CITY OF JOHANNESBURG 2017 FOOD SECURITY SURVEY

Final Report

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EXECUTIVE SUMMARY

Urban food insecurity is a serious but poorly-recognised problem in city governance. *Cities are considered the new global development frontier, with high concentrations of poverty and unemployment, severe inequalities and fragmented geographies which trap poor people in remote settlements with inadequate services and few job opportunities.*

The resulting inability of the urban poor to access adequate food has severe consequences, both in the short term and in the long term. *In addition to contributing to the increasing burden of non-communicable diseases on urban populations and public health systems, malnutrition (including the hidden hunger of simultaneous macronutrient over- and micronutrient under-nutrition) undermines the economy, costing as much as 16% of GDP.*

Due to the impact on cognitive development and educational attainment this impact is intergenerational, and will ripple forward over many decades, entrenching poverty and unemployment. *Finally, high levels of food insecurity contribute to social tensions that can erupt in violent and destructive uprisings which can damage urban infrastructure, undermine efforts at democratisation, and make affected settlements ungovernable.*

Acknowledging the importance of food security by including it as a key outcome within the 2040 Growth and Development Strategy, and recognising the importance of accurate and up-to-date data on the prevalence, severity and impact of food insecurity to design, target, monitor, and evaluate interventions, the City of Johannesburg's ***Strategy, Policy Coordination & Relations Unit under the auspices of Office of the City Manager*** commissioned the development of a food security index used to carry out a survey of food security across the city. The study would provide an important baseline which will be closely monitored and evaluated as part of CoJ's GDS plan. The survey gathered data from a sample of respondents from 1000 households across 7 wards across the wider city metropole using a set of standardised household food security indices complemented by demographic and economic questions.

Demographic Findings: Respondents were predominantly female (69%), the majority of whom (61%) were under 41 years of age. More than half of the respondents reported that four or more people normally ate together in a household. Almost 60% of respondents indicated that they were the household heads, and 61% indicated that they were the primary breadwinners. Levels of education were moderate, with only 47% having completed secondary education; 47% were unemployed, with women more likely to be unemployed. Forty seven percent received social grants and 85% of respondents reported spending less than R2000 each month on food, significantly below the R2068.35 minimum food basket. This important finding showed that the vast majority of households were unable to afford even the minimum food basket, while the more costly nutritionally-balanced food basket was almost entirely unattainable.

Food Security Findings: The Food Security indices revealed that ***approximately one in five respondent households appeared severely food insecure***, and one in three moderately insecure. This suggests that ***within the greater Johannesburg metropolitan area[1], approximately 6 million may be food insecure***. The **Household Food Insecurity Access Prevalence** score indicated that **34% are severely food access insecure**, while 19% and 10% were

[1] Population ca 9.823 million according to the world population review http://worldpopulationreview.com/world-cities/johannesburg-population/

moderately and mildly insecure respectively. The **Months of Adequate Household Food Provisioning** Score revealed that, while almost half of respondents reported adequate food provisioning throughout the year, 30% reported inadequate provisioning for 3 months or less each year and about **8% reported chronically inadequate provisioning throughout the year**.

To cope with food insecurity, households frequently buy and **eat foods less preferred** (56%), **buy only what is necessary** (57%), **stick to a budget** (45%), **reduce portion sizes** (44%), and **borrow food or money** from friends or relatives (40%). These coping mechanisms further compromise dietary quality and quantity which was already limited and that social capital was eroded to cope with food insecurity.

One in five households reported very low dietary diversity. The majority of households consumed starchy (93%) and sugary food and drinks (76%) meat (65%), while fruit, vegetables and pulses were consumed less widely. **This dietary profile could result in high risk of non-communicable diseases and reduced immunity which has huge health and cost ramifications.** To source food, respondents relied primarily on market channels. Although most respondents bought from supermarkets, they did so infrequently for monthly provisioning, relying on spazas, small shops and street traders for more frequent food access. Urban agriculture provided food for a small minority (8%) of respondents, and then infrequently. Social safety nets provided by government or civil society appeared to play a very minor role. **Food environments offered the large majority of respondents access to most foods within 10 minutes' walking distance**, especially starchy staples and affordable proteins. It was clearly evident that sugar-sweetened beverages and chips were particularly accessible. This suggests that food environments promote diets which contribute to non-communicable diseases.

Data revealed that **particular socio-economic groupings are especially vulnerable** to food insecurity, including the elderly, women, the unemployed and people with low levels of education. This highlighted the powerful role of wider systemic and economic drivers which impacts on the food and nutritional disadvantage. Levels of food insecurity throughout the different study sites also showed spatial inequalities of disadvantage and poverty, with households in informal areas like Orange Farm, Diepsloot and Soweto especially compromised.

Very few respondents appeared to be participating in food relief projects run by the City of Johannesburg, or from other feedings schemes. Considering the massive scale and systemic roots of the problem, and the very limited resources allocated to the primarily redistributive, project-based and agriculturally-focused interventions conducted as part of the Joburg City's Food Resilience Programme, it seems doubtful that the interventions have had any significant impact on the large majority of residents who experience food insecurity.

Recommendations and interventions:

The image of Johannesburg as a World-Class African city is at odds with the reality of millions of food insecure residents. The limited impact of the various projects of the food resilience programme in addressing the massive scale and severity of the problem of food insecurity in the city suggest that broader, systemic interventions are required if this complex matter is to be resolved. Key stakeholders and community engagement sharing findings and getting feedback are needed. Hence a dedicated management, coordination and communication Unit for food security needs to be established.

These systemic recommendations include:

- **Elevate the food security mandate** within the CoJ departmental structures.

- **Increase investment in food security**, research, development and extension in particular the agro-ecological approach.
- **Ensure 'Buy-in' and involvement of all key stakeholders** and active participation of the community.
- Offer **training, create greater awareness and build capacity** in governance and food security for senior management, middle management, (Food Unit), farmers and household gardeners and the wider community (women, youth and vulnerable groups).
- Re-orient and review the strategy and policy towards transparent and **participatory food systems governance** through the drafting of a food charter, institutionalisation of a food policy council and sustained participatory governance processes.
- **Embed food governance strategies** and structures in relevant policy documents such as the CoJ's GDS 2040, IDPs and make adequate budgetary provision for this within SDBIPs.
- **Grow capacity to monitor food security** regularly and with large data sets.
- **Review CoJ's Food Resilience Programme**.
- **Enhance support for women, mothers, and the elderly** in terms of access to education, employment, and social grants.
- **Develop system-wide interventions to enhance viability of urban food production**. Such interventions should enhance ease of access to suitable and under-utilised land, water, labour, and compost derived from urban waste streams.
- **Address hunger and malnutrition** (including micronutrient deficient) by improving dietary diversity.

The following systemic interventions are grouped in short and medium and longer term phases and are recommended for addressing food insecurity in Johannesburg; *these include:*

Short-term and medium term

- **Soup Kitchens**- COJ needs to set-up soup kitchens to support the most vulnerable communities, for example women and older people and the inner city homeless populace.
- **Community Kitchens**- Regularising and providing of infrastructure for community kitchens. The concept of community kitchens is not new and is included as People's Restaurants in the CoJ Food Resilience Programme .
- **Address chronic health problems** in collaboration with the CoJ Department of Health. The CoJ Food resilience programme includes the Healthy Lifestyles initiative but this is limited to schools. We believe this programme should be spread to clinics and other community settings.
- **Food Co-Ops**- Adoption of Food Coops is critical in addressing food insecurity to the urban poor. Food Coops have showed success in Australia and other African countries like Ghana and Kenya.
- **Planning new research and setting-up M&E systems.** We recommend the use of built-in monitoring strategy which incorporates the Enterprise Monitoring Strategy (EMS) - a Strategy which provides an integrated monitoring and management tool using a database and data capturing software. The EMS will facilitate traceability.
- **Extend social safety nets through NGOs and CBOs.** Even though few respondents indicated that they received food through civil society initiatives, such initiatives have existing capacity and reach which could be leveraged to bolster the city's limited resources.
- **Support and up-scale public awareness campaigns** such as Izindaba Zokudla and the Soweto Eat-in to enhance awareness of food issues in the general public and among civil society initiatives.

- **Support and up-scale public awareness campaigns Review spatial planning and design guidelines**. Although informal food retail represents a key source of food for the poor, not all food traded necessarily promotes health.
- **Establish model food gardens** in each of the districts which will serve as positive examples for households, schools, parks etc. We recommend the Siyakhana Agro-ecology Enterprise Model (SAEM) which is based on proven agro-ecology production approaches.
- **Establish satellite fresh produce markets.** The presence in each of the city's regions of a well-located, secure and accessible satellite fresh-produce market could bring affordable fresh produce much closer to local informal traders and the general public alike.

Longer-term

- **Edible Landscapes-** City of Johannesburg can established an integrated edible landscaping in the it's many city parks. Edible Landscapes are where Public Orchards are planted on council land rather than the more conventional decorative trees and shrubs.
- **Food Sensitive Planning and Urban Design (FSPUD)**-The FSPUD is a resource which lays out a framework of ideas for planners and other important decision makers to encourage a shared understanding of what is meant by food sensitive planning and the important contribution.

1.0 INTRODUCTION - URBAN FOOD INSECURITY

The FAO defines food security as a state where all people at all times have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life[2]. It is usually understood to entail four dimensions - availability, access, utilisation and stability over time. Most food security debates and policy tends to emphasise the availability dimension, therefore emphasising rural contexts and productionist interventions aimed at increasing the availability of food[3], primarily by boosting smallholder production or the intensification of mono-cultural production of staple crops aimed at satisfying primarily caloric needs (i.e. energy intake via starchy staples). However, this emphasis on rural problems and agricultural solutions contradicts the rapidly increasing levels of urbanisation in Africa. Indeed, by 2011, 62% of South Africans lived in cities which are sprawling and spatially fragmented, trapping large segments of the urban population in peripheral, often informal settlements that provide limited services and offer few employment opportunities.[4] For city dwellers, access to food depends primarily on peoples' ability to buy food, which in turn relies on income, food prices, and the location of food outlets and thus transport.[5] The SANHANES study showed that informal urban areas were particularly severely affected by food insecurity with 32% of households at risk and 36% experiencing hunger.[6] What, then, is known about the state of food insecurity in Johannesburg? The following sections are extracted from an earlier report commissioned by the CoJ and compiled by the authors of the present study.[7]

[2] FAO. 1996. Rome Declaration on World Food Security, World Food Summit, Rome, 13 November 1996.

[3] Crush, J., Frayne, B. 2011a. Urban food insecurity and the new international food security agenda. Development Southern Africa 28(4): 527-544.

[4] Turok, I. 2012. Urbanisation and Development in South Africa: Economic Imperatives, Spatial Distortions and Strategic Responses. Urbanization and Emerging Population Issues. Working Paper 8. International Institute for Environment and Development. United Nations Population Fund

[5] Crush, J., Frayne, B. 2011b. Supermarket expansion and the informal food economy in Southern African cities: Implications for urban food security. Journal of Southern African Studies 37(4): 781-807.

[6] Shisana, O., Labadarios, D., Rehle, T., et al. 2013. South African National Health and Nutrition Examination Survey (SANHANES-1). Cape Town: HSRC Press.

[7] Kroll, F., Rudolph, M. 2016. City of Johannesburg Food Resilience Programme Evaluation

2.0 STATE OF KNOWLEDGE OF FOOD SECURITY IN THE CITY OF JOHANNESBURG

"The state of knowledge on food security in the City of Johannesburg is poor. To date, there is no recent, comprehensive and representative data on the food security status of CoJ residents. Several surveys have been conducted:

- **Johannesburg Poverty and Livelihoods Study - 2008** 73% food insecure, of which 26% moderate and 41% severely food insecure. 1409 households were surveyed in 8 wards identified as most impoverished (Ivory Park, Diepsloot, Riverlea, Doornkop, Phiri/Seloane, Alexandra, Jeppestown, Orange Farm)[8].
- **AFSUN Johannesburg Survey on Urban Food Security - 2008.** Three study areas were surveyed (Inner City, Orange Farm, Alexandra Far East Bank), revealing an average of 56% food insecurity in these communities, of which 15% moderate and 27% severe. The study also showed inadequate dietary diversity of about a third of respondents and frequent sourcing of food via informal trade. Food insecurity was correlated with income poverty and multidimensional poverty indices.[9]
- **RENEWAL Johannesburg case study - 2008** This survey interviewed 195 households from urban informal and 292 households from urban formal areas and found that 68% of residents of informal areas consume diets with low diversity as compared to 15% of those living in formal areas. Low dietary diversity was correlated with the experience of food shortages in the previous year.[10]
-

These studies reveal the following general insights:

- **Between half and three quarters of people in poor areas are affected by food insecurity**, which translates into a large number of people throughout the City of Johannesburg - possibly as many as 1.9 million people in the CoJ municipality, based on recent population estimates and the 2010/2011 upper-bound poverty line.
- **The levels of food insecurity vary significantly**, depending on neighbourhood, time of year, and broader economic trends including employment, food price increases, and currency fluctuations
- **Food sourcing is diverse**, with most households accessing foods through supermarkets, though infrequently, and a large proportion accessing food frequently through the informal trade.
- Households living in **informal settlements** and those living in remote **peri-urban areas** far from job opportunities and markets are **most** likely to be **food insecure**.
- **Dietary diversity is poor** for at least a third of households, particularly the poorest and those living in informal settlements. Diets emphasise starches, sugar, meat and sweetened beverages. This implies long-term health problems related to non-communicable diseases and infectious illnesses alike.

A baseline study commissioned by the City of Johannesburg has added to the body of knowledge and is considered below."

Final Report.

[8] De Wet, T.; Patel, L.; Korth, M.; Forrester, C. 2008. Johannesburg Poverty and Livelihoods Study (Johannesburg: Centre for Social Development in Africa, 2008.

[9] Rudolph, M., Kroll, F., Ruysenaar, S. and Dlamini, T. (2012). The state of food insecurity in Johannesburg. AFSUN Urban Food Security Series No. 12. Kingston: Queen's University and Cape Town: AFSUN.

[10] Drimie, S.; Faber, M.; Vearey, J. Nunez, L. (2013) Dietary diversity of formal and informal residents in Johannesburg, South Africa. BMC Public Health 2013, 13:911

3.0 THE 2013 COJ BASELINE FOOD SECURITY SURVEY

"A baseline survey of food security was conducted in 2012/2013. This survey interviewed 1262 households in Orange Farm, Soweto, Turffontein/Rosettenville, Westbury/Coronationville, Alexandra, Diepsloot, Cosmo City. A novel food insecurity index was developed for this survey. The survey indicates variable levels of food insecurity both between wards and within wards, with Orange Farm, Diepsloot and Soweto revealing particularly high levels of food insecurity.[11] The report reflects information on food availability, accessibility and use, following international definitions of the dimensions of food security. This survey data was used to inform the location of pilot sites for the implementation of the Food Resilience Programme.

The fact that the City of Johannesburg commissioned such a study is itself innovative and commendable in the context of South African urban management. The descriptive statistics presented are detailed and comprehensive. However, the implementation, analysis and presentation of the survey are beset with issues that limit its usefulness.

Firstly, the award of the research tender did not make use of the MoU between CoJ and higher education institutions, and instead followed conventional tendering processes. As a result, the implementing agency was not familiar with key issues and questions concerning urban food security, nor with standard research methodologies employed internationally.
Secondly, the report lacks adequate referencing or methodological explanations, which makes it impossible to validate findings without significant additional research. Instead, the methodology can only be inferred implicitly from the types of questions reflected in the final report. This suggests that the index was developed using elements of standardised and internationally validated survey instruments including the Household Food Insecurity Access Scale (HFIAS) (Coates et al 2007), a food frequency questionnaire (FFQ), the coping strategies index (CSI) and various other standard demographic information including age, employment status, settlement type, etc.

Thirdly, because the report does not represent or analyse the standardised food insecurity survey instruments in the conventional way, the resulting findings are presented in a piecemeal, descriptive manner, reflecting responses to each of the survey questions in turn. Given the large number of areas sampled, this generates a very complex picture that hinders effective analysis or strategic dialogue. Conventionally, the responses to these survey instruments are aggregated into scales reflecting the severity of food insecurity, the degree of dietary diversity, etc. These scales condense multiple layers of information into metrics that are more easily represented and discussed.

The report nevertheless reveals some important details concerning food affordability, availability, access, and utilisation. Demographic information shows that income poverty in the sampled areas appears pervasive, with **over half of households earning less than R4000 a month** to support approximately 3 persons per household.
Orange Farm in particular is affected by severe socio-economic circumstances, with large household sizes, low average income, and a large proportion of households living in informal settlements.

Extrapolating the food security statistics gathered, the data analysis that the report is based on estimates a population of approximately **687,000 food insecure households** (lower two quintiles) **in the 30 most deprived wards. Food appeared to be the biggest household expense,** although the questionnaire design prevents more precise estimation of amounts spent on food. **Over half of respondents sometimes worry** that they will not have enough food, and compromise on preferred food choices, meal size or frequency to make ends meet. **About a**

[11] City of Johannesburg (2013) Food Insecurity Survey. Results for 2013.

quarter sometimes goes to sleep hungry, while one in ten experiences this twice a month or more often. To cope with a shortage of food, 60% rely on friends and relatives, 40% borrow money, while a negligible number used government food aid.

Red meat, chicken or fish were accessed via the primary access channels; formal traders, while **for vegetables, bread, milk and eggs, formal and informal sources were similarly important**. Urban agriculture was applied to some extent in (Diepsloot 32% and Orange Farm 28% of respondents), but was negligible (2% and 4%) in most other areas. However, almost **a third reported that they had accessed fruit or vegetables from their own gardens which seemed contradictory**. In the two areas where cultivation was more common, the large majority (75% and 64%) indicated that the **amounts produced are inadequate. Two c**ommon reasons cited by **respondents for not growing food** was **lack of space** (74%) and lack of fertiliser (21%). Food produced was rarely sold, but rather consumed by the household.

The most important food transport mode was pedestrian, emphasising the importance of local food outlets. Frequent vehicular **transport incurred significant additional costs** for respondents, and was done primarily for meat, chicken or fish. This further emphasised the importance of local food outlets, especially informal traders operating in remote settlements.

Food consumption data indicated that **mealie meal, samp and rice** were most frequently consumed, followed by **bread and chicken**. Chicken and eggs were eaten very frequently compared to red meat. Similarly, the amounts consumed appeared to be highest for starches. Fruit appeared not to be consumed in adequate frequency or amounts. However, this methodology does not reveal intra-household variability in consumption, which is often influenced by gender, age, incomes and power. Consumption data highlighted the role of poor nutrition (primarily starches and cheap proteins) in the broad prevalence of noncommunicable diseases and compromised immunity. It also implied impaired childhood physical and cognitive development and resultant compromised educational attainment and employment potential.
Analysis of the food security index (derived from the HFIAS) was represented in quintiles, showing **particularly severe food insecurity in Orange Farm, Diepsloot and Soweto**, with more than 70% of Orange Farm respondents falling into the two lowest quintiles.

The ward-level analysis revealed a large degree of internal variability in the level of food insecurity, indicating that food insecurity is strongly correlated with local factors such as income, access to transport and employment, and type of dwelling.

The report concluded by recommending food distribution programmes and communal gardens without critically considering the evidence for their effectiveness either in the data gathered or in the wider literature on the topic. Systemic constraints or enablers were not discussed in the CoJ 2013 baseline survey report.
Important insights emerge from this baseline report:

- **Municipal governance processes**, particularly tendering processes, **compromise** the quality, relevance and comparability of **data** gathered and should be reviewed.
- **The existing data contained useful information, but requires re-analysis** according to accepted standards to permit comparability and more effective evaluation.
- **Levels of food insecurity appeared very locally-specific**, **but** food insecurity seemed **widespread**, particularly in informal settlements and in peri-urban spaces.
- **Income poverty appeared to be the primary driver** of food insecurity in this survey, but was influenced by other factors including household size, access to employment opportunities and cost of transport.
- **Informal trade was a key channel** providing access to fresh food, especially in remote peri-urban areas.
- **Urban agriculture only played a smallish role in peri-urban areas** where access to land is less problematic. Nevertheless, the amounts produced appear generally insufficient and are constrained by lack of access to land and fertiliser.

In addition, the dynamic nature of food insecurity suggested that levels of food insecurity will also vary over time, based on cyclical patterns of employment and expenses as well as in response to broader trends and events on a national and global scale such as currency fluctuations, input cost increases and droughts which can affect the cost of basic food commodities.

The emphasis on ward-level data to target specific areas for priority intervention is understandable given the geographic and population scale of the issue in the context of resource constraints. However, this focus on specific priority areas prevented the exploration of more systemic approaches towards ensuring a resilient food system that enables all residents of the CoJ to meet their needs.

Also, as suggested by the variability of food insecurity even within the most food insecure wards, this approach neglected the likelihood that there are pockets of severely food insecure people even within apparently well-off areas. A targeted approach would miss these people.

This, coupled with the insights summarised above, suggested the need for more regular food security monitoring in the City of Johannesburg, using standardised and comparable survey instruments. The insights also suggested the need for a systemic approach towards urban food security policy and programming."[12]

The City of Johannesburg has recognised food insecurity as an important key development priority and has included it within outcome one of the Growth and Development Strategy (GDS), mandating the development of a food security index. In response to a request made by CoJ's Group Strategy, Policy and Coordination and Relations (GSPCR), Wits Enterprise and the Wits Siyakhana Initiative were tasked to co-develop appropriate and effective systems and capacity within the City of Johannesburg to develop a food security index and build capacity which will inform food security strategy and implementation, and assess performance against GDS Outcome 2.

4.0 WHY URBAN FOOD SECURITY MATTERS

There are several clear reasons why engagement with urban food security and the food system is essential for the City of Johannesburg:

1. Health impacts cost the city and the province billions in healthcare[13]. The province's 2016/2017 health budget was set at ZAR34.2bn. Approximately a third of causes of death and morbidity are nutrition-related, including non-communicable diseases and infectious illnesses exacerbated by poor nutrition.
2. Malnutrition compromises childhood development, educational attainment and subsequent employability.
3. Loss of productive capacity hampers economic growth. Malnutrition costs 11%-12% of the GDP in Africa[14]. Extrapolated to the GDP of Johannesburg (estimated at 82.9 billion USD[15] or ZAR 1099.39 billion based on exchange rates at the time of writing), this implies an annual loss of approximately ZAR 109 billion.

[12] Kroll, F., Rudolph, M. 2016. City of Johannesburg Food Resilience Programme Evaluation Final Report.

[13] Maredza, M.; Hofman, K.J.; Tollman, S.M. (2011) 'A hidden menace: Cardiovascular disease in South Africa and the costs of an inadequate policy response' In: SA Heart Journal 2011 Vol 8 No1 p48-57; Kroll, F.; Rudolph, M.J.; Simatele, D., 2017. A systemic review of food security in the Gauteng City Region. Gauteng City Region Observatory Food Security Working Paper 1. GCRO

[14] Horton, S.; Steckel, R.H. 2010. Malnutrition. Global economic losses attributable to malnutrition 1900-2000 and projections to 2050. Assessment Paper. Copenhagen Consensus on Human Challenges; International Food Policy Research Institute. 2016. Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030. Washington, DC.

[15] The Brookings Institution, 2015. Global Metro Monitor 2014. An Uncertain Recovery.

4. Food insecurity creates conditions for social unrest and therefore constitutes a security and governance risk. Intensification of food insecurity as a result of shocks (food or fuel price increases, power disruptions, currency devaluations) could expose cities to social tensions which could make them ungovernable and undermine democracy[16]. The potential for tensions to reach breaking-point are reflected by recent violence and looting directed at non-South African informal food traders.

Although there is no clear local government mandate to engage with urban food security[17], there are several policy frameworks at national, provincial and local government level which anchor this mandate. These include the Integrated Food Security Strategy (2002), the Zero Hunger Strategy (2009), Gauteng Growth and Development Strategy 2040, and City of Johannesburg 2012/16 Integrated Development Plan. The national government Outcome 7 Delivery Agreement frames food security policy by addressing food availability, accessibility, utilisation and affordability. In contributing to the national agenda, the City has adopted Agriculture and Food Security as one of its key priorities.

Despite the lack of a formal mandate, it is important to recognise that the cities are already mandated to govern aspects of the food system in significant ways along the entire value chain, regulating food production, trade, distribution, retail, advertising and consumption in various ways which are still poorly understood[18].

[16] Bar-Yam, Y. ; Lagi, M. Bar-Yam, Y.(2013) South African Riots: Repercussion of the Global Food Crisis and US Drought. Available at: http://arxiv.org/pdf/1307.5268v1.pd; Grant, G. (2012) Shocks and Disruptions. The Relationship Between Food Security and National Security. Henry Jackson Society; Hendrix, C.S.; Haggard, S. (2015) Global food prices, regime type, and urban unrest in the developing world. Journal of Peace Research 2015, Vol. 52(2) 143–157

[17] Battersby, J.; Haysom, G.; Tawodzera, G.; Kroll, F.; Marshak, M. (2015) A study on current and future realities for urban food security in South Africa. Technical Report - South African Cities Network.

[18] Smit, W. (2016) Urban governance and urban food systems in Africa: Examining the linkages. Cities 58 (2016) 80–86

5.0 RESEARCH QUESTIONS AND SCOPE

The overarching project aim was to develop and apply appropriate indices to assess food security in COJ, but equally important to develop capacity within the City of Johannesburg to monitor and evaluate food security throughout the city by up-skilling existing personnel and developing appropriate data collection and management systems.

However, in consultation with CoJ officials, the up-skilling of CoJ staff and development of internal data collection and analysis capacity was decided to be unrealistic within the timeframe and financial resources available for this particular study.

6.0 METHODOLOGY

6.1 UNITS OF ANALYSIS

The primary unit of analysis where data was collected is the household. However, household-scale responses were aggregated at a ward level to generate ward-scale data. Similarly, ward-scale data were aggregated to estimate city-scale food security levels.

6.2 SURVEY INSTRUMENT

The survey tool (Reflected in Appendix 1) was designed to incorporate several standardised and validated instruments, along with basic demographic information. The instrument was strongly influenced by the longer instrument developed and used in the AFSUN survey conducted in 2008[19]. The instruments have been selected to ensure comparability with similar studies conducted elsewhere in SA and abroad. The survey instrument was kept as concise as possible to reduce the risk of respondent fatigue and to ensure that a sizeable sample could be interviewed despite time and budgetary constraints.

- **Demographic** information allows analysts to profile particularly vulnerable groups, which has important implications for relief programme design and planning. Relevant information will include age, gender, employment status, level of education, home language, migration status, household size and headship.
- **Economics**: *Livelihoods and food expenditure* were recorded. This will allow analysts to estimate not only the vulnerability of households to income loss and food price increases, but also how food provisioning expenditure compares with the basic needs food baskets calculated by SPII.
- **HFIAS**: *The Household Food Insecurity Access Scale* is an internationally standardised and validated tool to assess the access dimension of food insecurity by querying the frequency of experiences of food insecurity over the previous month. It consists of a set of questions, responses to which are scored to calculate the severity of food insecurity as well as to calculate the prevalence of different scores in the respondent population.
- **HDDS**: The *Household Dietary Diversity Score* is used to record respondents' consumption of various food groups in the previous 24 hours. It is quick to administer and is a proxy indicator for food security and socio-economic status. The responses are summed to generate a score, and also to calculate a population profile reflecting the prevalence of different food groups consumed in the population. This is relevant in

[19] Crush, J., Frayne, B. 2010. Pathways to insecurity: Urban food supply and access in Southern African Cities. Urban Food Security Series 3. Kingston and Cape Town: Queen's University and AFSUN.

terms of identifying risky consumption patterns with public health implications. The score can also be used to calculate the percentage of respondents below a minimum score below which responses are considered to reflect severe food insecurity and dietary inadequacy.

- **MAHFP**: The *Months of Adequate Household Food Provisioning* instrument records the months of the previous year during which households experienced inadequate access to food. This is useful to understand how food insecurity levels fluctuate over the course of a year, which has implications for the design and planning of food insecurity relief programmes.
- **Sources of food:** Understanding where households access food and how often they utilise different sources (including supermarkets, informal trade, street food, fast food, urban agriculture, feeding scheme, remittances, borrowing) has implications for the planning and regulation of different food retail modes in the City of Johannesburg.
- **Food Environments:** This metric was custom-designed to reflect what kinds of food are accessible within 10 minutes' walking distance of respondents' homes.

6.3 SAMPLING STRATEGY

In order to ensure appropriate sample reflecting the wider CoJ metropole and to ensure comparability with data previously collected in 2013, this survey selected sample wards which correspond with the wards previously surveyed. The selection of wards was done in consultation with CoJ in order to take into account other strategic considerations.

The following seven areas, and the number of wards in each, were included in the study:

- Diepsloot – 2 wards
- Westbury/Coronationville – 1 ward
- Cosmo City – 1 ward
- Soweto – 4 wards
- Alexandra – 6 wards
- Turffontein/Rosettenville – 2 wards
- Orange Farm – 1 ward

The sampling was conducted at ward level, on a PPS (probability proportional to size) basis. Within each ward, starting points were selected at random and 8 households were sampled per starting point, the first being chosen closest to the starting point and thereafter every sixth household was selected.

Sample sizes were calculated based on ward population sizes. The sampling design is reflected in Appendix 2. The final sample sizes were constrained by the available resources.

The person in the household who was responsible for food was interviewed. If there was more than one person, then one of them was selected at random. If this person was not available, then a return visit was arranged, and if necessary a second return visit. If the person was still not available, then a household next door was selected for the interview. If unable to interview any of the next door households, then this interview was abandoned and another household was added at the end.

A total of 125 starting points were selected over the 17 wards, giving a total of 1000 households that were interviewed. (Note that the sampling design presented in the spreadsheet allowed for an additional 64 households in order to ensure that the required 1000 interviews are achieved.)

6.4 SURVEY TECHNOLOGY

The authors collaborated with experienced subcontractors DMSA and QRS who specialise in statistical analysis and conducting social surveys respectively. These partners utilised a survey technology based on mobile data collection. This has ensured that enumerators were able to use smartphones or tablets with an customised survey app that allows enumerators to upload survey responses in real-time along with geo referencing information. This has allowed the data to be validated and also to be used to reflect the spatial distribution of different degrees of food insecurity within the city.

6.5 ENUMERATOR SELECTION, TRAINING AND SUPERVISION

Enumerators were selected based on their experience with social surveys generally and their prior experience with food security surveys. Also important was their familiarity with vernacular languages commonly spoken in the City of Johannesburg (ie isiZulu, seSotho, chiShona). The team was trained by researchers experienced with the use and analysis of the survey tools described above. This training addressed ethics, interview skills, survey tools and technology, enumerator safety. Enumerators were supervised by an experienced team which ensured that errors in the field were identified early and that data validity was ensured.

6.6 DATA COLLECTION

Data was gathered in face-to-face structured interviews using the standardised survey questionnaires developed. Enumerators were dropped off at key data points identified in the sampling strategy and applied the household selection strategies determined by statisticians while traversing the selected wards on foot. Enumerators were clearly identifiable as such. Enumerators were de-briefed to identify and address challenges arising in the field.
Data colleaction was done during the week Tuesdays - Fridays. Mondays were excluded to ensure that non-representative dietary patterns related to weekend festivities would not distort findings, particularly relating to the HDDS.

6.7 DATA MANAGEMENT

Data collected by the enumerators was uploaded to an online database in real-time. Wits researchers monitored the quality of data on an ongoing basis to identify and correct enumerator errors as early as possible, thus enhancing data reliability and validity.

6.8 STATISTICAL ANALYSIS

The results of the survey were generally presented in terms of frequency tables and displayed by means of bar diagrams. Cross-tabulations were also presented, with respect to demographic features, including area.

The three food security/insecurity indices as defined by USAID were computed from each household's responses:

- HDDS (Household dietary diversity score)
- HFIAS (Household food insecurity access scale)
- MAHFP (Months of adequate household food provisioning)

The results for the indices were presented both in terms of frequency tables and corresponding bar diagrams, as well as by standard summary statistics, including means, medians and standard deviations. Cross-tabulations were also presented for these indices.

Additionally, the HFIAP (Household food insecurity access prevalence) sub-index of HFIAS was computed from each household's responses and the results were presented as for the three main indices.

6.9 ETHICS

Respondents were informed about the purpose of the research, were assured that their participation would be entirely voluntary and anonymous, that they could refuse any question or choose to end the interview at any time, and that they would not be disadvantaged in any way by choosing not to participate in the research. The interview was only conducted once informed consent had been obtained.

In addition, information on personal identities obtained through the research for the purposes of back-checking and validation was kept in a separate, secure database to ensure that survey responses could not be correlated with respondents' identities.

Ethical clearance was applied for with Wits University's Faculty Of Science Ethics Committee

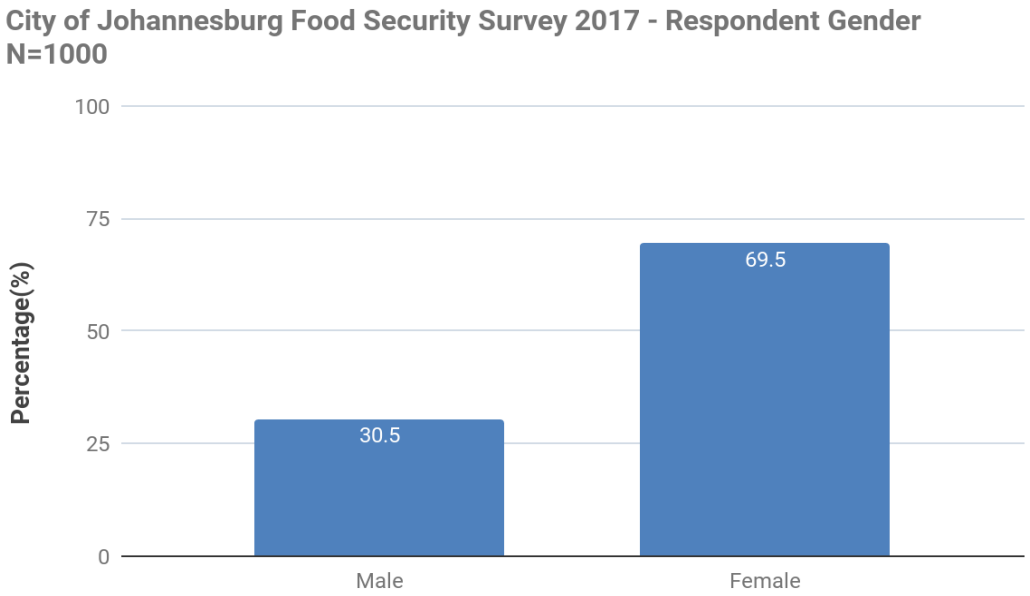
7.0 FINDINGS

Findings of the demographic and food security components of the survey are presented below.

7.1 DEMOGRAPHICS

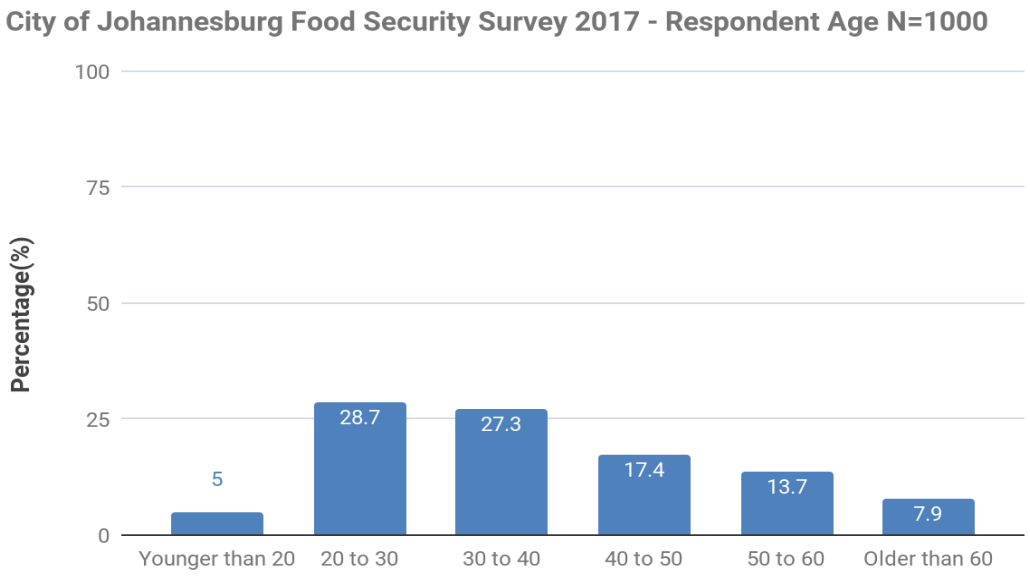
This section provides key data on gender, age, household size and headship and employment, social grants and education status of respondents and households

GENDER



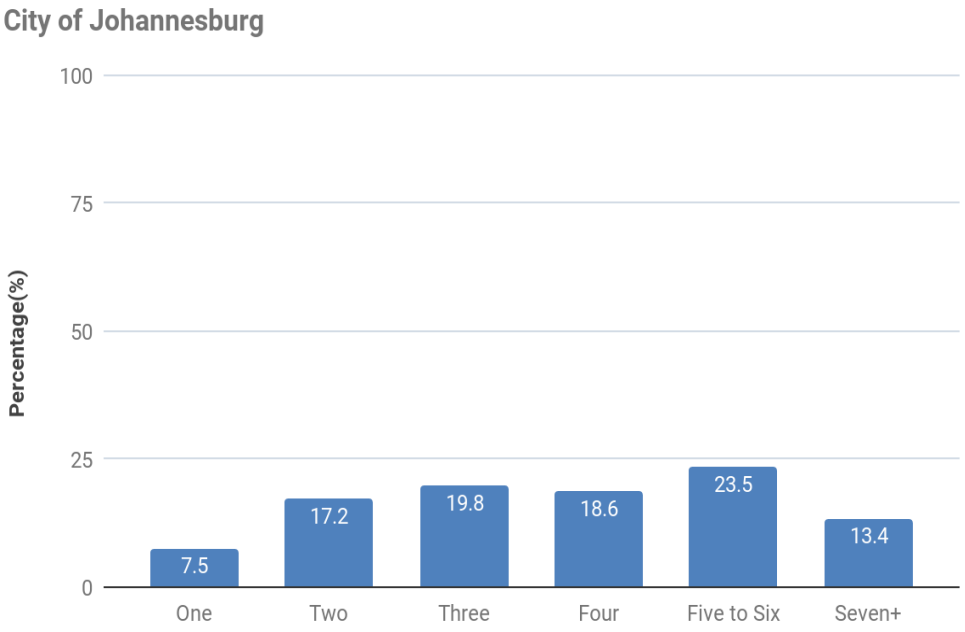
The overwhelming majority of respondents were female. This reflects common gender roles, according to which household food provisioning and preparation generally falls within women's domain.

AGE



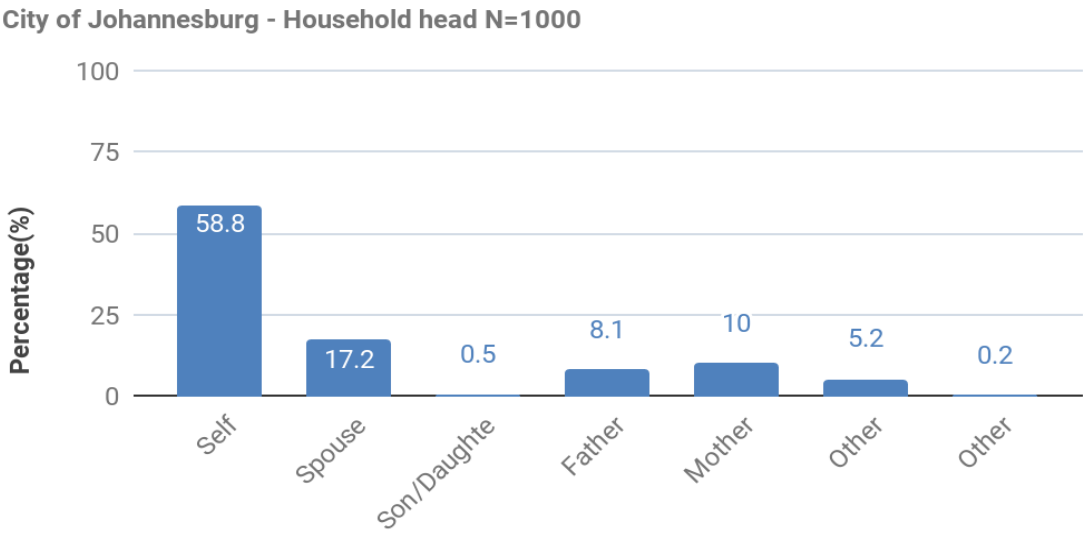
The majority of respondents (61%) were 40 years old or less.

HOUSEHOLD SIZE



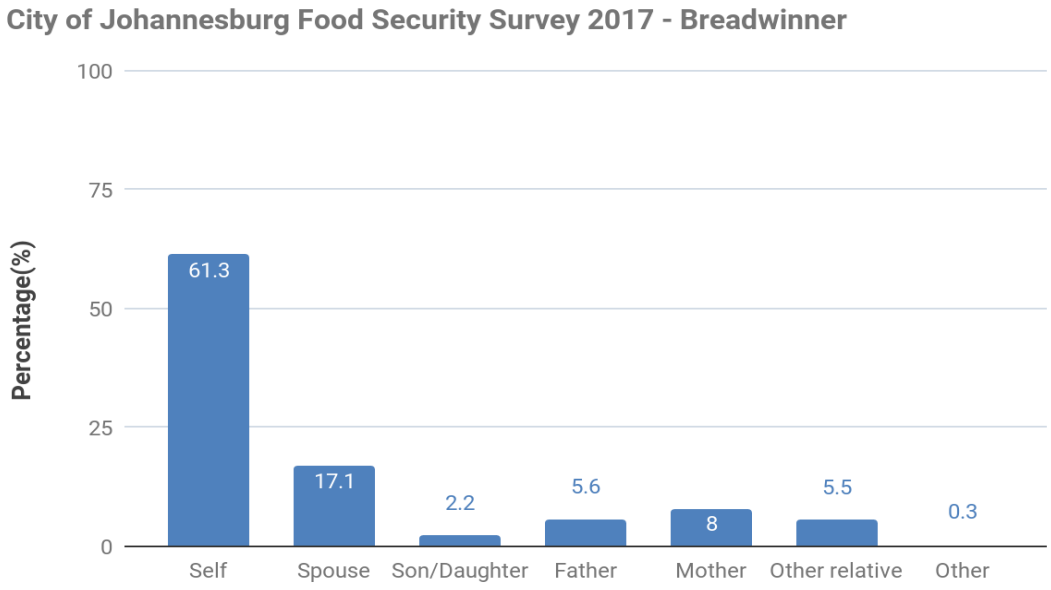
More than half of respondents reported that four or more people usually ate together in that household. This has important implications for the number of people affected by food insecurity and dependent on grants.

HOUSEHOLD HEADSHIP



Most of the respondents indicated that they were the heads of the household, although 17% indicated that their spouse headed the household and 18% indicated that a parent headed the household. This means that in the majority of cases, the household head was also the person responsible for purchasing and preparing food.

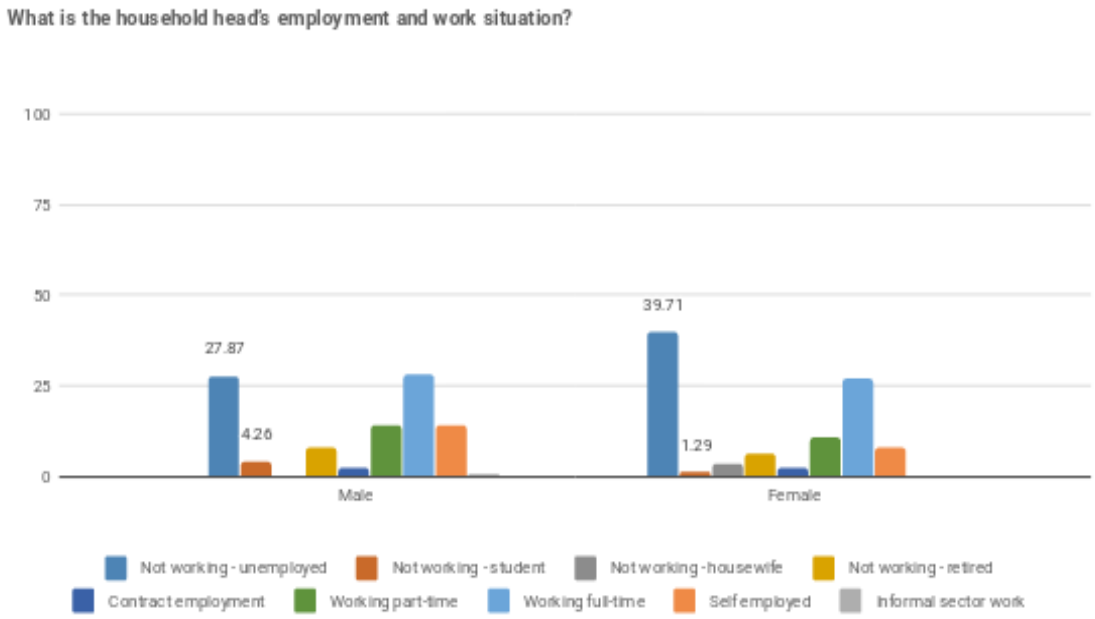
BREADWINNER



Most of the respondents (61%) were the main breadwinners. A small segment (~20%) indicated depending on parents or other relatives.

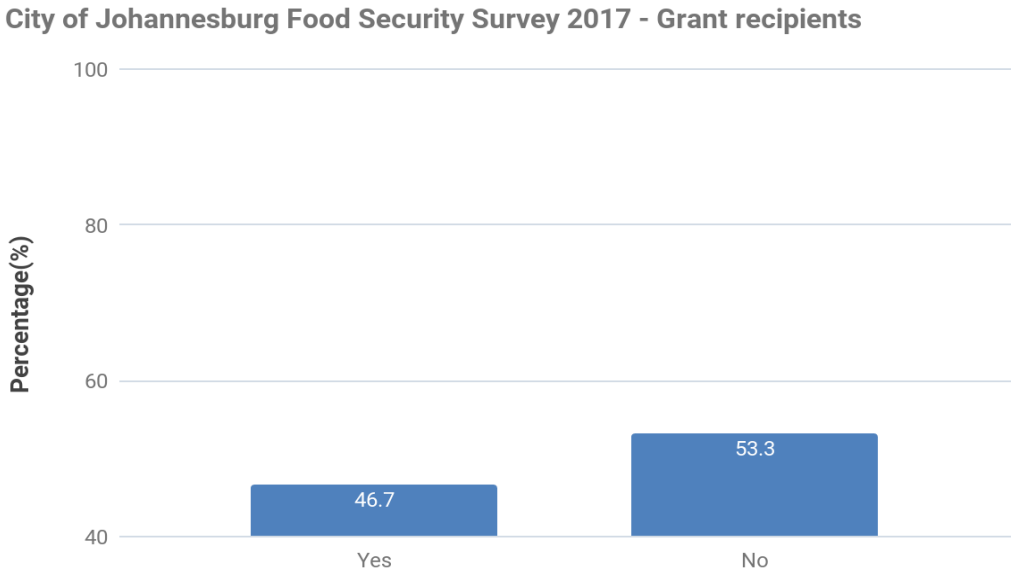
EMPLOYMENT STATUS

Only 27% of respondents had full-time jobs. More than a third was unemployed reflecting the general high unemployment rate in the country.



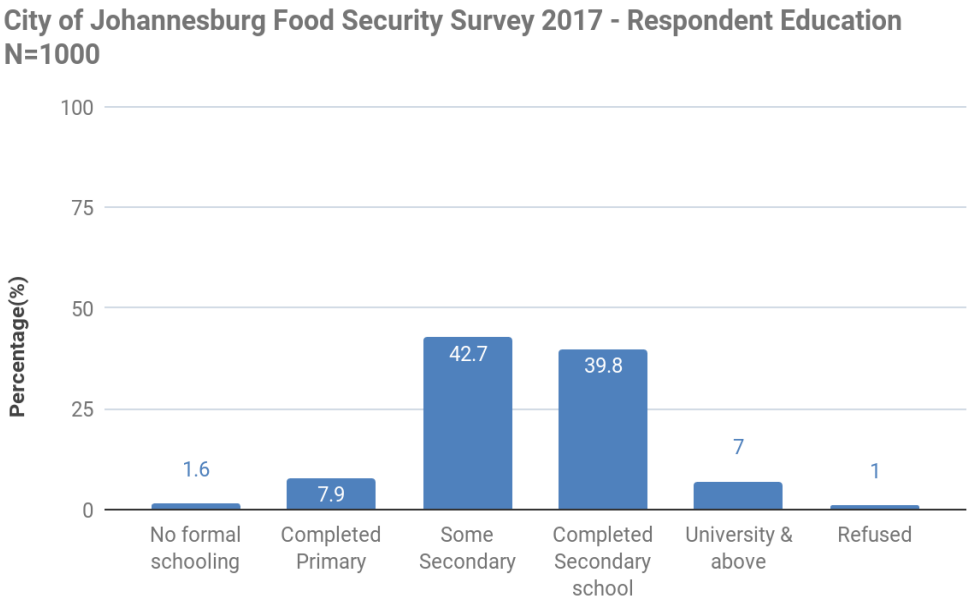
Female respondents were far more likely to be unemployed.

SOCIAL GRANT DEPENDENCY

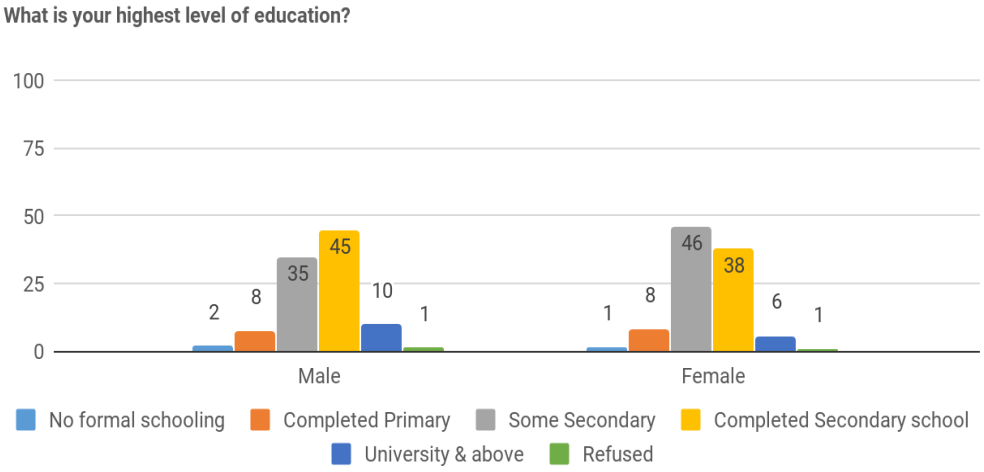


About half of respondents receive social grants. Without these grants many of the respondent households would be less able to afford food and thus likely to be more severely food insecure.

EDUCATION



Less than half of respondents had completed secondary education. This has important implications for employability, income potentials, and also dietary knowledge.

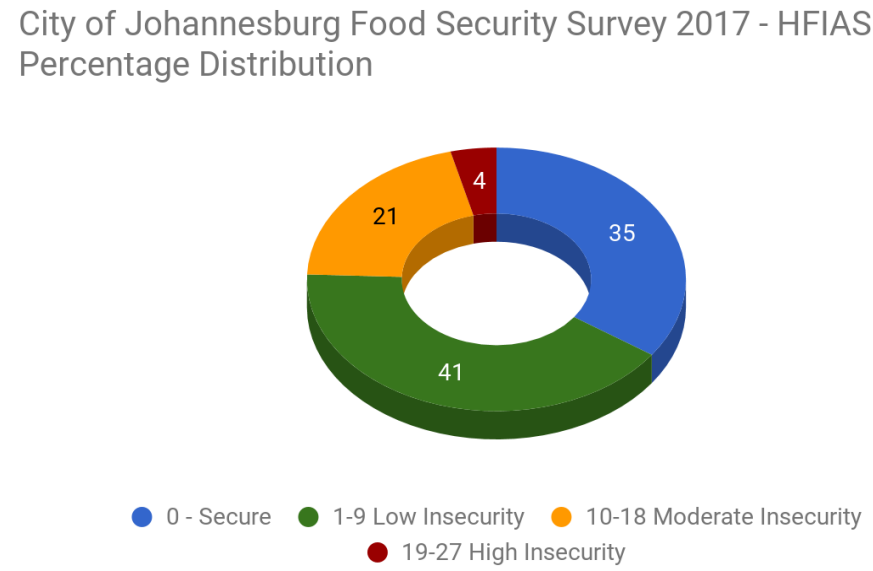


Female respondents reported lower levels of education. This has important impacts on employability and consequently on incomes. Considering the important role played by women in household food provisioning, this educational disadvantage contributes to high levels of food insecurity.

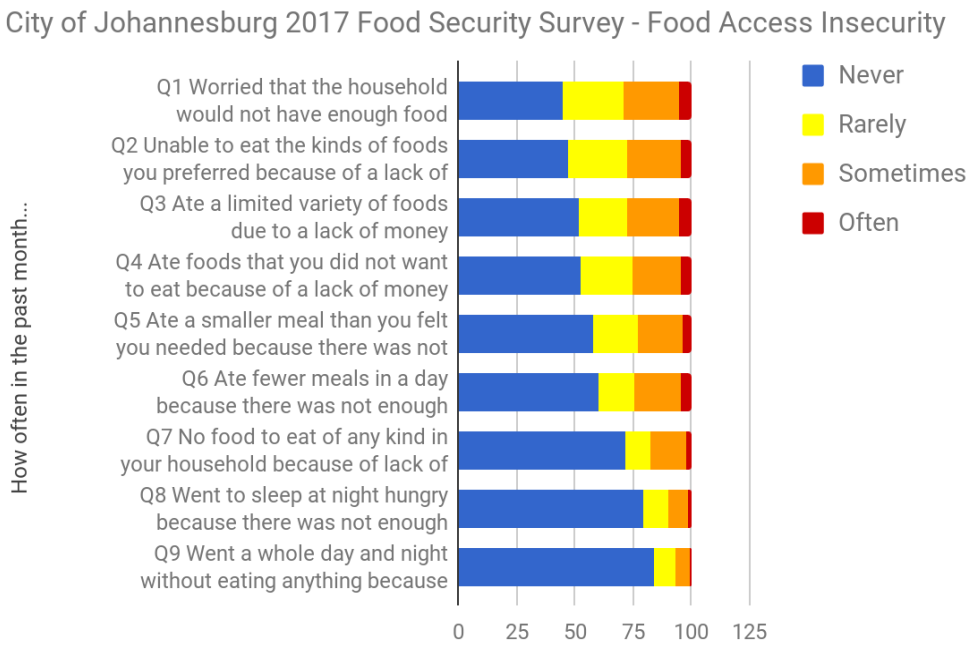
7.2 Food Security

Although consideration was given to develop one composite index, each of the three component indices has its own unique, well-defined measure of an aspect of Food Security / Insecurity and is universally understood through the USAID definitions. Combining them into a composite index can be compared to throwing the three indices into one pot, hoping for an overall picture to emerge that somehow adds to the information to the individual three indices. However, this proposed composite index could create confusion and is unlikely to enhance the overall food security picture. We have therefore opted not to compute a composite index and instead represent frequency distributions for each of the three metrics on its own terms.

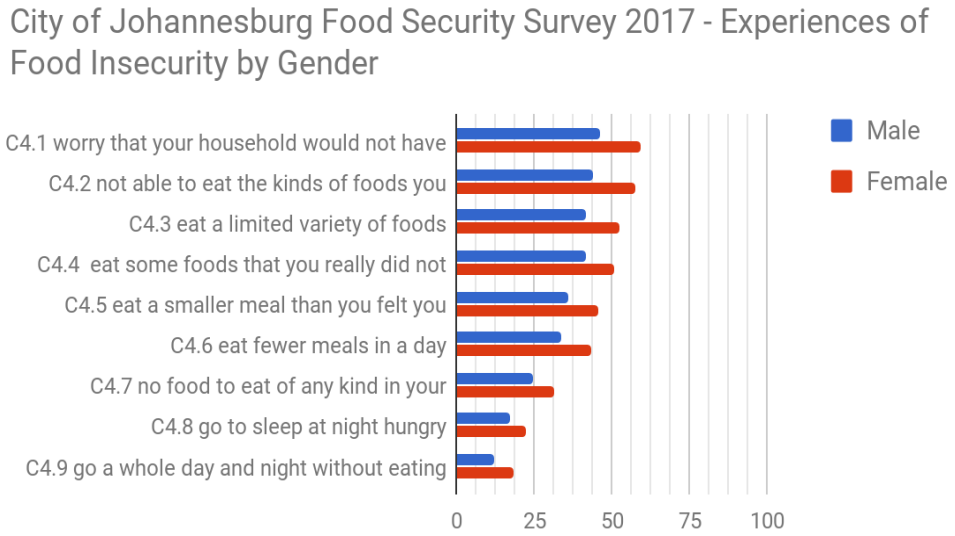
Household Food Insecurity Access Scale (HFIAS)



The mean HFIAS was 5.7, indicating generally low levels of food insecurity. The percentage distribution indicated that just over a third of respondents experienced no food insecurity over the past month. 41% of respondents scored between 1 and 9, indicating low levels of food insecurity, 21% between 10-18 showing moderate levels of food insecurity, and 4% scored higher than 18, reflecting high levels of food insecurity. On aggregate, a quarter of respondents achieved HFIAS scores which showed moderate or high levels of food insecurity.

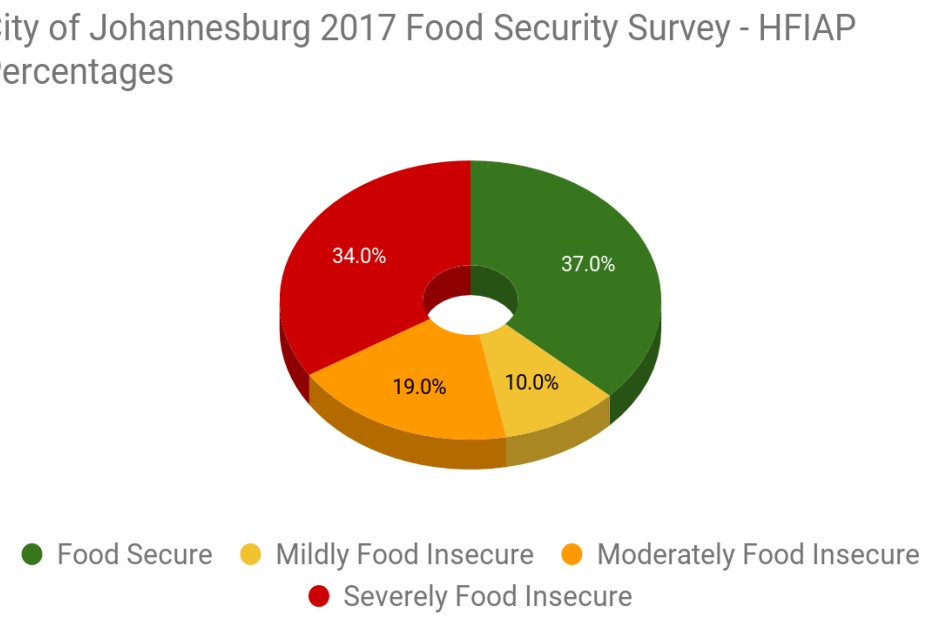


The HFIAS was calculated from the responses to 9 questions which probed the frequency with which households experienced increasingly severe conditions of food insecurity. The chart above reflected that about half of respondents experienced some of the milder forms of food insecurity in the previous month, but about a quarter experienced actual hunger.



Data of HFIAS responses by gender consistently indicated greater levels of food insecurity reported by female respondents.

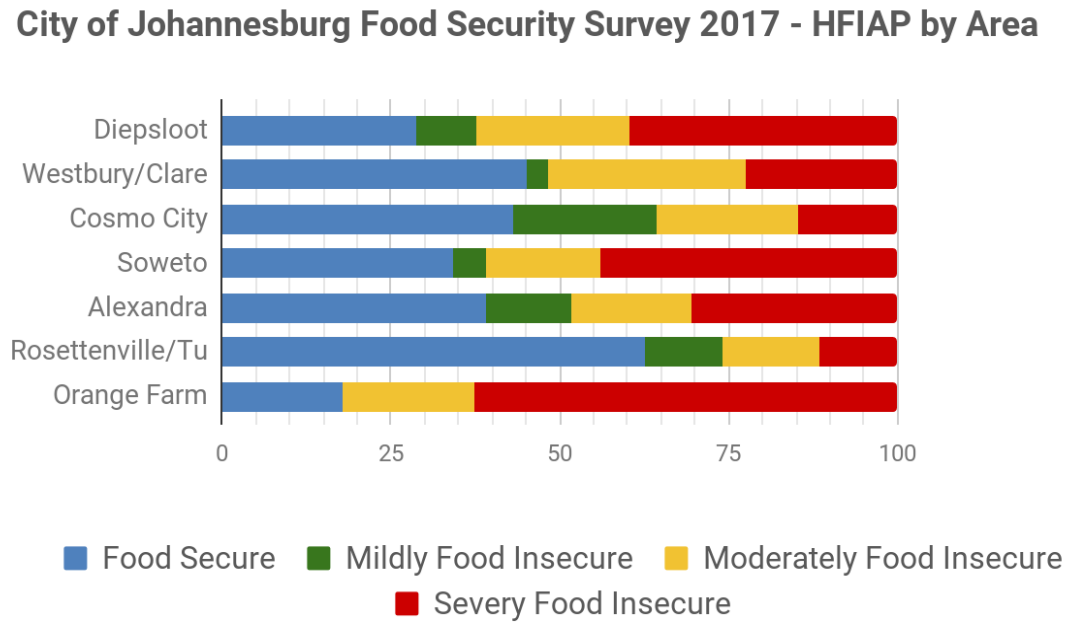
HOUSEHOLD FOOD INSECURITY ACCESS PREVALENCE (HFIAP)



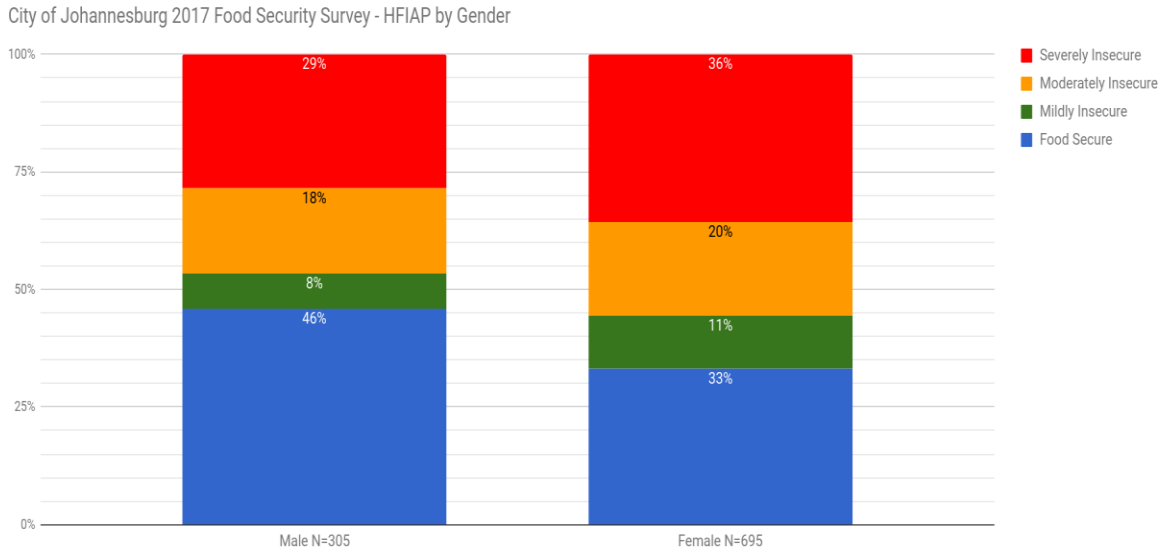
The HFIAP reflects the degree of food insecurity of the sample population in terms of four discrete categories of increasing severity. The overall HFIAP findings of the survey clearly showed high levels of severe food insecurity (37%), with slightly more than a third considered as food secure. This is in alignment with previous studies which found that between 27%[20] and 41%[21] of households surveyed were severely food insecure, with about a third positioned in the middle ground of mild or moderate food insecurity. The apparent discrepancy between this finding and the HFIAS scores reported above can be explained by reference to the scoring criteria for responses to the questions which explored more severe experiences of food insecurity (questions 7, 8 and 9).

Disaggregated by survey sample areas, it became apparent that there were great spatial disparities in levels of food insecurity with Orange Farm, Soweto and Diepsloot reflecting very high levels of severe food insecurity. in contrast, respondents from Rosettenville, Turffontein and Westbury reported far lower levels of severe food insecurity.

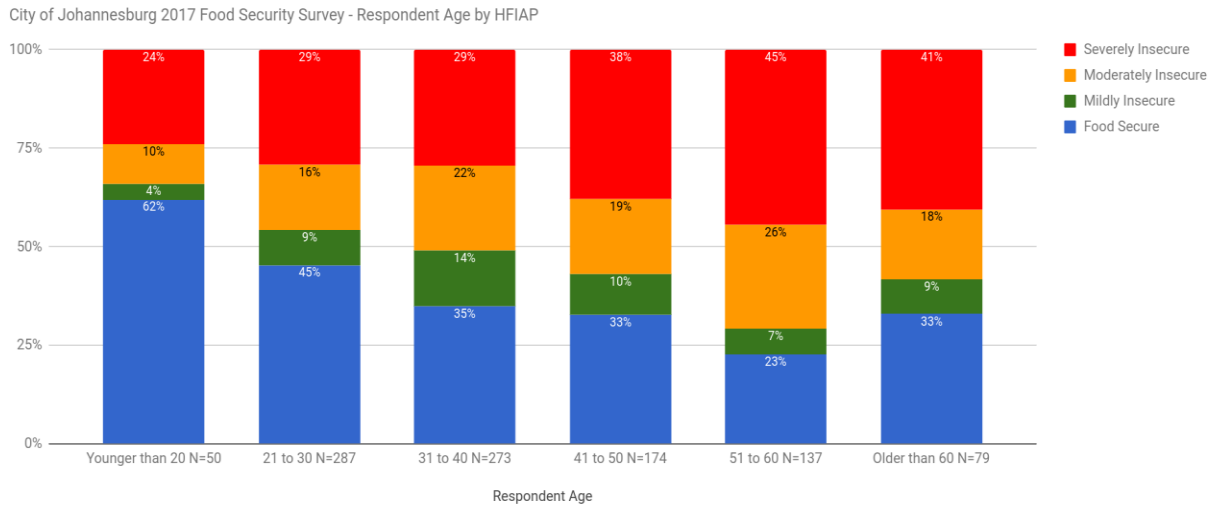
[20] Rudolph, M.J., Kroll, F., Ruysenaar, S., Dlamini, T. (2012) "The state of food insecurity in Johannesburg." Urban Food Security Series No. 12. Queen's University and AFSUN: Kingston and Cape Town.
[21] T. De Wet, L. Patel, M. Korth and C. Forrester, Johannesburg Poverty and Livelihoods Study. Johannesburg: Centre for Social Development in Africa, 2008



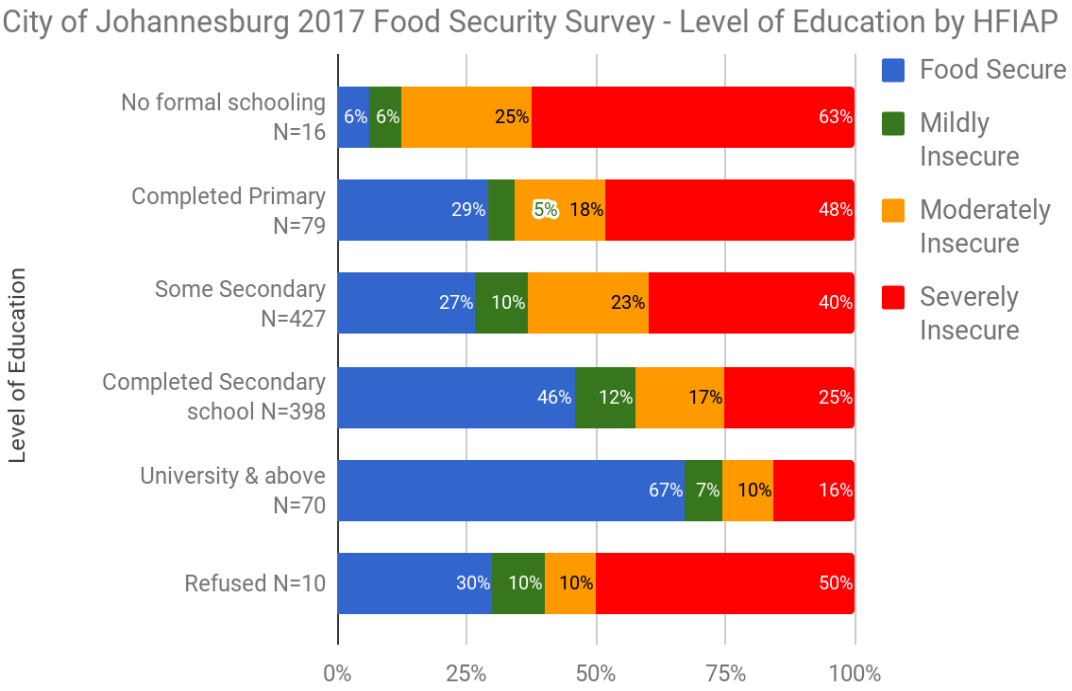
Cross tabulations showed further correlations between HFIAP status and other socioeconomic variables as shown in the tables below:



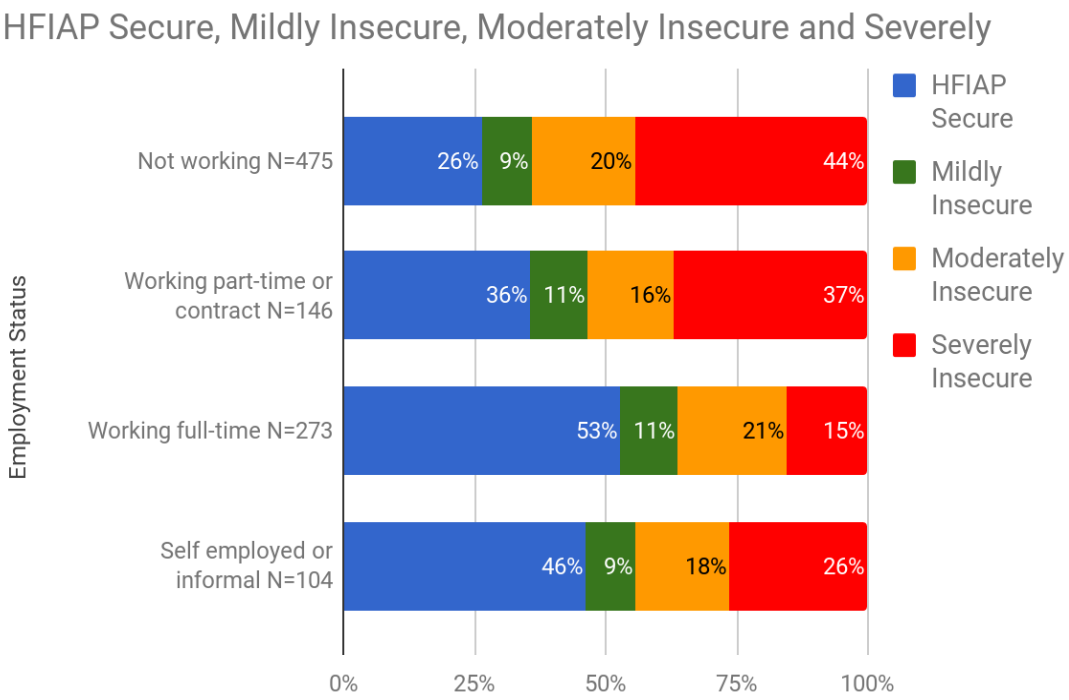
Thus, female respondents consistently reported higher levels of food insecurity, with 36% severely food insecure compared to 29% of male respondents who reported severe food insecurity. This once again highlighted the multiple disadvantages faced by women as the primary custodians of food provisioning in the household. As previously observed these disadvantages included lower levels of employment and education.



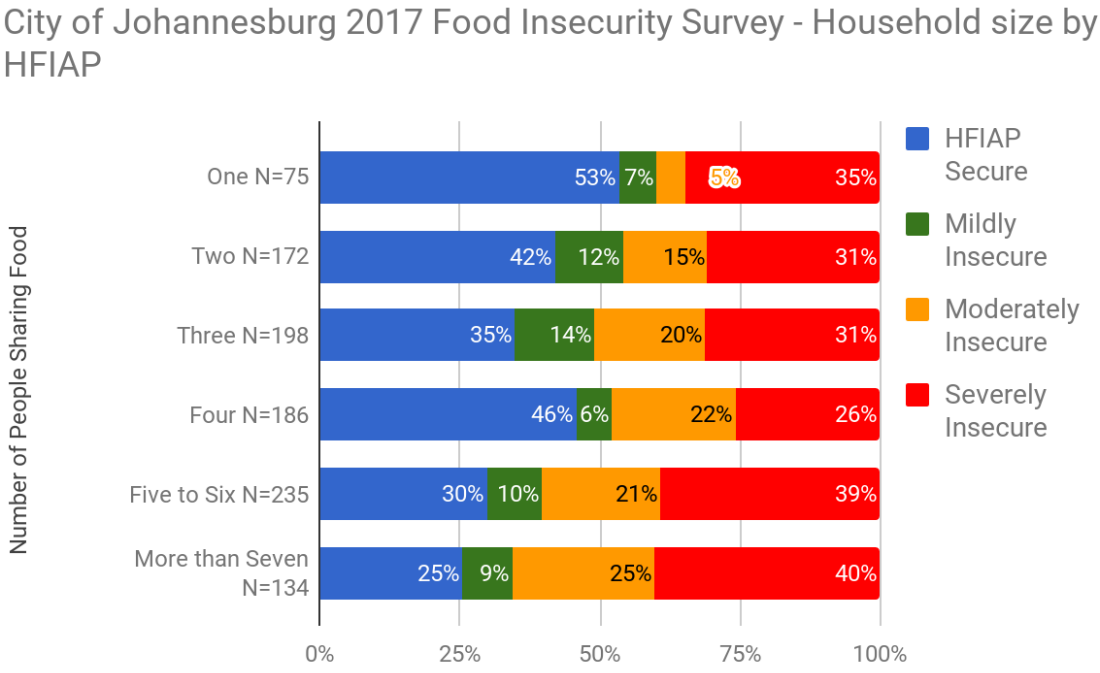
Also more vulnerable were the households of older respondents - 38% households with respondents between 41 and 50 were severely food insecure as opposed to 29% of households whose respondents were between 30 and 40. Older respondents were even more likely to be severely food insecure (45%).



Similarly, level of educational attainment correlated negatively with food insecurity - 48% of people who had completed only primary school were severely food insecure compared with 25% of respondents who had completed secondary school. However, even completing tertiary education was no guarantee against severe food insecurity, with 16% of respondents in this category who reported severe food insecurity.



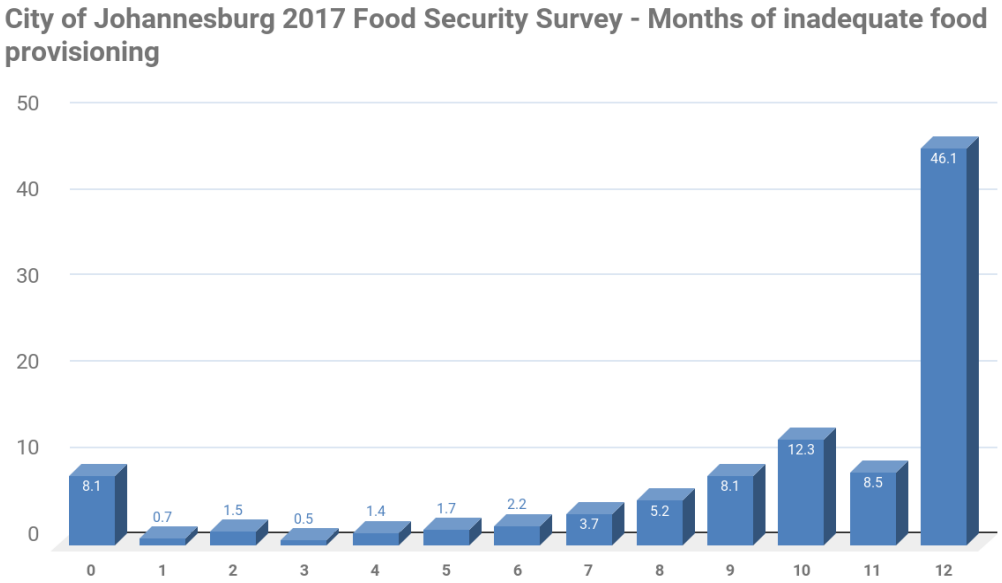
Educational attainment influences peoples' employment opportunities and access to higher-paying jobs translates into greater food security. Thus, 44% of respondents who were not working were severely food insecure, while only 16% of respondents reporting full-time employment reported severe food insecurity.



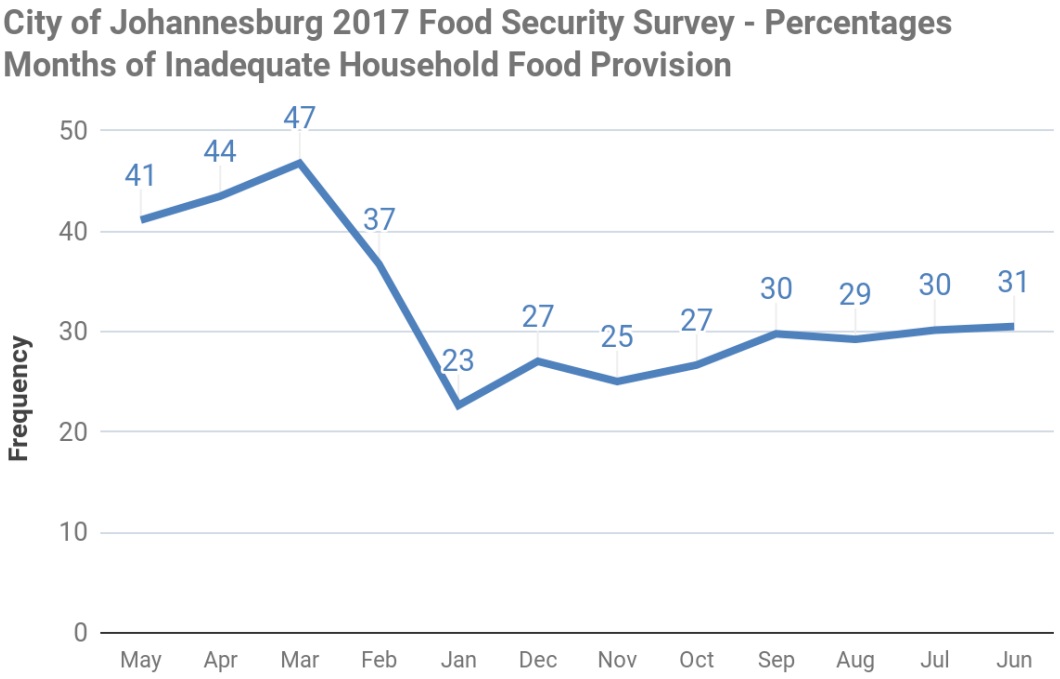
The need to stretch incomes to feed more mouths in larger households meant that larger households tended to be more food insecure than smaller ones. 40% of households of 7 or more members sharing food were severely food insecure, while households of four appeared least food insecure, with 26% reporting severe food insecurity.

These cross-tabulation findings revealed that specific demographic variables such as older people, being female, having a poor education and unemployed correlated with higher levels of food insecurity. It is important to clarify that correlation does not imply causation, and that all of these variables are likely to be interdependent. It does, however, emphasise the importance of social safety nets supporting the elderly and women, and the powerful role of wider economic factors such as unemployment and poor education in entrenching poverty and food insecurity.

MONTHS OF INADEQUATE FOOD PROVISIONING (MAHFP)

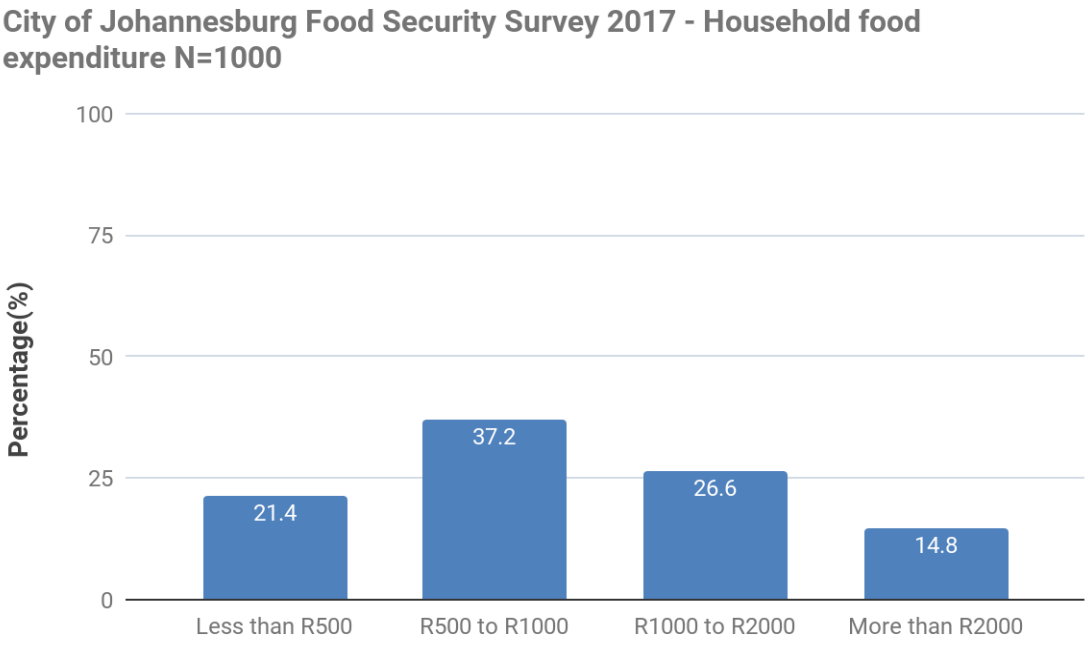


The MAHFP score indicated that just less than half of respondents reported experiencing no months of inadequate food provisioning in the previous year, and about 30% experienced 3 months or less of inadequate food. A small minority (8%), however, reported experiencing inadequate food provisioning every month of the past year, reflecting a small group of households which appeared to be trapped in chronic food insecurity.



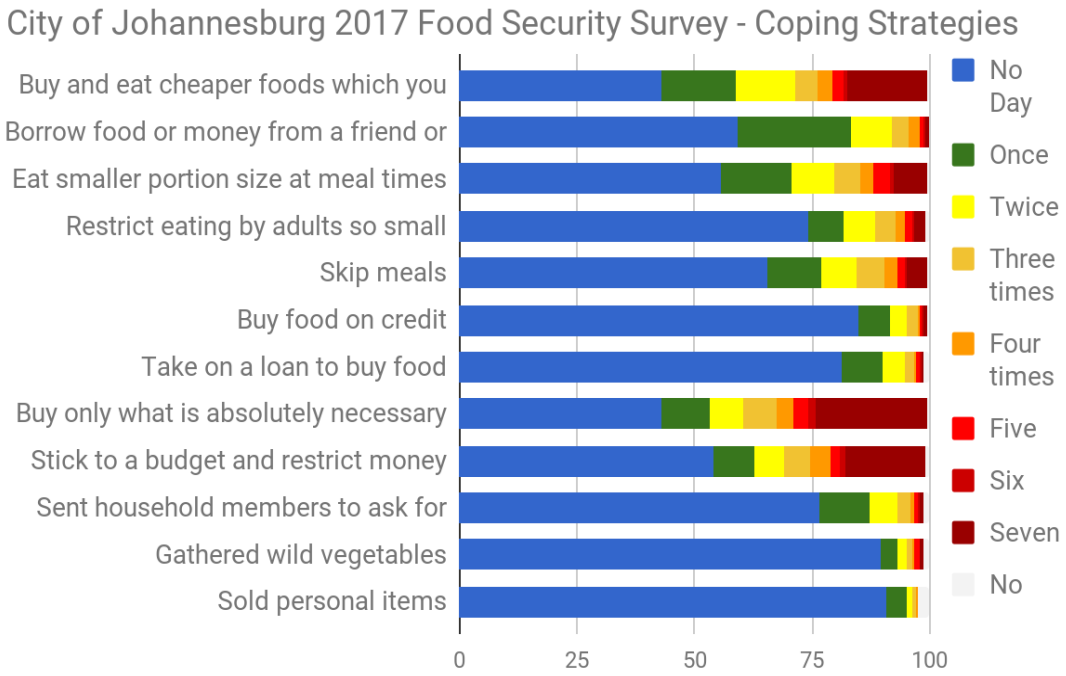
The distribution of months during which food provisioning was inadequate showed that, while December 2016 and January 2017 appeared to have been fairly "good" months, during which food inadequacy was comparatively low, February, March, April and May 2017 seemed to have been problematic for many households, with almost half reporting inadequacy in March. This indicated that there seems to be some temporal variation in food inadequacy. This may be linked to employment and holiday cycles (March and April being months around costly Easter holidays), or to food price increases. This finding requires further interrogation, ideally through qualitative methods including focus group interviews. Furthermore, the survey was carried out in June, and thus respondent's recall of more recent months of food insecurity were likely to be clearer.

7.3 Food Expenditure



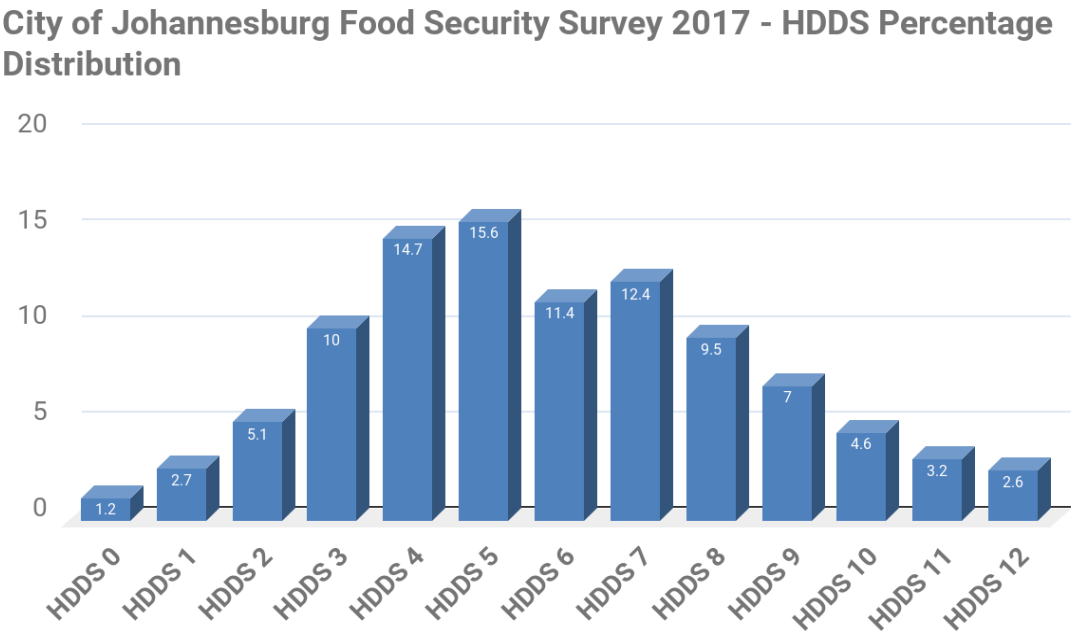
Most households spent a thousand rand or less each month on food. According to PACSA food price barometer 2017, a basic diet for a family of four costs R2068.35; a minimum nutritional basket R4480.76, This indicated that most respondent households were unable to afford even the basic food basket, while a nutritionally adequate diet was simply unaffordable for the vast majority of respondents.

7.4 Coping Strategies

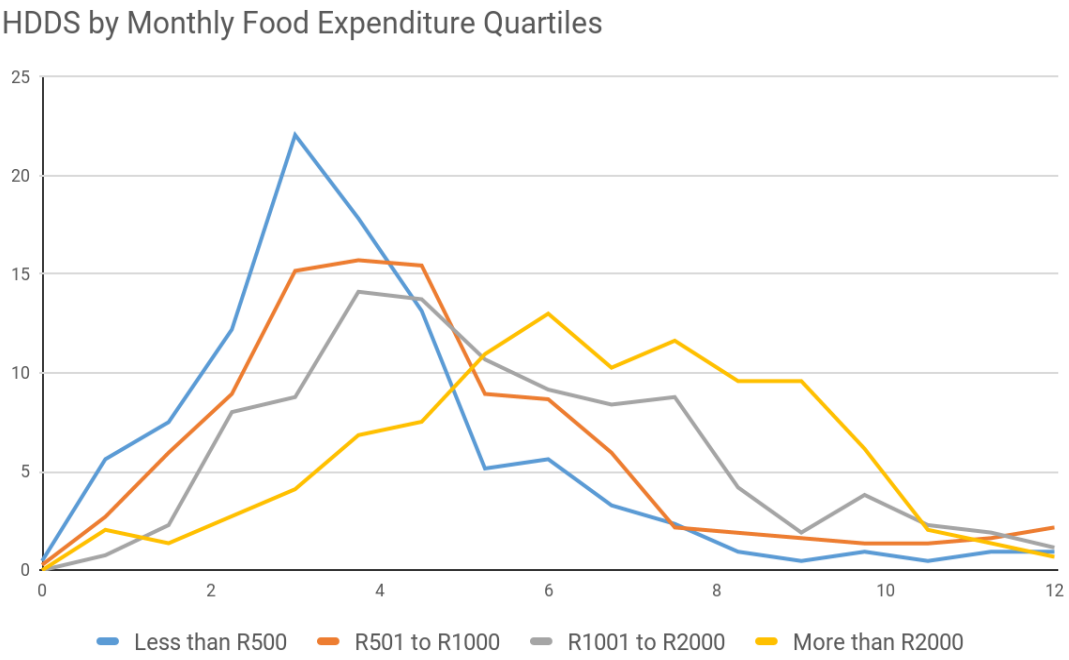


Food insecure households used various strategies to make ends meet despite lacking money. The most commonly used and frequently employed strategies reported by respondents to this survey for the preceding week included buying and eating foods which are less preferred (56% at least once in the previous week), buying only what is absolutely necessary (57%), sticking to a budget (45%), reducing portion sizes (44%), and borrowing food or money from friends or relatives (40%). Very few households reported selling personal items, gathering wild vegetables, or taking on credit in order to buy food.

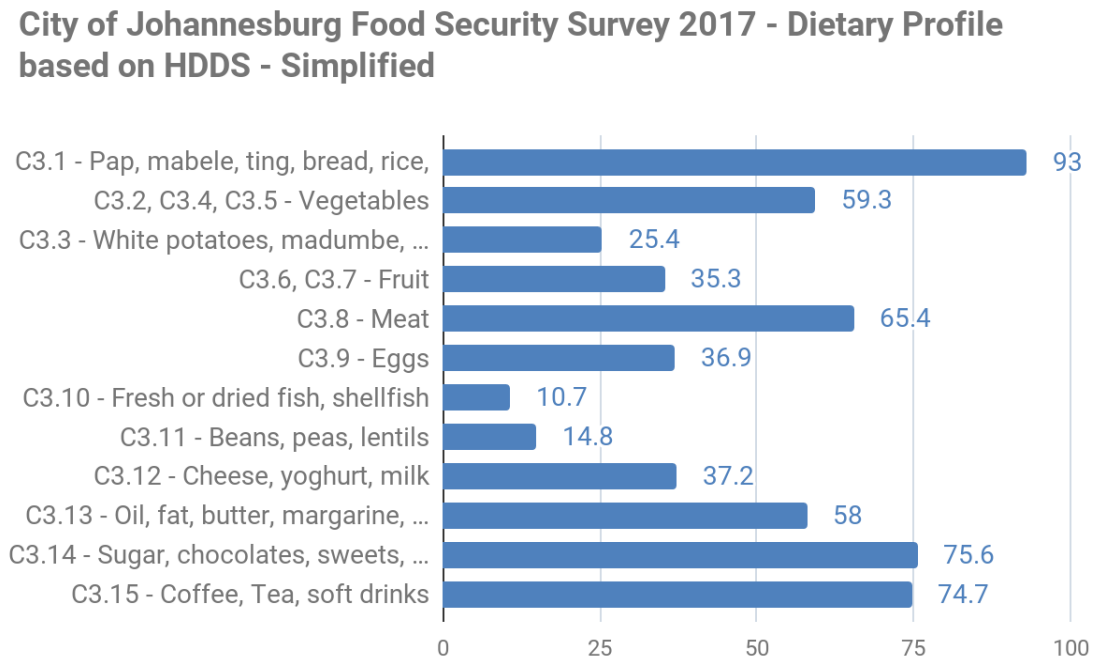
7.5 HOUSEHOLD DIETARY DIVERSITY SCORE (HDDS)

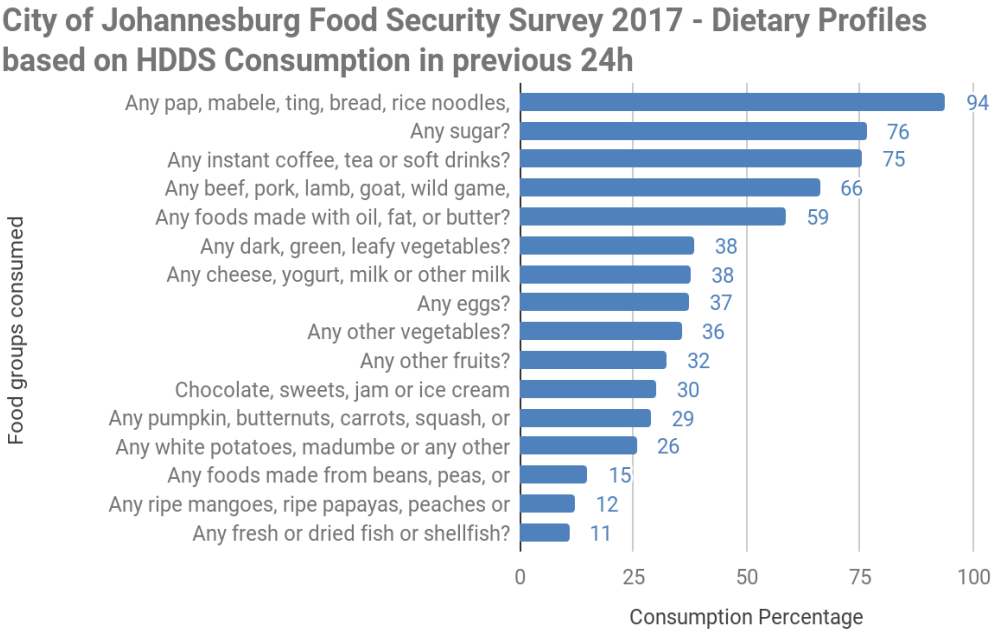


The average household dietary diversity score for this sample was 5.8, towards the middle of the distribution. However, the distribution reflected that approximately 19% reported a HDDS lower than 4, indicating very low dietary diversity.



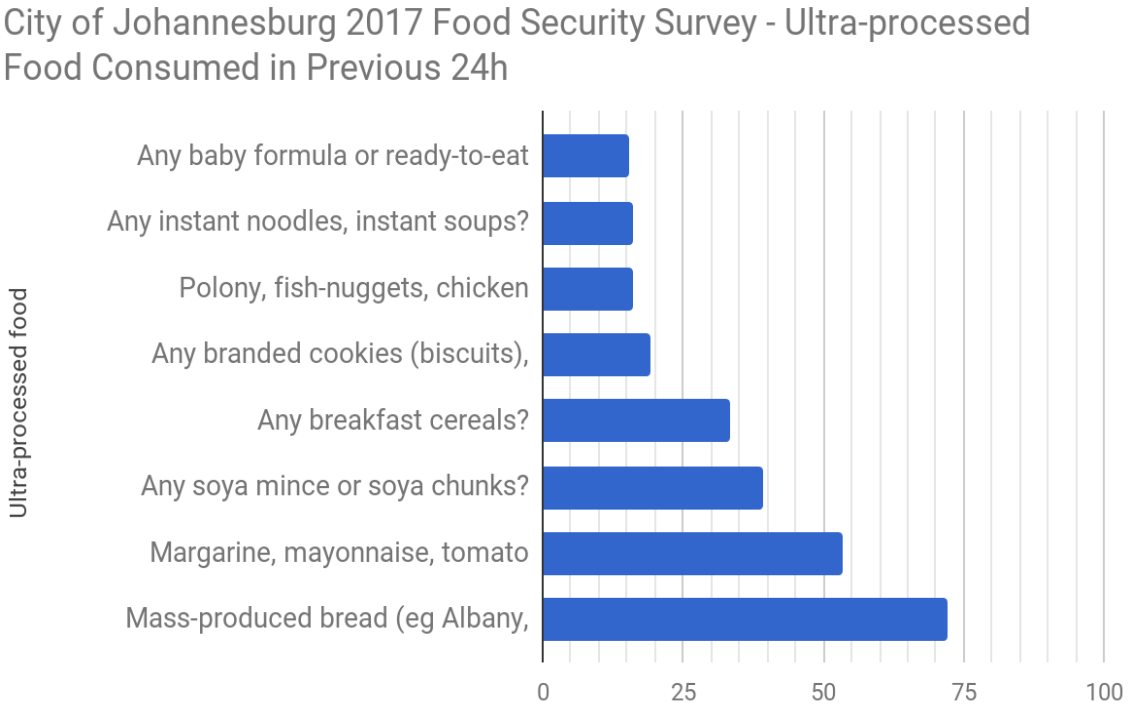
Cross-tabulation of HDDS scores by food expenditure quartiles clearly showed that increased food expenditure correlates positively with dietary diversity, although this only becomes clear in the highest expenditure quartile.





The Dietary Profile chart showed what the most commonly consumed foods were, indicating a heavy reliance on starchy grain-based foods, sugar, sweetened hot beverages, and meat. Although the aggregate scores reflected a fairly high consumption of vegetables, the detailed chart revealed that the consumption of Vitamin-A rich

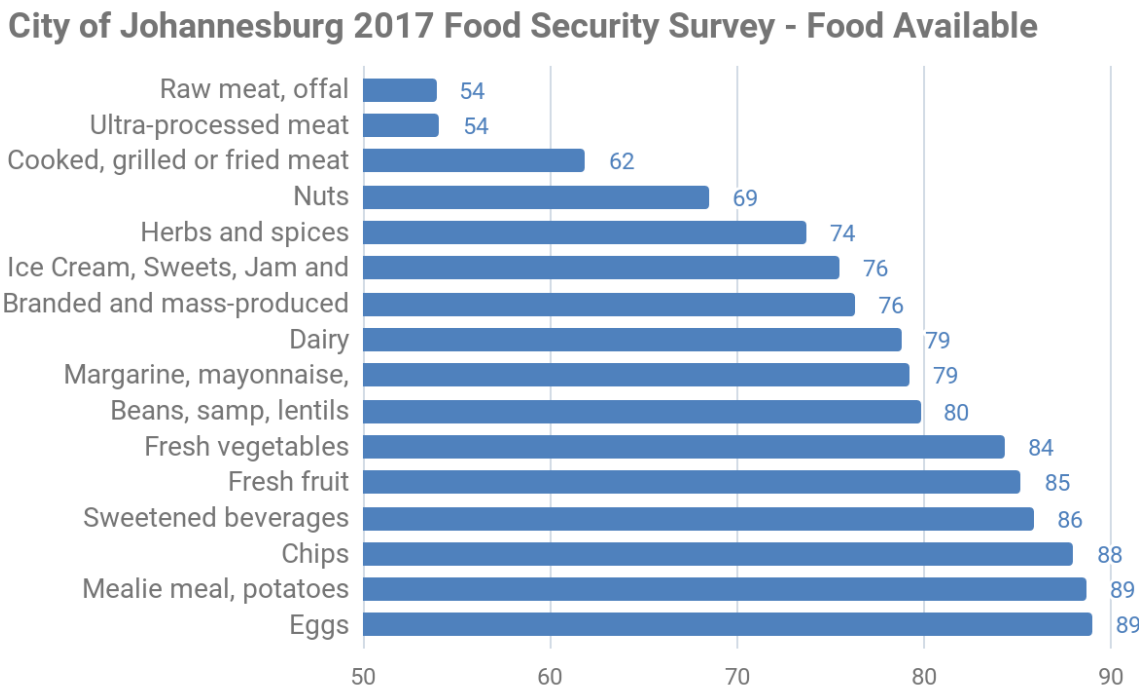
vegetables is low (38% DGLVs; 29% butternuts etc). This dietary profile reflected consumption patterns which promote the development of non-communicable diseases and undermine immunity to infectious illnesses.



The survey also probed respondents' consumption of ultra-processed foods as these are implicated in the rise of non-communicable illnesses worldwide[22]. Mass-produced bread appeared to be the primary and most frequently consumed form of highly- or ultra-processed food reported by respondents, with just over 70% reporting consumption. However, the low frequency of consumption of several other categories known to be fairly common suggested that these categories (e.g. polony, which is commonly consumed in the street food "kota") may have been under-reported, possibly due to issues of questionnaire comprehension by enumerators or respondents. These results must therefore be interpreted with some caution.

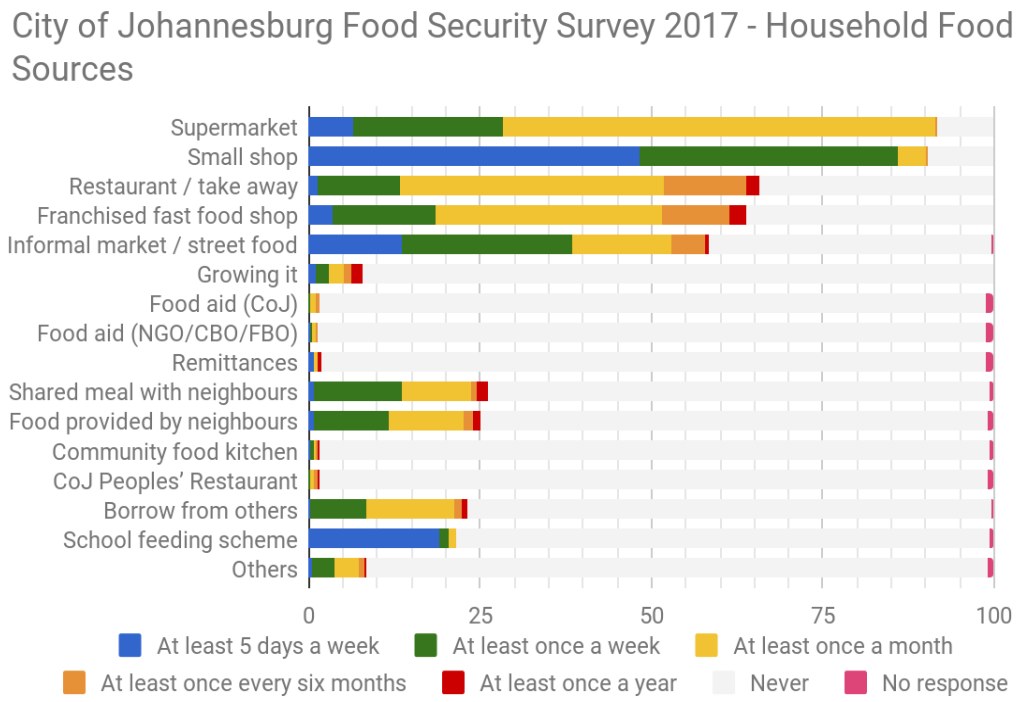
[22] Monteiro et al 2017

7.6 Food Environments



Due to the costs involved in traversing the spatial divides of a city like Johannesburg, the food available locally is believed to play a significant role in influencing food consumption. The food environments chart showed that eggs, mealie meal and potatoes, chips, sugar-sweetened beverages, fresh fruit and vegetables are widely available within a ten-minute walk of most survey respondents. By contrast, meat seemed far less easily available within walking distance. Nevertheless, these findings confirm that in the city of Johannesburg, food insecurity is not necessarily a result of lacking availability and but is closely linked to economic factors.

FOOD SOURCES



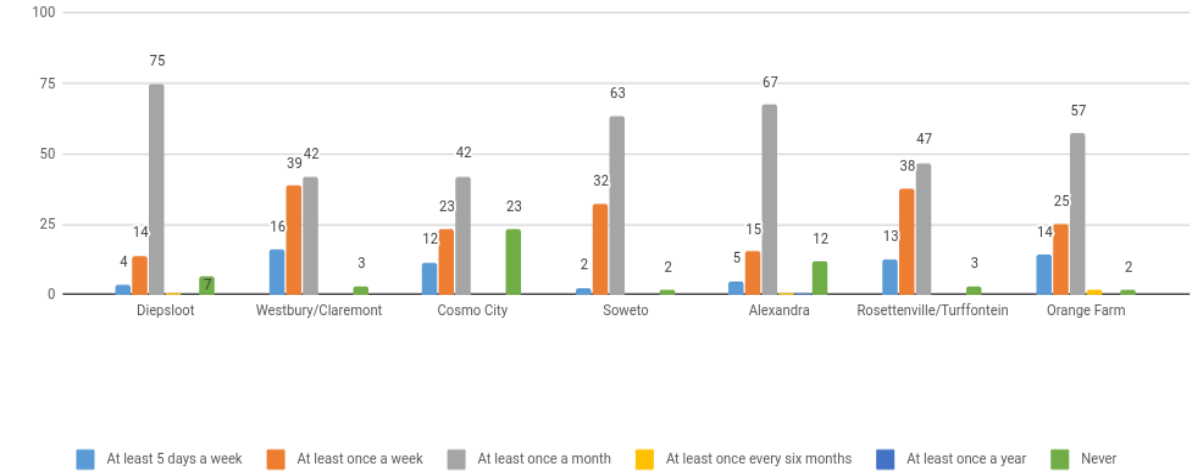
A review of food sources suggested that supermarkets are a common source of food for respondents, with over 90% indicating this as a food source. However, supermarkets were frequented mostly on a monthly basis. By contrast, small shops and spazas were far more frequent sources of food, with almost half of respondents reporting this source at least 5 days a week, and more than 85% reporting it at least once a week. Informal markets and street foods were also important sources of food, with more than 35% indicating this as a source at least once a week. Food service outlets were also commonly frequented, though less often than other sources, with about half of respondents reporting this source at least once a month.

Social networks appeared to be important sources for a minority of respondents; about 10% reported relying on various social relations at least once a week. By contrast, food aid via NGOs or the City of Johannesburg, community food kitchens and CoJ peoples' restaurants was negligible. This could have been as a result of few such programmes operating within the areas sampled, but also suggested that such initiatives are too few and poorly-resourced to offer a significant alternative channel for food access.

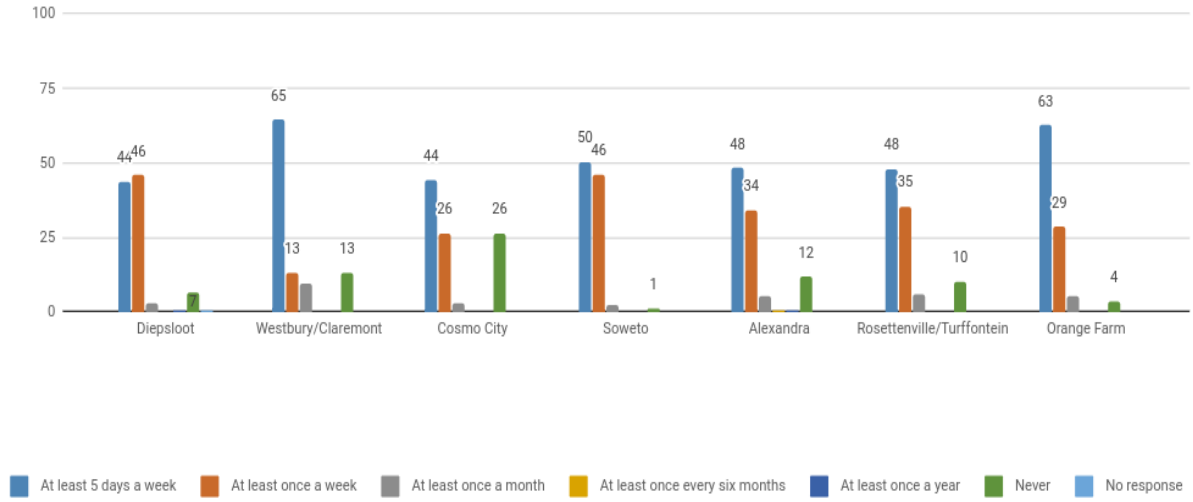
Food gardens also represented a very small and infrequently-used source of food, with less than 5% of respondents reporting this source at least once a month. This confirmed previous findings by AFSUN[23]

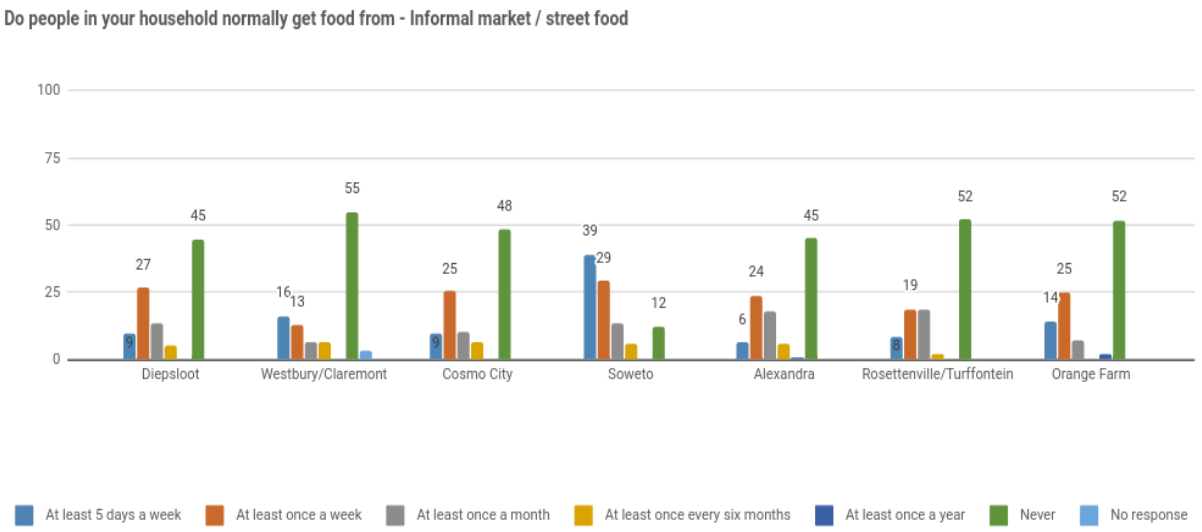
[23] Crush, J.; Hovorka, A.; Tevera, D. (2010). "Urban Food Production and Household Food Security in Southern African Cities." Urban Food Security Series No. 4. Queen's University and AFSUN: Kingston and Cape Town.; Frayne, B., McCordic, C. & Shilomboleni, H. (2014) Growing out of poverty: Does urban agriculture contribute to household food security in South African cities? Urban Forum 25, 177-189.;

Do people in your household normally get food from - Supermarket



Do people in your household normally get food from - Small shop





8.0 SUMMARY AND DISCUSSION OF KEY FINDINGS

The survey gathered data from a sample of 1000 respondents across 7 wards across the city using a set of standardised household food security indices complemented by demographic and economic questions.

Demographic Findings: Respondents were predominantly female (69%), the majority (61%) under 40. More than half of the respondents reported that four or more people normally ate together in a household. 59% of respondents indicated that they were the household heads, and 61% that they were the primary breadwinners. Levels of education were moderate, with only 47% having completed secondary education. 47% were unemployed, with women more likely to be unemployed. 47% received social grants. 85% of respondents reported spending less than R2000 each month on food, significantly below the R2068.35 minimum food basket, showing that the vast majority of households were unable to afford even the minimum food basket, while the more costly nutritionally-balanced food basket was almost entirely unattainable.

The demographic findings reflected that the sample population was compromised from a socio economic aspect, with high levels of unemployment, low levels of education and low food expenditure. Nevertheless, fairly large numbers of people generally eat together, implying that the limited resources were stretched quite far to feed household members. For many of these people, social grants mitigated against severe and chronic food insecurity and malnutrition. These findings also revealed the important role played by women in food provisioning and that women appeared particularly disadvantaged in terms of levels of education and employment.

Food Security Findings: The HFIAP reveals that ***approximately one in three respondent households appears severely food insecure***, and one in three mildly or moderately insecure. This suggests that ***within the greater***

Johannesburg metropolitan area[24], about 6 million people may be food insecure. The sheer scale of food insecurity confirmed that this is an issue with massive negative consequences for public health, human development, economic productivity, and social cohesion. By comparison, budgetary allocations, food security planning and intervention programmes are desperately under-resourced and inadequate, particularly considering that most interventions are agriculturally-oriented and focused on the distribution of tools or food parcels.

The **Months of Adequate Household Food Provisioning** Score revealed that, while almost half of respondents reported adequate food provisioning throughout the year, about 30% reported inadequate provisioning for 3 months or less each year, while about **8% reported chronically inadequate provisioning throughout the year**. This suggests that a sizeable segment of the Johannesburg population which experiences periodic food shortages, while there is a small but significant segment which is trapped in chronic food insecurity throughout the year and requires urgent support to avoid acute and long-term consequences of food insecurity.

To cope with food insecurity, households frequently buy and **eat foods less preferred** (56%), **buy only what is necessary** (57%), **stick to a budget** (45%), **reduce portion sizes** (44%), and **borrow food or money** from friends or relatives (40%). This means that dietary quality and quantity is reduced and that social capital is eroded to cope with food insecurity.

The household dietary diversity score reflects that about **one in five households has very low dietary diversity**. In the 24 hours preceding the interview, the majority of households consumed starchy (93%) and sugary food and drinks (76%) along with meat (65%), while healthier fruit, vegetables (dark green leafy vegetables 38%, Vitamin-A rich vegetables 29%) and pulses are consumed less widely. A large majority (72%) reported consuming the highly-processed industrial bread commonly known as "government loaf". **This dietary profile reflected a high intake of starchy and sugary sources of energy, with a low intake of fibre, plant proteins, or micronutrients. This pattern implied a high risk of non-communicable diseases such as diabetes, obesity, hypertension and heart disease as well as reduced immunity to infection.**

To source food, respondents rely primarily on market channels. Although most respondents buy from supermarkets, they did so infrequently for monthly provisioning, relying on spazas, small shops and street traders for more frequent food access. This finding highlighted the important role played by the informal food retail sector in making food available close to where poor people live, and in quantities affordable to them, reflecting a complementary relationship between supermarkets and informal food retailers.[25]

Urban agriculture provided food only to a small minority (8%) of respondents, and then infrequently. This once again raises concerns about the usefulness of food security programing which foregrounds agricultural interventions, especially in densely-settled urban areas where amongst other factors there is inadequate land to permit cultivation of food, water scarcity, inadequate or poor training, inadequate tools, poor pest management. This tends to confirm research which questions the usefulness of current urban agriculture interventions to

[24] Population ca 9.823 million according to the world population review http://worldpopulationreview.com/world-cities/johannesburg-population/

[25] Peyton, S.; Moseley, W.; Battersby, J. 2015. Implications of supermarket expansion on urban food security in Cape Town, South Africa. African Geographical Review, 2015

address food insecurity[26], although there are evidently other potential benefits to urban agriculture (greater social cohesion, a sense of place, ownership and participation, etc)[27].

Food environments appeared to offer the large majority of respondents access to most foods within 10 minutes' walking distance, especially starchy staples and affordable proteins, but it was clearly evident that sugar-sweetened beverages and chips were particularly accessible. This suggested that food environments promoted diets which contribute to non-communicable diseases.

The data revealed that **particular socio-economic groupings were especially vulnerable** to food insecurity, including the older persons, women, the unemployed, and people with low levels of education. This highlighted the powerful role of wider systemic and economic forms of disadvantage. It also emphasised how important social safety nets are in providing at least some marginal relief. Varying levels of food insecurity throughout the different research sites also show spatial inequalities of disadvantage and poverty, with households in the more remote, informal areas like Orange Farm, Diepsloot and Soweto especially disadvantaged.

Very few respondents appeared to be participating in food relief projects run by the City of Johannesburg, or from other feedings schemes. Considering the massive scale and systemic roots of the problem, and the very limited resources allocated to the primarily redistributive, project-based and agriculturally-focused interventions conducted as part of the city's food resilience programme, it doubtful that the interventions are having any significant impact on the large majority of residents who experience food insecurity.

[26] Crush, J.; Hovorka, A.; Tevera, D. (2010). "Urban Food Production and Household Food Security in Southern African Cities." Urban Food Security Series No. 4. Queen's University and AFSUN: Kingston and Cape Town.; Frayne, B., McCordic, C. & Shilomboleni, H. (2014) Growing out of poverty: Does urban agriculture contribute to household food security in South African cities? Urban Forum 25, 177-189.;

[27] Battersby, J.; Marshak, M. 2013. Growing Communities: Integrating the Social and Economic Benefits of Urban Agriculture in Cape Town. Urban Forum (2013) 24:447–461

9.0 KEY MESSAGES

- CoJ has positioned Food Security high on its objectives for its 2040 GDS. This offers a unique opportunity to put food security policies and related strategic plans in place.
- Food Security is a major problem and needs to be addressed by a cross sectoral and integrated approach.
- Hunger, malnutrition, food insecurity, poverty, poor education and unemployment are inextricably linked with resource scarcity and a complex web of social, economic, health drivers.
- COJ's food security plan requires improved governance, better management and a broader understanding of structural drivers and addressing them with sound policy action, involvement and coordination of various departments and active participation of communities.
- Core communication is needed to consolidate essential conclusions for decision makers in an accessible and consistent format.
- To comprehensively address the underlying causes of hunger, malnutrition and food insecurity through policy and strategic plans but simultaneously maintaining the necessary support for local food assistance.
- CoJ must address the high prevalence of obesity, diabetes, chronic heart disease.
- CoJ has an ambitious and comprehensive Food Resilience Programme. However the impact of this programme is limited.
- Urbanisation is creating a large number of poor food buyers who spend a small amount but large percentage of their income on buying staples which include highly processed food.
- There are genuine opportunities for smallholder farmers/household gardeners to increase access to food, address malnutrition and reduce poverty.

10. CONCEPTUAL FRAMEWORK FOR IMPLEMENTATION (CFI) AND RECOMMENDATIONS.

10.1 CONCEPTUAL FRAMEWORK

The conceptual Framework for implementation applies to Implementation fidelity of the suggested interventions . Implementation fidelity refers to the degree to which an intervention or programme is delivered as intended. The proposed CFI assists in achieving the desired outcomes in all phases (short, medium and long term), of the 2040 Strategic Plan.

To establish a dedicated management, coordination and communication Unit for food security in the Strategy***, Policy Coordination & Relations Unit.***
Workshop with the City of Johannesburg's ***Strategy, Policy Coordination & Relations Unit t***o thoroughly interrogate Food Security report including methodology, findings interpretation and recommendations which could then be shared with other key stakeholders in COJ .
Inter departmental seminar and workshop including inter-departmental food security workgroup. Participation should be mandatory and supported by appropriate human resources and budget allocations. The workgroup should report directly to the city manager and should include senior representatives from at least the following departments: -Health -Social Development -Housing -Economic Development -Environment and Infrastructure services -Community Development -City Parks -Regional Managers -and Other key stakeholders.
Workshop with Social Development and in particularly food unit but also Policy and M&E units
Several Community engagements in order to share findings and get feedback- this action aims to cultivate community and beneficiary participation, involvement and ownership of the intervention process. This process could make ward councillors, (who may not have the relevant skills or knowledge), responsible for driving the process, particularly the identification of beneficiary households. Furthermore community involvement, participation and decision making are key factors for any successful intervention. This requires great skill, investment in time and good communication
Awareness and publicity campaigns to inform and mobilise community about Food Security in its broadest understanding
Liaising and collaborating with researchers involved with studies such as Social Cohesion and Youth Unemployment commissioned by the City of Johannesburg's ***Strategy, Policy Coordination & Relations Unit, but could include other relevant research.***

10.2 RECOMMENDATIONS AND INTERVENTIONS

Food security interventions should be considered across the food chain continuum, from addressing the need for emergency assistance in times of severe food insecurity to ensuring people who are currently food secure remain food secure. In order to address food security, interventions need to involve a multi-strategy and integrated approach, ranging from upstream initiatives such as broader, systemic policies and strategic plans, increasing sustainable local food supply options to downstream initiatives such as emergency and daily relief of food assistance. This approach will ensure a coherent, predictable and comprehensive response. However, every effort will be needed to translate previous and current recommendations and proposed interventions made to CoJ into more effective, efficient and accountable tangible actions which will have the desired impact and outcomes.

These systemic recommendations include:

- **Elevate the food security mandate**. In recognition of the severity, scale and cost of urban food insecurity, the food security mandate should be elevated to a position that commands greater influence at the strategic level, ensures cross-departmental co-ordination, and receives significantly greater resourcing.

- **Increase investment in food security research**, development and extension and in particular the agro-ecological approach.

- **Buy-in and involvement of all stakeholders.**

- **Training, capacity building in food governance** and security for senior management, middle management, (Food Unit), farmers and household gardeners and the wider community (women, youth and vulnerable groups).

- **Grow capacity to monitor food security** regularly and with large data sets. To enable the city to monitor and track food security status regularly, there is a need to develop in-house capacity to gather, analyse and interpret food security data in partnership with academic institutions and other agencies.

- **Reduce hunger and malnutrition** (including micronutrient deficient) by improving dietary diversity, increasing local agricultural production and improving access and affordability to staple and a wider range of nutritional food.

- **Review CoJ's Food Resilience Strategy Programme**. The current food resilience strategy proposes a complex and ambitious series of interventions focusing on distribution of food relief packages, urban agriculture support, and people's restaurants. A recent review of the programme has revealed that the programme is inadequately resourced, logistically challenging, at too small a scale to be able to have a significant impact given the prevalence of food insecurity, and designed on a project basis rather than on systemic interventions. While the programme may bring valuable benefits to the small number of people it is able to reach, it is therefore unlikely to have a significant impact on the hundreds of thousands of food insecure people within the city. The programme therefore requires not only significantly greater resourcing, but also fundamental revision to adopt a more systemic and food governance based approach.

- **Re-orient and review of the strategy and policy towards transparent and participatory food systems governance** through the drafting of a food charter, institutionalisation of a food policy council and sustained participatory governance processes.

- **Enhance support for women, mothers, and the elderly** in terms of access to education, employment, and social grants. Demographic data suggests that women, the elderly, and those with low levels of education are particularly vulnerable. Hence, city-wide programmes aimed at supporting these vulnerable groups would have significant indirect impact on food insecurity.

- **Develop capacity for food governance**. This will require the development of cross-departmental leadership capabilities which are well-informed around food security and urban food systems issues. Appropriate training and decision support would be essential to grow leadership capacity to engage with this complex and contested issue. This leadership would also need to be located in appropriate structures which transcend narrow departmental mandates, which enable cross-departmental alignment around this important issue and which carry enough authority to ensure effective collaboration.

- **Develop system-wide interventions to enhance viability of urban food production**. Such interventions should enhance ease of access to suitable and under-utilised land, water, labour, and compost derived from urban waste streams. To reduce administrative burden and speed up access, approval should not require adjudication and management on a project-by-project basis but should be streamlined and standardised across all regions. Agricultural support should shift emphasis to low-external-input, agro-ecological methods in training and skill development, mentoring and coaching. There is also need for greater emphasis on entrepreneurial and small case business skills and training in effective cooperatives. Farmers should be involved in training, decision-making and technology development. Explicit and improved linkages between urban farmers and informal markets should be cultivated. Urban farmer groups require enhanced organisational development and cultivation of social capital. CoJ needs to develop greater capacity to implement agricultural programmes through skills and leadership development, information and communication technology, as well as significant budget increases

Although short, medium and longer term interventions have been recommended, these can run concurrently but obviously with some priorities identified in the short term and thereafter extending and building on short term successes. The following interventions include;

Short-term and Medium term

- **Soup Kitchens**- COJ needs to set-up soup kitchens to support the most vulnerable communities, for example women and older people and the inner city homeless populace. The Central West Gippsland-Food Security Recommendations Report[28] (2012) and Committee on World Food Security (CFS) (2011) supports the use of soup kitchens as immediate response to food shortages.

- **Community Kitchens**[29]- Regularising and providing of infrastructure for community kitchens. The concept of community kitchens is not new and is included as People's Restaurants in the CoJ's Food Resilience Programme. However community kitchens are slightly different from People's Restaurants. The Community Kitchens have proved to have had a positive impact on individual life skills and knowledge in healthy cooking, shopping and budgeting and could also be an opportunity for job creation and entrepreneurship.

[28] http://www.centralwestgippslandpcp.com/wp-content/uploads/2013/08/FS-Rec-Report-CWGPCP-FINAL-FINAL.pdf
[29] http://communitykitchens.org.au/what-is-a-community-kitchen/

- **Address health problems in collaboration with the CoJ`s Department of Health**. The CoJ strategy includes the Healthy Lifestyles initiative, but this is limited to school's needs. This programme should be spread to clinics and other community settings. This food and nutrition challenge threatens the wellbeing of communities and impacts on the economic growth. Malnourished mothers are more likely to give birth to low weight infants leading to stunted growth, perpetuating an intergenerational cycle of hunger, malnutrition and poverty.

- **Food Co-Ops**- Adoption of Food Coops is critical in addressing food insecurity to the urban poor. Food Coops have showed success in Australia and other African countries like Ghana and Kenya. The Food co-ops provide affordable, low packaged (bulk) food, fruit and vegetables; Their aim is to provide cheap and subsidised food to the vulnerable communities. Food co-ops have the potential to increase food access and affordability as well as provide opportunities for local farmers and food producers.

- **Planning new research and setting-up M&E systems.** We recommend the use of built-in monitoring strategy which incorporates the Enterprise Monitoring Strategy (EMS) - a Strategy which provides an integrated monitoring and management tool using a database and data capturing software. The EMS will facilitate traceability. Furthermore recent innovations in information and communication technology could facilitate the rapid collection and aggregation of survey data by crowdsourcing survey data via mobile data collection platforms such as Open Data Kit. Existing systems have been developed by UJ researchers and have been effectively applied in Cape Town by the Hungry Cities Project.

- **Embed food governance strategies and structures** in relevant policy documents such as the CoJ GDS 2040, IDPs and make adequate budgetary provision for this within SDBIPs.

- **Extend social safety nets through NGOs and CBOs.** Even though few respondents indicated that they received food through civil society initiatives, such initiatives have existing capacity and reach which could be leveraged to bolster the city's limited resources. By developing a system of targeted grants supporting the purchase, preparation and distribution of food to the needy by organisations already active in impoverished neighbourhoods, the City could extend the reach of current food aid programmes. The procurement of such food should be incentivised to promote sourcing from small-scale urban and peri-urban farmers, possibly from satellite fresh produce markets.

- **Support and up-scale public awareness campaigns** such as Izindaba Zokudla and the Soweto Eat-in to enhance awareness of food issues in the general public and among civil society initiatives.

- **Support and up-scale public awareness campaigns Review spatial planning and design guidelines**. Although informal food retail represents a key source of food for the poor, not all food traded necessarily promotes health. The city's heavy-handed strategy in engaging with informal trade must be reviewed and appropriate forms of regulation developed in close partnership with informal traders. In particular, traders selling fresh produce should be supported more actively, to enhance affordable and convenient access to health-promoting foods. Such support could entail improved provision of services including shelter, storage, access to water and electricity, training on nutrition and hygiene, and improved security. Any such interventions should take place in close consultation with representatives of informal traders. This may require extensive organisational development initiatives to support stronger internal organisation and accountability of traders' organisations. Finally, informal food traders should be protected from the alleged abuse by police officers who confiscate and damage goods, extort bribes, and

impose fines; similarly, eviction campaigns such as “Operation Clean Sweep” should be abandoned.

- The promotion of local food trails, “buy local” campaigns and agritourism initiatives.

- **Establishing model food gardens** in each of the districts which will serve as positive examples for households, schools, parks etc. We recommend the Siyakhana Agro-ecology Enterprise Model (SAEM) which is based on proven agro-ecology production approaches. The model applies agro-ecology to the design and management of an agricultural enterprise and provides multiple revenue streams for the garden, while maintaining environmental and social consciousness (IPES-Food, 2016; Frison, 2016).

- **Establish satellite fresh produce markets.** The presence in the city’s regions of a well-located, secure and accessible satellite fresh-produce market could bring affordable fresh produce closer to informal traders and the general public alike. Such markets should be designed and built in collaboration with traders, market agents and local community organisations. Participatory governance of such infrastructure could improve the degree of local buy-in and participation. These markets should also be designed and implemented in a way that facilitates market access for small-scale urban and peri-urban farmers.

Longer-term

- **Edible Landscapes-** City of Johannesburg can established an integrated edible landscaping in the its many city parks. Edible Landscapes are where Public Orchards are planted on council land rather than the more conventional decorative trees and shrubs. The food produced by these Public Orchards is free to all members of the community to access at their own convenience. Councils can support the development and maintenance of these initiatives by ensuring town plans incorporate open spaces, parks and gardens and nature strips. Jobs and training opportunities are created.

- **Food Sensitive Planning and Urban Design (FSPUD)**-The FSPUD is a resource which lays out a framework of ideas for planners and other important decision makers to encourage a shared understanding of what is meant by food sensitive planning and the important contribution it can make to the liveability and sustainability of our towns and cities. The FSPUD matrix is a tool for exploring the integrated nature of planning and food objectives. The FSPUD also includes the review spatial planning and design guidelines for supermarkets, transit nodes and other food retail. These should be embedded in Spatial Development Frameworks (SDFs) and Urban Development Frameworks (UDFs) and Precinct Plans. The potential impact of supermarkets in terms of undermining thousands of informal traders’ livelihoods should be weighed up against their ability to provide affordable access to non-perishable food items. Planning and permitting processes should be reviewed to curb undue influence by property developers, financiers and retail corporations. Inclusive design criteria for supermarkets should be developed which ensure greater access by public transport and pedestrians, and also provide accessible and well-located trading spaces for informal fresh produce retailers and informal food service within the supermarket grounds. [30].

[30] See also Kroll et al 2016. City of Johannesburg Food Resilience Programme Evaluation Report, p33-37

APPENDIX 1 - QUESTIONNAIRE

City of Johannesburg Food Security Survey

Interviewer Details

Interviewer Name	
Interviewer no.	
Interview start time	
Interview end time	
Interview length	

"Hi, I am a researcher working with Wits University. I am interviewing people about the food they eat. Our research will help the City of Johannesburg to understand hunger and make better plans to ensure people get enough good food. "

"I would like to speak with the person in your house who normally chooses, buys and prepares the food."

A1. Are you the person who normally chooses buys and prepares the food in your house?

Yes	1 [Skip A2]
No	2

A2. "Could I please speak with the person who normally buys and prepares the food in your house?"

"Participation in this survey is voluntary. You are free to not participate and you can decide not to answer any question or to end the interview at any time. You will not be disadvantaged for not participating, and you also will not be paid any money. Your name, identity and responses will be kept confidential.

Do you understand what I have just explained and are you willing to participate in this interview?"

DEMOGRAPHICS

B1 **Gender:** Interviewer to record gender

Male	1
Female	2

B2 **How old are you?**

……	
No response	00

B3 WHAT IS YOUR HIGHEST LEVEL OF EDUCATION?

No formal schooling	1
Some Primary	2
Completed Primary	3
Some Secondary	4
Completed Secondary school	5
Professional training, apprenticeship	6
Technical college, training college, business college/school	7
University & above	8
Refused	9

B4 What is the household head's employment and work situation? **(DO NOT READ OUT: ONE MENTION ONLY)**

Not working - unemployed	1
Not working - student	2
Not working - housewife	3
Not working - retired	4
Contract employment	5
Working part-time	6
Working full-time	7
Self employed	8
Informal sector work	9

B5 How many people normally are normally fed in your home?

B6 Who is the main breadwinner in the household?

Self	1
Spouse	2
Son/Daughter	3
Father	4
Mother	5
Other relative	6
Other	7

B8 Do you receive any government grants?

Yes	1
No	2 [Goto B10]

B9 Which grant(s) do you receive?

B10 How much money do all the people in your home usually spend on food each month?

R

B11 Does your household receive any food aid from the City of Johannesburg?

Yes	**1**
No	**2**

B12 Does anyone in your household participate in a food gardening programme supported by City of Johannesburg?

Yes	**1**
No	**2**

FOOD SECURITY

Now I would like to ask you some questions about the food you eat in your home.

C1 Do people in your household normally get food from....

		At least 5 days a week	At least once a week	At least once a month	At least once every six months	At least once a year	Never	No response
C1.1	Supermarket	1	2	3	4	5	6	0
C1.2	Small shop	1	2	3	4	5	6	0
	Restaurant / take away							
C1.3	Franchised fast food shop	1	2	3	4	5	6	0
C1.4	Informal market / street food	1	2	3	4	5	6	0
C1.5	Growing it	1	2	3	4	5	6	0
C1.6	Food aid (CoJ)	1	2	3	4	5	6	0
	Food aid (NGO/CBO/FBO))							
C1.7	Remittances	1	2	3	4	5	6	0
C1.8	Shared meal with neighbours	1	2	3	4	5	6	0
C1.9	Food provided by neighbours	1	2	3	4	5	6	0
C1.10	Community food kitchen	1	2	3	4	5	6	0
	CoJ Peoples' Restaurant							
C1.11	Borrow from others	1	2	3	4	5	6	0
C1.12	School feeding scheme	1	2	3	4	5	6	0
C1.13	Others	1	2	3	4	5	6	0

C2. Within 10 minutes walking distance of your home, is there a place to get.....

		YES	NO	Don't know
C2.1	Mealie meal, potatoes?	1	2	3
C2.2	Branded and mass-produced bread, cookies, muffins?	1	2	3

C2.3	Beans, samp, lentils	1	2	3
	Nuts (peanuts, almonds, macadamia, etc)			
C2.4	Fresh vegetables	1	2	3
	Herbs and spices			
C2.5	Fresh fruit	1	2	3
C2.6	Raw meat, offal	1	2	3
C2.7	Ultra-processed meat (Hamburger, polony, corned beef)	1	2	3
C2.8	Eggs	1	2	3
C2.9	Cooked, grilled or fried meat (Shesa nyama, Walkie-talkies, KFC etc)	1	2	3
C2.10	Dairy (Milk, cheese, yoghurt)	1	2	3
C2.11	Sweetened beverages (Cola, fruit juices, etc)	1	2	3
C2.12	Margarine, mayonnaise, tomato sauce?	1	2	3
C2.13	Ice Cream, Sweets, Jam and Chocolates	1	2	3
C2.14	Chips (ultra-processed, eg shwam'-shwam' Simba, Niknaks, Lays, Flanagans)	1	2	3

HDDS

C3. "Now I would like to ask you about the types of foods that you ate yesterday during the day and at night. During this time, did you or anyone else in your home eat..."

Filter: "Would you say that what you ate yesterday was normal in terms of what you usually eat?"

Filter 2: "Did you participate in any festivities or celebrations in the previous 24 hours?"

		YES	NO	Don't know
C3.1	"Any pap, mabele, ting, bread, rice noodles, biscuits, cookies, scones or any other foods made from millet, sorghum, maize, rice, or wheat?"	1	2 [Goto C3.2]	3
C3.1.1	Any branded cookies (biscuits), cakes, muffins?	1	2	3
C3.1.2	Any breakfast cereals?	1	2	3
C3.1.3	Any mass-produced bread (eg Albany, "Govt loaf")?	1	2	3
C3.1.4	Any instant noodles, instant soups?	1	2	3
C3.2	"Any pumpkin, butternuts, carrots, squash, or sweet potatoes that are yellow or orange inside?"	1	2	3
C3.3	Any white potatoes, madumbe or any other foods made from roots or tubers?	1	2	3
C3.4	"Any dark, green, leafy vegetables such as bean leaves, kale/choumollier, spinach, pepper leaves, and marogo/tepe leaves?"	1	2	3
C3.5	Any other vegetables?	1	2	3
C3.6	Any ripe mangoes, ripe papayas, peaches or guavas?	1	2	3
C3.7	Any other fruits?	1	2	3
C3.8	"Any beef, pork, lamb, goat, wild game, chicken, or other birds, liver, kidney, heart, or other organ meats?" - isikopo,	1	2 [Goto C3.9]	3

	amanqina, ulusu, mohodu, shesa nyama, amasonja			
C3.8.1	Polony, fish-nuggets, chicken nuggets or corned beef?	1	2	3
C3.9	Any eggs?	1	2	3
C3.10	Any fresh or dried fish or shellfish?	1	2	3
C3.11	Any foods made from beans, peas, or lentils?	1	2 [Goto C3.12]	3
C3.11.1	Any soya mince or soya chunks?	1	2	3
C3.12	Any cheese, yogurt, milk or other milk products? maheu, amasi,	1	2	3
C3.13	Any foods made with oil, fat, or butter?	1	2 [Goto C3.14]	3
C3.13.1	Margarine, mayonnaise, tomato sauce?	1	2	3
C3.14	Any sugar?	1	2 [Goto C3.15]	3
C3.14.1	Chocolate, sweets, jam or ice cream	1	2	3
C3.15	Any instant coffee, tea or soft drinks?	1	2	3
C3.16	Any baby formula or ready-to-eat infant foods?	1	2	3

HFIAS

C4.1 "In the past four weeks, did you worry that your household would not have enough food?"

Yes	1
No	2 [Goto C4.2]
NR	3

C4.1.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.2 In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of money?

Yes	1
No	2 [Goto C4.3]
NR	3

C4.2.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.3 "In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of money?"

Yes	1

No	2 [Goto C4.4]
NR	3

C4.3.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.4 "In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of money to obtain other types of food?"

Yes	1
No	2 [Goto C4.5]
NR	3

C4.4.1 How often did this happen?

Rarely (once or twice in the past four weeks)	1
Sometimes (three to ten times in the past four weeks)	2
Often (more than ten times in the past four weeks)	3

C4.5 "In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?"

Yes	1
No	2 [Goto C4.6]
NR	3

C4.5.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.6 "In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?"

Yes	1
No	2 [Goto C4.7]
NR	3

C4.6.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.7 "In the past four weeks, was there ever no food to eat of any kind in your household because of

lack of resources to get food?"

Yes	1
No	2 [Goto C4.8]
NR	3

C4.7.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.8 "In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?"

Yes	1
No	2 [Goto C4.9]
NR	3

C4.8.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C4.9 "In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?"

Yes	1
No	2 [Goto C5]
NR	3

C4.9.1 How often did this happen?

Rarely (once or twice in the past four weeks)	**1**
Sometimes (three to ten times in the past four weeks)	**2**
Often (more than ten times in the past four weeks)	**3**

C5""Now I would like to ask you about your household's food supply during different months of the year. Please think back over the last 12 months. Were there months in which you did not have enough food to meet your family's needs?""

Yes	1
No	2 [Goto C6]
NR	3

C5.1""“Which were the months (in the past 12 months) in which you did not have enough food to meet your

family's needs?""

		Yes	No
C5.1.1	May	**1**	**2**
C5.1.2	April	**1**	**2**
C5.1.3	March	**1**	**2**
C5.1.4	Feb	**1**	**2**
C5.1.5	Jan	**1**	**2**
C5.1.6	Dec	**1**	**2**
C5.1.7	Nov	**1**	**2**
C5.1.8	Oct	**1**	**2**
C5.1.9	Sept	**1**	**2**
C5.1.10	Aug	**1**	**2**
C5.1.11	Jul	**1**	**2**
C5.1.12	Jun	**1**	**2**

C6 "In the past 7 days, if there have been times when you did not have enough food or money to buy food, how many days has your household had to:"

		Days 1-7	NR
C6.1	Buy and eat cheaper foods which you like less	.....	**9**
C6.2	Borrow food or money from a friend or relative	.....	**9**
C6.3	Eat smaller portion size at meal times	.....	**9**
C6.4	Restrict eating by adults so small children can eat	.....	**9**
C6.5	Skip meals	.....	**9**
C6.6	Buy food on credit	.....	**9**
C6.7	Take on a loan to buy food	.....	**9**
C6.8	Buy only what is absolutely necessary	.....	**9**
C6.9	Stick to a budget and restrict money spent on food	.....	**9**
C6.10	Maintain a food garden	.....	**9**
C6.11	Sent household members to eat elsewhere	.....	**9**
C6.12	Feed working members of the household at the expense of non-working members	.....	**9**
C6.13	Sent household members to ask for food	.....	**9**
C6.14	Gathered wild vegetables	.....	**9**
C6.15	Sold personal items (jewellery, clothing, furniture)	.....	**9**
	Pooling food with friends and family		

Respondent Details

Are you willing to share your contact details with us so that our supervisors can check that this interview was actually done properly?

Name & Surname											
Mobile number (with prefix)											(C)
House/Flat etc. no. (if flat please name complex)											
Street Name											
Suburb											
Postal code											
Interview date					2	0	1	7			

APPENDIX 2 - SAMPLING DESIGN TABLE

Wits Syakhana Johannesburg Food Resilience Survey	**Sampling Design**						**Planned**	**Actual**
Total Sample Size							1,000	1,064
					Cluster size		8	8
					no. clusters		125	133
				Planned	**Number of random Starting Points**	% sampled	0.48%	0.51%
HOUSEHOLDS CITY OF JOHANNESBURG	Sampled Ward	Total Households	%	Sampled Households		**Actual Sample**		
79800004 79800004: Ward 4	Orange Farm	11,589	5.55%	55	7	56		
79800012 79800012: Ward 12	Soweto Chiawelo	7,874	3.77%	38	5	40		
79800019 79800019: Ward 19	Soweto Dhlamini	8,155	3.90%	39	5	40		
79800033 79800033: Ward 33	Soweto Moroka	7,092	3.39%	34	5	40		
79800042 79800042: Ward 42	Soweto Meadowlands	6,988	3.34%	33	5	40		
79800055 79800055: Ward 55	Turffontein/Rosettenville	9,063	4.34%	43	6	48		
79800056 79800056: Ward 56	Turffontein/Rosettenville	10,199	4.88%	49	7	56		
79800075 79800075: Ward 75	Alexandra	8,409	4.03%	40	6	48		
79800076 79800076: Ward 76	Alexandra	6,426	3.08%	31	4	32		
79800082 79800082: Ward 82	Westbury/Coronationville	9,349	4.48%	45	6	48		
79800095 79800095: Ward 95	Diepsloot	22,987	11.00%	110	14	112		

79800100 79800100: Ward 100	Cosmo city	18,713	8.96%	90	12	96		
79800105 79800105: Ward 105	Alexandra	16,317	7.81%	78	10	80		
79800107 79800107: Ward 107	Alexandra	7,325	3.51%	35	5	40		
79800108 79800108: Ward 108	Alexandra	11,466	5.49%	55	7	56		
79800113 79800113: Ward 113	Diepsloot	39,685	19.00%	190	24	192		
79800116 79800116: Ward 116	Alexandra	7,272	3.48%	35	5	40		
	Total	**208,909**	**100.00%**	**1,000**	**133**	**1,064**		
Select the household closest to the starting point for the first interview								
Then select every sixth house to interview until eight households have been interviewed.								
Interview the person in the household who is responsible for the food. If there are more than one, select one at random								
If the person responsible for the food is not available, return a second time and if necessary a third time.								
Otherwise, choose a next-door household. If unable to interview any of the next-door households, abandon this interview and add another household at the end.								

APPENDIX 3 QUEST RESEARCH SERVICES -MANAGERS AND ENUMERATORS

First Name	Surname	Designation
Henry	Semwayo	Account Manager
Dumisani	Mhlanga	Account Manager
Patience	Mokalake	Field Manager
Zodwa	Zwane	Field Manager
Edson	Chiviri	Data Processor
Bekithemba	Ndimande	Assistant Data Processor
Amanda	Mthetho	Enumerator
Babalwa	Mpeta	Enumerator
Balungile	Vilakazi	Enumerator
Betty	Meyer	Enumerator
Bonginkosi	Mbele	Enumerator
Busi	Vilakazi	Enumerator/Team Leader
Cynthia	Kunene	Enumerator
Dennis	Mhlanga	Enumerator
Disebo	Xulu	Enumerator
Duduzile	Khumalo	Enumerator/Team Leader
Elsie	Yobile	Enumerator
Emmanuel	Ntshingila	Enumerator
Evelina	Khumalo	Enumerator
Francina	Khunou	Enumerator/Team

		Leader
Gift	Takalo	Enumerator
Kelebogile	Duma	Enumerator/Team Leader
Koena	Pitso	Enumerator
Lebohang	Maluke	Enumerator
Lidiwe	Nhlapho	Enumerator
Lungile	Mkhonto	Enumerator/Team Leader
Mapule	Lekgatle	Enumerator
Maureen	Mkonto	Enumerator
Ncamisile	Maseko	Enumerator
Neo	Montsonyane	Enumerator
Nkateko	Mthombeni	Enumerator
Nono	Montsonyane	Enumerator
Nontobeko	Mncube	Enumerator
Nothemba	Sidlai	Enumerator
Pearl	Mdletshe	Enumerator
Phindile	Mthimkulu	Enumerator
Priscilla	Isaacs	Enumerator
Sabelo	Gumede	Enumerator
Siyabonga	Malinga	Enumerator/Team Leader
Siyabonga	Mkhize	Enumerator
Thandazile	Motaung	Enumerator
Thuli	Chiloane	Enumerator
Tinotenda	Hwami	Enumerator
Victor	Saragee	Enumerator
Vinolia	Baloyi	Enumerator/Team Leader
Zac	Chambe	Enumerator
Zandile	Khumalo	Enumerator