

National Food and Nutrition
Security Survey

GAUTENG PROVINCE REPORT



National Food and Nutrition Security Survey Gauteng Province Report

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List of Abbreviations

BMI	Body Mass Index
CAPI	Computer Assisted Personal Interviewing
CI	CI Confidence Interval
CSI	Coping Strategy Index
GBV	Gender-Based Violence
GDP	Gross Domestic Product
DAFF	Department of Agriculture, Forestry and Fisheries
DALRRD	Department of Land Reform and Rural Development
DDS	Dietary Diversity Score
DOH	Department of Health
DSD	Department of Social Development
FCS	Food Consumption Score
FGDs	Focus Group Discussions
FNS	Food and Nutrition Security
GAM	Global Acute Malnutrition
GHS	General Household Survey
HDDS	Household Dietary Diversity Score
HEA	Household Economy Approach
HFIAP	Household Food Insecurity Access Prevalence
HFIAS	Household Food Insecurity Access Scale
HHS	Household Hunger Scale
HSRC	Human Sciences Research Council
IFSNP	Integrated Food Security and Nutrition Programme
JMP	Joint Monitoring Programme
Kg/Ha	Kilogram Per Hectare
LHZ	Livelihood Zones
MAHFP	Months of Adequate Household Food Provisioning
NFERP	National Food Emergency Relief Programme
NFNSS	National Food and Nutrition Security Survey
NIDS	National Income Dynamic Survey
NISIS	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
SANHANES	South African National Health and Nutrition Examination Survey
SOP	Standard Operation Procedure
Stats SA	Statistics South Africa
TLU	Tropical Livestock Units
UNICEF	United Nations International Children's Emergency Fund
VIP	Ventilated Improved Pit
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organization
WHR	Waist-to-Hip Ratio
ZAOCG	Highveld Border Open Mixed Income Livelihood Zone
ZANWC	Western Open Access Cattle and Game Farming Livelihood Zone
ZAHMI	Highveld Open Access Mixed Income (ZAHMI) Livelihood Zone



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Disclaimer

This report is based on the empirical evidence collected from selected Small Area Layers (SALs) within the five districts of Gauteng Province. SAL is the smallest geographical unit usually allocated to a single enumerator during census enumeration. In other words, it constitutes a small piece of land for an enumerator to cover to administer a questionnaire during a census or study (Statistics South Africa). Each of the SALs in this survey had 35 visiting points (households). The results provide a baseline assessment of the status quo of food and nutrition security in the province. The data was collected more than 8 months after the COVID-19 lockdown measures, a period characterized by much more relaxed restrictive COVID-19 measures. This greatly influenced and changed the picture from what would ordinarily obtain under a normal situation. Whilst this research project has benefited from the valuable insights and input of a Technical Advisory Group (TAG) that provided comments and reviewed the final research report, the ultimate responsibility for the contents therein (including but not limited to unintentional errors, inaccuracies, or omissions) rests with the authors and researchers involved. Users of this research should exercise their judgment and discretion when interpreting the findings and recommendations presented herein.

Executive Summary

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

To develop intervention measures that are well targeted and address the root causes of household food and nutrition insecurity, current data at lower geographic levels and contextually relevant scientific evidence are crucial. Accordingly, the DALRRD commissioned a National Food and Nutrition Security Survey (NFNSS) aimed at providing baseline data on the state of food and nutrition security across districts and livelihood zones in South Africa. Further, the survey sought to investigate the link between food security and nutrition as well as assessing the impacts of COVID-19 on household FNS. National surveys on food and nutrition security are needed as they inform the government and policymakers about the actual status of food and nutrition insecurity in a country. This provincial report provides the first ever full-scale baseline assessment of the Food and Nutrition Security Survey (NFNSS) conducted in all six districts of the Gauteng Province. The survey adopted the SAVAC-endorsed methodological framework for measuring food insecurity and assessing vulnerability. The framework combines qualitative and quantitative research dimensions to enhance methodological and data triangulation. Broadly, the framework adopts the food and nutrition security continuum, and the Household Economy Approach (HEA). Out of the targeted 5 810 visiting points (VPs), 96.7% were valid. Out of these valid VPs, 69.4% were realised. A total of 4 035 people were interviewed in this province, when weighted, this total represents 11 521 536 South Africans 18 years and older living in the Gauteng Province.

Several internationally accepted food security indicators, such as the Household Food Insecurity Access Score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and Household Dietary Diversity Score (DDS), were used to capture the different dimensions of food and nutrition security. The results indicated that many households were food insecure in the Gauteng Province. The HFIAS revealed that less than half (48.6%) of the households were food secure, with the remaining 51.4% of households being food insecure. Furthermore, of those who are food insecure, 14.2% of the households experienced severe levels of food insecurity. The HHS showed that over 80% proportion of households experienced little to know hunger, while 12.4% of the households and 5.3% experienced moderate hunger and severe hunger, respectively. The FCS and HDDS showed that over 70% and 80% of households, respectively, consumed an acceptable number of food groups across all the districts. The FCS indicated that 9.7% of households consumed poor diets, while 16.3% consumed borderline diets. However, the households mostly consumed nutrient-poor food groups such as

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

The levels of food insecurity varied across districts. Severe food insecurity was more prevalent in the West Rand District where 24% of the households were severely food insecure, and 8% experienced severe hunger as determined by HFIAS and HHS, respectively. Additionally, households from the West Rand District had poor diet and lowest dietary diversity, with 16% and 4% of the households found to have consumed poor diets and low dietary diversity, respectively. This was followed by Sedibeng, Ekurhuleni, City of Johannesburg districts respectively. The City of Tshwane had the lowest proportion of households experiencing severe food insecurity, at 10%. Severe food insecurity was more prevalent among households headed by younger household heads, and among the households from the West Rand, Ekurhuleni, and Sedibeng districts.

Significant relationships were found between household food security status and some demographics and socio-economic factors such as gender, age of household heads/ acting head, access to irrigation, improved water source, sanitation, social grants, household size, markets, education level of household head/ acting head, and involvement in agricultural production. Overall, the results showed that social grants, education levels, and employment were positively correlated with better food security outcomes. As an example, the proportion of food-secure households increased significantly as education levels also increased; only 28.8% of households headed by people with no education were food secure, compared to 82.9% of households headed by people with tertiary qualifications. However, farming activities did not play a significant role, suggesting that dealing with food insecurity in an urban province such as Gauteng is more dependent on the expansion of social protection measures (such as social grants) and creating employment opportunities, than on agricultural activities. Findings indicate that 87.1% of children under 2 years were breastfed at some point in their lives. The provincial prevalence of overall stunting, wasting, and underweight in children aged 0-5 years is 25.5%, 7.2%, and 8.0%, respectively, compared to 25.9%, 7.4% and 8.3% in 2012. This indicates that the proportion of children experiencing both acute and chronic undernutrition in 2021 has remained more or less the same over the past 10 years. Over the same time period, the combined prevalence of overweight and obesity in adult females has remained more or less unchanged from 68.0% to 68.5%, while that of adult males have increased substantially from 33.9% to 43.1%. Across the districts, West Rand remains the highest with the prevalence of severe stunting at 34%, severe wasting at 6.3%, and severe underweight at 8.2% compared to other districts. The least is Tshwane, with 7.8% within the severe stunting category. For adults, the City of Johannesburg reported the highest prevalence of combined overweight and obesity, at 62.6%, while Sedibeng reported the highest prevalence of underweight (8.2%). The nutrition indicators for children were generally not correlated with the food security status of households, suggesting that these nutrition challenges similarly affected members of both food secure and insecure households. However, there were significant correlations between food security and nutrition indicators for adults. Table A shows a summary of the food security and nutrition indicators.

The survey also showed that the COVID-19 pandemic, and the lockdown measures introduced to curb its spread, led to serious disruptions of food supply chains and production systems. The increase in food prices was the biggest shock experienced across all six districts in the Gauteng Province. The highest shocks were experienced in Sedibeng, City of Tshwane, and West Rand districts with 62%, 59%, and 56%, respectively. Sedibeng District had the highest percentage (33%) of households who were sometimes worried about their food running out before they can get money to buy some more food. Sedibeng and Ekurhuleni districts also had the highest percentage (18%) of households who reported that their food often runs out and they did not have money to buy more.

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

- increase incomes of households,
- create employment,
- ensure water security to adapt to the changing climate,

- enhance food safety,
- invest in post-harvest agro-processing and intrinsic land access,
- establish food banks,
- promote domestic food production,
- improve awareness of micro- and macro-nutrient consumption interventions, and
- implement full-scale nutrition-sensitive programmes.

Table A: Gauteng Food and Nutrition Security Situation based on selected Indicators

DISTRICTS	FOOD SECURITY INDICATORS (%)											
	Household Food Insecurity Access Scale (HFIAS)			Household Hunger Scale (HHS)			Household Dietary Diversity Score (HDDS)			Food Consumption Score (FCS)		
	Food Secure	Mild/ Moderate	Severe	Little/No	Moderate	Severe	Highest	Medium	Lowest	Acceptable	Borderline	Poor
City of Johannesburg	55.0	31.0	14.0	82.0	12.0	5.0	84.0	14.0	2.0	74.0	16.0	10.0
City of Tshwane	49.0	42.0	10.0	86.0	10.0	4.0	84.0	12.0	4.0	76.0	15.0	9.0
Ekurhuleni	47.0	37.0	16.0	82.0	12.0	6.0	85.0	13.0	2.0	76.0	14.0	10.0
Sedibeng	34.0	51.0	15.0	81.0	14.0	5.0	82.0	14.0	3.0	70.0	25.0	5.0
West Rand	34.0	42.0	24.0	73.0	20.0	8.0	78.0	18.0	4.0	63.0	21.0	16.0
Province	48.6	37.1	14.2	82.3	12.4	5.3	83.6	13.6	2.8	74.0	16.3	9.7

DISTRICTS	NUTRITION INDICATORS (%)											
	STUNTING			WASTING			UNDERWEIGHT			ADULT BMI		
	All	Moderate	Severe	All	Moderate	Severe	All	Moderate	Severe	Underweight	Overweight	Obese
City of Johannesburg	23.5	9.8	13.7	6.5	6.5	0.0	0.9	0.9	0.0	2.3	31.9	30.7
City of Tshwane	23.1	15.3	7.8	6.0	1.1	4.9	10.6	3.6	7.0	5.5	25.9	32.3
Ekurhuleni	27.1	14.1	12.9	11.5	4.6	6.9	8.7	6.4	2.4	1.2	30.4	28.5
Sedibeng	28.9	17.1	11.8	5.2	1.8	3.4	7.0	6.7	0.3	8.2	22.4	34.9
West Rand	46.1	11.3	34.3	14.9	8.6	6.3	16.9	8.6	8.2	3.7	23.1	32.6
Province	25.5	13.7	11.8	7.2	3.3	3.9	8.0	3.9	4.1	3.4	28.6	31.1

Legend

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

Food security which is widely defined as ‘a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO, 1996), is one of the strategic imperatives for South Africa. This is expressed in the Constitution, government policy documents, and development plans (e.g., the National Development Plan). The right to have access to sufficient food by all citizens is enshrined in the Constitution of the country. To translate this right into action, the government approved the National Policy on Food and Nutrition Security in 2014. Since then, the National Food Security plan has been developed but not fully implemented. However, despite solid legislative, constitutional, and policy framework for food and nutrition security imperatives, a significant proportion of South Africa’s population faces massive food and nutrition challenges. These challenges include hunger, micronutrient deficiencies, stunting, wasting and obesity. While there is sufficient food to feed everyone in South Africa through domestic food production and food imports, many families and individuals go to bed hungry (Stats SA, 2019). Recent estimates are that the number of individuals with inadequate or severely inadequate access to food rose from 13.7 million in 2020 to 14.4 million in 2021 (Stats SA, 2021).

Food security is a multi-dimensional concept¹, which needs to be addressed within the context of various issues in South Africa. These include land reform, employment, agricultural productivity, adequate responses to hazards and shocks, as well as economic dimension lenses. This requires planning that is adequate, efficient, and effective in addressing the country’s vulnerability to food insecurity. Such planning needs to be supported by up-to-date data at lower geographic levels and scientific evidence that is contextually relevant to the realities facing various communities and households in the country. Large-scale surveys, such as the NFSS, can generate such data and evidence that is representative at the district levels. The NFSS survey intends to address the following objectives:

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

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

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

The DALRRD provides the secretariat for, and chairs, the South African Vulnerability Assessment Committee (SAVAC). The committee exists as a multi-stakeholder forum for organising the development and maintenance of a well-coordinated information system for classifying, measuring, monitoring, and forecasting food insecurity and vulnerability levels in the country. Not long ago, SAVAC began a process of conducting baseline assessments to determine the status quo of livelihoods, food, and nutrition security in localised geographical areas for informed planning and targeting of interventions. The initial baseline assessments were conducted in 19 of the 119 Livelihood Zones of South Africa (Ngidi et al., 2016). However, for the information system to be fully functional, there was a realisation of the need to undertake a national baseline against which the national vulnerability forecasts and monitoring surveys can be conducted.

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

The national report will provide the first ever full-scale baseline assessment of the National Food and Nutrition Security Survey (NFNSS) conducted in all the districts across the nine provinces of South Africa. This report contains the results from the Gauteng Province only. The survey seeks to provide the first step towards the development of a multi-dimensional index to assess countries' vulnerability to food insecurity across all the four food security dimensions. It supplements the South Africa Demographic and Health Survey (SADHS) by updating the provincial level data that it presented. The General Household Surveys (GHS) cover approximately 32 000 households annually since 2002, but do not include nutrition indicators. They focus on the experience of hunger and access to food only. In most countries, food and nutritional security assessments provide estimates which are representative at administrative levels or areas (i.e., province, districts, and sub-district) by rural/ urban divide, or for both rural and urban as defined by the livelihood zones.

3

Methodological Matrix

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

3.1 Food Security Continuum

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

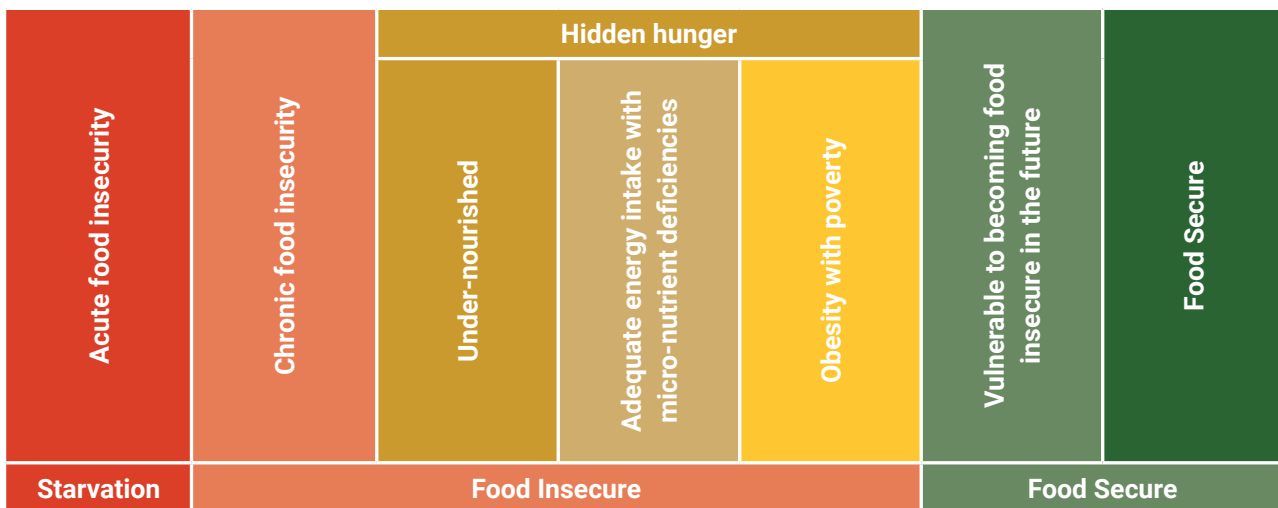


Figure 1: Food Security Continuum (Hendriks, 2016)

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

3.2 Indicators of Food and Nutrition Security Measurement

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

reach a state of nutritional well-being where all members' physiological needs are met. The food stability pillar points to the fact that to be food secure, a population, household, or individual must have access to adequate food at all times. They should not risk losing access to food due to sudden shocks (e.g., an economic or climatic crisis) or cyclical events. Studies that have investigated the correlations among the different FNS indicators in South Africa and internationally have found that correlations among different FNS indicators vary from relatively weak across FNS dimensions (those are comparing indicators of the different FNS dimensions), to relatively strong within FNS dimensions (comparing indicators of the same dimension). It is, thus, important that a suite of FNS indicators be reported to adequately monitor the different dimensions of FNS. In acknowledging that there is no single perfect agreed global measure that captures all aspects of food insecurity, the framework proposed the use of standard and acceptable food and nutrition measurement indicators. Through the food security continuum, an array of indicator tools was used, and these were complemented with the HEA as indicated in Table 1.

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

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

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

3.3 Household Economy Approach (HEA)

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

4.1 Study Design and Sampling for the Household Survey

The study design was cross-sectional and sought to provide representative and precise information at the household level. The first stage of the two-stage cluster sampling design is the selection of SALs or clusters in each district using PPS (Probability Proportional to Size). In this province, we selected a total of 166 SALs. The second stage was a simple random selection of households within each selected SAL/Cluster, and for this study, we selected 35 households per SAL. Then in each household, we selected an average of 3 persons (household head, mother/ caregiver, and child under 5 years old).

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

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

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

Administratively, the Gauteng Province is divided into 6 districts, and 18 local municipalities (mixed urban and rural). In this study, the smallest geographic unit is the small area layer (SAL) composed of 35 households sampled. Given the heterogeneity in livelihoods within regions, the province has 3 Open-Access Livelihood Zones that have people living in them. The LHZ strata can cover several districts or cross over several provinces. This means a district will not necessarily have all the livelihood zones. A GIS function was used to overlay the administrative boundaries with the livelihood zones (as illustrated in Figure 2).

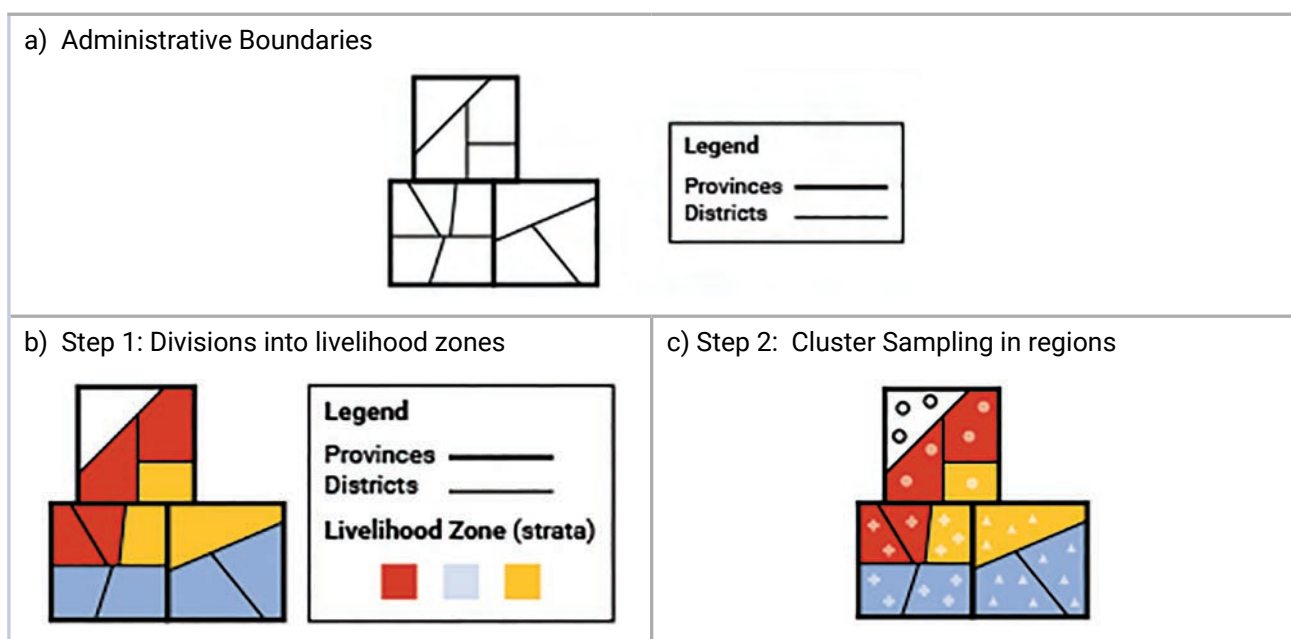


Figure 2: Schematic representation of the overlay of administrative boundaries and LHZ

Stratification by administrative boundary and livelihood zones serves two functions:

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

For district level estimates, the strata of investigation are the 5 districts, with clusters/ SALs distributed across livelihood zones within districts. In this study, given the resource and time constraints, the focus was on the district strata.

4.3 Eligibility

4.3.1 Participant inclusion criteria

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

4.3.2 Participant exclusion criteria

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

4.4 Sample Size Estimation

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

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

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

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

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

4.4.1 Determining sample size for the food security survey

The sample size calculation sought to provide statistically representative and precise information on food security at the district level. The required sample size for each stratum (district) was determined using the formula presented below and food security indicators provided in Table 2 and recommended parameters listed in Appendix 5. Due to many different indicators that could be used to measure food security, a proportion of 50% to get the largest sample desired for analysis of multiple indicators of food security at district level was considered.

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

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

Table 2: Food Security Indicators

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

A sample of 401 households per stratum (district) provides required estimate of food and nutrition 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 was adopted for Gauteng Province with an expected calculated average of 968 households per district. A lower precision, e.g., 7%, recommended for lower geographies, yields 346 households per region. In this study, the 6.5% precision was informed by budgetary constraints on sample size and the fact that the recommended precision range between 2-10% for higher geographies (e.g. province, district) and at least 20% for lower geographies (livelihoods).

4.4.2 Determining sample for nutritional indicators survey

The sampling did not aim at providing an estimate of malnutrition at lower geographies. The goal was to establish the link between food security and nutrition. It was estimated that a sample of 106 children under

five for each stratum (district) converted into 366 households, provides the required estimate of stunting of 21.5% (SANHNAES 2013), with a 10% precision around the estimate assuming a 21% non-response rate, and a design effect of 1.5 with 95% confidence level and 80% power. The 10% precision was informed by budgetary constraints on sample size, and the fact that the study was were 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 3a: Parameters for nutritional indicators

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

This survey was conducted in 166 SALs, across 5 districts in the province. Within each SAL, a random sample of 35 visiting points was identified. One household was to be selected at each visiting point. This yielded a total sample size of 5810 households. Once a household was selected, specific household members were eligible to participate in the survey (as per the inclusion and exclusion criteria set, refer to 4.3). These include the head of the household and / or the person responsible for food procurement and food preparation, as well as the biological mother of any children under the age of 5 years and all children between the ages of 0-5 years. We had estimated that, on average, each household will yield 3 people. The total sample was thus 5810 Households. The survey managed to get 700 children in the province.

4.4.3 Sampling procedure: selecting clusters

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

We adopted the World Food Program (WFP) Technical Guideline, which defines a cluster based on SALs, cluster size or the number of household's survey teams that can visit in one day safely, and the number of clusters with a number of households in each for each indicator. Usually, 20 to 30 clusters/EAs per stratum are typical for most settings (Technical Guideline, WFP). In this province, 35 households per cluster or (SAL) were thus used.

4.4.3.1 Household Response Rate

Out of the targeted 5 810 visiting points (VPs), 96,8% were valid. Out of these valid VPs, 69,4% of them (4 035) were realised or interviewed, while the refusals accounted for 13,8%. Absent or 'other' constituted 13,6%. 'Other' included those who were not eligible to participate such as those who were incapacitated, were underage and no adult to consent, were not at home for the duration of the study and those who could not participate due to COVID-19 exposure.

Table 3b: Household response rate by district

District	Total VPs	Valid VPs		Interviewed		Refused		Absent/Other	
	n	n	%	n	%	n	%	n	%
Sedibeng	1 155	1 124	97.3	860	74.4	120	10.4	120	10.4
West Rand	1 155	1 106	96.0	832	72.0	152	13.1	152	13.1
Ekurhuleni	1 155	1 108	96.0	787	68.1	128	11.0	128	11.0
City of Johannesburg	1 190	1 155	97.0	775	65.1	192	16.2	192	16.2
City of Tshwane	1 155	1 130	97.8	781	67.6	194	17.0	194	17.0
Total	5 810	5 623	96.7	4035	69.4	802	13.8	786	13.6

Table 4 shows characteristics of household heads and members from the households that were realised by local municipality. Due to low numbers at household head level, further breakdown by local municipalities throughout the report was done only for household members.

Table 4: Proportions of the sample for household heads and members by local municipality

Municipality	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
City of Johannesburg	19.2	[18.0-20.5]	775	19.2	[18.5-19.9]	2,478
City of Tshwane	19.4	[18.2-20.6]	781	17.7	[17.1-18.4]	2,288
Ekurhuleni	19.5	[18.3-20.8]	787	19.3	[18.6-20.0]	2,490
Emfuleni	17.8	[16.6-19.0]	718	19	[18.3-19.7]	2,452
Lesedi	1.8	[1.4-2.2]	72	1.9	[1.7-2.2]	247
Merafong City	3.1	[2.6-3.7]	125	3.1	[2.8-3.4]	402
Midvaal	1.7	[1.4-2.2]	70	1.6	[1.4-1.9]	212
Mogale City	10.9	[9.9-11.9]	438	12.2	[11.7-12.8]	1,580
Rand West City	6.7	[5.9-7.5]	269	5.9	[5.5-6.3]	758
Total	100.0		4,035	100.0		12,907

4.4.3.3 Delimitation of the Household Economic Approach (HEA)

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

4.5 Field Data Collection

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 step 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 ensured that the fieldwork was consistent, rigorous and that it upholds the highest degree of ethical standards. Some of the broad undertakings enshrined in the training included the Standard Operational Guideline for data collection in the COVID-19 environment, ethics, and the broader governance structure and team structure. (Refer to Operational Manual Annexure.)

4.5.1 COVID-19 safety procedures and protocols

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

4.5.2 Survey data collection

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

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

4.5.3 Structured household questionnaire administration

This component constituted the quantitative dimension of food and nutrition security. This approach employed a survey which involved structured household questionnaire administration in the five districts. A total of 166 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. (Table 1). Data collection was done using tablets that were linked to the central server where data was deposited through real-time streaming that took place under strict supervision.

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

4.5.4 HEA Data collection

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

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

4.6 HEA Sampled Livelihood Zones

4.6.1 Central maize, wheat, and cattle (ZAMWF) of Sedibeng, West Rand and Ekurhuleni districts

This livelihood zone covers a number of districts including Sedibeng, West Rand, and Ekurhuleni. It covers an area 2,317,600ha in North West Province, 791,900ha in Gauteng, 1,759,100ha in Mpumalanga and 3,175,600ha of land in the Free State Province. This is the third-largest livelihood zone by area and the main bread-basket livelihood zone of the country, producing most of the country's maize, sunflower, and a significant amount of wheat. Cattle combine well with the crops as the old stems are converted into feedstock and the grazing fields are rotated with the crops. Some farms may also keep a few game species, but it is difficult to control their impact on the crops. Fields are extensive, largely rain fed, and the farming is mechanised. The topography is flat and mostly well-watered, although rainfall can be unreliable, especially in the western side of the Gauteng Province.

- The average population density of 224.3 people per km²;
- Livestock holdings are not limited by population density; and
- Livelihoods augmented by other income sources such as remittances, trading, grants, and casual or formal labour.

Most of the zone receives rainfall ranging from 600 to 700mm per annum. The temperature ranges from 07°C to 37°C. Loam to sandy soils characterize the zone and the land capability is classified as 'medium potential agricultural area'. The main crops that are grown for food are maize, beans, potatoes, and vegetables.

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

Figure 3 shows the location of ZAMWF livelihood zone. The zone is serviced by a number of national roads and numerous smaller feeder roads.

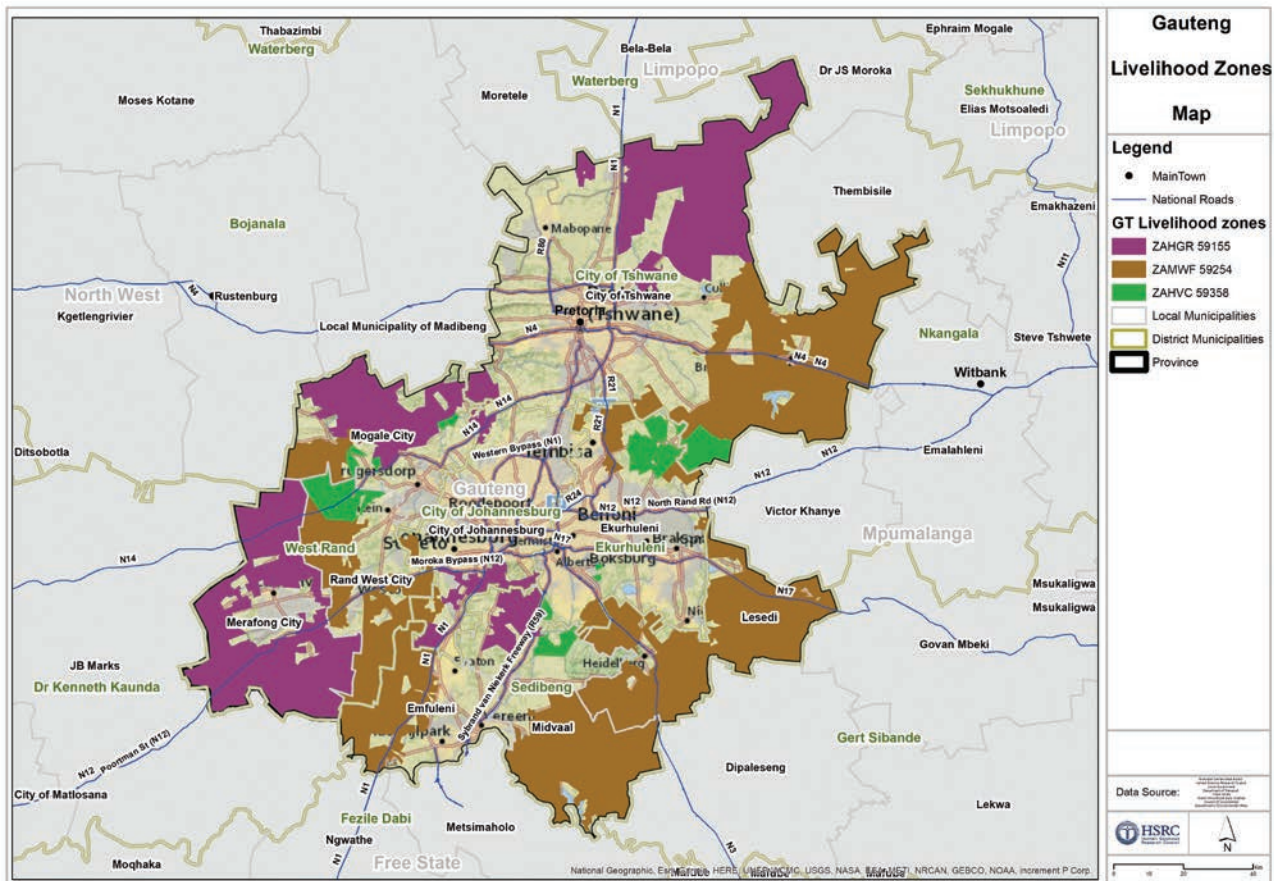


Figure 3: Location of ZAMWF Livelihood Zone in Gauteng

4.6.2 Highveld vegetables and crops (ZAHVC) of West Rand and Ekurhuleni districts

This is a rural zone, with a high population density of 224.3 people per square kilometre. It covers an area of 76,400ha in Gauteng and 301,500ha in Mpumalanga Province. This zone primarily supplies demand for fresh produce in the Gauteng conurbations and its location close to the markets is key. Farming is irrigated and rain fed. There is a number of roads connecting the zone to the urban areas.

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

Most of the zone receives 500 to 700mm rainfall. The temperature ranges from 22°C to 34°C in summer, and 2°C to 20°C in winter. The main crops that are grown for food are maize, beans, and vegetables; and also, stone fruits but not for commercial purposes. Moisture availability is considered ‘slight’ and the land capability in the zone is classified as ‘marginal potential arable’, due to its low rainfall and soils. Wealthier households keep cattle, sheep, and goats which make use of the extensive grazing in the surrounding veld.

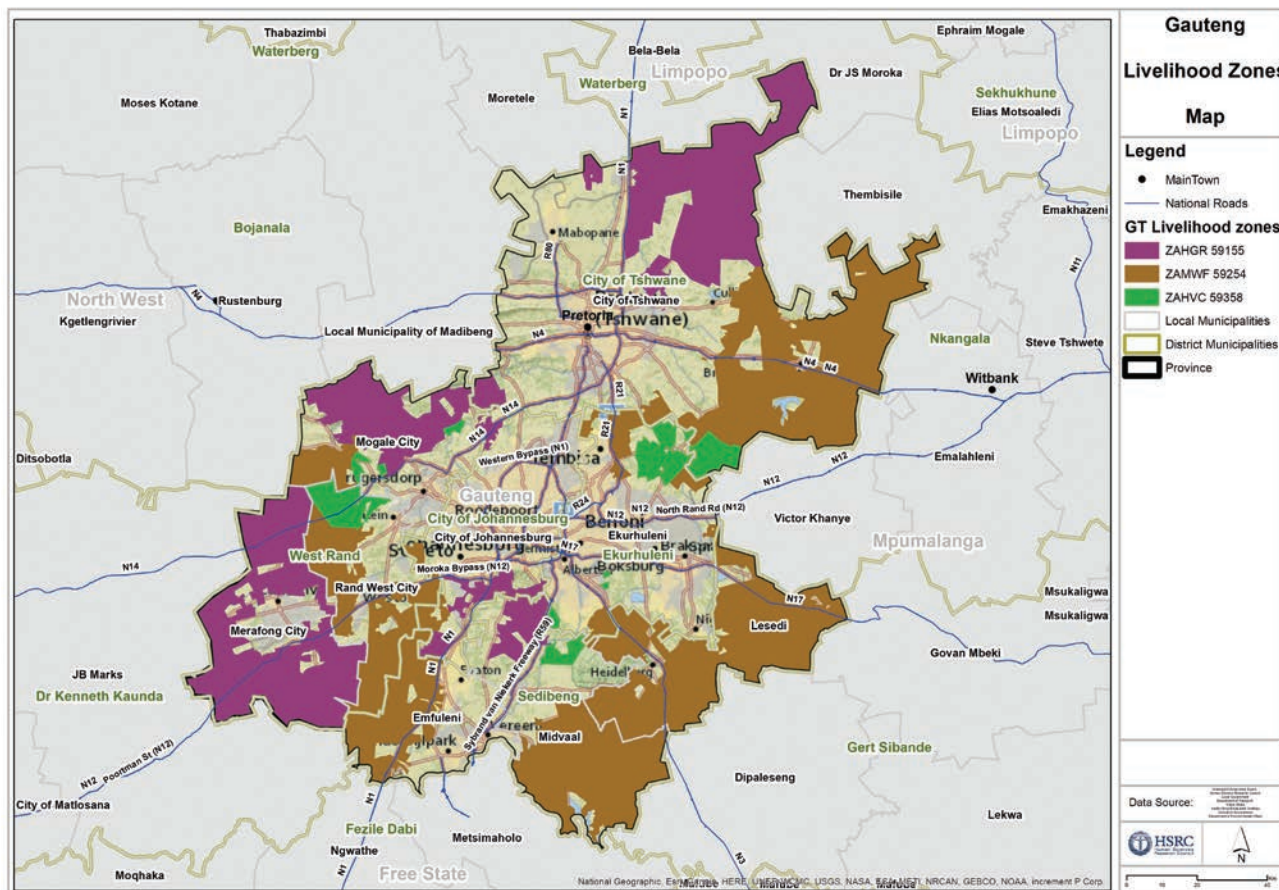


Figure 4: Map of ZAHVC Livelihood Zone

4.6.3 Highveld Cattle and Game Farming (ZAHGR) in West Rand, City of Johannesburg, and City of Tshwane districts

This livelihood zone covers a number of districts including the City of Tshwane, City of Johannesburg, and West Rand districts (Figure 5). It covers an area of 2,503,800ha in the Free State; 651,200ha in Gauteng; 209,500ha in Limpopo; 817,900ha in Mpumalanga and 1,097,500ha in North West.

Excluding protected lands, this is the fourth-largest livelihood zone in the country. The commercial farming area of the central highveld plateau is roughly split into two major zones; this zone is one of them and consists of the areas that have poorer soils and are less suitable for cropping. It is somewhat less extensive than the ranches of the neighbouring bushveld, but farms are still large. Game farming has become popular for meat supply and for tourism and hospitality options. It has good infrastructure, although many roads have become old, and maintenance can be an issue.

- The average population density is lower than most livelihood zones in the province;
- Livestock holdings not limited by population density; and
- Livelihoods are augmented by other income sources such as remittances, trading, grants, and casual or formal labour.

Most of the zone receives rainfall ranging from 250 to 700mm per annum. The temperature ranges from 17°C to 37°C in summer. Loam to sandy soils characterize the zone and the land capability is classified as 'high potential agricultural area'. The main crops that are grown for food are maize, beans, potatoes, and vegetables. Wealthier households keep cattle, goats, sheep, and pigs which make use of the extensive grazing in the surrounding open access areas. Households also depend on both formal and informal cash transfers.

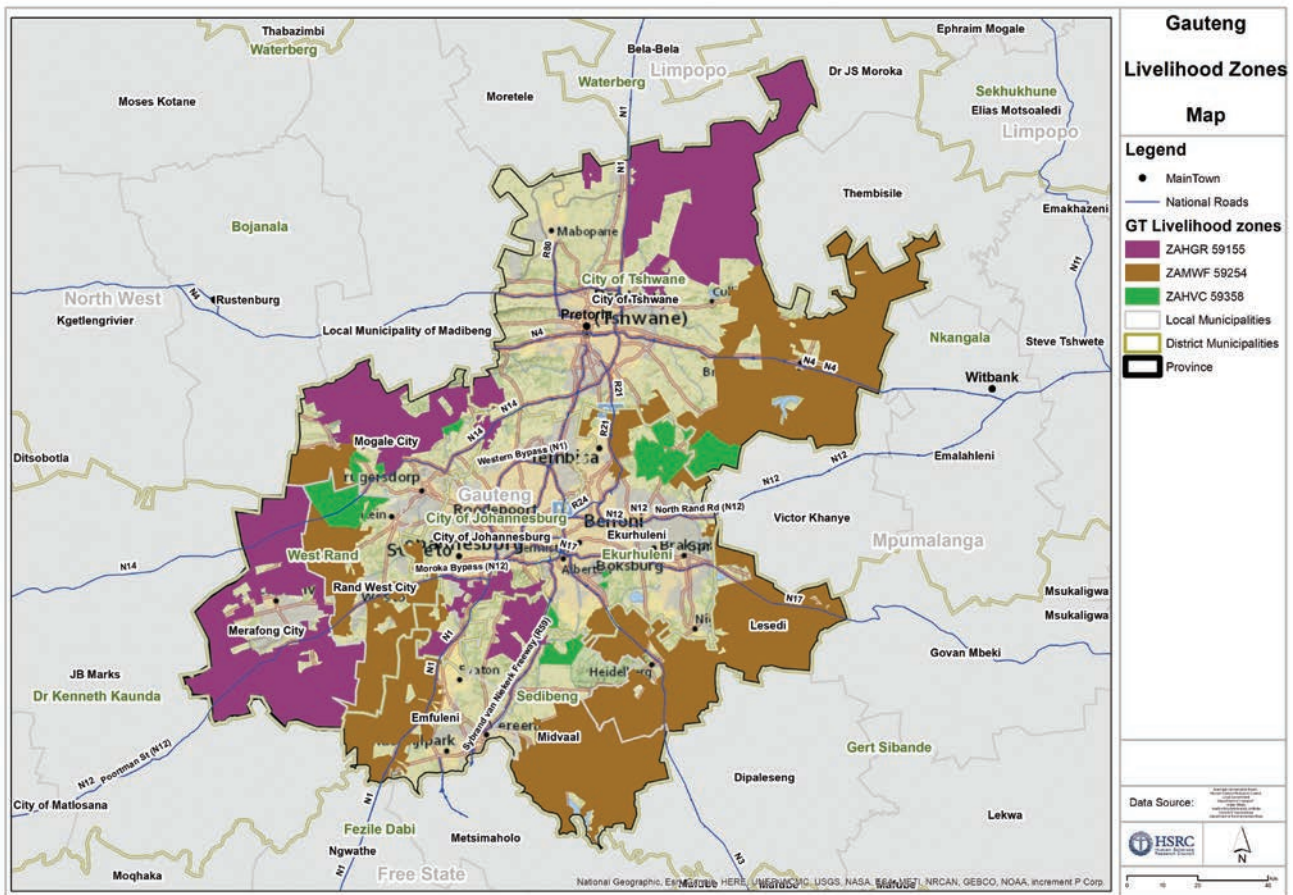


Figure 5: Map of ZAHGR Livelihood Zone

4.7 Data management, Weighting and Analysis

4.7.1 Data management

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



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

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

Captured data and validated data that contains 4 035 cases, and 3 394 variables were converted to (SPSS) for descriptive analyses and exploration of data quality. Verified and cleaned data was further converted to Stata and SAS for further detailed exploratory analyses, cross-tabulations, weighting, and analyses.

4.7.2 Data weighting

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

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

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

A total of 4 035 people were interviewed in this province. When weighted, this total represents 11 521 536 South Africans living in the Gauteng Province who are 18 years and older.

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

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

District	Unweighted N	Weighted N
Sedibeng	860	690 896
West Rand	832	694 464
Ekurhuleni	787	2 906 064
City of Johannesburg	775	4 459 850
City of Tshwane	781	2 770 262
Total	4 035	11 521 536

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

Gender	Unweighted N	Weighted N
Male	2 283	5 748 812
Female	1 752	5 772 724
Total	4 035	11 521 536

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

Age groups	Unweighted N	Weighted N
18-24	146	1 793 135
25-34	683	3 446 373
35-44	920	2 616 355
45-54	850	1 663 885
55-64	740	1 119 207
65+	696	882 580
Total	4 035	11 521 536

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 the proportions of responses and cross-tabulations. Weighted [benchmarked to the 2021 mid-year] population estimates provided by Statistics South Africa (Stats SA) for age, race, age group, and province], was done to ensure that the estimates of the food and nutrition survey variables were aligned with the general population of Gauteng Province. 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 9 depicts the characteristics of household heads and members from the households that were realised. More than half (56.6%) of household heads were males. The majority were the Black African population group (89.2%) while those aged between 35 and 44 years constituted 22.8%. In terms of marital status, those who were single and those who were married or living together accounted for around 42% each. Sedibeng recorded the highest percentage with 21.3%, while City of Johannesburg accounted for the least proportion with 19.2%. Regarding household members, more than half (53.2%) of household members were females; Black Africans dominated with 90.1%, while children aged 0 to 14 years old constituted the highest percentage with 24.0%. Almost two thirds (68.3%) of household members were single. Sedibeng had the highest percentage (22.6%) of household members, while City of Tshwane had the least with 17.7%.

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

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
Sex						
Male	56.6	[55.0-58.1]	2,283	46.8	[45.9-47.6]	6,009
Female	43.4	[41.9-45.0]	1,752	53.2	[52.4-54.1]	6,842
Total	100.0		4,035	100.0		12,851
Population group						
Black African	89.2	[88.2-90.2]	3,601	90.1	[89.6-90.6]	11,597
White	7.0	[6.2-7.8]	282	6.0	[5.6-6.4]	773
Coloured	3.2	[2.7-3.8]	128	3.3	[3.0-3.7]	429
Indian/Asian	0.6	[0.4-0.9]	24	0.6	[0.5-0.7]	74
Total	100.0		4,035	100.0		12,873
Age group						
0-14	-	-	-	24.0	[23.3-24.8]	3,027
18-24 (15 -24 for HH Members)	3.6	[3.1-4.2]	146	15.9	[15.3-16.5]	2,002
25-34	16.9	[15.8-18.1]	683	18.7	[18.0-19.3]	2,350
35-44	22.8	[21.5-24.1]	920	14.9	[14.3-15.5]	1,876
45-54	21.1	[19.8-22.4]	850	11.2	[10.6-11.7]	1,406
55-64	18.3	[17.2-19.6]	740	8.5	[8.0-9.0]	1,071
65+	17.2	[16.1-18.4]	696	6.9	[6.5-7.3]	868
Total	100.0		4,035	100.0		12,600

	Household heads			Household members		
	%	95% CI	n	%	95% CI	n
Marital status						
Married/Living together	41.9	[40.4-43.5]	1,682	25.8	[25.1-26.6]	3,311
Divorced/Widowed/ Separated	16.3	[15.2-17.5]	653	5.9	[5.5-6.3]	752
Single	41.8	[40.3-43.3]	1,676	68.3	[67.5-69.1]	8,758
Total	100.0		4,011	100.0		12,821
District						
City of Johannesburg	19.2	[18.0-20.5]	775	19.2	[18.5-19.9]	2,478
City of Tshwane	19.4	[18.2-20.6]	781	17.7	[17.1-18.4]	2,288
Ekurhuleni	19.5	[18.3-20.8]	787	19.3	[18.6-20.0]	2,490
Sedibeng	21.3	[20.1-22.6]	860	22.6	[21.8-23.3]	2,911
West Rand	20.6	[19.4-21.9]	832	21.2	[20.5-21.9]	2,740
Total	100.0		4,035	100.0		12,907

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

5.1.2 Education attainment of household heads

Table 10 highlights the education attainment of the household heads. Matric qualifications accounted for 32.8%, followed by those with secondary school education with 29.2%. 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 9.7% and 3.8%, respectively. City of Tshwane District had the highest percentage (36.6%) of household heads with tertiary education, while Sedibeng District had the highest percentage (3.3%) of household heads with no education.

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

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	1.4	[0.9-2.1]	7.1	[5.4-9.3]	28.1	[23.0-33.8]	32	[28.0-36.3]	31.5	[24.7-39.2]
Female	1.4	[1.0-2.1]	8.5	[6.4-11.1]	30.3	[25.7-35.3]	33.6	[29.2-38.3]	26.2	[21.1-32.0]
Total	1.4	[1.0-1.9]	7.8	[6.2-9.8]	29.2	[25.0-33.8]	32.8	[29.4-36.3]	28.8	[23.3-35.0]
Age group										
18-24	0.2	[0.0-1.3]	4.4	[1.7-11.3]	35.3	[23.3-49.5]	39	[27.5-51.9]	21.1	[11.7-34.9]
25-34	0.6	[0.2-2.1]	3.2	[1.7-5.8]	25.1	[19.3-32.0]	38.6	[32.5-45.0]	32.5	[25.3-40.7]
35-44	0.3	[0.1-0.9]	3.6	[2.3-5.6]	25.0	[19.8-31.0]	31.5	[27.5-35.8]	39.6	[31.4-48.5]
45-54	0.2	[0.1-0.5]	7.9	[5.5-11.2]	31.9	[26.5-37.9]	33.6	[28.7-38.8]	26.4	[20.0-33.8]
55-64	3.8	[2.4-5.9]	22.3	[16.2-29.8]	34.0	[27.2-41.6]	20.9	[15.9-27.0]	19.0	[13.4-26.3]
65+	9.7	[6.4-14.3]	27.4	[21.8-33.8]	34.7	[27.3-42.9]	14.6	[11.0-19.2]	13.6	[9.8-18.6]
Total	1.4	[1.0-1.9]	7.8	[6.2-9.8]	29.2	[25.0-33.8]	32.8	[29.4-36.3]	28.8	[23.3-35.0]

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
District										
City of Johannesburg	1.2	[0.6-2.4]	9.2	[6.0-14.0]	28.4	[20.5-37.9]	30.5	[24.2-37.7]	30.6	[21.0-42.2]
City of Tshwane	1.3	[0.6-2.6]	3.8	[2.4-5.9]	21.2	[14.8-29.4]	37.2	[30.9-43.9]	36.6	[25.4-49.4]
Ekurhuleni	1.0	[0.6-1.7]	7.8	[5.8-10.4]	34.1	[27.5-41.5]	30.6	[25.6-36.2]	26.5	[17.6-37.8]
Sedibeng	3.3	[2.0-5.4]	8.3	[5.9-11.6]	33.8	[27.9-40.1]	40.8	[34.6-47.3]	13.8	[9.3-19.9]
West Rand	2.8	[1.5-5.1]	13.7	[9.9-18.8]	41.4	[35.4-47.6]	31.0	[25.0-37.7]	11.1	[7.0-17.3]
Total	1.4	[1.0-1.9]	7.8	[6.2-9.8]	29.2	[25.0-33.8]	32.8	[29.4-36.3]	28.8	[23.3-35.0]

5.1.3 Education attainment of household members

Table 11 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 matric qualification accounted for 31.5% followed by those with secondary school education with 30.9% (Table 11). 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 8.2% and 3.6%, respectively. When considering those aged 20 years and older, 1.7% of household members did not have any form of formal schooling, while 37.6% had attained matric education.

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

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	1.3	[1.0-1.7]	19.1	[17.5-20.9]	31.8	[29.3-34.5]	30.5	[28.7-32.2]	17.3	[14.2-20.8]
Female	1.5	[1.2-1.9]	17.8	[16.3-19.4]	30.1	[28.0-32.3]	32.3	[30.8-34.0]	18.2	[15.4-21.5]
Total	1.4	[1.2-1.7]	18.4	[17.1-19.9]	30.9	[28.8-33.1]	31.5	[30.1-32.8]	17.8	[14.9-21.0]
Age group										
7-14	0.7	[0.4-1.3]	82.5	[79.8-84.9]	15.9	[13.5-18.6]	0.9	[0.4-1.8]	0.1	[0.0-0.2]
15-24	0.3	[0.1-0.8]	3.6	[2.7-4.8]	45.3	[42.1-48.5]	43.4	[40.4-46.4]	7.4	[5.8-9.4]
25-34	0.5	[0.2-1.1]	3.0	[2.2-4.1]	26.3	[23.0-29.9]	43.6	[40.3-46.9]	26.6	[22.2-31.5]
35-44	0.7	[0.4-1.3]	4.6	[3.3-6.3]	28.3	[24.5-32.5]	37.3	[34.2-40.5]	29.1	[23.8-35.1]
45-54	0.6	[0.3-1.3]	8.6	[7.0-10.6]	33.7	[30.1-37.6]	34.0	[31.2-36.9]	23.0	[18.5-28.2]
55-64	3.6	[2.6-5.2]	20.2	[16.2-24.9]	35.3	[30.0-41.0]	22.8	[19.2-26.9]	18.0	[13.3-24.0]
65+	8.2	[6.2-10.9]	27.1	[22.7-32.0]	34.0	[29.1-39.2]	16.8	[13.4-20.9]	13.9	[10.1-18.8]
Total	1.4	[1.2-1.7]	18.4	[17.1-19.9]	30.9	[28.8-33.1]	31.4	[30.1-32.8]	17.8	[15.0-21.0]

	No schooling		Primary		Secondary		Matric		Tertiary	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
District										
City of Johannesburg	1.3	[0.9-2.0]	17.5	[14.9-20.3]	33.0	[28.9-37.3]	31.6	[29.2-34.2]	16.6	[11.8-22.9]
City of Tshwane	1.4	[0.9-2.3]	17.2	[14.6-20.1]	24.1	[20.2-28.5]	31.9	[29.6-34.3]	25.4	[19.0-33.1]
Ekurhuleni	1.1	[0.8-1.5]	17.9	[15.4-20.7]	31.7	[28.1-35.5]	31.8	[29.1-34.7]	17.5	[12.7-23.8]
Sedibeng	2.4	[1.7-3.4]	24.3	[21.9-26.9]	32.3	[29.6-35.1]	31.2	[28.4-34.2]	9.7	[7.5-12.5]
West Rand	2.2	[1.5-3.2]	22.7	[19.8-25.8]	37.1	[33.0-41.4]	27.9	[24.5-31.5]	10.2	[6.8-15.0]
Total	1.4	[1.2-1.7]	18.4	[17.1-19.9]	30.9	[28.8-33.1]	31.4	[30.1-32.8]	17.8	[15.0-21.0]

5.1.4 Employment status

Table 12 shows that among the household heads and members who were economically active, 36.1% and 57.0% were unemployed, respectively. A higher proportion (47.6%) of female household heads were unemployed compared to their male counterparts with 25.3%. For household members, a similar pattern exists. About 62% of female household members were unemployed compared to 51.9% of males. Among the youth, those aged 34 years and younger, the unemployment rate was 38.4% and 68.9% for household heads and members, respectively. Those aged between 55 and 64 years old had the highest unemployment rate of 60.5% household heads, while the younger people (15 to 24 years) had the highest unemployment rate with 90.0%. The highest unemployment rate for household heads and members was reported in West Rand and Sedibeng districts of 53.0% and 65.3%, respectively.

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

	Household heads				Household members			
	Employed		Unemployed		Employed		Unemployed	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex								
Male	74.7	[70.0-79.0]	25.3	[21.0-30.0]	48.1	[44.4-51.8]	51.9	[48.2-55.6]
Female	52.4	[47.0-57.9]	47.6	[42.1-53.0]	38.5	[35.4-41.7]	61.5	[58.3-64.6]
Total	63.9	[59.4-68.2]	36.1	[31.8-40.6]	43.0	[39.9-46.2]	57.0	[53.8-60.1]
Age group								
18-24 (15-24 for HH Members)	42.1	[29.9-55.4]	57.9	[44.6-70.1]	10.0	[8.2-12.1]	90.0	[87.9-91.8]
25-34	69.9	[63.8-75.4]	30.1	[24.6-36.2]	47.7	[43.9-51.5]	52.3	[48.5-56.1]
35-44	73.6	[67.8-78.6]	26.4	[21.4-32.2]	59.0	[54.4-63.5]	41.0	[36.5-45.6]
45-54	71.4	[65.6-76.6]	28.6	[23.4-34.4]	60.8	[56.1-65.2]	39.2	[34.8-43.9]
55-64	39.5	[32.3-47.1]	60.5	[52.9-67.7]	38.0	[33.2-43.2]	62.0	[56.8-66.8]
Total	63.9	[59.4-68.2]	36.1	[31.8-40.6]	43.0	[39.9-46.1]	57.0	[53.9-60.1]

District								
City of Johannesburg	70.4	[62.5-77.2]	29.6	[22.8-37.5]	46.5	[40.3-52.8]	53.5	[47.2-59.7]
City of Tshwane	61.4	[53.2-69.1]	38.6	[30.9-46.8]	48.7	[43.0-54.4]	51.3	[45.6-57.0]
Ekurhuleni	64.1	[55.4-71.9]	35.9	[28.1-44.6]	38.2	[33.0-43.6]	61.8	[56.4-67.0]
Sedibeng	48.2	[39.8-56.7]	51.8	[43.3-60.2]	34.7	[30.9-38.8]	65.3	[61.2-69.1]
West Rand	47.0	[40.2-53.9]	53.0	[46.1-59.8]	35.9	[30.8-41.4]	64.1	[58.6-69.2]
Total	63.9	[59.4-68.2]	36.1	[31.8-40.6]	43.0	[39.9-46.1]	57.0	[53.9-60.1]

At local municipality level, Merafong City local municipality fell under the highest band (66.7% to 72.2%) of unemployed household members (Figure 6). City of Johannesburg and City of Tshwane districts were under the lowest band of 51.3. to 53.5% of household members being unemployed.

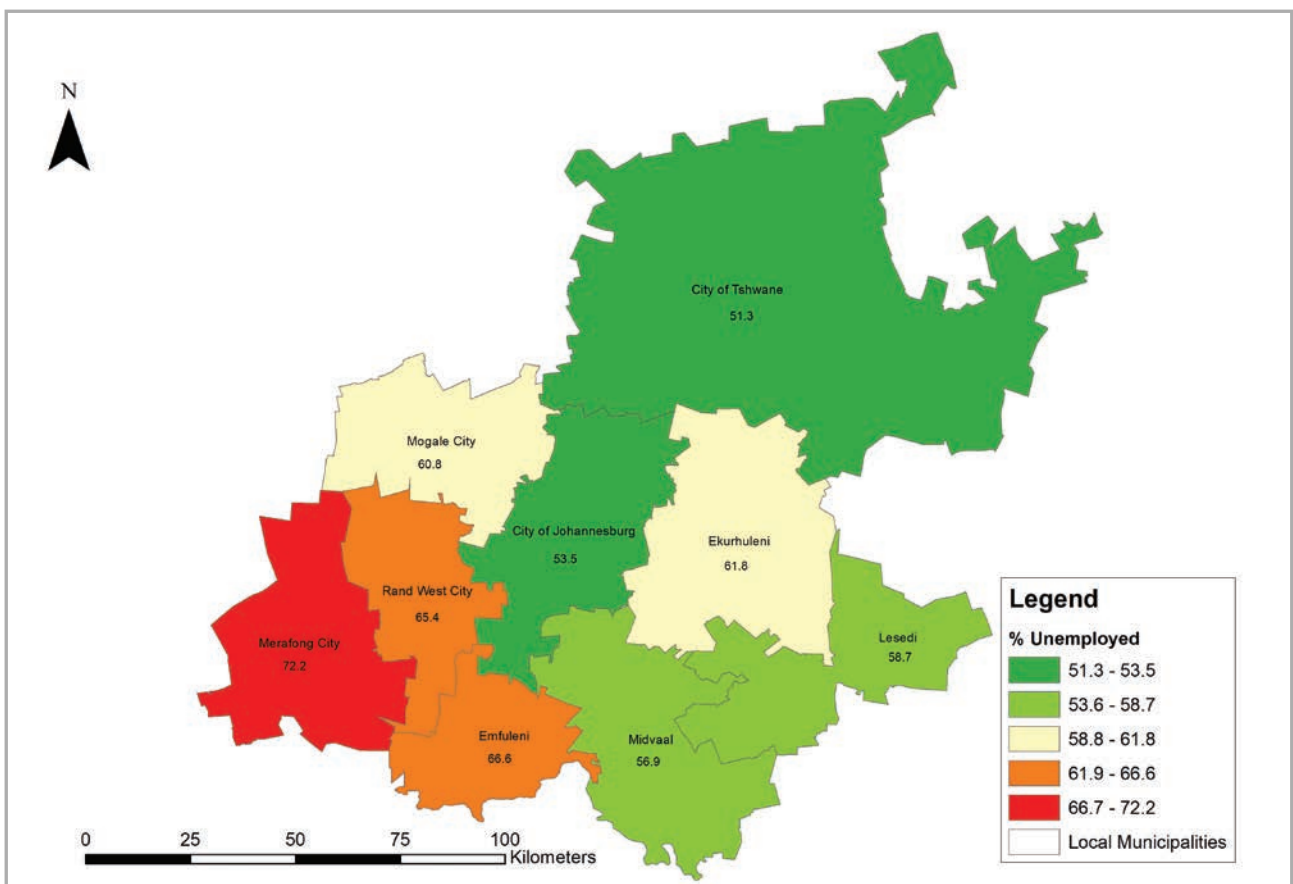


Figure 6: Employment status of household members by local municipality in Gauteng Province

5.1.5 Household income

Table 13 shows household income by household head sex, age, and district. The highest percentage (38.4%) was recorded among households which earned more than R6 000, followed by those who earned between R1 501 and R3 000 with 21.7%. Male-headed households had a higher percentage (41.8%) of household income of more than R6 000, compared to female-headed ones with 33.9%; however, the difference was not significant based on the overlapping confidence intervals. Households headed by those aged from 35 to 44 years old had the highest percentage of household income of more than R6,000 with 45.8%. West Rand District had the highest percentage of (25.6%) households with no income or earned less than R1 500 while City of Johannesburg District had the highest percentage of (41.7%) households which earned more than R6 000.

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

	No income or <R1500		R1501-R3000		R3001-R4500		R4501-R6000		>R6000	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Sex										
Male	17.7	[14.4-21.6]	17.9	[15.5-20.7]	11.7	[9.7-13.9]	10.9	[9.2-12.9]	41.8	[35.9-48.0]
Female	15.1	[12.4-18.2]	26.7	[23.6-30.2]	15.0	[12.7-17.6]	9.3	[7.6-11.4]	33.9	[29.2-39.0]
Total	16.6	[14.0-19.5]	21.7	[19.3-24.3]	13.1	[11.4-14.9]	10.2	[9.0-11.6]	38.4	[33.5-43.6]
Age group										
18-24	35.2	[25.4-46.4]	24.9	[16.7-35.5]	13.8	[7.8-23.2]	9.1	[4.4-17.8]	17.0	[10.1-27.1]
25-34	22.5	[18.0-27.8]	16.9	[13.7-20.6]	13	[9.9-16.9]	11.2	[8.9-14.0]	36.4	[29.3-44.1]
35-44	21.2	[17.2-25.8]	15.4	[12.4-18.9]	9.1	[6.8-12.1]	8.5	[6.6-11.0]	45.8	[38.2-53.6]
45-54	19.4	[15.4-24.1]	17.4	[14.4-20.9]	9.4	[7.2-12.3]	10.2	[8.0-13.0]	43.6	[37.1-50.3]
55-64	13.3	[10.2-17.1]	26.7	[22.3-31.7]	15.3	[12.0-19.4]	7.9	[5.7-10.9]	36.7	[30.1-43.9]
65+	1.2	[0.6-2.6]	34.5	[30.7-38.5]	20.3	[16.4-24.9]	14.0	[11.0-17.6]	30.0	[24.9-35.6]
Total	16.6	[14.0-19.5]	21.7	[19.3-24.3]	13.1	[11.4-14.9]	10.2	[9.0-11.6]	38.4	[33.5-43.6]
District										
City of Johannesburg	14.0	[10.3-18.7]	19.7	[15.3-25.0]	13.1	[9.9-17.2]	11.5	[9.0-14.5]	41.7	[32.3-51.8]
City of Tshwane	19.7	[13.2-28.5]	19.2	[15.3-23.9]	12.0	[9.0-15.8]	8.8	[7.3-10.4]	40.3	[30.4-51.1]
Ekurhuleni	13.7	[9.6-19.2]	22.4	[17.8-27.9]	13	[10.1-16.5]	10.2	[7.9-13.2]	40.6	[31.5-50.4]
Sedibeng	22.7	[18.7-27.3]	32.4	[28.6-36.5]	15	[12.9-17.3]	9.9	[7.9-12.5]	20.0	[15.1-25.9]
West Rand	25.6	[19.4-32.9]	26.3	[22.8-30.2]	14.9	[12.8-17.2]	8.4	[6.5-10.6]	24.8	[18.3-32.8]
Total	16.6	[14.0-19.5]	21.7	[19.3-24.3]	13.1	[11.4-14.9]	10.2	[9.0-11.6]	38.4	[33.5-43.6]

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

5.1.6 Sources of income

Table 14 shows that the majority of household heads relied on salaries and wages as their source of income with 50.2%. The majority of household members relied on social welfare grants (including old age grant) as their source of income with 27.5%.

Table 14: Sources of income of household heads and members

	Household heads	Household members
Source of income	%	%
Salaries and wages	50.2	26.0
Social welfare grants (including old age grant)	17.0	27.5
Net profit from business or professional practice/activities or commercial farming	8.1	3.6
Regular allowances/remittances received from non- Household members	3.0	1.0
Alimony, maintenance, and similar allowances from divorced spouse, family members, etc., living elsewhere	2.4	0.7
Regular receipts from pension from previous employment and pension from annuity funds	2.3	2.1
Other	1.9	0.9
Income from letting of fixed property	1.3	0.4
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
Income from small-scale farming	0.0	0.0
Royalties	0.0	0.0

Further breakdown of social welfare grants as source of income of household heads and members by sex, age, and district is explored in Table 15. Significantly, more female household heads (23.4%) relied on social welfare grants as a source of income compared to their male counterparts, with only 10.7% reporting social welfare grants as their source of income. A similar pattern is noticed at household members' level as there were more females (29.6%) who relied on social welfare grants as source of income compared to their male counterparts with only 25.3%, even though the difference was not significant in this case. Sedibeng District had the highest proportion of household heads and members who relied on social welfare grants as their source of income with 26.4% and 38.7%, respectively.

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

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	10.7	[8.1-13.9]	2,276	25.3	[22.5-28.4]	5,982
Female	23.4	[19.2-28.1]	1,746	29.6	[26.9-32.5]	6,811
Total	17.0	[13.9-20.8]	4,022	27.6	[25.0-30.4]	12,793
Age group						
0-14	-	-	-	47.3	[42.1-52.6]	3,019
18-24 (15 -24 for HH Members)	12.9	[5.9-25.7]	142	22.3	[19.3-25.6]	1,994
25-34	9.3	[6.2-13.7]	678	12.8	[10.7-15.4]	2,347
35-44	8.1	[5.7-11.5]	918	10.5	[8.7-12.7]	1,872
45-54	8.8	[6.2-12.3]	849	12.3	[10.0-15.0]	1,403
55-64	33.3	[27.4-39.8]	740	34.6	[30.1-39.3]	1,071
65+	76.8	[71.1-81.6]	695	74.7	[68.7-79.9]	867
Total	17.0	[13.9-20.8]	4,022	27.8	[25.2-30.6]	12,573
District						
City of Johannesburg	14.5	[9.1-22.3]	775	25.9	[20.8-31.8]	2,465
City of Tshwane	19.0	[12.5-27.9]	776	26.5	[20.5-33.6]	2,273
Ekurhuleni	16.4	[12.3-21.5]	786	26.7	[22.9-30.8]	2,475
Sedibeng	26.4	[21.3-32.3]	857	38.7	[34.0-43.7]	2,896
West Rand	18.9	[14.6-24.1]	828	29.4	[25.8-33.2]	2,727
Total	17.0	[13.9-20.8]	4,022	27.5	[24.9-30.3]	12,836

Figure 7 shows that Emfuleni and Lesedi local municipalities fell under the highest band (32.0% to 44.9%) of household members who had social welfare grants as a source of income. City of Johannesburg and Rand West City districts recorded least percentages of household members who had social welfare grants as source of income as they were under the least band of 25.2% to 25.9%.

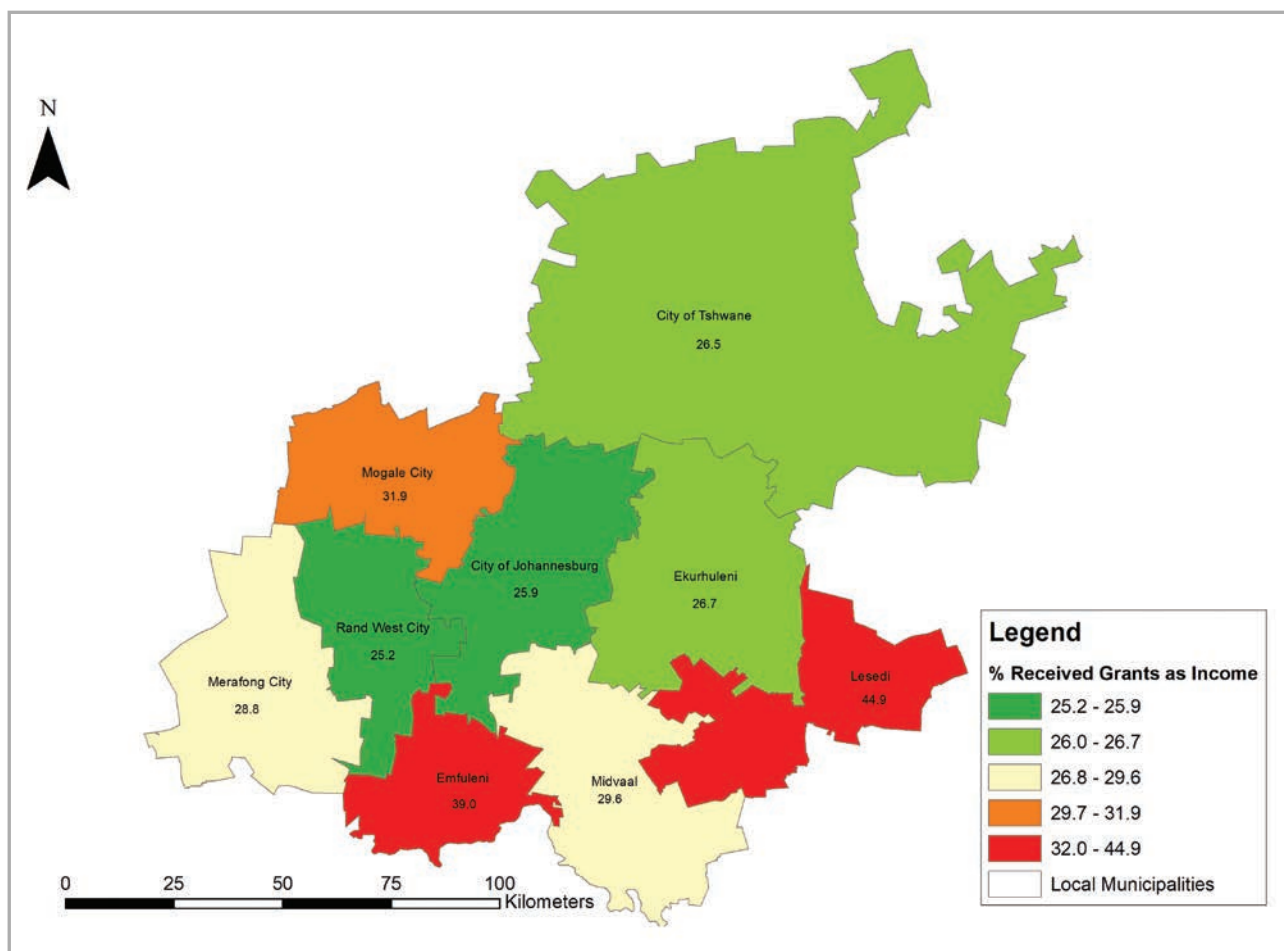


Figure 7: Social welfare grants as source of income of household members disaggregated by local municipality in Gauteng Province

Table 16 shows household heads and members reported receiving any social grant(s) during the 12 months preceding the survey by sex, age, and district. Similar trends were noticed as those who reported social welfare grants as their source of income. The majority of elderly household heads (70.3%) and members (71.3%) received social grant in the last 12 months prior to the survey. Just below half (46.8%) of children aged 14 and younger received social grants in a year preceding the survey. Sedibeng District had the highest proportion of household heads and members who had received social grants during the 12 months preceding the survey with 25.7% and 39.1%, respectively.

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

	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	11.1	[8.2-14.7]	2,278	25.0	[22.2-28.0]	5,981
Female	21.1	[17.2-25.5]	1,747	29.3	[26.6-32.1]	6,818
Total	16.1	[13.0-19.7]	4,025	27.2	[24.6-30.0]	12,799

Age group						
0-14	-	-	-	46.8	[41.5-52.2]	3,016
18-24 (15 -24 for HH Members)	11.5	[5.5-22.3]	143	22.1	[19.2-25.3]	1,999
25-34	8.8	[5.6-13.5]	677	13.3	[11.1-15.8]	2,343
35-44	8.8	[6.1-12.4]	920	11.5	[9.5-13.7]	1,876
45-54	8.9	[6.0-13.1]	850	11.6	[9.3-14.4]	1,405
55-64	30.5	[24.8-36.8]	740	33.4	[29.3-37.7]	1,071
65+	70.3	[62.5-77.1]	695	71.3	[65.2-76.7]	867
Total	16.1	[13.0-19.7]	4,025	27.5	[24.8-30.3]	12,577
District						
City of Johannesburg	14.5	[9.0-22.7]	775	25.4	[20.4-31.2]	2,472
City of Tshwane	16.2	[10.4-24.4]	777	26.1	[19.9-33.3]	2,284
Ekurhuleni	14.9	[11.3-19.4]	787	26.2	[22.7-30.0]	2,473
Sedibeng	25.7	[20.5-31.6]	858	39.1	[34.3-44.1]	2,903
West Rand	20.5	[16.3-25.5]	828	29.9	[26.4-33.7]	2,720
Total	16.1	[13.0-19.7]	4,025	27.2	[24.6-30.0]	12,852

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

In terms of grant type, the dominant grant for household heads was old age grant which accounted for 49.2%, while the child support grant was dominant grant with 48.9% for household members (Table 17). Social relief distress was the second dominant grant in both cases with 33.0% and 21.8% for household heads and members, respectively. In terms of the type of grants accessed, child support grant constituted 34.4% and 58.3% for household heads and members, respectively (Table 10). The dominant grant accessed by household heads was the old age grant which accounted for 36.5%. Social relief distress (SRD) grant recorded at 25.1% and 14.2% for household heads and members, respectively.

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

Grant type	Household heads (%)	Household members (%)
Old age	49.2	25.5
Social relief distress	33.0	21.8
Child support	13.8	48.9
Disability	2.2	2.6
Care dependency	0.7	0.3
Foster care	0.2	0.1
Grant-in-aid	0.0	0.2
War veterans	0.0	0.0

Table 18 shows household heads and members who reported receiving social relief during the 12 months prior to survey. One out of ten (10.1%) of household heads and members reported receiving social relief during the 12 months prior to the survey. Those aged 45 to 54 years old had the highest proportion of household heads (11.5%) and members (15.5%) who received social relief during the 12 months prior to the survey. City of Johannesburg District had the lowest percentage (7.3%) of household heads who received social relief during a year prior to the survey, which was lower than a provincial average of 10.1%.

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

	Household heads received social relief a year prior survey			Household members received social relief a year prior survey		
	%	95% CI	n	%	95% CI	n
Sex						
Male	8.5	[6.1-11.5]	2,279	9.5	[8.0-11.1]	5,978
Female	11.8	[9.0-15.3]	1,744	10.7	[9.3-12.2]	6,812
Total	10.1	[8.0-12.8]	4,023	10.1	[8.9-11.5]	12,790
Age group						
0-14				2.7	[1.7-4.4]	3,015
18-24 (15 -24 for HH Members)	11.4	[6.1-20.2]	143	11.8	[9.8-14.1]	1,997
25-34	9.9	[7.0-13.9]	677	15.0	[12.8-17.6]	2,341
35-44	10.5	[7.6-14.3]	918	12.8	[10.6-15.5]	1,874
45-54	11.5	[8.3-15.6]	850	15.5	[12.8-18.6]	1,405
55-64	10.4	[7.5-14.4]	740	10.0	[7.9-12.7]	1,071
65+	4.4	[2.4-8.1]	695	4.3	[2.4-7.5]	867
Total	10.1	[8.0-12.8]	4,023	10.3	[9.0-11.7]	12,570
District						
City of Johannesburg	7.3	[4.2-12.6]	775	8.5	[6.8-10.6]	2,472
City of Tshwane	14.3	[10.0-20.0]	776	12.9	[9.7-16.9]	2,278
Ekurhuleni	7.7	[4.8-12.1]	785	7.7	[6.1-9.8]	2,468
Sedibeng	21.1	[16.0-27.2]	858	17.9	[14.6-21.7]	2,900
West Rand	10.8	[7.8-14.8]	829	9.6	[7.3-12.5]	2,717
Total	10.1	[8.0-12.8]	4,023	10.1	[8.9-11.5]	12,835

Figure 8 shows that Merafong City local municipality had the lowest percentage (2.2%) of household members who received social relief during the year preceding the survey. Lesedi local municipality had the highest proportion (27.1%) of household members who received social relief during the year preceding the survey.

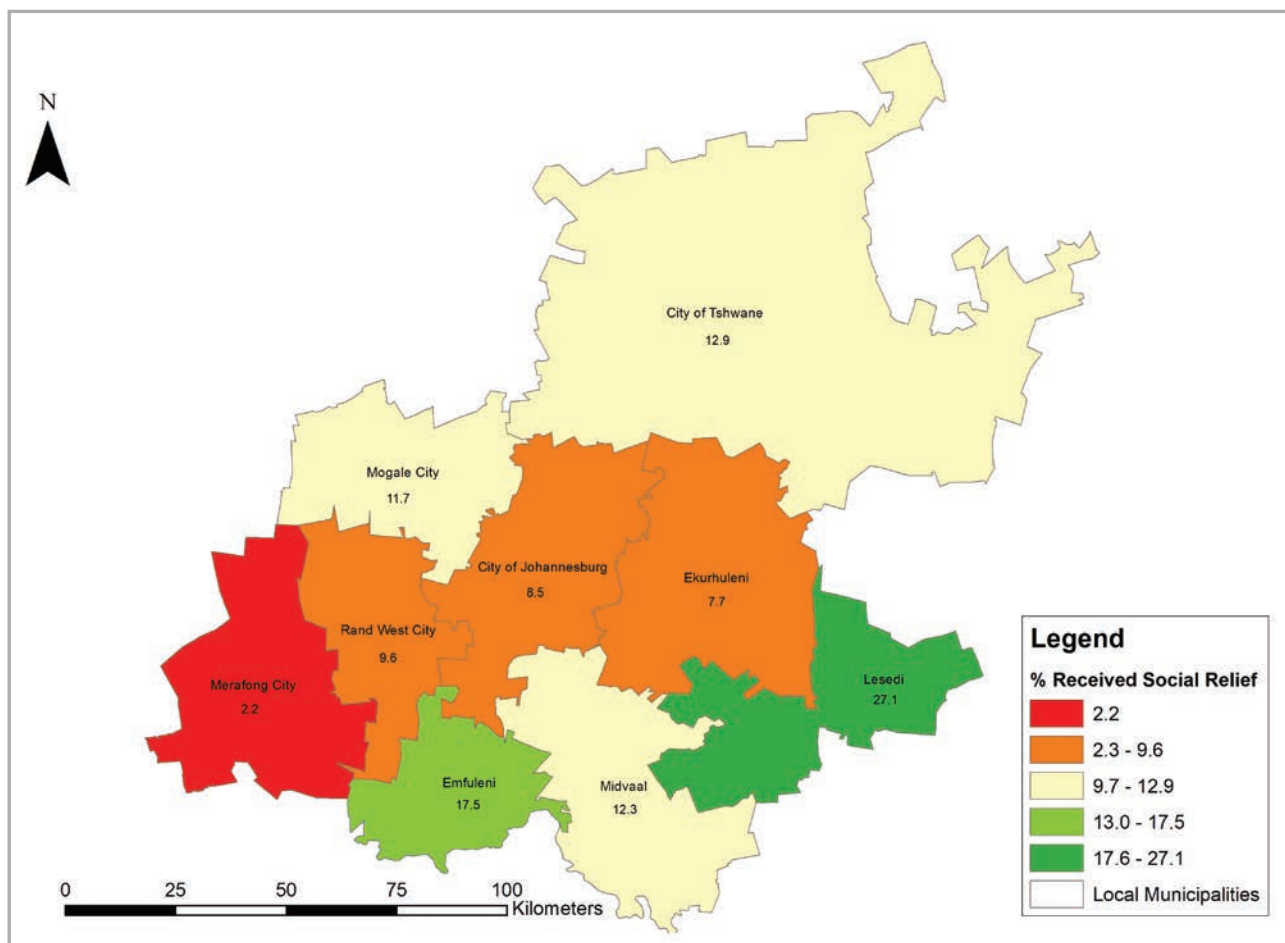


Figure 8: Household members who received any social relief during 12 months prior to survey by local municipality in Gauteng Province

The COVID-19 social relief grant was the dominant social relief type for both household heads and members with 66.2% and 58.8%, respectively (Table 19). Cash was the second most dominant grant with 39.4% of household heads, and 42.3% of household members reported having received it. Food accounted for 3.2% and 3.7% of household heads and members, respectively.

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

Social Relief Type	Household heads (%)	Household members (%)
COVID-19	66.2	58.8
Cash	39.4	42.3
Food	3.2	3.7
Blankets	0.0	0.1
Clothes	0.0	0.0
Other	0.0	0.0

Further breakdown of COVID-19 grant received by household members indicates that 60.0% of female members received this social relief grant compared to 57.5% of their counterparts (Table 20). Those aged 45 to 54 years old had the highest proportion, with 65.9% followed by those aged 25 to 44 years old with 65.4%. City of Johannesburg District had the highest percentage (74.7%) of household members who received COVID-19 social relief grant during the 12 months prior to the survey. Sedibeng District had the lowest proportion of household members who received COVID-19 social relief grant, with 55.2%.

Table 20: Social relief type received by household heads and members during the 12 months prior to survey in Gauteng Province

Variable	Yes		No		Total
	%	95% CI	%	95% CI	N
Sex					
Male	57.5	[50.2-64.5]	42.5	[35.5-49.8]	677
Female	60.0	[52.8-66.7]	40.0	[33.3-47.2]	874
Total	58.9	[52.2-65.2]	41.1	[34.8-47.8]	1,551
Age group					
0-14	12.8	[5.5-27.1]	87.2	[72.9-94.5]	148
15-24	64.2	[55.5-72.0]	35.8	[28.0-44.5]	296
25-34	65.4	[56.0-73.6]	34.6	[26.4-44.0]	392
35-44	61.2	[53.2-68.7]	38.8	[31.3-46.8]	269
45-54	65.9	[56.9-73.9]	34.1	[26.1-43.1]	247
55-64	59.5	[47.8-70.3]	40.5	[29.7-52.2]	133
65+	7.4	[2.1-23.2]	92.6	[76.8-97.9]	62
Total	58.7	[52.1-65.1]	41.3	[34.9-47.9]	1,547
District					
City of Johannesburg	74.7	[62.3-84.1]	25.3	[15.9-37.7]	217
City of Tshwane	48.0	[37.4-58.7]	52.0	[41.3-62.6]	311
Ekurhuleni	62.1	[47.1-75.1]	37.9	[24.9-52.9]	198
Sedibeng	44.8	[33.3-57.0]	55.2	[43.0-66.7]	543
West Rand	54.1	[40.4-67.2]	46.2	[32.8-60.2]	286
Total	58.8	[52.2-65.2]	41.2	[34.9-47.8]	1,555

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

5.1.7 Discussion

It is always important to give context of the demographic characteristics of the current study population in relation to other recent nationally representative surveys. For those aged 20 years and older, 1.7% of household members did not have any form of schooling compared to 37.6% in 2020, while 23.1% had matric education compared to 36.3% in 2020 (Stats SA, 2021).

The unemployment rate for household heads and members who were economically active from the current study was 36.1% and 57%, respectively, which is higher than the provincial official unemployment rate from the third quarter of the Quarterly Labour Force Survey in 2021 which was 38.1% (QLFS, 2021). This is probably because the survey was also able to capture people who are unemployed but are not actively looking for work.

According to the General Household Survey, a larger percentage of households received grants compared to salaries as a source of income in Gauteng Province (60.2% versus 49.0%) in 2020. A different pattern is noticed in this study where 17% of the household heads and 27.5% of household members relied on social welfare grants (including old age grant) as their source of income, followed by those who relied on salaries with 50.2% and 26% for household heads and household members, respectively. This finding shows that most people within the Gauteng Province rely on salaries and wages, which is expected since this the economic hub of South Africa where most economically active groups of people reside. Although slightly higher, the provincial average of 44.5% of household members reported to be receiving social grant is in line with the Gauteng Province average for the household population of 38.9% and 39.1% in 2016 and 2020, respectively (SADHS, 2016; Stats SA, 2021). In terms of grant type, old age grant was the most common type of grant with 49.2% of household members receiving this grant, followed by the child support grant with 48.9%. Although this was also the case in 2016, the percentage of the household population that received child grant in this province was lower at 26.2% (SADHS, 2016). Unsurprisingly, children and the elderly were more likely than other age groups to receive any type of grants. In terms of the COVID-19 grant, 58.8% of household members and 66.2% of the household heads were reported as having received this grant in Gauteng Province in the current study. This is higher than the provincial average of 4.8% of individuals who accessed the COVID-19 grants in 2020 (Stats SA, 2021). The reason behind this might be because the grant was being gradually rolled out as the pandemic was progressing hence in the early stages of the programme, there is bound to be fewer individuals enrolled. In addition, for 2020 statistics only those aged 18 years and older were counted, whereas all household members were included in the current study.

5.2 Dwellings and Services

Housing types

In the choice of 12 dwelling types (Table 21) indicated in the questionnaires administered in Gauteng Province, most respondents (65.7%) indicated that they lived in formal dwellings (house/ brick/concrete structure) on a separate stand or yard on a farm. Two other common forms of house types were dwelling/ house/ flat/ room in backyard occupied by 11.4% of households and an informal dwelling/ shack not in backyard occupied by 7.9% of households in Gauteng Province. Informal settlements are the third most common housing typology in the province (Table 21).

Table 21: Types of dwellings occupied by households

Dwelling types (n=4010)	Number (n)	Percentage (%)
Formal dwelling/ House or brick/concrete block structure on a separate stand or yard or on a farm	2,603	65.7
Formal dwelling /House/ Flat/Room in backyard	397	11.4
Informal dwelling/Shack not in backyard	470	7.9
Flat or apartment in a block of flats	210	7.5
Informal dwelling/Shack in backyard	174	3.3
Room/Apartment on a property or an apartment in a larger dwelling, servants quarters/granny	66	1.8
Other	65	1.8
Cluster house in security complex	14	0.4
Traditional dwelling/Hut/Structure made of traditional materials	6	0.1
Semi-detached house	2	0.1
Townhouse (semi-detached house in a complex)	2	0.1
Caravan/Tent	1	0.0

5.3 Access to Water Services

5.3.1 Households main source of drinking water

The predominant source of water in Gauteng Province was tap water in the dwelling (72.9%), followed by tap water in yard (21.9%) (Table 22). The third most common source of water in Gauteng Province was public/communal tap (4.3%). Less than 0.6% of households accessed water from boreholes either in their yards (0.4%), or outside their yards (0.2%).

Table 22: Main source of drinking water

Drinking water source (n=4021)	Number (n)	Percentage (%)
Piped (tap) water in dwelling/house	2,757	72.9
Piped (tap) water in the yard	927	21.0
Public/communal tap	220	4.3
Neighbour's tap	28	0.5
Borehole in yard	33	0.4
Water vendor (charge involved)	17	0.4
Other	15	0.3
Water-carrier/tanker	16	0.2
Borehole outside yard	6	0.2
Rain-water tank in yard	2	0.0

Water sources were further categorized into 'improved' and 'unimproved' following the WHO & UNICEF Joint Monitoring Programme (JMP) definition. 'Improved' drinking water sources include piped water (in dwelling and yard or plot), public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater (WHO and UNICEF, 2017). More female-headed households (74.7%) than male-headed households (71.5%) had access to piped (tap) water in dwellings (Table 23). An equal proportion of female- (21.0%) and male-headed households (20.9%) had access to piped (tap) water in yard. The main water source supplier for almost all the households in the Gauteng Province (97.5%) was the municipality (Figure 9). In terms of the distribution of water sources across the district, the City of Johannesburg District (77.5%) had the highest proportion of households using piped (tap) water in dwelling/ house while West Rand District had the least (49.8%). West Rand (10.1%) takes the lead with the proportion of households which indicated using communal taps as their main source of water, followed by Ekurhuleni District (4.6%) and Sedibeng District (4.4%). The West Rand District leads with the highest proportion of households that access water from the tap in the yard, followed by Ekurhuleni (22.2 %) and City of Tshwane (20.1 %) districts respectively.

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

		Household head sex		Districts				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Piped (tap) water in dwelling/ house	%	71.5	74.7	77.5	72.8	72.7	73.1	49.8
	95% CI	[65.0-77.2]	[69.3-79.4]	[66.6-85.6]	[60.3-82.4]	[61.5-81.6]	[63.2-81.1]	[37.4-62.2]
Piped (tap) water in yard	%	20.9	21.0	18.5	20.1	22.2	18.4	34.5
	95% CI	[16.9-25.6]	[17.0-25.7]	[12.3-26.8]	[12.8-30.2]	[15.5-30.8]	[13.4-24.8]	[24.3-46.3]
Borehole in yard	%	0.5	0.3	0.2	0.2	0.0	1.8	1.9
	95% CI	[0.2-1.0]	[0.1-0.8]	[0.1-0.9]	[0.0-1.7]		[0.5-6.5]	[0.6-6.0]
Rain-water tank in yard	%	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	95% CI	[0.0-0.1]	[0.0-0.1]				[0.0-0.8]	[0.0-0.8]
Neighbours tap	%	0.6	0.3	0.0	1.3	0.1	0.5	1.5
	95% CI	[0.2-1.6]	[0.1-0.8]		[0.4-3.9]	[0.0-0.9]	[0.1-1.5]	[0.7-3.1]
Public/ communal tap	%	5.2	2.9	3.6	3.1	4.6	4.4	10.1
	95% CI	[2.4-11.0]	[1.4-6.0]	[0.6-18.7]	[0.6-13.4]	[1.2-16.4]	[1.2-14.7]	[4.1-22.8]
Water-carrier/ tanker	%	0.3	0.1	0.0	0.5	0.0	0.1	1.2
	95% CI	[0.1-0.9]	[0.0-0.5]		[0.1-2.1]		[0.0-1.0]	[0.4-3.4]
Water vendor (charge involved)	%	0.4	0.3	0.0	1.1	0.0	0.8	0.5
	95% CI	[0.2-0.8]	[0.1-0.8]		[0.5-2.3]		[0.3-1.9]	[0.2-1.3]
Borehole outside yard	%	0.2	0.1	0.2	0.0	0.3	0.4	0.0
	95% CI	[0.1-0.6]	[0.0-0.5]	[0.0-1.2]		[0.0-1.8]	[0.1-1.1]	
Other	%	0.4	0.2	0.0	0.9	0.1	0.5	0.4
	95% CI	[0.2-1.0]	[0.0-0.9]		[0.3-2.9]	[0.0-0.9]	[0.2-1.6]	[0.1-1.4]

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

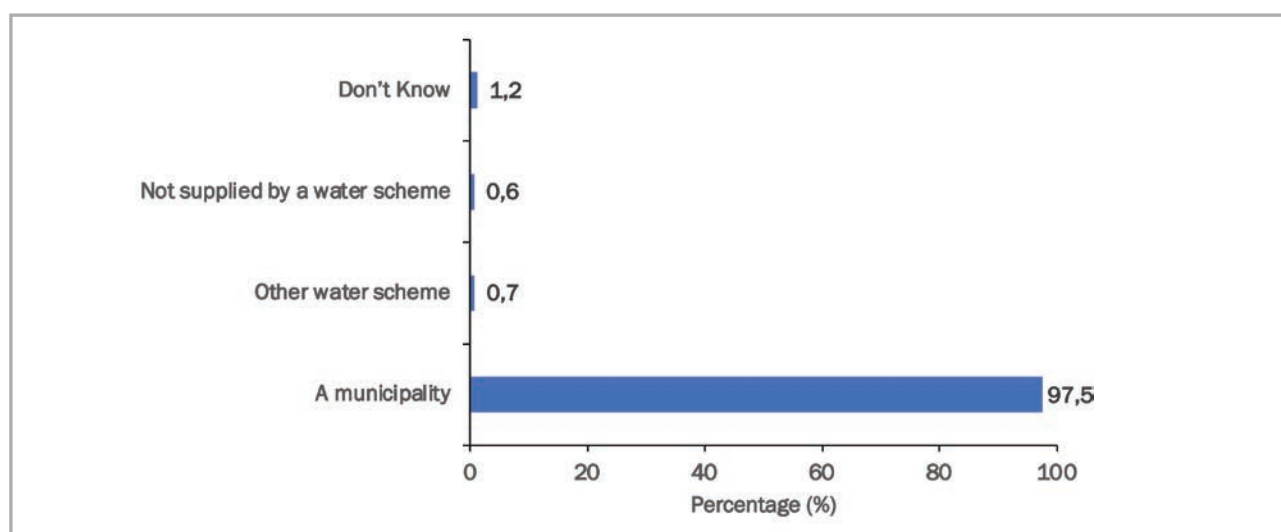


Figure 9: Water supplier (n=3853)

5.3.2 Payment for water services

In terms of payment for water services in Gauteng Province, most households (64.0%) indicated paying for water services, while 36.0% were not (Figure 10). More female-headed (65.1%) than male-headed (63.1%) households were paying for water services (Table 24). The City of Tshwane District (76.1%) had the highest proportion of households that paid for water services, followed by Ekurhuleni District (72.3%) and the City of Johannesburg District (58.7%) (Table 24). Sedibeng District (36.8%) had the lowest proportion of households which indicated paying for water services.

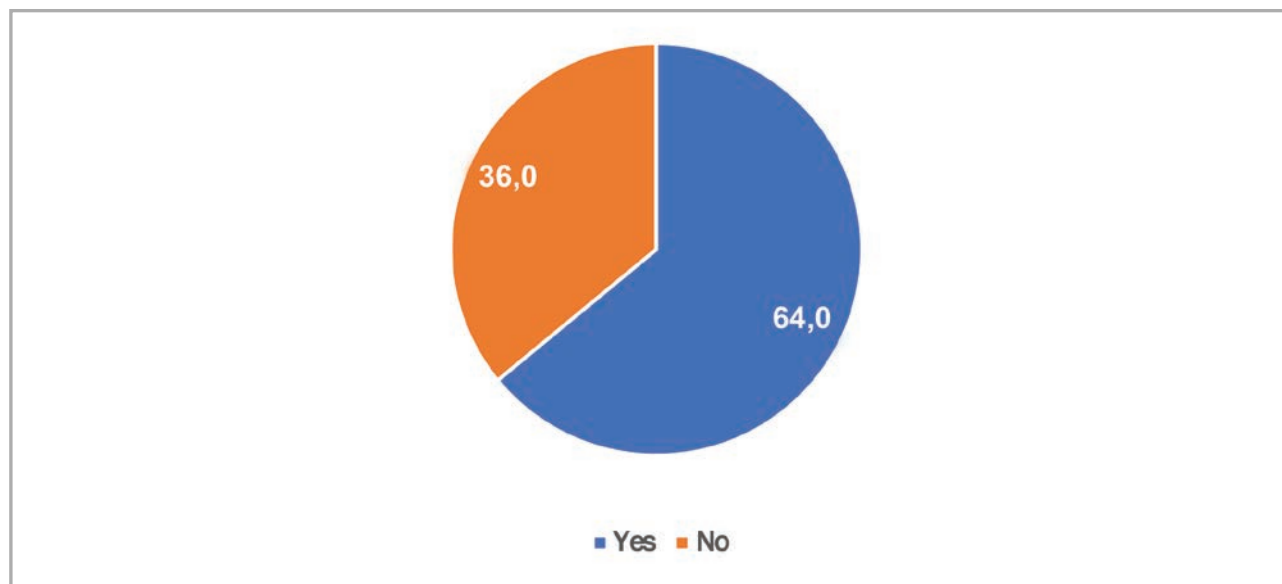


Figure 10: Payment of water services (n=3850)

Table 24: Payment of water services by district and household head sex in Gauteng Province

	Yes		No	
	%	95% CI	%	95% CI
Household head sex				
Male	63.2	[55.4-70.4]	36.8	[29.6-44.6]
Female	65.1	[58.3-71.2]	34.9	[28.8-41.7]
District				
City of Johannesburg	58.7	[45.8-70.5]	41.3	[29.5-54.2]
City of Tshwane	76.1	[59.1-87.5]	23.9	[12.5-40.9]
Ekurhuleni	72.3	[62.5-80.4]	27.7	[19.6-37.5]
Sedibeng	36.8	[27.1-47.7]	63.2	[52.3-72.9]
West Rand	46.8	[34.4-59.7]	53.2	[40.3-65.6]

5.4 Sanitation and Hygiene

5.4.1 Types of toilet facilities

Improved access to water and sanitation is among the sustainable development targets, and South Africa is among the countries that must report on progress in terms of the achievement of the specified targets. The indicator for toilet types shows that eleven of these exist in South Africa and most households in Gauteng Province (87.4%) have access to a flush toilet connected to public sewerage (Table 25). The second most common type of toilet was pit latrine toilet without ventilation pipe (3.3%). Flush toilets connected to a septic or conservancy tank were used by 3.1 % of households in Gauteng Province. There are households still using bucket toilets (collected by municipality) (2.5%) and chemical toilets (0.5%).

Table 25: Type of toilet facility used by households

Toilet types (n=3983)	Number (n)	Percentage (%)
Flush toilet connected to a public sewerage	3,303	87.4
Pit latrine/toilet without ventilation pipe	182	3.3
Flush toilet connected to a septic or conservancy tank	115	3.1
Pit latrine/toilet with a ventilation pipe	188	2.6
Bucket toilet (collected by municipality)	133	2.5
Chemical toilet	28	0.5
Pour flush toilet connected to a septic tank (or septage pit)	11	0.3
Open defecation (e.g., no facilities, field, bush)	8	0.2
Bucket toilet (emptied by household)	11	0.2
Others	2	0.0
Ecological Sanitation Systems (e.g., urine diversion)	2	0.0

Almost an equal proportion of male-headed (87%) and female-headed households (87.9%) used a flush toilet connected to a public sewerage system (Table 26). Ekurhuleni (90.9%) District had the highest proportion of the households that used flush toilets connected to public sewerage, followed by the City of Johannesburg (90.4%), Sedibeng (87.8%), and the City of Tshwane (86.5%) districts. West Rand District takes a lead with the highest proportion of households which indicated using pit latrines without ventilation (11.1%), and with pit latrine with ventilation pipe (14.9%). Again, West Rand District had the highest proportion of households that use bucket toilets (7.3%).

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

		Household head sex		Districts				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Flush toilet connected to a public sewerage system	%	87	87.9	90.4	86.5	90.9	87.8	60.4
	95% CI	[80.4-91.6]	[83.1-91.5]	[80.3-95.7]	[70.4-94.5]	[77.7-96.6]	[76.3-94.2]	[43.4-75.2]
Flush toilet connected to a septic or conservancy tank	%	2.5	3.9	4.9	0.8	2.6	2.6	3.8
	95% CI	[1.5-3.9]	[2.4-6.1]	[2.8-8.3]	[0.3-2.3]	[1.2-5.6]	[1.2-5.5]	[1.8-7.7]

		Household head sex		Districts				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Pour flush toilet connected to a septic tank (or septage pit)	%	0.2	0.3	0.3	0.5	0.1	0.1	0.4
	95% CI	[0.1-0.6]	[0.1-1.0]	[0.1-1.0]	[0.1-2.1]	[0.0-0.8]	[0.0-0.8]	[0.1-1.6]
Chemical toilet	%	0.6	0.4	0.5	0.6	0	0.9	1.4
	95% CI	[0.2-1.3]	[0.1-0.9]	[0.1-2.2]	[0.1-2.5]		[0.3-3.1]	[0.4-5.3]
Pit latrine/toilet with ventilation pipe	%	3	2.1	1.3	3.8	0.3	2.5	14.9
	95% CI	[1.8-5.0]	[1.3-3.4]	[0.3-5.3]	[1.5-9.1]	[0.0-1.8]	[1.1-5.5]	[8.3-25.4]
Pit latrine/toilet without ventilation pipe	%	3.3	3.3	1.8	6.8	0.3	2.9	11.1
	95% CI	[1.7-6.3]	[1.6-6.6]	[0.3-10.6]	[2.4-17.9]	[0.0-1.7]	[1.2-6.7]	[6.1-19.2]
Bucket toilet (collected by municipality)	%	2.9	1.9	0.5	0.8	5.3	2.1	7.3
	95% CI	[1.2-7.2]	[0.8-4.5]	[0.2-1.6]	[0.1-5.6]	[1.2-20.4]	[0.4-9.5]	[3.4-15.3]
Bucket toilet (emptied by household)	%	0.1	0.2	0	0.2	0.1	0.8	0.2
	95% CI	[0.0-0.4]	[0.0-0.7]		[0.0-1.2]	[0.0-0.9]	[0.1-5.2]	[0.1-0.8]
Ecological Sanitation Systems (e.g., urine diversion)	%	0	0	0	0	0	0	0.2
	95% CI	[0.0-0.2]						[0.0-1.5]
Open defecation (e.g., no facilities, field, bush)	%	0.3	0.1	0.3	0	0.4	0.1	0.2
	95% CI	[0.1-1.1]	[0.0-0.5]	[0.0-1.8]		[0.1-2.7]	[0.0-0.8]	[0.0-1.5]
Other	%	0	0	0	0	0	0.1	0.1
	95% CI	[0.0-0.1]	[0.0-0.1]				[0.0-0.8]	[0.0-0.7]

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

Types of toilet facilities used by households were further divided into 'improved' and 'unimproved' based on the WHO & UNICEF Joint Monitoring Programme (JMP) definition. 'Improved' toilets include flushed or flushed to septic tanks, piped sewer systems, pit latrines, VIP latrines, and pit latrines with slabs. Meanwhile, 'unimproved' toilets consist of shared facilities or none (bush or field); flush toilets or pour-flush toilets that go elsewhere (not to septic tanks or pit latrines); pit latrines without slabs; bucket systems; and hanging toilets (WHO and UNICEF, 2017). Overall, 97.1% of households in Gauteng Province used improved toilet types (Figure 11). In terms of distribution across the districts, the City of Johannesburg District had the highest proportion of households (99.2%) that used improved types of toilets, followed by the City of Tshwane (99%) and Sedibeng (96.9%) districts. West Rand District (92.1%) had the lowest proportion of households using improved toilet types.

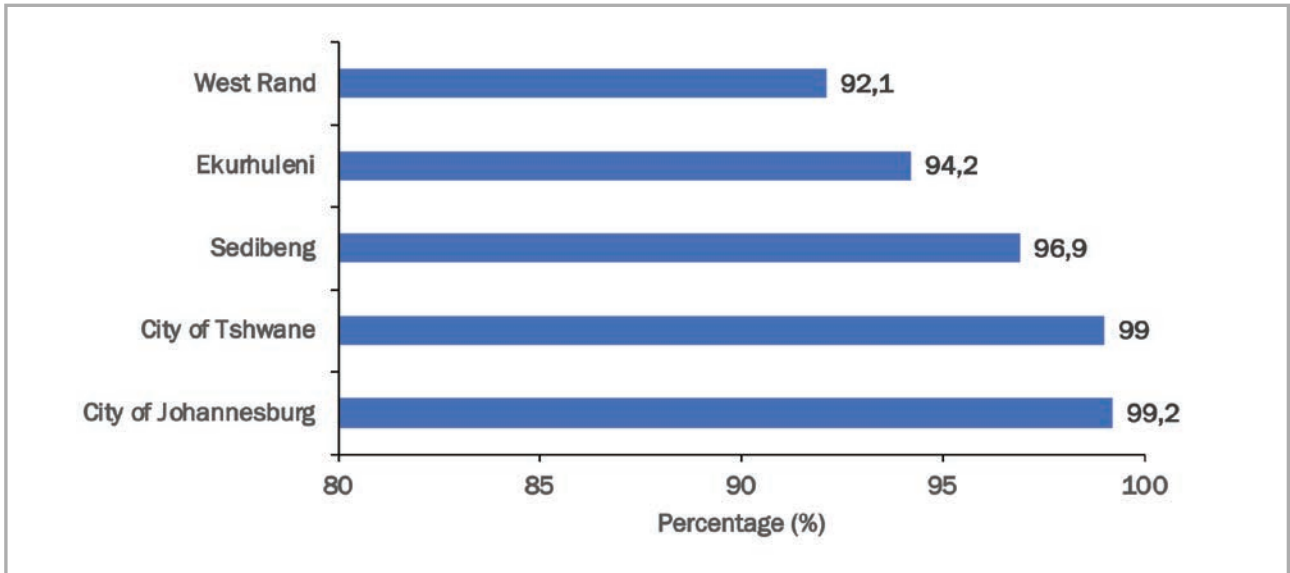


Figure 11: Proportion of households using improved toilet types by districts

When asked if the household was paying for public sewerage services, 48.6% of households responded 'yes', while 47,2 % said 'no' (Figure 12). Around 64.2% of the households indicated that they were receiving free sanitation services (Figure 13). More male-headed households (32.7%) than female-headed households (31.3%) were receiving free sanitation services. Ekurhuleni District (39.2%) had the highest proportion of households receiving free sanitation services, followed by the City of Johannesburg (37.1%) and Sedibeng (31.2%) districts (Table 27).

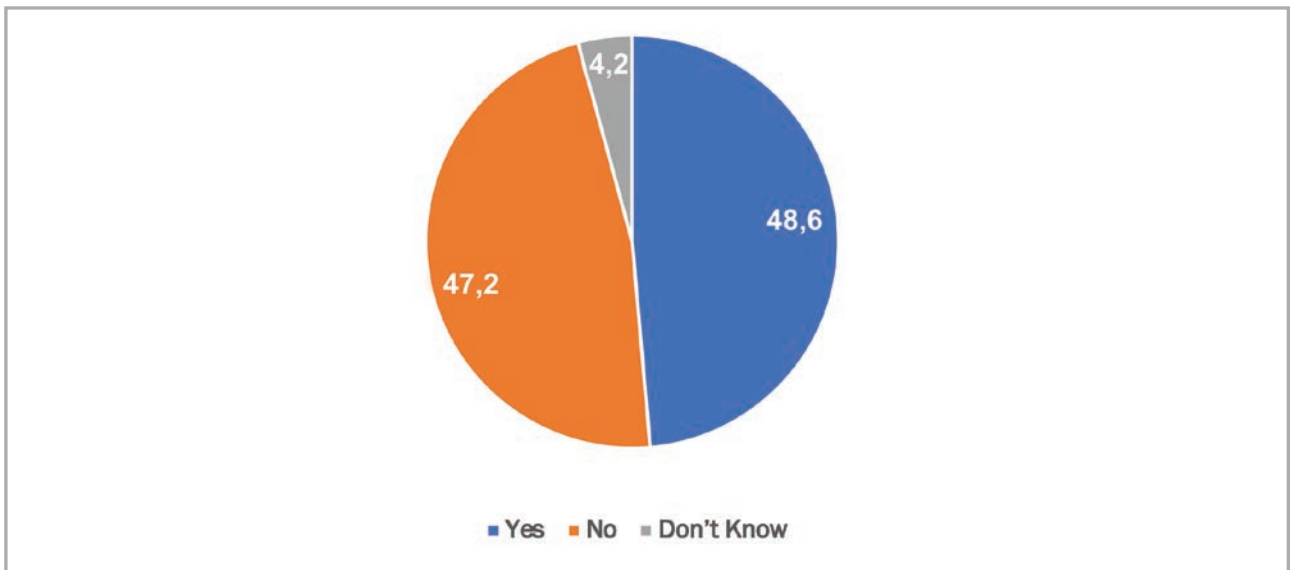


Figure 12: Proportion of households paying for public sewerage (n=3785)

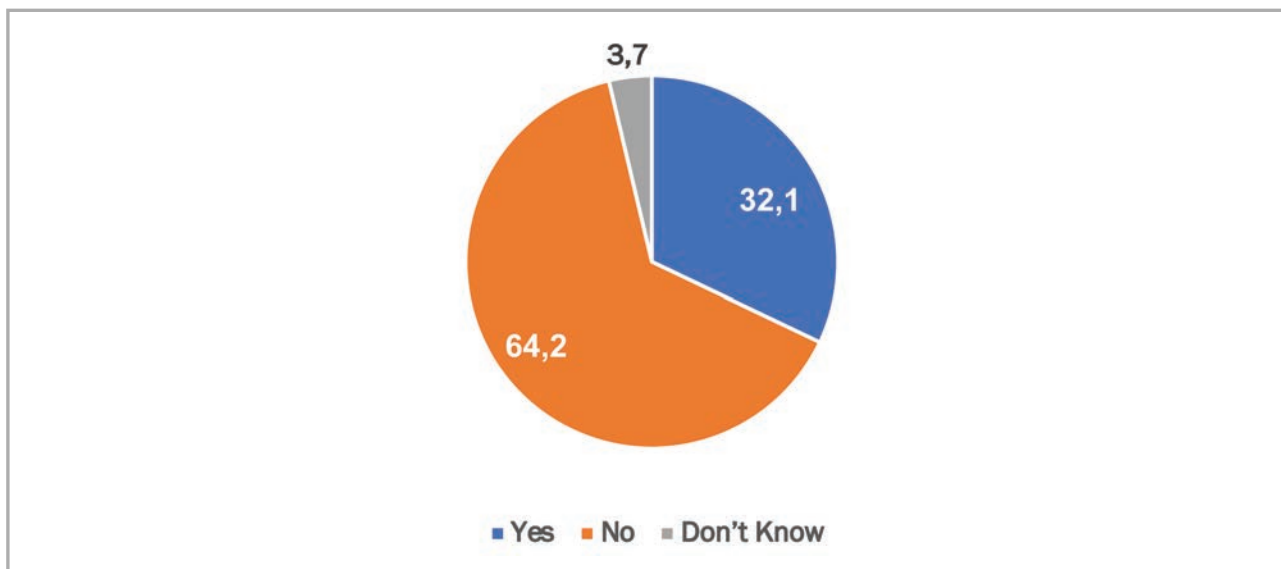


Figure 13: Proportion of households receiving free sanitation services (n=3564)

Table 27: Households receiving free sanitation disaggregated by sex of the household head and district in Gauteng Province

	Yes		No		Don't know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	32.7	[27.9-37.9]	63.4	[58.1-68.3]	3.9	[2.7-5.7]
Female	31.3	[27.3-35.6]	65.2	[60.9-69.4]	3.4	[2.3-5.0]
District						
City of Johannesburg	37.1	[31.1-43.5]	59.5	[53.5-65.2]	3.4	[1.8-6.3]
City of Tshwane	17	[10.6-26.2]	80	[70.1-87.2]	3	[1.8-4.9]
Ekurhuleni	39.2	[33.2-45.6]	55.7	[48.9-62.4]	5	[2.8-8.9]
Sedibeng	31.2	[24.2-39.2]	65.5	[57.9-72.4]	3.2	[2.1-4.9]
West Rand	25.3	[19.5-32.1]	72.1	[65.2-78.2]	2.5	[1.5-4.3]

5.4.2 Refuse removal

Municipalities are required to ensure an adequate level of environmental health and safety and eleven indicators were used to measure the levels of refuse removal (Table 28). Most of the households (62.5%) had their refuse removed by local authority/ private company at least once a week. About 17.2% of the households had refuse removed by community members contracted by municipality at least once a week, while 5.6% used a communal refuse dump (Table 28).

Table 28: Households rubbish disposal

Rubbish removal (n=3975)	Number (n)	Percentage (%)
Removed by local authority/private company at least once a week	2,134	62.5
Removed by community members, contracted by municipality at least once a week	576	17.2
Communal refuse dump	424	5.6
Dump or leave rubbish anywhere	287	4.7
Own refuse dump	251	3.4
Removed by local authority/private company less often than once a week	106	2.6
Removed by community members, contracted by municipality less than once a week	80	1.5
Communal container/central collection point	58	1.1
Removed by community members at least once a week	21	0.6
Removed by community members, less often than once a week	17	0.4
Other	21	0.3

More female-headed (64.2%) than male-headed (61.2%) households had refuse removed by a local company at least once a week (Table 29). Ekurhuleni District had the highest proportion of households whose refuse was removed at least once a week by the municipality (70.2%), followed by the City of Johannesburg (66.4%) and the City of Tshwane (63.6%) districts. Sedibeng District (21.5%) had the highest proportion of households which used communal refuse dump. About 37.6% of households in Gauteng Province had access to free refuse removal services (Figure 14).

Table 29: Households rubbish disposal methods by sex of the household head and district

		Household head sex		District				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Removed by local authority/private company at least once a week	%	61.2	64.2	66.4	63.6	70.2	28.3	45.8
	95% CI	[55.2-67.0]	[58.9-69.1]	[56.7-74.9]	[53.1-72.9]	[59.5-79.1]	[19.4-39.3]	[33.0-59.2]
Removed by local authority/private company less often than once a week	%	2.2	3.2	3.4	1.7	2.3	4.6	0.8
	95% CI	[1.5-3.3]	[2.0-5.0]	[1.8-6.2]	[0.8-3.8]	[1.0-5.0]	[2.2-9.1]	[0.4-1.9]
Removed by community members, contracted by municipality at least once a week	%	17.3	17.2	22.5	9.7	20.4	7	14.2
	95% CI	[13.3-22.1]	[13.8-21.2]	[15.9-31.0]	[6.1-15.2]	[13.6-29.3]	[4.4-11.1]	[8.7-22.4]

		Household head sex		District				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Removed by community members, contracted by municipality less than once a week	%	1.3	1.7	0.4	4	0.2	2.1	3
	95% CI	[0.8-2.2]	[0.9-3.2]	[0.1-1.1]	[2.1-7.4]	[0.1-0.9]	[0.8-5.3]	[1.1-8.0]
Removed by community members at least once a week	%	0.7	0.4	0.7	0.3	0.9	0.7	0
	95% CI	[0.2-2.4]	[0.1-1.2]	[0.2-2.9]	[0.1-1.0]	[0.1-5.9]	[0.1-3.5]	
Removed by community members, less often than once a week	%	0.6	0.2	0.8	0	0.4	0.8	0.1
	95% CI	[0.2-1.9]	[0.1-0.6]	[0.2-3.0]		[0.1-2.6]	[0.2-2.8]	[0.0-0.8]
Communal refuse dump	%	6.2	4.9	1.5	6.9	2.2	21.5	19.1
	95% CI	[4.2-9.1]	[3.2-7.4]	[0.3-6.3]	[3.3-13.8]	[0.6-7.6]	[14.6-30.6]	[11.0-31.1]
Central collection/central collection point	%	0.8	1.6	0.4	2.8	0.4	0.8	2.5
	95% CI	[0.4-1.5]	[0.8-3.1]	[0.1-2.4]	[1.2-6.2]	[0.1-1.6]	[0.4-1.7]	[1.0-6.1]
Own refuse dump	%	3.6	3.1	1.2	3.8	1.4	14.3	9.1
	95% CI	[2.3-5.6]	[2.0-4.7]	[0.4-3.8]	[1.6-8.8]	[0.2-7.7]	[10.1-19.9]	[5.2-15.6]
Dump or leave rubbish anywhere	%	5.8	3.2	2.5	7.1	1.7	18.1	5
	95% CI	[3.2-10.1]	[2.1-5.0]	[0.7-9.0]	[2.5-18.2]	[0.3-9.6]	[12.6-25.3]	[2.4-10.2]
Other	%	0.3	0.3	0.2	0.3	0	1.8	0.2
	95% CI	[0.2-0.7]	[0.1-0.7]	[0.0-1.7]	[0.1-1.1]		[0.9-3.5]	[0.0-1.5]

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

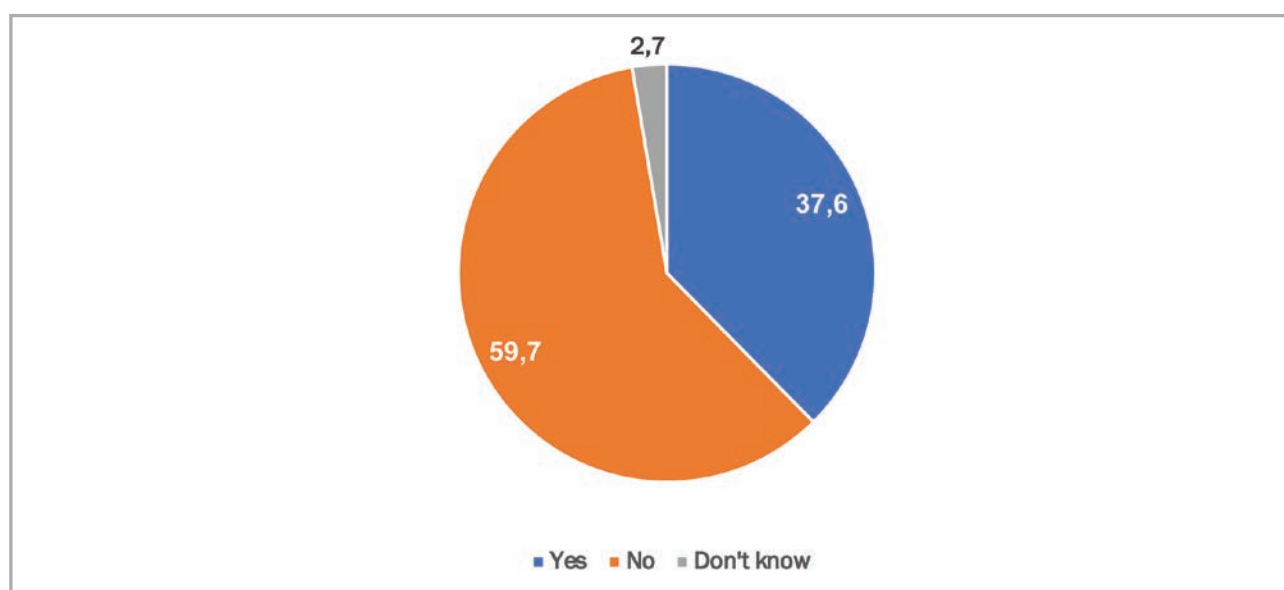


Figure 14: Proportion of households receiving free refuse removal services (n=2915)

5.5 Energy

5.5.1 Access to electricity

Overall, 90.9% of households in Gauteng Province had access to electricity (Figure 15). More female-headed households (9.32%) than male-headed households (89.9%) had access to electricity (Table 30). The City of Johannesburg had the highest proportion of households with access to electricity (94.3%), followed by Ekurhuleni (93.4%) and the City of Tshwane (89.8%) districts. West Rand District (78.4%) had the lowest proportion of the households with access to electricity.

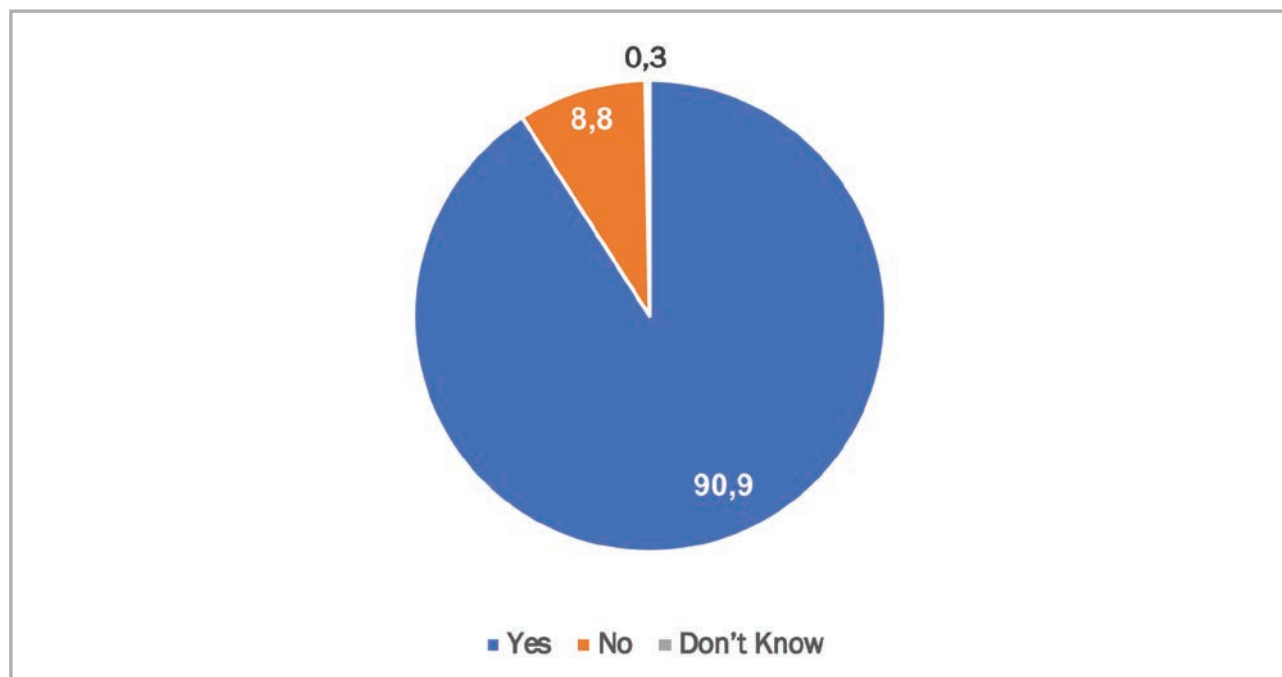


Figure 15: Proportion of households with access to electricity (n=4021)

Table 30: Access to electricity disaggregated by household head, sex, and district in Gauteng Province

	Yes		No		Don't know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	89.9	[85.0-93.3]	9.7	[6.3-14.5]	0.4	[0.2-1.0]
Female	92.3	[89.4-94.5]	7.6	[5.5-10.6]	0.1	[0.0-0.4]
District						
City of Johannesburg	94.3	[91.2-96.3]	5.4	[3.3-8.6]	0.4	[0.1-1.5]
City of Tshwane	89.8	[79.0-95.4]	9.7	[4.3-20.5]	0.5	[0.2-1.2]
Ekurhuleni	93.4	[81.2-97.9]	6.4	[2.0-18.8]	0.1	[0.0-1.0]
Sedibeng	80.8	[68.2-89.2]	19.1	[10.7-31.8]	0.1	[0.0-0.8]
West Rand	78.4	[65.2-87.5]	21.5	[12.4-34.7]	0.1	[0.0-0.9]

When asked if the household is receiving free electricity as part of the Free Basic Electricity Policy, the majority (80%) of the households responded 'no' while only 18.6 % said 'yes' (Figure 16). Few households received free electricity in each district. Ekurhuleni District (23.3%) had the highest proportion of households receiving free electricity, followed by the City of Tshwane District (20.3%). City of Johannesburg District (14.6%) had the least proportion of the households receiving free electricity (Table 31).

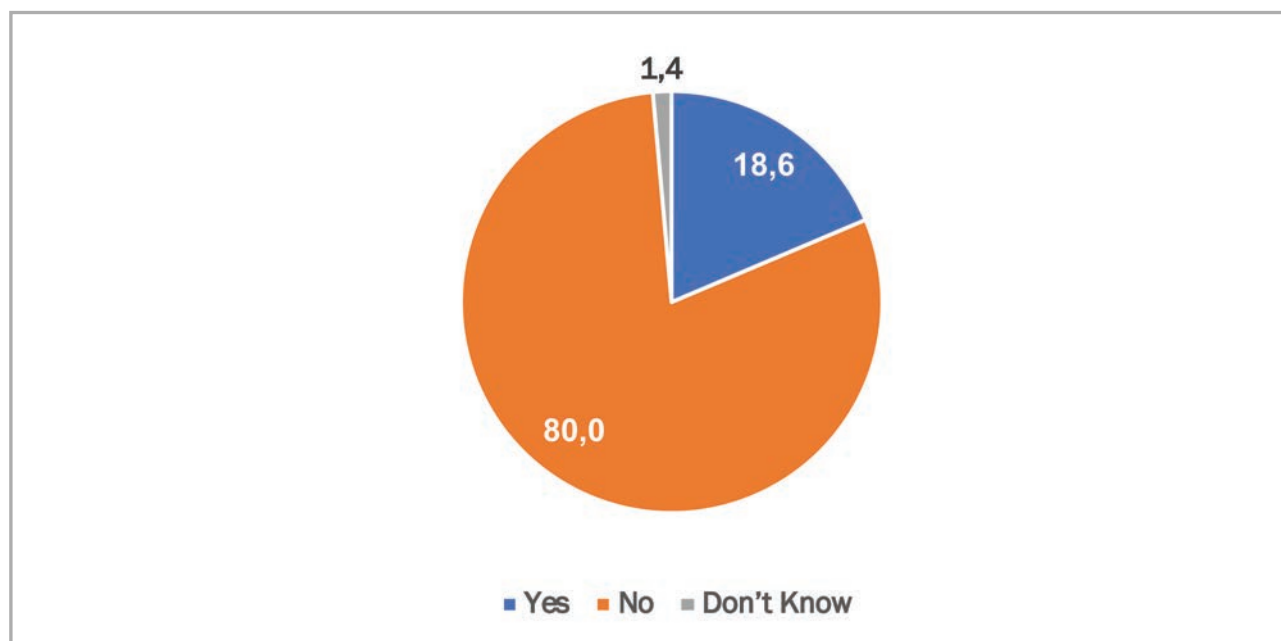


Figure 16: Proportion of households receiving free electricity (n=3487)

Table 31: Households receiving free electricity disaggregated by sex of the household head and district in Gauteng Province

	Yes		No		Don't know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	19.1	[14.5-24.7]	79.5	[73.9-84.1]	1.4	[0.8-2.4]
Female	18	[15.1-21.3]	80.5	[77.2-83.5]	1.5	[0.8-2.5]
District						
City of Johannesburg	14.6	[9.3-22.3]	83.2	[75.7-88.8]	2.1	[1.2-3.7]
City of Tshwane	20.3	[12.8-30.6]	78.8	[68.4-86.4]	0.9	[0.5-1.8]
Ekurhuleni	23.3	[18.5-28.9]	76.1	[70.6-80.8]	0.6	[0.1-2.7]
Sedibeng	17.2	[13.5-21.7]	80.2	[75.5-84.2]	2.6	[1.4-4.8]
West Rand	16.4	[12.4-21.5]	82.1	[77.2-86.1]	1.5	[0.9-2.6]

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 32). In terms of energy sources for cooking, most households use electricity from mains (94.5%) and less than 5% of households use gas (3.4%). In terms of the distribution of the source of energy for cooking across the districts, Ekurhuleni (97.5%) had the highest proportion of households which use electricity from the mains as main source of energy for cooking, followed by the City of Johannesburg (96.8%) and the City of Tshwane (91%) (Table 33).

Table 32: Household's main source of energy for cooking, lighting, water heating, and space heating in Gauteng Province

	Cooking	Lighting	Water heating	Space heating
	%	%	%	%
Electricity from mains	94.8	98.7	97.1	87.0
Other source of electricity (e.g., Generator)	0.4	0.6		0.4
Gas	3.4	0.0	0.7	1.9
Paraffin	0.9	0.1	0.7	1.0
Wood	0.2	0.0	0.2	0.5
Coal	0.2		0.2	0.4
Candles		0.2		
Solar energy	0.1	0.3	0.3	0.1
Other		0.0	0.0	0.2
None			0.2	8.5

Table 33: Source of energy for cooking disaggregated by sex of the household head and district in Gauteng Province

		Household head sex		District				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Electricity from mains	%	94.2	95.7	96.8	91.1	97.5	90.7	89.6
	95% CI	[92.3-95.7]	[94.0-96.9]	[94.7-98.1]	[87.0-94.0]	[93.9-99.0]	[87.3-93.3]	[82.8-93.9]
Other source of electricity (e.g., Generator)	%	0.4	0.4	0.4	0.3	0.4	0.3	0.5
	95% CI	[0.2-0.9]	[0.1-0.9]	[0.1-1.2]	[0.1-1.2]	[0.1-1.1]	[0.1-1.0]	[0.2-1.5]
Gas	%	3.7	3.1	2.2	7	0.7	6.8	6.3
	95% CI	[2.7-5.0]	[2.1-4.6]	[1.2-4.0]	[4.5-10.5]	[0.2-1.9]	[4.6-10.0]	[3.3-11.5]
Paraffin	%	1.1	0.7	0.4	1.4	0.9	0.8	2.4
	95% CI	[0.6-2.0]	[0.3-1.3]	[0.1-1.2]	[0.6-3.6]	[0.3-3.1]	[0.2-3.2]	[1.0-5.7]
Wood	%	0.2	0.1	0	0.1	0.1	0.4	1.1
	95% CI	[0.1-0.6]	[0.0-0.2]		[0.0-1.0]	[0.0-1.0]	[0.1-1.3]	[0.3-4.7]
Coal	%	0.2	0.1	0.1	0	0.1	0.7	0.1
	95% CI	[0.1-0.6]	[0.0-0.3]	[0.0-1.0]		[0.0-0.9]	[0.3-1.9]	[0.0-1.0]
Candles	%	0.1	0	0	0	0.1	0	0
	95% CI	[0.0-0.5]				[0.0-1.0]		
Solar energy	%	0.1	0	0	0	0.1	0.3	0
	95% CI	[0.0-0.4]				[0.0-1.0]	[0.1-1.1]	

The main source of energy for lighting (98.7%) for almost all the households in Gauteng Province was electricity from the mains (Table 32). Few households (1.3%) reported using other energy sources for lighting. Table 33 indicates that there is no much difference between male and female who use electricity from main 94.2% and 95.7% respectively.

Table 34: Source of energy for water heating disaggregated by sex of the household head and district in Gauteng Province

		Household head sex		District				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Electricity from mains	%	96.7	97.6	98.6	95.2	98	95.6	92.5
	95% CI	[95.3-97.7]	[96.5-98.3]	[97.7-99.1]	[91.9-97.2]	[95.5-99.1]	[92.8-97.4]	[87.3-95.7]
Other source of electricity (e.g., Generator)	%	0.7	0.6	0.6	0.8	0.7	0.1	1.1
	95% CI	[0.4-1.3]	[0.3-1.3]	[0.3-1.4]	[0.3-1.7]	[0.2-1.8]	[0.0-1.0]	[0.6-2.0]
Gas	%	0.8	0.7	0	2.1	0.1	2.1	1.5
	95% CI	[0.5-1.4]	[0.3-1.4]		[1.2-3.6]	[0.0-1.0]	[1.2-3.7]	[0.9-2.7]
Paraffin	%	0.9	0.4	0.3	1.3	0.4	0.7	2.2
	95% CI	[0.4-1.7]	[0.2-1.0]	[0.1-1.0]	[0.4-3.7]	[0.1-1.7]	[0.1-3.3]	[0.9-4.9]
Wood	%	0.1	0.3	0	0.1	0.1	0.3	1.3
	95% CI	[0.0-0.5]	[0.1-0.7]		[0.0-1.0]	[0.0-0.9]	[0.1-1.1]	[0.3-4.8]
Coal	%	0.2	0.1	0.1	0	0.3	0.3	0.3
	95% CI	[0.0-0.6]	[0.0-0.6]	[0.0-1.0]		[0.0-1.9]	[0.0-1.9]	[0.0-1.9]
Solar energy	%	0.4	0.1	0.1	0.6	0.1	0.7	0.7
	95% CI	[0.2-0.9]	[0.0-0.7]	[0.0-0.9]	[0.2-1.5]	[0.0-1.0]	[0.2-2.1]	[0.2-2.3]
Other	%	0.1	0	0	0	0.1	0	0
	95% CI	[0.0-0.5]				[0.0-0.9]		
None	%	0.2	0.1	0.3	0	0.1	0.1	0.4
	95% CI	[0.1-0.6]	[0.0-0.6]	[0.1-1.0]		[0.0-0.9]	[0.0-1.0]	[0.1-1.9]

Table 32 shows that the most common source of energy for water heating (97.1%) was electricity from the mains. Other sources of energy accounted for less than 3%. The City of Johannesburg district (98.6%) had the highest proportion of households using electricity from the mains as the main source of energy for water heating, followed by Ekurhuleni (98%) and the City of Tshwane (95.2%) (Table 34) districts. West Rand District (92.5%) had the lowest proportion of households which indicated using electricity as the main source of energy for water heating (Table 34).

Table 35: Main source of energy for space heating disaggregated by sex of the household head and district in Gauteng Province

		Household head sex		District				
		Male	Female	City of Johannesburg	City of Tshwane	Ekurhuleni	Sedibeng	West Rand
Electricity from mains	%	87.1	87	91.2	77.9	91.4	83.5	81.1
	95% CI	[83.7-89.8]	[83.7-89.6]	[87.4-93.9]	[69.6-84.4]	[86.8-94.4]	[78.5-87.5]	[75.2-85.9]
Other source of electricity (e.g., Generator)	%	0.5	0.3	0.6	0.1	0.3	0.3	1.4
	95% CI	[0.2-0.9]	[0.1-1.0]	[0.2-1.5]	[0.0-1.0]	[0.1-1.0]	[0.1-1.1]	[0.7-2.6]
Gas	%	2.1	1.7	0.9	4.3	0.3	4.3	4.4
	95% CI	[1.3-3.4]	[1.1-2.6]	[0.3-2.3]	[2.5-7.5]	[0.1-1.1]	[2.6-7.0]	[2.4-7.8]
Paraffin	%	0.9	1	0.3	1.9	1.3	0.4	0.7
	95% CI	[0.4-2.0]	[0.5-2.0]	[0.1-1.1]	[0.7-5.2]	[0.5-3.5]	[0.1-1.2]	[0.2-2.5]
Wood	%	0.5	0.4	0	0.9	0.1	0.7	3.2
	95% CI	[0.3-1.1]	[0.1-1.0]		[0.3-2.2]	[0.0-1.0]	[0.3-1.6]	[1.3-7.6]
Coal	%	0.5	0.2	0	0.4	0.8	0.9	0.3
	95% CI	[0.2-1.2]	[0.1-1.1]		[0.1-1.2]	[0.1-4.2]	[0.4-2.0]	[0.0-1.9]
Candles	%	0.1	0	0	0	0.1	0	0
	95% CI	[0.0-0.5]				[0.0-1.0]		
Solar energy	%	0.2	0	0	0.3	0.1	0.3	0
	95% CI	[0.1-0.6]			[0.1-1.1]	[0.0-1.0]	[0.1-1.2]	
Other	%	0.2	0	0	0.4	0	0	0.3
	95% CI	[0.1-0.7]	[0.0-0.2]		[0.1-1.7]			[0.1-1.3]
None	%	7.9	9.3	7.2	13.8	5.6	9.6	8.6
	95% CI	[6.0-10.4]	[7.0-12.4]	[4.4-11.4]	[9.2-20.3]	[3.1-9.8]	[6.9-13.2]	[5.5-13.1]

The majority (87%) of the households in Gauteng Province indicated using electricity from the mains as the main source of energy for space heating (Table 32). About 8% of the households indicated that they did not use anything for space heating. Ekurhuleni District (91.4%) had the highest proportion of households whose main source of energy for space heating was electricity, closely followed by Ekurhuleni District (91.4%). The City of Tshwane District (13.8%) had the highest proportion of households which indicated that they use nothing for space heating (Table 32). West Rand District (4.4%) had the highest proportion of households using gas as the main source of energy for space heating, closely followed by the City of Tshwane (4.3%) and Sedibeng (4.3%) Districts (Table 35).

5.6 Indigent Households

In Gauteng Province, only less than a third (27.6%) of the households indicated that they were registered as indigent households (Figure 17). More female-headed (28.4%) than male-headed (27%) households were registered as indigent in Gauteng Province. However, the variance between male- and female-headed households is (1.4%) (Table 36). The City of Johannesburg District (29.6%) had the highest proportion of households registered as indigent, followed by Ekurhuleni (29%) and City of Tshwane (27.4%) districts. West Rand District (18.3 %) had the lowest proportion of the households registered as indigent.

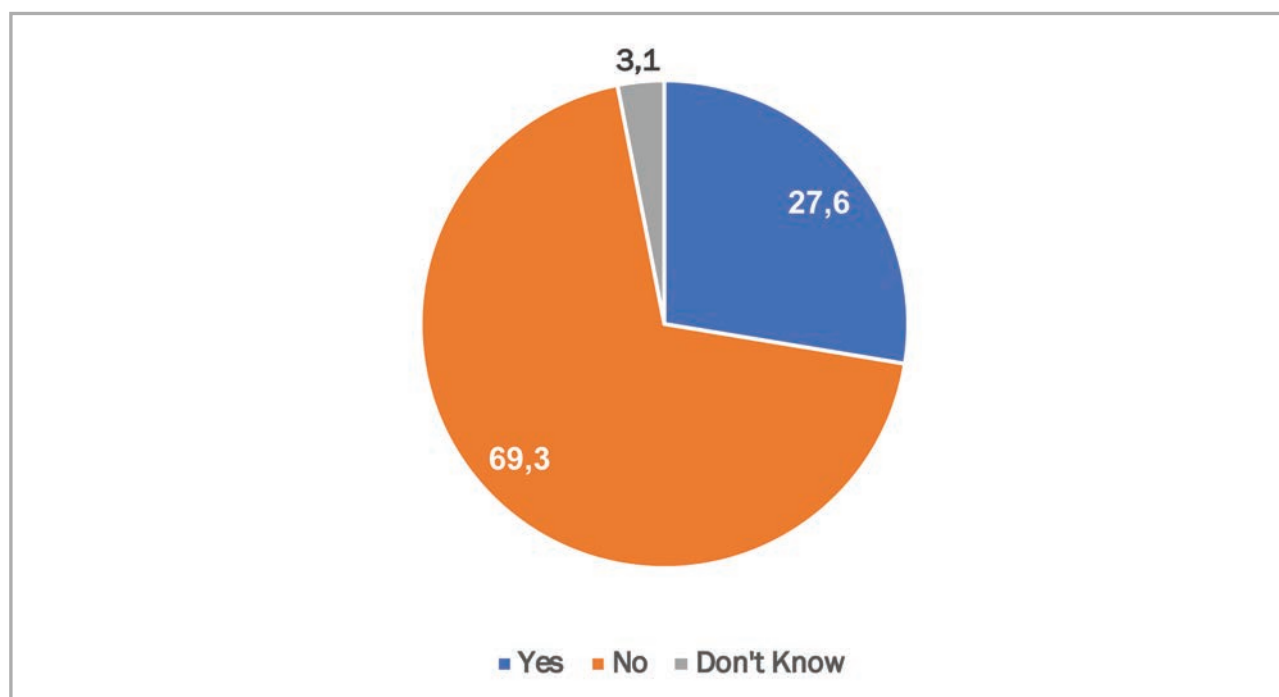


Figure 17: Proportion of the household registered as indigent (n=4022) in Gauteng Province.

Table 36: Households registered as indigent disaggregated by sex of the household head and district in Gauteng Province

	Yes		No		Don't know	
	%	95% CI	%	95% CI	%	95% CI
Household head sex						
Male	27.1	[23.9-30.5]	69.9	[66.5-73.2]	3	[2.2-4.1]
Female	28.4	[25.1-31.9]	68.4	[64.9-71.7]	3.2	[2.2-4.6]
District						
City of Johannesburg	29.6	[24.5-35.1]	68.6	[62.8-73.8]	1.9	[1.1-3.1]
City of Tshwane	27.4	[20.8-35.3]	68.3	[60.7-75.0]	4.3	[2.5-7.1]
Ekurhuleni	29	[23.9-34.5]	69	[63.7-73.7]	2.1	[1.2-3.7]
Sedibeng	22.6	[18.7-27.1]	70.8	[65.7-75.4]	6.6	[4.6-9.2]
West Rand	18.3	[13.5-24.4]	76.3	[70.2-81.5]	5.4	[3.8-7.7]

6.1 Agriculture and Production Systems

This section focuses on the food availability dimension of food security and explores food production within the province by various households. Most households in the African context rely on agriculture as the primary source of food hence they engage in crop and livestock production to provide food for their households. This section characterizes land ownership and access, and agriculture production trends across the different districts in Gauteng Province.

Activity	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Land preparation (maize)												
Planting (maize)												
Weeding												
Harvesting												
Land preparation (beans)												
Planting												
Weeding												
Harvesting												
Land preparation (vegetables)												
Planting												
Weeding												
Harvesting												
Off-farm Employment (CWP)												
Fishing												

Figure 18: Seasonal calendar (Source: HEA, Qualitative Output)

Findings from the HEA focus group discussions indicate that agricultural production and value chains have a critical role in household food and nutrition security. Figure 18 depicts a seasonal calendar in Gauteng Province. The rain season (September to February) is characterised by land preparation, planting, and weeding. Much of the rural life in the zone is still determined by agricultural seasons, although this has been ameliorated by employment, fishing, and social grants, which are year-round contributors to people's livelihoods. Livelihoods information is organised temporally by consumption year, which begins with the start of the main dry harvest and runs through to just before the next year's main dry harvest. The main dry harvest begins in May, so the consumption year begins that month and runs up until the end of the following April. 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.

The main season for farming begins with land preparation in spring, followed by ploughing and planting, depending on the timing of the rains. Weeding (a period of intense activity and one in which work opportunities increase) takes place from December to April, with the dry harvest (another period for employment) beginning in April. The main crops grown during this period are maize, beans, and vegetables. Fishing is done throughout the year and contributes significantly to the livelihood of most households in the province.

6.1.1 Household access to land in Gauteng Province

In South Africa, there are dual systems when it comes to land rights i.e., statutory law vested in the Constitution and customary law vested mostly in patrilineal tribal traditions and customs (Toulmin, 2008).

Overall, access to land by households in the Gauteng Province is modest (Figure 19) with at least 50% of households in three (Sedibeng, West rand, and City of Tshwane districts) out five districts reporting having access to land. The district with the least number of households with access to land is City of Johannesburg Metropolitan District with a paltry 36%.

It should be noted that most of the land in the Gauteng Province is privately owned. Within the West Rand District most of the land is used for gold mining enterprises. Other drivers of the economy in the area are tourism, owing to the cradle of humankind, other archaeological sites and botanical gardens in the area, manufacturing, and commercial agriculture. The other district in the area known as Sedibeng is also famous for mining and industrial activities, such as the Sasol refinery, the then Iron and Steel hub (ISCOR) (now under the global company Arcello Metal).

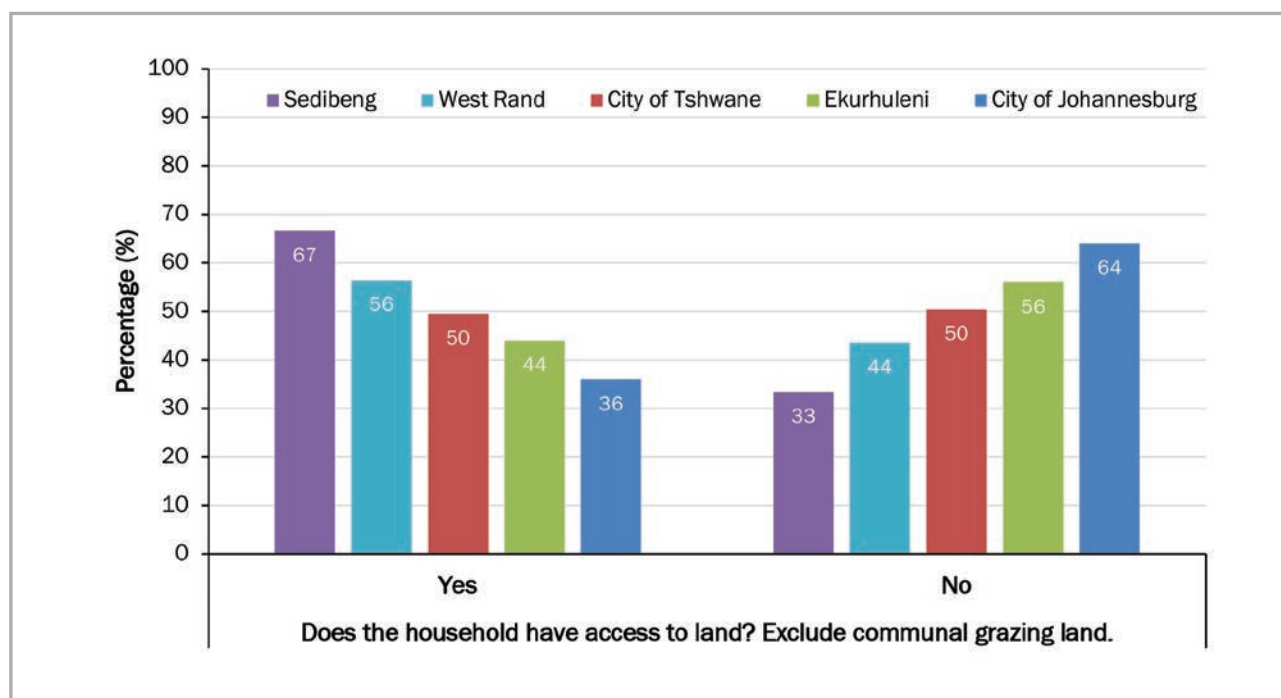


Figure 19: Household access to land in Gauteng Province

Disaggregated by gender, female-headed households were on average having higher percentage when it comes to access to land (Figure 20). This is more pronounced among females in both Sedibeng and West Rand districts, with 60% of access to land. (Figure 21).

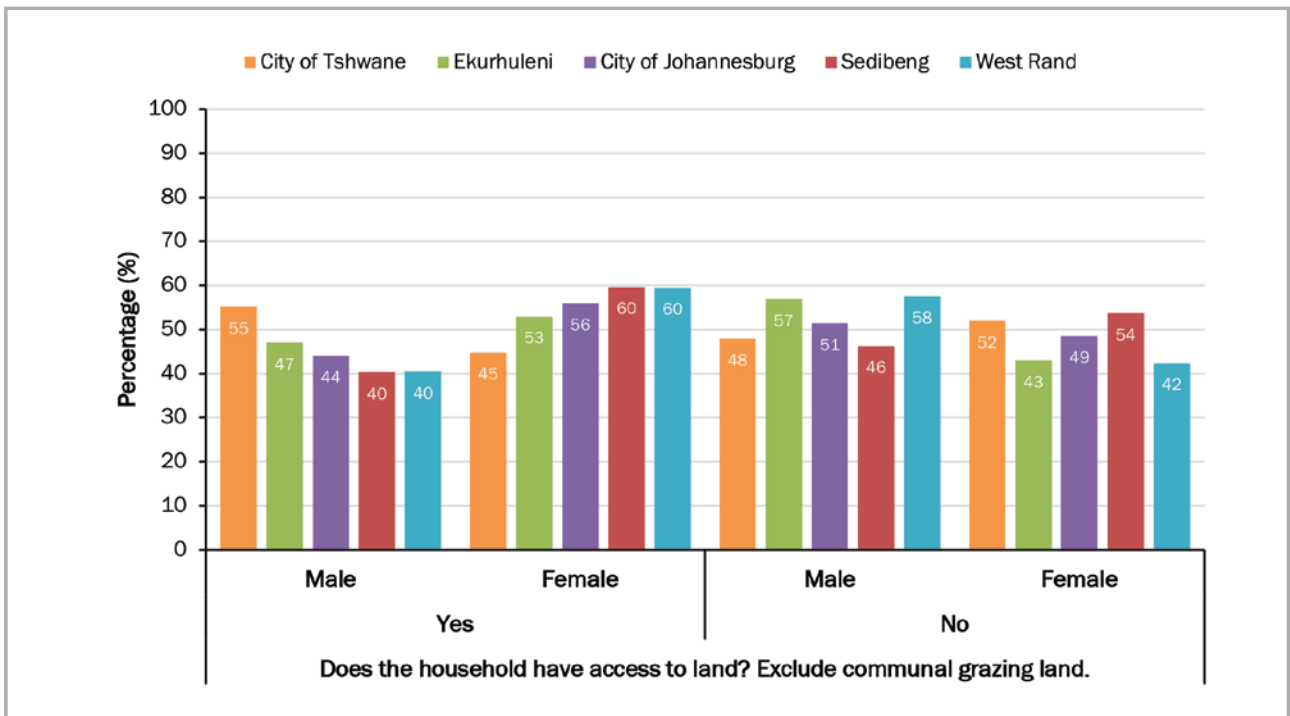


Figure 20: Land access disaggregated according to household head sex in Gauteng Province

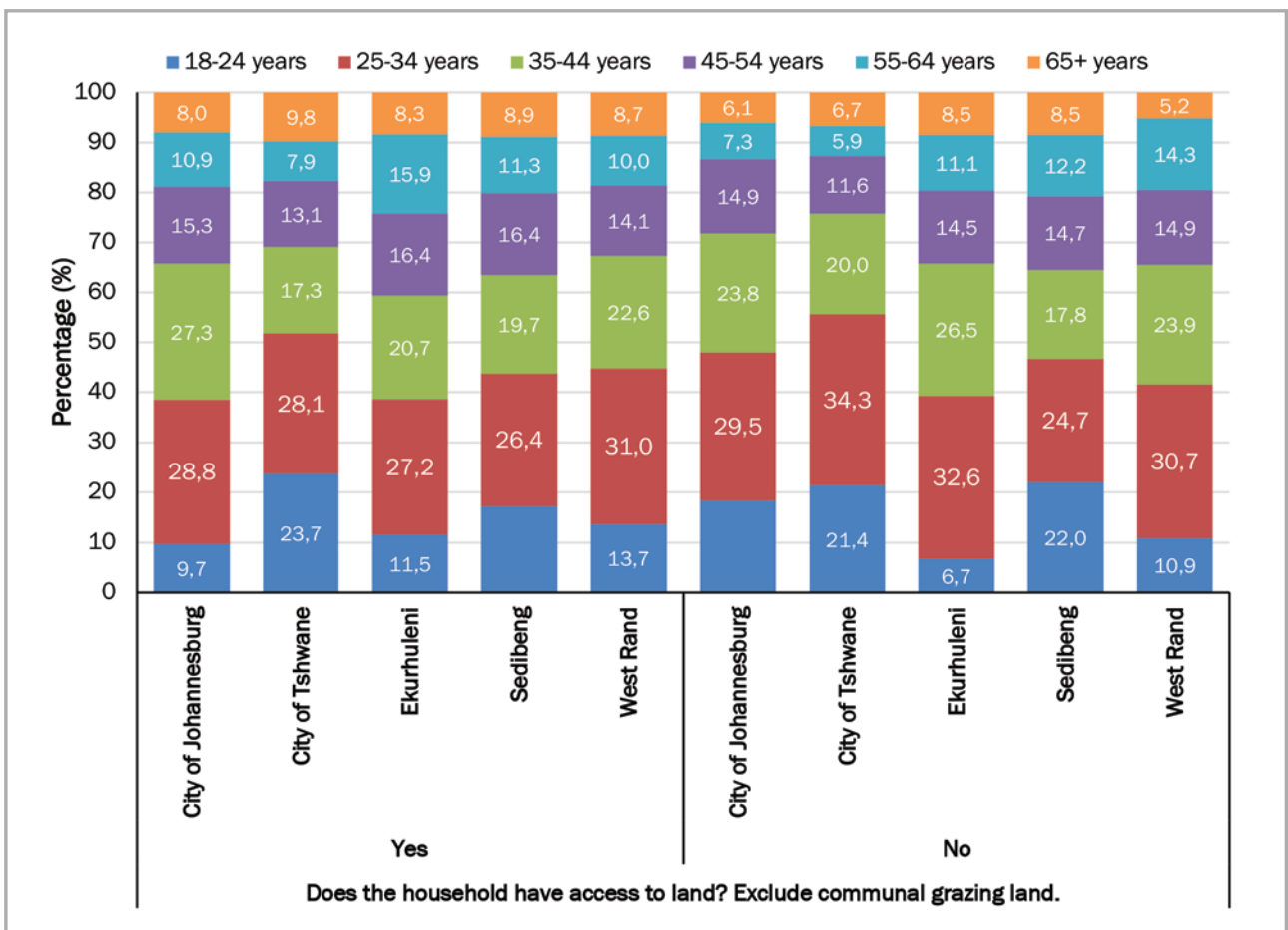


Figure 21: Access to land disaggregated according to age in Gauteng Province

Land access varied disproportionately according to the different age group categories as shown in Figure 21. Entirely, all the respondents in the 18-24 years age category have extremely limited access to land and across the five districts, except for the City of Tshwane District, wherein 23.7% of the 18-24 years age group have access to the land (Figure 21). It should be noted that in a well-functioning society, we expect low levels of child/youth-headed households, hence the extremely low levels reported of the youth with access to land. As expected, access to land increased with increase in age, that is why in all the districts the age group between 25-44 years has the highest percentage of access to land. It should be noted that this is the most economically active age group which is able to purchase land from income generated.

6.1.2 Land tenure system

Results from the household survey show that of the land that they have access to, most of it is owned by the households (Figure 22), with households in the Ekurhuleni District, at the forefront with 88.3%, followed by Sedibeng and the City of Tshwane districts with 87.5% and 83.3% of the households owning the land they have access to, respectively. There is, however, a small percentage of households who reside on land which is rented i.e., City of Johannesburg and City of Tshwane districts have the highest number of households reported for renting at 24% and 14%, respectively. In all the districts, the majority of the households have access to land, which is less than 500m². This result indicates that the majority of the reported land owned is merely for residential purposes and not enough for agriculture production purposes (Figure 22). Ownership of the land in this context is a small area for dwelling with extremely limited backyard farming or gardening. Sedibeng District has the largest percentage of households (15%) with yards bigger than 500m² but less than 1000m², it is then followed by the City of Tshwane District with 12%.

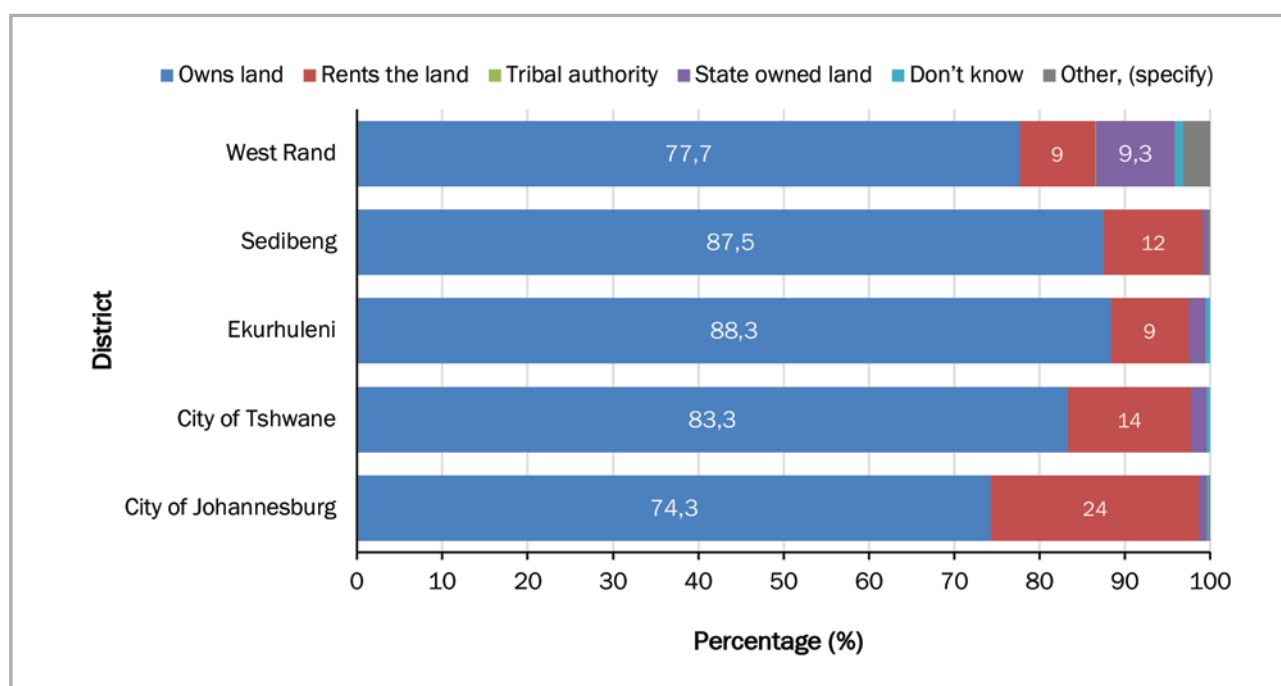


Figure 22: Land tenure in the Gauteng Province

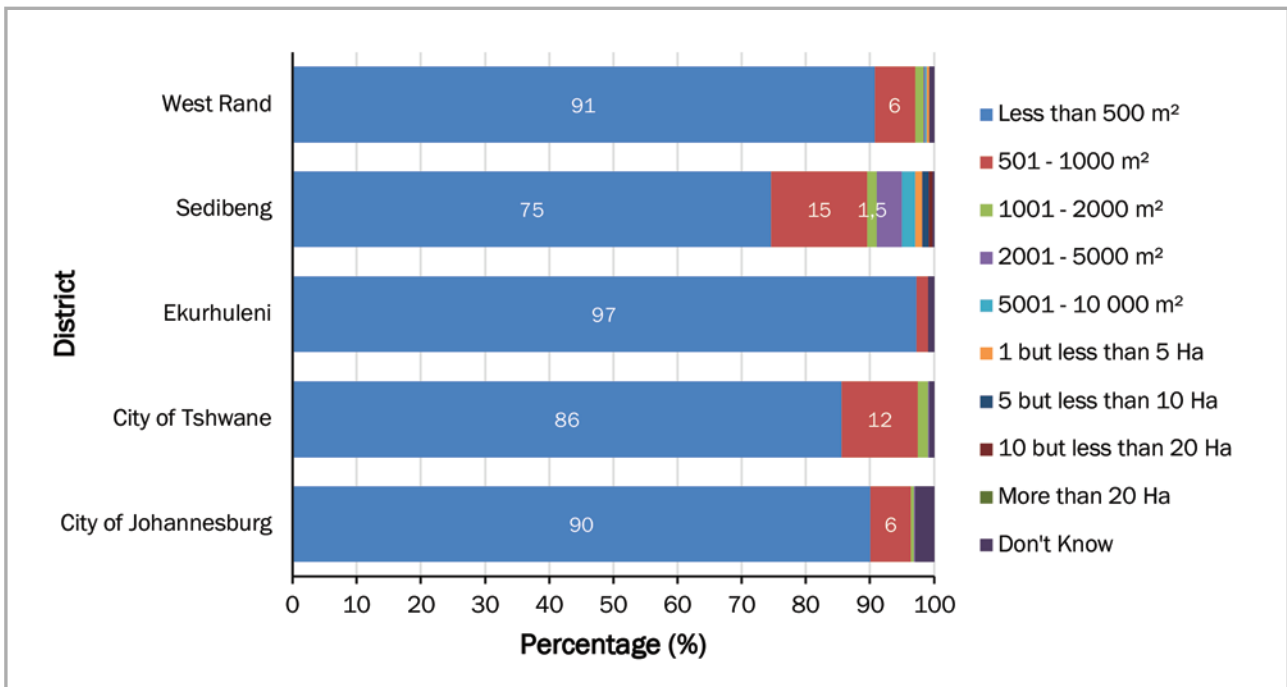


Figure 23: The approximated agricultural land size accessed by households in Gauteng Province

6.1.3 Use of land for food production or other agricultural products

Within the province, the percentage of households who use the land that they have access to for food and agricultural production is extremely low (Figure 23). Only Sedibeng District has a slightly higher percentage (33%) of households who have access to land using it for agricultural purposes (Figure 23). It should be noted that a higher percentage (above 75% in all districts) 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 mining in the province.

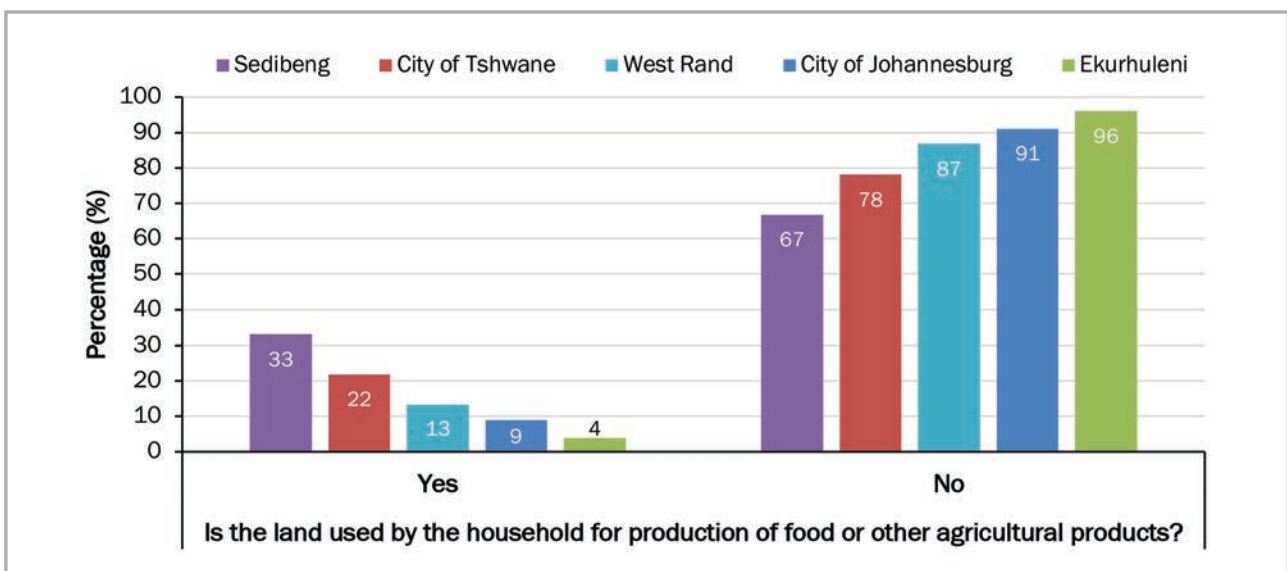


Figure 24: Land use for food and other agricultural production

6.1.4 Crop and livestock production

Households in the Gauteng Province practise livestock production at an extremely lower rate (Figure 25). Ekurhuleni and Sedibeng are the only districts with a very low percentage of live stock production (9%). The low level of participation by households in livestock production can be ascribed to the small size of the stands and the high proportion of commercial farming and mining in the area.

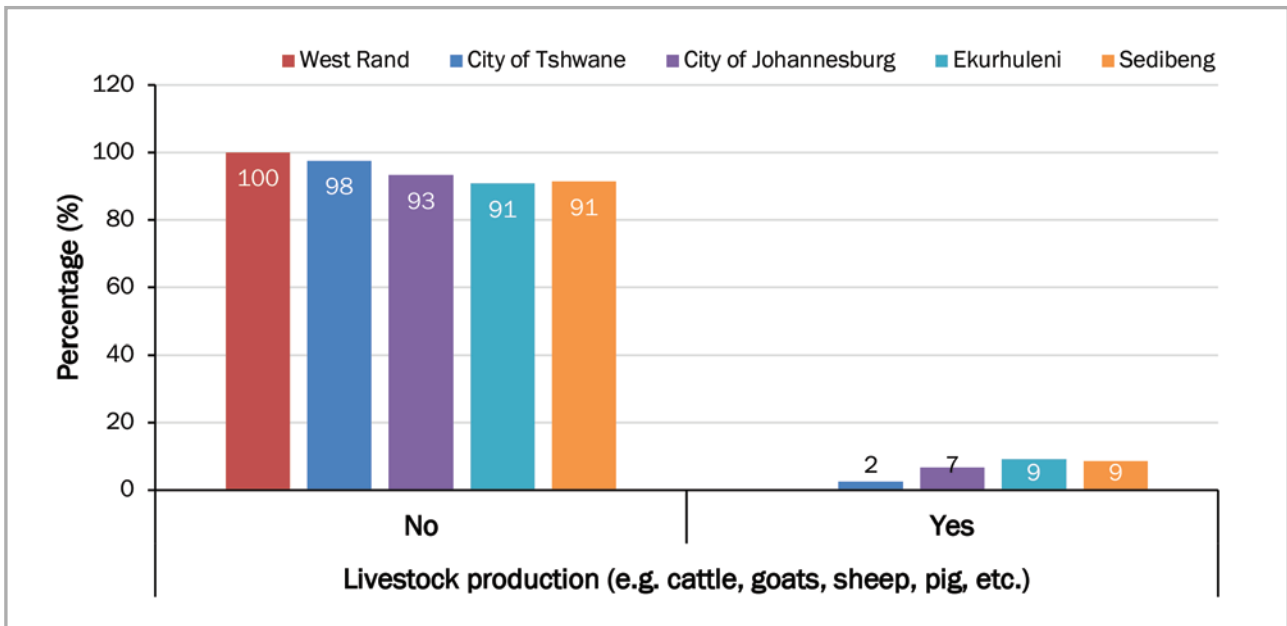


Figure 25: Livestock production disaggregated by district in Gauteng Province

Generally poultry production is practised by an extremely low number of households in Gauteng Province (Figure 24). The households in both the City of Tshwane and Ekurhuleni districts are at the forefront when it comes to poultry production, but with a lowly value of 9%.

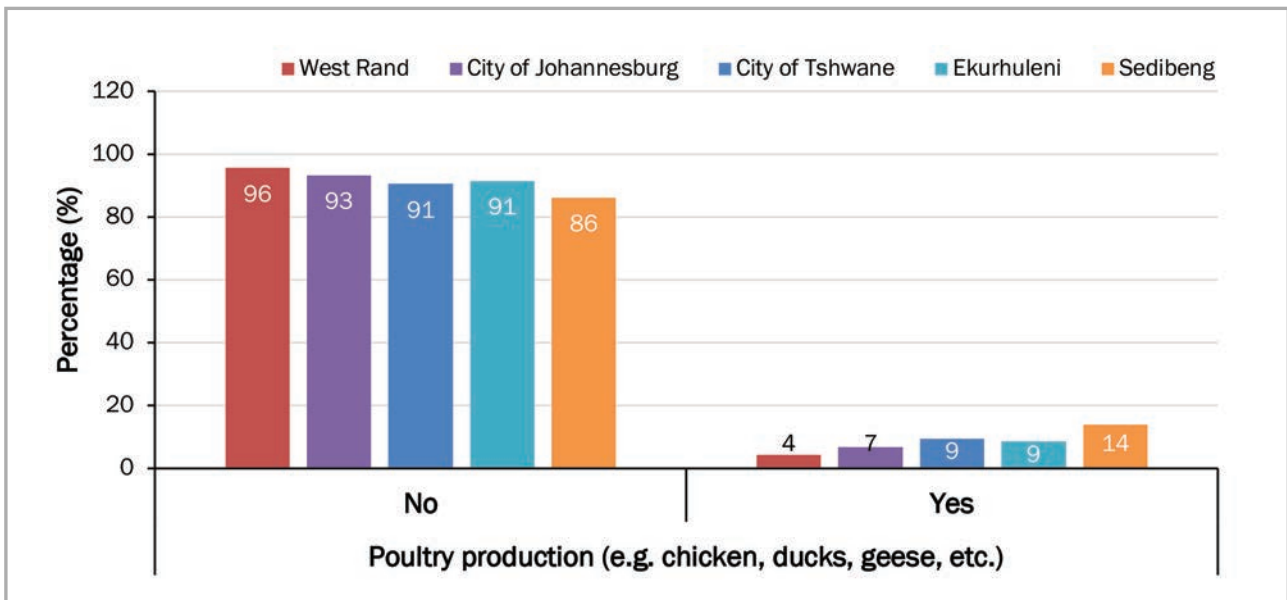


Figure 26: Poultry production disaggregated by district in Gauteng Province

Households in the Gauteng Province reported an extremely low percentage of engagement in grain crop production, with the City of Tshwane and the City of Johannesburg districts reported to have fairly low level of engagement in crop productin at 23% and 14%, respectively (Figure 27). Such low levels of grain production can be ascribed to the fact that most of the households have small yards (less than 500m²). Even though parts of Gauteng Province are known for their high value crop production i.e., maize and wheat, the households have reported an extremely low levels of production.

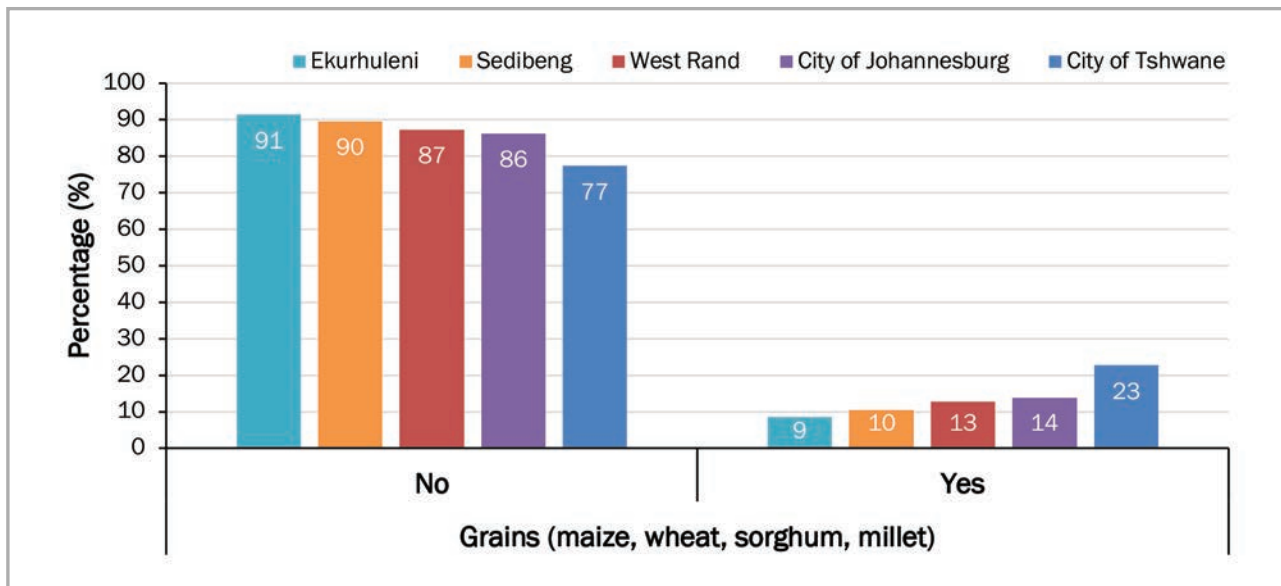


Figure 27: Household involvement in crop production

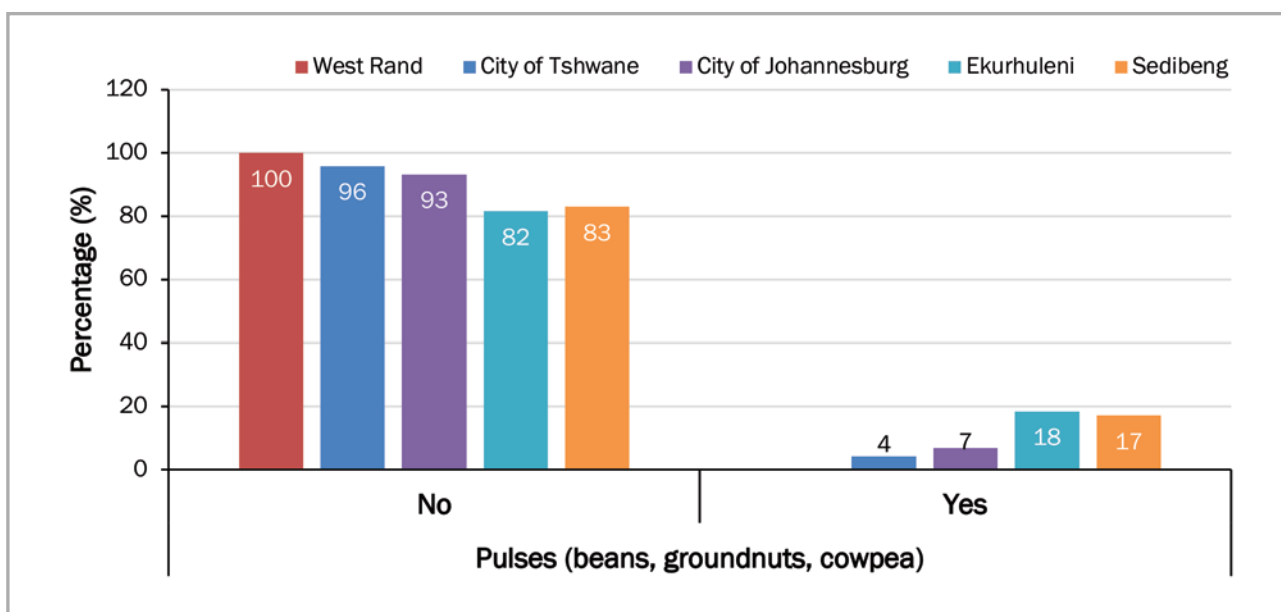


Figure 28: Pulses Production by district

The production of pulses is very minimal with no practice by most households in the Gauteng Province across the five districts (Figure 28). Only Ekurhuleni and Sedibeng districts have reported some level of pulse production, with 18% and 17% respectively. This result is expected since most of the areas in Gauteng Province are urbanized, hence there is limited agriculture activities.

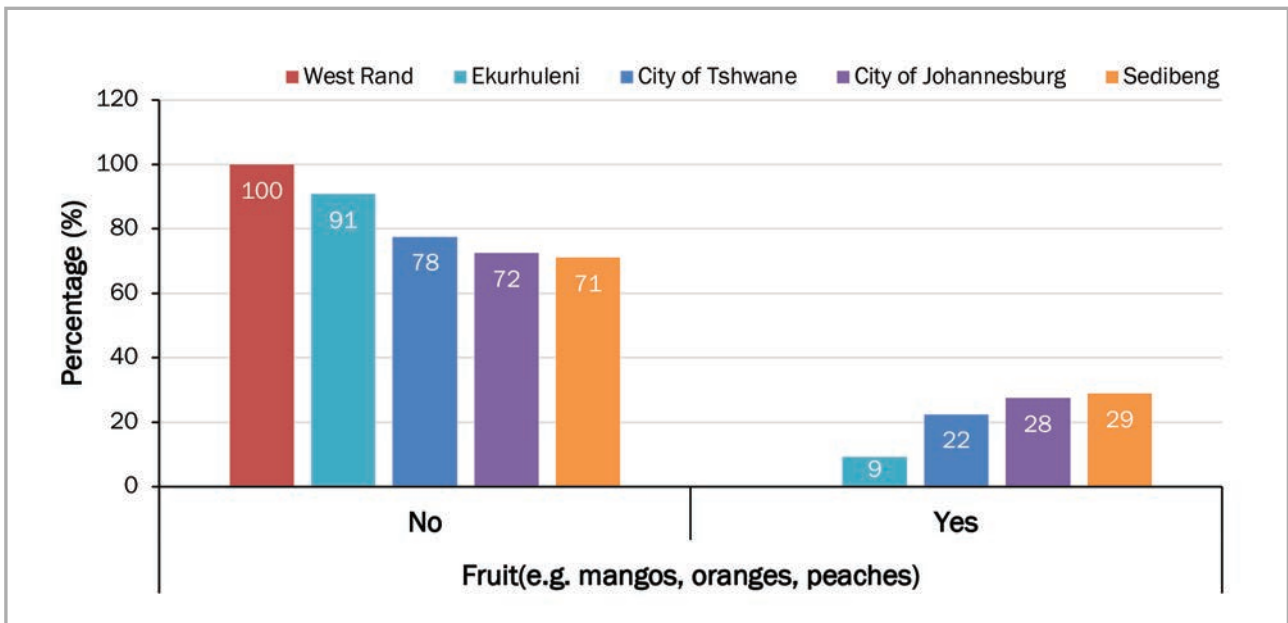


Figure 29: Household fruit production in Gauteng Province

Fruit production is low in all the districts in the Gauteng Province (Figure 29). The highest levels in Sedibeng and City of Johannesburg districts at 29% and 28%, respectively. Vegetable production is also not highly practised in the province, with West Rand, Sedibeng, and Ekurhuleni districts at the forefront of production with 27%, 18%, and 17%, respectively.

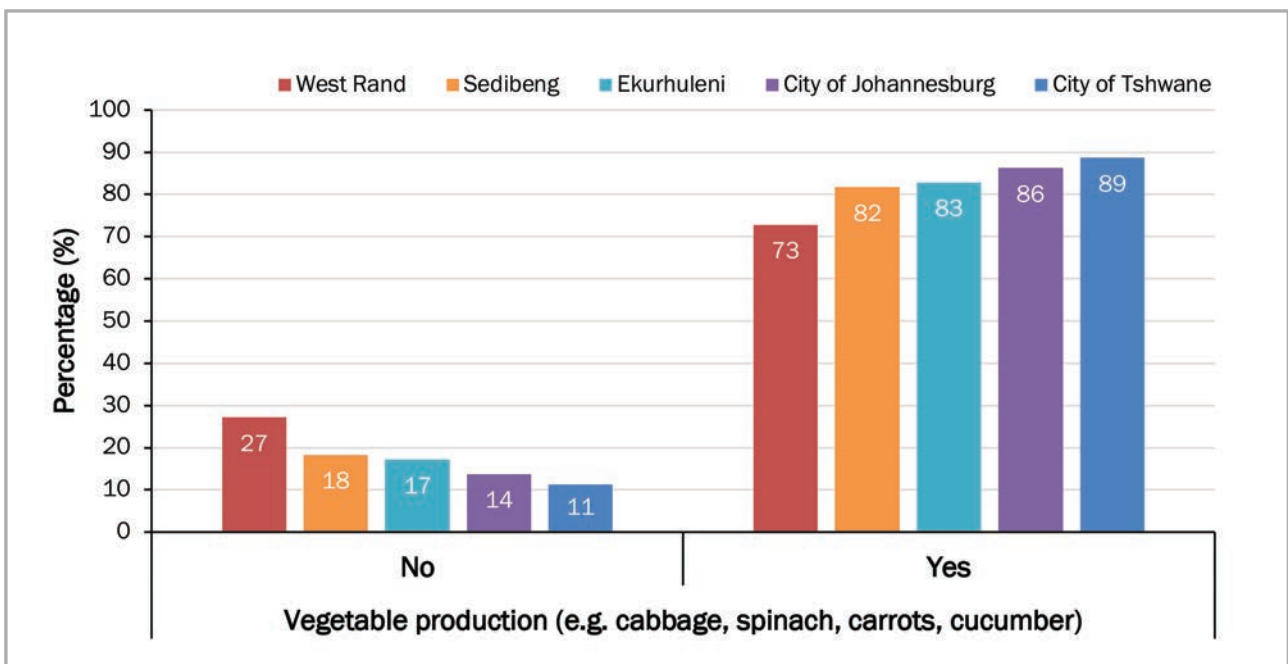


Figure 30: Household vegetable production in Gauteng Province

6.1.5 Major Crops Grown

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

6.2 Wealth Breakdown, Food, and Income Sources

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

The analysis showed that geography plays a critical role in determining a household's options for obtaining food and income in a society. However, it is not the only factor that determines the pattern of livelihood. While geography tends to define a household's options for obtaining food and income, the ability to exploit those options and to survive in a crisis is determined largely by wealth. In other words, what people have by way of land, capital, and livestock, together with their educational status and access to political and social networks determines the ways in which they are able to get food and cash, as well as the ways in which they will respond to sudden or long-term change.

This section provides an analysis of wealth, food, and income sources in the three livelihood zones in the province. The analysis focused on factors that determine how well-off community members might be based on prevailing livelihood assets. The wealth breakdown is the analysis which entails grouping households based on wealth and assets. The investigation of differences between households is central to building a meaningful analysis of food security and vulnerability to different hazards. Results emerging from the HEA focus group discussions indicate that the majority of the households in open access livelihood zones of the province are poor and very poor. This result is a cause for concern with regards to government interventions that need to be tailor-made for the province.

6.2.1 Central maize, wheat, and cattle (ZAMWF) of Sedibeng, West Rand, and Ekurhuleni districts

Wealth in this area is determined by four factors:

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

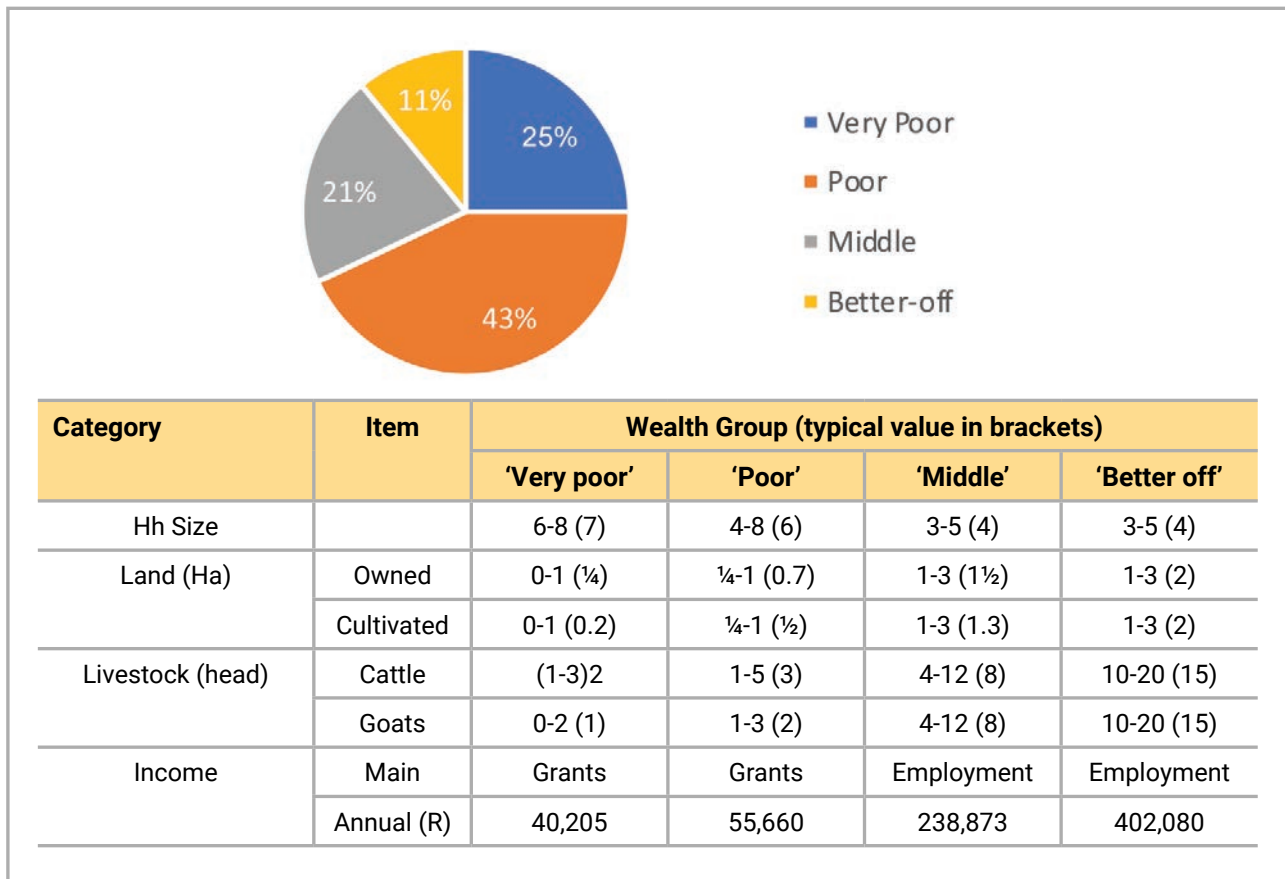


Figure 31: Wealth breakdown in the ZAMWF Livelihood Zone (Source: HEA, Qualitative Output)

Land holdings increase with wealth but not as exponentially as the factors listed above (0.1ha for the poorest against 2ha for the wealthiest). The wealthiest households, described as the 'better-off', are those with permanent work, a salary and have business opportunities. They have an average annual income of R402,080 compared to the R40 205 of the 'very poor' households. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R238,873 are referred to as the 'middle'. Those who depend primarily on income from grants and informal labour are described as the 'poor' and 'very poor'; collectively, they are about 68% of households (Figure 31). These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock products.

'Better-off' households are employed in both formal and informal sectors. They 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 are the ones who suffer the most impacts of food insecurity.

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

6.2.2 Highveld vegetables and crops (ZAHVC) of West Rand and Ekurheni districts

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

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

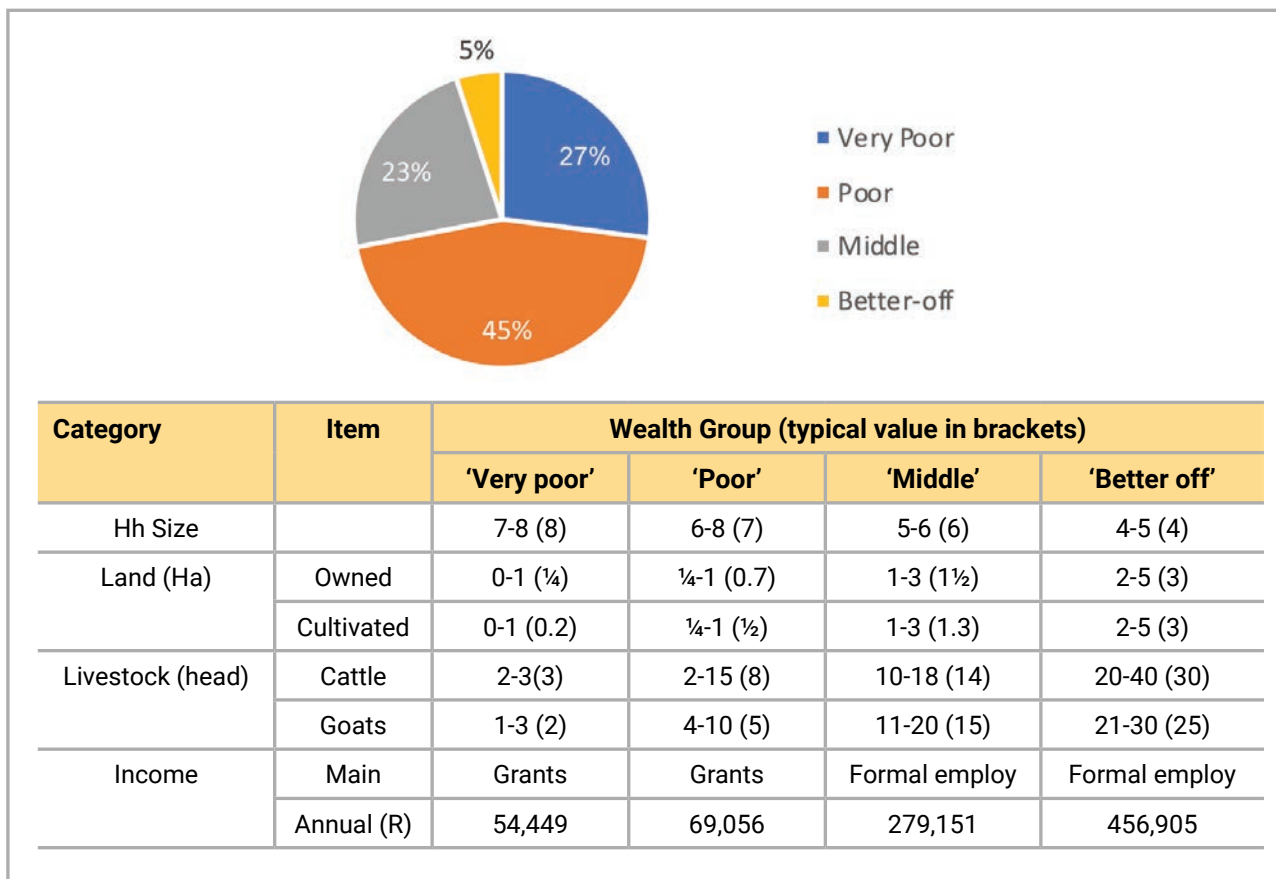


Figure 32: Wealth breakdown in the North Western open access cattle and crops livelihood zone (ZAHVC)

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

The wealthiest households, described as the 'better-off', are those with permanent work, a salary and have business opportunities. They have an average annual income of R456,905 compared to less than R5,000 per month of the 'very poor' households who struggle to meet their daily food and non-food needs. The results indicate income disparities among the 'poor' and 'better-off' households in the livelihood zone. Households that have lower-paying or less permanent formal employment and some business opportunities with average annual income of R279,151, are referred to as the 'middle' (Figure 32). Those who depend primarily on grants are described as the 'poor' and 'very poor'; collectively, they are about 72% of households. These 'very poor' and 'poor' supplement their grant income with casual labour, self-employment and, in very small quantities, crops and livestock.

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

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

6.2.3 Highveld Cattle and Game Farming (ZAHGR) in West Rand, City of Johannesburg, and City of Tshwane districts

Wealth in this livelihood zone is determined by four factors:

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

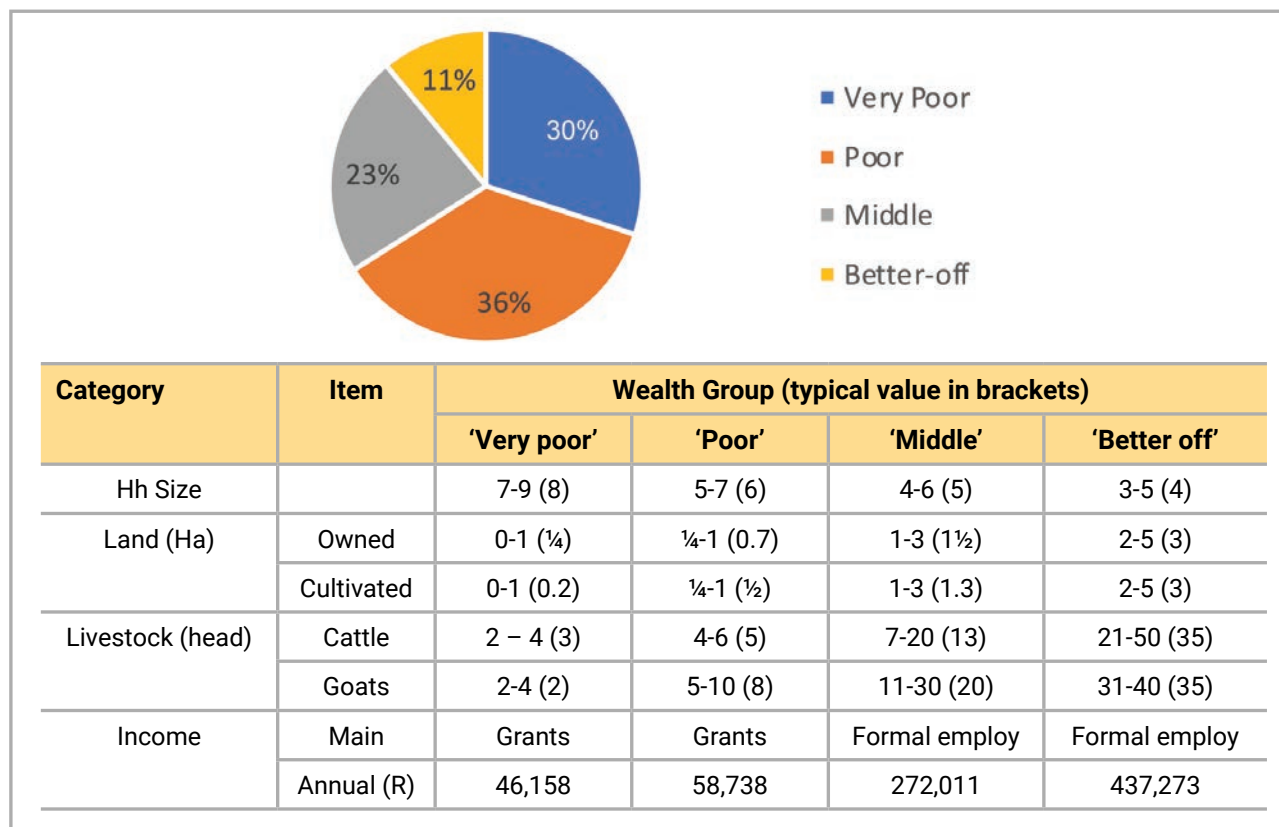


Figure 33: Wealth breakdown in the livelihood zone (ZAHGR)

The wealthiest households, described as the 'better-off', are those with permanent work, a salary, and an average income of almost half a million. Households that have lower-paying or less permanent work, which when averaged over the year is approximately R15, 000 per month, are referred to as the 'middle'. The 'better-off' households have an annual income of R437,273 compared to the very poor households (R46,158) (Figure 33). Those who depend primarily on grants are described as the 'poor' and 'very poor'; collectively, they are almost four-fifths of households. The 'very poor' and 'poor' supplement their grant income from casual labour and other sources.

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

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

6.2.4 Source of food in ZAMWF of Sedibeng, West Rand, and Ekurhuleni districts

Sources of food are expressed in terms of contribution to the minimum human food energy needs, which is 8,800 kJ/person/day. Wealthier households may consume considerably more than this, for example 12,144 kJ/person/day, which is 138% of minimum food needs. Some of this consumption may be wasted, for example

when food is thrown away or incompletely eaten. Even the poorest households may consume slightly more than the minimum requirement, for example 111%, or 9,768 kJ/person/day. Crop production contributed to 2% and 6% of the food sources for the 'very poor' and 'poor' wealth groups. Food purchases contributed about 77% and 83% of the food needs for the 'middle' and 'better-off' households. Despite the good rainfall and fertile soils, purchases still made up a significant portion of people's sources of food (Figure 34). The contribution to food energy from non-staple food purchases increased steadily from 27% to 40% across the wealth groups. The 'very poor' and 'poor' households also accessed food from food aid from both state and non-state actors implementing various safety net programmes. The 'very poor' and 'poor' households could hardly cover their basic food and livelihoods needs in normal times, leaving little financial ability to invest in their children's needs such as education. About 80% and 83% of the 'very poor' and 'poor' households' food needs were drastically affected by COVID-19 restrictions leaving them vulnerable to food insecurity.

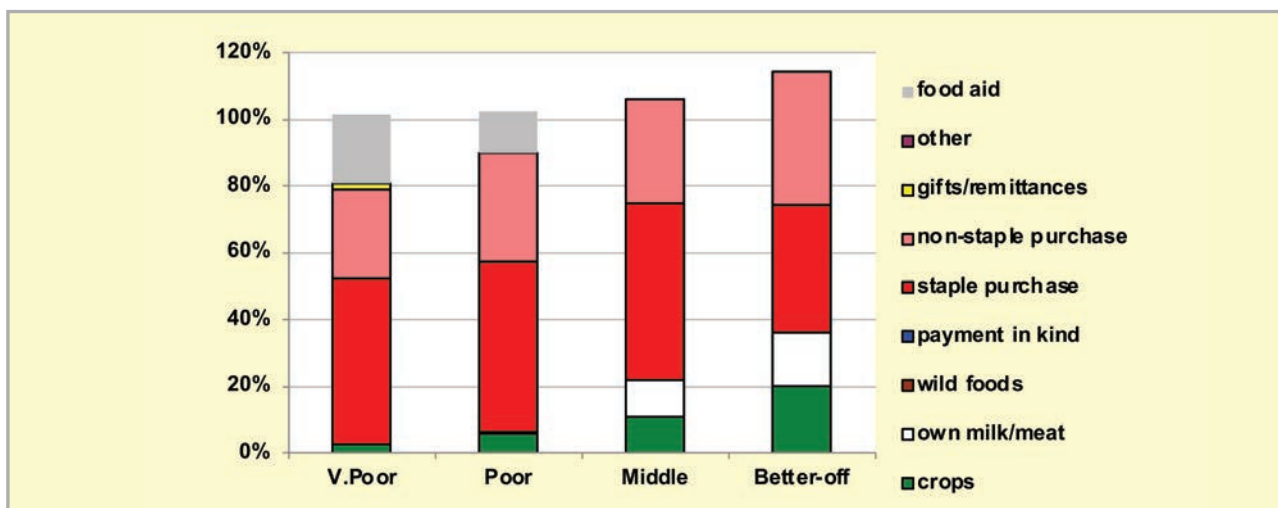


Figure 34: Sources of food in ZAMWF (expressed as percentage of minimum average food energy needs) for each wealth group (Source: HEA, Qualitative Output)

Wealthier households have the capital for inputs and hired labour, ensuring their crops are planted and weeded in time, as well as being protected from pests. 'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (11% to 16%); this was usually from cow milk and occasional slaughter for meat. Dairy production in this zone is not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) is milked for consumption.

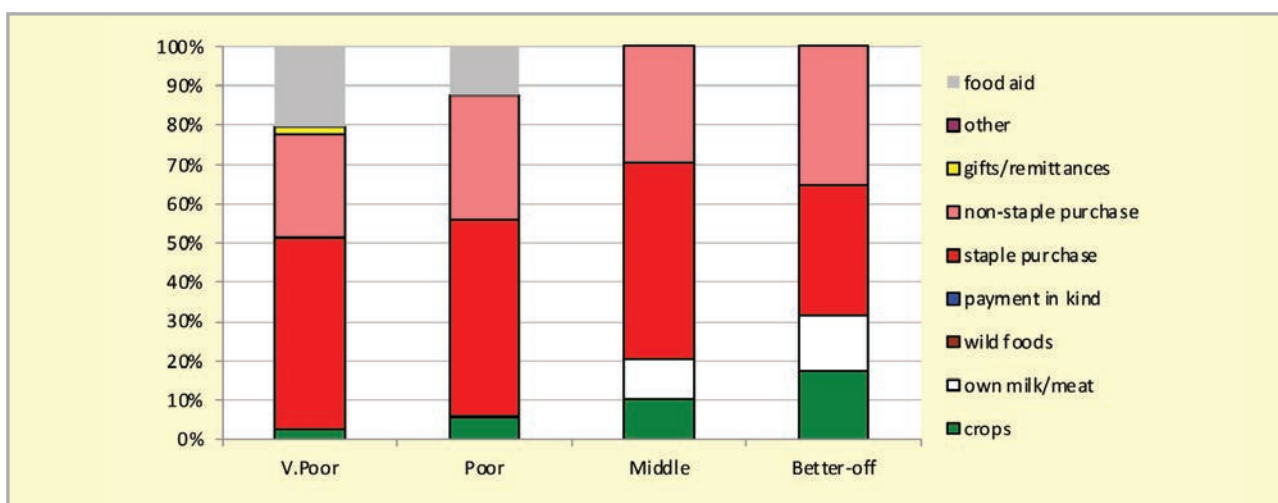


Figure 35: Sources of food in ZAMWF (expressed as percentage of overall total food energy needs) for each wealth group (Source: HEA, Qualitative Output)

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

6.2.5 Gender analysis of who produces Food in ZAMWF of Sedibeng, West Rand, and Ekurhuleni districts

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

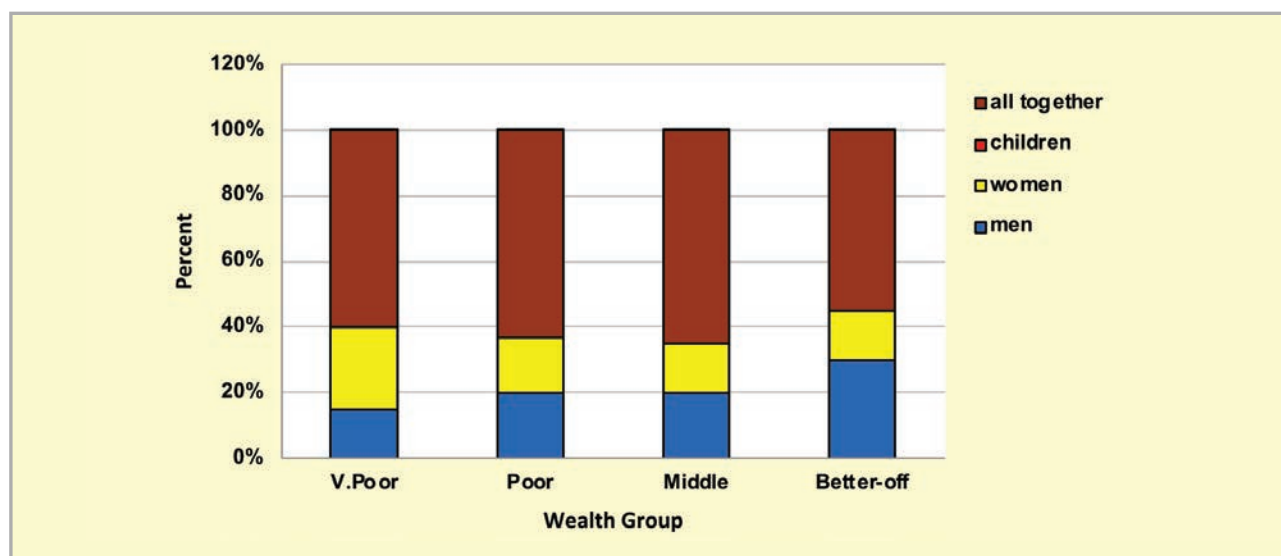


Figure 36: Gender breakdown of who produces food in the zone for each wealth group (Source: HEA, Qualitative Output)

The results indicated that men and women altogether contributed significantly to generate food. This was about 60 percent across all wealth groups. Women appears to contribute significantly to the production of food among all wealth groups ranging from 15% among 'better-off' and 25% among 'very poor' households. However, there are still challenges and emerging issues relating to gender mainstreaming and youth participation in development. These include HIV and AIDS, poor youth participation in development agenda, gender-based violence (GBV), increased environmental degradation, climate change, and high levels of poverty. Women still face many challenges, including the burden of care which takes away much of their time for productive work. They also have poor access to extension services, information, inputs, and markets. Hence addressing the gender gap in development including agriculture could raise the scale of economic activities, crop production, boost agricultural yield, overall GDP, and lift a significant proportion of people out of poverty. Further, there has been a general inadequacy among all the gender structures at all levels to maintain a collective and sustained response to gender and youth empowerment issues.

6.2.6 Sources of cash income in ZAMWF of Sedibeng, West Rand, and Ekurhuleni districts

Cash income varied considerably across wealth groups, with the 'better-off' earning R402,080 per annum, ten times as much as the 'very poor', who earned only R40,205 per annum. Figure 37 shows this distribution; it must be noted that the bars in the figure are not quartiles, they represent wealth groups and wealth groups are not distributed evenly (see Figure 36).

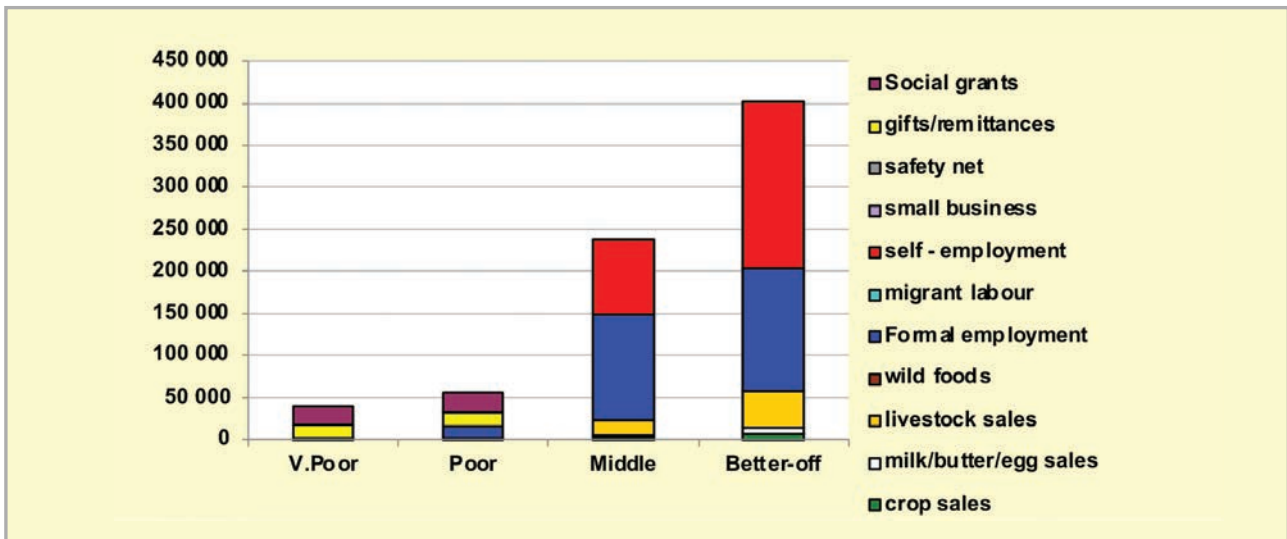


Figure 37: Sources of annual cash income by wealth group in ZAMWF (Source: HEA, Qualitative Output)

The main sources of cash income in the zone are self and formal employment - and livestock sales for the 'middle' and 'better-off' - and cash grants and hiring out of local labour for the 'poor' and 'very poor' (Figure 40). 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 41.

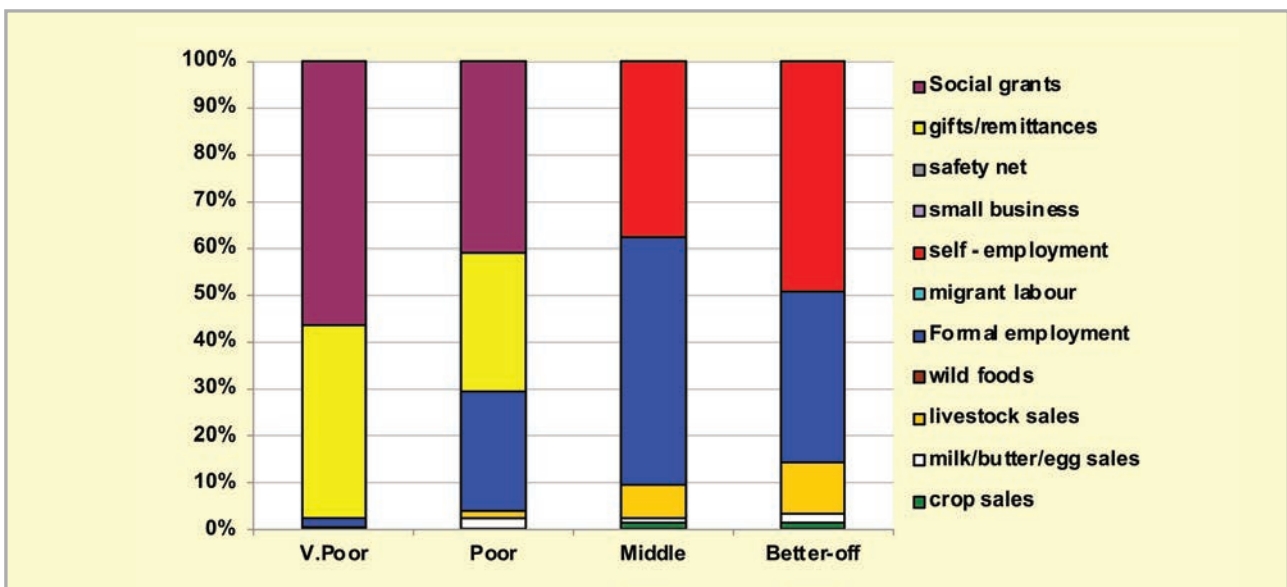


Figure 38: Sources of annual cash income as a percentage of total, by wealth group in ZAMWF (Source: HEA, Qualitative Output)

For the 'very poor' and 'poor', grants made up 56% and 42% of total cash income, respectively (Figure 38); the remainder was from casual labour (mostly domestic work, agricultural piece work, construction jobs, etc.) and self-employment (collecting natural products for sale, weaving, making bricks, etc.). The 'poor' earn small amounts of income through livestock sales - usually goats, gifts/ remittances, and employment. This, coupled with a small income from the formal sector, was what distinguishes their livelihoods from that of the 'very poor'. The analysis showed that poor households would lose up to half of their income sources due to COVID-19 lockdowns and any movement restrictions in the area. Income from casual labour would not be available during the pandemic lockdowns, leading to worsening food security situation for the 'very poor' and 'poor' households who comprise most of the population in this area.

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

The earnings from livestock products are very low for the 'very poor' and 'poor' households, which is lost productivity. This is very significant among 'middle' and 'better-off' households. 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.

6.2.7 Sources of food and income in ZAHVC of West Rand and Ekurheni districts

Purchases were the largest source of people's food, contributing about 77% to 84% of minimum food energy needs across the wealth groups. The contribution from staple food purchases decreased steadily as households get wealthier. Conversely, the contribution from non-staple food purchases increased with increasing wealth. Most households and all wealth groups also consume food from their own crop production although only at about 4% for the 'very poor', who lack the labour and capital to produce any significant quantities of their own food. The 'better-off' and 'middle' have the highest contribution to their food energy from both staple and non-staple crops, at about 62% to 80% of their minimum needs, respectively (Figure 39). The analysis showed that about 84% and 77% of the food purchases which needed to be obtained on almost daily basis from local markets were affected for the 'very poor' and 'poor' households in this area during COVID-19 lockdowns. This exacerbated the food insecurity level of the 'poor' and 'very poor' households in districts of Gauteng Province.

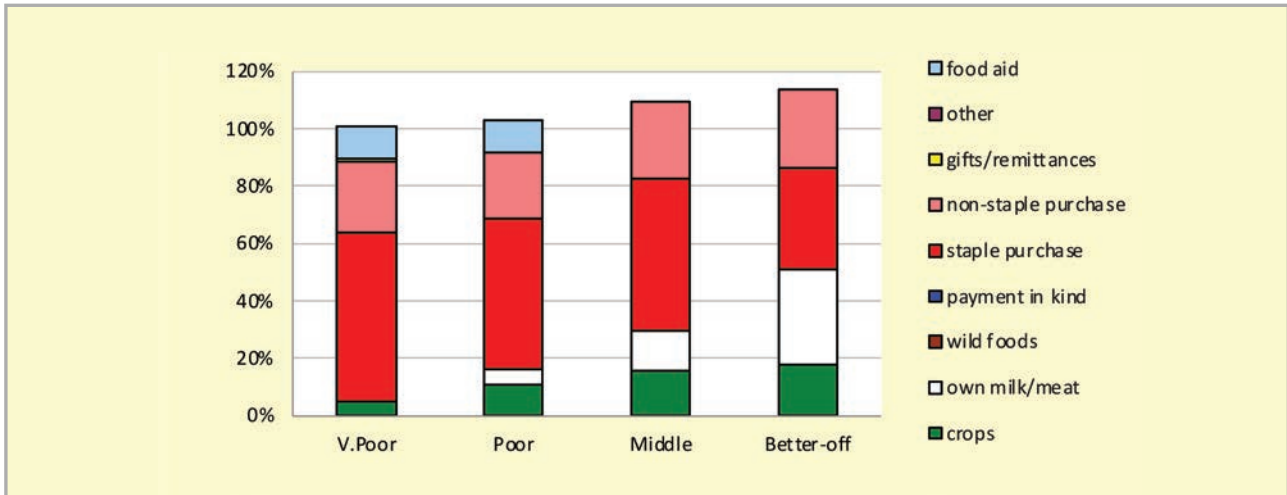


Figure 39: Sources of food in ZAHVC (expressed as percentage of minimum average food energy needs) for each wealth group (Source: HEA, Qualitative Output)

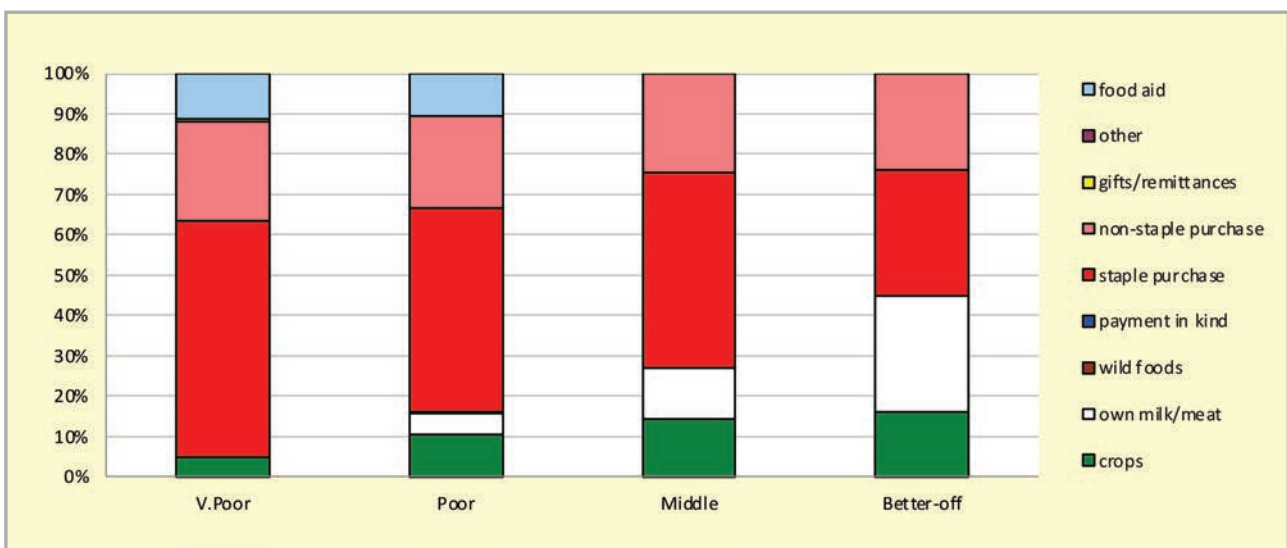


Figure 40: Food Source as Contribution to the Total in ZAHVC livelihood zone (Source: HEA, Qualitative Output)

Only the 'middle' and 'better-off' households obtain substantial food from their livestock products (14% and 33%, respectively) (Figure 40); this is usually from cow milk and occasional slaughter for meat (the 'poor' obtain a small contribution from the meat of an occasional slaughter). Dairy production in this zone is not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1:3 to 1:6) is milked for consumption.

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

6.2.8 Gender breakdown of who produces food

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

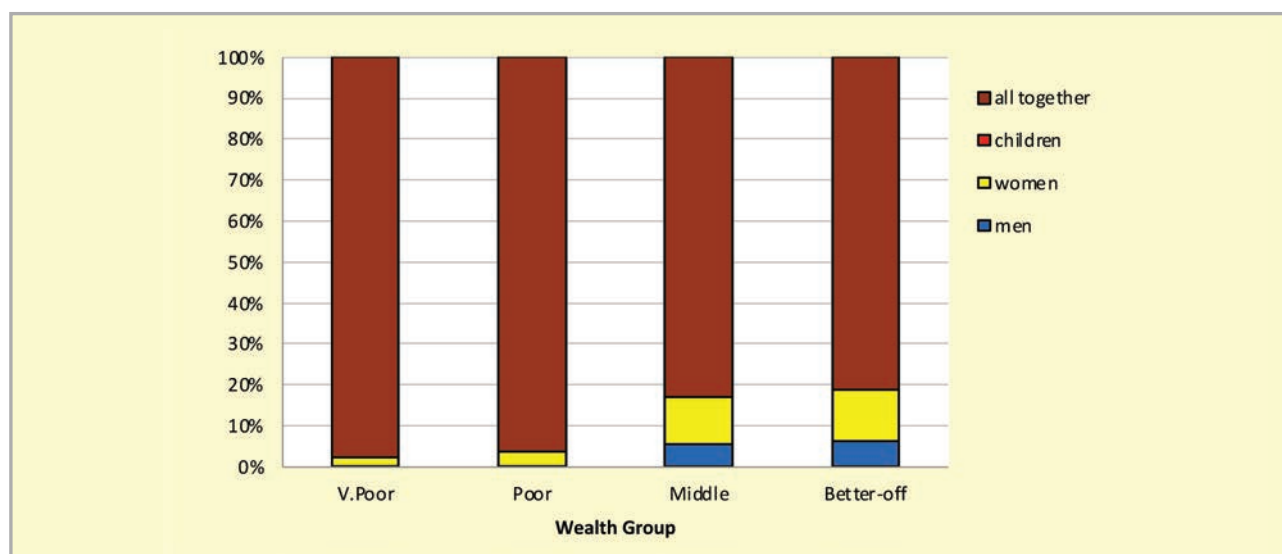


Figure 41: Gender breakdown of who produces food in the zone for each wealth group in ZAHVC
(Source: HEA, Qualitative Output)

The results indicated that young adults, men, and women altogether contribute significantly to generate food among the 'poor' and 'very poor' households in most districts and municipalities in this livelihood zone (Figure 41). Women appeared to contribute significantly to production of food among 'middle' and 'better-off' households. However, there are still challenges and emerging issues relating to gender mainstreaming and youth participation in development. These include HIV and AIDS, poor youth participation in 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 scale of economic activities, crop production, boost agricultural yield, overall GDP, and lift a significant proportion of people out of poverty.

6.2.9 Sources of Cash in ZAHVC of West Rand and Ekurheni districts

Cash incomes vary considerably across wealth groups, with the 'better off' earning R456,905 per annum, more than six times as much as the 'very poor', who earn R54,449 per annum (Figure 42). Figure 41 shows this distribution as the bars represent wealth groups and wealth groups.

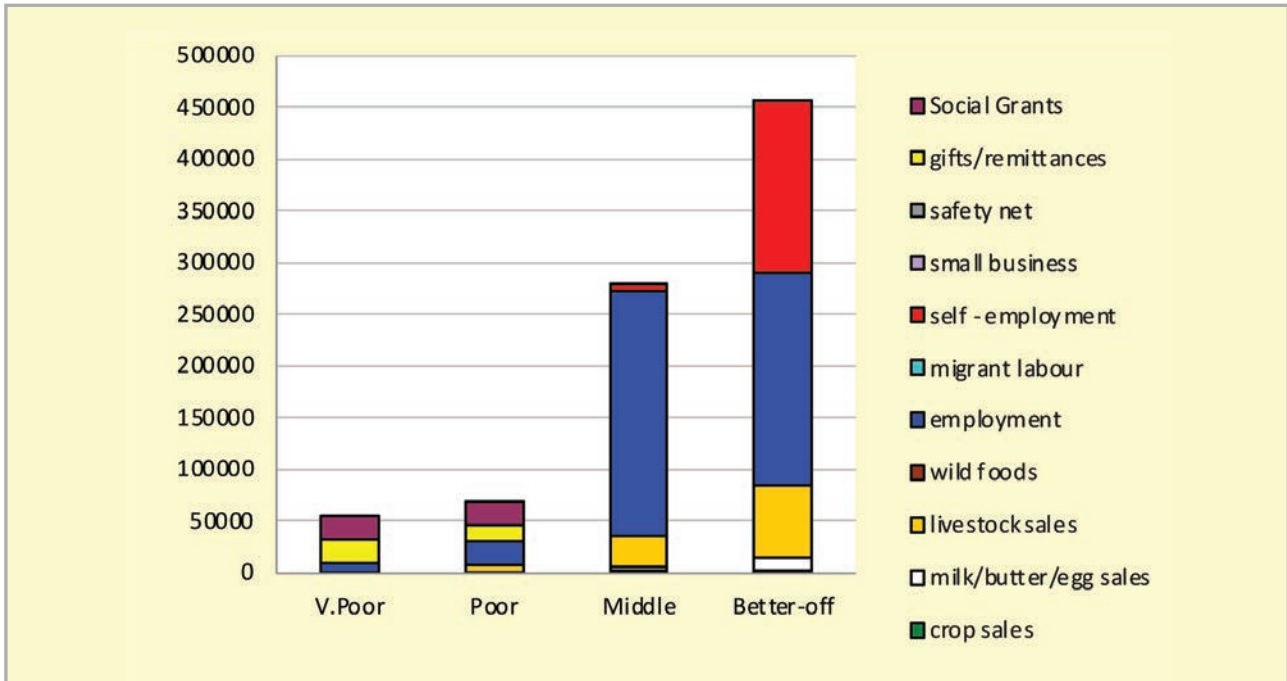


Figure 42: Sources of annual cash income by wealth group in ZAHVC (Source: HEA, Qualitative Output)

However, the point of this enquiry was to gain an understanding of how all livelihood sources contribute to the main income of each wealth group in the sampled communities. This is important because it enables practitioners to link a hazard (such as a price change) to an income and it enables other users to see potential areas of intervention. By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 43.

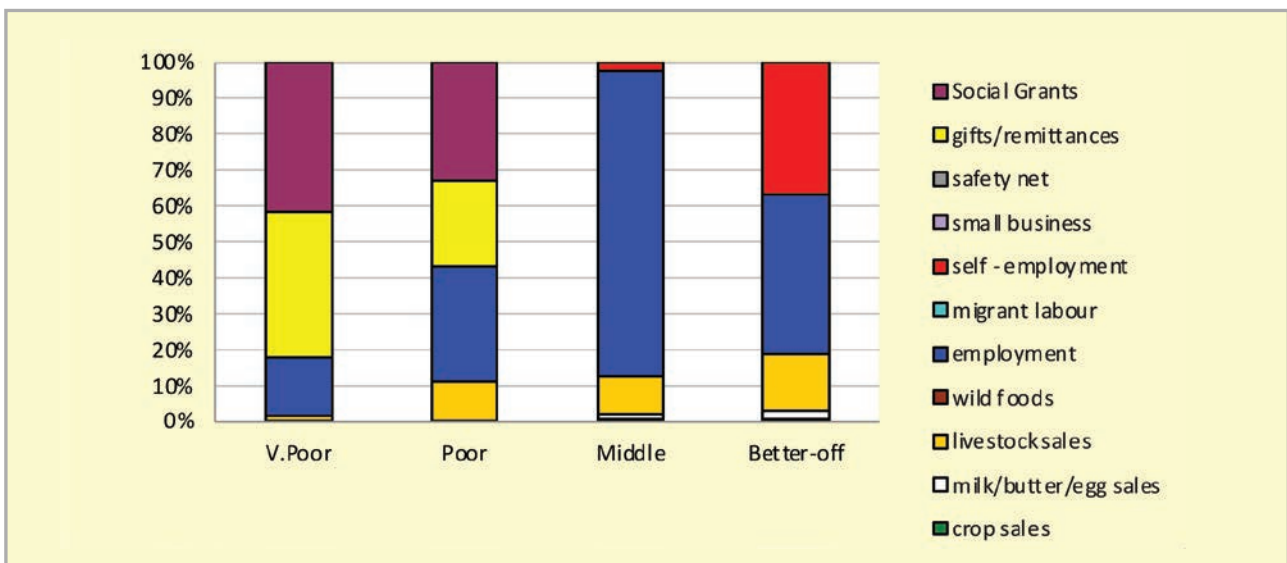


Figure 43: Sources of annual cash income as a percentage of total, by wealth group in ZAHVC (Source: HEA, Qualitative Output)

For the 'very poor' and 'poor' households, grants make up 42% and 32% of total cash income, respectively, with the remainder coming from casual labour (mostly domestic work, agricultural piece work, construction jobs, etc.) and self-employment (collecting natural products for sale, weaving, making bricks, etc.) (Figure 43). The 'middle' and 'better-off' earn some of their cash from animal sales and from petty trading or a small business.

The 'middle' and 'better-off' gain their wealth from a formal wage or salary for the better part of their income. Some 'middle' households may have a member that works seasonally on the commercial farms, but earnings typically amount to almost R79,000 per annum, while the 'better-off' earn around R386,284 per annum (Figure 45). 'Middle' and 'better-off' households also gain a little cash from grants. The earnings from livestock products are nil, 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 number of factors: lack of economic incentives for milking, lack of time by the cattle-owners (because they are full-time employed), and minimal herd management.

6.2.10 Sources of food and income in ZAHGR of West Rand, City of Johannesburg, and City of Tshwane Districts

Despite the good rainfall and fertile soils, purchases still make up the largest portion of people's sources of food. Food purchases contribute 67% to 88% of food energy needs across the wealth groups. Conversely, the contribution to food energy of non-staple food purchases increased with increasing wealth, from 21% for the 'very poor', to 35% for the 'better-off' households (Figure 44).

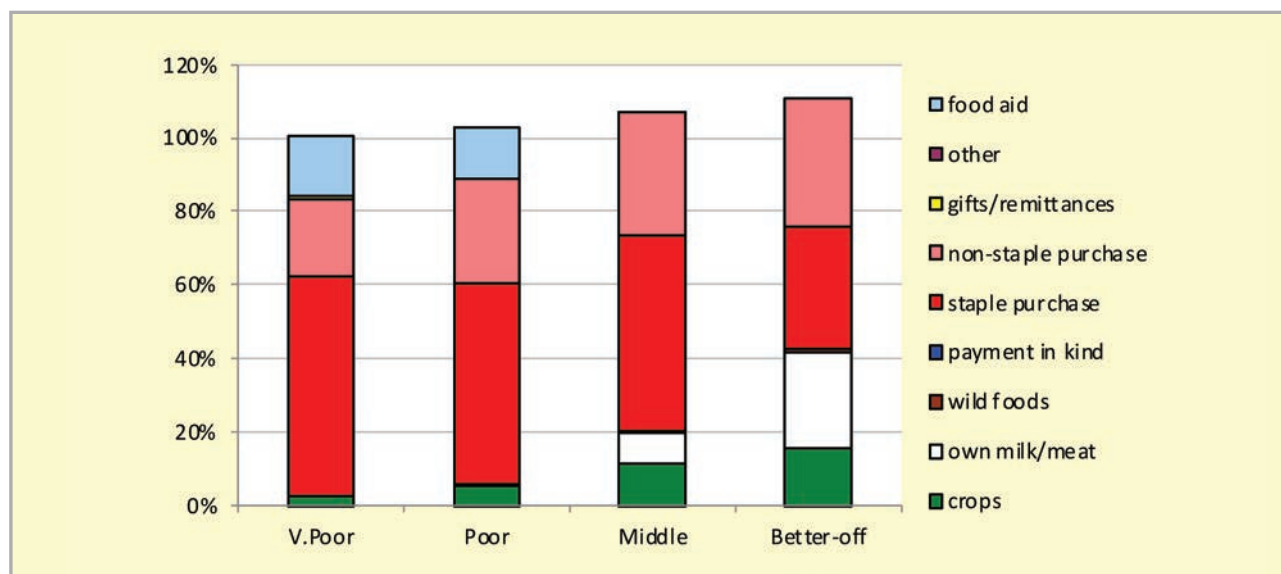


Figure 44: Sources of food in ZAHGR (expressed as percentage of minimum average food energy needs) for each wealth group (Source: HEA, Qualitative Output)

The contribution to food energy needs from own crop production increased with increasing wealth, from 3% for the 'very poor' to 16% for the 'better-off' in the zone. The breakdown into staple and non-staple did not follow any pattern with wealth; the contribution from non-staple crops being about 22% to 30%. Wealthier households had capital for inputs and hired labour, ensuring their crops were planted and weeded in time as well as being protected from pests. 'Middle' and 'better-off' households obtained a tiny proportion of their needs from their livestock (8% and 26%, respectively) (Figure 45); this was usually from cow milk and occasional slaughter for meat. Dairy production in this zone was not commensurate with herd sizes and livestock ownership. In general, a fraction of lactating cows (about 1 in 8) was milked for consumption.

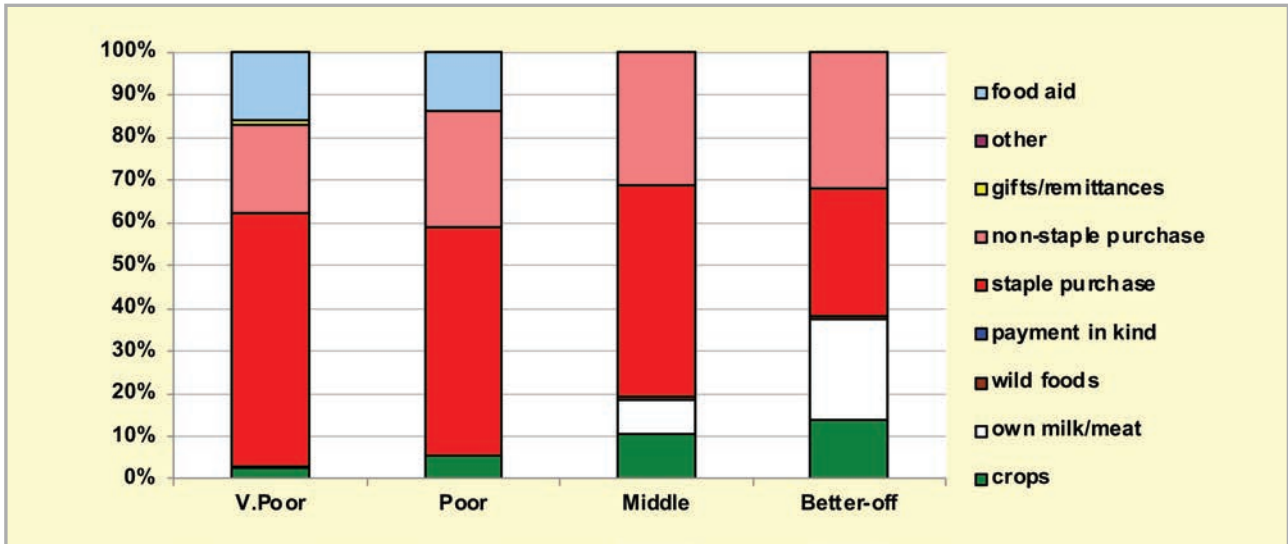


Figure 45: Sources of food as overall to the total by wealth breakdown in ZAHGR (Source: HEA, Qualitative Output)

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

6.2.11 Sources of Cash in ZAHGR of West Rand, City of Johannesburg, and City of Tshwane districts

Cash incomes varied considerably across wealth groups, with the 'better-off' earning R437,273 per annum, more than nine times as much as the 'very poor' households, who earn only R46,158 per annum. Figure 45 shows this distribution.

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

By dividing the value of each source by the total income, we can see these proportions, and this is presented in the graph in Figure 46.

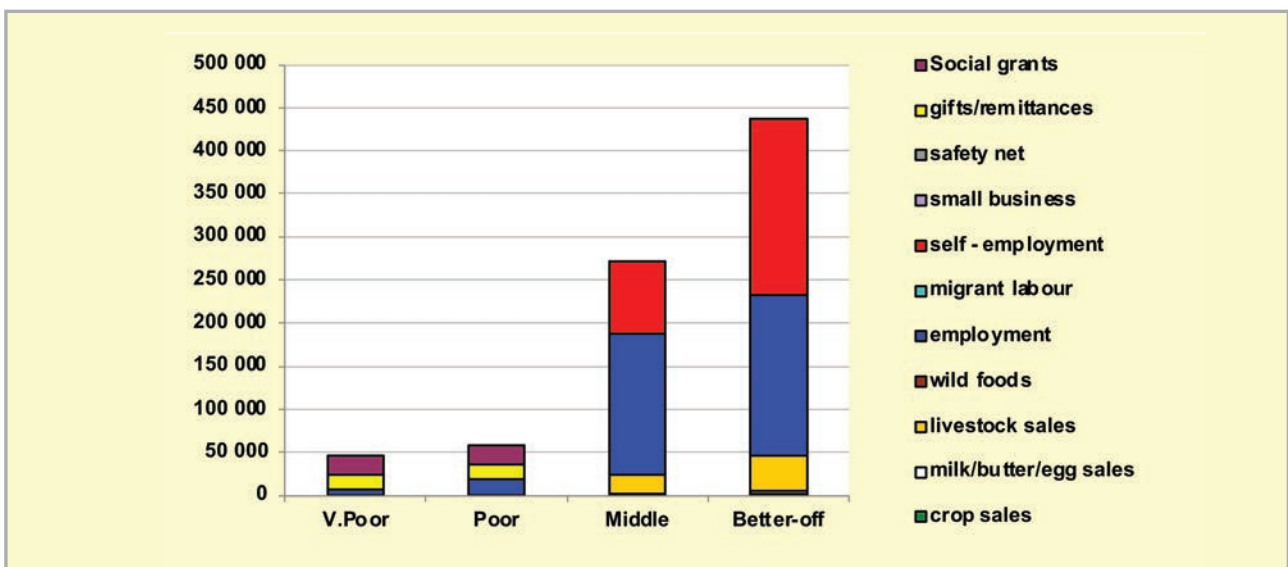


Figure 46: Sources of annual cash income by wealth group in ZAHGR (Source: HEA, Qualitative Output)

For the 'very poor' and 'poor' households grants make up 48% and 38% of total cash income, respectively (Figure 47), with the remainder coming from casual labour (mostly domestic work, agricultural piece work, construction, and mining related jobs) and self-employment (collecting natural products for sale, weaving, making bricks, trading in mineral related products, etc.).

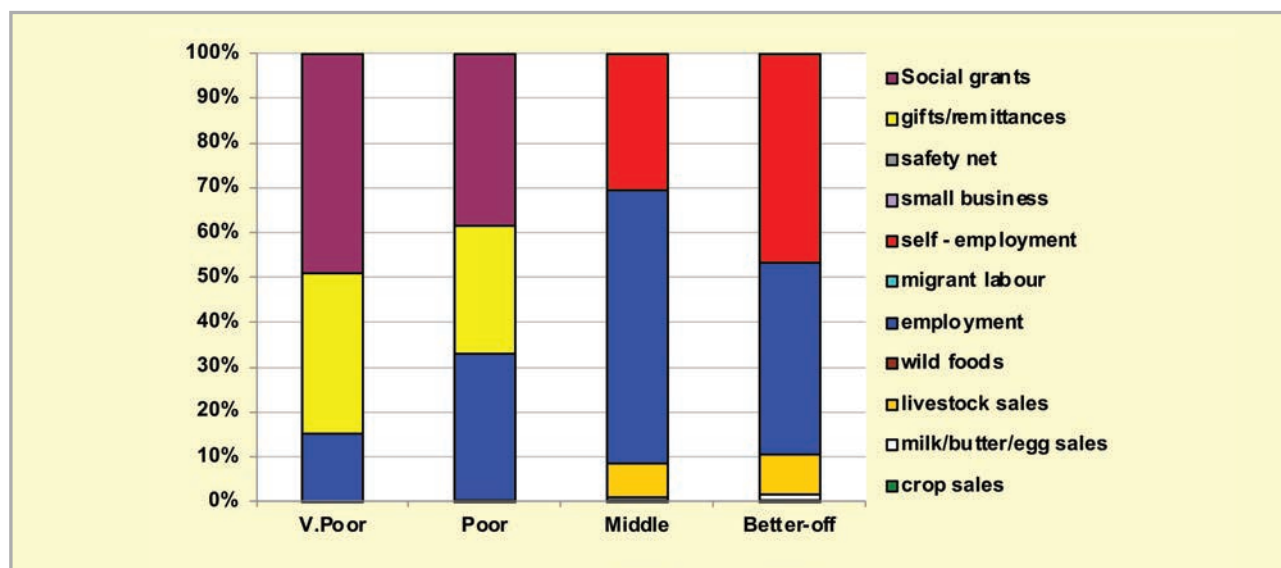


Figure 47: Sources of annual cash income as a percentage of total, by wealth group in ZAHGR (Source: HEA, Qualitative Output)

This income was mostly affected during COVID-19 lockdowns leaving the 'poor' and 'very poor' hopeless and food insecure. The 'poor' households earn small amounts of income through employment and remittances. This, coupled with a small income from the formal sector annually and self-employment is what distinguishes their livelihoods from that of the 'very poor'. The 'middle' and 'better-off' households gain their cash from self-employment (R83,520 and 204,600 annually, respectively) and a formal wage or salary for the better part of their income. Some 'middle' households may have a member that works seasonally on the commercial farms, but earnings typically amount to almost R126,000 per annum, while the 'better-off' earn around R168,000 per annum (Figure 46). 'Middle' and 'better-off' households also gain a little cash from grants (for example, pensions and fostering are not means-tested and the probability of a household having a pensioner in it is about one in two).

6.2.12 Hazards, vulnerabilities, and response strategies

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

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

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

6.3 Access to agriculture extension services, road infrastructure and markets

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

6.3.1 Access to road infrastructure

Access to infrastructure such as good roads is critical in enhancing food and nutrition security. Both females and males reported prominent levels of access to good roads, with the 25-34 years age category having 100% of access (Table 37). Across the five districts, road access was extremely good with the highest (100%) being recorded in the City of Johannesburg and Sedibeng districts, whilst the least was reported in the West Rand District (88%).

Table 37: Access to road infrastructure by households

Variable		Access to road infrastructure			
		No		Yes	
		N	Row N %	N	Row N %
Household		2	5	28	95
Sex of Household Head	Male	2	7	19	93
	Female	0	0	9	100
Household head age	18-24	0	0	1	100
	25-34	0	0	5	100
	35-44	1	30	3	70
	45-54	0	0	7	100
	55-64	1	3	8	97
	65+	0	0	4	100
District	City of Johannesburg	0	0	4	100
	City of Tshwane	1	7	11	93
	Sedibeng	0	0	10	100
	West Rand	1	19	3	81

6.3.2 Access to Markets by households

Within the province, the households have indicated that they have access to the market (Table 38). Disaggregated by district, Sedibeng District and City of Tshwane District household members have the lowest access to the market with 89% and 86%, respectively. This is due to the reason that the districts have a higher proportion of areas which are rural, and they have also been struggling with the issue of poor road infrastructure.

Table 38: Access to market by households

Variable		Access to market			
		No		Yes	
		N	Row N %	N	Row N %
Household		50	12	360	88
Sex of Household Head	Male	3	12	18	88
	Female	0	0	9	100
Household head age	18-24 years	0	0	1	100
	25-34 years	1	12	4	88
	35-44 years	1	31	3	69
	45-54 years	1	13	6	87
	55-64 years	0	0	9	100
	65+ years	0	0	4	100
District	City of Johannesburg	0	0	4	100
	City of Tshwane	2	14	10	86
	Sedibeng	1	11	9	89
	West Rand	0	0	4	100

6.3.3 Access to extension services by households

Access to agricultural extensions services has been reported to be extremely low in the entire Gauteng Province (Figure 51). Crop production was reported to be extremely low in the earlier sections, and there is extremely low percentage (11%) of households reporting to have receiving seedlings and fertilizers for free and it does influence the low level of households' involvement in crop production. The situation is also worsened by the size of the stand and extensive commercial agriculture, aviation, mining, and manufacturing industry in the province. Only about 3% of the households (Figure 48) have reported to have received support when it comes to training and advisory services about agricultural activities. Disaggregated by district, the City of Johannesburg has the highest percentage (33%) of households with access to agricultural extension services (Table 39).

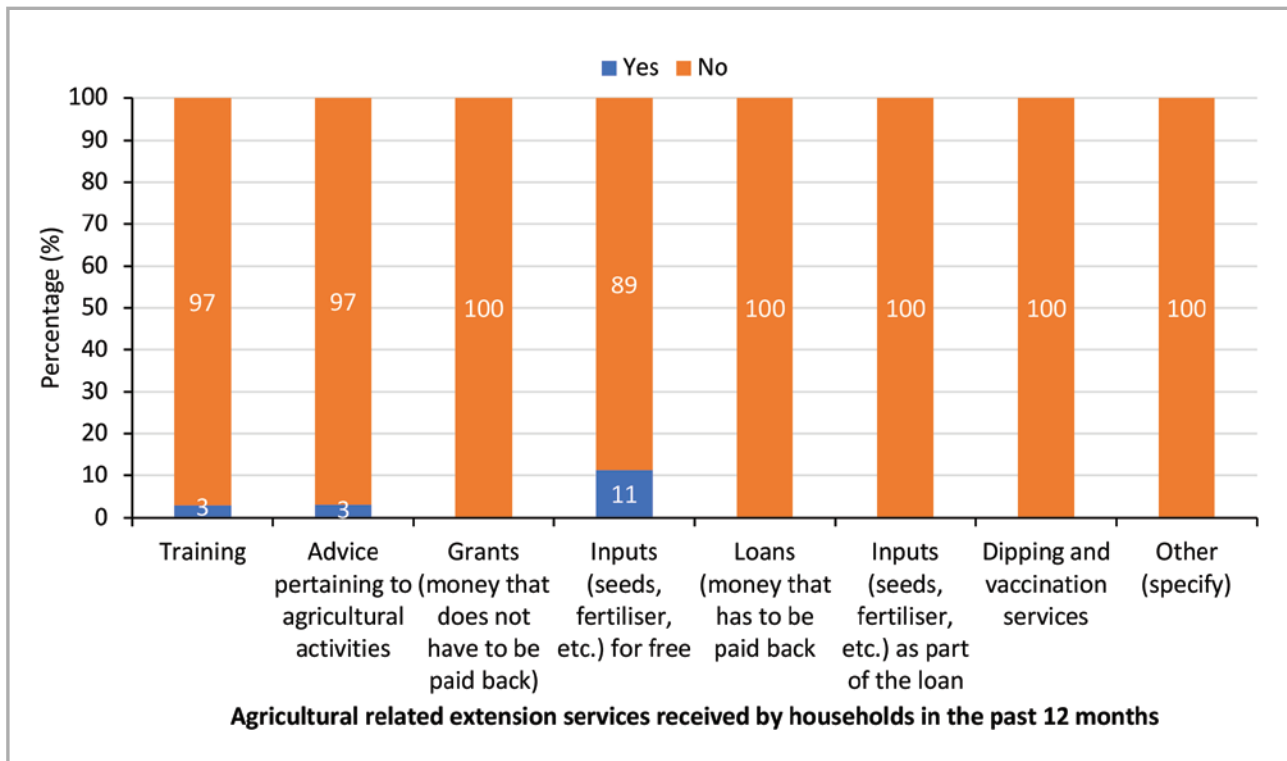


Figure 48: Access to extension services by households

Table 39: Household access to agricultural extension services

Variable		Access to extension services			
		No		Yes	
		N	Row N %	N	Row N %
Household		25	93	1	7
Sex of Household Head	Male	16	90	1	10
	Female	9	100	0	0
Household head age	18-24 years	1	100	0	0
	25-34 years	3	42	1	58
	35-44 years	4	100	0	0
	45-54 years	5	100	0	0
	55-64 years	8	100	0	0
	65+ years	4	100	0	0
District	City of Johannesburg	2	67	1	33
	City of Tshwane	10	100	0	0
	Ekurhuleni	0	0	0	0
	Sedibeng	9	100	0	0
	West Rand	4	100	0	0

Discussion

Seasonal variation

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

Access and land ownership

There is pronounced limited access to land (by households across the five districts of Gauteng Province). This explains the limited agriculture production of food crops in most of the districts. Most households reported that they own land, yet this land is between 0 – 0.25 hectares which is primarily used for residential purposes. This is buttressed by Nieuwoudt and Groenewald, (2003) who noted that land holdings in these former homelands of Gauteng Province are generally very small and are mainly used for residential and to some extent subsistence farming. Securing land rights for communities has been shown to improve production and household food security (Prosterman, 2013). In South Africa, as a country, there are dual systems when it comes to land rights i.e., statutory law vested in the Constitution and customary law vested mostly in patrilineal tribal traditions and customs (Toulmin, 2008). In Gauteng Province, which is mostly rural, most of the land is held under customary law and this has eased access to land for most households since the land held by traditional authorities is cheaper and easily accessible (Figures 14 -16). The 18-24 years age group in Gauteng Province reported the least land access (<5%) across the five districts, which calls for a need to empower the youths with land ownership since it is the category currently plagued by high levels of unemployment. This would result in increased participation by youths in agriculture income generating projects and improved food availability at the household level. Land access is also limited among female-headed households. This result is similarly echoed by Murugani et al. (2014) who argued that in Gauteng Province, land access by females is mediated by patrilineal customary law where women have mostly secondary property rights as wives. Consequently, their land use security was derived from the family and other means of fostering accountability (Murugani et al., 2014). These cultural practices have led to women having limited access and user rights to land for agricultural purposes particularly in rural communities.

Agriculture production systems

Livestock production is reported to be limited across Gauteng Province. There is also limited crop production mostly in Johannesburg Metropolitan and Tshwane District. High-value crops (HVCs), also known as horticultural crops or non-traditional crops, are grown for food, nutrition, human health, and wellbeing and they include fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops in urban settings which constitutes urban agriculture although on a very limited scale - as similarly reported by Materechera and Scholes (2021).

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 average HFIAS score for Gauteng Province was 6.8, with a range of 0 to 27.

Interpreting this continuous score in terms of its food security implications is not straightforward, necessitating the need to generate categorical indicators of food insecurity (Coates et al., 2007). However, when the HFIAS score is used to categorise households into four levels of food (in)security status (i.e., food secure, mildly food insecure, moderately food insecure, and severely food insecure), the picture becomes less rosy. The food secure category are those households that do not experience food access conditions, and rarely worry about not having enough food. Households in the mildly food insecure category worry about not having enough food sometimes or often, are unable to eat preferred foods, and rarely eat some foods considered undesirable. These households have not cut back on food quantities and have not experienced most severe access food challenges such as running out of food, going to bed hungry, or going the whole day and night without eating. A moderately food insecure household frequently consumes food that is of low quality, and/or sometimes or often eats undesirable foods, and/or rarely or sometimes reduces quantities of food consumed (i.e., reducing the size of meals or a 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 52 presents the proportion of the prevalence of food insecurity among the sampled households. The overall results showed that the majority of the households (51.4%) in Gauteng Province experienced food insecurity and 48.6% of households were food secure. Figure 52 shows that 14.2% of the households were severely food insecure, 19.8% of the surveyed households were moderately food insecure, and 17.3% of the households were mildly food insecure. Overall, the findings of this study slightly differ from the findings of the Stats SA, (2021) which found more proportions of food secure households than the food insecure ones. However, this household food security situation is not strange bearing in mind that the data was collected during the years of COVID19 pandemic which may have severely impacted on households' purchasing power and thus increased the proportions of food insecure households. The results are in line with most of the food security findings which generally indicate that a significant proportion of households' experience food access challenges in South Africa. For example, in 2016, SAVAC commissioned a study on livelihoods, food, and nutrition security in which more households were found to be food insecure than those that were food secure (Ngidi et al., 2016; Ngidi and Kajombo, 2017).

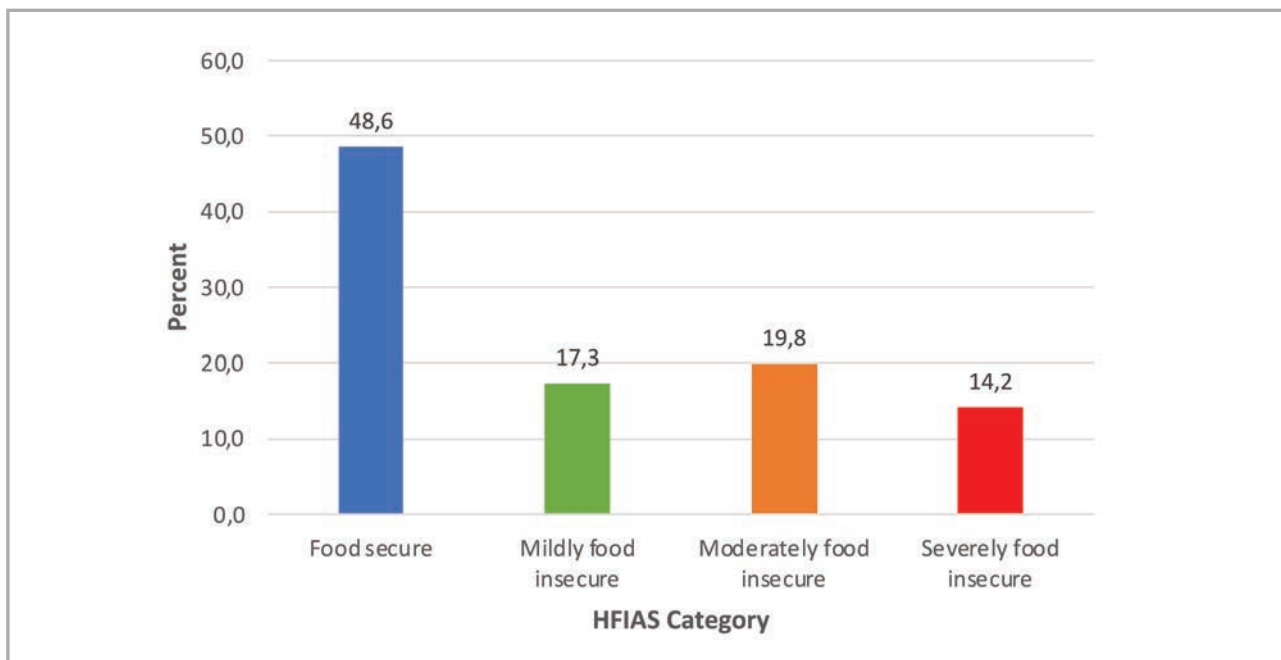


Figure 49: The categorized food security situation, using HFIAS

Table 40 and Figure 50 shows that the food security status of households was found to be varied by sex and age of household head, as well as by district. The results show that male-headed households were slightly more food secure than female-headed households, with 50% of the male-headed households found to be food secure, compared to 46% of female-headed households. Similarly, Negesse et al. (2020), also found that severity of food insecurity among female-headed households in Ethiopia was higher as compared with their men counterparts. In any category of the HFIAS but severe food insecurity, female-headed households experienced slightly higher levels of food insecurity. Severe food insecurity was experienced by 15% of the male-headed households compared to 14% of the female-headed households that fell within the same category. Approximately 18% and 22% of male-headed and female-headed households experienced moderate food insecurity, respectively. About 17% and 18% of male-headed and female-headed households experienced mild food insecurity, respectively.

Table 40: District level and gendered food security situation as determined by HFIAS

		Food secure		Mildly food insecure		Moderately food insecure		Severely food insecure	
		N	Row N %	N	Row N %	N	Row N %	N	Row N %
Sex of the Household Head	Male	973	50	345	17	467	18	338	15
	Female	613	46	301	18	431	22	265	14
Household head age	18-24	55	54	19	14	26	19	13	14
	25-34	284	52	107	17	98	14	115	17
	35-44	385	51	127	16	185	16	153	17
	45-54	309	48	135	17	208	22	134	13
	55-64	268	45	122	19	193	23	114	13
	65+	257	45	124	19	178	26	72	10

District	City of Johannesburg	400	55	121	16	110	15	101	14
	City of Tshwane	340	49	146	21	151	21	71	10
	Ekurhuleni	337	47	127	17	147	20	120	16
	Sedibeng	265	34	145	18	268	33	124	15
	West Rand	251	34	108	14	222	28	188	24

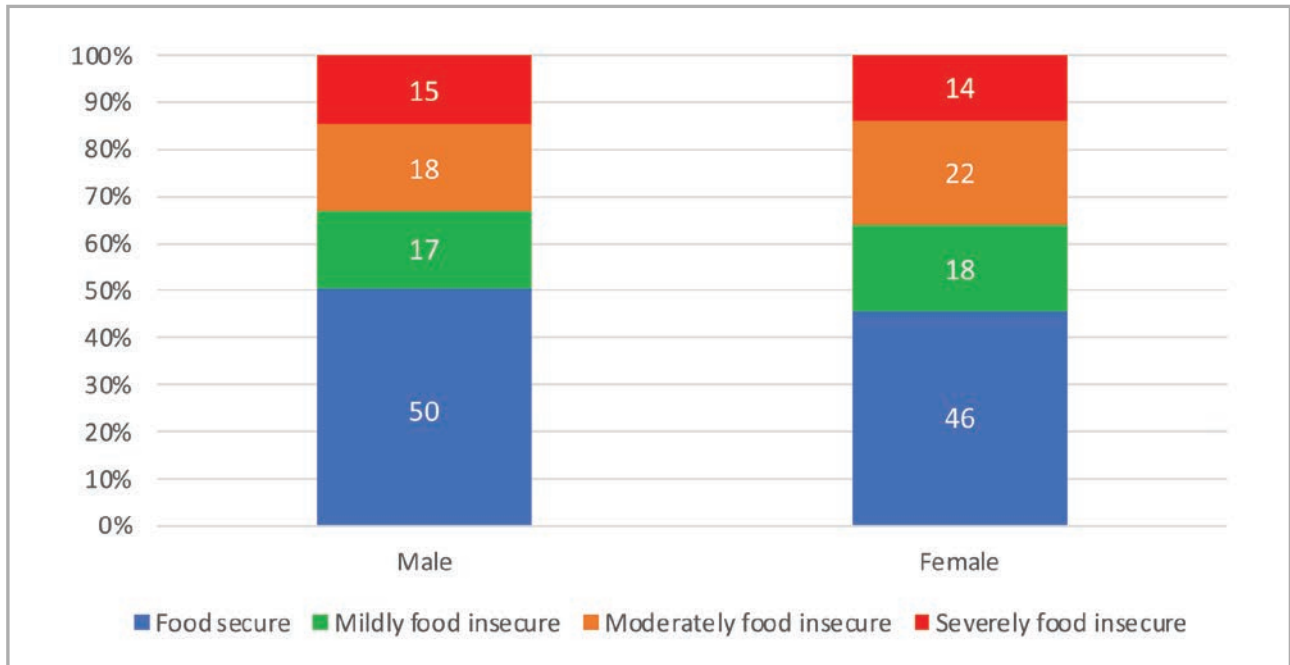


Figure 50: Food security status by sex of household head

Table 40 and Figure 50 show that households headed by the 18-24 years age group had the highest proportion of households (53%) who were food secure. They were followed by those households headed by the 25-34 years age group, with 52% of the households headed by this age group found to be food secure. The least food secure age group was found to be the 55-64 and 65+ years age groups, where 45% of the household heads in each age group were found to be food secure. However, these two same age groups were found to be the least severely food insecure age group, with 13% and 10% of the households headed by these age group found to be severely food insecure. The most severely food insecure age group was found to be in the 25-34 years and 35-44 years age groups, with 17% of the households in each age group being severely food insecure.

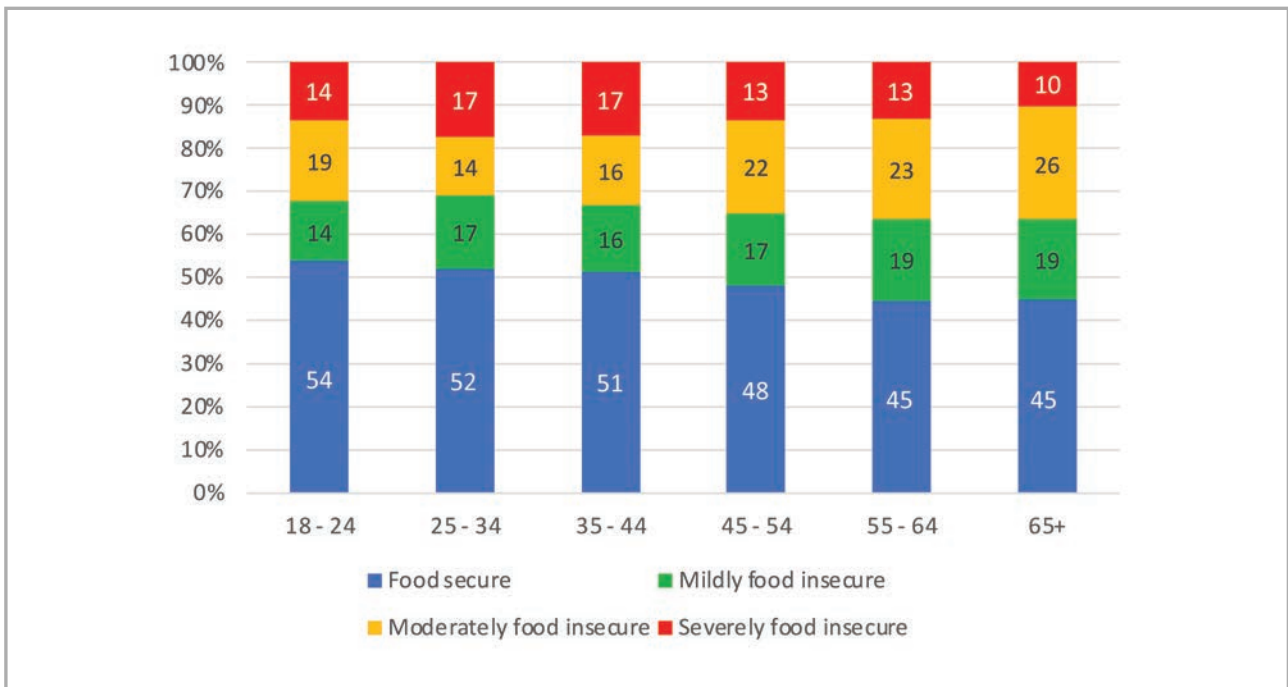


Figure 51: Food security status by age group of household head

Table 40 and Figure 54 show that the City of Johannesburg District had the highest proportion of households that were food secure (55%), followed by the City of Tshwane District, with 49% of the households that were found to be food secure. The least food secure districts were found to be Sedibeng and West Rand, with 34% of the households found to be food secure in each of these two districts. The West Rand District had the highest proportion of households experiencing severe food insecurity. About 24% of the households in the West Rand District were severely food insecure. This was followed by households from Ekurhuleni District, with 16% of the households from this district experiencing the severely food insecurity. About 15% of the households in Sedibeng District also experienced severe food insecurity while another 14% of the severely food insecure households were from City of Johannesburg District. The City of Tshwane District experienced the least food severe food insecurity compared to other provinces, with 10% of the households in this district reported to have experienced severe food insecurity. Moderate food insecurity was largely experienced by households from the Sedibeng District, where 33% of the households were moderately food insecure. This was followed by households from the West Rand where 27% of the households from this district were reported to have experienced moderate food insecurity. Mild food insecurity was largely experienced by households from the City of Tshwane District where 21% of the households from this district experienced mild food insecurity.

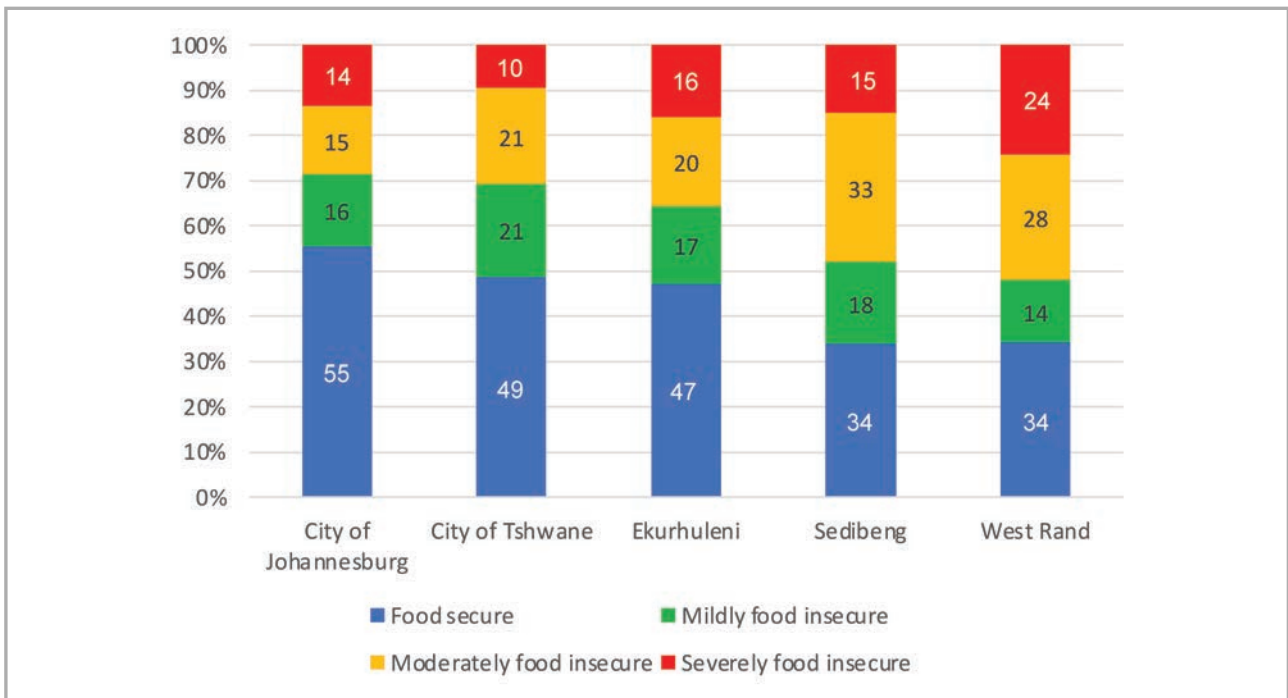


Figure 52: Food security status by district

7.2 Household Hunger Situation

The Household Hunger Scale (HHS) is a household food deprivation scale that is derived from selected HFIAS questions for use mainly in situations of high food insecurity levels. Figure 53 presents the results of the HHS scale, showing that most of the sampled households experienced little to no hunger (82.3%). About 12.4% of the households and 5.3%, respectively, experienced moderate hunger and severe hunger. While a considerable proportion of households experienced food insecurity (as shown by the HFIAS results), the HHS suggests that the level of food deprivation is not very severe for most of the households in the Gauteng Province (Figure 53).

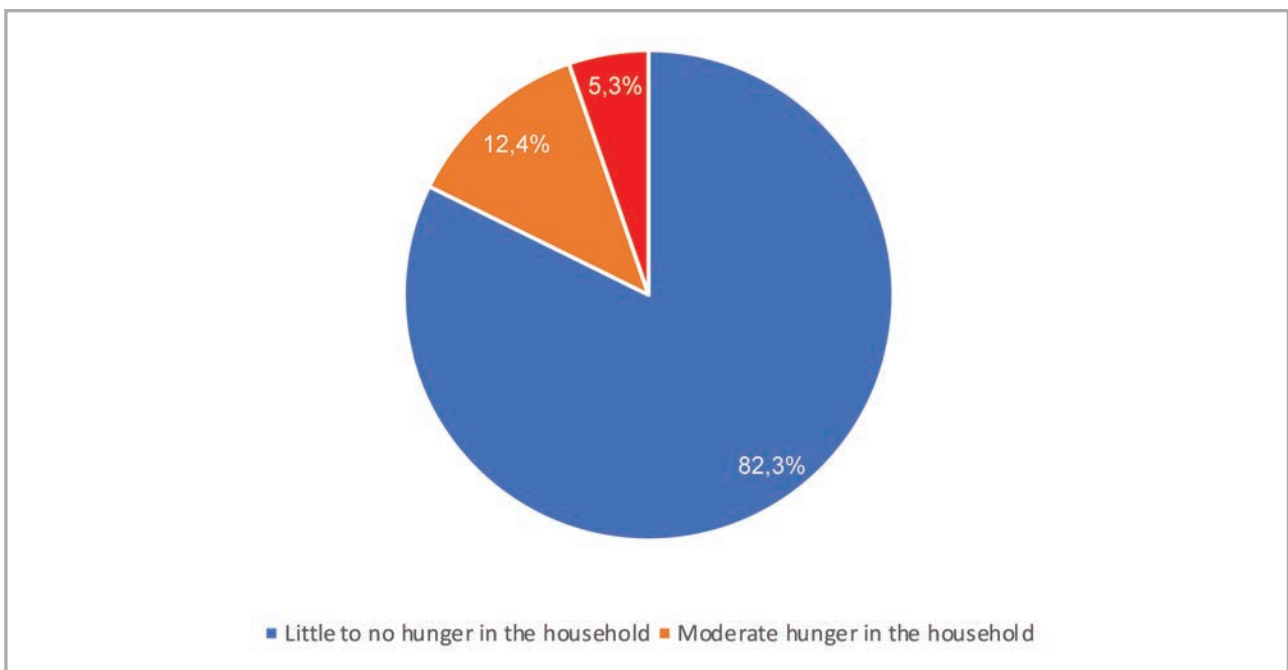


Figure 53: Hunger experiences of households

Table 41 presents the hunger status of households disaggregated by sex, age, and district. Table 41 and Figure 54 show that the hunger status generally did differ between male-headed and female-headed households across all the categories of the HHS. Male-headed households generally experienced more hunger than female-headed households in the province. Only in the category moderate hunger female-headed households were found to be higher than male-headed households.

Table 41: Food security situation, using HHS

		Little to no hunger in the household		Moderate hunger in the household		Severe hunger in the household	
		N	Row N %	N	Row N %	N	Row N %
Sex of household head	Male	1827	82	313	12	137	6
	Female	1406	83	252	13	90	4
Household head age	18-24	105	86	11	9	7	5
	25-34	517	82	80	10	52	8
	35-44	710	79	140	14	64	7
	45-54	675	83	129	13	46	5
	55-64	584	82	113	13	43	5
	65+	593	85	90	13	13	2
District	City of Johannesburg	637	82	96	12	42	5
	City of Tshwane	667	86	83	10	31	4
	Ekurhuleni	640	82	97	12	50	6
	Sedibeng	696	81	124	14	40	5
	West Rand	602	73	166	20	64	8

Table 41 and Figure 54 indicated that 82% of the male-headed households experienced little to no hunger compared to 83% of the female-headed households. The proportion of female-headed households (13%) was higher than that of male-headed (12%) in the moderate hunger category. Severe hunger in the household was slightly higher among male-headed (4%) than among female-headed households (6%).

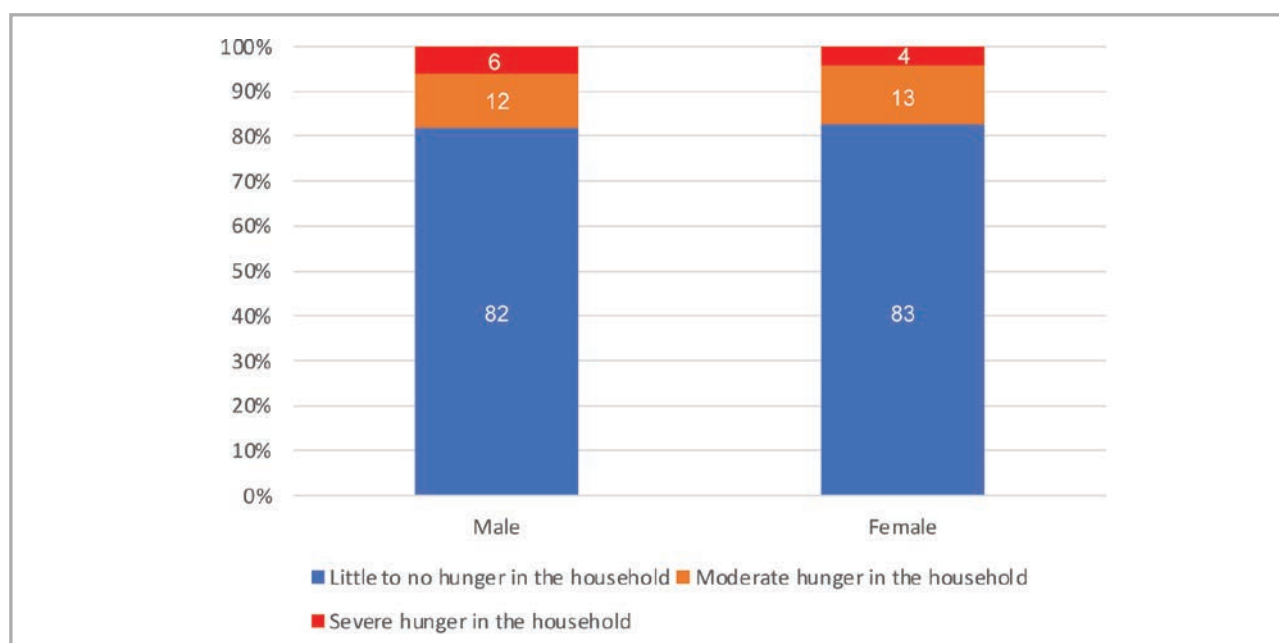


Figure 54: Household hunger status by sex of household head

The most food secure age group was found to be 18-24 years, with 86% of the households headed by this age group experiencing little to no hunger in the household. This was followed by household heads in the age group of 65+ years (Figure 55). Households in the age group of 35-44 years experienced relatively more moderate hunger compared to the other age groups, with 14% of the households in this age category experiencing moderate hunger. This was followed by households in the age categories of 45-54 years, 55-64 years, and 65+ years, where 13% from each of the household heads in this age groups experienced moderate hunger in their households. Severe hunger in the household was largely experienced by 25-34 years age group, with 8% of the household heads in this age found to be experiencing severe hunger.

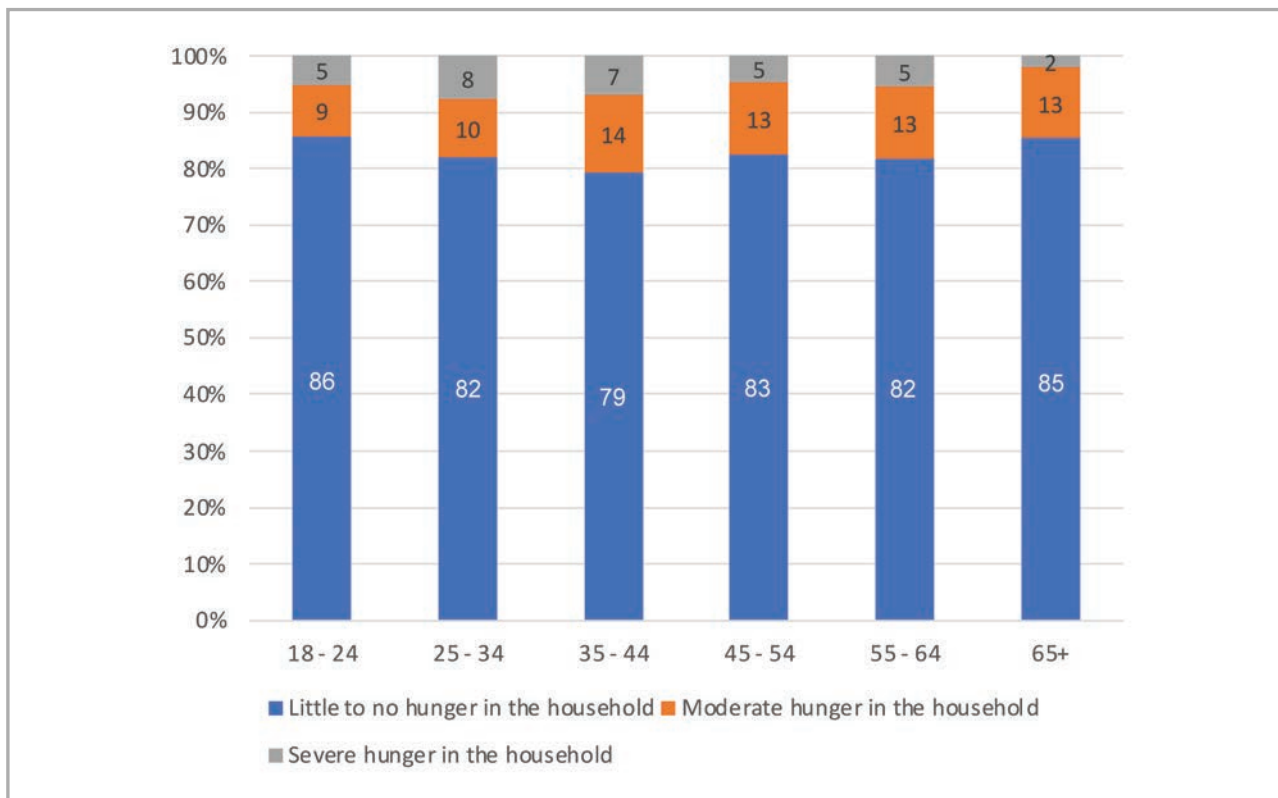


Figure 55: Household hunger status by age group of household head

There were minor variations in the hunger status of households across the five districts in the Gauteng Province. The City of Tshwane District is the most food-secure district with 85% of the households found to have experienced little to no hunger. This was followed by the City of Johannesburg and Ekurhuleni districts with 82% of the households from each of the districts found to have experienced little to no hunger. Generally, households across all districts did not experience too much hunger with more 80% or more of the households in all districts, but West Rand, experiencing little to no hunger (Figure 56). More households in West Rand District experienced moderate levels of hunger compared to the other four districts, with 20% of the household heads reportedly experiencing moderate hunger. Overall, there were slight differences in the proportion of households who experienced severe hunger in the five districts, ranging from 4% in the City of Tshwane District to 8% in West Rand District.

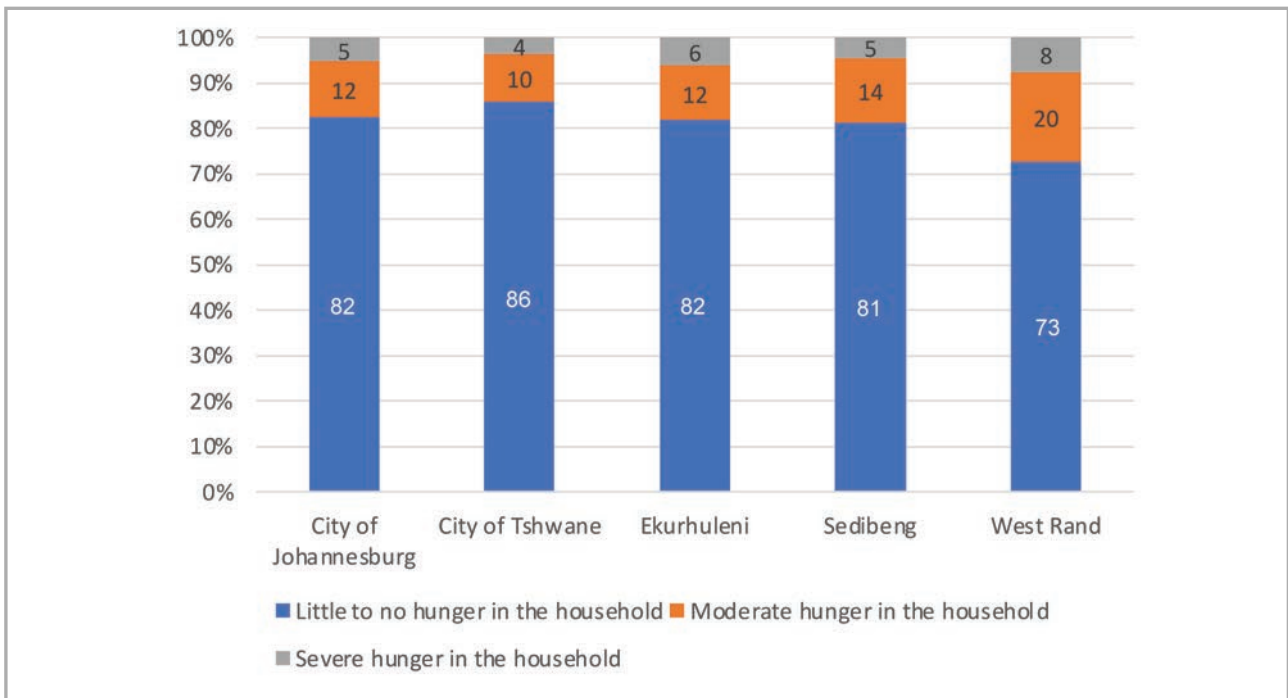


Figure 56: Household hunger status by district

7.3 Household Dietary Diversity Score (HDDS)

HDDS measures the economic ability of a household to access a variety of foods (Kennedy, 2011). Higher levels of HDDS imply improved chances of a household to consume enough of all food components necessary for good health. HDDS was constructed using the number of food groups consumed by the household over a 24-hour recall. The food items were categorized into 12 different food groups.

Figure 57 shows that on average, the households in Gauteng Province consumed more than 7 out of 12 food groups, which suggests above-average dietary diversity levels. Using the cut-offs suggested by Kennedy (2011), 83.6% of households consumed highly diverse diets (more or equal to 6 food groups) whilst 13.6% and 2.8% of the households consumed medium dietary diversity (4-5 food groups) and low diverse diets (less or equal to 3 food groups), respectively.

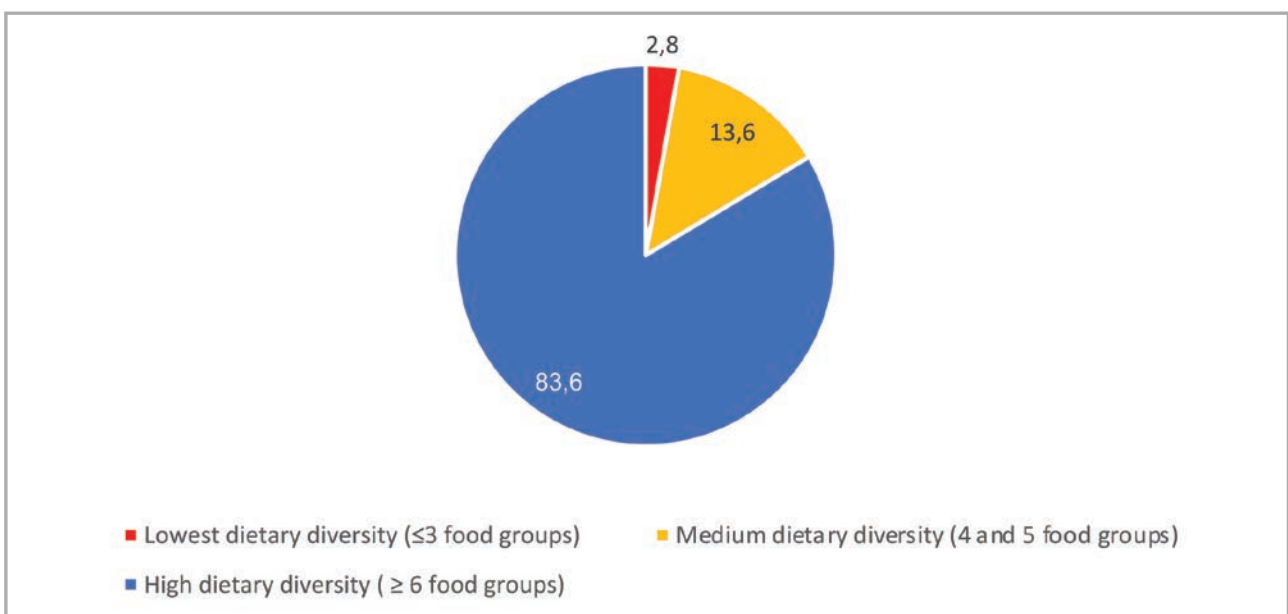


Figure 57: Household Dietary Diversity Scores

The results in Table 42 and Figure 58 show that 3% of both the male-headed and female-headed households had the lowest dietary diversity. More female-headed (84%) than male-headed (83%) households were in the category of highest dietary diversity, suggesting that they had better access to diversified food. Both male-headed and female-headed households consumed about 4 and 5 food groups (medium dietary diversity), with 14% and 13% of the households, respectively, reported to have consumed medium dietary diversity. Concluding within the context of this tool, these results generally suggest that both male-headed and female-headed households have better access to diversified food.

Table 42: Household Dietary Diversity Scores

		Lowest dietary diversity (≤ 3 food groups)		Medium dietary diversity (4 and 5 food groups)		High dietary diversity (≥ 6 food groups)	
		N	Row N %	N	Row N %	N	Row N %
Sex of Household head	Male	70	3	344	14	1856	83
	Female	56	3	242	13	1446	84
Household head age	18-24	3	3	19	21	101	76
	25-34	22	3	97	15	527	81
	35-44	23	2	138	13	752	84
	45-54	27	3	132	14	689	84
	55-64	33	4	114	15	592	82
	65+	18	3	83	10	593	88
District	City of Johannesburg	16	2	110	14	649	84
	City of Tshwane	34	4	98	12	641	84
	Ekurhuleni	18	2	102	13	666	85
	Sedibeng	29	3	123	14	705	82
	West Rand	29	4	155	18	643	78

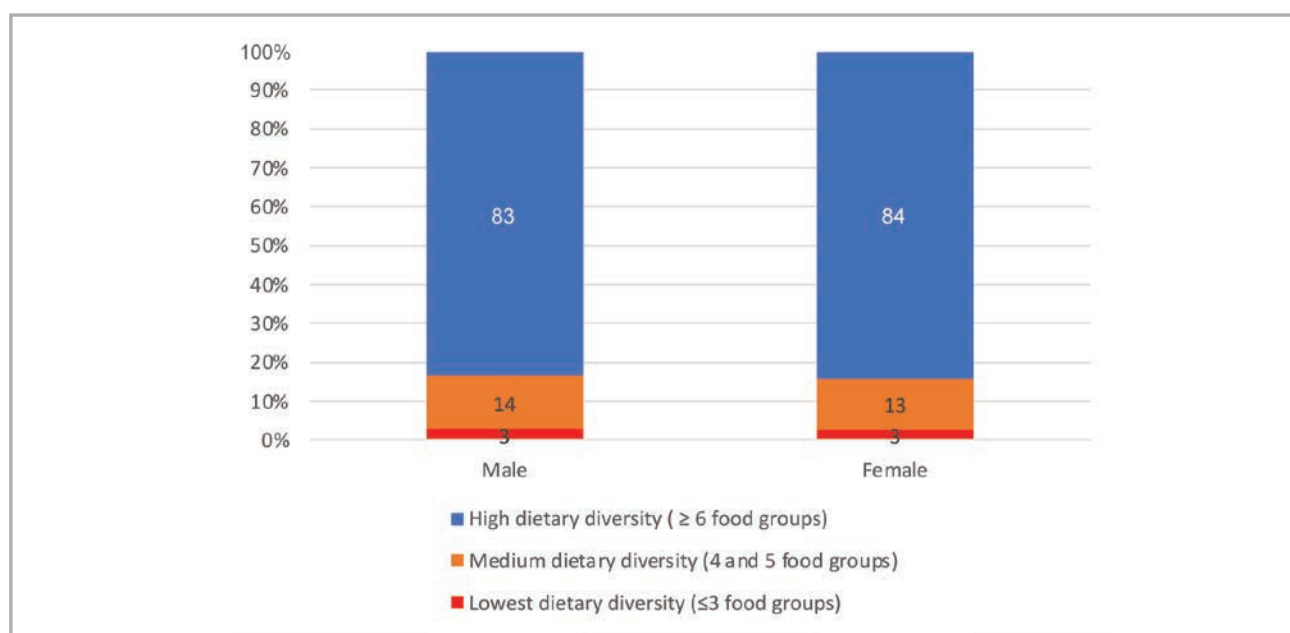


Figure 58: Dietary Diversity Score category by sex of household

In terms of the age groups, most of all age groups generally consumed a high dietary diversity, with results showing all age groups having a higher percentage of 76% or above of households that consumed highly diversified food. Results of the age groups also show that household heads aged 65+ years was the one that largely consumed the highest dietary diversity, with 88% of the households from this age group found to have consumed highest dietary diversity (Figure 59). Household age group aged 18-24 years were the least food secure households. Generally, households from different districts had the highest dietary diversity with 82% or more found to be in the category of high dietary diversity (Figure 60). Households in Ekurhuleni district had the highest dietary diversity, with 85% of the households from this district having consumed highest dietary diversity. Most households with the lowest dietary diversity were in the City of Tshwane and West Rand districts. These results should be taken with caution because with 24-hour recall it is possible to find the situation looking good in terms of food variety simply because the previous day, it was pension day.

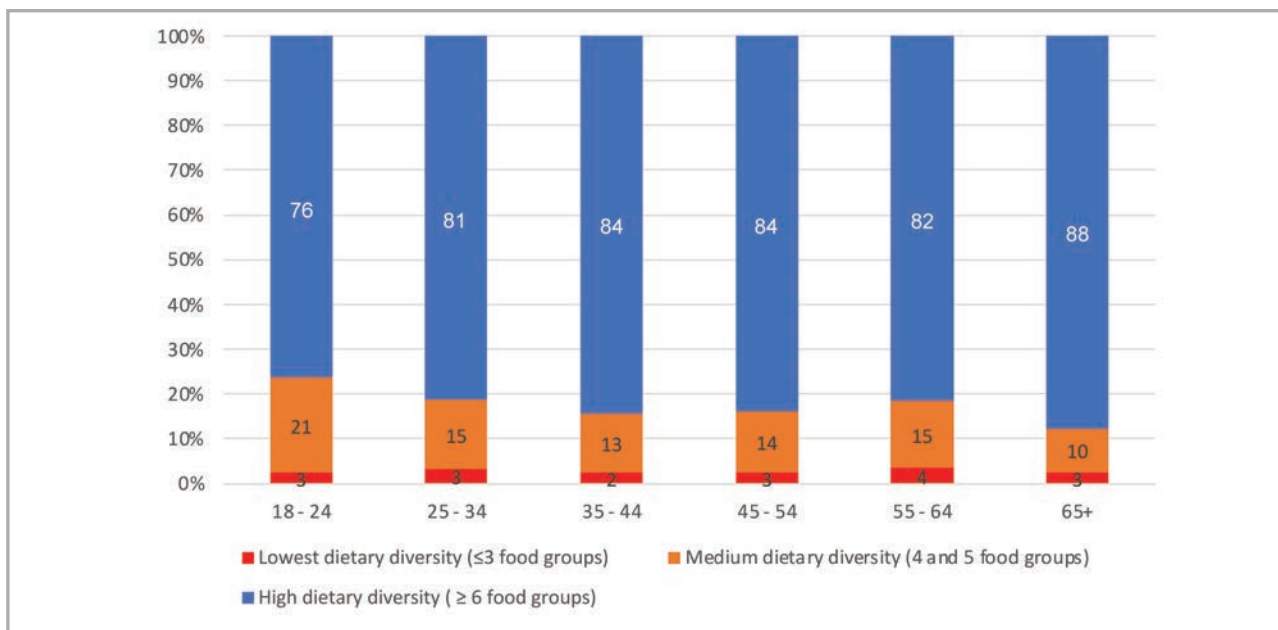


Figure 59: Dietary diversity category by age of household head

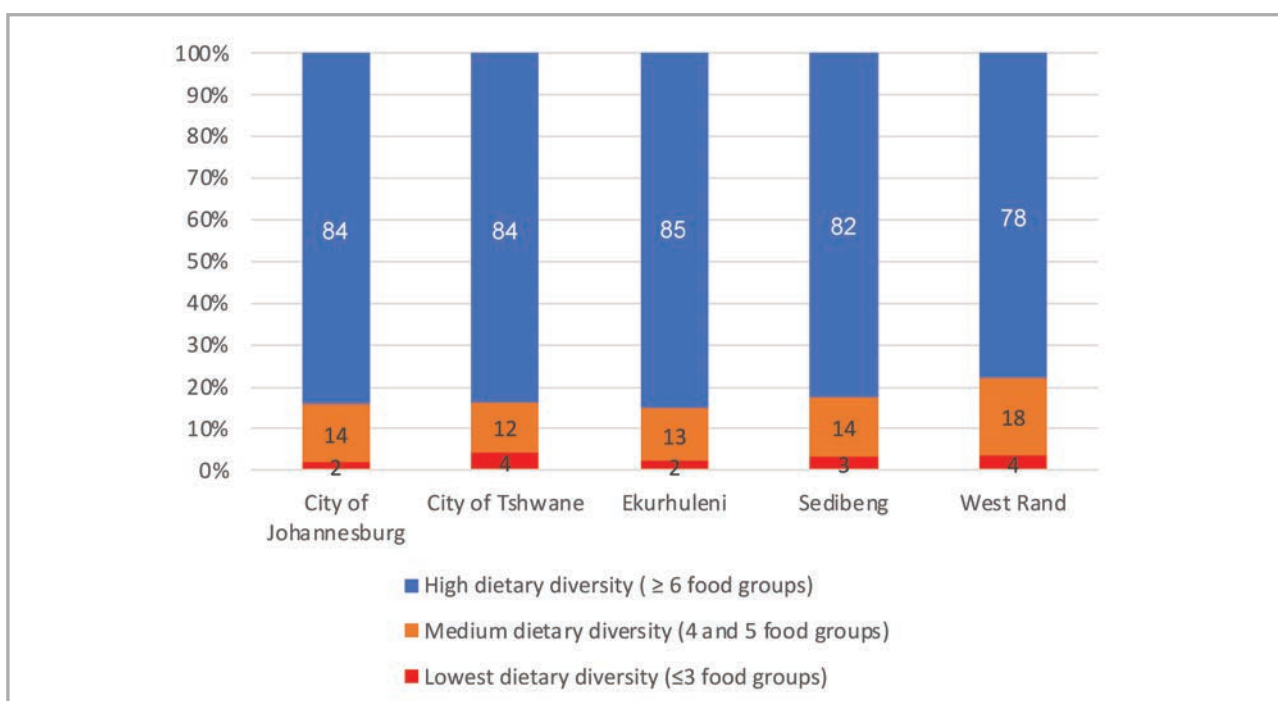


Figure 60: Dietary diversity category by district

However, HDDS should not be interpreted as a measure of nutrition or diet quality, as achieving a high dietary diversity score does not guarantee that important food groups, such as fruits and vegetables, are included in the diet. A household can lack crucial micro-nutrients even when consuming a diverse diet.

Figure 61 shows the food groups and their frequency of consumption by the households. The figure shows that the most popular food groups were cereals, condiments, oils and fats, sugars, other vegetables, meat, milk and milk products, meat, eggs, other fruits, roots and tubers, orange fresh vegetables, and dark green leafy vegetables. The least consumed food groups were orange-coloured fruits, pulses and nuts, and organ meat. Figure 61 shows that the most consumed food groups were mostly the less healthy ones, providing a different light to Figure 64, which gives an impression of a highly diverse and healthy diet.

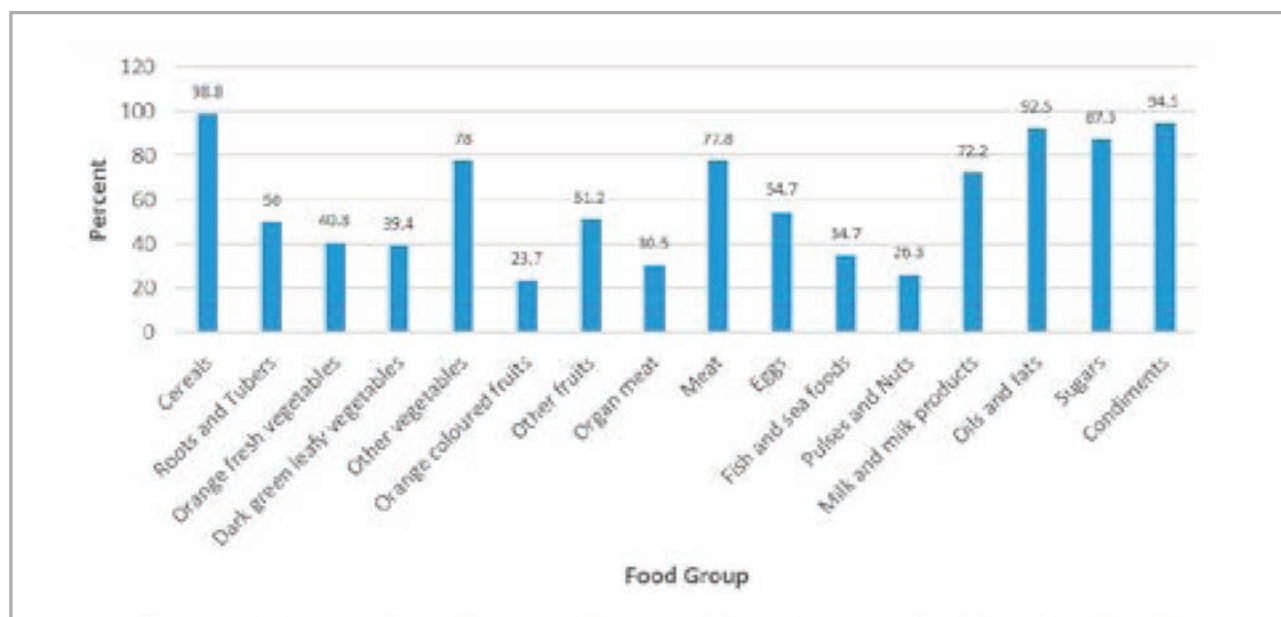


Figure 61: Frequency of food group consumption

7.4 Food Consumption Score

Food Consumption Scores (FSC) were calculated using the WFP methodology to further understand the levels of dietary diversity in the study areas. This FCS differs from Dietary Diversity in that it represents a weighted dietary diversity score. Figure 62 shows about 74% of the households were consuming adequately (acceptable) diversified diets and 16.3% 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 9.7% of the households consumed poor diets.

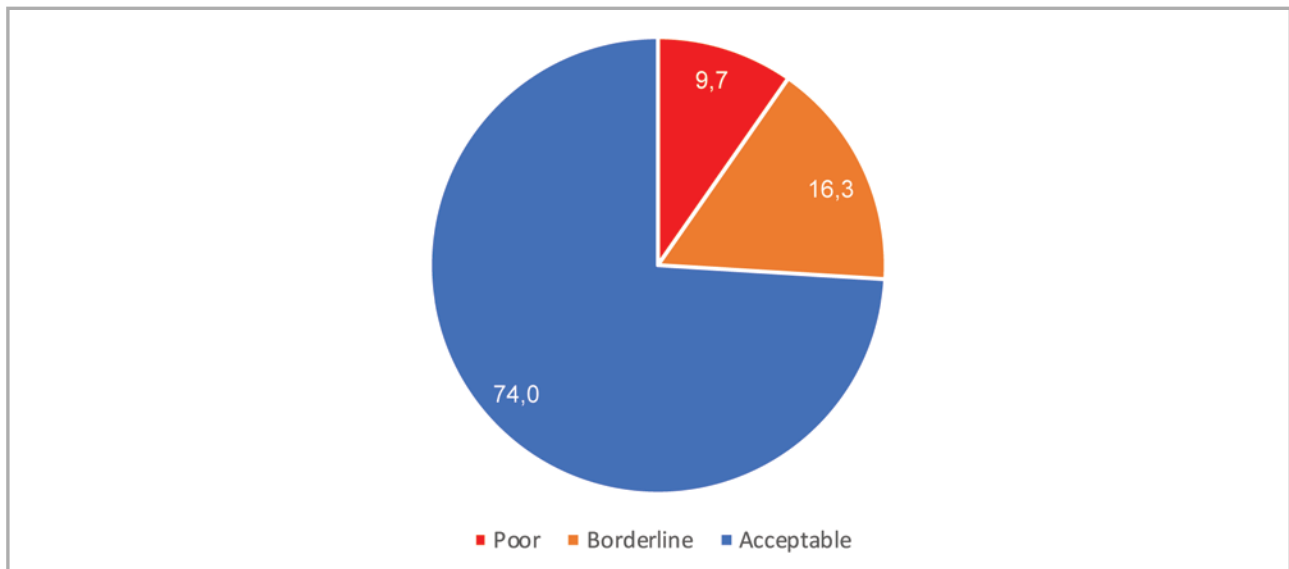


Figure 62: Food consumption score

Results in Table 41 presents the food consumption score categories according to sex, age, and district.

Table 43: Food Consumption Score by sex, age of household head, and district

Variable		Poor		Borderline		Acceptable	
		N	Row N %	N	Row N %	N	Row N %
Sex of the household head	Male	81	9	140	15	632	76
	Female	73	10	148	18	483	73
Household head age	18 - 24	7	20	10	16	37	64
	25 - 34	35	13	58	22	150	65
	35 - 44	27	7	66	15	287	78
	45 - 54	32	8	72	19	229	73
	55 - 64	30	12	37	13	191	76
	65+	21	8	43	15	201	77
District	City of Johannesburg	31	10	52	16	234	74
	City of Tshwane	27	9	48	15	237	76
	Ekurhuleni	34	10	44	14	236	76
	Sedibeng	16	5	75	25	209	70
	West Rand	52	16	69	21	200	63

Table 43 and Figure 62 present 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 76% of the male-headed households were found to have consumed acceptable diets compared to 73% of the female-headed households. Female-headed households were found in slightly higher proportions in the poor and borderline category.

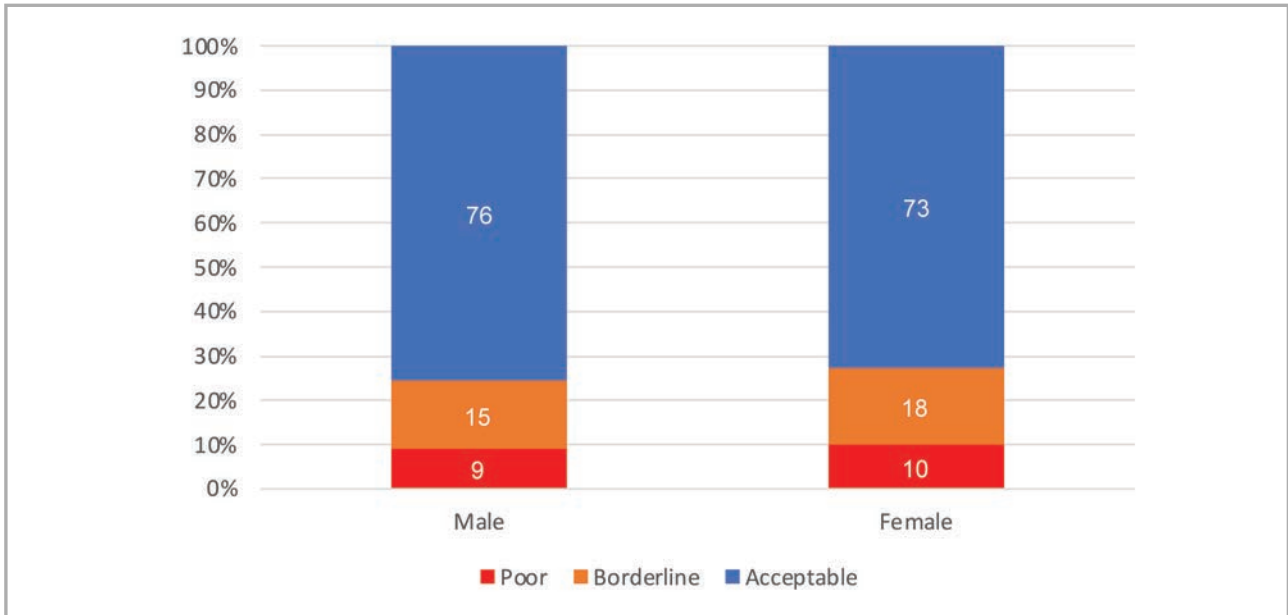


Figure 63: Food consumption category by sex of household head

The relationship between the age of household head and the chances of consuming acceptable diets was not linear (Figure 63). The proportion of households who consumed acceptable diets ranged from 64% to 78%. About 64% of the household heads in age group 18-24 years consumed acceptable diets, whilst 77% of the households in the age group 65+ years were found to have consumed acceptable diets. The most households that consumed acceptable diets were in the age group 35-44 years, with 78% of the household heads found to have consumed acceptable diets. The most households in the borderline were in the age groups of 25-34 years, followed by households in the age group of 45 -54 years. Most households with poor diets were in the age group of 18-24, with 20% of the households in this age category found to have consumed poor diets.

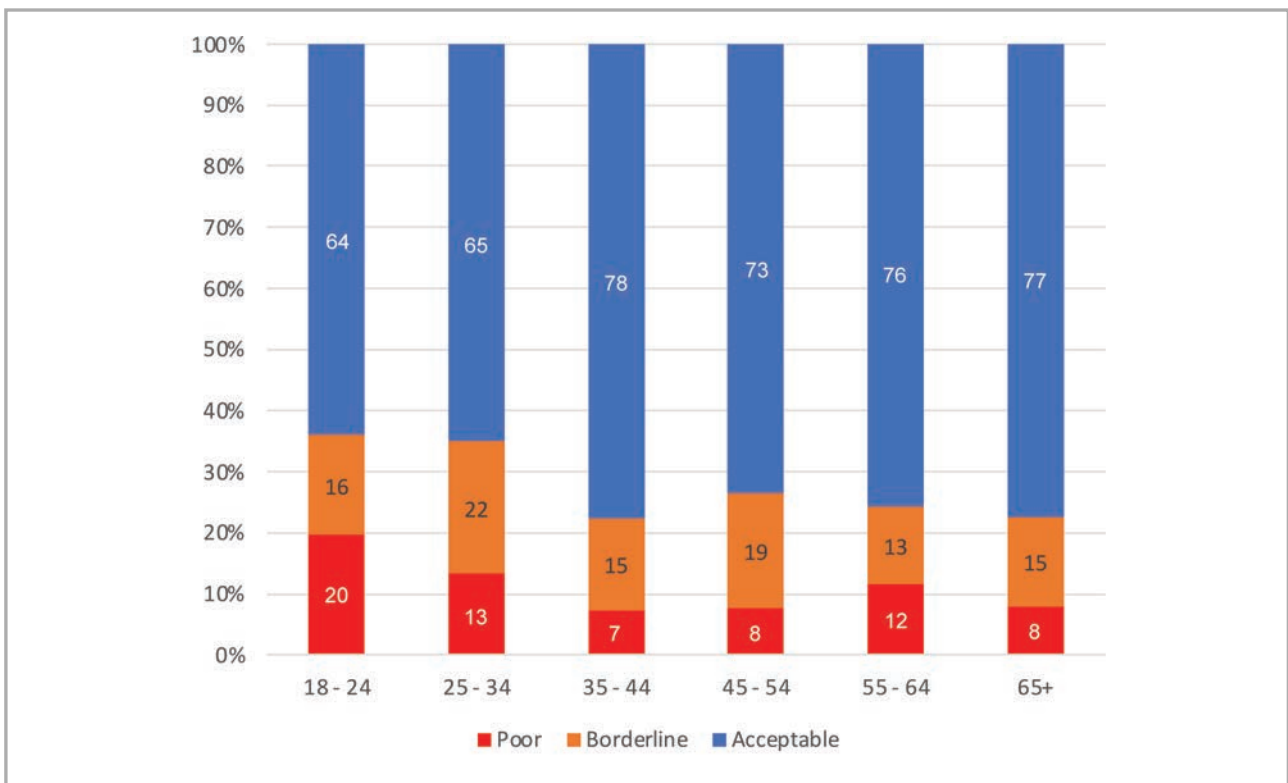


Figure 64: Food consumption category by age of household head

Regarding the districts, it was found that more households with poor diets were found in the West Rand District, where 16% of the households were found in this category. This was followed by households from the City of Johannesburg and City of Tshwane districts, with 10% of the households from each district in this category (Figure 65). Households from the City of Tshwane and Ekurhuleni districts consumed diverse diets compared to the other districts, with 76% of the households from each district in this category. The highest number of households on the borderline were from Sedibeng District, followed by households from West Rand District.

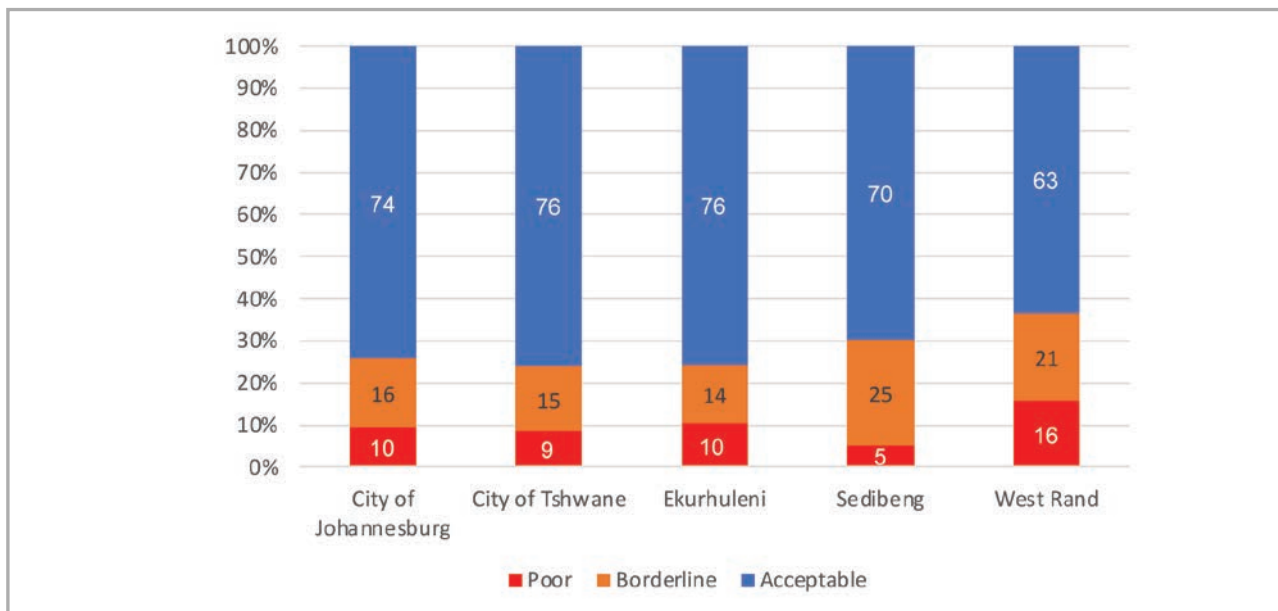


Figure 65: Food consumption category by district

7.5 Food Expenditure

The food expenditure approach captures food security in terms of the amount of money spent by a household to acquire food, and whether or not that amount is above or below the food poverty line. The food poverty line, commonly referred to as the ‘extreme’ poverty line, refers to the amount of money that an individual will need to afford the minimum required daily energy intake (Stats SA, 2021). In 2021, the food poverty line was R624 per person per month (Stats SA, 2021). On average, the households’ food expenditure per person per month in the Gauteng Province was R757.02, which is higher than the food poverty line. Using the 2021 food poverty line (i.e., R624), Figure 63 shows that 56% of the households were below the food poverty line. This indicates very high levels of food poverty, which supports the results of the HFIAS.

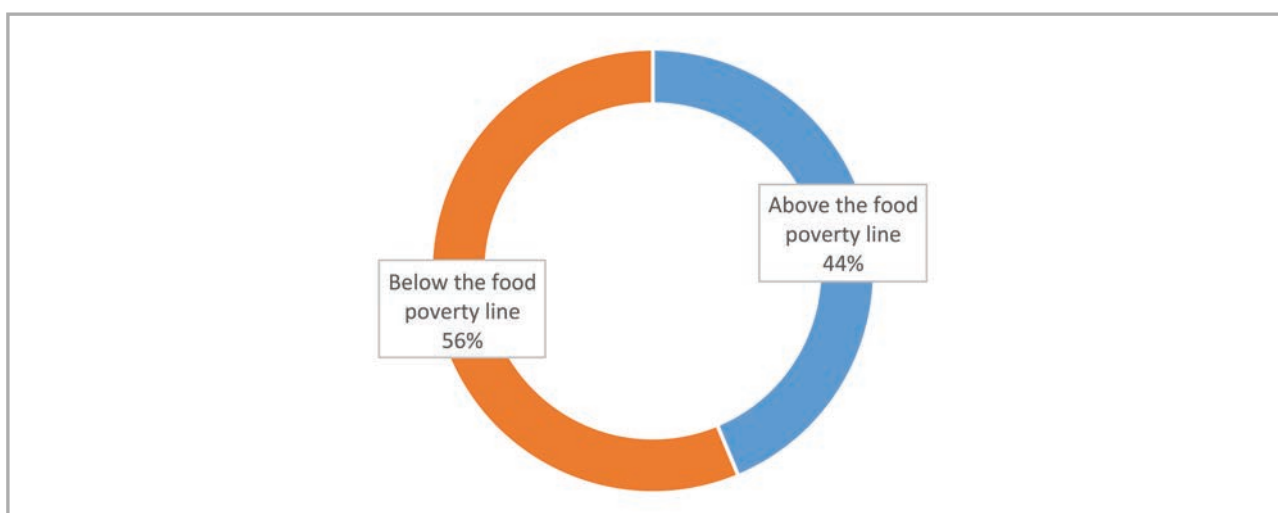


Figure 66: Food poverty levels in the Gauteng

The food expenditure and poverty levels varied by sex and age group (Table 44). The Table shows that a higher proportion of female-headed households (59.9%) were below the food poverty compared to male-headed households (53.7%). Across the age-groups, the results show food poverty was more prevalent among households headed by the 55-64 years age group, and among those headed by heads at least 65 years old. Food poverty was relatively less prevalent among households headed by those in the 18-24 years age group.

Table 44: Food expenditure per capita per month by sex and age group

Variables		Percentage above FPL	Percentage below FPL
All sample		43.7	56.3
Household head Sex	Male	46.3	53.7
	Female	40.1	59.9
Household head Age group	18-24 years	58.0	42.0
	25-34 years	50.5	49.5
	35-44 years	47.7	52.3
	45-54 years	42.5	57.5
	55-64 years	36.4	63.6
	65+ years	37.5	62.5

7.6

Relationship between Household Food Security situation and Socio-economic Factors

Household food security varies according to demographics, socio-economic characteristics, and support levels. This section presents results investigating the extent to which food security status of households differs according to several factors. For this analysis, the HFIAS categories were merged into a binary food security status variable, indicating whether a household was food secure or food insecure. The three food insecurity categories (i.e., mild, moderate, and severe levels) were all captured as food insecure. Table 45 presents the results. The table shows that significant relationships were found between household food security status and some demographics and socioeconomic factors such as gender, age of household heads/ acting head, access to irrigation, improved water source, sanitation, social grants, household size, markets, education level of household head/ acting head, and involvement in agricultural production.

Table 45: Relationship of food security and socio-economic factors

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
HH Sex	Male	50.5	49.5	***
	Female	45.7	54.4	
HH age	Mean age (years)	47.6	49.5	***

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
HH age group	18-24	53.7	46.3	***
	25-34	51.8	48.2	
	35-44	51.1	48.9	
	45-54	48.0	52.0	
	55-64	44.6	55.4	
	65+	44.8	55.2	
Marital status	Married	44.3	55.7	***
	Unmarried	54.4	45.6	
District	City of Johannesburg	55.4	44.6	***
		48.7	51.3	
	City of Tshwane	47.1	52.9	
		33.9	66.1	
	Ekurhuleni	34.2	65.8	
HH education level	No schooling	28.8	71.2	***
	Primary	22.2	77.8	
	Matric	44.1	55.9	
	Tertiary	82.9	17.1	
Household size	mean	2.7	3.4	***
HH employment status	Employed	36.5	63.5	***
	Unemployed	58.0	42.0	
Access to social grants	Beneficiary	28.3	71.7	***
	Non-beneficiary	55.1	44.9	
Access to land	Yes	41.6	58.6	**
	No	46.4	53.6	
Involved in farming activities	Yes	44.3	55.7	**
	No	45.2	54.8	
Access to irrigation	Yes	68.9	31.1	***
	No	76.3	23.7	
Access to extension	Yes	23.0	77.0	***
	No	0	100	
Access to markets	Yes	45.2	54.8	***
	No	28.7	71.3	
Access to road infrastructure	Yes	43.6	56.4	***
	No	54.4	45.6	

Variables	Categories	Food security status		t / Chi-square tests
		Food secure	Food insecure	
Location type	Urban, formal & informal	45.2	54.8	***
	Rural, Traditional areas			
	Farms	47.2	52.8	
Access to improved water sources	Yes	13.4	86.6	***
	No	48.6	51.4	
Access to improved sanitation	Yes	16.6	83.4	***
	No	49.3	50.7	

The Table 44 shows female-headed households were significantly more likely to be food insecure than male-headed households. Among male households, 49.5% were food insecure, while 54.4% were food insecure among female-headed households. This result is not unexpected, as females generally have disadvantages in accessing productive resources in traditional communities due to, among others, the historical formulation and implementation of patrilineal laws and cultural traditions, including laws that limit females' inheritance of productive assets such as land. Further, there is often social and administrative bias towards males, as well as unequal access to education, extension, training, information, and inputs, which limits the livelihood options for females, compounding the food security plight of their households.

The age of a household head also significantly varied with the food status of their households, with the average age of households in the food insecure category marginally higher than that of those in the food secure category. The negative relationship exists between age of household head and food security status, with the proportion of food insecure households increasing progressively as the household head become older. This finding was not unexpected, since one would expect the household heads in the prime years (late 30s and early 50 years) to have access to more opportunities than the older.

Households in the food secure category had marginally fewer household members than those in the food insecure category, and this difference was statistically significant. This was expected, since more members imply more mouths to feed, thus a greater burden than in smaller ones. While bigger households imply a cheaper, reliable, and committed source of labour, the results suggest that the consumption burden dominates the labour availability dimension.

Table 43 shows a positive and significant relationship between the education level of heads of household and household food security. The proportion of food secure households increased significantly as education levels also increased. For example, while 28.8% of households headed by people with no education were food secure, 82.9% of households headed by people with tertiary qualifications were food secure. Educated people have higher opportunities and higher chances of success in their endeavours, which lead to higher economic and welfare outcomes. Also, higher education among farming communities, such as those in the farming regions of the Gauteng Province, could lead to better information access and assimilation, which may increase awareness of the possible advantages of modernizing agriculture by means of technological inputs or simply taking advantage of opportunities arising in the area. This leads to higher productivity, food production and incomes. Even though increasing education is associated with increasing chances of being food secure, the results indicate that it is only after a household head attains a tertiary qualification that education plays a decided role in ensuring food security. The food-insecure household category dominates among those with education level attainments of matric and below, with food secure households becoming the majority for those in the tertiary qualification category.

The results show that access to land, as well as involvement in farming activities, did not play a crucial role in the food security status of households in the Gauteng Province. Among those with access to land, 41.6% were food secure, while 46.4% were food secure among those with no access to land. This result suggests that access to land does not lead to practical differences in the food security status of households in Gauteng Province. Households that were involved in agriculture were characterised by marginally higher levels of food security than those not engaged in farming activities. Again, the difference in the proportions was very small (less than a percentage point), indicating that farming does not play a huge role when it comes to food security in the province. Contrary to expectations, however, households with access to irrigation had a smaller proportion of food security (68.9%) in comparison to households with no access to irrigation (76.1%). Households in farms (47.2%) reported higher levels of food security than those in urban (45.2%) areas.

Employment was significantly associated with increased chances of a household being food insecure. While more than half (63.5%) of households among those headed by employed household heads were food insecure, about 42.0% of those headed by unemployed heads were food insecure. This is contrary to expectations. Employment is expected to play an important role in alleviating the scourge of poverty and food insecurity. It is, therefore, not clear why households with employed heads would fare worse than those headed by unemployed persons. Households that were dependent on social grants were more likely to be food insecure than those not dependent on social grants. This indicates that social grants are well-targeted, benefiting the food insecure, whose situation would have been worse without social grants. However, the social grants are not enough to lift households out of food insecurity, as food insecurity remains prevalent among the social grant dependent households.

While one would expect that access to infrastructure (such as roads) and basic services (such as improved water sources) would play a positive role in improving the food security status of households, the results present a different picture. The results show that among the proportion of food insecure households was higher among those who reported to have access to all-weather roads than among those with no access to better roads. Similarly, there was a higher proportion of food insecure households among those with access to improved water or sanitation than those without access. These results were not expected, since for example, access to good roads is expected to result in reduced transport costs to and from the market, whether to buy (inputs, food, etc.), or to sell output. Those located near accessible roads are also expected to have better access to market information (prices of inputs, food items, commodities), and thus be in a better position to achieve better transactions and savings.

Discussion

The food and nutrition security situation in the Gauteng Province continues to be a cause for concern, although it is better when compared to most provinces in South Africa. 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 (51.4%) in the Gauteng Province experienced food insecurity, with only 48.6% found to be food secure. This figure is considerably higher when compared with previous studies, such as Stats SA (2020) who reported, in the General Household Survey, that 23.7% of the households in the Gauteng Province were experiencing food access difficulties.

The HFIAS also showed that 14.2% of the households were severely food insecure, 19.8% of the surveyed households were moderately food insecure, while 17.3% of the households were mildly food insecure. This household food security situation is not strange, bearing in mind that the data was collected during the COVID-19 pandemic times. This implies the effects of COVID-19 measures may have affected both food availability and access in the study area. While the higher food insecurity figures reported in this study could also be possibly because the study largely focussed on open access livelihood zones and these are generally rural communities which are traditionally more food insecure, hence you would expect higher food insecurity levels there, the Gauteng Province (as was a similar case for the Western Cape Province) has a better food security status compared to other provinces in South Africa, and this province does not have a large rural areas as other provinces in the country, except Western Cape. 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 (82.3%). About 12.3% and 5.3% of the households experienced moderate hunger and severe hunger, respectively. While a significant proportion of households experienced food insecurity (as shown by the HFIAS results), the HHS suggests that the level of food deprivation is not very severe for most of the households in Gauteng Province. Also, emerging results from the household survey indicate that 82% of the male-headed households experienced little to no hunger compared to 83% of the female-headed households. This situation indicates that should there be interventions, such interventions should be equally tailor-made for both male-headed and female-headed households. The moderate hunger in the household was slightly more experienced by female-headed households compared to male-headed households while severe hunger in the household was more experienced by male-headed households compared to female-head households.

The Food Consumption Score (FCS) revealed that most households (74%) were consuming adequately (acceptable) diversified diets and about 16.3% 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 districts as a number of these districts are on borderline diets.

The most popular food groups were cereals, condiments, oils and fats, sugars, other vegetables, meat, milk and milk products, meat, eggs, other fruits, roots and tubers, orange fresh vegetables, and dark green leafy vegetables. The least consumed food groups were orange-coloured fruits, pulses and nuts, and organ meat. This shows that the most consumed food groups were mostly the less healthy ones, providing a different light to what a dietary diversity score showed which gave an impression of a highly diverse and healthy diet.

8.1 Child Nutrition and well-being

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

8.1.1 Infant feeding practices

Breastfeeding status

Data was recorded for a total of 241 children under the age of 2 years. Of those aged 0-11 months (n=112), 88.5% were ever breastfed, while 57.1% were breastfeeding at the time the survey was conducted. In children aged 12-24 months (n=129), 85.4% were ever breastfed, while 45.2% were being breastfed at the time the survey was conducted (Table 46). Male children (60.5%) appeared to have a higher prevalence of currently being breastfed than female children (43.4%), with female children (93.4%) having a higher prevalence of ever being breastfed as compared to male children (82.5%), however, the differences were not significant. Reports of between 76.6% and 90.0% were recorded for children that were ever breastfed across all districts with no significant differences between districts. Reports of between 61.9% and 66.9% were recorded for children that were currently breastfeeding in City of Johannesburg, Sedibeng, and West Rand districts compared to only 33.5% in City of Tshwane District. While this difference may seem large it was not significant. When disaggregating by district, results should be interpreted with caution as the sample sizes in some districts were small. Data could not be reported for Ekurhuleni District due to the low sample sizes in this district (n<30).

Table 46: Breastfeeding status among infants aged 0-24 months in Gauteng

	Ever been breastfed			Currently breastfed ¹			Exclusively breastfed (0-6 months)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n
Age(months)									
0-11 months	88.5	[77.8-94.4]	112	57.1	[31.0-79.7]	97	22.8	[9.0-46.8]	40
12-24 months	85.4	[75.6-91.7]	129	45.2	[29.1-62.5]	101			
Gender									
Male	82.5	[71.5-89.8]	131	60.5	[41.7-76.7]	104	-	-	21#
Female	93.4	[85.4-97.2]	109	43.4	[23.1-66.2]	94	-	-	19#

District									
City of Johannesburg	87.8	[76.3-94.1]	42	61.9	[42.0-78.5]	34	-	-	3#
City of Tshwane	90.0	[76.8-96.1]	50	33.5	[15.2-58.8]	42	-	-	12#
Ekurhuleni	-	-	20#	-	-	17#	-	-	1#
Sedibeng	80.1	[68.7-88.0]	73	66.1	[52.2-77.7]	61	-	-	12#
West Rand	76.6	[59.7-87.9]	56	66.9	[51.5-79.5]	44	-	-	12#
Total	87.1	[80.7-91.5]	241	51.6	[36.5-66.3]	198	22.8	[9.0-46.8]	40

¹among those ever breastfed * cell sample sizes too small to generate reasonable estimate # n<30

8.1.1.1 Time lapsed until the introduction of breastfeeding

In most infants aged 0-24months, (n=199), breastfeeding was introduced immediately (75.5%), within the first hour (14.3%) or within 24 hours (7.9%) (Table 47). Only in 1.4% of cases was breastfeeding introduced more than 24 hours after birth. There were no significant differences reported between children aged 0-11 months and 12-24 months. There were no significant differences between gender, except in those who were introduced more than 24 hours after birth, where males had a significantly higher prevalence (2.8%) compared to females (0.1%).

Data could not be reported at a district level for Ekurhuleni District as the sample size was too small. Of the remaining districts though, City of Tshwane reported the lowest proportion of children to be immediately breastfed (72.5%), while West Rand reported the highest proportion at 86.0% (Table 47), with no significant differences amongst the districts. There were also no significant differences across districts, regarding those currently being breastfed. However, due to the small sample size at district level, results should be interpreted with caution.

Table 47: Time lapsed until the introduction of breastfeeding among infants aged 0-24 months in Gauteng

	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	81.8	[66.7-91.0]	8.1	[2.8-21.6]	6.5	[2.5-15.8]	2.3	[0.6-8.4]	1.1	[0.2-6.5]	97
12-24 months	68.3	[55.8-78.6]	21.5	[12.7-33.9]	9.5	[5.0-17.4]	0.3	[0.1-1.3]	0.4	[0.1-2.9]	102
Gender											
Male	76.5	[65.2-85.0]	13.9	[7.8-23.7]	5.5	[2.2-12.9]	2.8	[0.8-9.0]	1.3	[0.2-6.9]	104
Female	74.7	[55.5-87.5]	14.7	[6.5-30.1]	10.2	[3.7-24.8]	0.1	[0.0-0.7]	0.4	[0.0-2.7]	95
City of Johannesburg	76.3	[58.1-88.2]	16.7	[7.4-33.3]	5.7	[1.9-15.6]	0.0		1.4	[0.2-10.0]	34
City of Tshwane	72.5	[50.0-87.5]	12.1	[4.3-29.6]	12.7	[4.8-29.6]	2.7	[0.5-12.4]	0.0		42
Ekurhuleni	-	-	-	-	-	-	-	-	-	-	17#
Sedibeng	81.8	[64.9-91.6]	3.9	[1.3-11.0]	9.9	[3.7-23.6]	4.5	[1.5-12.6]	0.0		61
West Rand	86.0	[73.7-93.1]	6.3	[2.3-16.0]	2.8	[0.6-11.4]	0.0		4.9	[1.2-18.2]	45
Total	75.5	[64.7-83.9]	14.3	[8.3-23.6]	7.9	[4.3-14.2]	1.4	[0.4-4.4]	0.8	[0.2-3.3]	199

* cell sample sizes too small to generate reasonable estimate # n<30

8.1.1.2 Age at which breastfeeding was stopped

In children aged 0-24 months (n=80), breastfeeding was most often stopped between the ages of 0-3 months (38.5%) and 7-12 months (28.8%). More than 62% of mothers stopped breastfeeding before the age of 6 months (38.5% stopped breastfeeding before 3 months, 11.7% stopped between 3-4 months and 12.4% stopped between 5-6 months (Figure 67). Only 8.6% of mothers continued to breastfeed for longer than 12 months, with only 0.1% continuing up to 24 months. Due to small sample sizes, no comparisons could be made at an age group and district level. While comparisons were possible for gender, no significant differences were found even though more than double the number of female children stopped breastfeeding at 0-3 months (49.8%) as compared to male children (21.5%). The only exception was of those who stopped between 13-18 months, were 21.3% of males were reported to have stopped breastfeeding compared to zero reports from females.

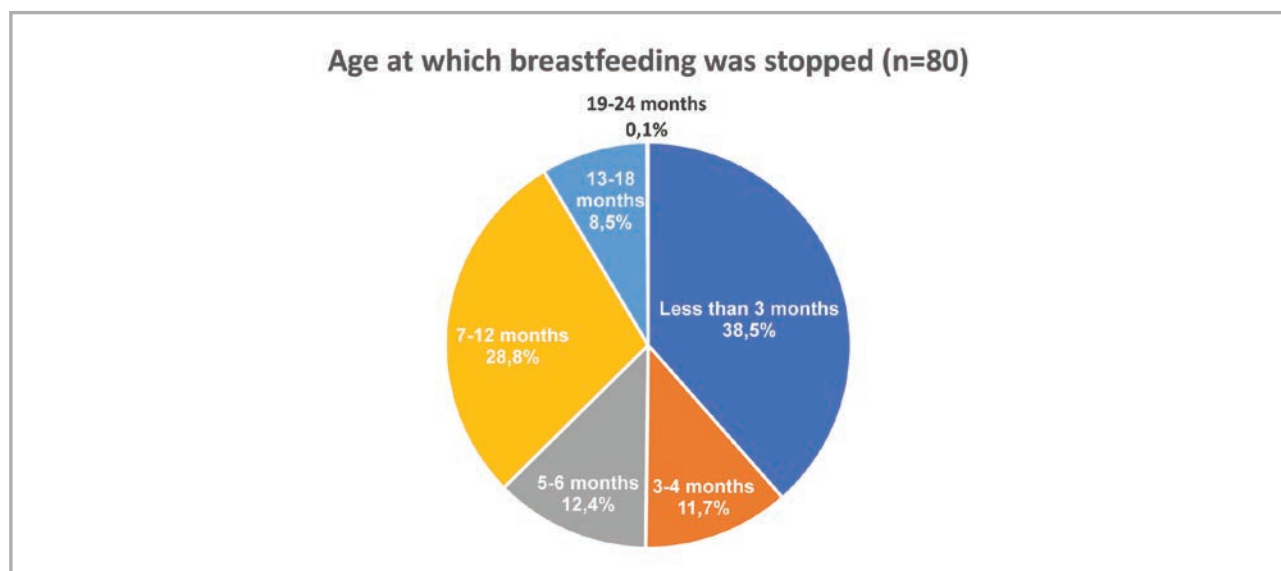


Figure 67: Age at which breastfeeding was stopped among infants aged 0-24 months in Gauteng

8.1.1.3 First drink other than breastmilk

Infant formula (56.0%) and plain water (26.4%) were reported to be the most common first drink other than breast milk that was introduced to infants under 2 years of age (Figure 68). There were, however, no significant differences found between age groups and gender (Table 48). The only significant difference across districts was for the introduction of gripe water, where those in West Rand District had a significantly higher prevalence than those in the City of Johannesburg District. However, due to the small sample size at district level, results should be interpreted with caution. Data for Ekurhuleni District was not reported due to a small sample size.

Mothers in all districts, reported that infant formula, followed by water, was the most common first drink introduced to children aged 0-24 months. Other drinks such as, juice, tea and medicine were reported as first drinks by less than 6.0% of mothers across all districts. It is important to note that district level comparisons must be interpreted with caution due to the small sample sizes.

First drink other than breastmilk in children aged 0-24 months
(n=238)

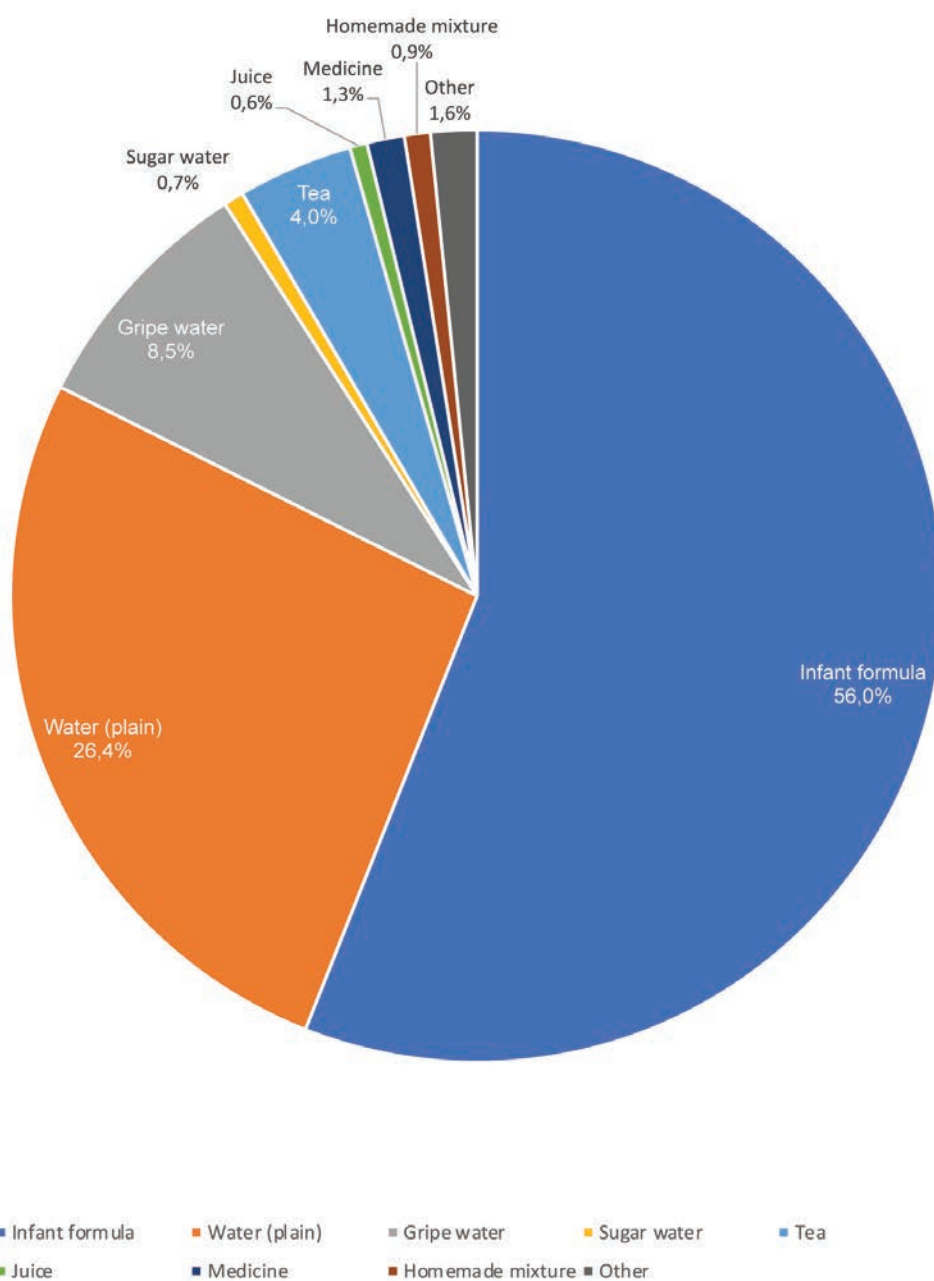


Figure 68: First drink other than breast milk among children aged 0-24 months in Gauteng

Table 48: The first drink other than breast milk among children aged 0-24 months by district in Gauteng

	Infant formula		Water (plain)		Gripe water		Sugar water		Tea		Juice		Medicine		Home-made mixture		Other		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age																			
0-11 months	60.7	[40.6-77.7]	21.9	[11.2-38.4]	7.1	[3.0-15.6]	0.6	[0.1-2.6]	2.2	[0.6-7.9]	0.9	[0.1-5.2]	2.1	[0.6-7.4]	1.7	[0.2-11.1]	2.9	[0.9-9.0]	107
12-24 months	51.0	[36.4-65.4]	31.3	[20.4-44.6]	10.1	[5.2-18.9]	0.9	[0.2-3.6]	5.8	[2.2-14.7]	0.3	[0.1-1.1]	0.4	[0.1-1.4]	0.0		0.3	[0.0-2.2]	131
Gender																			
Male	54.0	[39.8-67.5]	30.0	[19.2-43.6]	6.9	[3.4-13.5]	0.6	[0.1-2.6]	4.5	[1.6-12.1]	1.1	[0.3-4.7]	2.4	[0.8-7.2]	0.0		0.5	[0.1-2.1]	129
Female	57.3	[34.1-77.6]	23.2	[11.4-41.4]	10.5	[4.6-22.0]	0.9	[0.2-3.7]	3.4	[1.0-10.9]	0.0		0.1	[0.0-0.8]	1.8	[0.2-12.3]	2.9	[0.8-9.6]	108
District – NW																			
City of Johannesburg	65.4	[49.3-78.6]	32.1	[19.3-48.4]	1.9	[0.6-6.4]	0.6	[0.1-4.1]	0.0		0.0		0.0		0.0		0.0		43
City of Tshwane	61.0	[32.1-83.8]	16.2	[6.8-34.2]	9.0	[3.0-23.9]	0.0		5.2	[1.5-16.5]	0.0		2.9	[0.7-10.9]	2.3	[0.3-14.9]	3.3	[0.9-11.6]	50
Ekurhuleni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20#
Sedibeng	57.3	[44.7-69.1]	11.3	[4.3-26.6]	9.7	[4.9-18.1]	2.3	[0.3-15.0]	7.9	[2.1-25.6]	5.9	[1.3-22.7]	2.3	[0.5-9.5]	0.0		3.2	[0.6-14.6]	71
West Rand	37.9	[21.8-57.1]	36.0	[20.2-55.6]	17.4	[8.3-32.9]	4.7	[1.2-17.2]	0.9	[0.1-6.3]	0.8	[0.1-4.9]	0.0		0.0		2.2	[0.3-14.3]	54
Total	56.0	[42.4-68.7]	26.4	[18.3-36.6]	8.5	[4.8-14.8]	0.7	[0.3-2.1]	4.0	[1.8-8.6]	0.6	[0.1-2.5]	1.3	[0.4-3.9]	0.9	[0.1-5.9]	1.6	[0.6-4.5]	238

* cell sample sizes too small to generate reasonable estimate # n<30

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

Overall, the first drink other than breastmilk was mainly introduced at 0-1month (43.6%), followed by 3 months (17.4%). The same pattern was followed for children in both age groups with 50.7% and 18.1% of children aged 0-11 months and 36.0% and 16.7% of children aged 12-24 months, introduced to other drinks 0-1 months and 3 months, respectively, with no significant differences shown between age groups (Table 49). We can assume that the introduction of other drinks before the age of 1 month is most likely the introduction of infant formula. Of the remaining children, 11.0% of children were introduced to other drinks at 2 months and nearly 20.8% were introduced from 6 months of age.

When doing comparisons by gender, 37.5% of boys were introduced to other drinks before the age of one month, with 19.3% at 3 months. Girls followed a similar pattern (48.9%) at 1 month and 15.7% at three months. There were no significant differences between gender for all ages at which breast feeding was stopped. Furthermore, 23.5 % of boys and 18.2% of girls were introduced to other drinks from the age of 6 months.

Similar patterns were displayed across districts, where most children were introduced to other drinks before the age of 1 month (27.8% – 57.1%). This was followed by 3 months (13.8% - 23.4%). The only significant differences were reported for a first drink other than breast milk introduced to children aged at 2 months between Sedibeng (1.4%) and City of Johannesburg (1.4%) districts.

Table 49: Age at which the first drink other than breastmilk was introduced among infants aged 0-24 months in Gauteng

	Name of first semi-solid or solid food (with a spoon or fingers)																
	Infant Cereal / Porridge (commercial)		Cereal / Porridge (homemade)		Cereal / Porridge (clinic)		Pureed / mashed vegetables / fruit		Bottled / canned baby foods		Traditional baby food		Custard		Other (specify)		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)																	
0-11 months	50.7	[28.3-72.8]	13.6	[6.5-26.1]	18.1	[8.6-34.2]	2.1	[0.8-5.3]	6.7	[1.4-27.3]	5.0	[2.0-12.0]	3.8	[0.7-18.6]	107	[7.4-30.8]	75
12-24 months	36.0	[25.8-47.7]	8.2	[2.8-21.4]	16.7	[9.5-27.7]	4.5	[1.6-11.9]	1.2	[0.4-4.0]	15.5	[9.3-24.6]	17.9	[8.4-34.1]	131	[0.0-1.0]	94
Gender																	
Male	37.5	[26.9-49.4]	10.5	[5.1-20.3]	19.3	[11.8-30.0]	2.5	[1.1-5.7]	6.7	[1.3-28.5]	11.6	[6.4-20.0]	11.9	[5.1-25.2]	130	[2.4-19.5]	86
Female	48.9	[26.4-71.8]	11.7	[4.5-27.2]	15.7	[7.6-29.8]	4.1	[1.3-12.5]	1.4	[0.4-4.9]	8.7	[3.5-20.0]	9.5	[2.9-27.0]	107	[3.2-23.6]	82
District																	
City of Johannesburg	32.9	[20.7-48.0]	14.1	[5.8-30.7]	23.4	[14.2-36.0]	2.2	[0.3-15.2]	8.0	[1.6-31.9]	5.9	[2.0-16.1]	13.5	[3.8-38.5]	43		62
City of Tshwane	57.1	[29.6-80.9]	8.4	[2.8-22.8]	13.8	[5.0-32.6]	2.7	[0.6-11.2]	0.0		5.8	[1.9-16.4]	12.1	[4.4-29.1]	50	[3.5-43.9]	37
Ekurhuleni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20#	[3.1-19.0]	70
Sedibeng	54.0	[43.4-64.2]	1.4	[0.3-5.7]	16.4	[7.5-32.2]	6.9	[2.5-17.7]	5.8	[1.6-19.2]	12.1	[4.3-29.5]	3.3	[1.1-10.0]	71		
West Rand	27.8	[15.5-44.7]	10.7	[4.0-25.6]	23.4	[11.8-41.1]	13.0	[5.8-26.5]	7.9	[2.0-26.4]	12.5	[6.4-23.0]	4.7	[1.4-14.4]	54		
Total	43.6	[29.9-58.2]	11.0	[6.1-18.8]	17.4	[11.2-26.1]	3.3	[1.5-7.0]	4.0	[1.1-14.2]	10.1	[5.9-16.6]	10.7	[5.2-20.6]	238	[3.6-17.0]	169

* cell sample sizes too small to generate reasonable estimate # n<30

8.1.1.5 Milk feeds

The mean age at which milk feeds were introduced to children was higher in those aged 12-24 months (5.0 months) and boys (4.3 months) as compared to those aged 0-11 months (2.4 months) and girls (3.0 months); however, these differences were not significant (Table 50). At a district level, comparisons for City of Johannesburg, Ekurhuleni, and West Rand were not possible due to the small sample sizes, comparisons for the remaining districts must, however, also be interpreted with caution.

Table 50: Mean age at introduction of milk feeds among infants 0-24 months old in Gauteng Province

	Mean	95% CI	n
Age (months)			
0-11 months	2.4	[0.7-4.0]	55
12-24 months	5.0	[2.9-7.0]	77

Gender			
Male	4.3	[2.4-6.3]	76
Female	3.0	[1.3-4.8]	55
District			
City of Johannesburg	-	-	29#
City of Tshwane	2.4	[1.0-3.9]	32
Ekurhuleni	-	-	8#
Sedibeng	4.1	[2.9-5.2]	40
West Rand	-	-	23#
Total	3.7	[2.3-5.1]	132

cell sample sizes too small to generate a reasonable estimate # n<30

Except for breast milk, the majority of infants (86.4%) were receiving infant formula, followed by full strength cow milk (10.5%), diluted cow milk (3.1%) and 4.2% receiving other milk (Table 51). No significant differences were observed between age groups, gender, and districts. At a district level, comparisons for City of Johannesburg, Ekurhuleni, and West Rand were not possible due to the small sample sizes, comparisons for the remaining districts must, however, also be interpreted with caution.

Table 51: The type of milk other than breast milk that the infant receives (among infants aged 0-24 months who are receiving milk feeds) in Gauteng

	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 (months)													
0-11 months	2.3	[0.4-12.8]	0.6	[0.1-3.1]	0.0		0.0		97.6	[87.5-99.6]	0.0		55
12-24 months	18.8	[8.0-38.1]	5.7	[1.6-18.3]	1.3	[0.2-9.2]	5.2	[1.9-13.7]	75.1	[55.8-87.9]	8.4	[1.8-31.4]	77
Gender													
Male	4.6	[1.3-15.1]	5.2	[1.5-16.4]	1.2	[0.2-8.6]	2.9	[0.9-9.3]	90.6	[78.9-96.1]	2.2	[0.3-14.6]	76
Female	17.8	[5.4-45.3]	0.7	[0.1-5.8]	0.0		2.3	[0.5-9.7]	81.0	[53.3-94.1]	6.7	[0.8-37.9]	55
District													
City of Johannesburg	-	-	-	-	-	-	-	-	-	-	-	-	29#
City of Tshwane	14.1	[3.9-40.1]	3.3	[0.4-23.2]	1.6	[0.2-12.3]	1.6	[0.2-12.3]	84.3	[58.0-95.4]	0.0		32
Ekurhuleni	-	-	-	-	-	-	-	-	-	-	-	-	8#
Sedibeng	14.2	[4.4-37.0]	9.9	[2.7-30.8]	0.0		0.0		87.0	[65.8-95.9]	0.0		40
West Rand	-	-	-	-	-	-	-	-	-	-	-	-	23#
Total	10.5	[4.3-23.3]	3.1	[1.0-9.7]	0.7	[0.1-4.8]	2.6	[0.9-7.0]	86.4	[73.3-93.6]	4.2	[0.9-17.9]	132

cell sample sizes too small to generate a reasonable estimate # n<30

8.1.1.6 Solid foods

The mean age at which first semi-solid or solid foods were introduced was 4.9 months. There was a significant difference between the older and younger infants where those aged 12-24 months were first introduced to solid food at the age of 6 months compared to significantly lower mean age of 3.7 months in infants aged 0-11 months. There were no significant differences between gender. While there did seem to be a significant difference between the mean age of introduction of solid foods in the City of Tshwane (3.3%) and the City of Johannesburg (6.4%), these results must be interpreted with caution due to the small sample sizes (Table 52).

Table 52: Age of introduction of first semi-solid or solid food and the types of foods among infants 0-24 months in Gauteng

	Mean	95% CI	Sample
Age (months)			
0-11 months	3.7	[2.7-4.7]	98
12-24 months	6.0	[4.8-7.3]	130
Gender			
Male	5.8	[4.6-7.1]	125
Female	3.9	[2.9-4.9]	102
District			
City of Johannesburg	6.4	[4.8-8.0]	40
City of Tshwane	3.3	[2.4-4.2]	48
Ekurhuleni	-	-	18#
Sedibeng	4.4	[3.8-5.0]	68
West Rand	4.8	[4.2-5.4]	54
Total	4.9	[3.9-5.8]	228

* cell sample sizes too small to generate a reasonable estimate # n<30

Table 53 shows that commercial infant cereal was the first semi solid food given to most children aged 0-24 months (64.9%), followed by homemade infant cereal/porridge (20.0%) and pureed/mashed fruit / vegetables (4.8%). Less than 3.0% of infants had cereal/ porridge supplied by the clinic and bottled/ canned baby foods as their first semi solid foods, while 6.9% and 0.3% of mothers reported other foods and traditional baby foods as their infants first food, respectively.

When disaggregating by age groups, the only significant finding occurred for other foods, where a significantly higher proportion of infants aged 0.11 month (13.4%) were given other foods compared to 0.5% of those aged 12-24 months. While males appear to have a higher prevalence of being introduced to homemade cereal/ porridge, females appear to have a higher prevalence of being introduced to commercial cereal/ porridge; however, these results were not significant for any of the first solid foods listed.

When disaggregating by district, significant differences were only reported in cereal/porridge received at the clinic, where only those children in the City of Johannesburg reported using this as a first food compared to zero children in other districts.

Table 53: Types of first semi-solid or solid food among infants 0-24 months in Gauteng Province

	Name of first semi-solid or solid food (with a spoon or fingers)																
	Infant Cereal / Porridge (commercial)		Cereal / Porridge (home-made)		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	65.0	[44.3-81.3]	14.9	[6.1-31.8]	0.0		5.8	[2.1-15.1]	0.5	[0.1-3.2]	0.4	[0.1-1.6]	0.0		13.4	[4.8-32.2]	98
12-24 months	64.7	[48.1-78.5]	25.2	[13.8-41.3]	1.7	[0.2-11.4]	3.8	[1.2-10.9]	2.1	[0.4-9.8]	0.2	[0.0-0.8]	1.9	[0.3-10.1]	0.5	[0.1-2.0]	129
Gender																	
Male	53.9	[35.9-70.9]	25.7	[13.7-42.9]	1.7	[0.2-11.4]	6.4	[2.6-14.8]	2.2	[0.5-9.4]	0.3	[0.1-1.2]	1.6	[0.2-11.0]	8.2	[1.9-29.2]	124
Female	75.6	[56.9-87.9]	14.5	[6.4-29.7]	0.0		3.2	[0.8-11.7]	0.5	[0.1-3.4]	0.2	[0.0-1.4]	0.3	[0.0-2.3]	5.7	[1.5-19.5]	102
District																	
City of Johannesburg	68.0	[45.3-84.6]	18.9	[5.9-46.3]	2.3	[0.3-15.5]	2.0	[0.3-13.8]	0.6	[0.1-4.6]	0.0		0.0		8.2	[1.5-34.6]	37
City of Tshwane	67.9	[42.9-85.6]	15.9	[5.2-39.6]	0.0		5.4	[1.5-18.0]	2.3	[0.4-12.9]	0.0		2.1	[0.3-15.1]	6.4	[1.5-23.2]	49
Ekurhuleni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18#
Sedibeng	53.9	[33.9-72.7]	18.5	[7.9-37.3]	0.0		15.6	[6.9-31.7]	0.0		1.0	[0.2-4.1]	1.6	[0.2-11.4]	9.4	[3.8-21.6]	69
West Rand	56.2	[37.7-73.2]	32.7	[17.1-53.2]	0.0		4.8	[1.1-18.8]	3.6	[0.5-21.6]	2.7	[0.7-10.2]	0.0		0.0		54
Total	64.9	[51.8-76.0]	20.0	[11.4-32.7]	0.8	[0.1-5.9]	4.8	[2.3-9.8]	1.3	[0.4-4.8]	0.3	[0.1-0.8]	1.0	[0.2-5.3]	6.9	[2.8-16.4]	227

* cell sample sizes too small to generate a reasonable estimate # n<30

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 fetal growth restriction, stunting, wasting, and micronutrient deficiency, especially of vitamin A and Zinc. This occurs along with poor infant feeding practices, which are indicated by suboptimum breastfeeding.

Anthropometric data was recorded for 469 children under the age of 5 years, of these, there were a slightly higher number of boys (52.0%) than girls (48.0%) (Table 54).

Table 54: Distribution of age and sex of the sample in Gauteng Province

Age (months)	Boys		Girls		Total	
	n	%	n	%	n	%
<6	22	52.4	20	47.6	42	9.0
6-17	67	54.5	56	45.5	123	26.2
18-29	60	59.4	41	40.6	101	21.5
30-41	41	48.8	43	51.2	84	17.9
42-53	44	46.8	50	53.2	94	20.0
54-59	10	40.0	15	60.0	25	5.3
Total	244	52.0	225	48.0	469	100.0

8.1.2.1 Stunting

The overall prevalence of stunting for children under the age of 5 years (n=455) was 25.5%, of which 11.8% was severe, and 13.7% was moderate, stunting (Table 55 and Figure 69). There were no significant differences in overall stunting between for age groups and districts. While it appeared as if twice as many males (34.7%) were stunted compared to females (17.0%), this too was not significant.

When disaggregating by severe and moderate stunting, children aged 30-41 months had the highest prevalence of moderate stunting (29.1%), which was significantly higher than those aged 42–53-months (2.9%), while there were no significant differences recorded for severe stunting (Table 55 and Figure 70). There were also no significant differences between gender for both moderate and severe stunting. Generally, it seems as if moderate and severe stunting were evenly distributed in females (7.0% and 10.0%, respectively), however, far more males were moderately stunted (21.0%) compared to those who were severely stunted (13.7%).

District comparisons show that the overall prevalence of stunting was highest in the West Rand District (46.1%), with more severe (34.3%) than moderate stunting (11.8%) (Table 55 and Figure 71). The prevalence of overall stunting was lowest in City of Tshwane (23.1%) and City of Johannesburg (23.5%) districts. However, there was no significant differences at a district level across overall and moderate stunting. For severe stunting, however, there was a significantly higher prevalence of severe stunting in the West Rand District (34.3%), compared to the City of Tshwane District (7.8%).

Table 55: The prevalence of Stunting in children under 5 years by age, sex, and district in Gauteng

	No stunting HAZ \geq -2		All stunting HAZ<-2		Moderate stunting HAZ<-2 and \geq -3		Severe stunting HAZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	88.8	[58.4-97.8]	11.2	[2.2-41.6]	7.9	[0.9-43.8]	3.3	[1.0-10.6]	40
6-17	74.0	[59.8-84.5]	26.0	[15.5-40.2]	9.3	[3.5-22.6]	16.7	[9.3-28.0]	122
18-29	72.2	[58.4-82.8]	27.8	[17.2-41.6]	13.7	[7.0-25.4]	14.0	[7.2-25.6]	99
30-41	63.6	[46.7-77.7]	36.4	[22.3-53.3]	29.1	[13.4-52.0]	7.3	[1.9-24.9]	82
42-53	79.5	[64.0-89.4]	20.5	[10.6-36.0]	2.9	[0.9-9.5]	17.6	[8.5-32.9]	88
54-59	-	-	-	-	-	-	-	-	24#

Gender									
Female	83.0	[73.8-89.4]	17.0	[10.6-26.2]	7.0	[3.4-13.9]	10.0	[6.1-15.9]	219
Male	65.3	[49.0-78.7]	34.7	[21.3-51.0]	21.0	[8.6-43.0]	13.7	[8.4-21.5]	236
District									
City of Johannesburg	76.5	[65.9-84.6]	23.5	[15.4-34.1]	9.8	[4.3-20.7]	13.7	[7.6-23.4]	68
City of Tshwane	76.9	[64.2-86.0]	23.1	[14.0-35.8]	15.3	[6.6-31.9]	7.8	[3.8-15.2]	93
Ekurhuleni	72.9	[52.9-86.6]	27.1	[13.4-47.1]	14.1	[6.6-27.5]	12.9	[5.0-29.6]	44
Sedibeng	71.1	[59.0-80.9]	28.9	[19.1-41.0]	17.1	[11.6-24.4]	11.8	[6.3-20.9]	155
West Rand	53.9	[36.2-70.7]	46.1	[29.3-63.8]	11.8	[4.6-27.2]	34.3	[17.8-55.7]	95
Total	74.5	[68.1-80.0]	25.5	[20.0-31.9]	13.7	[8.3-21.9]	11.8	[8.0-17.0]	455

* cell sample sizes too small to generate a reasonable estimate

n<30

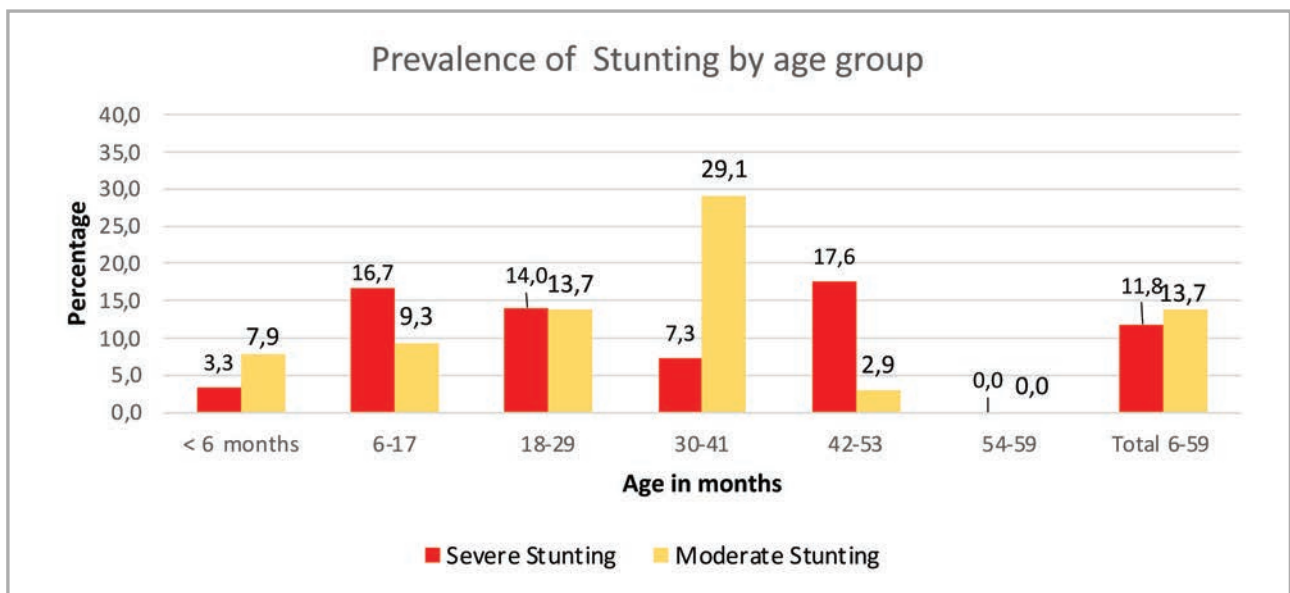


Figure 69: The prevalence of Stunting in children under 5 years by age group in Gauteng

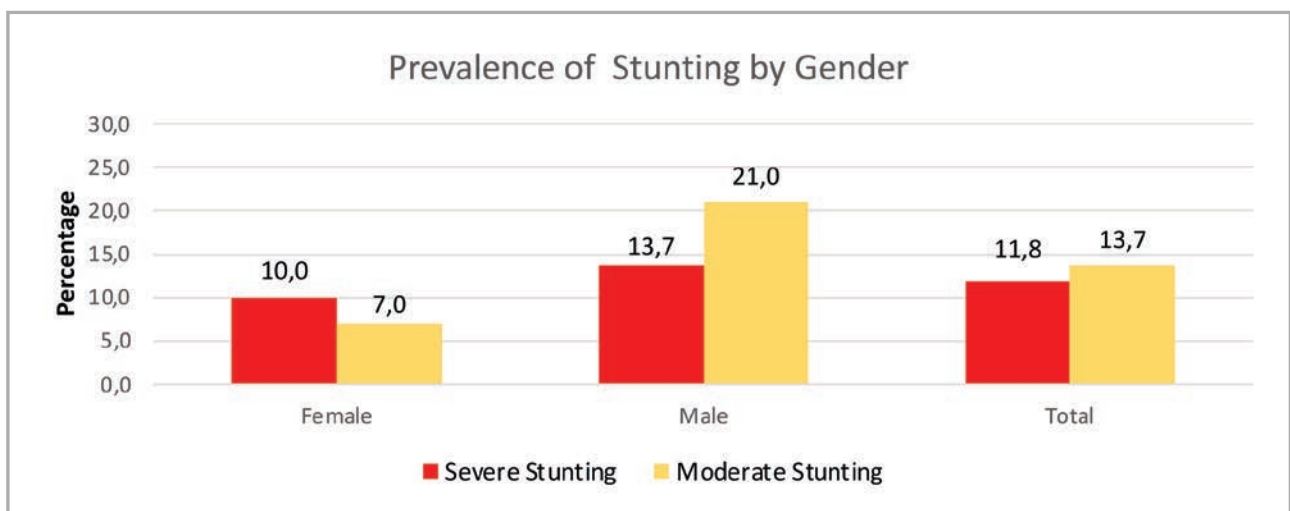


Figure 70: The prevalence of Stunting in children under 5 years by gender in Gauteng

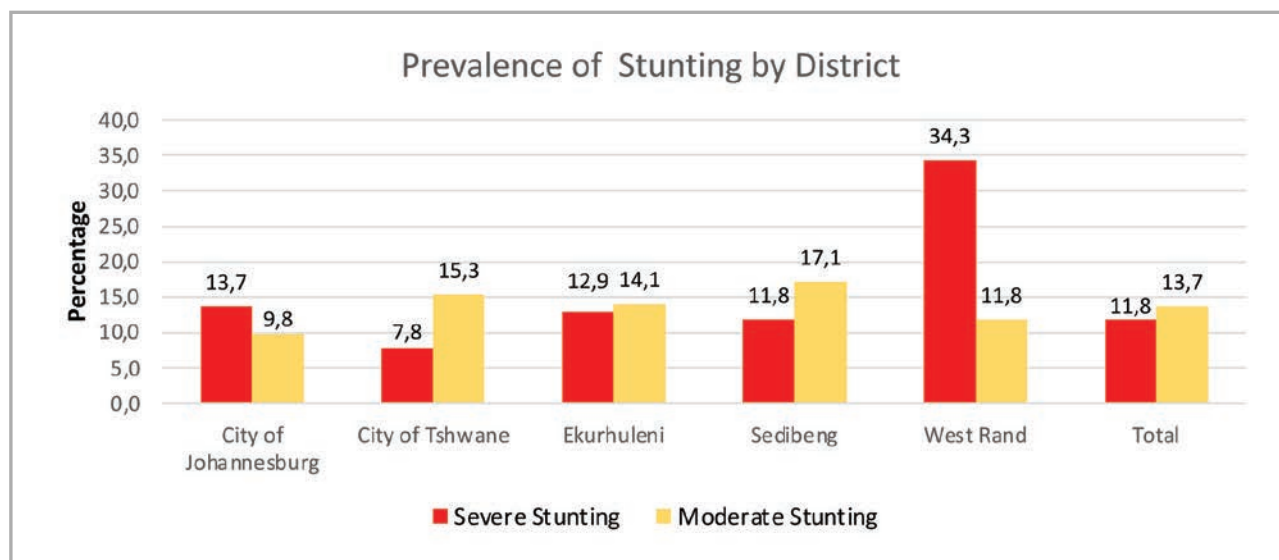


Figure 71: The prevalence of Stunting in children under 5 years by district in Gauteng

8.1.2.2 Wasting

The overall prevalence of wasting for children under the age of 5 years (n=444) was 7.2%, of which 3.9% was severe and 3.3% was moderate wasting (Table 56 and Figure 72). For overall wasting, across all age groups, the prevalence ranged from 0.7% in children aged <6 months to 12.2% in children 42-53 months. The differences between these age groups were, however, not significant. While the prevalence of overall wasting in males (11.2%) was three times more than that in females (3.4%), these differences were also not significant. Overall, wasting ranged from 5.2% in Sedibeng to 14.9% in West Rand districts, however, differences between districts were also not significant (Table 56 and Figure 73).

The prevalence of moderate wasting was highest in children aged 42-53 months (5.9%), and lowest in the age groups <6 months (0.0%) (Table 56 and Figure 74). This difference was significant. While males had a higher prevalence of moderate wasting (3.9%) than females and West Rand had the highest prevalence of moderate wasting (8.6%) compared to other districts (range 1.1%-6.5%), there were no significant differences in moderate wasting between genders and across districts.

Comparisons for severe wasting across gender, age group and districts did not reveal any additional significant differences. Generally, more children were severely wasted than moderately wasted in all districts, except in City of Johannesburg and West Rand districts where the prevalence of moderate wasting was higher than that of severe wasting (Table 56).

Table 56: The prevalence of Wasting in children under 5 years by age, sex and district in Gauteng

	No wasting WHZ>=-2		All wasting WHZ<-2		Moderate wasting WHZ<-2 and >=-3		Severe wasting WHZ<-3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	99.3	[94.3-99.9]	0.7	[0.1-5.7]	0.0		0.7	[0.1-5.7]	41
6-17	92.8	[84.8-96.8]	7.2	[3.2-15.2]	5.3	[1.9-13.6]	1.9	[0.4-8.5]	120
18-29	98.3	[95.0-99.4]	1.7	[0.6-5.0]	1.1	[0.2-4.7]	0.6	[0.2-2.4]	94
30-41	96.0	[85.2-99.0]	4.0	[1.0-14.8]	3.7	[0.9-14.4]	0.3	[0.0-2.8]	80
42-53	87.8	[68.8-95.9]	12.2	[4.1-31.2]	5.9	[1.1-25.9]	6.2	[1.4-23.5]	85
54-59	-	-	-	-	-	-	-	-	24#

Gender									
Female	96.6	[89.7-98.9]	3.4	[1.1-10.3]	2.7	[0.7-10.1]	0.7	[0.2-2.9]	213
Male	88.8	[76.8-95.0]	11.2	[5.0-23.2]	3.9	[1.8-8.5]	7.2	[2.1-22.0]	231
District									
City of Johannesburg	93.5	[80.8-98.0]	6.5	[2.0-19.2]	6.5	[2.0-19.2]	0.0		65
City of Tshwane	94.0	[77.5-98.6]	6.0	[1.4-22.5]	1.1	[0.2-5.4]	4.9	[0.9-23.2]	92
Ekurhuleni	88.5	[62.3-97.3]	11.5	[2.7-37.7]	4.6	[1.1-17.7]	6.9	[1.0-36.1]	41
Sedibeng	94.8	[79.8-98.8]	5.2	[1.2-20.2]	1.8	[0.6-5.2]	3.4	[0.6-17.0]	154
West Rand	85.1	[72.9-92.4]	14.9	[7.6-27.1]	8.6	[3.2-21.1]	6.3	[2.6-14.5]	92
Total	92.8	[85.7-96.5]	7.2	[3.5-14.3]	3.3	[1.5-7.2]	3.9	[1.2-11.4]	444

* cell sample sizes too small to generate reasonable estimate # n<30

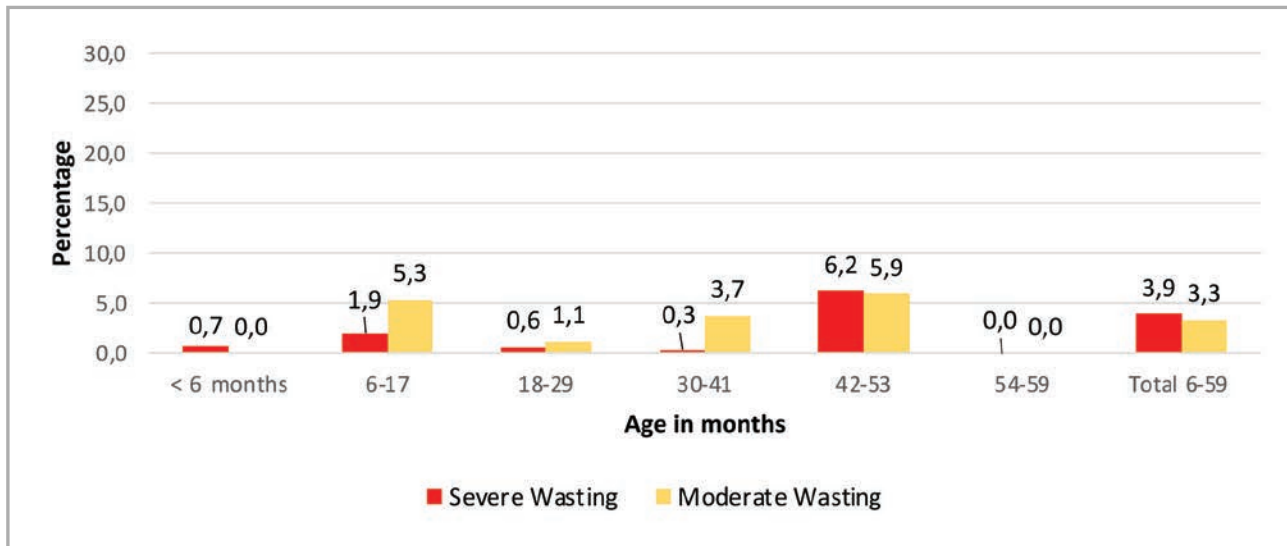


Figure 72: The prevalence of Wasting in children under 5 years by age group in Gauteng

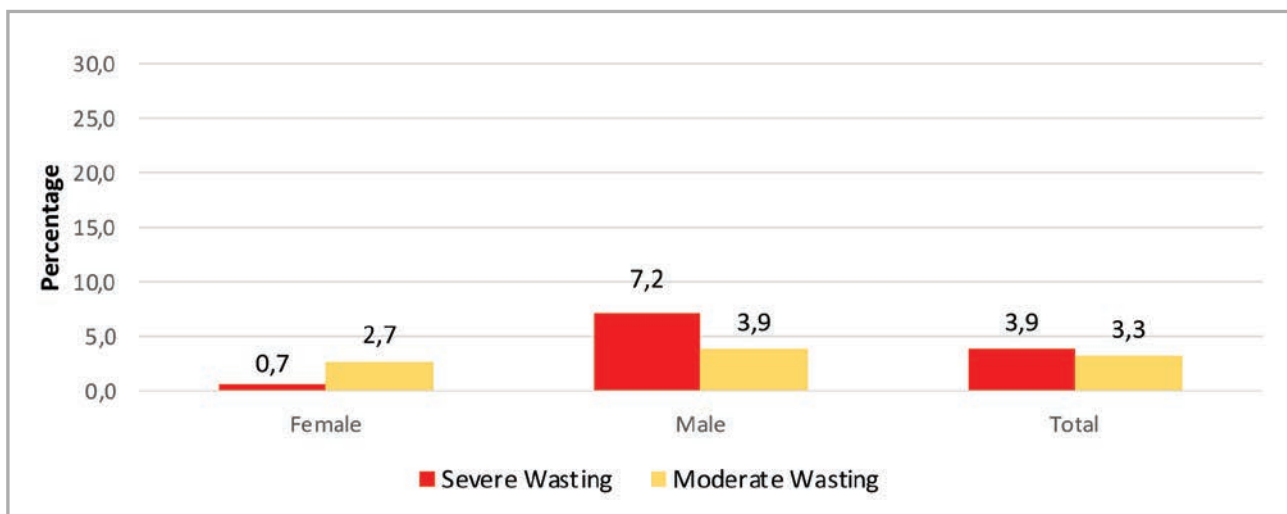


Figure 73: The prevalence of Wasting in children under 5 years by gender in Gauteng

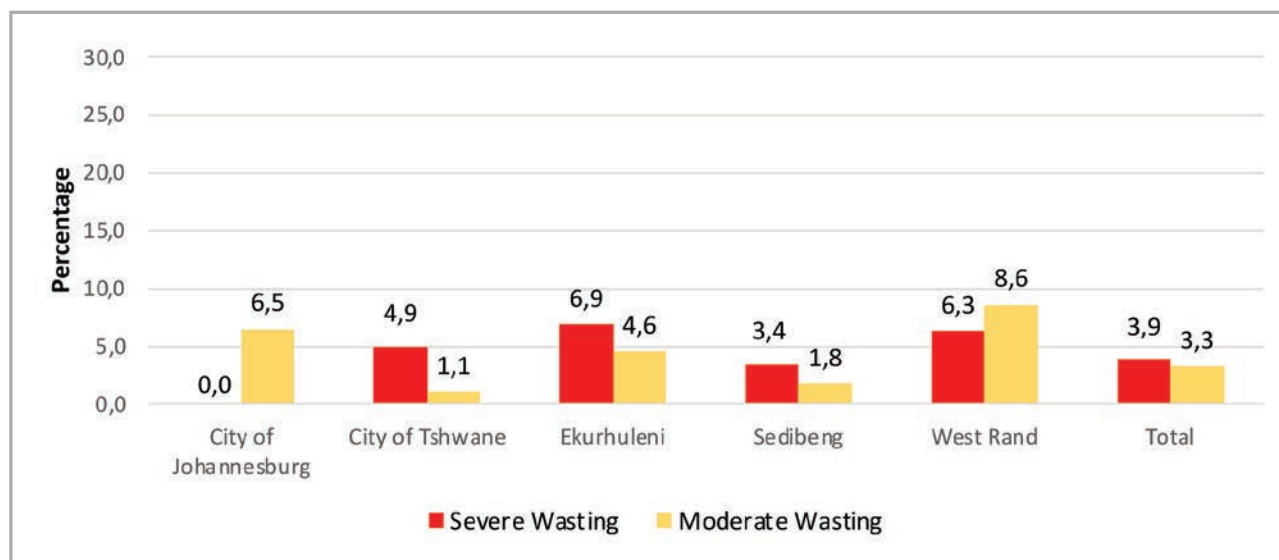


Figure 74: The prevalence of Wasting in children under 5 years by district in Gauteng

8.1.2.3 Underweight

The overall prevalence of underweight for children under the age of 5 years (n=463) was 8.0%, of which 4.1% was severe and 3.9% was moderate underweight (Table 57 and Figure 75). The prevalence of overall, moderate, and severe underweight was highest in children aged 42-53 months at 10.9%, 6.0% and 4.8%, respectively, however there were no significant differences in all categories of underweight across age groups.

Comparisons between gender showed that males (12.1%) had a prevalence of being underweight three times higher than that of females (4.1%) (Table 56 and Figure 76). While these differences were not significant at an overall level, it does appear that males had a significantly higher prevalence of moderate underweight (6.8%) compared to females (1.1%).

West Rand District reported a significantly higher prevalence of overall underweight (16.9%), compared to the City of Johannesburg District (0.9%) (Table 56 and Figure 77). No significant differences were observed at a district level for moderate underweight. However, Sedibeng District had a significantly lower prevalence of severe underweight (0.3%) compared to both the City of Tshwane District (7.0%) and the West Rand District (8.2%).

Table 57: The prevalence of Underweight in children under 5 years by age, sex, and district in Gauteng

	Not underweight WAZ \geq -2		All Underweight WAZ $<$ -2		Moderate underweight WAZ $<$ -2 and \geq -3		Severe underweight WAZ $<$ -3		n
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	
Age (months)									
<6	99.1	[94.8-99.9]	0.9	[0.1-5.2]	0.7	[0.1-5.7]	0.2	[0.0-1.6]	41
6-17	96.1	[90.0-98.6]	3.9	[1.4-10.0]	3.2	[1.0-9.8]	0.6	[0.2-2.1]	122
18-29	94.6	[84.6-98.2]	5.4	[1.8-15.4]	3.2	[0.7-14.3]	2.1	[0.5-8.8]	100
30-41	91.6	[72.9-97.8]	8.4	[2.2-27.1]	5.4	[1.2-20.6]	3.0	[0.5-17.6]	83
42-53	89.1	[74.1-95.9]	10.9	[4.1-25.9]	6.0	[1.5-21.8]	4.8	[1.3-16.8]	92
54-59	-	-	-	-	-	-	-	-	25#

Gender									
Female	95.9	[92.3-97.8]	4.1	[2.2-7.7]	1.1	[0.5-2.4]	3.0	[1.3-6.8]	220
Male	87.9	[75.6-94.5]	12.1	[5.5-24.4]	6.8	[3.1-14.3]	5.3	[1.2-20.7]	243
District									
City of Johannesburg	99.1	[93.2-99.9]	0.9	[0.1-6.8]	0.9	[0.1-6.8]	0.0		68
City of Tshwane	89.4	[77.7-95.4]	10.6	[4.6-22.3]	3.6	[1.1-10.9]	7.0	[2.3-19.2]	96
Ekurhuleni	91.3	[67.9-98.1]	8.7	[1.9-32.1]	6.4	[0.9-34.0]	2.4	[0.3-15.6]	44
Sedibeng	93.0	[80.7-97.7]	7.0	[2.3-19.3]	6.7	[2.1-19.3]	0.3	[0.0-1.8]	156
West Rand	83.1	[75.5-88.7]	16.9	[11.3-24.5]	8.6	[3.9-18.0]	8.2	[4.6-14.3]	99
Total	92.0	[86.3-95.4]	8.0	[4.6-13.7]	3.9	[1.9-7.8]	4.1	[1.7-10.0]	463

* cell sample sizes too small to generate reasonable estimate # n<30

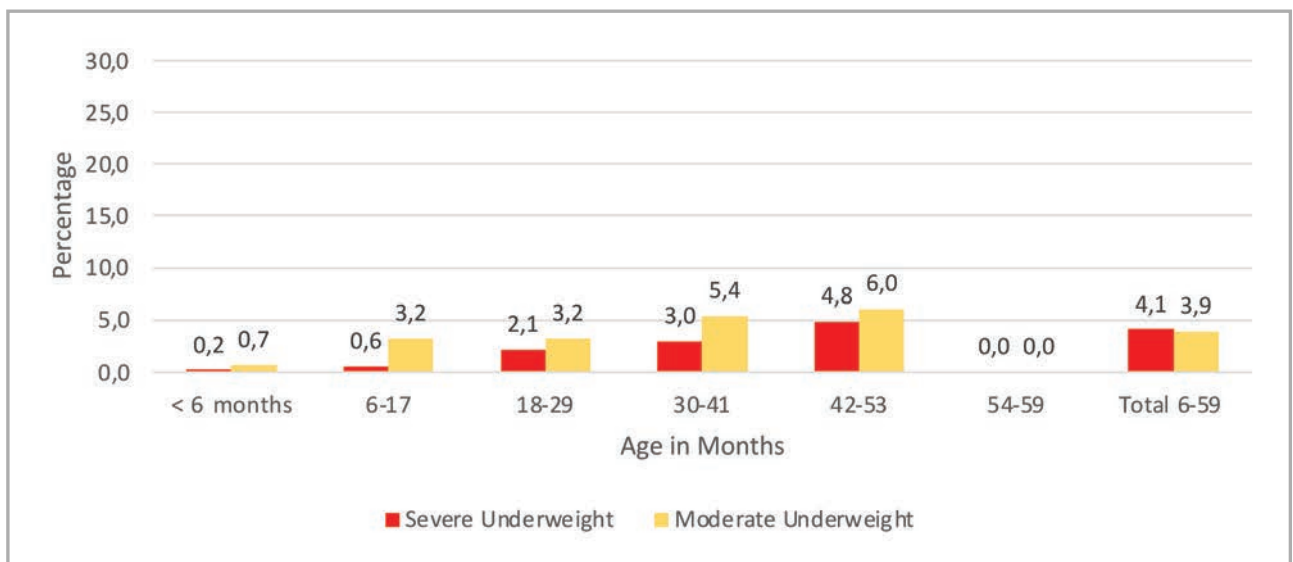


Figure 75: The prevalence of Underweight in children under 5 years by age group in Gauteng

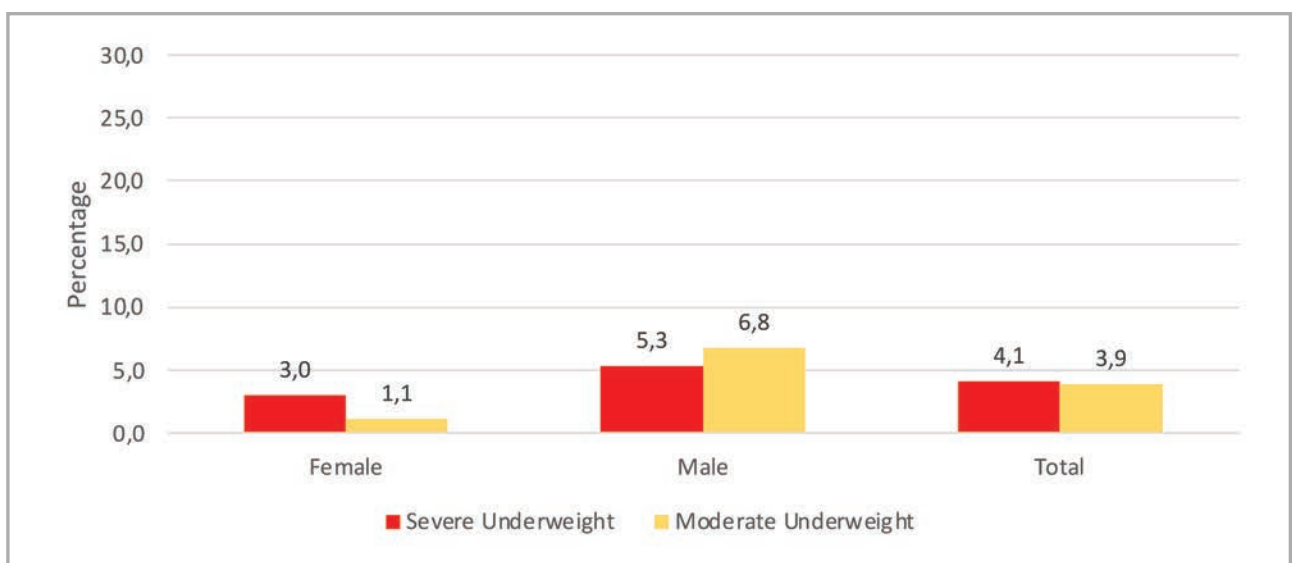


Figure 76: The prevalence of Underweight in children under 5 years by gender in Gauteng Province

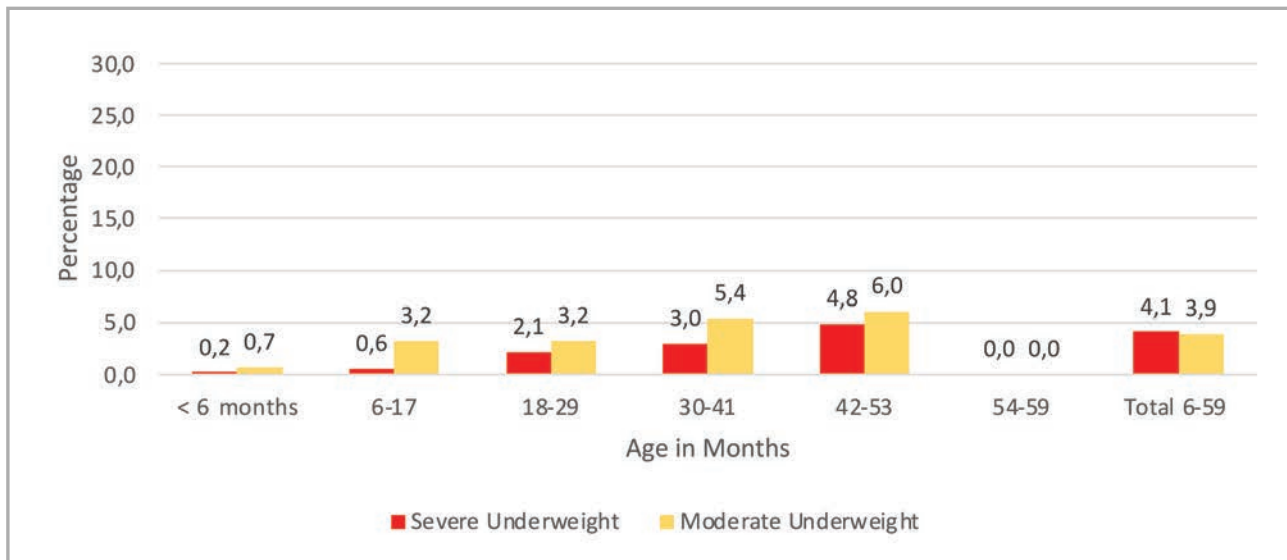


Figure 77: The prevalence of Underweight in children under 5 years by district in Gauteng Province

8.1.2.4 Overweight

The prevalence of overall overweight for children under the age of 5 years (n=444) was 16.3%, of which 9.5% was severe and 6.8% was moderate overweight (Table 58 and Figure 78). The prevalence of overall overweight appeared to decrease with age, with those aged 6-17 months (32.6%) having a significantly higher prevalence than those aged 30-41 month (5.7%). Similarly, those aged 6-17 months (19.3%) had a significantly higher prevalence of moderate overweight compared to those aged 18.29 month (2.1%). There were no significant differences between age groups for severe overweight.

Males had a higher prevalence of overall overweight (21.2%) compared to females (11.8%) (Table 58 and Figure 79). While these differences were not significant, it does appear that males had a significantly higher prevalence of severe overweight (15.6%), four times higher than that of females (3.8%).

West Rand District reported a significantly higher overall prevalence of overweight (34.5%), compared to both the City of Tshwane District (8.0%) and Sedibeng District (11.0%). For severe overweight, both the West Rand District (19.3%) and the City of Johannesburg District (20.9%) had a significantly higher prevalence of severe overweight compared to those in the City of Tshwane District (2.5%) (Table 59 and Figure 80).

Table 58: The prevalence of overweight in children under 5 years by age, sex, and district in Gauteng

	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	77.9	[46.1-93.5]	22.1	[6.5-53.9]	3.6	[0.4-24.9]	18.6	[5.1-49.0]	41
6-17	67.4	[51.3-80.3]	32.6	[19.7-48.7]	19.3	[9.6-35.0]	13.3	[6.7-24.6]	120
18-29	86.0	[67.7-94.7]	14.0	[5.3-32.3]	2.1	[0.9-5.0]	11.9	[3.8-31.5]	94
30-41	94.3	[82.5-98.3]	5.7	[1.7-17.5]	2.8	[0.6-11.9]	2.9	[0.7-10.6]	80
42-53	90.5	[76.3-96.6]	9.5	[3.4-23.7]	3.7	[0.7-16.9]	5.8	[1.6-19.0]	85
54-59	-	-	-	-	-	-	-	-	24#

Gender									
Female	88.2	[78.4-93.9]	11.8	[6.1-21.6]	8.0	[3.7-16.5]	3.8	[1.5-9.0]	213
Male	78.8	[68.8-86.3]	21.2	[13.7-31.2]	5.6	[2.4-12.3]	15.6	[9.4-24.8]	231
District									
City of Johannesburg	71.3	[55.8-83.1]	28.7	[16.9-44.2]	7.8	[2.1-24.8]	20.9	[11.2-35.6]	65
City of Tshwane	92.0	[81.8-96.7]	8.0	[3.3-18.2]	5.5	[1.9-14.6]	2.5	[0.9-6.3]	92
Ekurhuleni	79.5	[62.6-90.0]	20.5	[10.0-37.4]	7.1	[1.8-24.2]	13.4	[5.2-30.3]	41
Sedibeng	89.0	[82.2-93.4]	11.0	[6.6-17.8]	6.0	[3.0-11.9]	5.0	[2.7-8.9]	154
West Rand	65.5	[44.9-81.6]	34.5	[18.4-55.1]	15.2	[7.2-29.2]	19.3	[7.6-40.8]	92
Total	91.0	[87.4-93.6]	9.0	[6.4-12.6]	4.1	[2.5-6.7]	4.9	[3.1-7.6]	659

* cell sample sizes too small to generate reasonable estimate # n<30

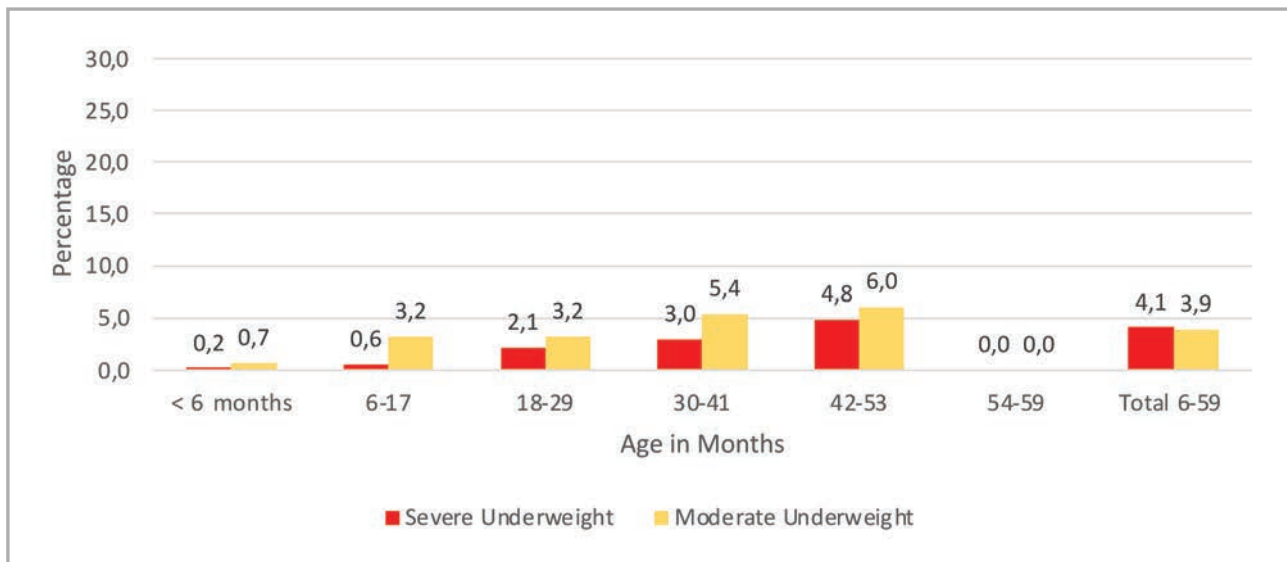


Figure 78: The prevalence of Overweight in children under 5 years by age group in Gauteng Province

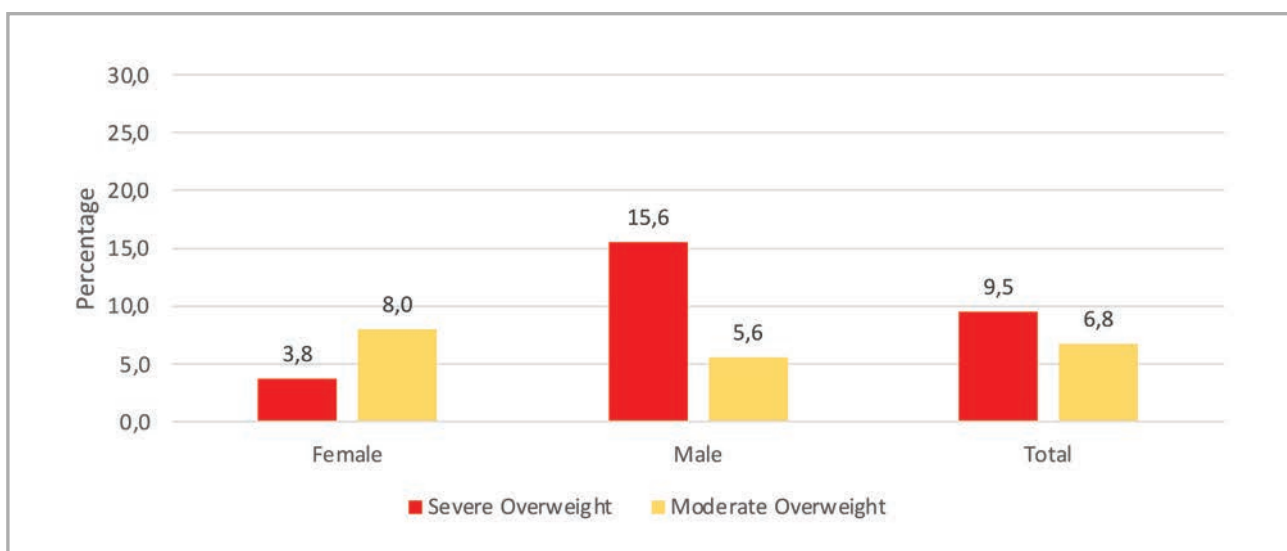


Figure 79: The prevalence of Overweight in children under 5 years by gender in Gauteng

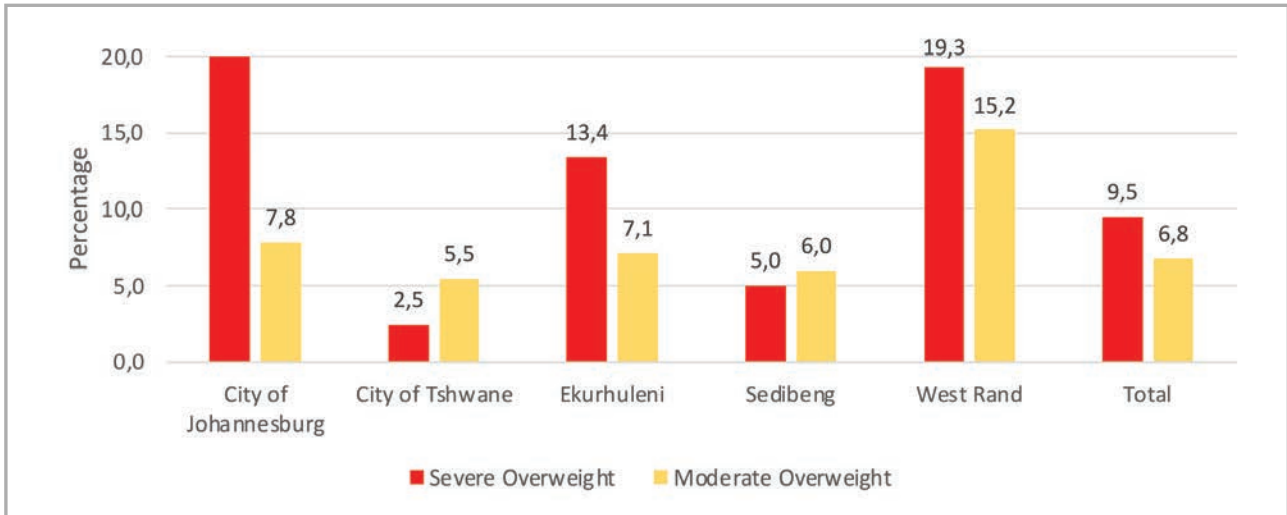


Figure 80: The prevalence of Overweight in children under 5 years by district in Gauteng Province

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=3200) in Gauteng Province was 27.6 kg/m². This was significantly different between males (24.7 kg/m²; 95% CI 24.1-25.3) and females (29.1 kg/m²; 95% CI 28.5-29.7). There were also significant differences in mean BMI between individuals of different age groups, with those aged 18-24 years having a significantly lower mean BMI (24.7 kg/m²) than those aged 25 years and older (range 27.1- 30.6 kg/m²). Furthermore, those aged 25-34 years, also had a significantly lower mean BMI (27.3 kg/m²) compared to those aged 35 years and older (range: 28.8-30.6 kg/m²). There were no significant differences in mean BMI at a district level (range: 27.1-28.0 kg/m²).

Overall, 59.7% were classified as either overweight (28.6%) or obese (31.1%). Slightly more than one third (36.9%) were classified as normal weight, and 3.4% were classified as underweight (Figure 81).

When disaggregating by gender (Females n=1944, Males n=1251), the proportion of overweight appears to be similar between genders (28.7% vs 28.5% respectively), with no significant differences, while the prevalence of obesity in females was significantly higher in females than in males (39.8% vs 14.6%) (Figure 82). Overall, nearly 1.5 times (68.5%) of females in Gauteng Province were either overweight or obese compared to (43.1%) of males. Conversely, the prevalence of underweight in females (1.7%) was significantly lower, at about six times of that in males (6.7%). Similarly, the prevalence of normal weight in females was also significantly lower (29.8%) than that of males (50.1%)

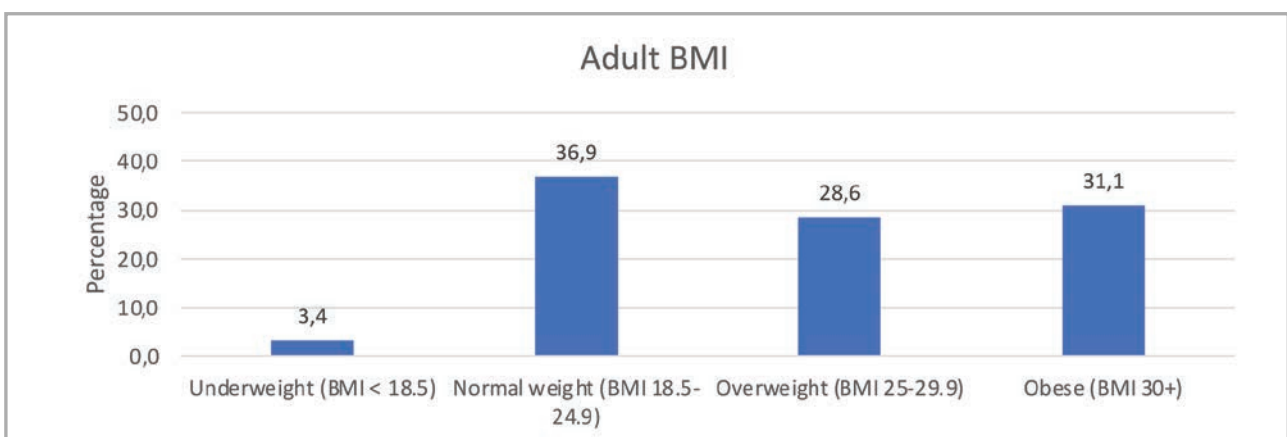


Figure 81: Distribution of BMI in adults aged 18 years and older by districts in Gauteng

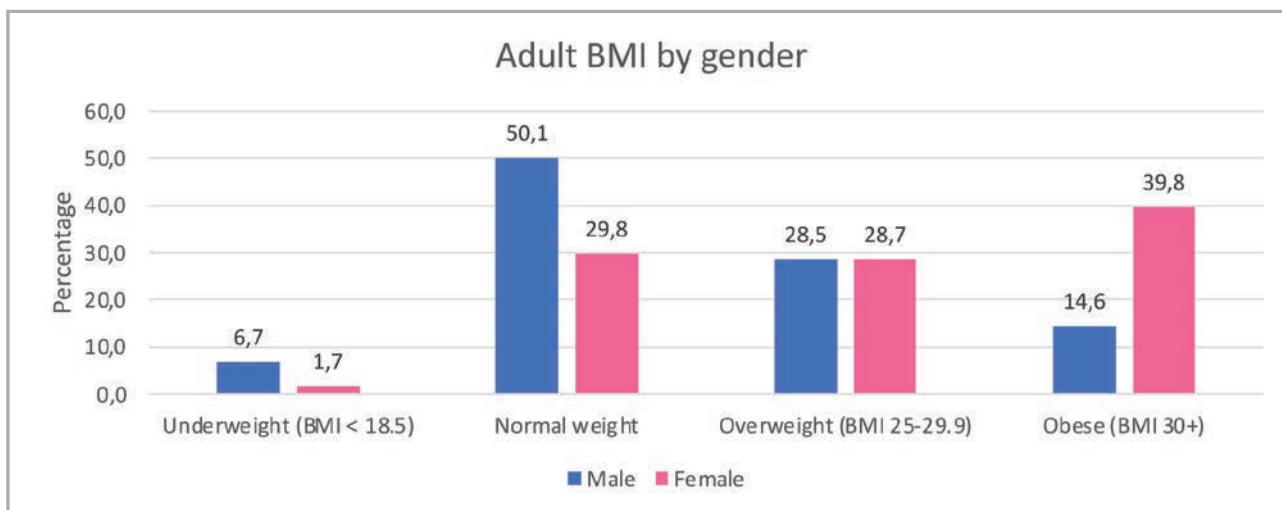


Figure 82: Distribution of BMI in adults aged 18 years and older by gender in Gauteng

When disaggregating the overall adult population by age, those aged 25-34 years had a significantly higher prevalence of overweight (33.8%) compared to those aged 18-24 years (18.9%) and those aged 45-54-year (22.4%) (Figure 83). There were also significant differences in obesity between age groups, where those aged 18-24 years had a significantly lower prevalence of obesity (18.2%) compared to those aged 35 years and older (range: 36.0%-46.5%). Furthermore, those aged 25-34 years also had a significantly lower prevalence of overweight (27.9%) compared to those aged 45-64 years (range: 43.8%-46.5%) (Figure 84). There were also significant differences in underweight, where those aged 18-24 years had a significantly higher prevalence than those aged 65 years and older.

Figure 88 compares BMI differences by age group between males and females. These figures clearly illustrate that obesity is higher in females (range 27.2%-53.0%) than males (range 2.7%-37.8%) 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 (27.2%) only compared to those aged 45-54 years (53.0%). While in males, those aged 18-24 years had a significantly lower prevalence (2.7%) compared to all those aged 35 years and older (range: 21.0%-37.8%). Furthermore, males aged 25-34 years also had a lower prevalence (10.2%) compared to all those aged 45 years and older (range: 24.8%-37.8%).

The prevalence of overweight is higher in females in the 18-24, 35-44 and 55-64 age groups, while the males have a higher prevalence in the 25-34, 45-54 and 65 years and older age groups. There were no significant differences in overweight across age groups in females, however, in males those aged 18-24 years had a significantly lower prevalence (13.6%) compared to those aged 25-34 years (37.4%) and those aged 65 years and older (35.6%).

The prevalence of underweight is lower in females (0.5-2.6%) compared to males (2.0%-13.7%) across all age categories. While there were no significant differences in underweight across age categories for females, in males those aged 65 years and older had a significantly lower prevalence of underweight (2.0%) compared to those aged 18-24 years (13.7%) and those aged 45-54 years (9.5%).

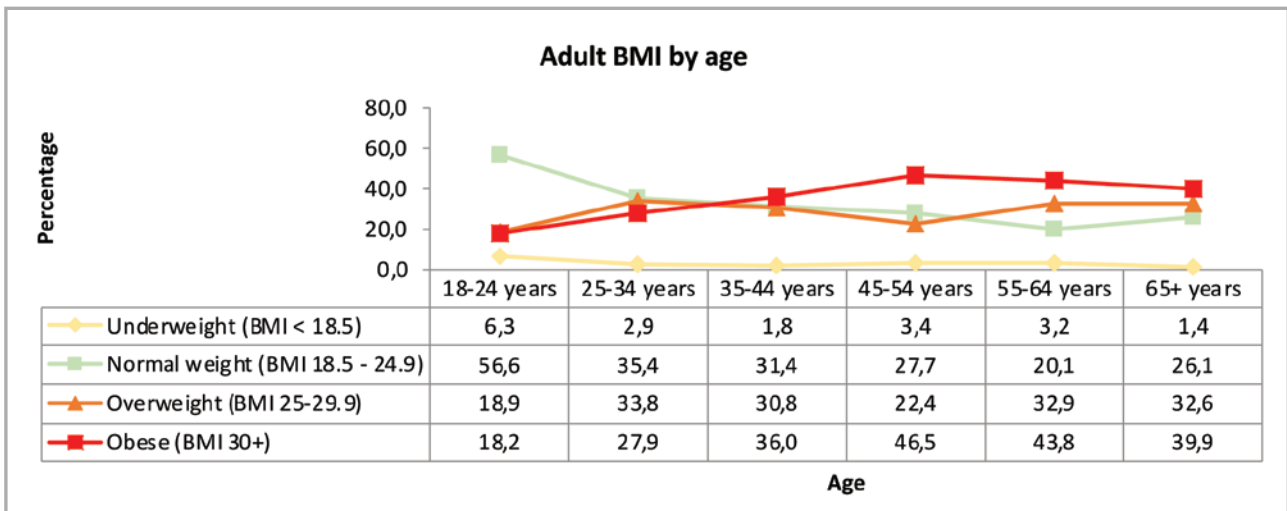


Figure 83: Distribution of BMI in adults aged 18 years and older by age categories in Gauteng Province

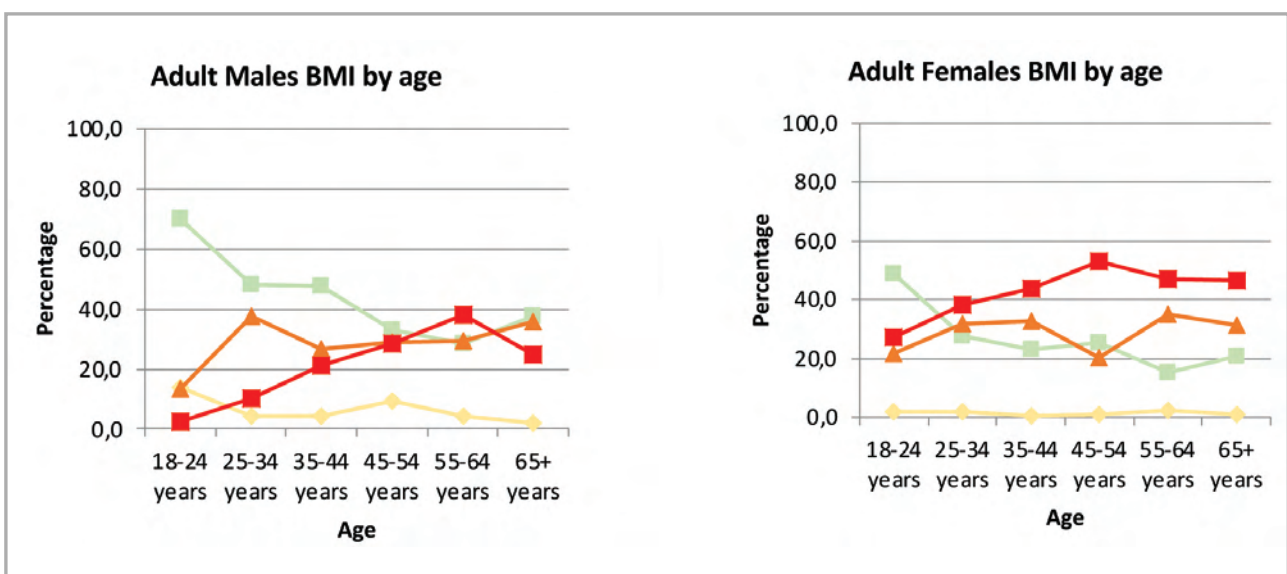


Figure 84: Comparison of the distribution of BMI in adults aged 18 years and older by age and gender in Gauteng Province

Figure 85 shows the disaggregation of BMI at a district level. There were significant differences in for both underweight and overweight at a district level. Ekurhuleni District had a significantly lower prevalence of underweight (1.2%) compared to both City of Tshwane (5.5%) and Sedibeng districts (8.2%), while City of Johannesburg District had a significantly higher prevalence of overweight (31.9%) compared to Sedibeng District (22.4%). Figure 86 compares district level data by gender. In both genders these figures illustrate that in all districts, females have higher rates of obesity (38.3% - 43.9%) than males (8.4% - 18.5%). There were no significant differences in obesity across districts for both genders.

Females had a higher prevalence of overweight compared to males in the City of Tshwane District (27.7% vs 23.2%), Ekurhuleni District (31.7% vs 27.7%) and Sedibeng District (25.4% vs 15.7%), respectively, while males had a higher prevalence in City of Johannesburg District (37.8% vs 29.0%). In the West Rand District, the prevalence of overweight was nearly the same in both genders (23.3% and 23.1%) (Figure 83). While there were no significant differences in overweight across districts for females, males in the City of Johannesburg District had a significantly higher prevalence of overweight (37.8%) compared to Sedibeng District (15.7%).

The prevalence of underweight was higher in males (range: 2.0%-13.3%) than females (range (0.7%-5.9%) across all districts (Figure 83). There were significant differences in underweight across districts for both genders. In males, Ekurhuleni District had a significantly lower prevalence of underweight (2.0%) compared to both City of Tshwane (12.0%) and Sedibeng (13.3%) districts, while in females Ekurhuleni District also had a significantly lower prevalence of underweight (0.7%) compared to Sedibeng District (5.9%).

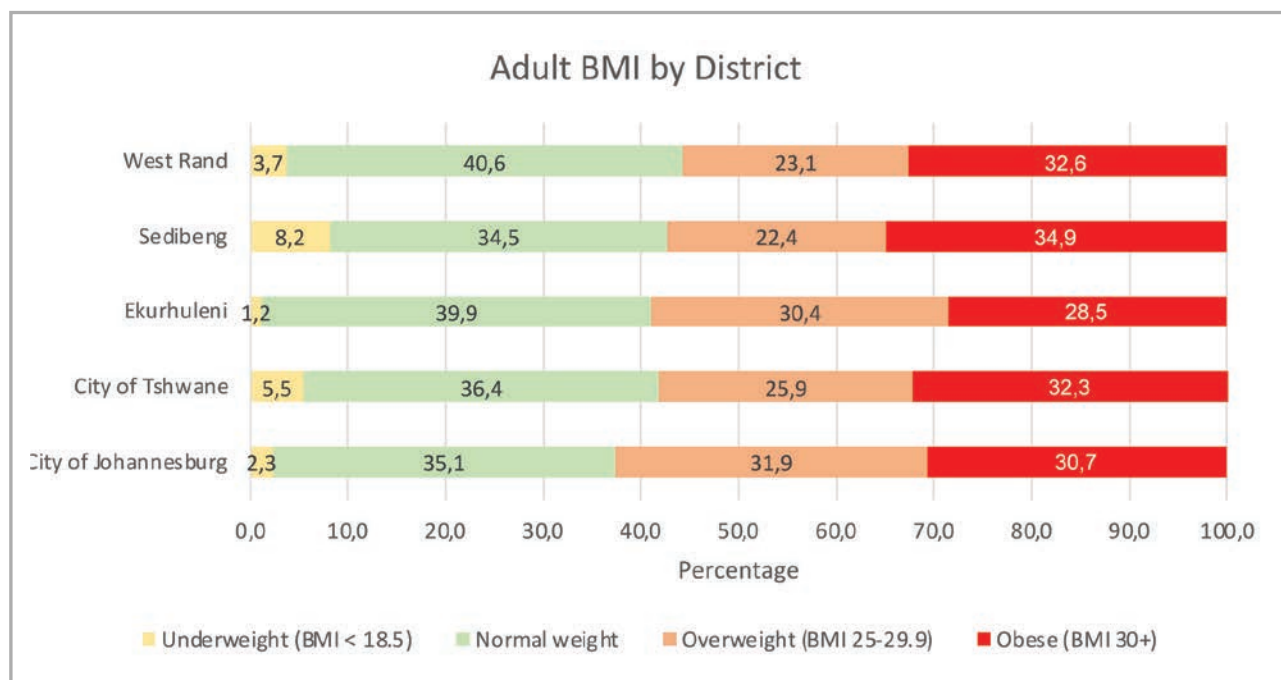


Figure 85: Comparison of the distribution of BMI in adults aged 18 years and older by districts in Gauteng

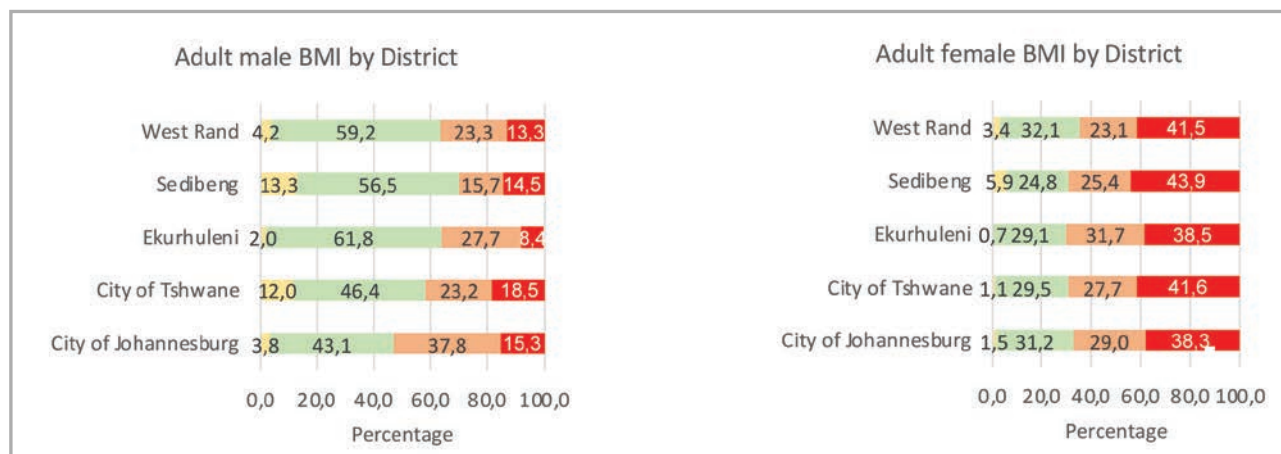


Figure 86: Comparison of the distribution of BMI in adults aged 18 years and older by districts and gender in Gauteng

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=1269) and females (n=1969) was 0.90 (95% CI: 0.88-0.91) and 0.85 (95% CI: 0.84-0.85), respectively. However, Table 59 clearly shows that overall, a far greater proportion of females (46.8%) had a high WHR compared to only 11.8% of males.

Table 59: Waist hip ratio (WHR) of adults aged 18 years and older in Gauteng Province disaggregated by gender, age, and district

	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	0.86	[0.84-0.88]	6.5	[3.2-12.6]	159	0.80	[0.78-0.83]	28.2	[18.1-41.2]	213
25-34	0.88	[0.87-0.90]	6.3	[3.1-12.4]	318	0.84	[0.83-0.86]	43.8	[36.3-51.7]	480
35-44	0.92	[0.89-0.94]	14.5	[9.1-22.4]	276	0.85	[0.84-0.86]	49.9	[42.2-57.6]	426
45-54	0.94	[0.91-0.97]	19.3	[10.4-32.9]	205	0.88	[0.86-0.90]	64.5	[55.6-72.5]	340
55-64	0.96	[0.93-1.00]	34.8	[15.2-61.4]	168	0.89	[0.87-0.90]	68.9	[60.5-76.2]	282
≥ 65	0.96	[0.94-0.99]	25.2	[16.9-35.8]	143	0.88	[0.86-0.90]	62.1	[51.5-71.6]	228
District										
City of Johannesburg	0.92	[0.89-0.95]	15.3	[9.2-24.4]	195	0.84	[0.83-0.86]	49.5	[41.7-57.3]	337
City of Tshwane	0.89	[0.87-0.91]	12.6	[6.7-22.5]	352	0.83	[0.81-0.85]	36.0	[29.4-43.1]	351
Ekurhuleni	0.89	[0.86-0.92]	8.3	[3.5-18.3]	199	0.87	[0.86-0.88]	56.5	[49.6-63.2]	329
Sedibeng	0.88	[0.84-0.93]	7.6	[3.6-15.4]	286	0.85	[0.82-0.88]	41.8	[35.7-48.2]	534
West Rand	0.89	[0.87-0.91]	5.6	[3.1-10.0]	237	0.84	[0.83-0.85]	46.4	[41.3-51.7]	418
Total	0.90	[0.88-0.91]	11.8	[8.4-16.4]	1269	0.85	[0.84-0.85]	46.8	[42.8-50.8]	1969

* cell sample sizes too small to generate reasonable estimate # n<30

Table 58 and Figure 87 illustrate that WHR tends to increase with age in males and females, peaking in the age group 55-64 years. There were significant differences between age groups in both female and males. Amongst males, those aged 18-34 years had a lower prevalence of an increased WHR (6.3%-6.5%) compared to those aged 55 years and older (range 25.2%-34.8%). Similar results were observed in females, where those aged 18-24 years had a significantly lower prevalence of an increased WHR (28.2%), compared to those aged 35 years and older (range 49.9%-68.9%).

At a district level, there were significant differences in the mean WHR and the proportion of those who had a high WHR among females. Females in the City of Tshwane (0.83) and West Rand districts (0.84) had significantly lower mean WHR compared to those in Ekurhuleni (0.87), and females in the City of Tshwane District (36.0%) had significantly lower mean WHR compared to those in Ekurhuleni District (56.5%). There were, however, no significant differences in both mean BMI and the proportion of those who had a high WHR among males at a district level. Overall, all districts indicated that a higher proportion of females have a high WHR compared to males (Table 58 and Figure 88).

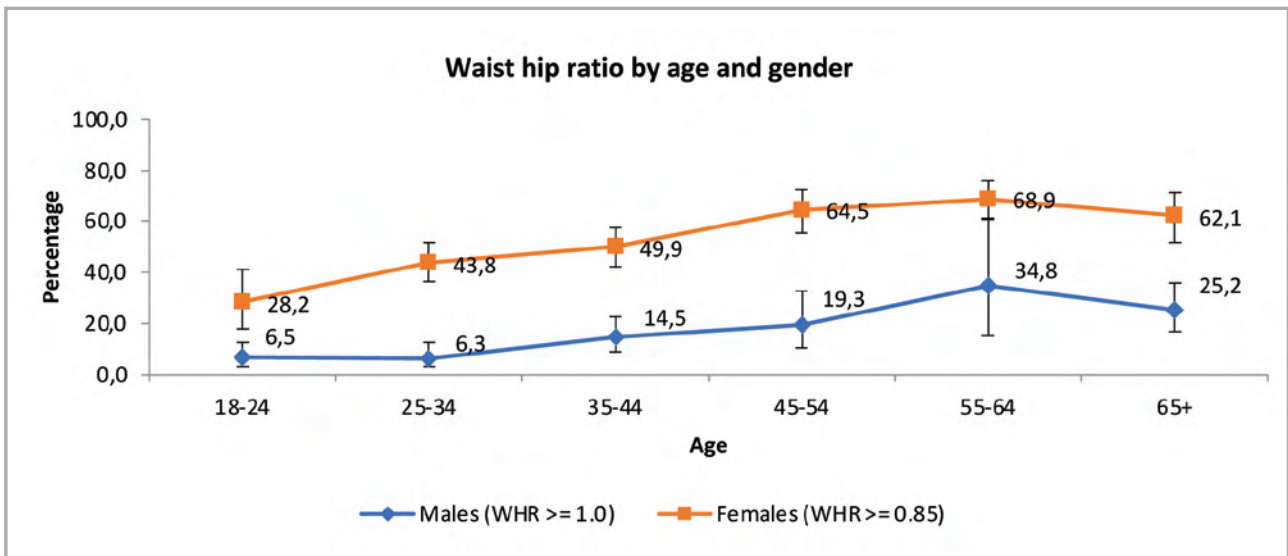


Figure 87: Comparison of the distribution of WHR in adults aged 18 years and older by age and gender in Gauteng Province

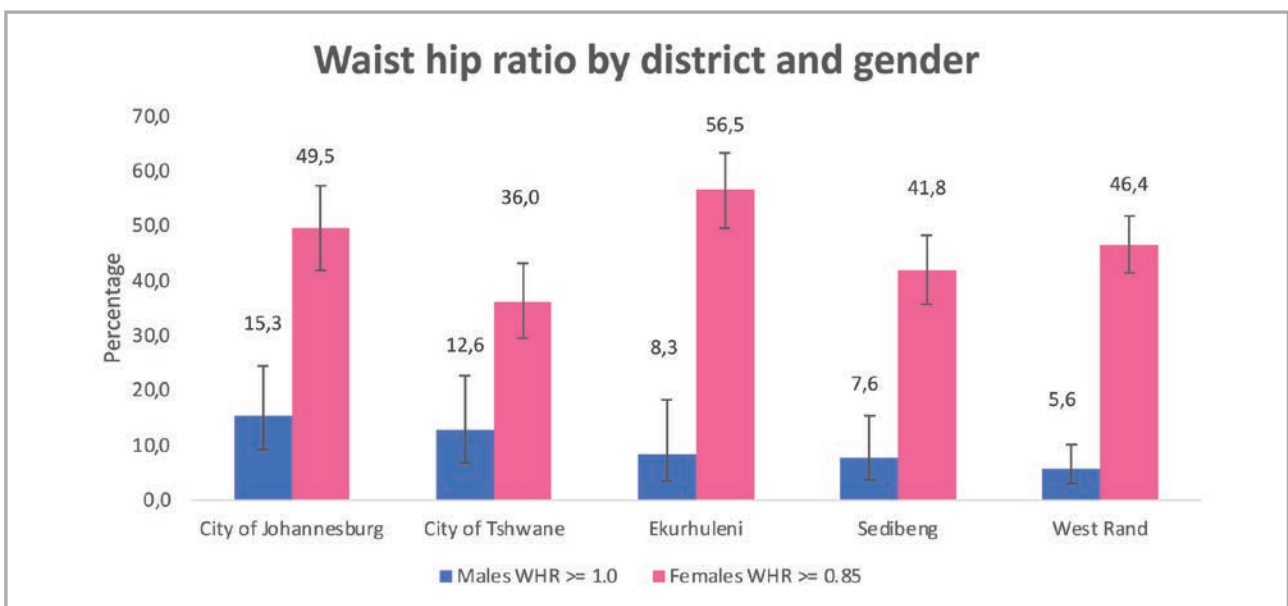


Figure 88: Comparison of the distribution of WHR in adults aged 18 years and older by districts and gender in Gauteng Province

8.3 Individual Dietary Diversity

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

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

The mean dietary diversity score (DDS) for children aged 0-5 years residing in Gauteng (n=479) was 4.42, which is indicative of an adequate dietary diversity (Table 60). Table 60 also shows that while individuals in three of the five districts have an adequate dietary diversity (DDS >4), those in City of Johannesburg and West Rand districts reported a low dietary diversity (DDS <4). District comparisons showed that City of Tshwane (4.93) and Ekurhuleni districts (4.81) had significantly higher mean DDS compared to West Rand District which had the lowest mean DDS (3.62).

Table 60: Dietary diversity scores for children aged 0-5 years in Gauteng Province

	Dietary Diversity Score		Dietary Diversity Score category				
	Mean	95% CI	0-3		4-9		n
			%	95% CI	%	95% CI	
Age (months)							
0-24 months	3.9	[3.32-4.48]	48.2	[36.4-60.2]	51.8	[39.8-63.6]	203
25-60 months	4.73	[4.40-5.06]	26.9	[16.7-40.3]	73.1	[59.7-83.3]	276
Gender							
Male	4.42	[4.01-4.83]	36.0	[25.5-47.9]	64.0	[52.1-74.5]	245
Female	4.42	[3.92-4.91]	33.7	[22.3-47.4]	66.3	[52.6-77.7]	234
District							
City of Johannesburg	3.78	[3.08-4.49]	51.0	[34.4-67.3]	49.0	[32.7-65.6]	78
City of Tshwane	4.93	[4.49-5.37]	18.6	[8.3-36.6]	81.4	[63.4-91.7]	87
Ekurhuleni	4.81	[4.39-5.24]	33.5	[24.4-44.0]	66.5	[56.0-75.6]	66
Sedibeng	4.27	[3.78-4.76]	37.0	[28.0-47.0]	63.0	[53.0-72.0]	150
West Rand	3.62	[3.09-4.14]	52.7	[35.3-69.6]	47.3	[30.4-64.7]	98
Total	4.42	[4.09-4.75]	34.8	[25.3-45.7]	65.2	[54.3-74.7]	479

cell sample sizes too small to generate reasonable estimate # n<30

Figure 92 illustrates the proportion of the children aged 0-5 years in Gauteng Province and in the various districts who have low and acceptable DDS. Overall, 65.2% of children in Gauteng Province reported an adequate DDS, while 34.8% have a low DDS. City of Tshwane District reported the lowest proportion of children with low DDS (18.6%), while West Rand and City of Johannesburg districts reported the highest proportion of people with a low DDS (52.7% and 51.0%); however, these results were not significant.

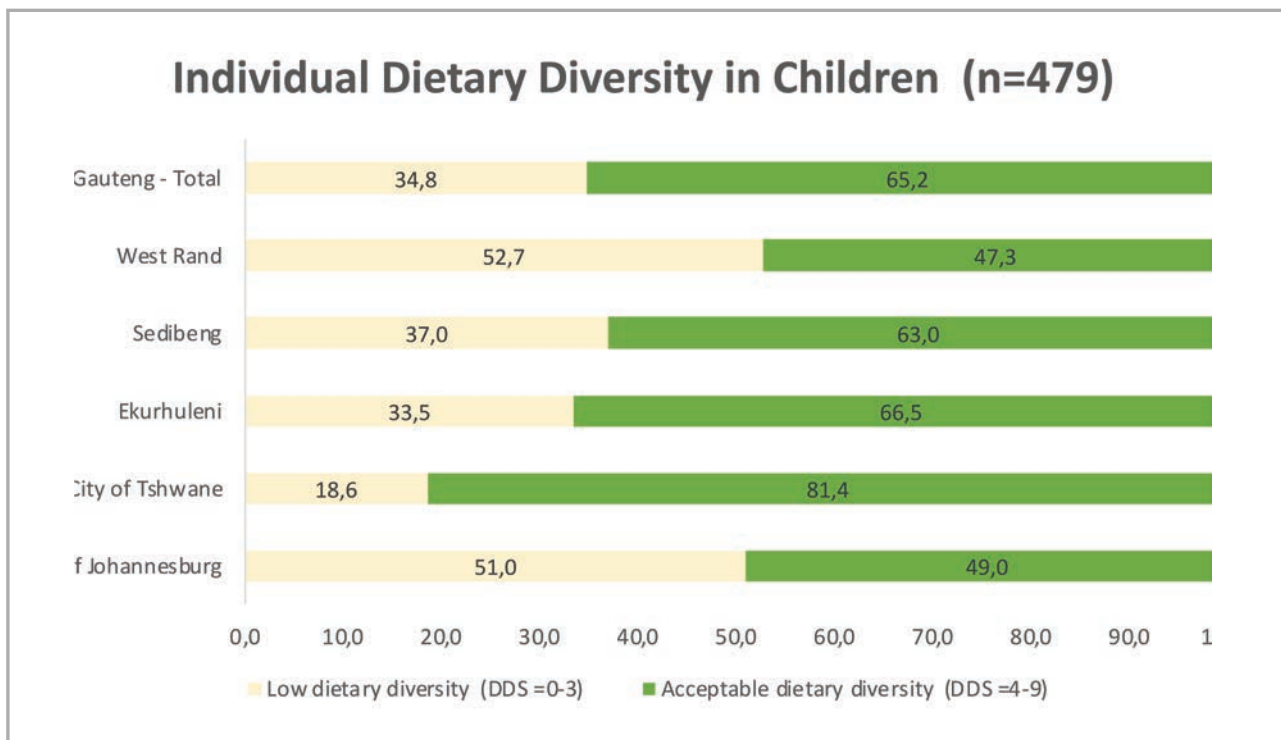


Figure 89: Comparison of the distribution of DDS in children aged 0-5 years by districts in Gauteng

The mean dietary diversity score (DDS) for adults residing in Gauteng Province (n=4053) was 5.27, which is indicative of an adequate dietary diversity (Table 61). District comparisons showed that City of Johannesburg District had the highest mean DDS (5.46) compared to West Rand District which had the lowest (4.71). Table 61 shows that individuals in all of the five districts have an adequate dietary diversity (DDS >4), with no significant differences across districts. Similarly, there were no significant differences in mean DDS across gender and age groups.

Table 61: Mean dietary diversity scores for adults in Gauteng

	Dietary Diversity Score		Dietary Diversity Score category				n
	Mean	95% CI	0-3		4-9		
			%	95% CI	%	95% CI	
Age group							
18-24	5.03	[4.65-5.40]	24.2	[16.4-34.2]	75.8	[65.8-83.6]	416
25-34	5.32	[5.04-5.60]	22.0	[17.4-27.3]	78.0	[72.7-82.6]	993
35-44	5.56	[5.06-6.06]	18.8	[15.1-23.3]	81.2	[76.7-84.9]	905
45-54	5.23	[4.96-5.51]	22.1	[18.0-26.8]	77.9	[73.2-82.0]	692
55-64	5.05	[4.79-5.32]	23.3	[18.5-29.0]	76.7	[71.0-81.5]	578
>=65	5.11	[4.82-5.40]	23.2	[17.3-30.5]	76.8	[69.5-82.7]	470
Gender							
Male	5.40	[5.04-5.77]	21.0	[16.1-26.9]	79.0	[73.1-83.9]	1586
Female	5.20	[5.00-5.40]	22.5	[18.9-26.6]	77.5	[73.4-81.1]	2460

	Dietary Diversity Score		Dietary Diversity Score category				n
	Mean	95% CI	0-3		4-9		
			%	95% CI	%	95% CI	
District							
City of Johannesburg	5.46	[4.96-5.95]	21.4	[14.3-30.8]	78.6	[69.2-85.7]	785
City of Tshwane	5.30	[4.97-5.62]	20.5	[15.7-26.2]	79.5	[73.8-84.3]	772
Ekurhuleni	5.18	[4.87-5.50]	21.2	[16.0-27.6]	78.8	[72.4-84.0]	785
Sedibeng	4.90	[4.65-5.15]	26.8	[22.4-31.8]	73.2	[68.2-77.6]	875
West Rand	4.71	[4.45-4.97]	29.6	[24.8-35.0]	70.4	[65.0-75.2]	837
Total	5.27	[5.04-5.50]	21.9	[18.4-26.0]	78.1	[74.0-81.6]	4053

cell sample sizes too small to generate reasonable estimate # n<30

Figure 93 illustrates the proportion of the adult population in Gauteng Province and in the various districts who have low and acceptable DDS. Overall, 78.1% of people in Gauteng Province reported an adequate DDS, while 21.9% have a low DDS. City of Tshwane District reported the lowest proportion of people with low DDS (20.5%), while West Rand District reported the highest proportion of people with a low DDS (29.6%). These differences, though, were also not significant.

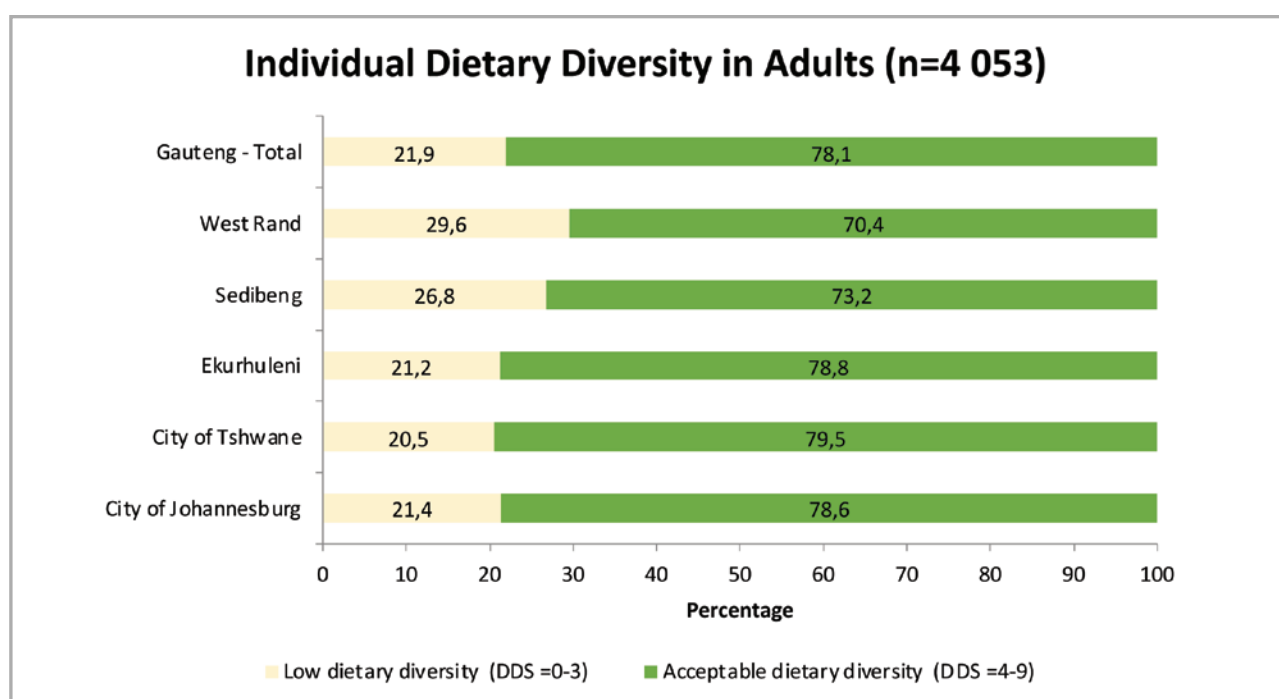


Figure 90: Comparison of the distribution of DDS in children aged 0-5 years by districts in Gauteng Province

8.4 Relationship of Household Food Insecurity and Malnutrition in Gauteng Province

Table 62 presents the associations between nutrition indicators and food security status, based on the Household Food Insecurity Access Scale (HFIAS). In Gauteng, there was no significant relationships between food security and three of the nutrition indicators (wasting, underweight, and overweight) for children aged 0-5 years. The relationship between food security and stunting was, however, significant. The table shows that the prevalence of household food insecurity was higher among households that had at least one child under 5 years who was stunted (74.7%) than among households that did not have a child under 5 years who was stunted (60.4%) ($p<0.05$).

For adults, there was no significant relationship between household food security and an elevated waist hip-ratio (WHR), which is a risk factor for non-communicable diseases (NCDs). Persons with an elevated waist-hip ratio, that is WHR of >1 in males or >0.85 in females, are considered as being at increased risk of NCDs. There was also 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 (73.1%), than among households that did not have an underweight adult (54.4%) (p<0.001). Similarly, the prevalence of food insecurity was significantly higher (71.1%) in households that had at least one person who had a low dietary diversity (DDS <4) compared to households in which everyone had acceptable dietary diversity (44.4%) (p<0.001).

Table 62: Relationship between Household Food Insecurity and Malnutrition indicators in Gauteng

Variables	Categories	Food security status based on the HFIAS (%)		Chi-square tests
		Food secure	Food insecure	
0-5 years				
Stunting	Yes	25.3	74.7	**
	No	39.6	60.4	
Wasting	Yes	24.5	75.5	
	No	35.3	64.7	
Underweight	Yes	35.2	64.8	
	No	34.1	65.9	
Overweight	Yes	29.8	70.2	
	No	36.0	64.0	
Adults				
Underweight	Yes	26.9	73.1	***
	No	45.6	54.4	
Obesity / Overweight	Yes	44.9	55.1	
	No	44.5	55.5	
Increase risk of NCDs (Waist / hip ratio)	Yes	42.4	57.6	
	No	46.1	53.9	
Individual Dietary Diversity	Low	28.9	71.1	***
	Acceptable	55.6	44.4	

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

Table 62 demonstrates South Africa's dual nutrition problem. While on the one hand South Africa experiences higher levels of undernutrition, it also experiences higher levels of overweight and obesity (FAO et al., 2021).

8.5 Discussion

Infant feeding practices

Exclusive breastfeeding has been adopted as one of the keys, and crucially important, components of the Infant and *Young Child Feeding Policy* which was developed in 2007 (DoH, 2011). Promotion, protection, and support of breastfeeding are a key focus area of infant and young child feeding of the Integrated Nutrition programme of the Department of Health.

The results of the current study indicate that 87.1% of children under 2 years were breastfed at some point in their lives, which is slightly higher than the national results reported in the SADHS in 2016 (84%).

Furthermore, the results of the current study indicate that nearly 75.5% of children aged 0-2 years in the Gauteng Province were introduced to breastfeeding immediately after birth with a total of 89.8% 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 Gauteng Province was reported to be 22.8%. This should be interpreted with caution due to the small sample size. However, 22.8% 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%), but lower than 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 5.8 months, which is more in line with what the SANHANES reported compared to the SADHS.

Overall, the first drink other than breastmilk was mainly introduced at 0-1 months. This occurred in less than half (43.6%) of children. We can assume that this is most likely the introduction of infant formula, for mothers who may be unable to breastfeed. At 3 months, other drinks were introduced in a further 17.4% of children. Less than a quarter of children (20.8%) were first introduced to other drinks at the age of 6 months/ older. Regarding the type of drink that was first introduced, more than half (56.0%) indicated infant formula while 26.4% indicated plain water.

After 6 months, infants should be introduced to solid foods as breastmilk is no longer sufficient to meet the nutritional requirements. However, the results of this study indicates that complementary feeding is initiated slightly earlier than the anticipated 6 months at 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 (64.9%) and homemade cereal/ porridge (20.0%), with only 4.8% introduced to pureed/mashed vegetables/fruit.

Anthropometry (0-5 years)

In 2012, the SANHANES reported a national stunting prevalence of 28.6% in children 0-5 years, and a provincial prevalence of 25.9% in the Gauteng Province. Four years later in 2016, the SADHS reported a slightly lower stunting prevalence at the national (27.0%) level but a much higher prevalence at the provincial (34%) level. The results of the current study appear to indicate that the stunting prevalence in the Gauteng Province is more aligned to the SANHANES results and is much lower than the SADHS provincial prevalence with a current prevalence of 25.5% in children of the same age group. These results indicate that stunting has remained more or less the same over the last 10 years and as such the proportion of children experiencing chronic undernutrition in 2021 has not changed. The SADHS reported that stunting was more prevalent nationally in the age group 18-23 months. The results of this provincial analysis indicate that children aged corroborates this, as children aged 30-41 months had the highest prevalence of stunting in the Gauteng Province; however, this was not significantly higher than the stunting prevalence in other age categories.

Furthermore, the SANHANES and SADHS has reported that stunting is more prevalent in male children than female children at a national level. This study shows similar trends at a provincial level, with the almost double the proportion of males (34.7%) being stunted compared to females (17.0%); however, these results were not significant. At a district level, the current study reported that stunting is more prevalent in the West Rand District, with nearly half the children reported to be stunted (46.1%); however, this was not significantly higher than other districts (range 23.1% to 28.9%).

The national prevalence of wasting was reported to be 3.7% in 2012 (SANHANES), with a slightly lower provincial prevalence in Gauteng of 7.4%. In 2016, similar national results were presented in the SADHS (3.0%); however, a provincial prevalence was not reported at the time. The current study has reported a

similar provincial prevalence of wasting in Gauteng of 7.2%, thereby indicating that the proportion of children experiencing acute undernutrition in 2021 has remained more or less the same over the past 10 years. It also appears that those aged 6-17 months and 42-53 months, as well as males experience a higher prevalence of wasting than their counterparts. At a district level, the current study reported that wasting, while not significant, is more prevalent in the West Rand (14.9%) and Ekurhuleni (11.5%) districts, compared to the other districts (range 5.2% to 6.5%).

The prevalence of underweight in Gauteng, in the current study (8.0%) is similar to the provincial prevalence of underweight reported by the SANHANES in 2012 (8.3%). A lower prevalence was also reported at the national level in 2012 (6.8%) and 2016 (6%).

In 2016, the SADHS reported a national prevalence of overweight of 13% in children 0-5 years. SANHANES reported a higher prevalence in females than in males across all age categories at a provincial level. The current study found a slightly higher prevalence (16.3%) of children were overweight and that males had a higher prevalence of being more overweight than females, though the differences between genders were not significant.

The above trends across time seem to indicate that over the last 10 years, both chronic and acute undernutrition in children in Gauteng has remained more or less the same. At a district level, it appears as if the City of Johannesburg has the lowest prevalence of acute undernutrition (wasting and underweight). The West Rand however, seems to have the highest prevalence of both acute and chronic undernutrition.

Anthropometry (18 years and older)

At a national level, the mean BMI in females were reported to be 28.9kg/m² in 2012 and 29.2kg/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 23.6kg/m². A similar provincial mean was reported for BMI in Gauteng for females (29.8kg/m²) and a slightly higher mean for males (24.2kg/m²) in 2012. Similar results were reported in 2016 (females 29.2kg/m² and males 23.8kg/m²). The current study reported similar results to SANHANES for both females (29.8kg/m²) and males (24.7kg/m²) in Gauteng.

Based on BMI cut off points, SANHANES reported a national prevalence of overweight and obesity of 64.0% in females and 30.7% in males 10 years ago. The SADHS reported similar results in 2016, 67.5% in females and 31.3% in males. The provincial prevalence of overweight and obesity in Gauteng was slightly higher than the national estimates for females (68.0%) and lower for males (33.9%) in 2012. In 2016, the SADHS reported a similar provincial prevalence in Gauteng in females (65.6%) and an increased prevalence in males (33.5%). Ten years later, the results of this study report a similar provincial prevalence of overweight and obesity in females (68.5%) and a far higher prevalence in males (43.1%) compared to the SANHANES.

The current study also reported a slightly higher proportion of females (46.8%) and nearly twice as many of males (11.8%) with regard to a waist hip ratio larger than 0.85 and 1.0 respectively, compared to previous studies. For females, SANHANES reported 47.1% and 43.3% at a national and provincial level respectively. For males SANHANES reported 6.8% and 6.7% at a national and provincial level respectively.

Dietary Diversity

A diet that is sufficiently diverse reflects nutrient adequacy. This statement is based on the fact that no single food contains all 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, Akhter, Semba et al., 2010), as well as other health issues.

In the present survey, the mean dietary diversity score of the adult population was 5.27 with 21.9% of the population having a score less than 4. The mean DDS was in the current survey is higher than that of the NCFCS in 2009 (4.02) and that reported in SANHANES nationally in 2012 (4.2). However, the proportion of those with a low DDS was higher than that reported in both the SANHANES in 2012 (40%) and the NCFCS in 2009 (38%). The current study further found that children have a lower mean DDS of 4.42 with a larger proportion (34.8%) of children having a score of less than 4.

9.1 Household Health Status, Chronic Illnesses, and Diseases

The study sought to review the disease burden and health experiences of household heads and members in the year preceding the study. As expected, a wide range of illness/diseases were reported (Table 63). The most common illnesses/ diseases reported by household heads were coughs/ colds/ chest infections at 25.8% followed by headaches (10.3%), hypertension (6.3%), other diseases (2.5), abdominal pains (2.2%) and HIV/AIDS (1.2%) in that order. Cough/ cold/ chest infections were also reported by 27.8% of household members. These are commonly reported ailments some of which are simply symptoms rather than confirmed diseases. Nonetheless, the level of access to food, and especially nutritious food, predisposes individuals to a multitude of illnesses/ diseases and also influences their ability to prevent / manage/ recover these illnesses/diseases. Diseases such as diabetes and hypertension, for example, require specific diets in order to be managed successfully. It is, therefore, important that households have access to diverse diets, including medically prescribed diets.

Table 63: Disease experienced by household heads and members a year prior to the survey in Gauteng

Disease	Household heads		Household members	
	n	%	n	%
Cough/cold/chest infection	3,420	25.8	1,118	27.8
Headache	1,396	10.3	536	14.0
Fever/malaria	1,503	10.1	476	11.0
Hypertension	885	6.3	602	8.5
Diabetes	558	4.6	404	5.9
Toothache or mouth infection	285	2.6	125	2.6
Other disease	417	2.5	203	2.4
Abdominal pains	304	2.2	183	2.5
Asthma	201	1.9	101	2.0
Eye infection	240	1.6	127	2.1
Diarrhoea	197	1.5	66	1.5
Vomiting	167	1.5	45	1.1
HIV/AIDS	211	1.2	131	1.5
Paralysis	128	1.1	76	1.3
Skin rash	148	1.1	54	1.0
Bronchitis/pneumonia/chest pain	80	0.7	47	1.1
TB	71	0.5	39	1.0

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

The study found low prevalence of chronic illness (a disease that lasts for more than 3 months) at both the household head (8.0%) and household member (6.5%) levels (Figure 94). The significance of this finding is that food and nutrition security is vital to managing most chronic diseases (such as TB and diabetes) as the nutritious status of foods that people eat assists in controlling recovery processes. The prevalence of chronic diseases adds to the need for ensuring that most households are food secure.

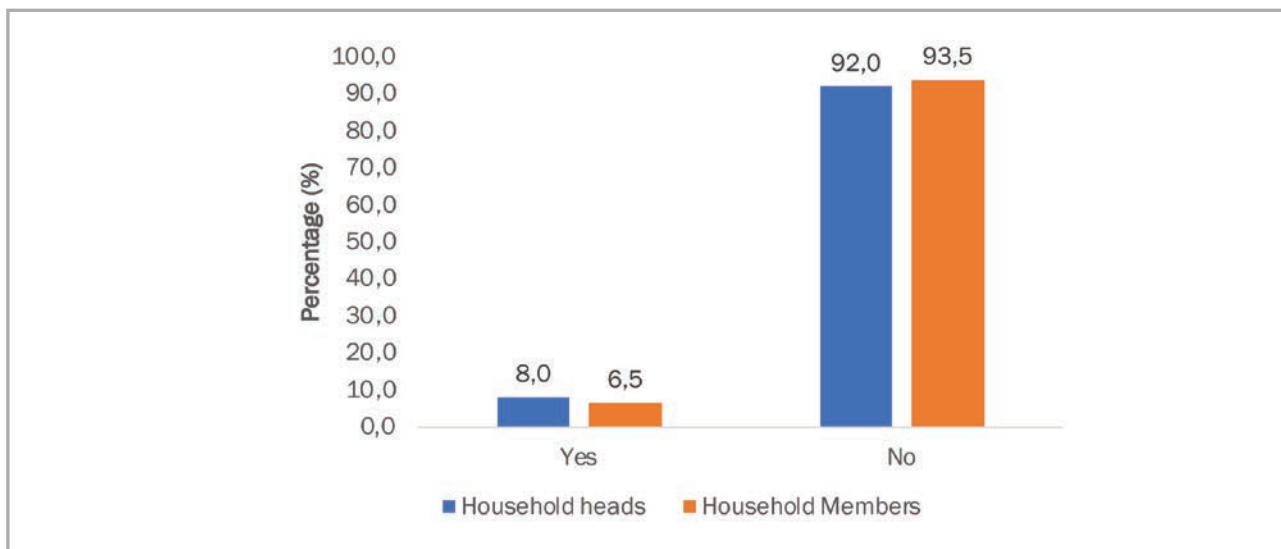


Figure 91: Household heads and members reported to having been continuously ill, for at least 3 months in the last 12 months prior to the survey

There was generally little difference in the reported or perceived health status of household heads by sex and district with noticeable differences being observed particularly by age (Table 64). Those aged between 55 years and above reported high levels of poor or fair health compared to those younger. City of Tshwane District had a slightly higher percentage (10.6%) of household heads who perceived their general health status as poor or fair.

Table 64: Household heads' perceived health status by sex, age, and district in Gauteng Province

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Sex							
Male	5.2	[4.1-6.8]	48.6	[42.0-55.3]	46.1	[39.2-53.2]	2,058
Female	8.8	[6.8-11.3]	50.2	[43.7-56.6]	41.1	[34.4-48.1]	1,489
Total	7.0	[5.7-8.6]	49.4	[44.1-54.7]	43.6	[37.9-49.5]	3,547
Age group							
18-24	1.9	[0.4-8.9]	56.1	[42.0-69.3]	42.0	[28.9-56.3]	139
25-34	3.3	[1.9-5.5]	43.0	[35.6-50.7]	53.7	[46.0-61.3]	653
35-44	6.9	[4.6-10.2]	48.9	[42.6-55.3]	44.2	[37.8-50.8]	867
45-54	8.6	[5.9-12.4]	53.1	[45.4-60.5]	38.3	[30.2-47.1]	757
55-64	15.8	[11.7-21.0]	55.4	[49.7-61.1]	28.8	[22.6-35.8]	625
65+	24.0	[17.9-31.3]	48.9	[41.1-56.7]	27.2	[21.1-34.2]	506
Total	7.0	[5.7-8.6]	49.4	[44.1-54.7]	43.6	[37.9-49.5]	3,547
District							
City of Johannesburg	4.6	[3.1-6.8]	41.4	[31.2-52.4]	54.0	[42.4-65.2]	682
City of Tshwane	10.6	[7.1-15.5]	60.2	[53.3-66.7]	29.2	[23.9-35.1]	688
Ekurhuleni	6.6	[4.6-9.3]	45.7	[36.7-55.0]	47.7	[37.6-58.0]	696
Sedibeng	9.7	[6.9-13.3]	67.1	[58.6-74.6]	23.3	[17.4-30.4]	737
West Rand	7.4	[4.8-11.3]	56.0	[48.2-63.5]	36.6	[29.1-44.8]	744
Total	7.0	[5.7-8.6]	49.4	[44.1-54.7]	43.6	[37.9-49.5]	3,547

A similar pattern is observed across household members disaggregated by sex, age, and district (Table 65). 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 14.7% and 26.4%, respectively. City of Tshwane District had the highest percentage of household members who were reported as having poor or fair health status with 9.3%, while City of Johannesburg District had the least in this category with 4.4%.

Table 65: Household members' reported perceived health status by sex, age, and district

	Poor/Fair		Good		Very good/Excellent		Total
	%	95% CI	%	95% CI	%	95% CI	n
Sex							
Male	5.3	[4.3-6.4]	48.1	[43.7-52.6]	46.6	[41.8-51.4]	5,602
Female	6.8	[5.7-8.1]	50.5	[46.0-55.1]	42.7	[37.9-47.6]	6,294
Total	6.1	[5.1-7.2]	49.4	[45.1-53.7]	44.5	[40.0-49.2]	11,896
Age group							
0-14	2.8	[2.0-4.0]	50.5	[45.0-55.9]	46.8	[41.2-52.4]	2,915
15-24	1.9	[1.2-2.9]	50.6	[45.0-56.1]	47.6	[41.9-53.3]	1,970
25-34	3.6	[2.5-5.1]	45.3	[39.7-51.0]	51.2	[45.2-57.1]	2,269
35-44	6.3	[4.7-8.3]	47.6	[42.8-52.4]	46.2	[40.9-51.5]	1,757
45-54	8.4	[6.4-10.9]	53.2	[47.5-58.9]	38.3	[32.1-45.0]	1,239
55-64	14.7	[11.6-18.4]	54.4	[50.0-58.8]	30.9	[26.1-36.1]	896
65+	26.4	[21.4-32.2]	47.3	[40.8-53.9]	26.3	[21.6-31.5]	647
Total	6.1	[5.2-7.3]	49.4	[45.1-53.7]	44.5	[39.9-49.1]	11,693
District							
City of Johannesburg	4.4	[3.1-6.3]	42.7	[34.2-51.6]	52.9	[43.3-62.4]	2,316
City of Tshwane	9.3	[6.7-12.6]	54.2	[47.4-60.8]	36.6	[30.4-43.2]	2,112
Ekurhuleni	5.5	[4.2-7.2]	46.8	[38.7-54.9]	47.7	[39.4-56.2]	2,329
Sedibeng	7.8	[5.9-10.2]	67.5	[62.6-72.1]	24.7	[21.0-28.8]	2,635
West Rand	4.7	[3.4-6.3]	59.1	[52.4-65.4]	36.2	[29.9-43.1]	2,546
Total	6.1	[5.1-7.2]	49.4	[45.2-53.7]	44.5	[40.0-49.1]	11,938

Figure 92 shows that City of Tshwane, Emfuleni, and Medieval local municipalities were under the highest category (8.1.1% to 9.3.7%) of household members with reported poor or fair health status. The local municipality that fell under the lowest category (2.7%) was West Rand City.

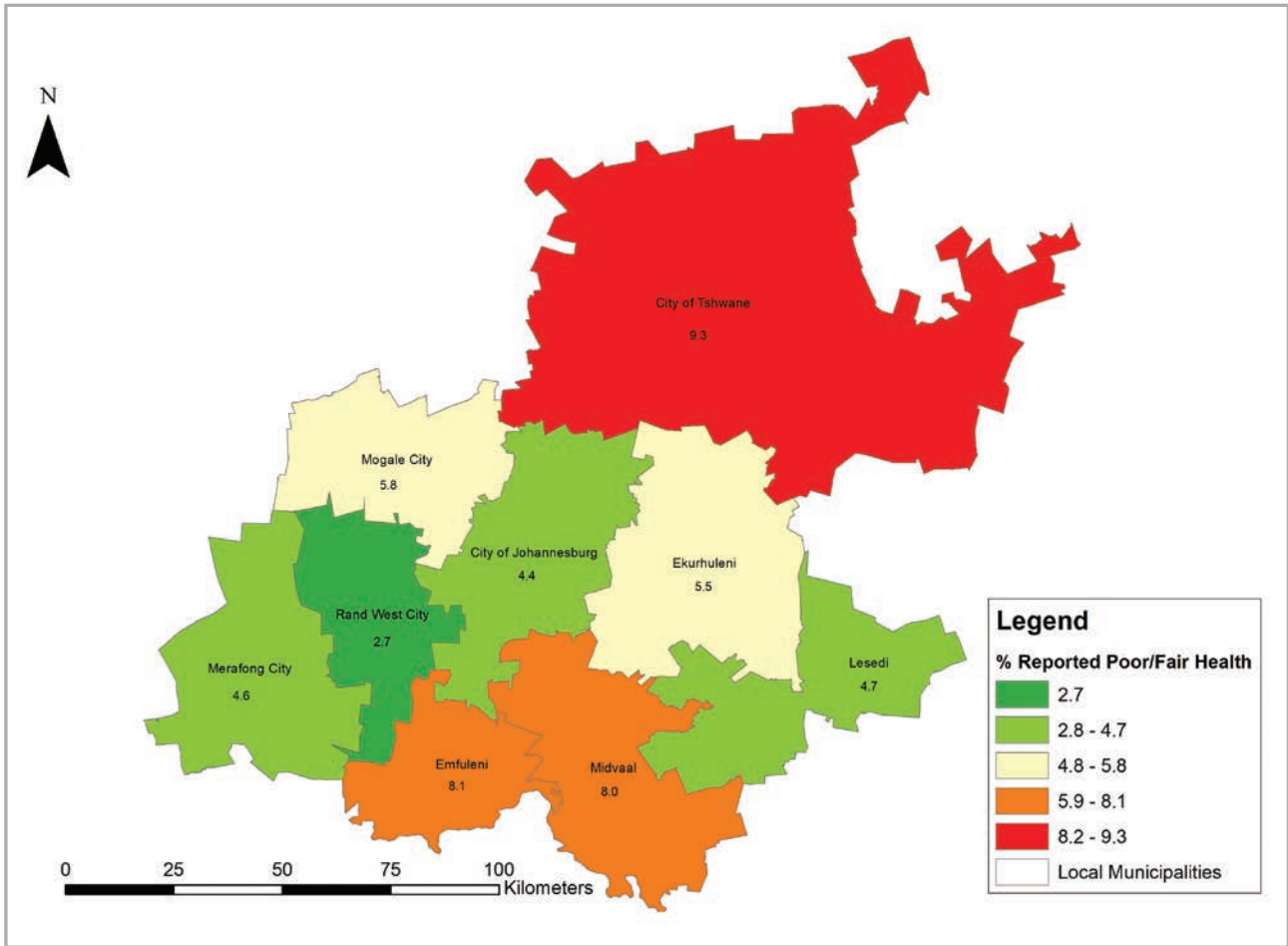


Figure 92: Household members reported perceived health status by local municipality

9.2

Shocks, COVID 19 Coping Strategies and their Associated Effect on Food Availability and Access

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

9.2.1 Drought and water shortage

Shocks due to flooding were not commonly reported across the six districts of the Gauteng Province. Within the province, over 95% of households in all the five districts reported that they have not experienced floods (Figure 93), except for the City of Tshwane District which reported that 8% of the households experienced flooding. Very few households in the province reported to have experienced flooding in the previous 12 months (note that the survey was conducted in 2022) (Figure 93).

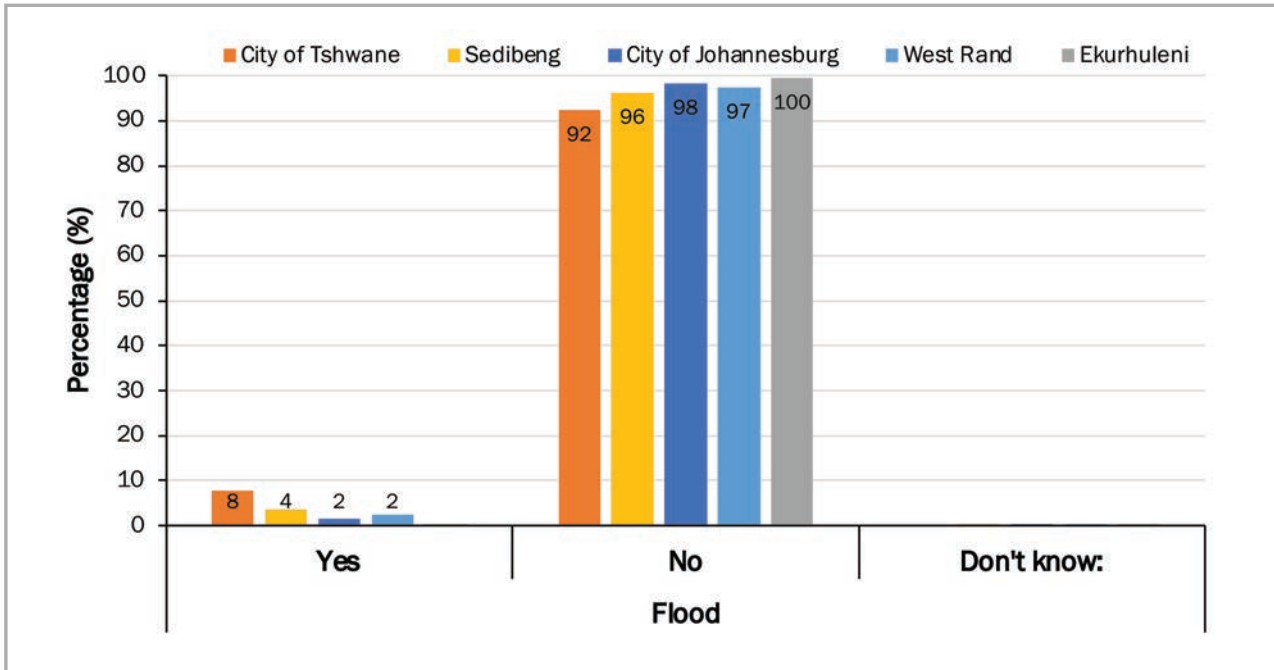


Figure 93: Household that experience floods in the last 12 months in Northwest Province

Overall, the Gauteng Province experiences inter-annual variation when it comes to drought. It experiences years with wet winters, neutral, and dry seasons as shown by the figure below in which only a handful (2%) in the Sedibeng and the West Rand districts have experienced drought shock during the study period (Figure 94).

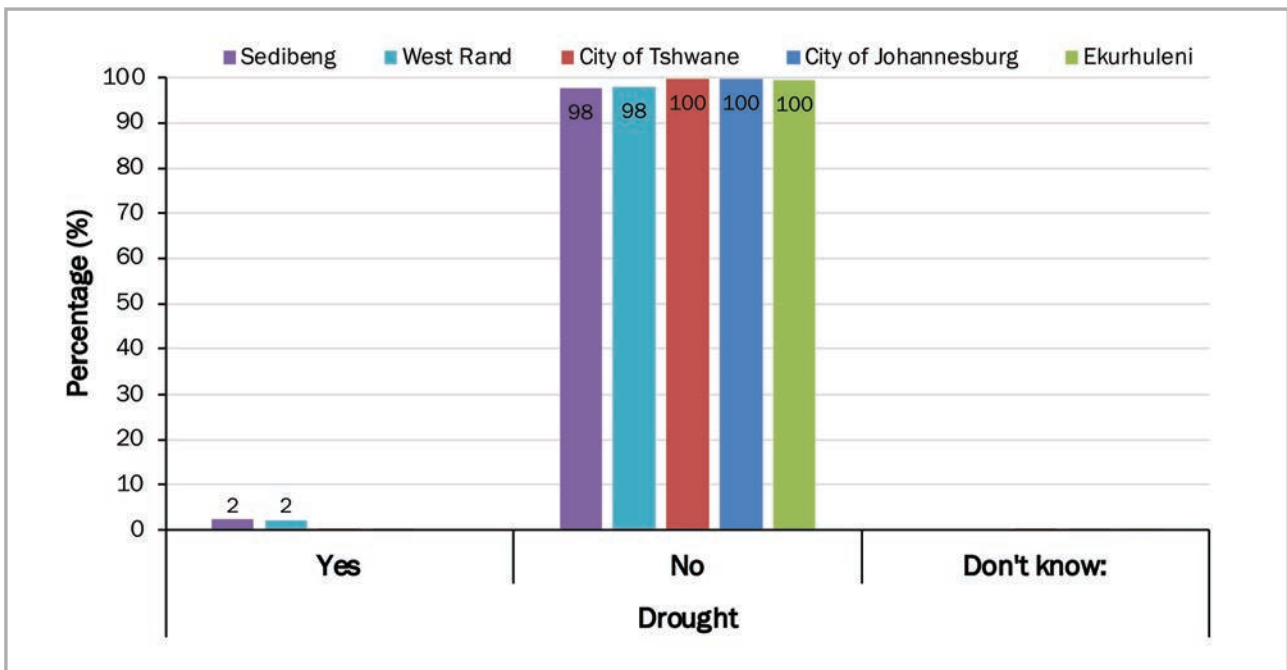


Figure 94: Household that experience drought shock by district in the last 12 months in Gauteng Province

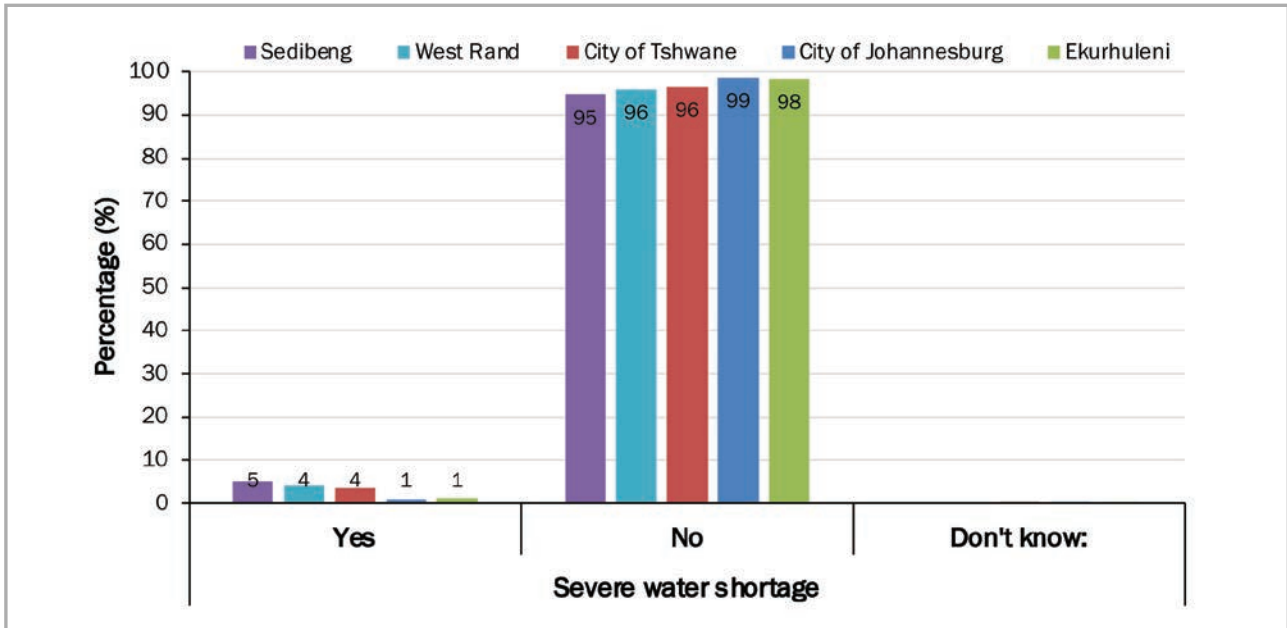


Figure 95: Household that experience severe water shortage shock by district

Severe water shortage is one of the shocks that was least reported in most of the districts and was reported a little bit in Sedibeng (5%) while West Rand and City of Tshwane districts at 4% as depicted by the graph. Overall, severe water shortages was not a major challenge or shock in all the districts (Figure 95).

9.2.2 Crop disease and crop failure

Crop failure and emergence of crop diseases were barely reported across the districts, with only 5% of the households in Sedibeng District reporting that they experienced it the most (Figure 96).

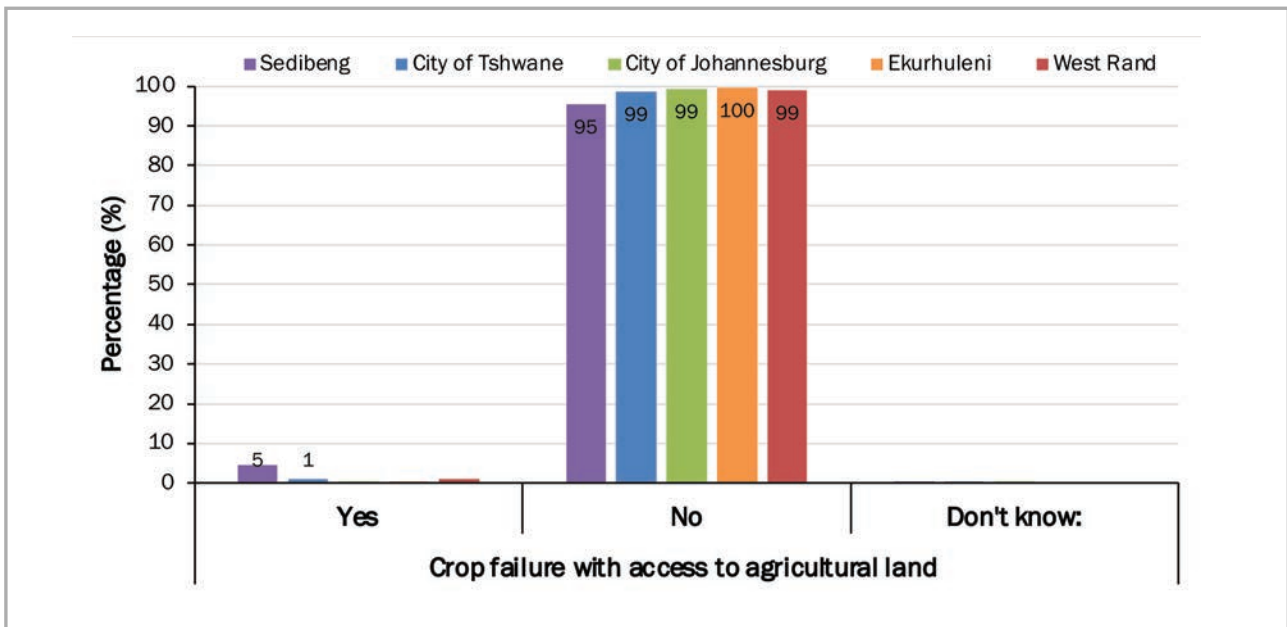


Figure 96: Household that experience crop failure shock by district

The low percentage of crop failure reported in the Gauteng Province is closely related to the fact that crop production is seldomly practiced in that area across all the districts (Figure 96). In other words all the districts are less involved on agricultural production activities, hence the extremely low percentage reported of crop failure and associated disease.

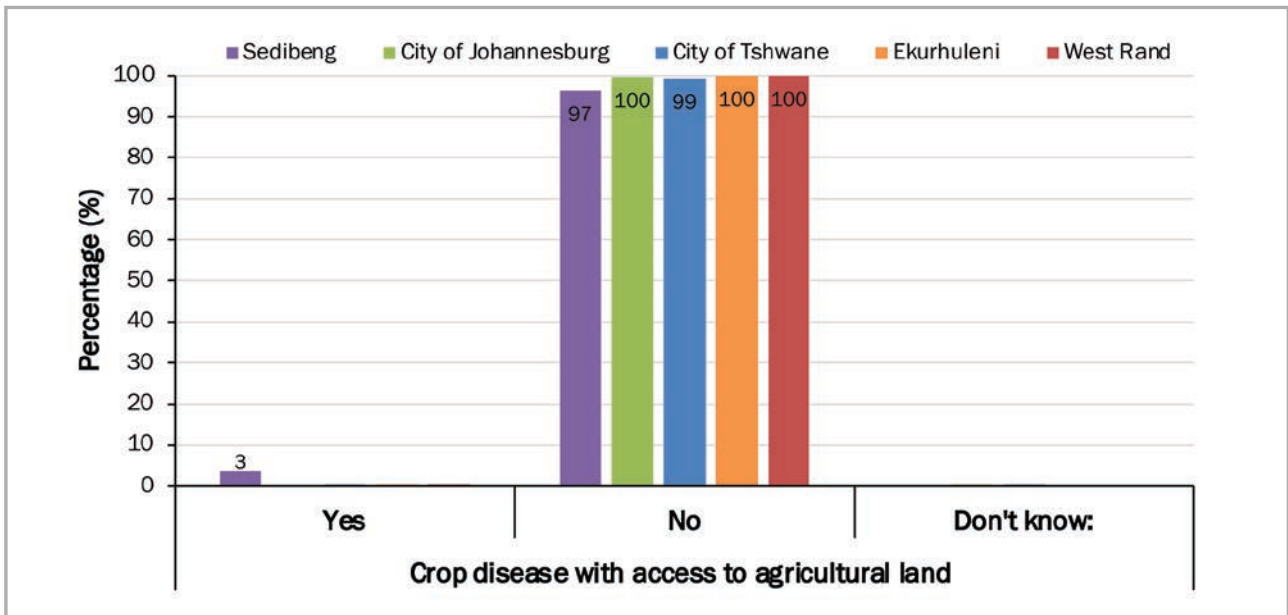


Figure 97: Household that experience drought and water shortage shock disaggregated by district in Gauteng Province

9.2.3 Increase in inputs and food prices

The increase in food prices was the biggest shock experienced across all the six districts of Gauteng Province. The highest shocks were experienced in Sedibeng, City of Tshwane, and West Rand districts with 62%, 59%, and 56%, respectively (Figure 98). This is attributable to the fact that there was limited food supply globally due to the COVID-19 pandemic which triggered immediate price increases since the food supply chains were disrupted due to movement restrictions brought about by lockdown measures.

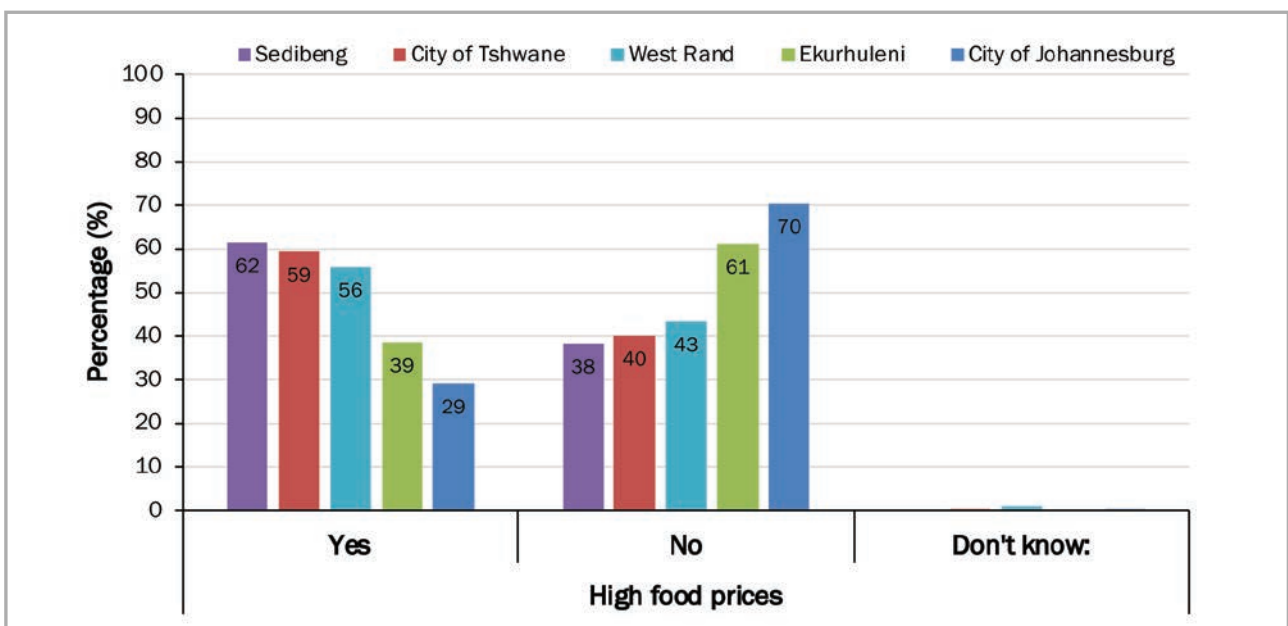


Figure 98: Household that experience high food prices shock by district

The increase in agriculture input prices were low in all the six districts (Figure 99). The low percentage of households who reported to have felt the increase in input cost could be explained by the fact that the households are not highly involved in agricultural production. The increase in input prices also had a direct effect on the increase in the food process, hence this justifies the reported increases in food prices across the four districts (Figure 98).

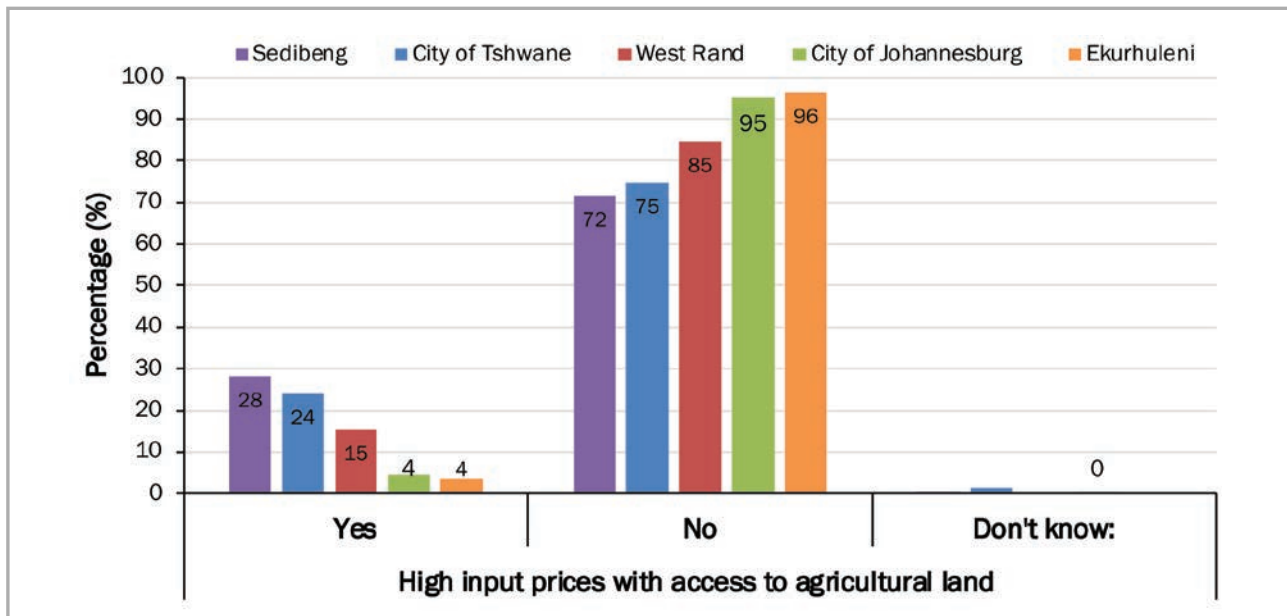


Figure 99: Household that experience high input prices shock by district

9.2.4 COVID-19 shocks and associated coping strategies

The COVID-19 pandemic resulted in serious disruptions in food supply chains and production systems. Sedibeng District had the highest percentage (33%) of households who were sometimes worried about their food running out before they can get money to buy some more food. Sedibeng and Ekurhuleni districts also had the highest percentage (18%) of households who reported that their food often runs out and they did not have money to buy more (Tables 66 to 68).

Table 66: Households that worried their food would run out before we got money to buy more

We worried our food would run out before we got money to buy more	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	47.5	317	37.6	253	31.3	245	23.7	152	22.3	190
Rarely	17.0	138	21.6	165	18.0	153	21.0	196	16.0	118
Sometimes	20.2	168	28.3	236	29.6	226	33.7	290	32.0	266
Often	15.3	148	12.4	120	21.1	162	21.5	218	29.6	253

Table 67: Households whose food did not last, and they did not have money to get more

The food that was bought just did not last, and they did not have money to get more	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	51.5	350	42.2	284	37.8	285	29.9	200	25.5	217
Rarely	17.3	141	22.0	178	17.7	158	19.8	174	12.8	126
Sometimes	18.1	158	22.1	209	26.3	193	35.0	302	37.9	287
Often	13.2	124	13.6	102	18.3	150	15.3	180	23.9	198

Table 68: Households who could not afford sufficient and nutritious food because the price of food increased

Households could not afford sufficient and nutritious food because the price of food increased	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	50.7	333	41.9	282	37.1	280	27.5	201	25.2	218
Rarely	15.1	143	18.7	151	16.3	138	17.0	170	17.5	129
Sometimes	18.5	157	25.5	224	27.8	208	37.3	294	30.3	250
Often	15.8	140	13.8	116	18.9	161	18.1	191	27.0	231

During the COVID-19 period, most households were unable to eat healthy and nutritious foods as shown in the table below (table 60) where 34.8 % of the respondents in the Sedibeng District reported that sometimes they were unable to eat healthy and nutritious food (Table 69).

Table 69: Households which were unable to eat healthy and nutritious food

Unable to eat healthy and nutritious food price of food increased	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	50.5	332	41.9	281	38.6	281	27.6	193	24.9	217
Rarely	15.3	141	22.1	159	16.5	151	18.5	166	16.2	131
Sometimes	19.5	160	21.6	220	27.1	198	34.8	291	33.3	264
Often	14.8	139	14.4	113	17.8	157	19.1	205	25.6	216

Table 70: Households which could not access the cheap and affordable food market, because they were shut down due national lockdown restrictions

Could not access the cheap and affordable food market, because they were shut down due to national lockdown restrictions	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	40.3	292	40.5	291	30.4	246	31.3	251	30.2	261
Rarely	22.3	168	23.7	179	18.7	144	27.3	244	15.8	124
Sometimes	22.7	183	25.1	205	36.6	266	28.0	219	31.6	254
Often	14.7	130	10.7	97	14.3	131	13.5	140	22.4	188

Most households across the districts reported that sometimes they could not access cheap and affordable food markets since they were shut down because of COVID-19 national lockdown restrictions. However, this was mostly experienced in the Ekurhuleni District (Table 71).

Table 71: Household heads who were hungry but did not eat

You were hungry but did not eat	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	66.7	468	61.2	449	59.5	445	58.9	453	45.8	377
Rarely	12.7	122	18.0	135	16.7	148	21.3	191	17.2	156
Sometimes	14.0	111	14.5	138	14.5	113	16.6	157	23.2	189
Often	6.6	72	6.3	49	9.2	79	3.3	46	13.7	105

Table 72: Household head who had to skip a meal

Had to skip a meal	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	63.7	447	59.0	424	52.5	389	50.7	380	40.7	328
Rarely	14.2	127	18.3	156	16.7	146	22.1	201	15.5	144
Sometimes	12.8	113	18.1	137	20.9	167	20.0	194	27.9	227
Often	9.3	87	4.6	55	9.9	85	7.2	78	15.9	126

Although skipping a meal was least reported across all the districts of the Gauteng Province, in the Sedibeng District households' heads did report that they often skipped a meal, and it was the highest percentage (15.9%) compared to other districts (Table 72). In the City of Johannesburg District, 63.7% of household heads never had to skip meals. This is also attributable to the fact that these are not major food crop producing districts since they mostly rely on formal employment in the commercial agricultural sector, services sector, aviation, manufacturing, mining, and tourism. Hence households would rely entirely on buying food which was limited due to restricted markets and high food price.

Table 73: Households who ran out of food

Household ran out of food	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	66.5	467	64.6	444	59.4	436	56.0	422	46.9	386
Rarely	12.1	117	17.3	135	15.5	138	22.1	207	15.0	141
Sometimes	13.1	116	13.5	135	15.1	124	15.6	156	24.2	192
Often	8.3	73	4.6	57	9.9	88	6.3	67	13.9	107

COVID-19 was expected to increase the number of households who are food insecure in developing countries. In Gauteng Province, in the two regions of City of Johannesburg and City of Tshwane districts, 13% of the households did report that they sometimes ran out of food, with 15% the households in West Rand and Ekurhuleni districts reporting to have sometimes ran out of food (Table 72).

Table 74: Household heads who went without eating for a whole day

Went without eating for a whole day	District									
	City of Johannesburg		City of Tshwane		Ekurhuleni		Sedibeng		West Rand	
	%	N	%	N	%	N	%	N	%	N
Never	73.7	533	71.2	521	68.3	521	73.2	575	61.1	497
Rarely	8.9	96	13.7	108	13.4	120	16.8	167	15.7	139
Sometimes	10.8	87	12.9	103	12.7	90	6.7	69	13.3	113
Often	6.6	55	2.2	38	5.7	54	3.4	38	10.0	76

Results show that it was exceedingly rare for the household heads to go without eating for the entire day (Table 74). However, in West Rand District the households' heads (10%) reported that they often went a full day without consuming food during the COVID-19 pandemic.

Key Findings and Policy Recommendations

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

Demographics characterisation

More than half of the household heads (56.6%) were males, and Africans were the dominant racial group in Gauteng. The heads were mostly middle-aged, with significant proportions of household members attaining at least a matric qualification. A very small proportion of members (1.4%) had no schooling in the province. There were, generally, very high unemployment levels in the sampled areas, particularly among the young, females and female-headed households. For example, 90% of the household members aged 15-24 years old were unemployed. A significant proportion of households (38.4%) earned at least R6,000 per month, with only 16.6% of households making less than R1,500 per month. Unsurprisingly, salaries and wages were the main source of income, followed by social protection, which plays an important role as a crucial socio-economic safety net among poor households. Many households were recipients of CSG and OAG, and female headed households were more reliant on social grants than male-headed households. While most of the households had access to social grants, the amounts received are not enough to eradicate hunger, food insecurity, and malnutrition. Almost a third of the households (27.6%) were registered as indigents. Households generally had moderate levels of access to basic services such as safe drinking water, housing, energy, and improved sanitation.

Socio-economic status, health, and well being

This survey has revealed that socio-economic challenges that include limited food production at household level, high dependencies on social grants, acute unemployment, especially among women and youth, and dwindling household incomes exposes households to food and nutrition insecurity. Despite the high levels of unemployment and inadequacy of social grant income, few households were involved in farming activities. Households' access to land was generally limited in the study area, and the land they accessed was too small for farming purposes. Consequently, most households relied on food purchases, which left them vulnerable to volatile food prices and inflation.

Access to land and agriculture production

Subsistence farming in rural portions of Gauteng Province has been limited by climate change, inadequate support and services (such as extension, information and infrastructure), and was further exacerbated by the COVID-19 pandemic, which had accumulated effects on food and nutrition security.

The involvement in agriculture was generally low and in line with national agricultural participation statistics. The households that engage in farming produce food from small plots resulting in low production that are unable to sustain them with adequate food supply. 'Better-off' households with larger pieces of land sold most of their produce only for them to purchase food including staples (selling of un-milled own produced grain rather than own grain consumption was preferred and purchasing of mealie for consumption), further exposing even the 'better-off' households to market related shocks. The purchases still made up the largest proportion of people's sources of food; mostly for 'very poor' and 'poor' households and thus exposing them to market related shocks.

Food security indicators

Several food security indicators (such as the Household food insecurity access score (HFIAS), Household Hunger Score (HHS), Food Consumption Score (FCS), and Household Dietary Diversity Score (DDS)) indicated

that many households were facing food access challenges in Gauteng. The HFIAS revealed that 51.4% of the households were food insecure, with 14.2% of the households being severely food insecure. Severe food insecurity was more prevalent among households headed by younger heads, and among the West Rand, Ekurhuleni, and Sedibeng districts. Male-headed households had better food security experiences than female-headed households. Most of the households experienced no hunger to little hunger when food access was measured through HHS. Most households consumed (83.6%) above at least 6 group food groups, as indicated through the HDDS. However, this does not always mean that households consumed healthy foods with required micro-nutrients. Further analysis indicated that households mostly consumed food groups such as cereals, condiments, sugars, and oils/ fats, and there was limited consumption of food groups such as fruits, pulses and nuts, eggs, and fish and seafood. The FCS indicated that 9.7% of households consumed poor diets, while 16.3% consumed borderline diets. While female-headed households were significantly more food insecure than male-headed households, they were likely to consume better diets than their male counterparts. Further, female-headed households were more likely to spend more money on food than male-headed households.

Nutrition indicators

Infant feeding practices

Exclusive breastfeeding has been adopted as one of the key, and crucially important, components of the Infant and Young Child Feeding Policy which was developed in 2007 (DoH, 2011). Promotion, protection, and support of breastfeeding are a key focus area of infant and young child feeding of the Integrated Nutrition programme of the Department of Health.

The results of the current study indicate that 87.1% of children under 2 years were breastfed at some point in their lives, which is slightly higher than the national results reported in the SADHS in 2016 (84%).

Furthermore, the results of the current study indicate that nearly 75.5% of children aged 0-2 years in the Gauteng Province were introduced to breastfeeding immediately after birth, with a total of 89.8% 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 Gauteng Province was reported to be 22.8%. This should be interpreted with caution due to the small sample size. However, 22.8% 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%), but lower than 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 5.8 months, which is more in line with what the SANHANES reported compared to the SADHS.

Overall, the first drink other than breastmilk was mainly introduced at 0-1 months. This occurred in less than half (43.6%) of children. We can assume that this is most likely the introduction of infant formula, for mothers who may be unable to breastfeed. At 3 months, other drinks were introduced in a further 17.4% of children. Less than a quarter of children (20.8%) were first introduced to other drinks at the age of 6 months/ older. Regarding the type of drink that was first introduced, more than half (56.0%) indicated infant formula while 26.4% indicated plain water.

After 6 months, infants should be introduced to solid foods as breastmilk is no longer sufficient to meet their nutritional requirements. However, results of this study indicate 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 (64.9%) and homemade cereal/ porridge (20.0%), with only 4.8% introduced to pureed/ mashed vegetables/ fruit.

Anthropometry (0-5 years)

In 2012, the SANHANES reported a national stunting prevalence of 28.6% in children 0-5 years, and a provincial prevalence of 25.9% in Gauteng Province. Four years later in 2016, the SADHS reported a slightly lower stunting prevalence at the national (27.0%) level but a much higher prevalence at the provincial (34%) level. The results of the current study appear to indicate that the stunting prevalence in Gauteng Province

is more aligned to the SANHANES results and is much lower than the SADHS provincial prevalence with a current prevalence of 25.5% in children of the same age group. These results indicate that stunting has remained more or less the same over the last 10 years and, as such, the proportion of children experiencing chronic undernutrition in 2021 has not changed.

The SADHS reported that stunting was more prevalent nationally in the age group 18-23 months. The results of this provincial analysis indicate that children aged corroborates this, as children aged 30-41 months had the highest prevalence of stunting in the Gauteng; however, this was not significantly higher than the stunting prevalence in other age categories. Furthermore, the SANHANES and SADHS reported that stunting is more prevalent in male children than female children at a national level. This study shows similar trends at a provincial level, with almost double the proportion of males (34.7%) being stunted compared to females (17.0%); however, these results were not significant. At a district level, the current study reported that stunting is more prevalent in the West Rand District, with nearly half the children reported to be stunted (46.1%); however, this was not significantly higher than other districts (range 23.1% to 28.9%).

The national prevalence of wasting was reported to be 3.7% in 2012 (SANHANES), with a slightly lower provincial prevalence in Gauteng of 7.4%. In 2016, similar national results were presented in the SADHS (3.0%); however, a provincial prevalence was not reported at the time. The current study has reported a similar provincial prevalence of wasting in Gauteng of 7.2%, thereby indicating that the proportion of children experiencing acute undernutrition in 2021 has remained more or less the same over the past 10 years. It also appears that those aged 6-17 months and 42-53 months, as well as males, experience a higher prevalence of wasting than their counterparts. At a district level, the current study reported that wasting, while not significant, is more prevalent in the West Rand (14.9%) and Ekurhuleni (11.5%) districts, compared to the other districts (range 5.2% to 6.5%).

The prevalence of underweight in Gauteng in the current study (8.0%) is similar to the provincial prevalence of underweight reported by the SANHANES in 2012 (8.3%). A lower prevalence was also reported at the national level in 2012 (6.8%) and 2016 (6%).

In 2016, the SADHS reported a national prevalence of overweight of 13% in children 0-5 years. SANHANES reported a higher prevalence in females than in males across all age categories at a provincial level. The current study found a slightly higher prevalence (16.3%) of children were overweight and that males had a higher prevalence of overweight than females, though the differences between genders were not significant.

The above trends across time seem to indicate that over the last 10 years, both chronic and acute undernutrition in children in Gauteng has remained more or less the same.

Anthropometry (18 years and older)

At a national level, the mean BMI in females were reported to be 28.9kg/m² in 2012 and 29.2kg/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 23.6kg/m². A similar provincial mean was reported for BMI in Gauteng for females (29.8kg/m²) and a slightly higher mean for males (24.2kg/m²) in 2012. Similar results were reported in 2016 (females 29.2kg/m² and males 23.8kg/m²). The current study reported similar results to SANHANES for both females (29.8kg/m²) and males (24.7kg/m²) in Gauteng.

Based on BMI cut-off points, SANHANES reported a national prevalence of overweight and obesity of 64.0% in females and 30.7% in males 10 years ago. The SADHS reported similar results in 2016, 67.5% in females and 31.3% in males. The provincial prevalence of overweight and obesity in Gauteng was slightly higher than the national estimates for females (68.0%) and lower for males (33.9%) in 2012. In 2016, the SADHS reported a similar provincial prevalence in Gauteng in females (65.6%) and an increased prevalence in males (33.5%). Ten years later, the results of this study report a similar provincial prevalence of overweight and obesity in females (68.5%) and a far higher prevalence in males (43.1%) compared to the SANHANES.

The current study also reported a slightly higher proportion of females (46.8%) and nearly twice as many of males (11.8%) with regard to a waist hip ratio larger than 0.85 and 1.0 respectively, compared to previous studies. For females, SANHANES reported 47.1% and 43.3% at a national and provincial level, respectively. For males SANHANES reported 6.8% and 6.7% at a national and provincial level, respectively.

Dietary Diversity

A diet that is sufficiently diverse reflects nutrient adequacy. This statement is based on the fact that no single food contains all required nutrients for optimal health. Consequently, the more food groups included in a daily diet, the greater the likelihood of meeting nutrient requirements (Kennedy, 2009). Monotonous diets, based mainly on starches such as maize, rice and bread, have been closely associated with food insecurity. Dietary diversity is an outcome measure of food security at the individual or household level (Kennedy, 2009). Apart from reflecting on food security, a low DDS has also been associated with low weight and stunted growth (Rah et al., 2010), as well as other health issues.

In the present survey, the mean dietary diversity score of the adult population was 5.27 with 21.9% of the population having a score less than 4. The mean DDS in the current survey is higher than that of the NCS in 2009 (4.02) and that reported in SANHANES nationally in 2012 (4.2). However, the proportion of those with a low DDS was higher than that reported in both the SANHANES in 2012 (40%) and the NCS in 2009 (38%). The current study further found that children have a lower mean DDS of 4.42, with a larger proportion (34.8%) of children having a score of less than 4.

Results showed that there was no significant relationship between food security and three of the nutrition indicators (wasting, underweight, and overweight) for children aged 0-5 years. The relationship between food security and stunting was, however, significant. Findings revealed that the prevalence of household food insecurity was higher among households that had at least one child under 5 years who was stunted (74.7%) than among households that did not have a child under 5 years who was stunted (60.4%) ($p < 0.05$).

For adults, there was no significant relationship between household food security and an elevated waist hip-ratio (WHR), which is a risk factor for non-communicable diseases (NCDs). Persons with an elevated waist-hip ratio, that is WHR of >1 in males or >0.85 in females, are considered as being at increased risk of NCDs. There 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 (73.1%) than among households that did not have an underweight adult (54.4%) ($p < 0.001$). Similarly, the prevalence of food insecurity was significantly higher (71.1%) in households that had at least one person who had a low dietary diversity (DDS <4) compared to households in which everyone had acceptable dietary diversity (44.4%) ($p < 0.001$).

The COVID-19 pandemic resulted in serious disruptions of food supply chains and production systems. Sedibeng District had the highest percentage (33%) of households who were sometimes worried about their food running out before they cannot get money to buy some more food. Sedibeng and Ekurhuleni districts also had the highest percentage (18%) of households who reported that their food often time runs out and they did not have money to buy more.

Shocks due to flooding were not commonly reported across the six districts of the Gauteng Province. Overall, Gauteng Province experiences inter annual variation when it comes to drought. It experiences years with wet winters, neutral, and dry seasons; only a handful (2%) in the Sedibeng and the West Rand districts have experienced drought shock during the study period. Severe water shortage is one of the shocks that was least reported in most of the districts and was reported a little bit in Sedibeng (5%) District, with both West Rand and City of Tshwane districts at 4%. However, in a general sense, severe water shortages were not a major challenge or shock in all the districts. Although skipping a meal was least reported across all the districts of the Gauteng Province, in Sedibeng District household heads did report that they often skipped a meal, and it was the highest percentage (15.9%) compared to other districts. In the City of Johannesburg District 63.7% of household heads never had to skip meals. This is also attributable to the fact that these are not major food crop producing districts since they mostly rely on formal employment in the commercial agricultural sector, services sector, aviation, manufacturing, mining, and tourism. Hence households would rely entirely on buying food which was limited due to restricted markets and high food price.

- The results have shown low levels of access to land, and low participation of households in farming activities. Most households depend on food purchases. These results suggest that addressing food insecurity in Gauteng should focus on strategies to increase incomes of households. However, the focus group discussion showed opportunities in intensive food production activities such as vegetables, dairy, and poultry. Agro-processing and value addition have a potential of increasing the participation of youths in agri-food value chains.
- Water shortage and recurrent drought emerged as part of major shocks. This implies that there is need for a well thought out water provision programme in Gauteng Province for household use and for
- agriculture production purposes. Possible interventions could be construction of dams for irrigation and domestic water reticulation systems at the household level.
- Promotion of projects and programmes that encourage good hygiene practices such as use of latrines and washing hands with soap after using the toilet is crucial.
- Breastfeeding promotion, growth monitoring for improved case detection in children who need care, appropriate referrals, and management of acute malnutrition, coupled with appropriate messages on complementary feeding, remain key interventions that need to be done. There is a need to scale-up multiple micronutrient supplementation during pregnancy, calcium supplementation to mothers at risk of low intake, promotion of maternal balanced nutrition, use of iodised salt, deworming, and vitamin A and zinc supplementation for children under 5.
- Nutrition assessment of children under-five at all points of contact should be strengthened. More focus should be given to the first 1 000 days of a child's life Nutrition assessment during pregnancy and appropriate management of pregnant women who are underweight or with poor weight gain should be strengthened during basic antenatal care services.
- Households need support in some months of the year (mainly January and June) to avoid negative consumption reduction practices and incidence of seasonal hunger. Interventions that seek to help households budget and save in anticipation of lumpy expenditures are crucial to ensure year-round food security.
- Enlightenment about the importance of micro and macro nutrient consumption as a crucial, food security programmes that must be formulated to focus on the production and consumption of foods aimed at improving the identified deficient micro-nutrient at the household level. Interventions on food preparation, meal planning and nutrition advice to support home production of fresh produce is required for improved dietary diversity in the households.
- These interventions, together with full scale implementation of other nutrition sensitive programmes and approaches such as school feeding, agriculture and food security enhancement programmes, social safety network, early childhood nutrition, women empowerment, child protection water, sanitation and hygiene, and other health and family planning services, in an enabling environment will greatly reduce morbidity and mortality in childhood, incidence of obesity and non-communicable diseases, while on the other hand contributing to the improvement of cognitive, motor socio-emotional development, school performance and learning capacity, adult stature, and work capacity and productivity.
- Promotion of domestic food production: This will involve encouraging families to produce their own food to ensure food security at household level. In Gauteng, most families rely on food purchased from supermarkets, and formal and informal traders. This is unsustainable and makes households more vulnerable to food insecurity.
- Focused investment and the establishment of food banks: Creating an enabling environment for commercial food production - There is need to increase agricultural production in each district through focused food production and agro-processing investments. These can be distributed through fruit and

vegetables markets that can be strategically located close to vulnerable households in all districts of the province. The markets may also serve as food banks where items imported elsewhere can be sold at affordable prices.

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

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