 5-6 months (Figure 55).

Only 13.3% of mothers continued to breastfeed for longer than 12 months, with only 1.1% continuing up to 24 months.

While it appeared as if more girls (54.3%) stopped breastfeeding earlier (0-4 months) than boys (35.0%), there were no significant differences between genders until 12 months of age. There was a significant difference between the genders for those who stopped breastfeeding between 13-18 months, where a higher proportion of male children (21.4%) stopped breastfeeding compared to female children (4.2%), and this difference was significant.

At a provincial level, no significant differences were reported in the age at which breastfeeding was stopped in children before the age of 6 months. At 7-12 months a significantly higher proportion of children stopped breastfeeding in Mpumalanga (46.4%) than in Limpopo Province (8.0%). Limpopo and Northern Cape provinces (8.7% and 7.7%, respectively) reported the highest proportion of children who continued to be breastfed after the age of 19-24 months, compared to less than 1.0% in all other provinces.

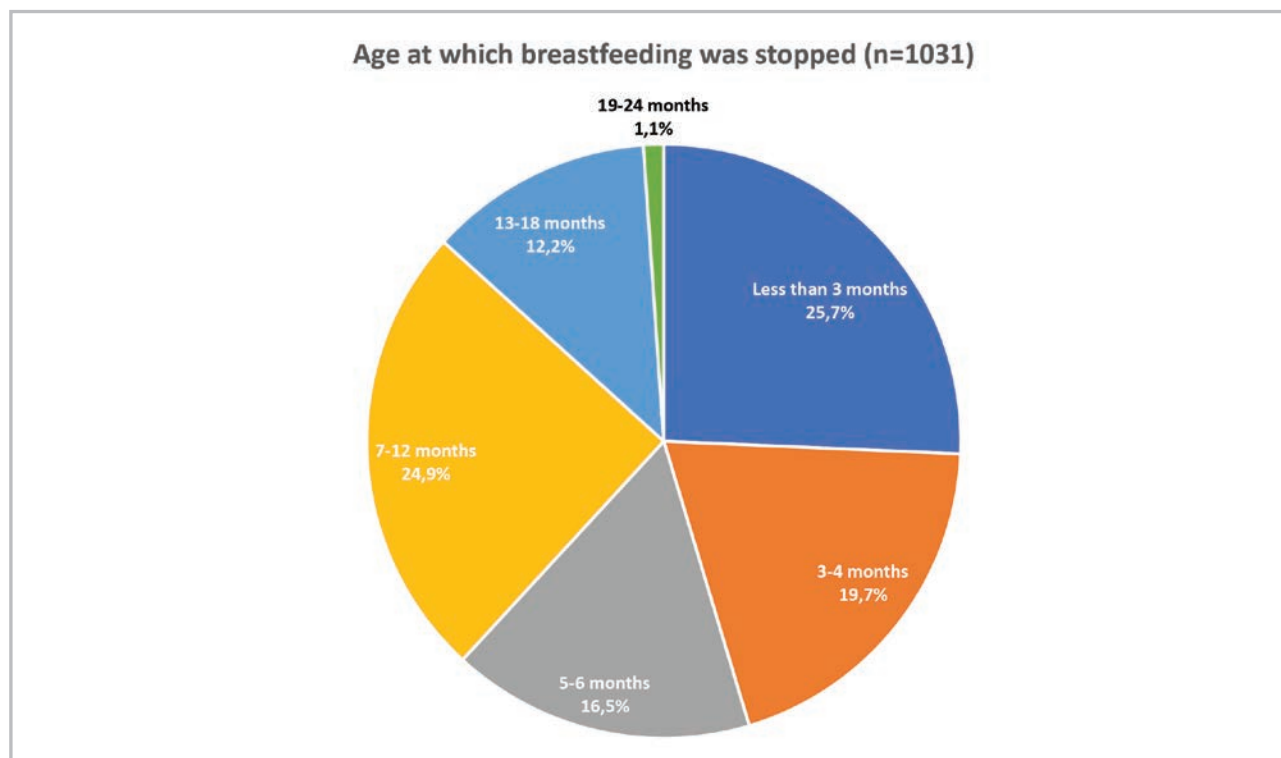


Figure 55: Age at which breastfeeding was stopped among infants aged 0-24 months in South Africa

8.1.1.3 First drink other than breast milk

Infant formula (46.0%) and plain water (21.5%) were reported to be the most common first drink other than breastmilk that was introduced to infants under two years of age (Figure 67). There were significant differences between age groups for the introduction of tea as a first drink, where children aged 12-24 months had a higher prevalence of receiving tea (9.0%) compared to 1.5% of children aged 0-11 months, while children aged 0-11 months had a higher prevalence of receiving other drinks (4.0%) compared to 1.2% of children aged 12-24 months (Table 49). There were no significant differences found between male and female children (Table 47).

Mothers in all provinces, except KwaZulu-Natal and the Eastern Cape, reported that infant formula, followed by water, was the most common first drink introduced to children aged 0-24 months. Mothers in KwaZulu-Natal and the Eastern Cape reported that gripe water (25.4% and 32.0%, respectively) was introduced more often than plain water (16.8% and 13.7%, respectively) to children in these provinces. Other drinks such as juice, tea, and medicine were reported as first drinks by less than 15.0% of mothers across all provinces.

There were significantly more children in the Eastern Cape and KwaZulu-Natal (32.0% and 25.4%, respectively) who were introduced to gripe water as a first drink compared to children in Limpopo Province (2.9%), while there were significantly more children in Mpumalanga (8.6%) compared to 0.3%-1.2% of children in the Northern Cape, Free State, Gauteng, and Limpopo provinces introduced to sugar water as a first drink. Children in the Northern Cape were significantly more likely (10.5%) to be introduced to tea as a first drink, compared to 0.8% of children in the Western Cape. Children in the Western Cape were significantly more likely (9.8%) to introduce juice as a first drink compared to 0.1% of children in the Eastern Cape.

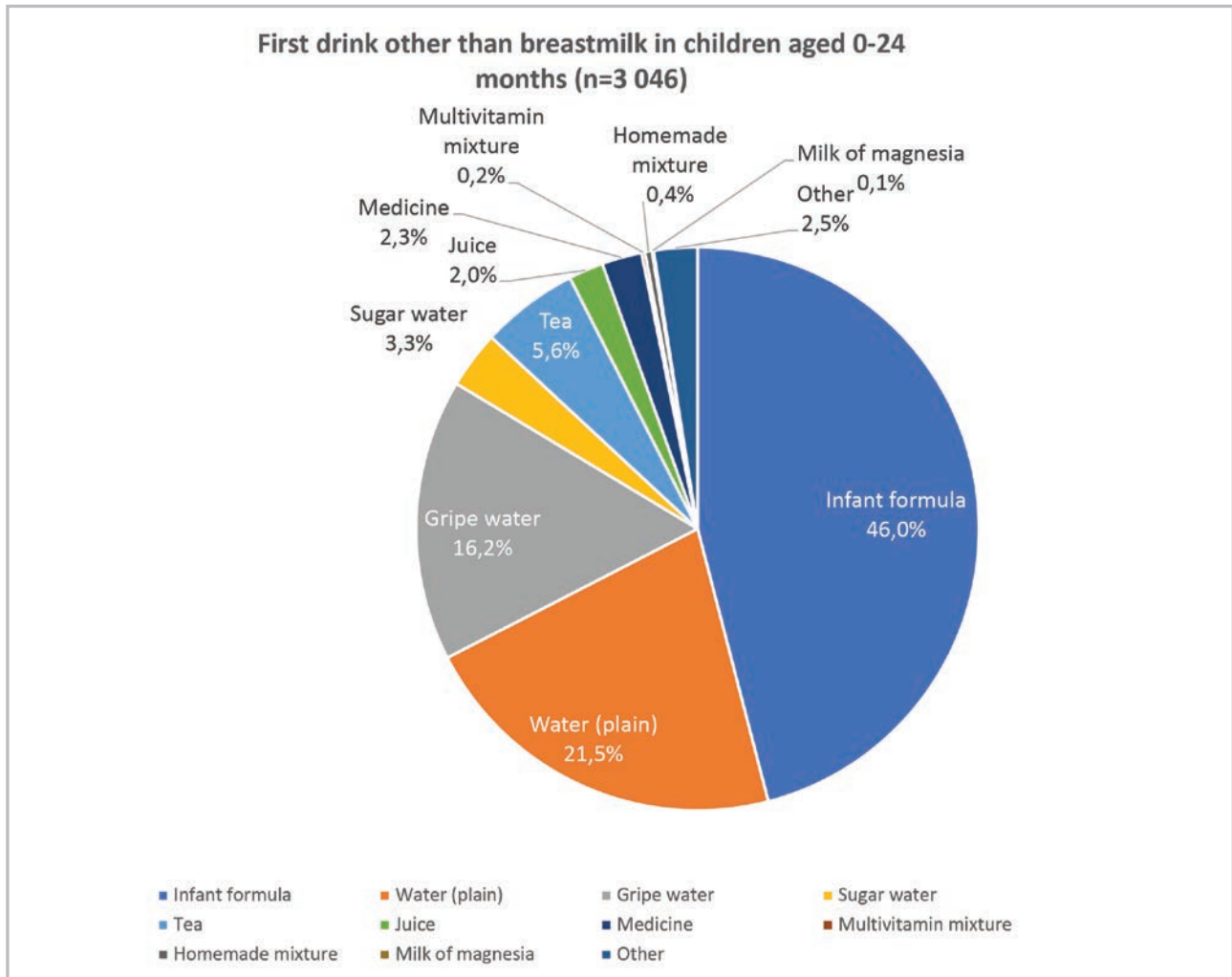


Figure 56: First drink other than breast milk among children aged 0-24 months in South Africa

Table 47: The first drink other than breast milk among children aged 0-24 months disaggregated by age, gender, and province in South Africa

	Infant formula		Water (plain)		Gripe water		Sugar water		Tea		Juice		Medicine		Multivitamin mixture		Homemade mixture		Milk of magnesia		Other		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age																							
0-11 months	48.7	[40.8-56.7]	19.6	[15.2-25.0]	15.4	[10.7-21.7]	4.7	[2.6-8.2]	1.5	[0.7-2.9]	2.5	[0.4-14.0]	3.1	[1.7-5.4]	0.1	[0.0-0.4]	0.5	[0.1-2.3]	0.0	[0.0-0.2]	4.0	[2.4-6.6]	1,386
12-24 months	43.7	[35.2-52.6]	23.1	[17.7-29.7]	16.9	[9.2-29.1]	2.1	[1.2-3.8]	9.0	[5.0-15.7]	1.5	[0.6-3.9]	1.7	[0.8-3.7]	0.3	[0.0-1.6]	0.3	[0.1-0.8]	0.1	[0.0-0.5]	1.2	[0.6-2.3]	1,660
Gender																							
Male	44.6	[35.6-54.0]	22.7	[17.1-29.5]	17.9	[10.0-30.0]	2.5	[1.4-4.7]	5.0	[2.4-9.9]	1.3	[0.4-4.0]	3.3	[1.8-5.9]	0.1	[0.0-0.4]	0.2	[0.1-0.7]	0.1	[0.0-0.6]	2.2	[1.3-3.6]	1,559
Female	47.6	[38.9-56.4]	20.5	[15.6-26.6]	14.5	[10.5-19.7]	4.2	[2.5-7.0]	6.3	[2.7-13.8]	2.7	[0.5-12.5]	1.3	[0.7-2.2]	0.3	[0.1-1.8]	0.5	[0.1-2.1]	0.0	[0.0-0.2]	2.1	[1.2-3.4]	1,481
Province																							
Western Cape	48.2	[32.2-64.6]	25.6	[16.7-37.1]	10.6	[4.7-22.3]	2.8	[0.6-11.2]	0.8	[0.2-3.8]	9.8	[1.5-43.2]	1.0	[0.3-4.2]	0.0		0.0		0.0		1.2	[0.4-3.2]	318
Eastern Cape	42.5	[22.9-64.8]	13.7	[6.5-26.7]	32.0	[12.8-60.1]	1.9	[0.6-6.2]	7.1	[2.0-22.4]	0.1	[0.0-0.3]	1.0	[0.2-4.2]	0.0		0.1	[0.0-0.3]	0.0	[0.0-0.4]	1.7	[0.6-4.9]	493
Northern Cape	51.7	[43.6-59.7]	24.1	[16.6-33.5]	8.9	[5.2-14.8]	0.8	[0.3-2.7]	10.5	[4.5-22.4]	1.3	[0.4-3.6]	0.5	[0.1-2.8]	0.0		0.4	[0.1-2.4]	0.1	[0.0-0.4]	1.8	[0.6-5.6]	313
Free State	49.7	[38.6-60.8]	19.7	[11.4-31.8]	8.1	[4.0-16.0]	1.1	[0.4-3.0]	8.3	[3.3-19.1]	2.1	[0.5-9.1]	3.3	[1.6-6.8]	0.0		0.4	[0.1-2.7]	0.3	[0.1-1.3]	7.0	[2.4-19.0]	200
KwaZulu-Natal	39.7	[28.8-51.7]	16.8	[10.0-26.8]	25.4	[18.2-34.3]	4.3	[1.5-11.6]	6.7	[1.8-22.4]	0.5	[0.1-1.8]	4.5	[2.1-9.6]	0.6	[0.1-3.4]	0.4	[0.1-1.3]	0.0	[0.0-0.1]	1.0	[0.3-3.6]	906
North West	41.1	[29.0-54.4]	28.8	[18.2-42.4]	10.7	[4.1-25.1]	6.7	[1.9-21.5]	5.8	[1.9-16.3]	0.5	[0.1-1.5]	3.1	[1.4-7.0]	0.4	[0.0-2.6]	0.0	[0.0-0.2]	1.0	[0.2-3.8]	1.9	[0.6-6.1]	216
Gauteng	56.5	[42.1-69.9]	25.5	[17.1-36.4]	9.6	[4.6-18.9]	0.3	[0.1-1.1]	4.3	[1.7-10.2]	0.3	[0.1-1.8]	0.9	[0.3-2.8]	0.0		1.0	[0.1-6.8]	0.0		1.5	[0.4-5.1]	238
Mpumalanga	41.2	[29.1-54.4]	23.3	[14.8-34.8]	11.5	[6.8-18.7]	8.6	[4.6-15.7]	6.1	[1.3-24.4]	1.3	[0.3-4.9]	2.9	[0.6-13.3]	0.0		0.6	[0.1-4.1]	0.0		4.5	[2.4-8.1]	178
Limpopo	52.6	[38.1-66.6]	25.4	[14.5-40.6]	2.9	[1.0-8.1]	1.2	[0.4-3.5]	5.6	[2.3-12.7]	4.2	[0.7-22.1]	1.1	[0.3-3.7]	0.0		0.0		0.0		7.1	[2.4-19.1]	184
Total	46.0	[40.0-52.1]	21.5	[17.8-25.8]	16.2	[11.3-22.8]	3.3	[2.1-5.2]	5.6	[3.3-9.4]	2.0	[0.6-5.9]	2.3	[1.5-3.7]	0.2	[0.0-0.8]	0.4	[0.1-1.0]	0.1	[0.0-0.3]	2.5	[1.6-3.8]	3,046

	Infant formula % [95% CI]	Water (plain) %	Gripe water %	Sugar water %	Tea %	Juice %	Medicine %	Multivitamin mixture %	Homemade mixture %	Milk of mag- nesia %	Other %	n
Age												
0-11 months	48.7 [40.8-56.7]	19.6 [15.2-25.0]	15.4 [10.7-21.7]	4.7 [2.6-8.2]	1.5 [0.7-2.9]	2.5 [0.4-14.0]	3.1 [1.7-5.4]	0.1 [0.0-0.4]	0.5 [0.1-2.3]	0.0 [0.0-0.2]	4.0 [2.4-6.6]	1,386
12-24 months	43.7	23.1	16.9	2.1	9.0	1.5	1.7	0.3	0.3	0.1	1.2	1,660
Gender												
Male	44.6 [35.6-54.0]	22.7 [17.1-29.5]	17.9 [10.0-30.0]	2.5 [1.4-4.7]	5.0 [2.4-9.9]	1.3 [0.4-4.0]	3.3 [1.8-5.9]	0.1 [0.0-0.4]	0.2 [0.1-0.7]	0.1 [0.0-0.6]	2.2 [1.3-3.6]	1,559
Female	47.6 [38.9-56.4]	20.5 [15.6-26.6]	14.5 [10.5-19.7]	4.2 [2.5-7.0]	6.3 [2.7-13.8]	2.7 [0.5-12.5]	1.3 [0.7-2.2]	0.3 [0.1-1.8]	0.5 [0.1-2.1]	0.0 [0.0-0.2]	2.1 [1.2-3.4]	1,481
Province												
Western Cape	48.2 [32.2-64.6]	25.6 [16.7-37.1]	10.6 [4.7-22.3]	2.8 [0.6-11.2]	0.8 [0.2-3.8]	9.8 [1.5-43.2]	1.0 [0.3-4.2]	0.0 [0.0-0.3]	0.0 [0.0-0.3]	0.0 [0.0-0.4]	1.2 [0.4-3.2]	318
Eastern Cape	42.5 [22.9-64.8]	13.7 [6.5-26.7]	32.0 [12.8-60.1]	1.9 [0.6-6.2]	7.1 [2.0-22.4]	0.1 [0.0-0.3]	1.0 [0.2-4.2]	0.0 [0.0-0.3]	0.1 [0.0-0.4]	0.0 [0.0-0.4]	1.7 [0.6-4.9]	493
Northern Cape	51.7 [43.6-59.7]	24.1 [16.6-33.5]	8.9 [5.2-14.8]	0.8 [0.3-2.7]	10.5 [4.5-22.4]	1.3 [0.4-3.6]	0.5 [0.1-2.8]	0.0 [0.0-0.4]	0.4 [0.1-2.4]	0.1 [0.0-0.4]	1.8 [0.6-5.6]	313
Free State	49.7 [38.6-60.8]	19.7 [11.4-31.8]	8.1 [4.0-16.0]	1.1 [0.4-3.0]	8.3 [3.3-19.1]	2.1 [0.5-9.1]	3.3 [1.6-6.8]	0.0 [0.1-2.7]	0.4 [0.1-2.7]	0.3 [0.1-1.3]	7.0 [2.4-19.0]	200
KwaZulu-Natal	39.7 [28.8-51.7]	16.8 [10.0-26.8]	25.4 [18.2-34.3]	4.3 [1.5-11.6]	6.7 [1.8-22.4]	0.5 [0.1-1.8]	4.5 [2.1-9.6]	0.6 [0.1-3.4]	0.4 [0.1-1.3]	0.0 [0.0-0.1]	1.0 [0.3-3.6]	906
North West	41.1 [29.0-54.4]	28.8 [18.2-42.4]	10.7 [4.1-25.1]	6.7 [1.9-21.5]	5.8 [1.9-16.3]	0.5 [0.1-1.5]	3.1 [1.4-7.0]	0.4 [0.0-2.6]	0.0 [0.0-0.2]	1.0 [0.2-3.8]	1.9 [0.6-6.1]	216
Gauteng	56.5 [42.1-69.9]	25.5 [17.1-36.4]	9.6 [4.6-18.9]	0.3 [0.1-1.1]	4.3 [1.7-10.2]	0.3 [0.1-1.8]	0.9 [0.3-2.8]	0.0 [0.1-6.8]	1.0 [0.1-6.8]	0.0 [0.0-0.1]	1.5 [0.4-5.1]	238
Mpumalanga	41.2 [29.1-54.4]	23.3 [14.8-34.8]	11.5 [6.8-18.7]	8.6 [4.6-15.7]	6.1 [1.3-24.4]	1.3 [0.3-4.9]	2.9 [0.6-13.3]	0.0 [0.1-4.1]	0.6 [0.1-4.1]	0.0 [0.0-0.1]	4.5 [2.4-8.1]	178
Limpopo	52.6 [38.1-66.6]	25.4 [14.5-40.6]	2.9 [1.0-8.1]	1.2 [0.4-3.5]	5.6 [2.3-12.7]	4.2 [0.7-22.1]	1.1 [0.3-3.7]	0 [0.0-0.8]	0 [0.1-1.0]	0 [0.0-0.3]	7.1 [2.4-19.1]	184
Total	46 [40.0-52.1]	21.5 [17.8-25.8]	16.2 [11.3-22.8]	3.3 [2.1-5.2]	5.6 [3.3-9.4]	2 [0.6-5.9]	2.3 [1.5-3.7]	0.2 [0.0-0.8]	0.4 [0.1-1.0]	0.1 [0.0-0.3]	2.5 [1.6-3.8]	3,046

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

Overall, the first drink other than breast milk was mainly introduced at 0-1 month (49.5%), followed by 3 months (11.6%). The same pattern was followed for children aged 0-11 months, with 54.1% and 12.4% introduced to other drinks 0-1 month and 3 months, respectively. In children aged 12-24 months, the first drink other than breast milk was mainly introduced at 0-1 month (45.6%), followed by more than 6 months (14.5%). There were no significant differences shown between age groups (Table 48).

We can assume that the introduction of other drinks before the age of 1 month is most likely the introduction of infant formula. Of the remaining children, 10.0% of children were introduced to other drinks at 2 months, 10.4% at 6 months, and 10.4% after 6 months of age.

When doing comparisons by gender, 52.8% of boys were introduced to other drinks before the age of one month and 7.2% at six months, while 45.7% of girls were introduced to other drinks before the age of one month and 13.9% at six months. However, there were no significant differences between gender for all ages except at 5 months, where significantly more male children (4.3%) compared to female children (1.1%) were introduced to a drink other than breast milk. This seems to indicate that slightly more female children are possibly exclusively breastfed compared to male children.

Similar patterns were displayed across provinces, where the majority of children were introduced to other drinks before the age of one month (26.7%-66.8%). There were significantly less children introduced to other drinks at the age of one month in the Western Cape (26.7%) compared to the Eastern Cape, KwaZulu-Natal, and Mpumalanga (range: 54.8% - 66.8%) (Table 48). There were significantly more children in KwaZulu-Natal (15.3%) who were introduced to a drink other than breastmilk at two months compared to Mpumalanga (3.7%). At three months, significantly less children were introduced to other drinks in KwaZulu-Natal (5.4%) compared to the Northern Cape, Free State, North West, and Gauteng (15.4%, 17.1%, 17.7% and 16.9%, respectively). At four months, the Western Cape had significantly more children introduced to other drinks (16.3%), compared to the Eastern Cape and Gauteng provinces (2.7% and 2.1%). At six months, the Northern Cape reported significantly more children introduced to other drinks (20.8%) compared to the Eastern Cape, KwaZulu-Natal, and Mpumalanga provinces (9.7%, 7.6%, and 6.7%, respectively).

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

	0-1 month		2 months		3 months		4 months		5 months		6 months		>6 months		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)															
0-11 months	54.1	[46.9-61.3]	11.0	[8.1-14.7]	12.4	[8.6-17.5]	5.5	[3.1-9.4]	3.5	[1.5-7.6]	8.0	[5.2-12.1]	5.6	[2.2-13.3]	1,372
12-24 months	45.6	[38.5-55.7]	9.2	[5.8-14.4]	11.0	[7.8-15.4]	5.0	[2.7-9.2]	2.2	[1.0-4.5]	12.5	[8.9-17.1]	14.5	[9.4-21.8]	1,651
Gender															
Male	52.8	[43.9-61.5]	7.4	[5.2-10.3]	11.3	[8.2-15.4]	5.5	[3.0-10.1]	4.3	[2.2-8.4]	11.4	[7.9-16.4]	7.2	[4.5-11.5]	1,547
Female	45.7	[38.5-53.1]	13.0	[9.0-18.4]	12.1	[7.7-18.3]	4.9	[2.8-8.5]	1.1	[0.6-1.9]	9.3	[6.6-13.0]	13.9	[8.1-22.9]	1,473
Province															
Western Cape	26.7	[16.7-39.8]	5.4	[2.3-12.2]	18.7	[6.9-41.7]	16.3	[7.0-33.4]	1.1	[0.3-4.5]	11.3	[4.7-24.7]	20.5	[6.9-47.2]	311
Eastern Cape	66.8	[49.1-80.7]	6.1	[2.9-12.7]	7.4	[3.0-17.0]	2.7	[1.1-6.7]	3.6	[0.8-14.4]	9.7	[6.7-13.9]	3.7	[1.5-8.7]	490
Northern Cape	27.0	[19.2-36.5]	9.1	[5.8-13.9]	15.4	[10.2-22.6]	7.4	[4.2-12.7]	1.9	[0.7-5.1]	20.8	[15.1-27.9]	18.5	[8.8-34.8]	310
Free State	37.9	[27.6-49.4]	11.6	[6.1-21.0]	17.1	[10.6-26.4]	5.8	[2.1-15.2]	5.3	[1.4-18.3]	12.5	[7.2-20.8]	9.9	[4.5-20.2]	201
KwaZulu-Natal	54.8	[46.4-63.0]	15.3	[10.1-22.6]	5.4	[3.0-9.4]	3.6	[1.1-10.7]	3.1	[1.1-8.9]	7.6	[3.9-14.1]	10.2	[4.3-22.1]	898
North West	51.2	[39.7-62.5]	8.0	[3.7-16.2]	17.7	[10.3-28.6]	2.3	[0.7-7.2]	1.0	[0.3-3.2]	11.9	[6.1-22.1]	7.9	[2.4-22.6]	220
Gauteng	44.0	[30.0-59.1]	11.7	[6.2-21.2]	16.9	[10.5-26.1]	2.1	[0.8-5.5]	3.7	[0.7-16.4]	9.7	[5.5-16.5]	11.9	[5.5-23.8]	238
Mpumalanga	56.7	[45.0-67.7]	3.7	[1.7-8.0]	14.0	[7.1-25.7]	6.2	[2.2-16.1]	2.9	[1.2-6.7]	6.7	[3.7-12.0]	9.8	[3.7-23.2]	176
Limpopo	47.5	[36.0-59.4]	11.9	[4.0-30.3]	5.9	[3.0-11.4]	6.8	[2.6-16.4]	1.1	[0.4-3.5]	19.2	[9.4-35.4]	7.5	[3.9-14.1]	179
Total	49.5	[43.9-55.2]	10.0	[7.6-13.2]	11.6	[8.7-15.4]	5.2	[3.5-7.8]	2.8	[1.6-4.8]	10.4	[8.2-13.1]	10.4	[7.1-15.1]	3,023

8.1.1.5 Milk Feeds

The mean age at which milk feeds were introduced to children was 3.8 months. This was significantly higher in those aged 12-24 months (4.8 months) compared to those aged 0-11 months (2.7 months). The mean age between genders was similar (3.9 months in males and 3.8 months in females) (Table 49). There were no significant differences across provinces.

Table 49: Mean age at introduction of milk feeds among infants 0-24 months old in South Africa

	Mean	95% CI	n
Age			
0-11 months	2.7	[2.2-3.3]	782
12-24 months	4.8	[4.1-5.6]	892
Gender			
Male	3.9	[3.1-4.6]	871
Female	3.8	[3.1-4.5]	799
Province			
Western Cape	4.5	[2.9-6.1]	185
Eastern Cape	3.6	[3.0-4.2]	289
Northern Cape	5.2	[4.0-6.3]	172
Free State	5.7	[4.0-7.4]	120
KwaZulu-Natal	3.4	[2.6-4.2]	482
North West	4.7	[2.7-6.7]	116
Gauteng	3.9	[2.3-5.6]	131
Mpumalanga	3.2	[2.2-4.2]	97
Limpopo	3.5	[2.1-5.0]	82
Total	3.8	[3.3-4.3]	1,674

Except for breast milk, most infants (82.2%) were receiving infant formula, followed by full strength cow's milk (8.9%), KLIM/ Nespray (6.6%), and 5.5% receiving other milk (Table 50). No significant differences were observed between age groups and genders. At a provincial level, a significantly higher prevalence of children in Mpumalanga (93.5%) were receiving infant formula compared to children in the Free State (67.4%) and KwaZulu-Natal (71.3%). Significantly more children in the Free State (32.1%) were receiving full strength cow's milk compared to between 4.3% and 7.7% in the Eastern Cape, Northern Cape, KwaZulu-Natal, and Mpumalanga provinces. There were significantly more children receiving diluted cow's milk in the Western Cape (8.3%) compared to children in KwaZulu-Natal province (0.1%). Furthermore, significantly more children in KwaZulu-Natal were receiving other drinks (9.1%) compared to children in the Western Cape (1.2%) and the Eastern Cape (1.1%).

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

	Cow's milk (full strength)		Cow's milk (diluted)		Goats milk		KLIM / Nespray		Infant formula		Other		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age													
0-11 months	4.1	[1.7-9.5]	0.3	[0.1-1.2]	0.1	[0.0-0.4]	3.5	[1.3-9.3]	89.8	[80.0-95.1]	4.7	[1.2-16.4]	790
12-24 months	13.2	[8.9-19.1]	3.1	[1.2-7.9]	0.3	[0.0-1.4]	9.3	[4.5-18.1]	75.3	[66.7-82.3]	6.1	[3.3-11.1]	901
Gender													
Male	8.4	[4.7-14.6]	3.2	[1.2-8.2]	0.3	[0.1-1.5]	4.9	[2.7-8.9]	83.5	[75.3-89.3]	4.0	[2.1-7.7]	877
Female	9.3	[5.4-15.7]	0.5	[0.2-1.5]	0.0	[0.0-0.3]	8.2	[3.4-18.4]	80.9	[70.7-88.2]	6.9	[3.4-13.5]	809
Province													
Western Cape	5.9	[1.5-20.1]	8.3	[1.8-30.6]	0.0		5.9	[1.5-20.4]	85.5	[68.6-94.0]	1.2	[0.4-3.4]	188
Eastern Cape	7.7	[4.0-14.1]	1.5	[0.4-5.2]	0.0		1.7	[0.6-4.5]	90.6	[83.0-95.0]	1.1	[0.3-3.3]	291
Northern Cape	7.4	[3.5-15.2]	1.2	[0.2-7.8]	0.3	[0.1-2.4]	8.7	[3.6-19.5]	80.5	[67.7-89.1]	4.1	[1.9-8.7]	173
Free State	32.1	[18.9-49.1]	2.4	[0.4-14.6]	0.0		2.1	[0.5-8.1]	67.4	[51.5-80.1]	3.4	[1.3-8.8]	121
KwaZulu-Natal	7.7	[3.1-17.8]	0.1	[0.0-0.4]	0.0		11.9	[4.2-29.6]	71.3	[55.4-83.2]	9.1	[3.6-21.0]	483
North West	13.3	[6.3-25.8]	0.3	[0.0-2.2]	0.7	[0.2-2.5]	9.0	[2.6-27.0]	85.0	[71.3-92.8]	3.8	[1.3-10.9]	120
Gauteng	11.4	[4.4-26.5]	2.8	[0.7-10.5]	0.6	[0.1-4.7]	2.5	[0.9-7.1]	85.5	[70.6-93.6]	4.9	[1.0-21.9]	132
Mpumalanga	4.3	[1.6-11.5]	0.0		0.0		6.5	[1.5-24.0]	93.5	[85.4-97.2]	4.7	[1.6-13.0]	99
Limpopo	5.6	[1.4-20.5]	0.0		0.0		3.6	[1.5-8.5]	89.4	[73.6-96.3]	9.5	[3.2-24.6]	84
Total	8.9	[6.2-12.7]	1.8	[0.8-4.4]	0.2	[0.0-0.7]	6.6	[3.6-11.8]	82.2	[75.5-87.3]	5.5	[3.0-9.7]	1,691

8.1.1.6 Solid foods

The mean age at which the first semi-solid or solid foods were introduced was 4.9 months, and was significantly higher in those aged 12-24 months (5.6 months) compared to those aged 0-11 months (4.0 months). There were no significant differences between gender, and provinces. (Table 51).

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

	Mean	95% CI	sample
Age			
0-11 months	4.0	[3.6-4.3]	1,165
12-24 months	5.6	[5.2-6.1]	1,671
Gender			
Male	5.1	[4.6-5.5]	1,450
Female	4.8	[4.3-5.3]	1,380
Province			
Western Cape	5.3	[4.2-6.5]	292
Eastern Cape	4.8	[4.3-5.2]	453
Northern Cape	5.7	[4.9-6.6]	286
Free State	5.3	[4.6-6.0]	188
KwaZulu-Natal	5.1	[4.6-5.6]	852
North West	4.5	[4.0-5.1]	198
Gauteng	5.0	[3.9-6.1]	228
Mpumalanga	5.0	[3.9-6.1]	171
Limpopo	4.0	[3.1-5.0]	168
Total	4.9	[4.6-5.2]	2,836

Table 52 and Figure 57 show that commercial infant cereal was the first semi-solid food given to most children aged 0-24 months (47.1%), followed by homemade infant cereal/porridge (33.7%). Less than 14.0% of children were first introduced to other foods (6.9%) and pureed/mashed fruit/vegetables (6.3%). Less than 6.0% of infants had cereal/porridge supplied by the clinic (1.4%) and bottled/canned baby foods (1.8%) as their first semi-solid foods, while 2.3% and 0.4% of mothers reported traditional baby foods and custard as their infant's first food, respectively. When disaggregating by gender, significantly more male children were introduced to cereal/porridge from the clinic (2.3%) as compared to female children (0.4%).

When disaggregating by province, significantly more children in the Eastern Cape (67.6%) had commercial infant cereal compared to five other provinces (range: 26.4%-43.5%). In KwaZulu-Natal and the Northern Cape, significantly more children were introduced to homemade cereal/ porridge (51.8% and 45.8%, respectively), compared to the Eastern Cape (21.2%), Free State (23.2%), and Gauteng (19.1%). Significantly less children in the Western Cape Province were introduced to cereal/ porridge from the clinic (0.3%) compared to children in the Eastern Cape (4.5%) and Northern Cape (3.2%) provinces. There were significantly more children in the Free State eating pureed / mashed vegetables / fruit (20.8%) compared to the Eastern Cape, North West, and Limpopo provinces (1.4%, 3.3%, and 2.2%, respectively). There were significantly more children in the North West (8.5%) and Mpumalanga (6.1%) provinces introduced to traditional baby food as compared to children in the Northern Cape (0.2%) and Gauteng (0.1%) provinces. There were significantly more children in Limpopo (16.6%) introduced to other foods compared to children in the Eastern Cape (2.2%) and Northern Cape (2.7%) provinces.

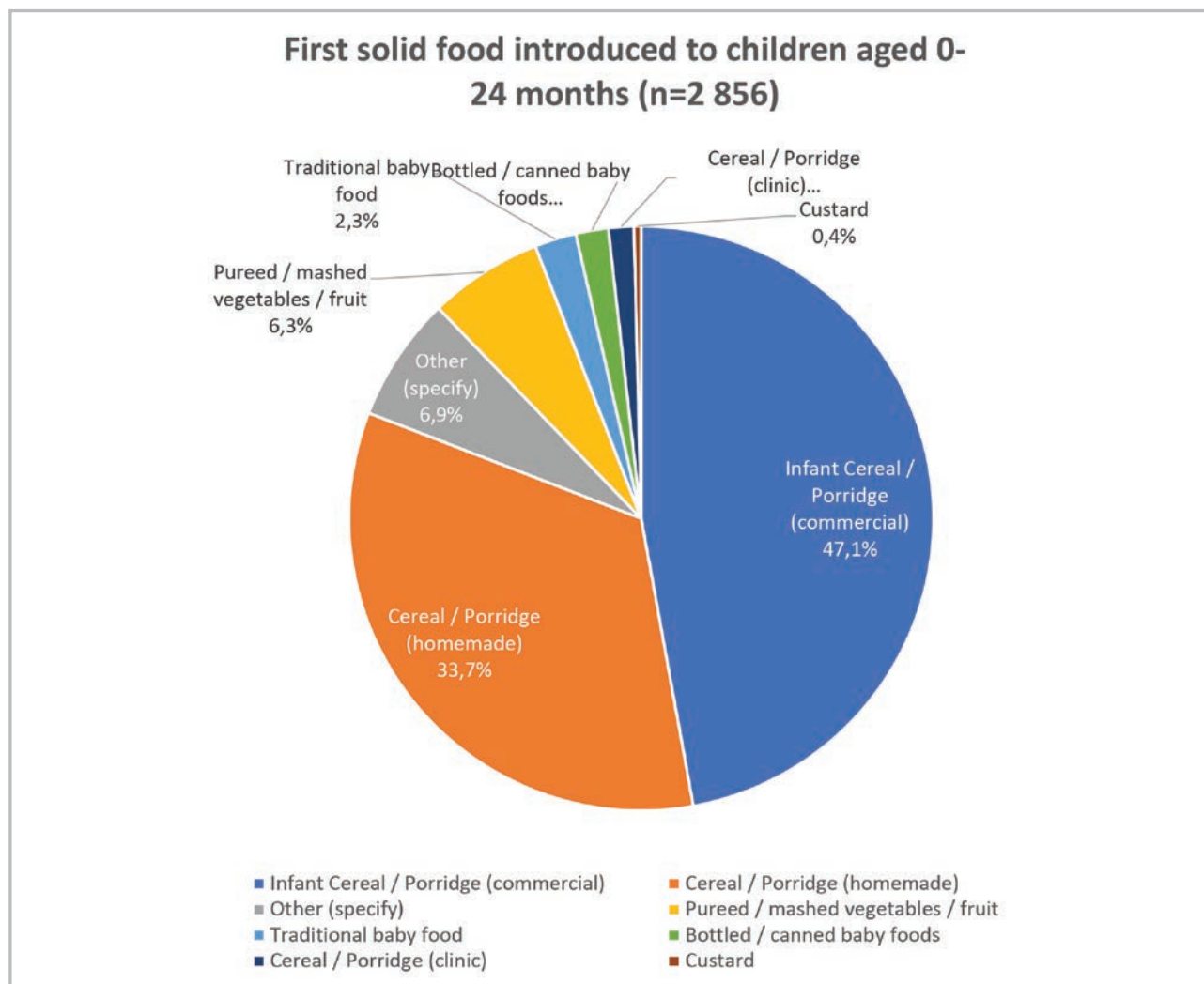


Figure 57: First solid food among children aged 0-24 months in South Africa

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

	Infant Cereal / Porridge (commercial)		Cereal / Porridge (homemade)		Cereal / Porridge (clinic)		Pureed / mashed vegetables / fruit		Bottled / canned baby foods		Traditional baby food		Custard		Other (specify)		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)																	
0-11 months	44.3	[35.9-53.0]	26.9	[20.4-34.5]	0.7	[0.3-1.6]	8.7	[5.1-14.5]	1.8	[0.9-3.6]	2.3	[1.0-5.6]	0.1	[0.0-0.6]	15.2	[9.7-23.1]	1,198
12-24 months	49.4	[41.9-56.9]	39.0	[31.2-47.3]	1.9	[0.8-4.3]	4.5	[2.5-7.8]	1.7	[0.7-4.0]	2.3	[1.2-4.4]	0.6	[0.2-1.7]	0.6	[0.3-1.2]	1,658
Gender																	
Male	47.4	[40.4-54.4]	30.8	[24.9-37.3]	2.3	[1.1-4.8]	5.8	[3.2-10.5]	2.2	[1.1-4.3]	2.6	[1.3-5.0]	0.4	[0.1-1.6]	8.6	[4.5-15.8]	1,464
Female	47.1	[37.9-56.5]	37.3	[28.2-47.3]	0.4	[0.2-0.7]	7.0	[4.3-11.2]	1.3	[0.5-3.6]	2.1	[0.9-4.8]	0.4	[0.1-1.3]	4.5	[2.5-8.0]	1,386
Province																	
Western Cape	55.9	[37.2-73.1]	28.5	[13.8-49.8]	0.3	[0.1-1.0]	6.6	[1.5-24.1]	2.1	[0.3-13.3]	3.5	[0.7-14.6]	0.0		3.2	[1.1-8.8]	297
Eastern Cape	67.6	[61.3-73.3]	21.2	[16.4-27.0]	4.5	[1.8-10.7]	1.4	[0.4-4.7]	2.2	[0.8-5.6]	0.6	[0.1-2.9]	0.4	[0.1-3.2]	2.2	[0.8-5.9]	454
Northern Cape	39.2	[31.3-47.8]	45.8	[36.2-55.7]	3.2	[1.2-8.3]	7.5	[4.0-13.6]	1.0	[0.3-3.0]	0.2	[0.0-0.8]	0.5	[0.1-2.1]	2.7	[1.1-6.3]	285
Free State	42.3	[30.1-55.5]	23.2	[15.0-34.0]	1.3	[0.4-4.2]	20.8	[13.4-30.7]	0.8	[0.3-2.1]	0.6	[0.1-2.2]	0.0		11.1	[4.6-24.5]	187
KwaZulu-Natal	26.4	[19.6-34.7]	51.8	[39.2-64.1]	1.0	[0.3-3.0]	8.3	[3.9-16.7]	1.6	[0.4-6.2]	1.6	[0.5-4.5]	0.4	[0.1-2.5]	9.0	[3.0-23.9]	858
North West	36.8	[23.5-52.5]	44.6	[30.1-60.1]	1.0	[0.3-3.0]	3.3	[0.8-12.6]	1.4	[0.4-5.3]	8.5	[2.2-27.2]	0.4	[0.1-1.7]	4.1	[1.8-8.9]	198
Gauteng	65.7	[51.3-77.6]	19.1	[10.0-33.4]	1.0	[0.1-6.6]	5.2	[1.8-13.6]	1.2	[0.3-5.2]	0.1	[0.0-0.3]	0.8	[0.1-5.4]	7.0	[2.6-17.5]	227
Mpumalanga	43.5	[32.2-55.5]	30.9	[21.0-43.0]	1.0	[0.3-3.6]	9.9	[3.6-24.5]	4.1	[1.3-12.7]	6.1	[3.1-11.6]	0.4	[0.1-2.4]	4.1	[1.9-8.8]	169
Limpopo	47.2	[33.2-61.6]	30.6	[17.8-47.2]	0.5	[0.1-2.2]	2.2	[0.5-8.7]	0.8	[0.1-4.5]	2.2	[0.6-8.0]	0.0		16.6	[7.8-31.8]	181
Total	47.1	[41.2-53.2]	33.7	[27.9-40.0]	1.4	[0.7-2.7]	6.3	[4.3-9.3]	1.8	[1.0-3.1]	2.3	[1.4-3.9]	0.4	[0.1-1.0]	6.9	[4.4-10.8]	2,856

8.1.2 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 foetal growth restriction, stunting, wasting, and micro-nutrient deficiency, especially of vitamin A and Zinc. This occurs along with poor infant feeding practices, which are indicated by sub-optimum breastfeeding.

Anthropometric data was recorded for 6 545 children under the age of five years; of these, there were a slightly higher number of girls (50.1%) than boys (49.9%) (Table 53).

Table 53: Distribution of age and sex of the sample in South Africa

AGE (months)	Boys		Girls		Total	
	n	%	n	%	n	%
<6	305	50.9	294	49.1	599	9.2
6-17	802	50.8	776	49.2	1578	24.1
18-29	721	49.8	726	50.2	1447	22.1
30-41	624	48.4	664	51.6	1288	19.7
42-53	588	49.0	611	51.0	1199	18.3
54-59	226	52.1	208	47.9	434	6.6
Total	3266	49.9	3279	50.1	6545	100.0

8.1.2.1 Stunting

The overall prevalence of stunting for children under the age of 5 years (n=6 265) was 28.8%, of which 14.8% was severe, and 14.0% was moderate stunting (Table 54 and Figure 58).

There were no significant differences in overall stunting between age groups and gender. Overall stunting was significantly lower in Limpopo Province (14.9%) as compared to the Free State, Northern Cape, Eastern Cape, and Western Cape provinces (32.1%, 46.2%, 33.3%, and 46.4%, respectively). Furthermore, in addition to having a significantly higher prevalence of stunting than Limpopo, the prevalence of overall stunting in the Western Cape (46.4%) and Northern Cape (46.2%) was also significantly higher than that in Gauteng (23.9%) and Mpumalanga (21.8%).

When disaggregating by severe and moderate stunting, children aged 18-29 months and 54-59 months had the highest prevalence of moderate stunting (16.3% and 16.2%, respectively), while those 6-17 months of age had the highest prevalence of severe stunting (20.2%). No significant differences were noted for moderate stunting; however, for severe stunting, children in the 54-59 month age group had a significantly lower prevalence of severe stunting (4.1%) as compared to the < 6 months, 6-17 months, and 18-29 months age groups (17.2%, 20.2%, and 19.6%, respectively). Severe stunting in the 42-53 month age group was also significantly lower (7.5%) than the children in the < 6 months and 6-17 month age groups (Table 54 and Figure 58).

Comparisons by gender in all children in South Africa under five years of age indicated that males had a slightly higher prevalence of overall stunting (33.2%) compared to females (24.7%); however, this was not significant (Table 54 and Figure 58). Similarly, there were no significant differences between gender for both moderate and severe stunting. Females reported a slightly higher proportion (14.1%) of severe stunting compared to moderate stunting (10.6%), while the converse was reported for males (17.7% moderate stunting, compared to 15.5% severe stunting).

Provincial comparisons show that the prevalence of overall stunting was highest in the Western Cape Province (46.4%) (Table 54 and Figure 58). The prevalence of severe stunting was highest in the Western Cape Province (25.7%), while the highest prevalence of moderate stunting was reported in the Northern Cape (30.4%) (Table 54 and Figure 58). The prevalence of overall stunting in the Western Cape (46.4%) was significantly higher than that of Gauteng (23.9%), Mpumalanga (21.8%), and Limpopo (14.9%). The prevalence of overall stunting in Limpopo (14.9%) was also significantly lower than the Eastern Cape (33.3%), Northern Cape (46.2%), and Free State (32.1%). There were no significant differences for severe stunting across provinces; however, for moderate stunting, children in Limpopo Province had a significantly lower prevalence of moderate stunting (6.6%) as compared to the North West, Free State, Western Cape, and Northern Cape provinces (18.0%, 19.2%, 20.8%, and 30.4%, respectively). Moderate stunting in Mpumalanga was also significantly lower (9.4%) compared to the Northern Cape and Free State provinces.

Table 54: The prevalence of stunting in children under 5 years disaggregated by age, sex, and province in South Africa

	No stunting HAZ>=-2		All stunting HAZ<-2		Moderate stunting HAZ<-2 and >=-3		Severe stunting HAZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	75.5	[66.2-82.9]	24.5	[17.1-33.8]	7.3	[3.8-13.7]	17.2	[11.9-24.2]	560
6-17	65.9	[59.2-71.9]	34.1	[28.1-40.8]	14.0	[10.2-18.9]	20.2	[15.9-25.3]	1,516
18-29	64.1	[52.5-74.3]	35.9	[25.7-47.5]	16.3	[11.4-22.6]	19.6	[10.4-33.8]	1,401
30-41	74.6	[67.5-80.6]	25.4	[19.4-32.5]	15.5	[9.6-24.1]	9.9	[6.6-14.5]	1,262
42-53	79.8	[71.4-86.2]	20.2	[13.8-28.6]	12.7	[7.1-21.6]	7.5	[4.9-11.3]	1,142
54-59	79.8	[70.3-86.8]	20.2	[13.2-29.7]	16.2	[9.9-25.4]	4.1	[2.2-7.5]	384
Gender									
Female	75.3	[68.9-80.7]	24.7	[19.3-31.1]	10.6	[8.0-14.0]	14.1	[9.1-21.2]	3,161
Male	66.8	[61.6-71.6]	33.2	[28.4-38.4]	17.7	[13.6-22.7]	15.5	[13.1-18.4]	3,104
Province									
Western Cape	53.6	[40.0-66.6]	46.4	[33.4-60.0]	20.8	[12.7-32.0]	25.7	[11.6-47.6]	688
Eastern Cape	66.7	[58.4-74.1]	33.3	[25.9-41.6]	15.4	[10.0-22.9]	17.9	[13.4-23.4]	1,031
Northern Cape	53.8	[38.4-68.5]	46.2	[31.5-61.6]	30.4	[14.7-52.6]	15.8	[10.4-23.3]	680
Free State	67.9	[60.1-74.8]	32.1	[25.2-39.9]	19.2	[14.3-25.4]	12.9	[8.6-18.8]	359
KwaZulu-Natal	72.5	[65.7-78.4]	27.5	[21.6-34.3]	12.3	[8.4-17.5]	15.3	[10.9-21.0]	1,901
North West	69.7	[59.4-78.4]	30.3	[21.6-40.6]	18.0	[12.0-26.1]	12.3	[7.2-20.2]	405
Gauteng	76.1	[69.0-82.0]	23.9	[18.0-31.0]	13.0	[7.5-21.5]	10.9	[7.2-16.1]	455
Mpumalanga	78.2	[69.7-84.9]	21.8	[15.1-30.3]	9.4	[6.6-13.2]	12.4	[7.5-19.8]	382
Limpopo	85.1	[76.3-91.1]	14.9	[8.9-23.7]	6.6	[3.6-11.8]	8.3	[4.3-15.2]	364
Total	71.2	[67.5-74.6]	28.8	[25.4-32.5]	14.0	[11.8-16.7]	14.8	[11.8-18.4]	6,265

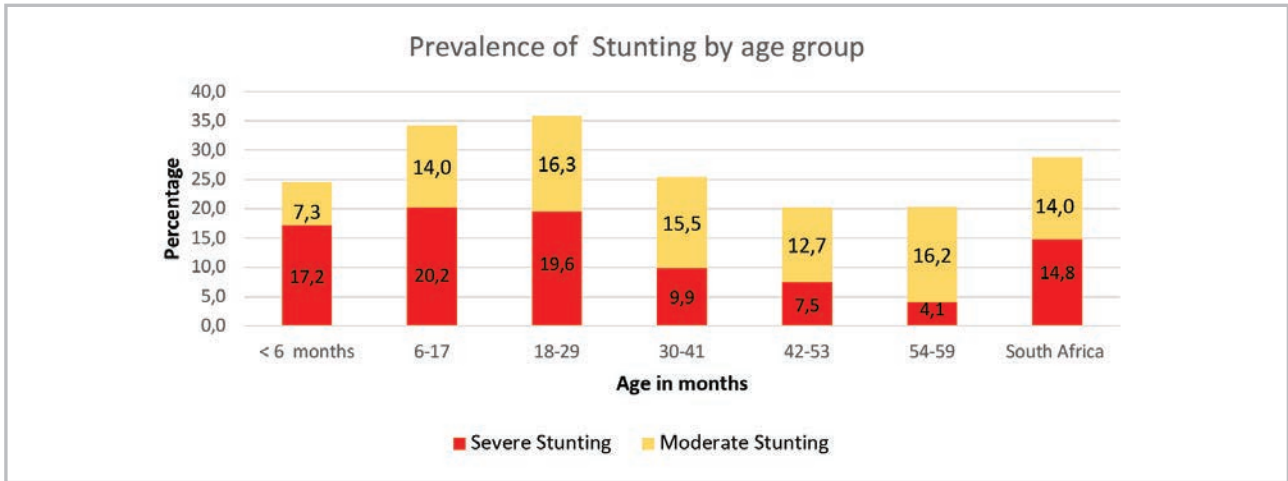


Figure 58: The prevalence of Stunting in children under 5 years disaggregated by age group in South Africa

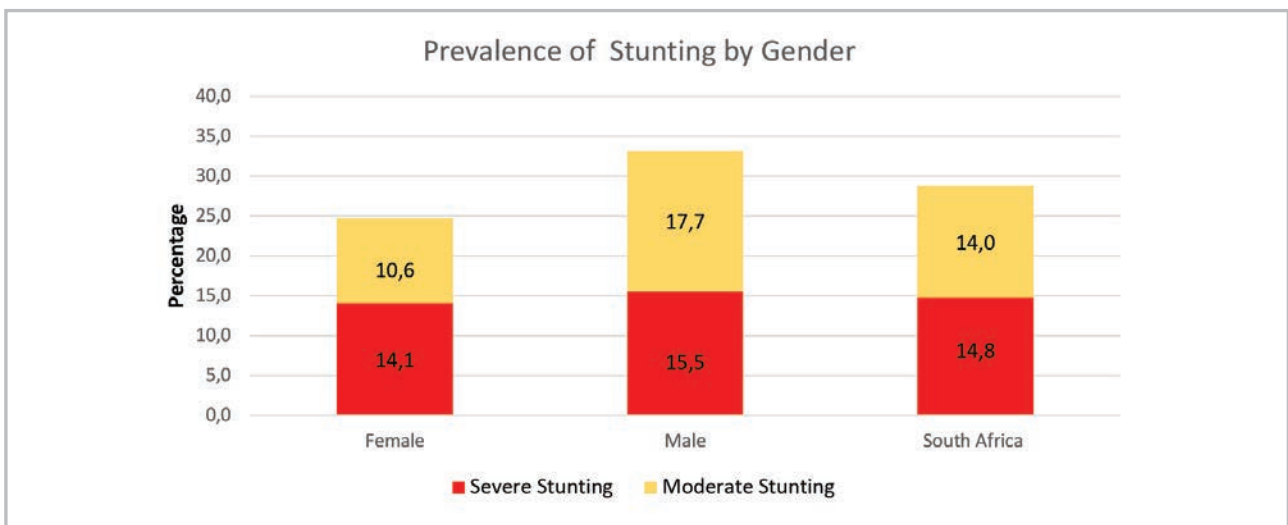


Figure 59: The prevalence of Stunting in children under 5 years disaggregated by gender in South Africa

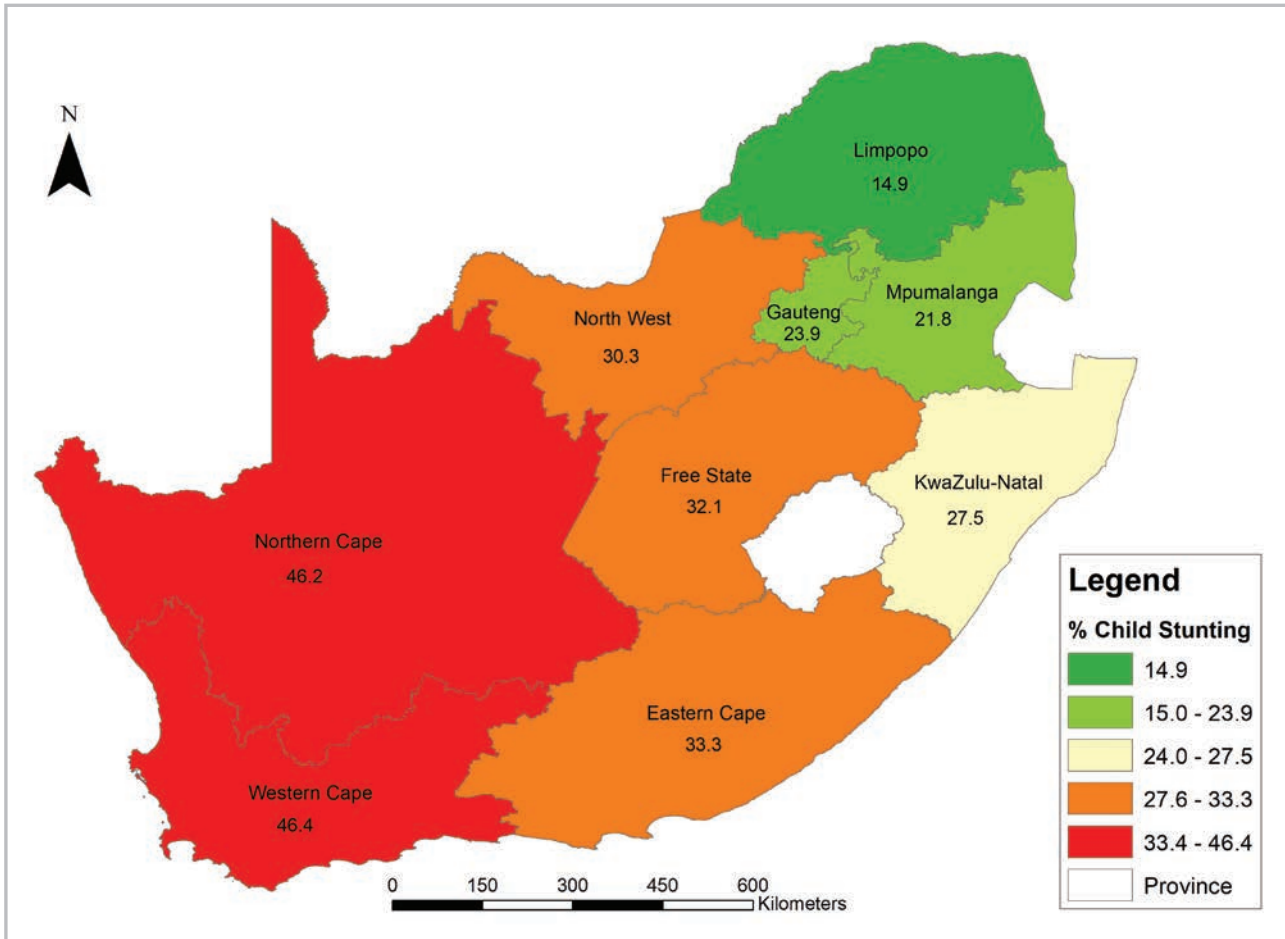


Figure 60: Map of the prevalence of overall stunting in children under 5 years by province in South Africa

8.1.2.2 Wasting

The overall prevalence of wasting for children under the age of 5 years (n=6 109) was 5.3%, of which 3.2% was severe and 2.1% was moderate wasting (Table 55 and Figure 69). For overall wasting, across all age groups, the prevalence ranged from 3.7% to 9.8%. The differences between these age groups were, however, not significant. While the prevalence of overall wasting in males (5.7%) was higher than in females (4.9%), these differences were also not significant (Table 55 and Figure 61).

Overall wasting ranged from 2.1% in KwaZulu-Natal Province to 23.8% in the Northern Cape Province (Table 55 and Figure 61). The Northern Cape Province had significantly more wasted children (23.8%) compared to KwaZulu-Natal, Free State, and Eastern Cape, provinces (2.1%, 4.3%, and 3.8%, respectively) (Table 55 and Figure 61).

The prevalence of moderate wasting was highest in children aged 6-17 months (3.0%), and lowest in the 54-59 age group (0.6%). This difference was significant. While females had a higher prevalence of moderate wasting (2.5%) than males (1.6%), and male children had a higher prevalence of severe wasting (4.1%) compared to females (2.4%); however, this was not significant. The Northern Cape Province had the highest prevalence of moderate wasting (4.8%), which was significantly higher than the Eastern Cape (1.3%) and KwaZulu-Natal provinces (1.3%).

Comparisons for severe wasting for gender and age group did not reveal any additional significant differences. The prevalence of severe wasting in the Northern Cape Province (19.0%) was significantly higher compared to KwaZulu-Natal and Free State provinces (0.8% and 1.6%, respectively).

Table 55: The prevalence of wasting in children under 5 years in South Africa disaggregated by age, sex, and province

	No wasting WHZ \geq -2		All wasting WHZ $<$ -2		Moderate wasting WHZ $<$ -2 and \geq -3		Severe wasting WHZ $<$ -3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	94.5	[89.9-97.1]	5.5	[2.9-10.1]	2.4	[0.9-6.2]	3.1	[1.4-6.7]	550
6-17	94.6	[91.3-96.7]	5.4	[3.3-8.7]	3.0	[1.7-5.3]	2.4	[1.1-5.4]	1,477
18-29	96.3	[92.1-98.3]	3.7	[1.7-7.9]	0.9	[0.5-1.5]	2.8	[1.0-7.4]	1,360
30-41	96.0	[93.3-97.6]	4.0	[2.4-6.7]	2.0	[1.0-3.9]	2.0	[1.0-4.2]	1,231
42-53	92.9	[87.3-96.1]	7.1	[3.9-12.7]	2.6	[0.9-7.0]	4.5	[2.1-9.4]	1,115
54-59	90.2	[69.3-97.4]	9.8	[2.6-30.7]	0.6	[0.2-1.5]	9.2	[2.2-31.1]	376
Gender									
Female	95.1	[92.9-96.7]	4.9	[3.3-7.1]	2.5	[1.5-4.0]	2.4	[1.3-4.4]	3,074
Male	94.3	[91.3-96.3]	5.7	[3.7-8.7]	1.6	[1.0-2.7]	4.1	[2.2-7.3]	3,035
Province									
Western Cape	96.2	[87.0-99.0]	3.8	[1.0-13.0]	0.8	[0.1-4.7]	3.0	[0.6-13.3]	665
Eastern Cape	96.2	[93.2-97.9]	3.8	[2.1-6.8]	1.3	[0.7-2.7]	2.4	[1.1-5.3]	1,009
Northern Cape	76.2	[50.2-91.0]	23.8	[9.0-49.8]	4.8	[2.8-8.1]	19.0	[5.3-49.6]	659
Free State	95.7	[92.5-97.6]	4.3	[2.4-7.5]	2.7	[1.2-6.0]	1.6	[0.7-3.5]	354
KwaZulu-Natal	97.9	[96.8-98.7]	2.1	[1.3-3.2]	1.3	[0.7-2.4]	0.8	[0.4-1.6]	1,856
North West	94.7	[89.6-97.3]	5.3	[2.7-10.4]	3.0	[1.1-7.6]	2.4	[0.9-6.2]	399
Gauteng	93.2	[85.7-96.9]	6.8	[3.1-14.3]	3.4	[1.3-8.2]	3.5	[1.0-11.3]	444
Mpumalanga	92.6	[83.7-96.8]	7.4	[3.2-16.3]	2.5	[0.9-6.5]	4.9	[1.5-15.2]	366
Limpopo	93.4	[87.0-96.8]	6.6	[3.2-13.0]	1.9	[0.8-4.6]	4.7	[2.0-10.8]	357
Total	94.7	[92.9-96.1]	5.3	[3.9-7.1]	2.1	[1.5-2.9]	3.2	[2.1-5.0]	6,109

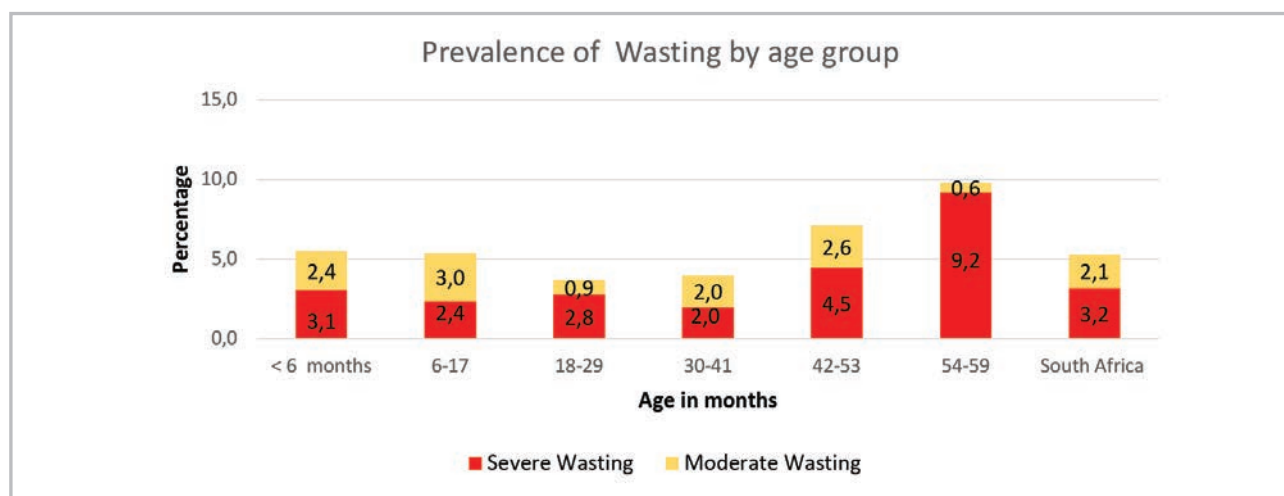


Figure 61: The prevalence of Wasting in children under 5 years disaggregated by age group in South Africa

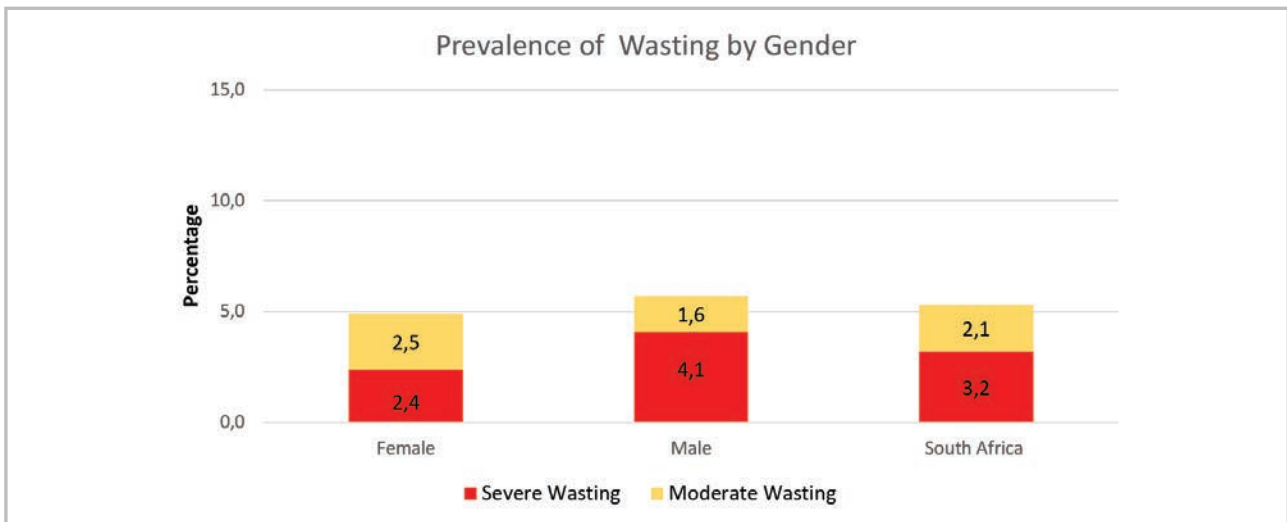


Figure 62: The prevalence of Wasting in children under 5 years disaggregated by gender in South Africa

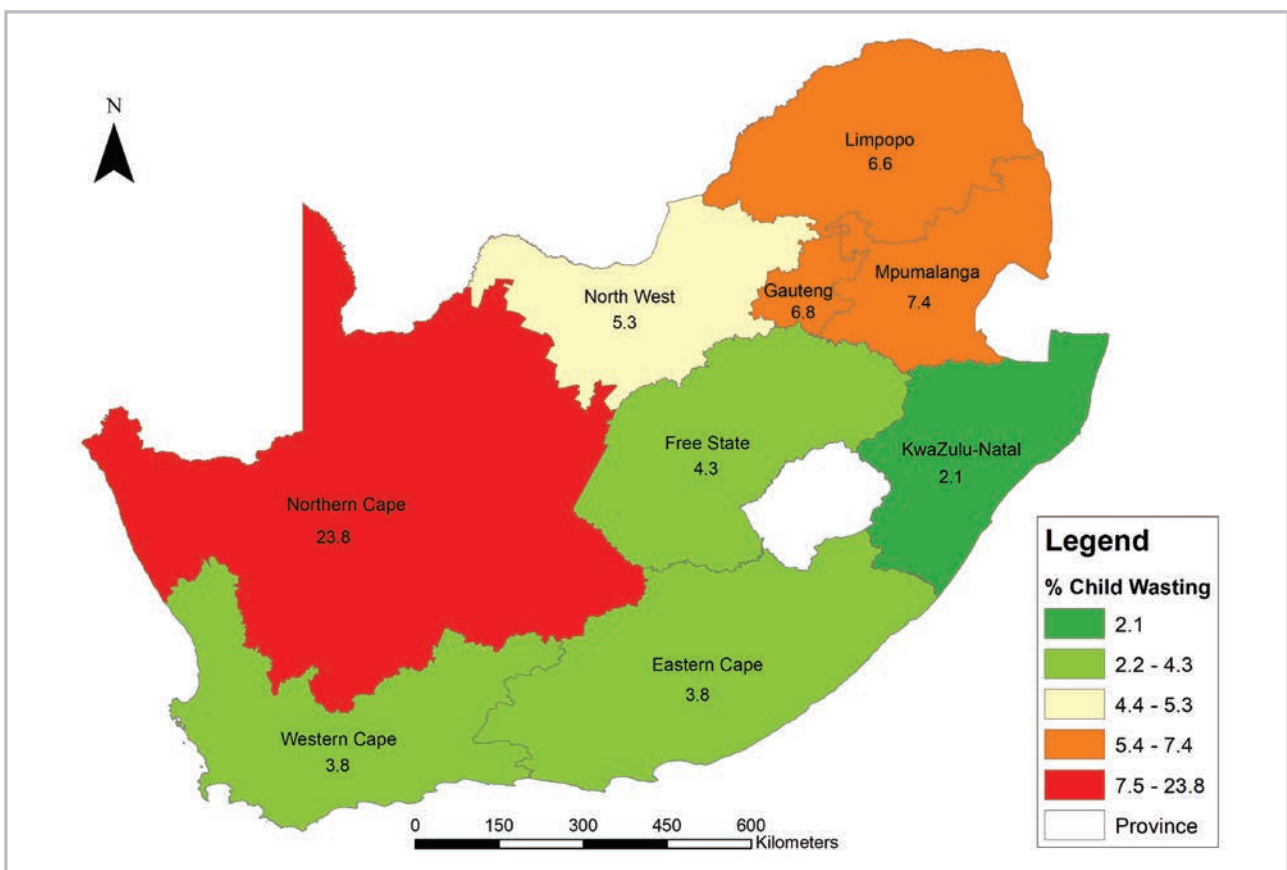


Figure 63: The prevalence of Wasting in children under 5 years by province in South Africa

8.1.2.3 Underweight

The overall prevalence of underweight for children under the age of 5 years (n=6 444) was 7.7%, of which 3.7% was severe and 3.9% was moderate underweight (Table 56 and Figure 72). The prevalence of overall and severe underweight was highest in children aged 54-59 months at 13.0% and 9.1%, respectively. Moderate underweight was highest in the 30-41 months age group (6.6%). There were no significant differences in all categories of underweight across age groups.

Comparisons between genders showed that males (9.1%) had a slightly higher prevalence of overall underweight than females (6.3%) (Table 55 and Figure 64). Similar results were reported for moderate (males 5.0% and females 2.9%) and severe underweight (males 4.1% and females 3.4%). There were no significant differences in all categories of underweight between genders.

Northern Cape Province reported the highest overall prevalence of underweight (27.6%) (Table 56 and Figure 64). The Northern Cape also reported the highest prevalence of severe underweight (18.8%), while the North West had the highest prevalence of moderate underweight (9.7%) (Table 55 and Figure 74). The Northern Cape had a significantly higher prevalence of overall underweight (27.6%) compared to the Western Cape, Eastern Cape, and KwaZulu-Natal provinces (5.3%, 5.3%, 4.4% respectively). The North West Province also had a significantly higher prevalence of underweight (14.4%) compared to the Eastern Cape Province (5.3%) (Table 56). Significant differences were observed at province level for both moderate and severe underweight. The North West Province had a significantly higher prevalence of moderate underweight (9.7%), as compared to KwaZulu-Natal (2.8%).

Table 56: The prevalence of underweight in children under 5 years disaggregated by age, sex, and province in South Africa

	Not underweight WAZ>=-2		All Underweight WAZ<-2		Moderate underweight WAZ<-2 and >=-3		Severe underweight WAZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	94.5	[90.2-97.0]	5.5	[3.0-9.8]	3.7	[1.7-7.8]	1.8	[0.8-3.9]	580
6-17	92.9	[89.5-95.3]	7.1	[4.7-10.5]	3.9	[2.3-6.3]	3.3	[1.8-5.8]	1,557
18-29	94.0	[90.1-96.4]	6.0	[3.6-9.9]	2.5	[1.5-4.2]	3.5	[1.6-7.5]	1,427
30-41	89.5	[84.5-93.0]	10.5	[7.0-15.5]	6.6	[4.0-10.7]	3.9	[2.1-7.4]	1,271
42-53	92.8	[88.2-95.7]	7.2	[4.3-11.8]	3.3	[1.7-6.5]	3.9	[1.9-7.9]	1,183
54-59	87.0	[71.4-94.8]	13.0	[5.2-28.6]	3.9	[1.6-9.1]	9.1	[2.6-27.5]	426
Gender									
Female	93.7	[91.1-95.6]	6.3	[4.4-8.9]	2.9	[1.9-4.2]	3.4	[2.1-5.4]	3,228
Male	90.9	[87.7-93.4]	9.1	[6.6-12.3]	5.0	[3.6-6.9]	4.1	[2.3-7.0]	3,216
Province									
Western Cape	94.7	[87.7-97.8]	5.3	[2.2-12.3]	2.7	[1.2-6.2]	2.6	[0.6-10.9]	707
Eastern Cape	94.7	[91.0-97.0]	5.3	[3.0-9.0]	3.1	[1.7-5.8]	2.1	[1.0-4.5]	1,062
Northern Cape	72.4	[50.2-87.2]	27.6	[12.8-49.8]	8.8	[5.1-14.8]	18.8	[5.6-47.4]	705
Free State	88.6	[83.7-92.1]	11.4	[7.9-16.3]	7.4	[4.4-12.3]	4.0	[2.2-7.2]	366
KwaZulu-Natal	95.6	[92.4-97.5]	4.4	[2.5-7.6]	2.8	[1.5-5.2]	1.6	[0.7-3.7]	1,950
North West	85.6	[78.8-90.5]	14.4	[9.5-21.2]	9.7	[5.8-15.8]	4.7	[2.4-8.9]	417
Gauteng	92.3	[86.2-95.8]	7.7	[4.2-13.8]	3.6	[1.6-8.1]	4.1	[1.6-10.2]	463
Mpumalanga	91.6	[81.1-96.6]	8.4	[3.4-18.9]	4.0	[1.8-8.9]	4.3	[1.4-12.5]	395
Limpopo	91.2	[83.3-95.6]	8.8	[4.4-16.7]	2.9	[0.9-9.5]	5.9	[2.7-12.4]	379
Total	92.3	[90.3-94.0]	7.7	[6.0-9.7]	3.9	[3.0-5.1]	3.7	[2.6-5.3]	6,444

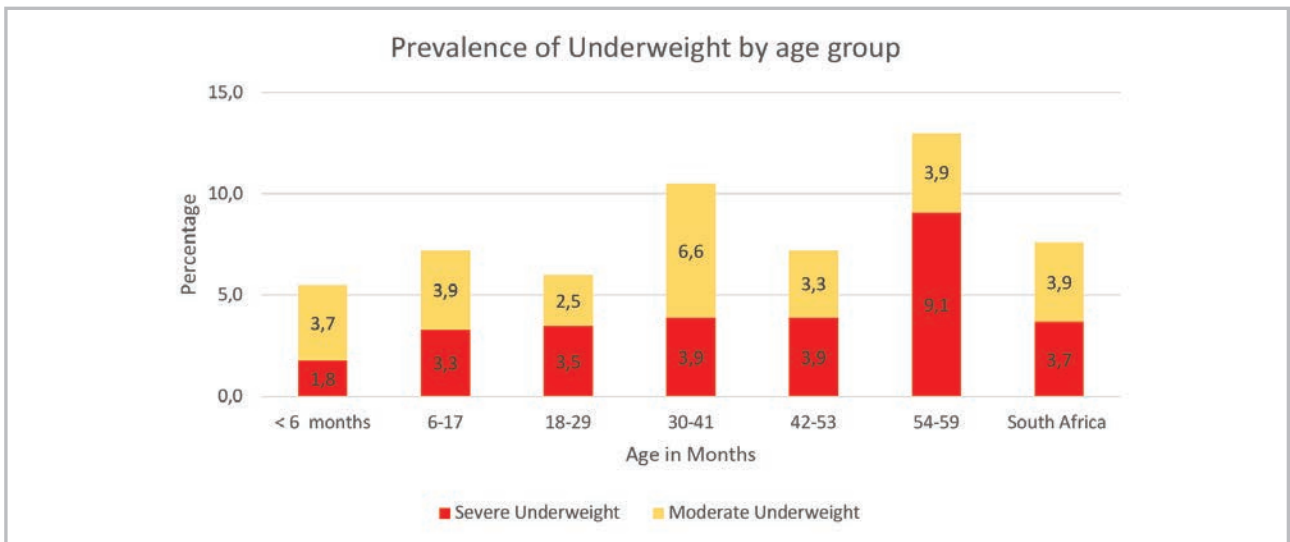


Figure 64: The prevalence of Underweight in children under 5 years disaggregated by age group in South Africa

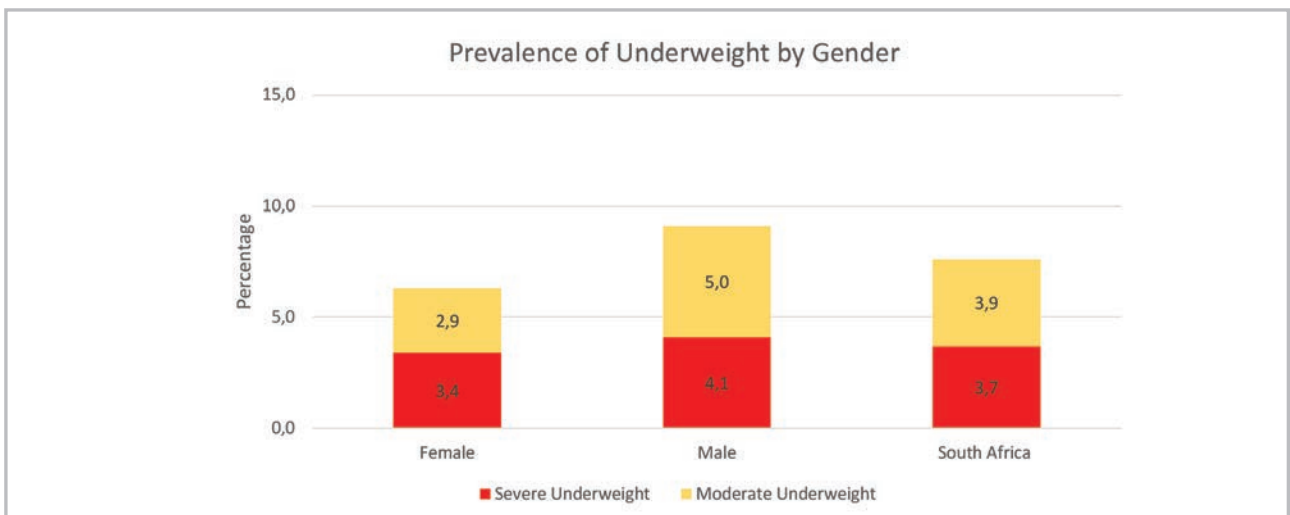


Figure 65: The prevalence of Underweight in children under 5 years by gender in South Africa

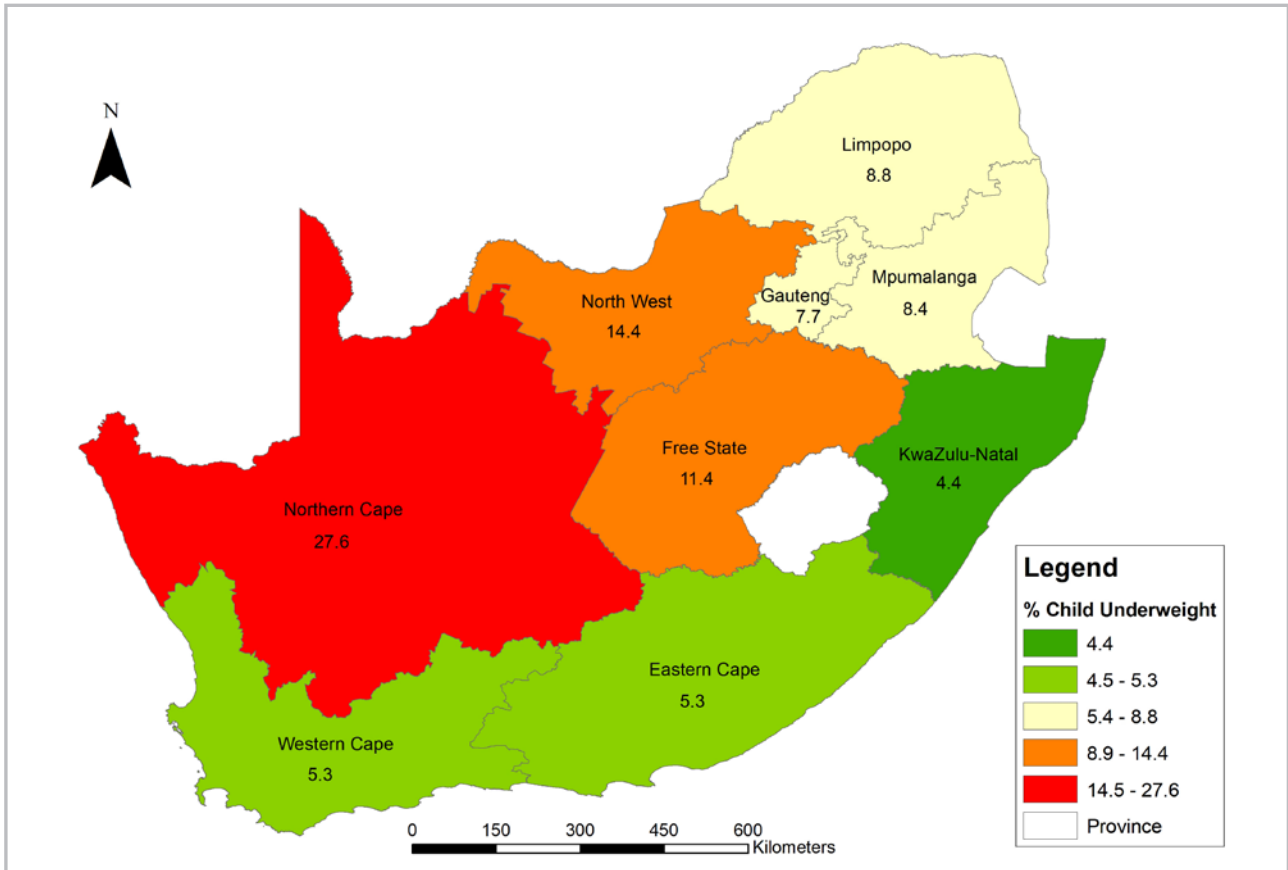


Figure 66: The prevalence of overall, severe, and moderate Underweight in children under 5 years by province in South Africa

8.1.2.4 Overweight

The overall prevalence of overweight for children under the age of 5 years (n=6 109) was 22.6%, of which 13.1% was severe and 9.5% was moderate overweight (Table 56 and Figure 67). The prevalence of overall overweight appeared to decrease with age. There were significant differences between age groups for overall overweight. The children aged 6-17 months had the highest prevalence of overall overweight (34.6%), with the 54-59 month age group having the lowest prevalence of overall overweight (7.0%). Children aged younger than 6 months, 6-17, and 18-29 months had a significantly higher prevalence of overweight (33.6%, 34.6%, and 28.9%, respectively) compared to those aged 30-41, 42-53, and 54-59 months (11.6%, 7.6%, and 7.0%, respectively).

When disaggregating by severe and moderate overweight, children aged 6-17 months of age had the highest prevalence of moderate overweight (18.4%), which was significantly higher than the prevalence in children aged 30-41 months (4.4%), 42-53 months of age (3.3%), and 54-59 months age groups (4.0%). Children younger than 6 months also had a significantly higher prevalence of moderate overweight (12.8%) compared to children in the 42-53 month age group (3.3%).

For severe overweight, there was a significant difference observed, where children younger than 6 months (20.8%) and those aged 6-17 months (16.1%) and 18-29 months (20.3%) had a significantly higher prevalence of severe overweight than those aged 30-41 (7.2%), 42-53 (4.3%), and 54-59 months of age (2.9%) (Table 55).

Females and males had a similar prevalence of overall overweight (23.1% and 22.1%, respectively) (Table 57 and Figure 67). For both genders, it appears as if there is a slightly higher proportion of severe overweight compared to moderate overweight (females 14.1% compared to 8.9% and males 12.0% compared to 10.1%).

KwaZulu-Natal Province reported the highest prevalence of overall (30.1%) and moderate overweight (15.2%), while Limpopo reported the highest prevalence of severe overweight (21.0%). KwaZulu-Natal, Western Cape, and Eastern Cape provinces had significantly higher prevalence of overall overweight (30.1%, 26.6%, and 25.9%, respectively) compared to the Northern Cape Province, which also reported the lowest overall prevalence (8.1%). When disaggregating by moderate and severe overweight, KwaZulu-Natal and Western Cape provinces had a significantly higher prevalence of moderate overweight (15.2% and 13.9%, respectively) compared to the Northern Cape (3.4%), while KwaZulu-Natal also had a significantly higher prevalence of moderate overweight compared to Limpopo (3.5%) and North West (4.9%). For severe overweight, the Eastern Cape (16.4%) and KwaZulu-Natal (14.9%) had significantly higher prevalence than the Northern Cape (4.7%) and the Free State (5.2%) (Table 57 and Figure 67).

Table 57: The prevalence of Overweight in children under 5 years disaggregated by age, sex, and province in South Africa

	Not overweight WHZ<2		All overweight WHZ>=2		Moderate overweight WHZ>=2 and <3		Severe overweight WHZ>=3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	66.4	[55.0-76.2]	33.6	[23.8-45.0]	12.8	[7.4-21.2]	20.8	[13.9-30.0]	550
6-17	65.4	[57.5-72.6]	34.6	[27.4-42.5]	18.4	[13.1-25.4]	16.1	[11.8-21.7]	1,477
18-29	71.1	[57.4-81.8]	28.9	[18.2-42.6]	8.6	[5.2-13.7]	20.3	[10.1-36.7]	1,360
30-41	88.4	[83.5-92.0]	11.6	[8.0-16.5]	4.4	[2.4-7.9]	7.2	[4.6-11.1]	1,231
42-53	92.4	[88.6-95.0]	7.6	[5.0-11.4]	3.3	[1.7-6.2]	4.3	[2.4-7.5]	1,115
54-59	93.0	[87.2-96.3]	7.0	[3.7-12.8]	4.0	[1.6-9.7]	2.9	[1.3-6.6]	376
Gender									
Female	76.9	[69.1-83.3]	23.1	[16.7-30.9]	8.9	[6.7-11.8]	14.1	[8.6-22.3]	3,074
Male	77.9	[73.9-81.5]	22.1	[18.5-26.1]	10.1	[7.6-13.4]	12.0	[9.4-15.1]	3,035
Province									
Western Cape	73.4	[63.1-81.6]	26.6	[18.4-36.9]	13.9	[8.2-22.5]	12.8	[6.9-22.3]	665
Eastern Cape	74.1	[63.9-82.2]	25.9	[17.8-36.1]	9.5	[6.0-14.6]	16.4	[10.9-24.1]	1,009
Northern Cape	91.9	[87.4-94.9]	8.1	[5.1-12.6]	3.4	[1.9-6.0]	4.7	[2.7-8.3]	659
Free State	85.8	[78.4-90.9]	14.2	[9.1-21.6]	9.0	[4.6-17.0]	5.2	[3.2-8.5]	354
KwaZulu-Natal	69.9	[60.5-77.9]	30.1	[22.1-39.5]	15.2	[10.5-21.6]	14.9	[9.9-21.7]	1,856
North West	83.7	[70.1-91.8]	16.3	[8.2-29.9]	4.9	[2.2-10.4]	11.5	[4.2-27.5]	399
Gauteng	83.6	[74.5-89.9]	16.4	[10.1-25.5]	7.3	[3.6-14.0]	9.1	[5.1-15.8]	444
Mpumalanga	82.5	[73.0-89.1]	17.5	[10.9-27.0]	7.2	[3.3-15.1]	10.3	[6.3-16.4]	366
Limpopo	75.5	[45.0-92.1]	24.5	[7.9-55.0]	3.5	[1.5-8.2]	21.0	[5.4-55.3]	357
Total	77.4	[72.8-81.4]	22.6	[18.6-27.2]	9.5	[7.6-11.9]	13.1	[9.8-17.3]	6,109

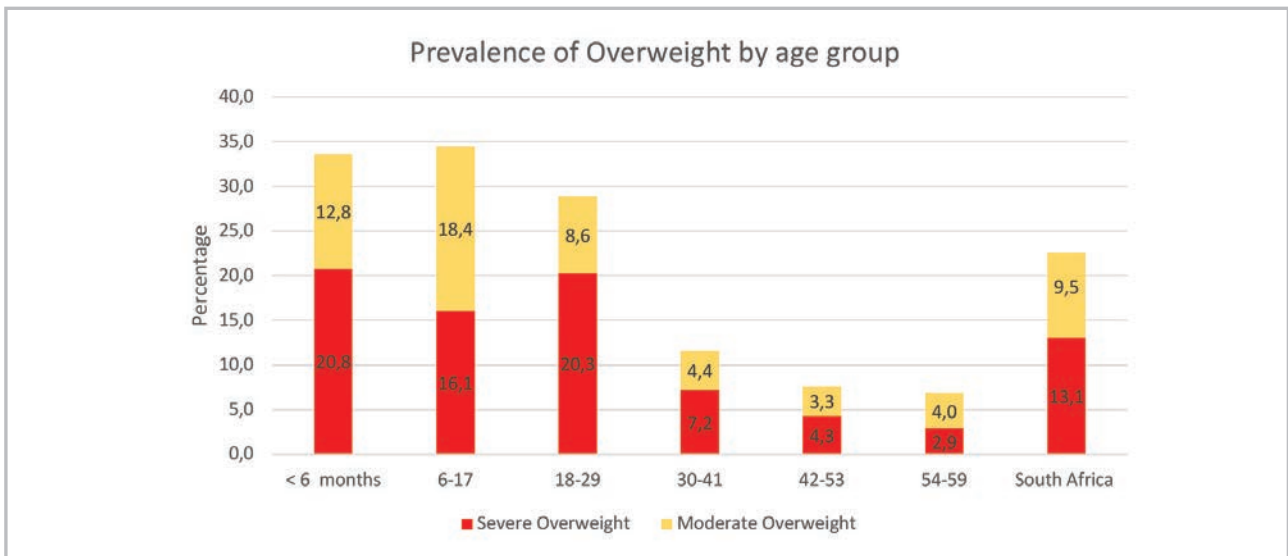


Figure 67: The prevalence of Overweight in children under 5 years disaggregated by age group in South Africa

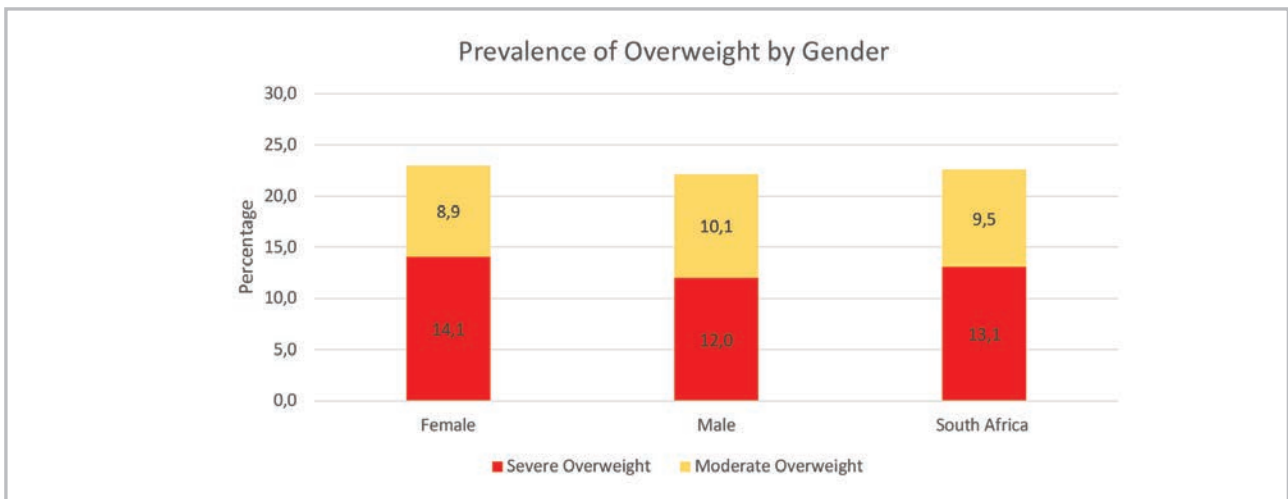


Figure 68: The prevalence of Overweight in children under 5 years disaggregated by gender in South Africa

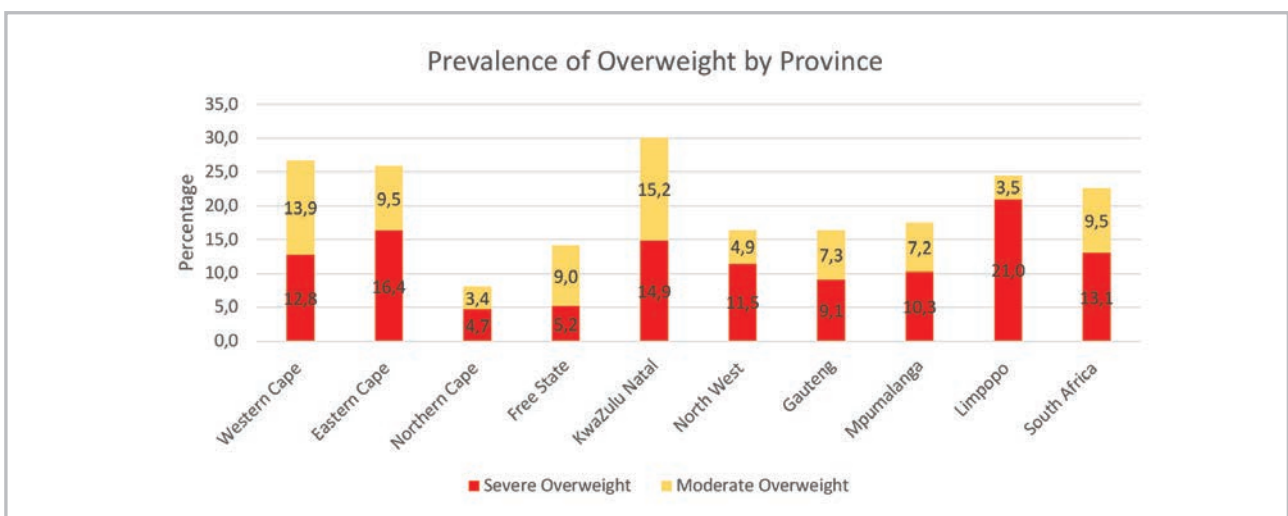


Figure 69: The prevalence of Overweight in children under 5 years disaggregated by province in South Africa

8.2 Anthropometry (18 years and older)

8.2.1 Body Mass Index (BMI)

The mean BMI for adults aged 18 years and older (n=30 136) in South Africa was 27.6 kg/m². This was significantly different between males (24.4 kg/m²; 95% CI 23.9-24.8) and females (29.4 kg/m²; 95% CI 29.0-29.8). There were also significant differences in mean BMI between individuals of different age groups, with those aged 45-54 years and 55-64 years having a significantly higher mean BMI (30.5 kg/m² and 30.4kg/m², respectively) than those aged 18-44 years of age (range 24.1-29.0 kg/m²). Furthermore, those aged >=65 years, also had a significantly higher mean BMI (28.9 kg/m²) compared to those aged 18-24 years (24.1 kg/m²). At a provincial level, the mean BMI in KwaZulu-Natal was significantly higher (29.2 kg/m²) compared to the other provinces (range 25.7-27.5 kg/m²), except for the Western Cape Province (27.9 kg/m²). Mean BMI in the Western Cape was also significantly higher than in the Northern Cape (25.7 kg/m²). Overall, 57.4% were classified as either overweight (25.3%) or obese (32.1%). Slightly more than one third (36.7%) were classified as normal weight, while 6.0% were classified as underweight (Figure 70).

When disaggregating by gender (Females n=19 982, Males n=10 099), the proportion of both overweight (26.6% vs 22.9%) and obesity (41.3% vs 15.3%) was higher in females than in males, respectively (Figure 70). While this was not significant for overweight, it was significantly different for obesity, with nearly three times more females being obese compared to males. Overall, nearly twice the number (67.9%) of females in South Africa were either overweight or obese compared to males (38.2%). Conversely, the prevalence of underweight in females (4.2%) was significantly lower, at about half that in males (9.2%). The prevalence of normal weight in females (27.8%) was significantly lower, at about half that in males (52.7%).

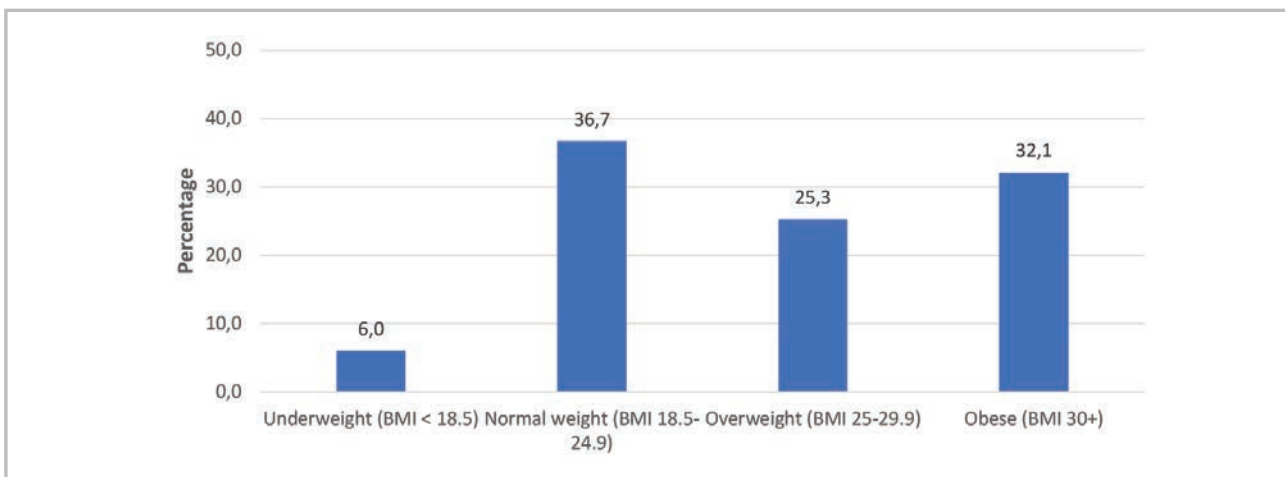


Figure 70: Distribution of BMI in adults aged 18 years and older across all provinces in South Africa

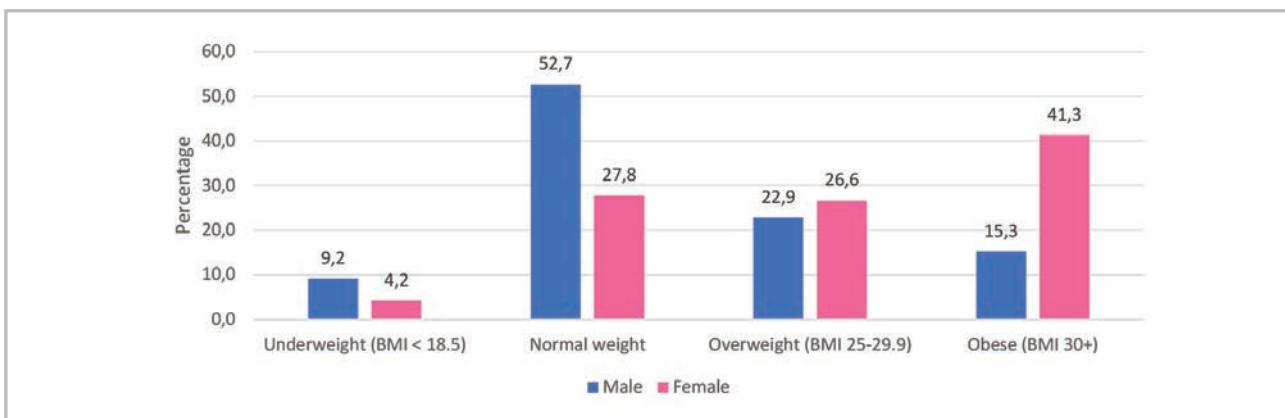


Figure 71: Distribution of BMI in adults aged 18 years and older by gender in South Africa

When disaggregating the overall adult population by age, those aged 55-64 years had the highest prevalence of overweight (28.6%), and the highest prevalence of obesity (48.9%) (Figure 72). While there were no significant differences in the prevalence of overweight, the prevalence of obesity was significantly higher in the older age groups (35-64 years) (range 39.1%-48.9%) compared to the younger age groups (range 13.8%-29.9%). Furthermore, the prevalence of obesity was significantly lower in those aged 18-24 years (13.8%) compared to all other age groups. Underweight was significantly higher in the 18-24 year age group (10.5%) compared to all other age groups (range 3.5%-5.4%). The same pattern was noted for normal weight.

Figure 73 compares BMI differences by age group between males and females. These figures clearly illustrate that obesity is higher in females (range 20.8%-56.4%) than males (range 3.7%-35.6%) 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 (20.8%) compared to those in all other age groups (range: 39.9%-56.4%). Those aged 25-34 years also had a significantly lower prevalence of obesity (39.9%) compared to those aged 35-64 years (range: 49.0-56.4%); while in males, those aged 18-24 years had a significantly lower prevalence (3.7%) compared to all those aged 25 years and older (range: 12.1% - 35.6%). Furthermore, males aged 25-34 years also had a lower prevalence (12.1%) compared to those aged 45-54 years (24.8%) and 65 years and older (26.8%).

The prevalence of overweight in females was highest in those aged 65 years and older (30.1%) and lowest in the 45-54 year old group (24.0%); however, there were no significant differences across age groups for females. In males, those aged 55-64 years reported the highest prevalence of overweight (35.2%), while those aged 18-24 years reported the lowest prevalence (14.4%), though this was not significant. There was, however, a significant difference between those aged 18-24 years and those aged 25-34 years (27.1%).

The prevalence of underweight was lower in females (1.8%-8.0%) compared to males (4.2%-14.1%) across all age categories (Figure 23). In females, the 18-24 year age group (8.0%) had a significantly higher prevalence of underweight compared to the 35-44 year and 45-54 year age groups (2.6% and 1.8%, respectively). The 25-34 year age group (4.2%) also had a significantly higher prevalence of underweight compared to the 45-54 year age group (1.8%). In males, those aged 18-24 years (14.1%) had a significantly higher prevalence of underweight compared to those aged 25-34 years (7.5%) and those aged 55-64 years (4.2%).

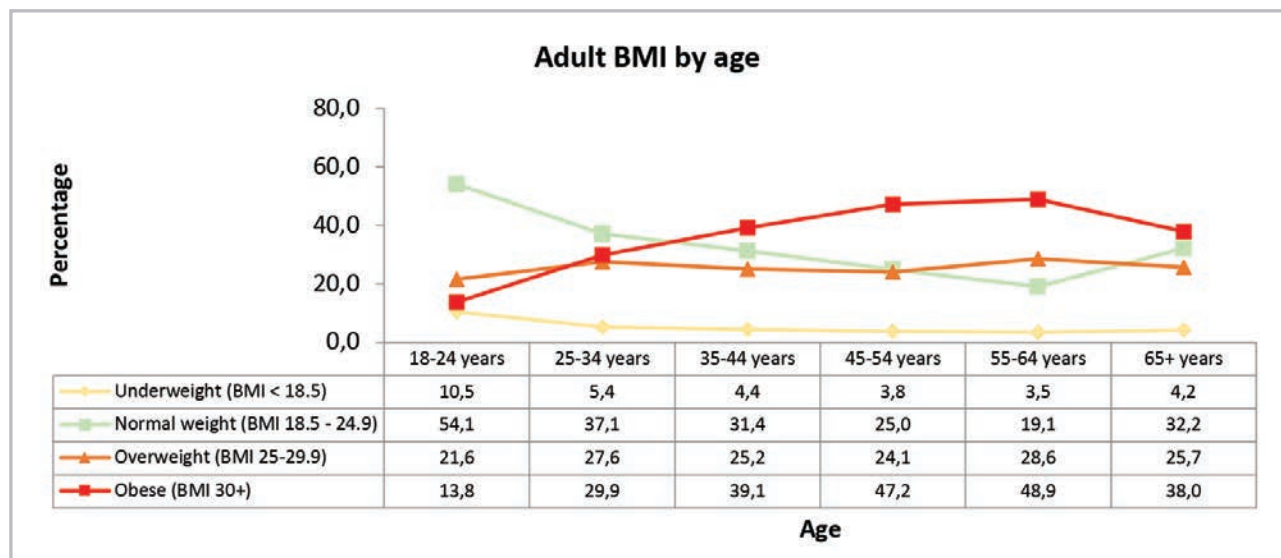


Figure 72: Distribution of BMI in adults aged 18 years and older by age categories in South Africa

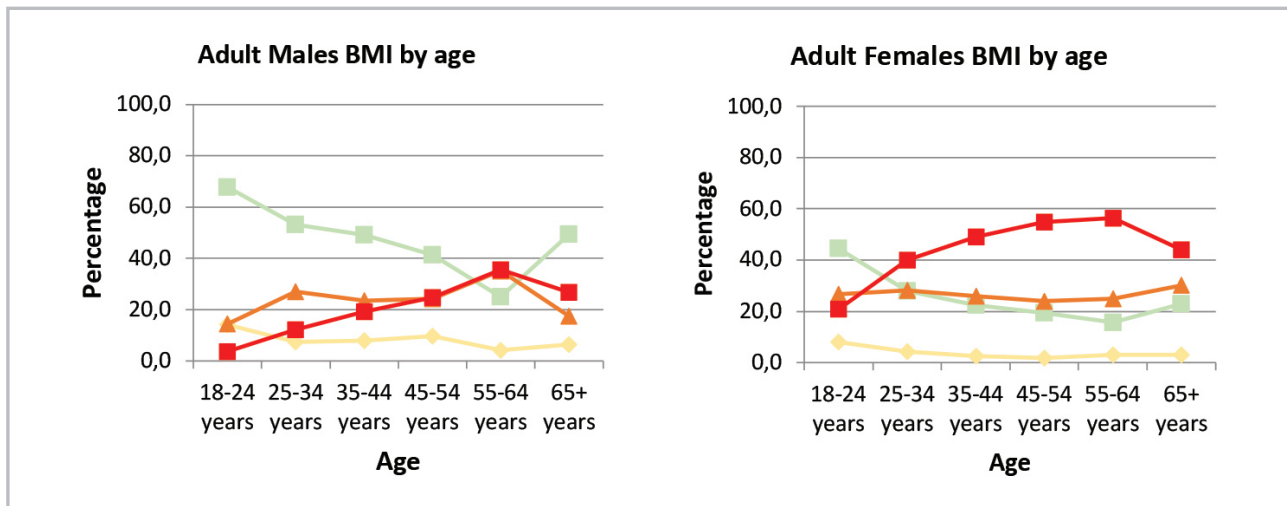


Figure 73: Comparison of the distribution of BMI in adults aged 18 years and older by age and gender in South Africa

When disaggregating the overall adult population by province, significant differences were noted for all BMI categories (Figure 74). KwaZulu-Natal reported a significantly higher prevalence of obesity (39.4%) compared to the Northern Cape, Free State, North West, and Mpumalanga provinces (26.9%, 27.4%, 25.2%, and 30.5%, respectively). Gauteng recorded a significantly higher prevalence of overweight (28.5%), compared to the Northern Cape (16.8%) and North West provinces (18.6%). The proportion in the Northern Cape Province was also significantly lower compared to the Western Cape (28.8%) and the Eastern Cape (25.6%). The proportion of underweight in the Northern Cape (20.7%) was significantly higher than all the other provinces (range 3.0%-8.0%) except the Free State (12.5%) and the North West (10.7%). Furthermore, the prevalence of underweight in the Free State (12.5%) was significantly higher compared to the Western Cape, KwaZulu-Natal, Gauteng, and Mpumalanga provinces (3.8%, 4.0%, 3.0% and 5.2%, respectively).

The prevalence of obesity was higher in females (range: 35.5%-51.9%) than males (range (6.9%-20.8%) across all provinces (Figure 88). In females, KwaZulu-Natal reported a significantly higher prevalence of obesity (51.9%) compared to all other provinces (range: 35.5%-41.1%) except Western Cape (40.4%) and Limpopo (41.5%). In males, the Western Cape Province reported a significantly higher prevalence of obesity (20.8%) compared to the Free State (6.9%), North West (7.4%), and Limpopo (9.5%). Furthermore, the Free State reported a significantly lower prevalence of obesity compared to the Eastern Cape (16.4%) and KwaZulu-Natal (15.0%).

Females in Gauteng (28.9%) and the Eastern Cape (27.5%) had a significantly higher prevalence of overweight compared to those in the Northern Cape (18.3%). While males in the Western Cape reported the highest prevalence of overweight (32.2%), this was not significant compared to other provinces. However, males in Gauteng Province (28.4%) had a significantly higher prevalence of overweight compared to males in Limpopo Province (13.1%).

The prevalence of underweight was higher in males (range: 5.4%-30.6%) than females (range (1.4%-15.3%) across all provinces. There were significant differences in underweight across provinces for both genders. In females, the Northern Cape had a significantly higher prevalence of underweight (15.3%) compared to 5 other provinces namely Gauteng, KZN, Western Cape, Mpumalanga and Limpopo (range: 1.4%-5.4%) respectively. Females in Gauteng also had a significantly lower prevalence of underweight (1.4%) compared to those in the Eastern Cape (7.9%), North West (8.4%), and Limpopo (5.4%). In males, those in the Northern Cape reported a significantly higher prevalence of underweight (30.6%) compared to all other provinces (range: 5.4%-11.6%) except Free State (21.6%) and North West (14.8%).

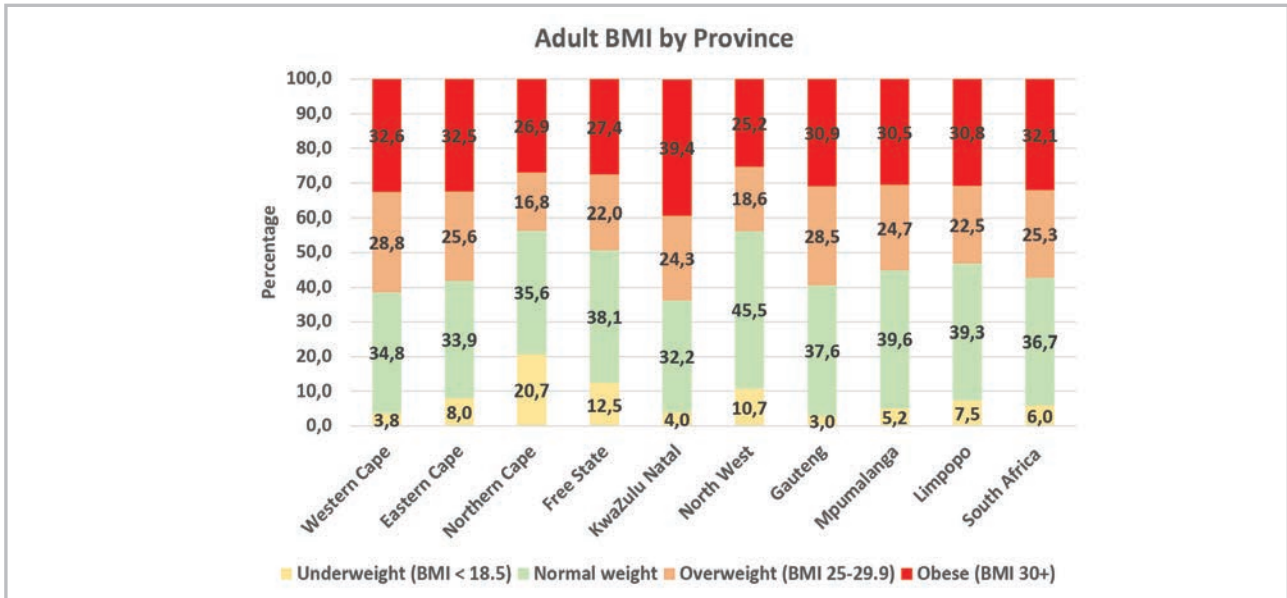


Figure 74: Comparison of the distribution of BMI in adults aged 18 years and older disaggregated by province in South Africa

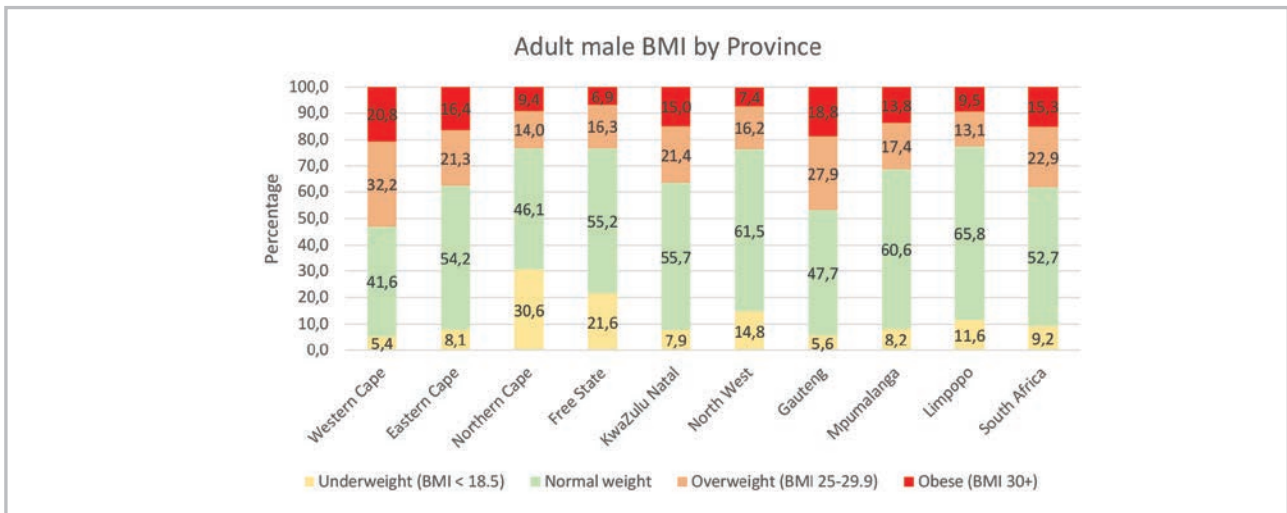


Figure 75: Comparison of the distribution of BMI in Male adults aged 18 years and older disaggregated by province and gender in South Africa

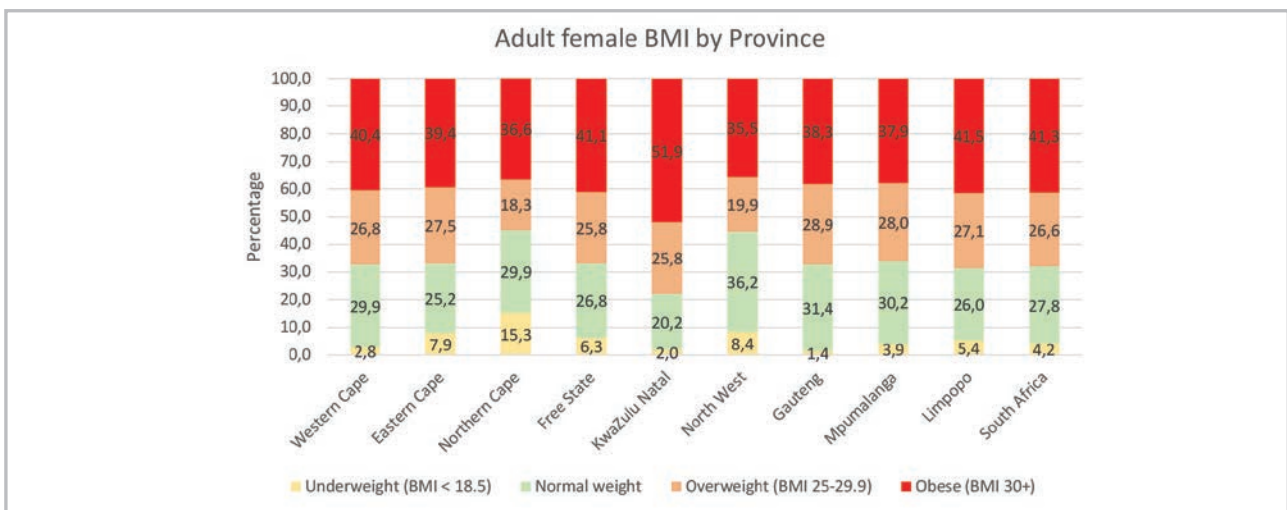


Figure 76: Comparison of the distribution of BMI in female adults aged 18 years and older disaggregated by province and gender in South Africa

8.2.2 Waist-Hip ratio

A waist-hip ratio (WHR) ≥ 1 in males and ≥ 0.85 in females is indicative of an increased risk of non-communicable diseases (NCDs) such as diabetes and hypertension, amongst other illnesses. The mean waist-hip ratio for males (n=10 238) and females (n=20 482) was

0.89 (range: 0.83-0.96) and 0.85 (range: 0.81-0.90), respectively. However, Table 58 shows that overall, a far greater proportion of females (51.4%) had a high WHR compared to only 11.2% of males.

Table 58: Waist-hip ratio (WHR) of adults aged 18 years and older in South Africa disaggregated by gender, age, and province.

	Males					Females				
	Waist-hip ratio		Waist hip ratio ≥ 1		N	Waist-hip ratio		Waist hip ratio ≥ 0.85		n
	Mean	95% CI	%	95% CI		Mean	95% CI	%	95% CI	
Age group										
18-24	0.83	[0.81-0.85]	2.5	[1.5-4.2]	1,367	0.81	[0.80-0.82]	29.1	[22.8-36.4]	2,138
25-34	0.88	[0.86-0.90]	7.7	[5.2-11.2]	2,223	0.84	[0.83-0.85]	45.0	[40.8-49.2]	4,187
35-44	0.91	[0.90-0.92]	13.9	[10.5-18.1]	2,077	0.86	[0.85-0.87]	55.2	[51.0-59.3]	4,045
45-54	0.93	[0.92-0.94]	16.6	[11.9-22.8]	1,684	0.89	[0.87-0.90]	69.4	[60.5-77.0]	3,515
55-64	0.96	[0.93-0.99]	33.0	[12.1-63.7]	1,477	0.90	[0.89-0.91]	74.4	[69.2-79.0]	3,454
≥ 65	0.94	[0.93-0.96]	23.3	[17.5-30.3]	1,410	0.90	[0.89-0.91]	71.3	[66.8-75.5]	3,143
Province										
Western Cape	0.90	[0.87-0.94]	16.1	[9.8-25.4]	1,242	0.88	[0.87-0.89]	63.7	[56.7-70.2]	2,218
Eastern Cape	0.87	[0.86-0.88]	8.9	[7.1-11.1]	1,816	0.84	[0.83-0.85]	46.1	[40.9-51.4]	3,840
Northern Cape	0.89	[0.87-0.91]	11.0	[8.4-14.4]	1,110	0.86	[0.85-0.87]	48.6	[43.3-54.0]	2,096
Free State	0.87	[0.85-0.89]	6.8	[3.8-11.8]	966.0	0.85	[0.84-0.86]	44.3	[39.7-49.0]	1,702
KwaZulu-Natal	0.87	[0.85-0.88]	6.0	[4.1-8.8]	2,236	0.85	[0.84-0.85]	50.2	[44.4-55.9]	5,231
North West	0.90	[0.83-0.97]	6.9	[4.2-11.2]	651.0	0.85	[0.84-0.87]	45.0	[37.5-52.7]	1,181
Gauteng	0.90	[0.88-0.93]	17.0	[8.3-31.5]	1,264	0.85	[0.84-0.85]	47.0	[42.7-51.4]	1,967
Mpumalanga	0.86	[0.85-0.88]	6.4	[4.0-10.3]	427.0	0.85	[0.83-0.86]	45.5	[38.5-52.7]	884.0
Limpopo	0.87	[0.85-0.89]	8.4	[5.8-11.9]	526.0	0.88	[0.87-0.90]	65.9	[55.4-75.1]	1,363
Total	0.89	[0.88-0.90]	11.2	[8.2-15.2]	10,238	0.85	[0.85-0.86]	51.4	[48.7-54.0]	20,482

Table 58 and Figure 77 illustrate that WHR tends to increase with age in males and females, peaking in the 55-64 and older age group. There were significant differences between age groups in both females and males. Amongst males, those aged 18-24 years had a significantly lower prevalence of an increased WHR (2.5%) compared to all other age groups (range 7.7%-33.0%). Furthermore, males aged 25-34 (7.7%) also had a significantly lower prevalence compared to the 45 years and older age groups (range 16.6-33.0%). Similar results were observed in females, where those aged 18-24 years had a significantly lower prevalence of an increased WHR (29.1%) compared to those aged 25 years and older (range 45.0%-74.4%). Furthermore, in females, those aged 25-34% also had a significantly lower prevalence (45.0%) compared to those aged 35 years and older (range 55.2%-74.4%).

At a provincial level, there was no significant difference in mean WHR for males; however, there was a significant difference in females, where the Western Cape and Limpopo had significantly higher mean WHR (0.88) compared to 5 other provinces (range: 0.84-0.85) Table 57.

With regards to the proportion of males who had a high WHR, those in the Western Cape reported a significantly higher prevalence (16.1%), compared to KwaZulu-Natal (6.0%). As for females, those in the Western Cape (63.7%) had a significantly higher prevalence than those in all other provinces (range: 44.3% - 50.2%), except Limpopo (65.9%) (Table 58 and Figure 78).

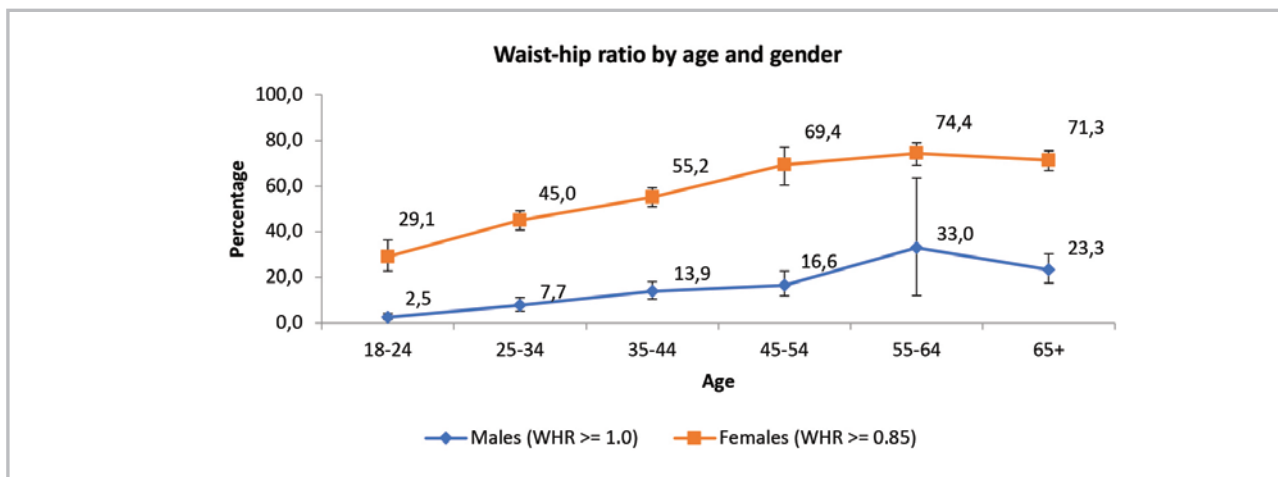


Figure 77: Comparison of the distribution of WHR in adults aged 18 years and older disaggregated by age and gender in South Africa

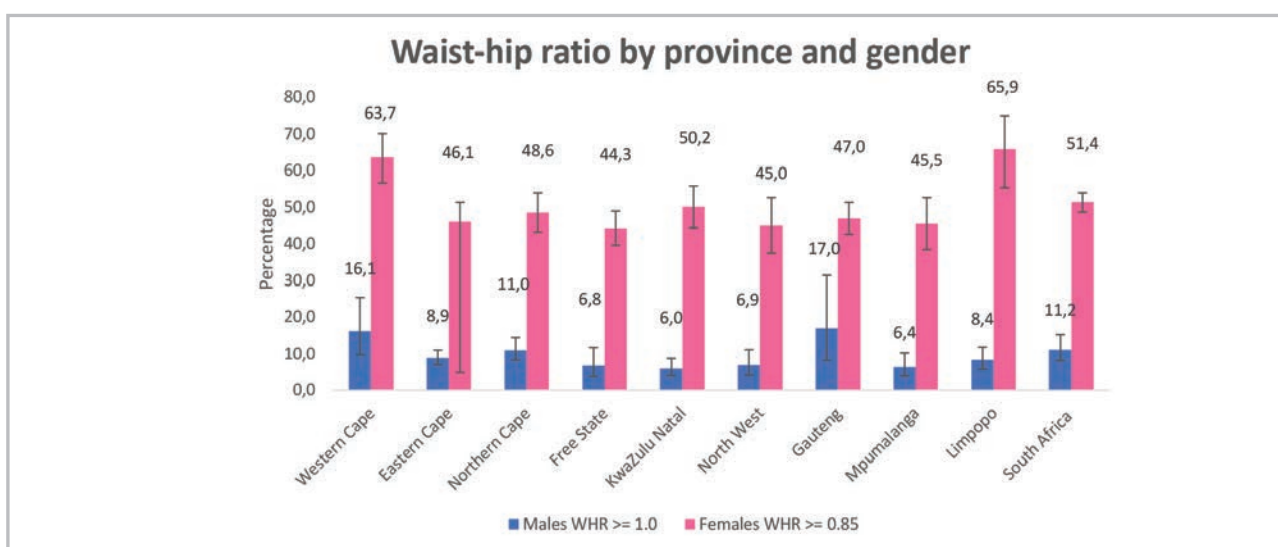


Figure 78: Comparison of the distribution of WHR in adults aged 18 years and older disaggregated by province and gender in South Africa

8.3 Individual Dietary Diversity

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

In this survey, adult participants and caregivers of children aged 6 months-5 years were asked to recall all foods and drinks they or their child had consumed the previous day. These food items were then allocated to specific food groups. A dietary diversity score (DDS) was calculated by summing the number of food groups from which food had been consumed. The nine food groups were: cereals, roots and tubers; Vitamin A rich vegetables and fruit; vegetables other than Vitamin A-rich; fruit other than Vitamin A-rich fruit; meat, poultry, and fish; eggs; legumes; dairy products; and foods made with fats or oils. Each food group was counted only once. A DDS below four is low and to be associated with dietary inadequacies (Steyn et al., 2006) "type": "article-journal", "volume": "9", "uris": [{"http://www.mendeley.com/documents/?uuid=20e4e06d-21e6-4dac-8bb2-dd95d2b2672c"}], "mendeley": {"formattedCitation": "(Steyn et al., 2006).

The mean dietary diversity score (DDS) for children and adults combined (n=38 775) was 5.00, which is indicative of an adequate dietary diversity at a national level (Table 59). Table 59 also shows that the DDS was 4.00 or greater in all provinces, indicating that adults and children in all provinces have an adequate dietary

diversity. Provincial comparisons showed that the Western Cape and Gauteng had the highest mean DDS (5.37 and 5.32, respectively) and Free State had the lowest (4.01) mean DDS. Free State, in fact, had a significantly lower mean DDS compared to the other provinces (range: 4.24-5.37).

Overall, nearly three quarters (73.4%) of people reported that they had a moderate to high dietary diversity, with slightly more than one quarter (26.6%) reporting a low dietary diversity (Figure 79). KwaZulu-Natal and Gauteng reported the highest prevalence of moderate to high dietary diversity (81.0% and 79.2%, respectively), which was significantly higher than that reported in the Eastern Cape (63.9%), Northern Cape (57.8%), Free State (50.7%), and North West (60.9%).

The Free State Province reported the highest prevalence of low dietary diversity (49.3%), which is nearly half the population in the province. This was significantly higher than that reported in the Western Cape (24.5%), Eastern Cape (36.1%), KwaZulu-Natal (19.0%), Gauteng (20.8%), and Mpumalanga (30.0%).

Table 59: Dietary diversity scores for all people aged 0-5 years and 18 years and older in South Africa

Province	Dietary Diversity Score		Dietary Diversity Score category				n
	Mean	95% CI	0-3		4-9		
			%	95% CI	%	95% CI	
Western Cape	5.37	[4.93-5.81]	24.5	[18.5-31.8]	75.5	[68.2-81.5]	4,767
Eastern Cape	4.71	[4.43-4.98]	36.1	[32.2-40.1]	63.9	[59.9-67.8]	7,452
Northern Cape	4.24	[3.89-4.59]	42.2	[35.5-49.1]	57.8	[50.9-64.5]	4,176
Free State	4.01	[3.79-4.23]	49.3	[44.2-54.4]	50.7	[45.6-55.8]	3,531
KwaZulu-Natal	5.08	[4.85-5.32]	19.0	[15.9-22.4]	81.0	[77.6-84.1]	11,175
North West	4.29	[4.00-4.58]	39.1	[32.2-46.5]	60.9	[53.5-67.8]	2,185
Gauteng	5.32	[5.05-5.58]	20.8	[16.8-25.5]	79.2	[74.5-83.2]	4,646
Mpumalanga	4.85	[4.44-5.27]	30.0	[21.7-39.8]	70.0	[60.2-78.3]	429
Limpopo	4.27	[3.95-4.58]	32.5	[21.4-46.0]	67.5	[54.0-78.6]	414
Total	5.00	[4.87-5.13]	26.6	[24.5-28.9]	73.4	[71.1-75.5]	38,775

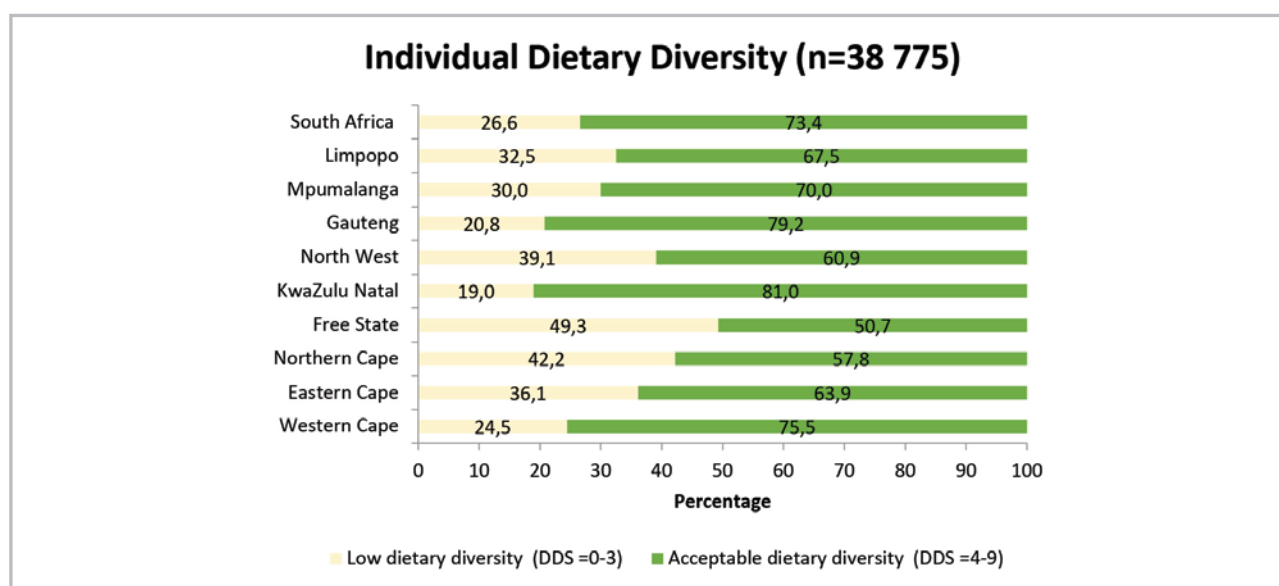


Figure 79: Provincial comparison of the distribution of DDS of people in South Africa

8.4 Relationship of Household Food Insecurity and Malnutrition in South Africa

Table 60 presents the associations between nutrition indicators and food security status, based on the Household Food Insecurity Access Scale (HFIAS). It shows the extent to which household food security status can predict malnutrition among household members for children (0-5 years) and adults. Nationally, there was no significant relationships between food security and two of the nutrition indicators (wasting and overweight) for children aged 0-5 years. The relationship between food security and stunting as well as underweight was, however, significant. The table shows that the prevalence of household food insecurity was higher among households that had at least one child under 5 years who was stunted (83.3%), than among households that did not have a child under 5 years who was stunted (77.6%) ($p < 0.01$). Furthermore, the table shows that the prevalence of household food insecurity was higher among households that had at least one child under 5 years who was underweight (84.0%) than among households that did not have a child under 5 years who was stunted (78.8%) ($p < 0.10$).

Table 60: Relationship between household food insecurity and malnutrition indicators in South Africa

Nutrition indicators	Categories	Food security status (%)		Chi-square tests
		Food secure	Food insecure	
0-5 years				
Stunting	Yes	16.7	83.3	+ ***
	No	22.4	77.6	
Wasting	Yes	19.5	80.5	
	No	20.6	79.4	
Underweight	Yes	16.00	84.0	+ *
	No	21.2	78.8	
Overweight	Yes	20.6	79.4	
	No	20.5	79.5	
Adults				
Underweight	Yes	19.7	80.3	+ ***
	No	32.8	67.2	
Obesity / Overweight	Yes	32.4	67.6	
	No	31.1	68.9	
Increase risk of NCDs (Waist / hip ratio)	Yes	29.0	71.0	+ ***
	No	34.0	66.0	

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

For adults, there was no significant relationship between household food security and obesity and overweight. There were, however, significant relationships between food security and two 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 (80.3%) than among households that did not have an underweight adult (67.2%) ($p < 0.01$). Similarly, the prevalence of food insecurity was significantly higher (71.1%) in households that had at least one person with an elevated waist-hip ratio (WHR) (71.0%) than among households that did not have a person with an elevated waist-hip ratio (66.0%) ($p < 0.01$). 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.

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 is a key focus area of infant and young children feeding for the Integrated Nutrition Programme of the Department of Health.

The results of this study indicate that 82.9% of children under two years were breastfed at some point in their lives, which is similar to the national results reported in the SADHS in 2016 (84%).

Furthermore, the results of this study indicated that nearly 78.0% of children aged 0-2 years in South Africa were introduced to breastfeeding immediately after birth, with a total of 89.3% being breastfed within an hour of birth. These results are slightly 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 South Africa was reported to be 22.2%, which is far higher than the national reports in the 2003 SADHS (8.3%) and SANHANES 2012 (7.5%) and more in line with 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 6.6 months, which is more in line with what the SANHANES reported, compared to the SADHS.

Overall, the first drink other than breastmilk was mainly introduced at 0-1 months. This occurred in about half (49.5%) of children. It can be assumed that this is most likely the introduction of infant formula, for mothers who may be unable to breastfeed. Between 2-3 months, other drinks were introduced in a further 21.6% of children. About one fifth of children (20.8%) were first introduced to other drinks at the age of 6 months/older. With regards to the type of drink that was first introduced, nearly half (46.0%) indicated infant formula, while 21.5% indicated plain water.

After 6 months, infants should be introduced to solid foods, as breastmilk is no longer sufficient to meet the nutritional requirements. However, the result of this study indicates that complementary feeding is initiated slightly earlier than the anticipated 6 months - at 4.9 months. This is similar to the results of the SANHANES 2012 (4.5 months). The most common food introduced is commercial cereal/ porridge (47.1%) and homemade cereal/ porridge (33.7%), and pureed/mashed vegetables/ fruit (6.3%).

Anthropometry (0-5 years)

In 2012, the SANHANES reported a national stunting prevalence of 28.6% in children 0-5 years. Four years later, in 2016, the SADHS reported a slightly lower stunting prevalence (27.0%) at the national level. The results of the current study appear to indicate that the stunting prevalence in South Africa is similar to the SANHANES prevalence, with a current prevalence of 28.8% in children of the same age group. These results indicate that stunting has remained the same over the last 10 years, and as such, the proportion of children experiencing chronic undernutrition in 2021 has remained unchanged. The SADHS reported that stunting was more prevalent nationally in the age group 18-23 months. The results of this national analysis corroborates this, as children aged 18-29 months had the highest prevalence of stunting. Furthermore, the SANHANES and SADHS has reported that stunting is more prevalent in male children than female children, at a national level. These results are also corroborated, where 33.2% of males are stunted compared to 24.7% of females. At a provincial level, the current study reported that stunting is more prevalent in the Western Cape and the Northern Cape provinces, which was significantly higher than provinces such as Gauteng, Mpumalanga, and Limpopo.

The national prevalence of wasting was reported to be 3.7% in 2012 (SANHANES). In 2016 similar national results were presented in the SADHS (3.0%). The current study has reported a slightly higher national prevalence of 5.3%, thereby indicating that the proportion of children experiencing acute undernutrition in 2021 has increased slightly over the past 10 years. It also appears that those aged 54-59 months, as well as males, experience a higher prevalence of wasting than their counterparts. At a provincial level, the current study reported that wasting is more prevalent in the Northern Cape (23.8%), compared to other provinces (range 2.1% to 7.4%).

The national prevalence of underweight in the current study was reported to be 7.7%. A slightly lower prevalence was reported at the national level in 2012 (6.8%) and 2016 (6%). This implies that the proportion of children that were underweight has increased slightly over the last 10 years. At a provincial level, the Northern Cape reported the highest prevalence (27.6%) compared to other provinces (range: 4.4%-14.4%).

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 higher prevalence (22.6%) of children were overweight and that females had a higher prevalence of being overweight than males, though the differences between genders were not significant.

The above trends across time seem to indicate that over the last 10 years, chronic undernutrition has remained relatively unchanged, however, acute undernutrition as well as overnutrition has increased.

At a provincial level, it appears as if KwaZulu Natal, Western Cape and Eastern Cape have the lowest cases of acute undernutrition (wasting and underweight). While, the Northern Cape, North West and Free State have the highest cases of both acute and chronic undernutrition (stunting and underweight). The Western Cape has reported a much higher prevalence of stunting compared to other studies in the province. However, the data has been interrogated and confirmed as correct. The authors recommend further exploration of the indicator results to ascertain reasons for the possible deviation from the usual trend.

Anthropometry (18 years and older)

At a national level, the mean BMI in females were reported to be 28.9 kg/m² in 2012 and 29.2 kg/m² in 2016. For males, there was no change in mean BMI between 2012 and 2016 as both the SANHANES and the SADHS reported a mean BMI of 23.6 kg/m². The current study also reported similar results for females (29.4 kg/m²) and slightly higher results for males (24.4 kg/m²) at a national level.

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. Ten years later, the results of this study report a similar national prevalence of overweight and obesity among females (67.9%) and a higher prevalence in males (38.2%) compared to the SADHS.

The current study also reported a higher proportion of females (51.4%) and males (11.2%) regarding a waist-hip ratio larger than 0.85 and 1.0, respectively, compared to previous studies. SANHANES reported 47.1% for females and 6.8% for males at a national level.

Dietary Diversity

A diet that is sufficiently diverse reflects nutrient adequacy. This is because no single food contains all the required nutrients for optimal health. Consequently, the more food groups included in a daily diet, the greater the likelihood of meeting nutrient requirements (Kennedy, 2009). Monotonous diets, based mainly on starches such as maize, rice and bread, have been closely associated with food insecurity. Dietary diversity is an outcome measure of food security at the individual or household level (Kennedy, 2009). Apart from reflecting on food security, a low DDS has also been associated with low weight and stunted growth (Rah et al., 2010), as well as other health issues. In this survey, the combined mean dietary diversity score of all those aged 0-5 years and those aged 18 years and older was 5.00; with 26.6% of the population having a score of less than four.

The mean DDS in this study was slightly higher than the NFCS in 2009 (4.02), and the SANHANES in 2012 (4.2). 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%).

9.1 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 61). Most household heads reported having experienced coughs/ colds/ chest infections at 29.2%, followed by headaches (15.2%), fever/ malaria (11.7%), hypertension (9.9%), and diabetes (6.0%) in that order. Cough/ cold/ chest infections accounted for 27.3% of household members, followed by fever/ malaria and headache with 11.2% and 9.8%, 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, for example, require specific diets as part of managing them and it is important that such households have access to diverse food stuffs including medically prescribed diets.

Table 61: Disease experienced by household heads and members a year prior to the survey

Disease	Household heads		Household members	
	n	%	n	%
Cough/cold/chest infection	9,680	29.2	33,857	27.3
Headache	4,459	15.2	12,115	9.8
Fever/malaria	3,682	11.7	12,972	11.2
Hypertension	6,386	9.9	9,390	3.9
Diabetes	3,564	6.0	5,101	2.6
Other disease	2,537	5.0	5,031	3.1
Abdominal pains	2,138	4.7	4,026	2.4
Toothache or mouth infection	1,559	3.9	3,694	2.5
HIV/AIDS	1,918	3.7	3,753	2.0
Eye infection	1,678	3.4	3,087	1.9
Diarrhoea	862	2.9	2,944	2.7
Asthma	1,174	2.7	2,508	1.7
Vomiting	416	1.7	1,448	1.3
Skin rash	585	1.7	1,992	1.5
Paralysis	868	1.2	1,537	0.7
TB	591	1.0	1,095	0.6
Bronchitis/pneumonia/chest pain	354	0.7	656	0.4

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

The study found a low prevalence of chronic illness (a disease that lasts for more than 3 months) at both the household head (7.7%) and household member (4.2%) levels (Figure 80). 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 nutrition 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.

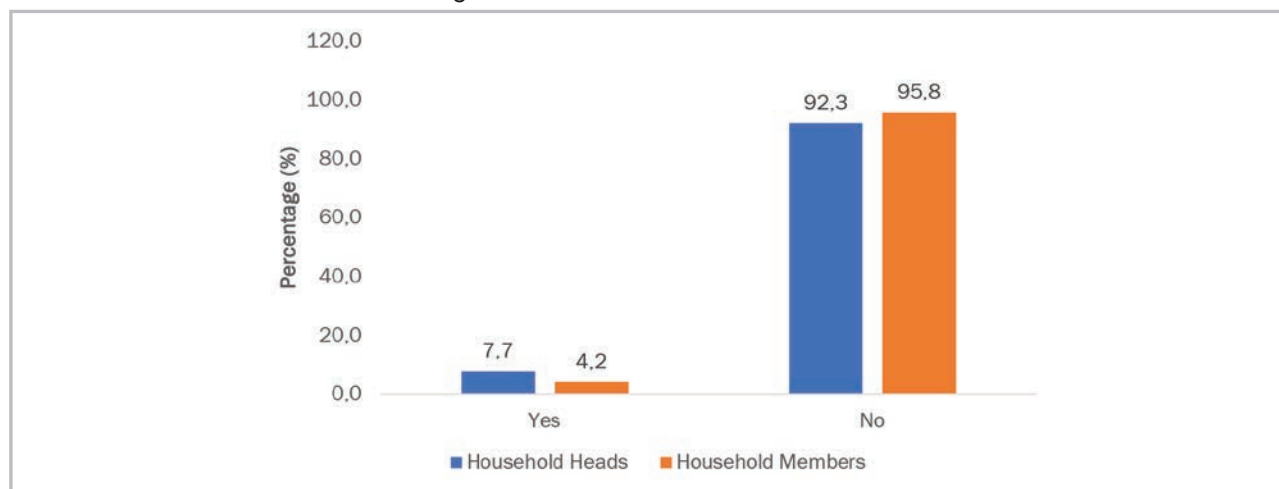


Figure 80: Household heads and members reported to having been continuously ill, for at least 3 months in the last 12 months prior to the survey

Table 62 highlights that the majority (54.4%) of household heads reported that their health status was good, followed by those who believed that their health status was very good or excellent, with 37.0%. Household heads who perceived their health status as poor or fair accounted for 8.6%. More female household heads (10.5%) reported poor or fair health status compared to their male counterparts, with 6.6%. Those aged 55 years and above reported significant levels of poor or fair health compared to those younger. The North West, Limpopo, and Mpumalanga had the highest percentage of household heads who perceived their general health status as poor or fair, with around 14%.

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

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Sex							
Male	6.6	[5.7-7.6]	54.7	[51.0-58.4]	38.7	[35.0-42.5]	15,673
Female	10.5	[9.3-11.9]	54.1	[50.5-57.7]	35.4	[32.0-39.0]	14,783
Total	8.6	[7.8-9.5]	54.4	[51.7-57.1]	37	[34.3-39.8]	30,456
Age group							
18-24	4.5	[2.8-7.0]	56.7	[49.1-64.0]	38.8	[31.8-46.4]	1,109
25-34	4.6	[3.6-6.0]	49.9	[46.0-53.8]	45.5	[41.4-49.6]	4,145
35-44	7.3	[5.9-9.0]	54.2	[50.9-57.6]	38.4	[35.1-41.9]	5,937
45-54	10.2	[8.6-12.1]	56.7	[53.0-60.4]	33.1	[29.2-37.1]	6,376
55-64	16.6	[14.6-18.9]	58.3	[55.0-61.5]	25.1	[22.3-28.1]	6,253
65+	25.6	[22.8-28.5]	54.2	[50.8-57.6]	20.2	[17.1-23.7]	6,617
Total	8.6	[7.8-9.5]	54.2	[51.6-56.9]	37.1	[34.4-39.9]	30,437

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Province							
Western Cape	4.9	[3.2-7.2]	56.8	[49.3-63.9]	38.4	[31.4-45.9]	3,626
Eastern Cape	10.7	[9.0-12.8]	55.5	[51.5-59.4]	33.8	[30.2-37.6]	5,555
Northern Cape	11.9	[9.7-14.5]	57.1	[47.6-66.2]	31.0	[21.6-42.3]	2,599
Free State	14.0	[10.6-18.4]	58.9	[53.4-64.1]	27.1	[22.6-32.0]	2,658
KwaZulu-Natal	5.8	[4.3-7.7]	59.0	[54.4-63.5]	35.2	[30.7-40.0]	7,813
North West	13.9	[11.1-17.2]	57.8	[49.9-65.3]	28.3	[21.8-36.0]	1,750
Gauteng	5.8	[4.6-7.4]	47.6	[40.9-54.5]	46.5	[39.5-53.7]	3,547
Mpumalanga	14.2	[10.8-18.5]	55.6	[49.5-61.5]	30.2	[25.5-35.3]	1,363
Limpopo	14.1	[10.5-18.6]	55.8	[46.4-64.7]	30.2	[23.3-38.0]	1,545
Total	8.6	[7.8-9.5]	54.4	[51.7-57.1]	37.0	[34.3-39.8]	30,456

A similar pattern was observed across household members by sex, age, and district (Table 63). Unsurprisingly, the elderly (55-64 years and 65 years and older) had the higher percentage of household members who were reported as having poor or fair health status, with 17.0% and 22.6% respectively. The North West Province had the highest percentage of household members who were reported as having poor or fair health status with 9.3%; while KwaZulu-Natal had the least in this category, with 2.5%. Limpopo Province recorded the highest proportion (46.6%) of household members who were reported as having very good or excellent health.

Table 63: Household members' reported perceived health status by sex, age, and province

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Sex							
Male	4.5	[3.7-5.3]	53.6	[51.2-55.9]	42	[39.4-44.5]	56,218
Female	5.5	[4.9-6.2]	54.5	[51.7-57.3]	40	[37.1-43.0]	66,523
Total	5	[4.4-5.7]	54.1	[51.7-56.5]	40.9	[38.4-43.5]	122,741
Age group							
0-14	2.5	[1.6-3.7]	53.3	[49.9-56.6]	44.3	[40.8-47.8]	35,310
15-24	2.7	[2.1-3.5]	53.9	[50.5-57.4]	43.3	[39.9-46.9]	22,293
25-34	4	[3.0-5.4]	52.7	[49.6-55.7]	43.3	[40.2-46.5]	19,410
35-44	7.1	[5.6-9.1]	54.8	[51.6-58.0]	38	[34.8-41.3]	14,655
45-54	9.7	[8.1-11.6]	59.2	[55.3-62.9]	31.1	[27.5-34.9]	11,022
55-64	17.0	[14.3-20.0]	59.9	[56.3-63.4]	23.2	[20.7-25.8]	9,193
65+	22.6	[19.9-25.5]	57.8	[53.6-61.8]	19.6	[16.4-23.3]	8,077
Total	5.1	[4.5-5.8]	54.3	[52.0-56.6]	40.6	[38.2-43.1]	119,960

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Province							
Western Cape	4.3	[2.8-6.5]	54.2	[47.1-61.1]	41.6	[34.2-49.3]	14,311
Eastern Cape	4.1	[3.3-5.1]	52.7	[47.9-57.5]	43.2	[38.0-48.5]	21,750
Northern Cape	7.4	[5.1-10.6]	53.8	[45.0-62.3]	38.9	[28.7-50.1]	11,226
Free State	7.5	[6.1-9.3]	61.6	[57.2-65.8]	30.8	[26.7-35.3]	9,385
KwaZulu-Natal	2.5	[2.0-3.2]	58.2	[53.2-63.1]	39.3	[34.4-44.4]	36,726
North West	9.3	[7.3-11.8]	61.3	[54.6-67.6]	29.4	[23.9-35.5]	7,422
Gauteng	4.6	[3.1-6.7]	49.5	[43.2-55.8]	45.9	[39.1-52.9]	11,938
Mpumalanga	7.3	[5.8-9.3]	54.2	[48.8-59.6]	38.4	[33.0-44.1]	6,088
Limpopo	8.2	[6.0-11.0]	45.2	[36.4-54.3]	46.6	[37.9-55.6]	7,571
Total	5.1	[4.5-5.8]	53.7	[51.3-56.1]	41.2	[38.6-43.7]	126,417

Figure 81 shows that Capricorn, Frances Baard, Ngaka Modiri Molema, Dr Kenneth Kaunda and Thabo Mofutsanyane districts were under the highest category (8.9% to 10.9%) of household members with reported poor or fair health status. Districts that fell under the lowest category (1.0% to 2.8%) were Central Karoo, Garden Route, Z F Mncawu, O.R. Tambo, Ugu, Harry Gwala, eThekweni, Umgungundlovu, King Cetshwayo, and Zululand.

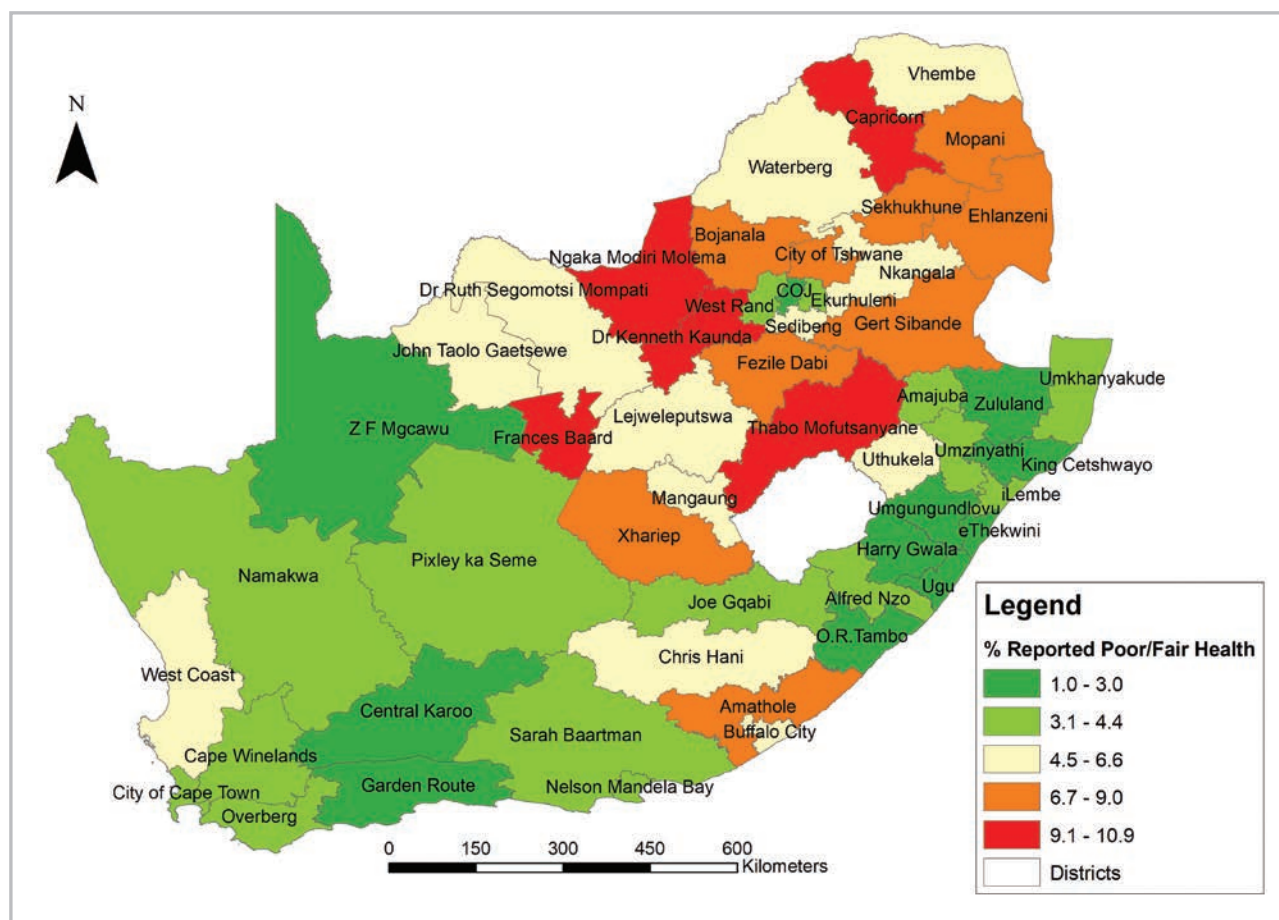


Figure 81: Household members reported perceived health status by districts

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

9.2.1 Drought and water shortage

Shocks due to floods were not commonly reported across the nine provinces. KZN had 40% of floods experienced in 2022. Over 80% of households in all nine provinces reported that they have not experienced floods (Figure 90), except for KZN which reported that 60% of the households experienced flooding. Very few households in South Africa reported having experienced flooding in the previous 12 months (note that the survey was conducted in 2022) (Figure 82).

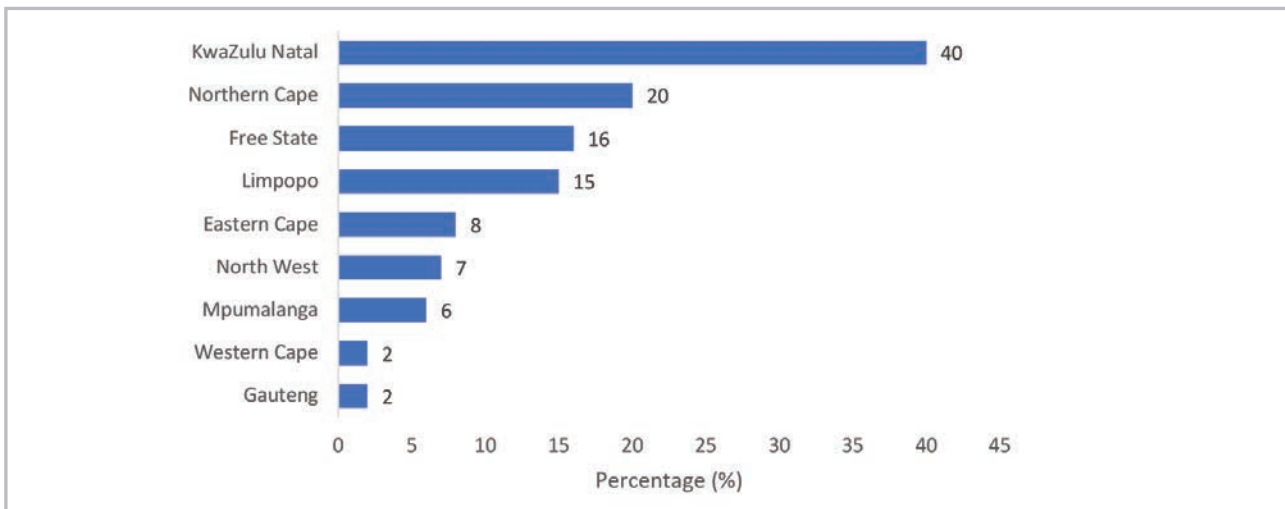


Figure 82: Households that experienced floods disaggregated by province in the last 12 months in South Africa

Overall, South Africa experiences inter-annual variation when it comes to drought. It experiences years with wet summers, neutral, and dry seasons as shown by the Figure 91 below, in which only a handful (less than 13% of provinces) have experienced drought shock during the study period. It should be noted that South Africa was generally experiencing severe drought and water shortages during the year 2019.

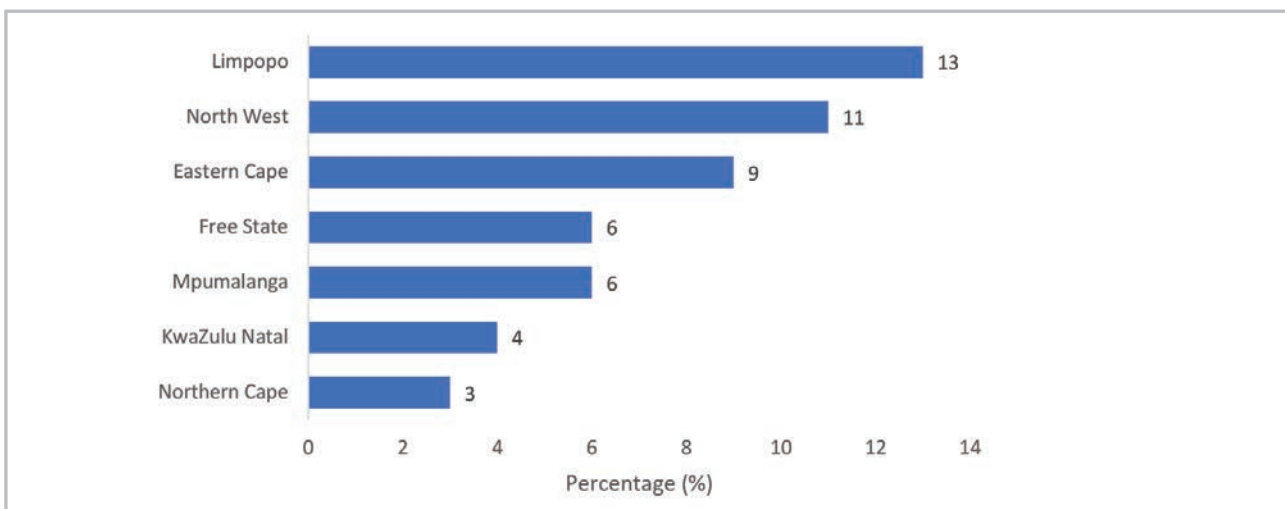


Figure 83: Households that experience drought shock disaggregated by province in the last 12 months in South Africa

Severe water shortage is one of the shocks that was reported in most of the provinces and was slightly more pronounced in Limpopo (36%) (Figure 84). However, severe water shortage was least reported in Gauteng (2%) (Figure 84).

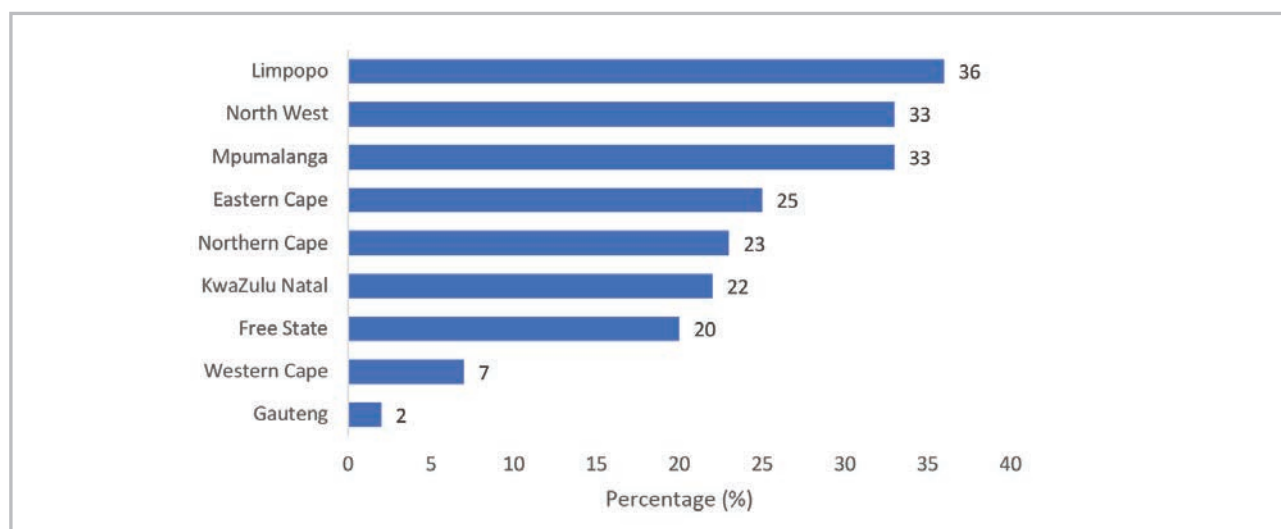


Figure 84: Households that experienced severe water shortage shock disaggregated by province in South Africa

9.2.2 Crop disease and crop failure

Crop failure and disease were highly reported across all provinces. Among other factors, this could be due to the reported lack of provision of extension services. The Northern Cape and Limpopo provinces were reported above 76% (Figure 85). However, the Western Cape reported low crop failure, and this could be explained by the low crop farming activities.

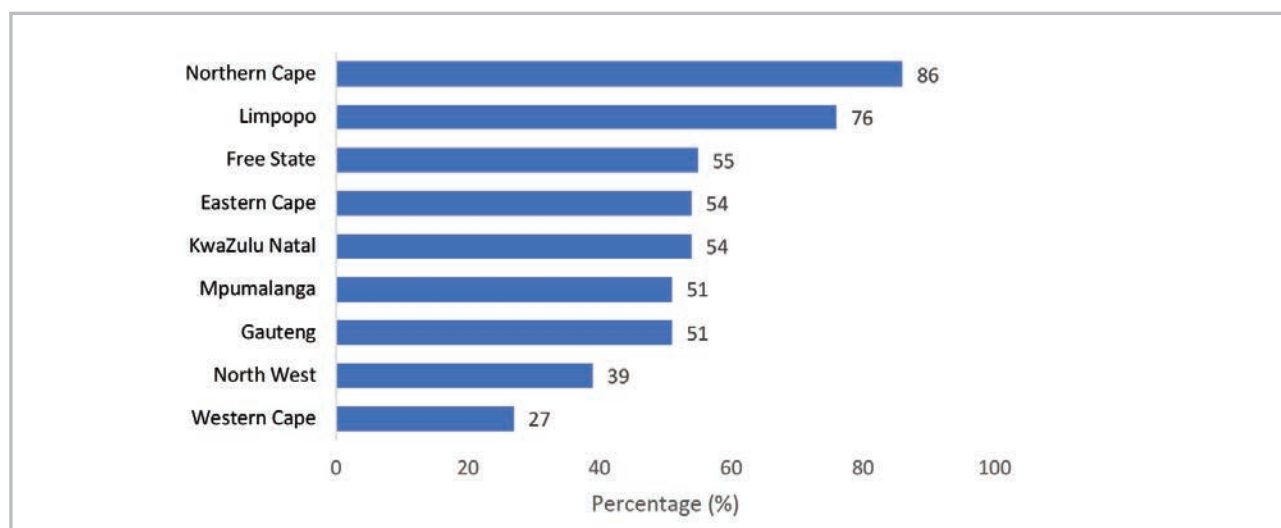


Figure 85: Households that experienced crop failure shock disaggregated by province in South Africa

High levels of crop diseases were reported in all the provinces and this could be explained by unfavourable weather and environmental conditions, and insect infestations experienced in some parts of the country (Figure 86).

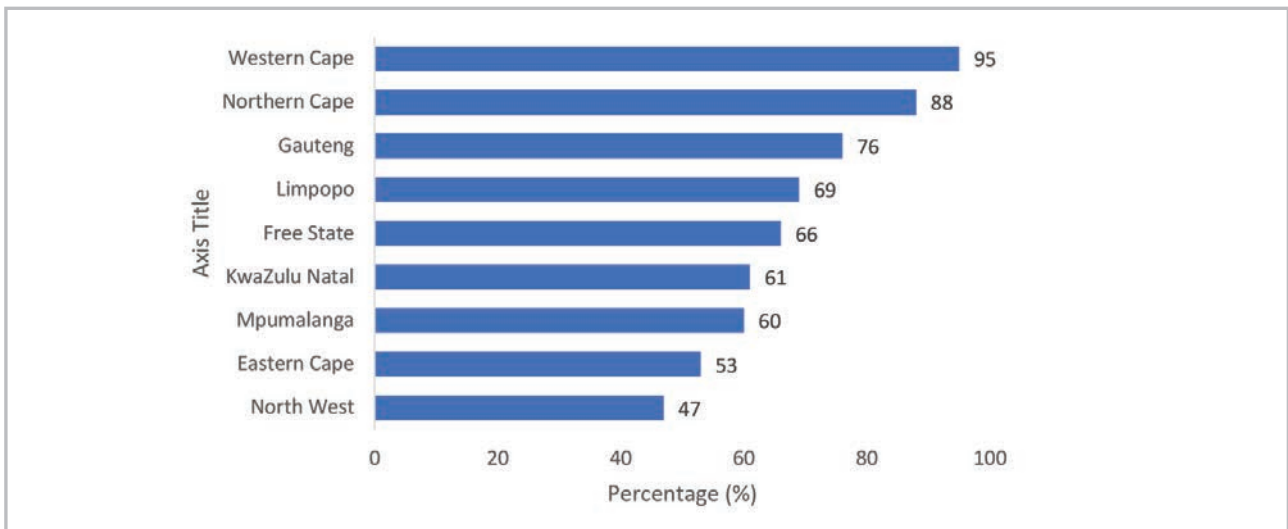


Figure 86: Households that experienced crop diseases shock disaggregated by province in South Africa

9.2.3 Increase in inputs and food Prices

The increase in food prices was the biggest shock experienced across all provinces. This is attributable to the idea that there was extremely limited food production globally, and shocks such as the Covid-19 pandemic would immediately trigger price increases since the supply chains were disrupted. The highest shocks were experienced in KZN, with 81% (Figure 87). This could be due to the socio-economic factors experienced in the previous year such as Covid-19 restrictions (lockdown), the 2021 July unrest, and floods.

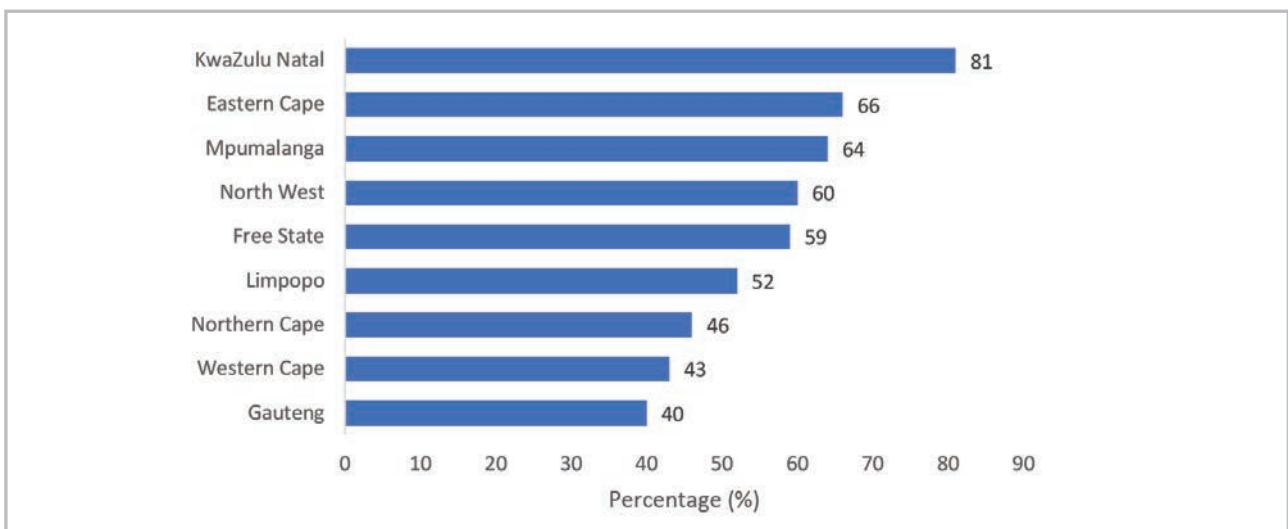


Figure 87: Households that experienced high food prices shock disaggregated by province in South Africa

The increase in input prices was highly reported in all provinces, with the Western Cape being the highest (Figure 88). The high number of households who reported to have felt the increase in input prices is directly 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 the food processing, hence this justifies the reported increases in food prices across provinces (Figure 88).

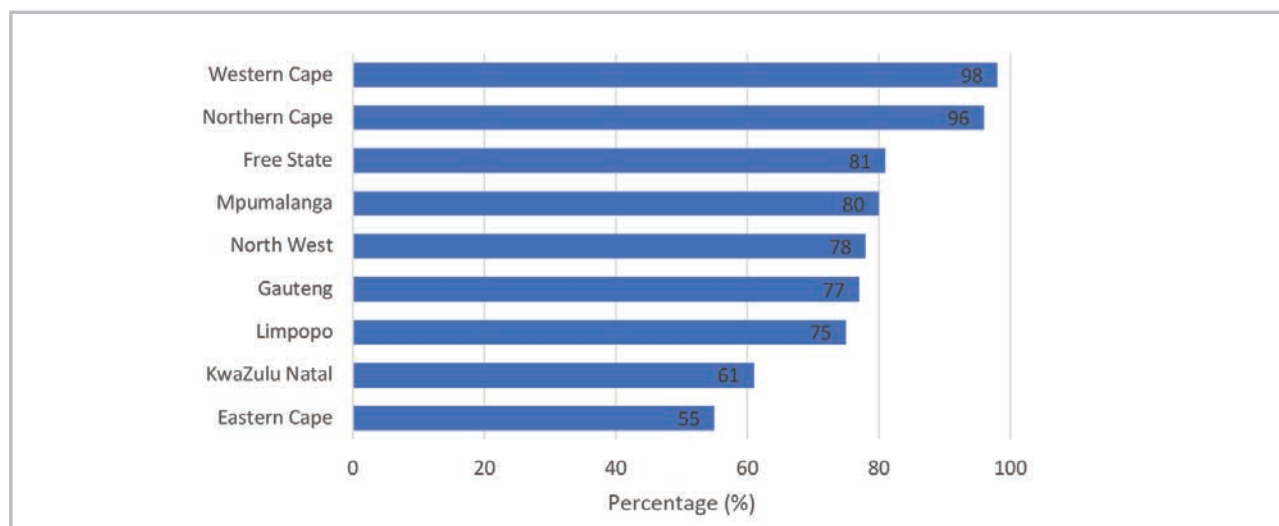


Figure 88: Households that experienced high input prices shock disaggregated by province in South Africa

9.2.4 Covid-19 shocks and associated coping strategies

The Covid-19 pandemic resulted in serious disruptions of food supply chains and production systems. The Northern Cape Province had the highest percentage (36.5 %) of households who were often worried about their food running out before they could get money to buy some more food. Gauteng Province had the lowest percentage (15.6%) of households who reported that their food often ran out and they did not have money to buy more (Table 67).

Table 67: Households that worried their food would run out before they got money to buy more disaggregated by province in South Africa

We worried our food would run out before we got money to buy more	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	29.3	993	13.6	910	12.2	546	22.7	670	18.8	1202	18.1	341	42.9	1157	24.6	337	23.4	346
Rarely	17.6	730	12.9	942	15.4	496	18.3	491	21.5	1581	15.2	292	17.6	770	19.6	243	8.3	191
Sometimes	33.3	1499	50.1	2766	35.8	1095	36.6	1071	36.6	3601	34.4	767	23.9	1186	36.0	645	38.0	754
Often	19.8	666	23.4	1450	36.5	918	22.4	671	23.2	2398	32.3	629	15.6	901	19.8	349	30.4	553

The Northern Cape Province had the highest percentage (32.2 %) of households whose food did not last, and households did not have money to get more. Gauteng had the lowest percentage (13.6%) of households whose food did not last and did not have money to get more (Tables 68).

Table 68: Households whose food did not last, and they did not have money to get more during Covid-19 pandemic in South Africa

The food that we bought just did not last, and we did not have money to get more	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	33.2	1123	16.1	1141	13.7	605	26.1	759	25.0	1466	20.0	393	47.7	1336	26.1	362	28.0	418
Rarely	18.4	735	15.5	1161	17.4	551	16.8	500	19.2	1643	16.2	340	17.5	777	20.3	270	9.9	229
Sometimes	29.3	1437	49.8	2670	36.7	1105	36.1	1053	35.2	3569	31.1	773	21.3	1149	34.3	607	35.9	726
Often	19.1	595	18.5	1100	32.2	794	21.0	589	20.6	2108	32.7	523	13.6	754	19.4	338	26.2	472

The Northern Cape Province had the highest percentage (35.1 %) of households who could not afford sufficient and nutritious food because the price of food increased. Gauteng had the lowest percentage (14.9%) of households who could not afford sufficient and nutritious food because the price of food increased (Tables 69).

Table 69: Households who could not afford sufficient and nutritious food because the price of food increased disaggregated by province in South Africa

We couldn't afford sufficient and nutritious food because the price of food increased	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	34.7	1121	15.2	1009	13.0	557	25.5	716	27.4	1464	23.4	377	47.0	1314	22.5	349	27.6	422
Rarely	16.7	727	15.5	1165	15.1	504	18.1	529	17.8	1569	13.3	318	15.7	731	23.4	266	16.7	260
Sometimes	30.0	1431	50.2	2706	36.9	1099	34.5	1041	34.0	3598	30.3	789	22.4	1133	35.7	629	28.2	672
Often	18.7	612	19.1	1194	35.1	896	21.9	617	20.8	2154	33.0	546	14.9	839	18.4	333	27.6	492

Most households across the provinces reported that sometimes they could not access cheap and affordable food markets since they were shut down because of the Covid-19 national lockdown restrictions. However, this was mostly experienced in Northern Cape Province with the highest percentage (31.9 %) of households that could not access the cheap and affordable food market because they were shut down due to the national lockdown restrictions, whereas, the Western Cape had the lowest percentage (11.8%) (Table 70).

Table 70: Households that could not access the cheap and affordable food market, because they were shut down due to the national lockdown restrictions disaggregated by province in South Africa.

We couldn't access the cheap and affordable food market, because they were shut down due national lockdown restrictions	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	38.1	1303	20.7	1461	16.4	638	26.1	734	29.4	1656	21.9	416	38.4	1341	23.4	388	33.3	528
Rarely	22.0	864	22.3	1415	14.4	529	20.0	620	17.6	1603	15.6	382	22.3	859	27.6	366	14.6	254
Sometimes	28.2	1182	40.6	2234	37.2	1133	36.8	1107	30.7	3392	33.0	772	26.1	1127	33.5	553	30.0	662
Often	11.8	542	16.4	965	31.9	754	17.1	439	22.3	2128	29.5	457	13.2	686	15.5	267	22.2	401

During the Covid-19 period, most households were unable to eat healthy and nutritious foods as shown in the table below (Table 62). About 32.9% of the respondents in the Northern Cape reported that often were unable to eat healthy and nutritious food (Table 71).

Table 71: Households that were unable to eat healthy and nutritious food during Covid-19 pandemic disaggregated by province in South Africa

You were unable to eat healthy and nutritious food	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	35.3	1169	14.7	994	14.8	584	25.0	723	26.3	1434	22.2	373	47.2	1304	25.1	354	26.2	412
Rarely	15.0	693	14.9	1090	15.3	515	19.6	568	18.7	1657	14.1	329	16.9	748	21.8	282	12.5	236
Sometimes	32.5	1409	51.7	2780	37.0	1106	35.6	1013	34.6	3632	34.3	812	21.3	1133	35.5	619	35.2	711
Often	17.2	621	18.7	1218	32.9	854	19.8	596	20.3	2067	29.3	519	14.6	830	17.5	325	26.0	487

The results show that the Northern Cape experienced the highest response (18.8) of household heads who were hungry but did not eat. However, Limpopo Province experienced the lowest response (6.2) (Table 72).

Table 72: Household heads who were hungry but did not eat during Covid-19 pandemic disaggregated by province in South Africa

You were hungry but did not eat	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	55.8	1981	41.3	2816	31.4	1263	44.9	1387	56.4	3850	49.0	876	64.3	2192	50.8	760	53.9	885
Rarely	14.6	787	22.6	1410	20.6	677	19.9	553	19.1	1800	16.1	389	14.5	752	20.9	294	17.9	368
Sometimes	20.8	828	28.8	1406	29.1	761	24.7	685	18.3	2128	20.3	498	15.0	708	19.5	368	22.0	412
Often	8.8	292	7.3	432	18.8	355	10.5	270	6.2	990	14.6	252	6.3	351	8.9	147	6.2	162

Skipping a meal was least reported across all provinces, with less than 25% of household heads often skipping meals. Household heads in the Northern Cape reported that they often skipped a meal, and it was the highest percentage (21.5%) compared to the other provinces (Table 73). In Gauteng, 8.0% of household heads skipped meals.

Table 73: Household head who had to skip meals during the Covid-19 pandemic disaggregated by province in South Africa

You had to skip a meal	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	51.3	1698	31.5	2285	27.6	1091	41.9	1269	41.8	2808	44.4	778	60.7	1968	50.6	713	51.0	817
Rarely	13.2	821	21.7	1424	24.8	712	19.6	553	24.8	2006	14.9	358	15.1	774	16.7	272	14.9	325
Sometimes	25.9	1027	38.1	1761	26.0	778	25.7	717	23.8	2647	24.2	564	16.2	838	21.7	404	18.7	451
Often	9.6	341	8.7	605	21.5	475	12.8	358	9.5	1324	16.6	328	8.0	431	11.0	186	15.4	246

Covid-19 was expected to increase the number of households that were food insecure in developing countries. The Northern Cape Province reported the highest (22.8%) that often ran out of food. However, Gauteng Province reported the lowest (7.5%) to often run out of food (Table 74).

Table 74: Households who ran out of food during Covid-19 pandemic disaggregated by province in South Africa

Your household ran out of food	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	51.7	1903	36.6	2586	28.7	1214	44.2	1356	53.9	3786	39.8	762	64.8	2155	44.0	672	47.5	769
Rarely	13.4	703	20.1	1334	20.6	594	19.0	527	19.8	1721	14.2	363	13.8	738	21.3	288	16.9	339
Sometimes	21.7	912	33.8	1562	27.9	744	25.0	668	17.1	2133	28.5	571	13.8	723	24.3	416	24.3	475
Often	13.3	372	9.6	590	22.8	503	11.9	352	9.2	1137	17.6	326	7.5	392	10.4	193	11.4	250

Results show that it was exceedingly rare for the household heads to go without eating for the entire day. The Northern Cape Province reported the highest (18.2%) and KZN reported the lowest (4.5%) that often went a full day without consuming food during the Covid-19 pandemic (Table 75).

Table 75: Household heads who went without eating for a whole day disaggregated by province in South Africa

You went without eating for a whole day	Province																	
	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never	66.4	2392	57.4	3804	43.7	1689	54.9	1687	72.3	5308	58.5	1065	72.0	2647	63.3	918	63.4	1071
Rarely	11.0	647	14.5	967	17.0	481	15.1	431	12.0	1228	13.7	302	10.9	630	14.2	223	15.7	314
Sometimes	15.8	599	22.3	953	21.0	544	20.6	548	11.2	1417	17.0	426	11.8	462	15.9	287	15.7	307
Often	6.8	241	5.7	312	18.2	330	9.4	227	4.5	797	10.9	207	5.3	261	6.6	123	5.2	128

The food system in South Africa has seen significant changes since the advent of democracy. The country's shift from being a net exporter of agricultural goods to being a net importer of food is one of the notable changes that have eventually affected household food security. Positive and negative effects of these changes have been expressed on the South African food chain, with direct implications for household food security. It is, therefore, important to comprehend these in order to appropriately develop effective intervention measures. Even though South Africa's food system has undergone significant change, there are a number of considerations that must be recognized that have been illuminated by the NFSS.

The multi-dimensional NFSS survey has unravelled socio-economic and food insecurity challenges which most households are faced with across the country. The survey unearthed the soaring unemployment levels, with provinces such as Limpopo and the Eastern Cape recording the highest unemployment rates (69% and 64%, respectively), while Gauteng reported the least (34%). The disaggregation by age showed that the 18-24 years age group had the highest unemployment rate of 68.2%. It has become clear from the survey that most of the respondents relied on wages and salaries and social grants as major sources of income for household heads, whilst for the household members their sources of income were social grants and wages, in that order. This reality has had a significant bearing on food insecurity situation across the country.

Land redistribution and restitution is an urgent issue if the empowerment of small scale farming rural communities is to take shape and contribute to the food system in South Africa. Access to agricultural land was reported to be generally low across South Africa; however, the Eastern Cape and Free State provinces recorded relatively high percentages (67%). Although this percentage of land ownership was reported, most households do not practise agricultural activities except for those in Limpopo and Mpumalanga, who reported 90% and 57%, respectively, for the use of land for agricultural activities.

Notable from the survey has been the role of agricultural production. Vegetable production was recorded as the highest form of agricultural practice across all the provinces. Gauteng Province and KZN emerged as the highest producers of vegetables, with 71% and 69% respectively. This shows the emergence of small-scale rural, peri-urban, and urban food production that was also triggered by the Covid-19 pandemic. Fruit production was not commonly practised except in Limpopo and the Western Cape. Livestock production was commonly practised in the Eastern Cape, whilst pulses (groundnuts, beans, etc.), and grain production (wheat, maize, sorghum, etc.) are prominently practised in Limpopo, Gauteng, and Mpumalanga provinces.

The few that are practising subsistence agriculture are faced with many challenges, ranging from capacity, finance, crop disease, and crop failure - with limited ability to adapt and cope with the ramifications of climate change as well as market bottlenecks. Additional shocks such as Covid-19 disrupted the agro-food systems and worsened the food insecurity situation for the country. There is a need, therefore, to find targeted interventions to encourage households that have access to land to engage in agricultural activities, and for those that have inadequate or no access to land be given access to arable land for agricultural activities.

Agriculture extension services were reported to be very low and almost non-existent in some communities across all the provinces. This partly explains why households that had access to land were not utilising that land for subsistence purposes and or selling of surpluses. However, there are reports of good access to road facilities and markets in some areas and others need investments in road and water infrastructure to support agricultural value chains especially in rural areas. In terms of markets, there is a need for further development of markets that suite the needs of rural households; compared to the existing supermarkets, shopping malls, and multinational companies that do not provide the required services to subsistence food producers. Not only are

these inaccessible to small farmers but the requirements both in terms of quality and volumes is prohibitive. What then happens in most areas is that farmers sell by the roadside without appropriate infrastructure to store and display their products which is a huge challenge if perishable vegetables are involved. Support for farmers should therefore be holistic and targeted to ensure improved production, distribution and marketing of products.

Overall, South Africa is faced with a worrying food insecurity situation. The Household Food Insecurity Access Score (HFIAS) indicates that more than half of the households (63.5%) in South Africa experienced food insecurity, with only 36.5% found to be food secure. The HFIAS also showed that 17.5% of the households were severely food insecure, 26.7% of the surveyed households were moderately food insecure, while 19.3% of the households were mildly food insecure. The Household Hunger Scale (HHS) showed that most of the sampled households experienced little to no hunger (79.2%). About 15.3% and 5.6% of the households experienced moderate hunger and severe hunger, respectively. The Food Consumption Score (FCS) revealed that most households (58.1%) were consuming adequately (acceptable) diversified diets, and about 23.3% of households are at the borderline. These results show that food security is an urgent issue that needs to be addressed both in urban and rural communities. South Africa has approximately over 100 million hectares of farmland of which 90% is grazing land and only 10% is arable. Clearly, with improved land access and use, agriculture has great potential of improving food security and have a significant dent on poverty. Even in urban areas the practice of SMART agriculture has potential to enhance reduce unemployment and enhance food security especially for the urban poor.

The results of this study indicate that 82.9% of children under two years were breastfed at some point in their lives, which is similar to the national results reported in the SADHS in 2016 (84%). Furthermore, the results indicated that nearly 78.0% of children aged 0-2 years in South Africa were introduced to breastfeeding immediately after birth, with a total of 89.3% being breastfed within an hour of birth. These study results on the prevalence of stunting in South Africa are similar to those found in the SANHANES study, with a current prevalence of 28.8% in children of the same age group. These results show that stunting has remained the same over the last 10 years, and as such, the proportion of children experiencing chronic undernutrition in 2021 has remained unchanged. It has remained unchanged possibly because the underlying factors including inadequate maternal education and nutrition, access to unimproved water sources, poor sanitation, illness and inadequate child-feeding practices have also not changed. More analytical work is needed to isolate some of these drivers so that appropriate interventions can be developed.

In conclusion, South Africa needs to build a resilient food system which promotes diverse practices, preserves traditional knowledge, and supports and upscales local subsistence agriculture through accelerated policy implementation to ensure a healthier and more sustainable future for both households and citizens of the country.

This was a baseline study whose primary purpose was to systematically establish the status of food and nutrition security in South Africa. However, the study findings point to a number of recommendations that need government attention in the medium to long-term.

The provincial diversity that has been exhibited by the NFSS reflects that each province of South Africa represents a sub-system of the broader national food system. The DALRRD needs to acknowledge this and allow provinces to develop and implement programmes that seek to solve challenges that are endemic to their areas of operation.

To promote household food production and agricultural practice, multi-stakeholder engagement workshops must be promoted to improve community interest in agriculture and food production. To cushion households where poverty is extreme, households can be provided with support in some months of the year (mainly January and June) to avert exposure of these households to seasonal hunger.

To improve household nutrition, promoting breastfeeding, growth monitoring for better case detection of children who need care, appropriate referrals, managing acute malnutrition, along with appropriate messages on complementary feeding must be implemented as continuous interventions.

Multiple micro-nutrient supplementations for pregnant women, calcium supplements for mothers at risk of poor calcium intake, support for maternal balanced diet, usage of iodized salt, de-worming, and Vitamin A and zinc supplementation for young children must be scaled up.

Knowledge of the significance of consuming foods high in micro- and macro-nutrients as a vital component of a food security programme must be designed to concentrate on the production and consumption of foods aimed at enhancing the detected deficient micro-nutrient at the household level. In order to promote dietary diversity in the homes, knowledge on the interventions on food preparation, meal planning, and nutrition guidance must be disseminated.

When combined with other nutrition-sensitive programmes and approaches like school feeding, agriculture and food security enhancement programmes, social safety networks, early childhood nutrition, women empowerment, child protection, water, sanitation, and hygiene, as well as other health and family planning services these interventions will significantly lower childhood mortality, incidence of obesity, and birth defects. 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.

To improve the state of food insecurity at national level, the following interventions are worth considering:

1. **Promotion of domestic food production:** this will involve encouraging urban and rural families to produce their own food to ensure food security at household level.
2. **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 province through focused food production and agro-processing investments.
3. **Focus on employment creation:** Targeted intervention through an agriculture sector employment creation drive - a combination of high levels of unemployment and dwindling incomes means that vulnerability to food insecurity will always remain high.

4. **Investment in food markets and food banks:** These can be distributed throughout, with fruit and vegetable markets that are strategically located close to vulnerable households in all the provinces of the country. The markets may also serve as food banks where items imported elsewhere can be sold at affordable prices.
5. **Land redistribution and restitution:** Most households reported limited access to land; hence there is a need for deliberate land apportionment to empower the vulnerable, especially women and the youth. Competing priorities for land pose a threat to agriculture production. People seem to prefer obtaining big pieces of land and use it to build houses rather than for food production. Considering this, the government is tasked to provide priorities for land. This will increase and sustain agricultural production in rural areas of South Africa, which has the potential to allow agriculture to serve as a significant source of income for households. It.
6. **Investment in post-harvest agro processing:** Although some households were found to be involved in agricultural activities, these are not sustainable and cannot ward off household vulnerability to food insecurity. A food system that encourages and enables households to process and consume what they produce locally is needed. Households need support in some months of the year (mainly January) to avoid reduced consumption patterns and incidence of seasonal hunger. Interventions that seek to help households to 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.
7. **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 the 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 so increase the profits of informal traders.
8. **Accelerated use of Indigenous Knowledge Systems:** As South Africa is culturally diverse (which is the reason why the country is referred to as the rainbow nation), infusing heterogeneity in the food system will demonstrate the respect for cultural heritage and promote cultural diversity. Different cultures have unique culinary traditions and local specialties that depend on specific crops and ingredients. Preserving these traditional foods and farming practices will not only demonstrate the honouring of cultural identity of the country but will also contribute to the overall diversity of the food system.

Overall, the government needs to tailor make interventions by province, district and municipality, and across the agricultural value chain in production, distribution and storage, marketing and even in promoting consumption habits to ensure that people eat healthy and diverse foods for enhanced food and nutrition security.

Bibliography

- Akinyemi, B.E and Mushunye, A. (2019). Land ownership and usage for agriculture: Empirical evidence from South African living conditions survey, 5: 1663691. <https://doi.org/10.1080/2311886.2019.1663691>
- Beukes, D.J., Bennie, A.T.P., and Hensley, M. (1999). 'Optimization of Soil Water Use in Production Areas of South Africa', *Efficient soil water use: the key to sustainable crop production in the dry areas of West Asia, and North and Sub-Saharan Africa*, p. 165. Coates, J., Swindale, A., and Bilinsky, P. (2007). 'Household Food Insecurity Access Scale (HFIAS) for measurement of food access: indicator guide: version 3'.
- DoH (2011). *Nutrition Strategy for the South African Health Sector 2010-2014. Directorate Nutrition. Integrated Nutrition Programme.* Pretoria.
- FAO (1996). *Rome Declaration on World Food Security and World Food Summit Plan of Action: World Food Summit 13-17 November 1996, Rome, Italy.* FAO.
- FAO (2009). *Food and Agriculture Organization of the United Nations (FAO), The SAGE Encyclopedia of Food Issues.* Rome. Available at: <https://doi.org/10.4135/9781483346304.n170>.
- GHS. (2020). *General Household Survey:2020.* Statistical Release P0318. Pretoria: Statistics South Africa. Available at: <https://www.statssa.gov.za/publications/P0318/P03182020.pdf>.
- Hendriks, S.L. (2016). 'The food security continuum: a novel tool for understanding food insecurity as a range of experiences', in *Food security and child malnutrition.* Apple Academic Press, pp. 27–48.
- Hendriks, S. L., Van der Merwe, C., Ngidi, M.S., Manyamba, C., Mbele, M., McIntyre, A.M., Mkandawire, E., Molefe, Q.N., Mphephu, M.Q., and Ngwane, L. (2016). 'What are we measuring? Comparison of household food security indicators in the Eastern Cape Province, South Africa', *Ecology of Food and Nutrition*, 55(2), pp. 141–162. doi: 10.1080/03670244.2015.1094063.
- Kennedy, G.L. (2009). *Evaluation of dietary diversity scores for assessment of micronutrient intake and food security in developing countries.* Wageningen University and Research.
- M'marete, C.K. (2003). 'Climate and water resources in the Limpopo Province', *Agriculture as the Cornerstone of the Economy in the Limpopo Province. A study commissioned by the Economic Cluster of the Limpopo Provincial Government under the leadership of the Department of Agriculture*, pp. 1–49.
- Murugani, V.G., Thamaga-Chitja, J.M., Kolanisi, U., and Shimelis, H. (2014). 'The role of property rights on rural women's land use security and household food security for improved livelihood in Limpopo Province', *Journal of Human Ecology*, 46(2), pp. 205–221.
- Mutanga, S., Simelane T., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Limpopo Province. HSRC: Pretoria.
- Mutanga, S., Simelane T., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: North West Province. HSRC: Pretoria.
- Mutanga, S., Simelane T., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Free State Province. HSRC: Pretoria.
- Mutanga, S., Simelane T., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Northern Cape Province. HSRC: Pretoria.
- Mutanga, S., Simelane T., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Gauteng Province. HSRC: Pretoria.
- Mutanga, S., Simelane T., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Western Cape Province. HSRC: Pretoria.

- Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Eastern Cape Province. HSRC: Pretoria.
- NDoH, Stats SA, SAMRC, and ICF. (2019). South Africa Demographic and Health Survey 2016: Pretoria, South Africa, and Rockville, Maryland, USA: National Department of Health (NDoH), Statistics South Africa (Stats SA), South African Medical Research Council (SAMRC) and ICF.
- Negesse, A., Jara, D., Temesgen, H., Dessie, G., Getaneh, T., Mulugeta, H., Abebaw, Z., Taddege, T., Wagnew, F., and Negesse, Y. (2020). 'The impact of being of the female gender for household head on the prevalence of food insecurity in Ethiopia: a systematic-review and meta-analysis', *Public Health Reviews*, 41(1), pp. 1–14.
- Ngidi, M., Kajombo, R., and Rethman, C. (2016). *Livelihoods, Food and Nutrition Security Baselines: Nine Livelihood Zones in KwaZulu Natal Province. South African Vulnerability Assessment Committee Report*. Pretoria.
- Phokele, M., and Sylvester, M. (2012). 'Impact of drought on food scarcity in Limpopo province, South Africa', *African Journal of Agricultural Research*, 7(37), pp. 5270–5277.
- QLFS (2021). *Quarterly Labour Force Survey Quarter 3: 2021*. Pretoria.
- Rah, J.H., Akhter, N., Semba, R.D., De Pee, S., Bloem, M.W., Campbell, A.A., Moench-Pfanner, R., Sun, K., Badham, J., and Kraemer, K. (2010). 'Low dietary diversity is a predictor of child stunting in rural Bangladesh', *European journal of clinical nutrition*, 64(12), pp. 1393–1398.
- SADHS (2016). *South Africa Demographic and Health Survey 2016: Pretoria, South Africa, and Rockville, Maryland, USA*: National Department of Health (NDoH), Statistics South Africa (Stats SA), South African Medical Research Council (SAMRC) and ICF. Shisana, O., Connolly, C., Rehle, T.M., Mehtar, S., and Dana, P. (2008). 'HIV risk exposure among South African children in public health facilities', *AIDS care*, 20(7), pp. 755–763.
- Simelane T., Mutanga, S., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: KwaZulu Natal Province. HSRC: Pretoria.
- Simelane T., Mutanga, S., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Western Cape Province. HSRC: Pretoria
- Simelane T., Mutanga, S., Hongoro, C., Parker, W., Mjimba, V., Zuma, K., Kajombo, R., Ngidi, M., Masamha, B., Mokhele, T., Ngungu, M., Sinyolo, S., Managa, R., Tshililo, F., Ubisi, N., Skhosana, F., Muthige, M., Dukhi, N., Sewpaul, R., Mkhongi, A., Ndinda, C., Sithole, M., Lunga, W., Tshitangano, F., (2023). Food and Nutrition Security Survey: Provincial Report: Mpumalanga Province. HSRC: Pretoria.
- Stats SA (2019). *Towards measuring the extent of food security in South Africa: An examination of hunger and food adequacy*. Pretoria: Statistics South Africa.
- Stats SA (2021). *General Household Survey:2020*. Statistical Release P0318. Pretoria: Statistics South Africa. Available at: <https://www.statssa.gov.za/publications/P0318/P03182020.pdf>.
- Steyn, N.P., Nel, J.H., Nantel, G., Kennedy, G., and Labadarios, D. (2006). 'Food variety and dietary diversity scores in children: are they good indicators of dietary adequacy?', *Public health nutrition*, 9(5), pp. 644–650.
- Toulmin, C. (2008). 'Securing land and property rights in sub-Saharan Africa: The role of local institutions', *Land Use Policy*, 26(1), pp. 10–19. Available at: <https://doi.org/10.1016/j.landusepol.2008.07.006>.
- WHO (2003). *Global strategy for infant and young child feeding*. World Health Organization.
- GHS. (2020). *General Household Survey 2020*. Statistical Release P0318. Pretoria: Statistics South Africa.
- NDoH, Stats SA, SAMRC, and ICF, (2019). *South Africa Demographic and Health Survey 2016*. Pretoria, South Africa, and Rockville, Maryland, USA: National Department of Health NDoH, Statistics South Africa (Stats SA), South African Medical Research Council SAMRC and ICF.
- QLFS. (2021). *Quarterly Labour Force Survey: Quarter 3 2021*. Statistical Release P0211. Pretoria: Statistics South Africa.



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