

**AN ASSESSMENT OF HOUSEHOLD FOOD SECURITY STATUS AND
FOOD SECURITY DETERMINANTS IN BRAZZAVILLE INFORMAL
SETTLEMENT, PRETORIA**

by

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DECLARATION

I, **Nhlamulo Wilmah Mkhathane** wish to state and declare that this report is my own work and where I used other people's work I've acknowledged their work, and this is submitted in partial fulfilment of the Master's degree of Geography and Environmental Studies in the University of Limpopo. It has not been submitted before for any degree or examination in any university.

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ABSTRACT

South Africa's population is more than 60% urbanised. Although food poverty has historically been associated with rural communities, this is no longer the case. With sustained urbanisation, food insecurity is now being experienced in the urban areas as well. The aim of this study was therefore to assess household food security levels and determinants, and to examine household food security coping strategies in Brazzaville informal settlement, Pretoria. The study adopted a quantitative approach which involved the collection of information through a standardised household questionnaire. A statistically representative sample of 95 households participated in the study. Household questionnaires were used to collect information on household demographics, income and expenditure statistics, poverty data as well as household food access issues. In terms of data analysis, the survey used three measures of household food insecurity: a) the Household Food Insecurity Access Prevalence Indicator (HFIAP); b) the Household Dietary Diversity Score (HDDS); and c) the Months of Adequate Household Food Provisioning (MAHFP) measurements of household food access. The survey results indicate that 29.5% of households in Brazzaville informal settlement were food secure and 70.5% food insecure. Contrary to conventional wisdom of female-headed households being the most food insecure, results of this study show that male-headed households were the most food insecure. In addition, households with low incomes, low level of education, and high unemployment were also likely to be food insecure. The results of the regression analysis suggest that gender, household income, and employment influences household food security. The probability of food security decreases if household is headed by a female, because females can adopt multiple coping strategies. The study concludes that food insecurity coping strategies vary significantly from one household to another according to their expenses, objectives and constrains.

Keywords: Household food insecurity, urbanisation, livelihood, Brazzaville informal settlement, coping strategies.

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DEDICATION

To my parents, Thomas Mkhacani Mkhathshane and Takalani Mkhathshane.

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LIST OF ABBREVIATIONS

AFSUN	African Food Security Urban Network
AIDS	Acquired Immunodeficiency Syndrome
BIS	Brazzaville Informal Settlement
CBD	Central Business District
CBNP	Community Based Nutrition Programme
CPI	Consumer Price Index
CSI	Coping Strategy Index
DAFF	Department of Agriculture Forestry and Fisheries
DESA	Department of Economic and Social Affairs
DOA	Department of Agriculture
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agricultural Organisation
GDP	Gross Domestic Product
HDDS	Household Dietary Diversity Score
HFIAP	Household Food Insecurity Access Prevalence Indicator
HFIAS	Household Food Insecurity Access Score
HIV	Human Immunodeficiency Virus
HSRC	Human Sciences Research Council
ISSER	Institute of Statistical, Social and Economic Research
LPI	Lived Poverty Index
MAHFP	Months of Adequate Household Food Provisioning
NAMC	National Agricultural Marketing Council
NNC	National Nutrition Council
NNSDP	National Nutrition and Social Development Programme

OECD	Organisation for Economic Cooperation and Development
PSNP	Primary School Nutrition Programme
SAIRR	South African Institute of Race Relations
SPSS	Statistical Package for Social Sciences
STATS SA	Statistics South Africa
SSAGHS	Statistics South Africa General Household Survey
UN	United Nations
UN-Habitant	United Nations-Habitant
UNCHS	United Nations Commission on Human Settlements
UNDP	United Nations Development Programme
UNPF	United Nations Population Fund
USAID	United States Agency for International Development
ZAR	South African Rand

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Food security has been defined as a state ‘when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (World Food Summit, 1996). According to the Food and Agricultural Organisation (FAO) 2004, the definition of food security has four interconnected dimensions namely, availability of food, access to food, utilisation of food, and stability of available food at a household level. Food insecurity occurs when one or more of these dimensions are weakened, as no single dimension assures food security on its own. South Africa is largely seen as a food secure nation producing enough staple foods or having the capacity to import food, if needed, to meet the basic nutritional requirements of its population (FAO, 2008). Hart (2009) argues that although South Africa seems food secure at the national level, the same cannot be said of the sub-national and household levels where large numbers of people remain food insecure. Thus, while South Africa maintains an ability to meet national food requirements, large scale inequality and poverty mean that many households do not enjoy food security or adequate access to food. A number of households live in a state of chronic poverty and increased vulnerability to hunger and food insecurity. Furthermore, they do not have access to a diet that is sufficiently diverse to allow adequate nutrition. Despite large declines in the vulnerability to hunger of South African households over the past decade, from 23.8% in 2002 to 11.5% in 2011, a large percentage of households (21.1%) continue to experience difficulty to access food. Inadequate access to food is particularly high in North West (32.9%) and Northern Cape (29.7%) (Stats SA, 2016).

Although there is now recognition in South Africa that food security is not just a rural problem, but also an urban one (e.g. Battersby, 2011; Battersby et al, 2009; Frayne et al., 2009) the full extent of food insecurity has not been adequately researched and information on how the urban poor survive is still little. Van der Berg (in Altman, Hart and Jacobs, 2009) argues that one of the

ways in which the poor in South Africa survive is through social grants. Although one cannot deny the role that social grants have played in improving food security among poor households, the current high levels of poverty in urban South Africa means that most of these poor may be vulnerable to food insecurity. South Africa faces a wide spectrum of food security challenges that include high levels of poverty, unemployment, inadequate safety nets, and unstable household food production. Poverty stricken households lack money to buy food (Shisanya *et al.*, 2011). Households are controlled by the inability to secure employment or to generate income. Poor households are typically characterised by few income-earners and many dependents, and are particularly vulnerable to economic shocks (Department of Agriculture Forestry and Fisheries (DAFF), 2002). The origin cause of food insecurity in developing countries is the inability of people to gain access to food due to poverty. United Nation Development Programme (UNDP) report, 2006 stated that food insecurity is closely linked to poverty, income and unemployment. Poverty and unemployment have strong relationship with food insecurity and in most cases food insecurity is evident in multiple deprivations.

Living in poverty creates additional challenges which limit the ability for people to search for employment and that contribute to a long-term unemployment trap thus leads to social exclusion problems. Lack of purchasing power is one of the key issues that influence food insecurity. The majority of households in South Africa lack cash to purchase food. Underlying the lack of purchasing power is the limited scope of income opportunities, especially in the rural areas. There are other combined factors that causes food insecurity in Africa and other third world countries, factors such as drought and other extreme weather events. Drought has adverse impacts on food security, affecting the quantity and quality of yields. Droughts also lead to significant economic losses. Changes in food production, together with other factors, could impact food prices, which affect the ability of poor households to access food markets. The overall availability of food is affected by changes in agricultural yields due to climatic conditions.

With rapid population growth, poor African and developing countries have the highest growth rate in the world which puts them at increased risk of food crises. The population of Niger, for example, increased from 2.5 million to 15 million from 1950 to 2010. It is estimated that Africa will produce

enough food for only about 1 quarter population by 2025 if the current growth rate will continue (Department of Economic and Social Affairs (DESA), 2009). The world is rapidly urbanising, currently, an estimated 54% of the global population lives in cities, up from only 14% in 1900 (DESA, 2009). It is projected that 66% of the global population will live in cities by 2050. In addition, most of the future global population growth is also predicted to be concentrated in urban areas as well (DESA, 2014). Acquired Immune Deficiency Syndrome (AIDS), the disease which is a serious public health concern in the sub-Saharan Africa worsens food insecurity in various ways. It reduces the available workforce in agriculture and puts an additional burden on poor households. All above mentioned factors contribute to either insufficient national food availability or insufficient access to food by households and individuals.

Achieving food security requires that households have adequate resources to obtain appropriate foods for a nutritious diet that the aggregate availability of physical supplies of food is sufficient, and that households are able to utilise food. The latter requires that households have access to essential nutrients, potable water, adequate sanitation and the appropriate knowledge about optimum food utilisation. Food security has to be addressed within the context of other developmental issues such as poverty, increasing commodity prices, including electricity, sources of income, social protection, rural and urban development, changing household structures, health, and access to land, water and sanitation as well as education. Since 1994, the South African government has attempted to address the challenges by increasing spending on a variety of social programmes, including school feeding schemes, free health services for children younger than 6 years, health services for pregnant and lactating women, and well-targeted cash transfers or social grants. Social grants have been shown to benefit poor and vulnerable people and their broader households by elevating consumption, welfare and access to social services, by improving the ability of households to deal with risk and insecurity, by facilitating the development of local markets, and increasing investments in productive assets and activities (Neves *et al.*, 2009). Despite the government's efforts to increase welfare payments, poorest people in the urban areas still experience high poverty levels. In a context where most of the food is bought and where other expenses such as housing, energy and transport are to be paid, the position of the poor remains

precarious in the urban areas. However, the full extent of the problem as well as the dynamics of the poor's survival are not yet clearly understood, hence the need for a study which examines the food security levels of urban households, the determinants of household food security and the way in which the poor cope with food security challenges.

1.2 Problem statement

South Africa is food secure at the national level (Tsegay, 2014). However, the food security situation at the national level is not replicated at the sub-national levels (Altman *et al.*, 2009). Food insecurity still exists among significant sections of the country's population (Labadarios *et al.*, 2011). Battersby (2011) argues that food security is one of the key development challenges in the 21st century, particularly for Africa which is urbanising faster than its ability to provide jobs and infrastructure necessary to assure food security in the city. South Africa, with 63% of its population living in the city faces a huge challenge in adequately feeding all its urban population (Battersby *et al.*, 2009). Food insecurity among the urban poor is worsened by high unemployment, high energy tariffs, and frequent increases of food and fuel prices (Altman *et al.*, 2009). Brazzaville informal settlement in Pretoria is one of the areas that are at risk of food insecurity; this is because the majority of the residents are unemployed, have very little income and mean monthly household income in the area is only about (R1 522) (Averbeke, 2013). Coping with food insecurity in cities is difficult since most goods and services have to be paid for in cash, and all food consumed is purchased. Agriculture on the other hand, does not play as large a role in household livelihood strategies in the cities as it does in rural areas. Urban households require cash to pay for their services such as housing, transport and electricity while on the other hand food price is increasing. While food insecurity occurs in both rural and urban areas (Shisanya *et al.*, 2013), little information is available on how the urban poor are affected. Much has been written about rural food security in South Africa (e.g. de Kock *et al.* 2013; Jacobs, 2012; Manyamba *et al.*, 2012; Hart, 2009; and Twine *et al.*, 2003). However, there is very limited research on urban food security (e.g. Tawodzera and Crush, 2016; Battersby and MacLachlan, 2013; Frayne *et al.*, 2009). This study thus seeks to assess household food security levels and examine household food security determinants in Brazzaville, an urban informal sector in Pretoria.

1.3 Significance of the study

South Africa, with 63% of its population living in the city faces a huge challenge in adequately feeding all its urban population (Battersby *et al.*, 2009). There is limited research on urban food security, many researches focused on rural food security. There is thus a need for the urban food security study. Policy makers will benefit from the study through better knowledge as to where and how to intervene in urban areas, knowing which areas are more vulnerable to food insecurity and requires food aid assistance. With the information derived from the study, the government will be aware of how to improve services which are lacking in sustaining proper food security in urban areas and come up with strategic ways of doing this. Food is a basic right that is enshrined in section 27 of the South African Constitution. The study will help develop an understanding of household food security and food rights in the urban environment by examining the factors that directly or inadvertently enable or constrain urban food supply and distribution as well as consumption needs of the urban poor. The study will also explore the coping strategies that are being adopted by the poor to increase resilience among those affected and will make recommendations on coping strategies and mechanisms to deal with factors that influence household food insecurity. The information generated will help policy makers to plan better for sustaining food secure cities.

1.4 Study Aim

The aim of this study was to assess household food security levels and determinants; and to examine household food security coping strategies in Brazzaville informal settlement, Pretoria.

1.5 Objectives of the study

The objectives of this study are to:

- a) assess household demographic and socio-economic profile
- b) assess household food security status in Brazzaville informal settlement;
- c) examine the determinants of household food security in the settlement, and;
- d) assess coping strategies being adopted by households in lieu of food insecurity.

1.6 Organisation of the study

Chapter One has introduced the research outline and provided a brief background of the study relating urban food security in Brazzaville informal settlement, Pretoria. The chapter addresses the problem statement of the study, aim and specific objectives of the study. It also discusses the importance/significance of the study and concludes with an outline of each chapter.

Chapter Two locates and review literature on urban food security within the broader context of urbanisation, food security in South Africa, poverty, urban livelihood and household food security targets and coping strategies of urban households, and reference is made to studies that have been carried out in relation to food security in South Africa and other African nation. The chapter concludes by discussing approaches to food security by households.

Chapter Three provides an overview of the study area, the research design, which include quantitative method, the quantitative survey involved the administration of a standardised questionnaire to selected households. The chapter also presents the methodological approach that has been used to assess household food security status and food security determinants in Brazzaville informal settlement. It gives the detailed steps and procedures used in the study in order to collect and analyse the relevant data as well as discussing sampling techniques. The chapter concludes by presenting ethical considerations and study limitations.

Chapter Four presents and discusses the findings on the study. It starts by discussing the demographic and socio-economic of the households then discuss the findings on household food security status of Brazzaville and food security levels using the three measures of household food insecurity. It also presents the findings on the factors influencing food security at household's level and the coping strategies that households adopt to survive the resilience of food insecurity.

Chapter Five summarises the key findings that have emerged from the addressing issues in regard to the problem of food insecurity in Brazzaville as per objective and the survey results as a whole then gives the recommendations. Conclusions drawn from the findings are discussed as well on this chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on food security in urban areas, issues surrounding urbanisation, urban livelihoods, and household food security targets as well as coping strategies of urban households. The chapter also discusses urban livelihoods and approaches to food (in) security.

2.2 The Concept of food (in) security

Food security is an evolving concept which has been defined in different ways by a number of organisations around the world. Concepts of food security have evolved in the last thirty years to reflect changes in official policy thinking (Clay, 2002; Heidhues *et al.*, 2004). From 1950s to 1960s, food security was equated with self-sufficiency in major staples. The Food and Agricultural Organisation (FAO) at the World Food Conference of 1974 defined food security as “the availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices access to sufficient food” (United Nations (UN), 1975). In 1983, the FAO expanded its concept to include securing access by vulnerable people to available supplies, implying that attention should be balanced between the demand and supply of the food security equation: “ensuring that all the people at all times have both physical and economic access to the basic food that they need” (FAO, 1983).

The most widely used food security definition is that by the FAO which defines food security as a state ‘when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO, 2009). According to Gross *et al.*, 2000, food security is achieved, if adequate food (quantity, quality, safety, and socio-cultural acceptability) is available and accessible for and satisfactorily utilised by all individuals at all times to live a healthy and happy life (Kracht and Schulz, 1999). The Human Sciences Research Council (HSRC), 2009, posits that food security

definition has four dimensions, namely: food availability, which is the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid); food access, which talks to access by individuals to adequate resources such as entitlements for acquiring appropriate foods for a nutritious diet; utilisation, which is concerned about the utilisation of food through an adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met; and stability, which relates to the fact that population, household or individual must have access to adequate food at all times in order to be food secure. Households should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events e.g. seasonal food insecurity (FAO, 2006). These four dimensions are interconnected and all must be present for people to be food secure, as no single element is able to ensure and sustain food security on its own (Faber *et al.*, 2008). Food insecurity thus generally occurs when one or more of these elements is weakened and can impact on the national, household and individual levels. Food security at one level does not indicate food security at another. As Anderson (2009) argues, household food security does not mean individual food insecurity.

Initially, food security was mostly concerned with regional, national and global food supplies (Frankenberger and McCaston, 1998). According to Anderson (2009), national food security was then defined as the condition whereby the nation is able to manufacture, import, retain and sustain food needed to support its population with minimum per capita nutritional standards. There are two major indicators that are used to define the food status of the nation: i) the measure of projected food supplies (calculated as domestic production (Gross Domestic Product (GDP)) that also includes farming, plus commercial imports minus non-food uses) as well as ii) the measure of the nutritious food supply (which is measured using the difference between projected food supplies and the amount of food needed to support the nation with individuals who earn the least amount of money (Labadarios *et al.*, 2009).

At the level of the community, food security is internationally defined as a condition whereby the residents in a community can obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximises community self-reliance and social justice

(Anderson, 1999). There are several indicators that researchers use to examine a community's food security status. Amongst these, the most important are: i) the location of the community (urban or rural, closer or further away from the basic services used to obtain food and to access health services); ii) the culture/social norms, health knowledge, attitudes, beliefs, practices and resources of the community; iii) the income and education level of the community (Radimer *et al.*, 1990).

Household food security is internationally defined as the availability of food in one's home which one has access to (FAO, 2006). A household is considered food-secure when its members do not live in hunger or fear of starvation (Radimer *et al.*, 1990). The food security of each household may be divided into four levels that are characterised as: i) high food security (described as the household having access to adequate food constantly without difficulties or anxiety); ii) marginal food security (defined as the household having difficulties at times or anxiety about accessing adequate food, but the quality, variety and quantity of their food intake is not substantially reduced); iii) low food security (the quality and variety of the person's food intake are reduced, but the quantity of food intake and normal eating patterns are not substantially disrupted); and iv) very low food security (the quantity of food intake and normal eating patterns are disrupted at certain times of the year, due to the household lacking money and other resources to access food) (FAO, 2003). Urbanisation affects all the dimensions of food security, this implies that more food will be demanded by a population of net food buyers and the demand will have to be met by rural and urban areas and by food imports (Matuschke, 2009) and this put additional pressure on urban infrastructure and the stability of food supplies is jeopardised (FAO, 2008).

2.3 Urbanisation

Urbanisation rates have considerable implications for hunger and malnutrition of urbanites and raises serious concerns about household food insecurity. In many cases, urbanisation is implicitly assumed to lead to changes in consumption behaviour and dietary patterns that are resource intensive, such as greater consumption of meat, and therefore have a negative impact on increasingly scarce natural resources (Stage *et al.*, 2009).

2.3.1 Global urbanisation

Globally, more people live in urban areas than in rural areas. Between 2007 and 2050 the world population is projected to increase from 6.7 to 9.2 billion, and most of this growth will occur in urban areas of less developed countries (UN, 2009). Department of Economic and Social Affairs (DESA, 2011) defined urbanisation as a population shift from rural to urban areas, the gradual increase in the proportion of people living in urban areas, and the ways in which each society adapts to the change (DESA, 2011). Although the developed world countries are currently more urbanised, the highest urbanisation rates are being experienced in the developing world, about 5% in sub-Saharan Africa, 4% in Asia and the Pacific, 3.3% in Northern Africa and 2.5% in Latin America and the Caribbean (Tettey, 2005; UN-Habitat,2008).

At least 60% of urban growth is due to natural growth i.e. higher birth than death rate, and 40% of rural-urban migration and area expansion (Montgomery, 2008). The process of urbanisation historically has been associated with other important economic and social transformations, which have brought greater geographic mobility, lower fertility, longer life expectancy and population ageing (UN, 2014). Rural-urban migration is often caused by a mix of pull and push factors (Cohen, 2006). Pull factors are those that make cities look attractive to rural migrants such as employment, better living standards, greater availability of services, education and health care services. Cities offer large varieties of cultural and social opportunities (Overman and Venables, 2005).

Push factors of rural urban migration include wars, disasters, drought, flood, land degradation and displacement by conflicts. Food insecurity is sometimes seen as one of the root causes of out-migration from the rural areas of the African continent, along with poverty, declining agricultural productivity, and climate change (Tawodzera *et al.*, 2016). Cities are important drivers of development and poverty reduction in both urban and rural areas, as they concentrate much of the national economic activity, government, commerce and transportation, and provide crucial links with rural areas, between cities, and across international borders (DESA, 2011). Unplanned urban growth threatens sustainable development when the necessary infrastructure is not developed or

when policies are not implemented to ensure that the benefits of city life are equitably shared (UN, 2014).

It is predicted that by 2050 about 64% of the developing world and 86% of the developed world will be urbanised. That is equivalent to approximately 3 billion urbanites by 2050, much of which will occur in Africa and Asia (United National Population Fund (UNPF), 2007). Notably, the United Nations has also recently projected that nearly all global population growth from 2016 to 2030 will be absorbed by cities, about 1.1 billion new urbanites over the next 14 years (Barney, 2015). Currently, more than 50% of the world's population lives in urban areas, up from only 14% in 1900 (Maxwell *et al.*, 2008; UNPF, 2007). Today, the most urbanised regions include North America (82% in urban areas in 2014), Latin America and the Caribbean (80%), and Europe 73%. In contrast, Africa and Asia remain mostly rural, with 40% and 48% of their respective populations living in urban areas (UN, 2014). All regions are expected to urbanise further over the coming decades. Africa and Asia are urbanising faster than the other regions and are projected to become 56% and 64% urban, respectively, by 2050.

Despite the record growth, the majority of urban dwellers about 61% live in small to medium sized cities of up to one million inhabitants (Matuschke, 2009). This holds for developed and developing countries and it is not expected to change in the long term. Yet, small to medium sized cities, particularly in developing countries, often lack infrastructure and basic services like water, sanitation, electricity, health care and waste disposal to absorb an ever-increasing number of people (Cohen, 2006; Montgomery, 2008). This frequently leads to the development of city slums, which are defined as low-income, over-crowded settlement with poor human living conditions (UN, DESA, 2003).

As the world continues to urbanise, sustainable development challenges will be increasingly concentrated in cities, particularly in the lower-middle-income countries where the pace of urbanisation is fastest (DESA, 2013). Hence the definition of food security comprises four dimensions: availability, stability, safety and access, urbanisation affect all four dimensions of food security. The steep amount of population increases makes it almost impossible for urban authorities to provide adequate infrastructure and guarantee adequate urban services. The ability

of the poor to feed themselves in the environment where everything need to be paid for becomes doubtful and raises questions of food insecurity that are basically different from those in rural areas. The high increase of population in urban areas puts pressure on the provision of infrastructures and urban services (Ravallion *et al.*, 2007). With such urbanisation rates in the world, considerably people in urban area lives in poor quality and overcrowded housing that lacks access to the infrastructure and services that urban centres need and that reduce everyday risks including safe, regular water supplies and good provision for sanitation, drainage, roads, traffic management and health care. These also have relevance for disaster risk and, increasingly, for the threats that arise from or are exacerbated by the direct and indirect impacts of climate change.

With urbanisation increasing, food availability will be affected; agriculture will be challenged to meet the demand of a population that is projected to grow and to urbanise (Matuschke, 2009). This implies that more food will be demanded by a population of net food buyers. Conceptualisations of African urban areas as more developed homogeneous geographic entities with no economic differentiation among its citizens initially rendered urban poverty relatively invisible. Exacerbating Southern Africa's situation is the fact that urbanisation is taking place in a context of severe constraints that did not face other regions in their urbanisation process (Zlotnik, 2006). Such constraints include exposure to global competition resulting from the liberalisation of global trade regimes, very limited outlets for external migration, and the decimation of the productive workforce due to Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) (Garland *et al.*, 2007; Tienda *et al.*, 2006).

2.3.2 South Africa's urbanisation

South Africa is one of the urbanised countries in Africa and this makes it one of the most populous countries in sub-Saharan Africa, after the small states of Reunion, Gabon and Djibouti (Turok, 2012). For over a century, urbanisation has been a source of controversy posing dilemmas for successive government and resulting in wide-ranging interventions to control it in various ways. Migration is one of the strategies used by the rural poor to improve their livelihood (Swift and Hamilton, 2001; Ellis and Freeman, 2004). Two-thirds of South Africa's population now lives in urban areas. According to the survey of the country released by the South African Institute of Race

Relations (SAIRR) 2013, the proportion of people living in urban areas increased from 52% in 1990 to 62% in 2011 and the share of those living in rural areas dropped from 48% to 38% over the same period. Gauteng province, the country's geographically smallest but economically busiest province, has both the biggest and the fastest growing population, according to census 2011, with 12.2 million people counted in 2011, a 33.7% increase over 2001, and more than double the national average increase (Stats SA, 2012). Polokwane, Rustenburg, Vanderbijlpark, Nelspruit and Ekurhuleni are the five fastest-growing urban areas, with average annual population growth rates of between 1.6% and 2.9% over the last decade, compared to Cape Town with a rate of 1.4% (SAIRR, 2013). A study done by Ruhiga (2013), indicates that Gauteng alone has three of the seven metropolitan areas with a combined urban population of about nine million as at end of 2011. Cape Town, Buffalo City, Nelson Mandela Bay and Ethekewini/Durban are coastal port cities whose growth is partly linked to international shipping. Other than those cities in Gauteng, only Mangaung is an inland city. Overall, South Africa registered an urbanisation rate of 61% in 2011 (Stats SA, 2012).

According to neo-classical economic migration theories, the major cause of migration is the differential between rural and urban incomes (Todaro, 1969; Berliner, 1977). Worsening economic conditions in urban areas, combined with the ever-increasing cost of living in the city, are therefore supposed to act as obstacle to rural-urban migration (Rogers and Williamson, 1982). However, lack of job opportunities in the urban areas of South Africa has limited the opportunities of the new arrivals to find employment in the cities. This has resulted in the transfer of poverty from rural to urban areas (May and Rogerson, 1995; Rakodi, 1999). These threaten food security status of the country. In South Africa, the challenges of urbanisation are not only economic, but are also social and political (Keivani, 2010). Urban growth has brought with it a host of problems, including unemployment and underemployment, a growing informal sector, deteriorating infrastructure and service delivery capacity, overcrowding and environmental degradation, and an acute housing shortage (Stren *et al.*, 1992; Mabogunje, 1994; Becker *et al.*, 1994; UNCHS, 1996). Many people moving to urban areas of South Africa are poor and they live in areas with low rentals. These result in families living in small room shacks or even a few families sharing a room which results in overcrowding and creates huge pressure on basic services and facilities.

2.4 Poverty and Household food security

World Bank (2006) defined poverty as the lack of what is necessary for material well-being especially food but also housing, land, and other assets. Poverty is the lack of multiple resources leading to physical deprivation. The poor are therefore those who live with hunger, thirst, homelessness, sickness, illiteracy, ill-health, exclusion and general insecurity. Dimensions of poverty include many aspects of human capabilities: economic (income, livelihoods, work), human (health, education), political (empowerment, rights), socio-cultural (status, dignity) and protective (insecurity, risk, vulnerability) (Organisation for Economic Cooperation and Development (OECD), 2001). According to Rakodi (2002), poverty usually occurs when the household is unable to demand sufficient resources that guarantee the consumption of sufficient goods and services to achieve a minimum level of welfare (Du Toit and Neves, 2014).

Over 1.4 billion people in the developing world are estimated to be living in extreme poverty (World Bank, 2008). In the global South, between 300 and 500 million urbanites are estimated to be living in absolute poverty, representing about 40% of all poorer people and 25% of the urban population (Jones and Corbridge, 2010). In sub-Saharan Africa, for example, 72% of the urban population is estimated to be living in slums owing to poverty (UN-Habitat, 2006). In these urban areas, 'poverty and unemployment are extreme, living conditions are particularly bad, and survival is supported predominantly by the informal sector, which tends in many parts to be survivalist rather than entrepreneurial' (Watson, 2007). At the start of the 21st century, an estimated 48% of the South African population (21.9 million people) lived below the national poverty line (UNDP, 2004). Under such conditions of extreme material deprivation, the goal of household food security for the urban poor becomes unattainable.

According to the FAO report (2008), high unemployment rate, inadequate social welfare systems and a high HIV/AIDS infection rate have all contributed to food insecurity in the country. In the urban areas of South Africa, poverty is particularly concentrated in low-income and informal settlements, which are nearly exclusively occupied by black people (Ravallion, 2001). It is in these settlements that problems of food insecurity and under-nutrition are most likely to occur. For

example, Theron (2000) identified 17% stunting rate among children aged 12 to 24 months in Brazzaville and Phomolong, two of the five informal settlements of Atteridgeville, Pretoria. She identified inadequate intake of calcium and iron among both stunted and non-stunted children as the most important dietary deficiencies in the area's households.

The World Bank (2008), reports that despite significant improvement in human development in the past two decades, extreme poverty in the developing world persist. A study done by Maxwell *et al.*, 2000 in Ghana-Accra indicate that the proportion of the city's population living in poverty has grown rapidly. Between 1987 and 1993, the proportion living below the poverty line increased from 8.5% to 23% (Coulomb and McKay, 1995). In fact, poverty in Accra increased when poverty in some other parts of the country was decreasing. Registered unemployment rose by 20% during the same period (Institute of Statistical Social and Economic Research (ISSER), 1995), with people unable to find wage employment crowding into the relatively limited range of self-employment alternatives in the city's informal economy. In 1980 the ratio of informal sector workers to formal sector workers in Ghana was two to one, by 1990 the ratio was five to one.

According to Howard *et al.*, (2010), for economic and demographic reasons, poverty is increasingly concentrated in urban settlements. The structural adjustment programmes which have been introduced in most developing countries have had uneven impact on the urban poor, due to rising food prices, declining real wages, and redundancy in the formal labour market and reduced public expenditure on basic services and infrastructure (World Bank, 1991; Moseley, 2001). With urbanisation, the transfer of rural poverty to urban areas is rising globally. Food insecurity is closely connected to poverty throughout the world, rural poverty remains deeper and more widespread than urban poverty (FAO, 2012). With the rapid urbanisation of low- and middle-income countries, however, poverty is increasingly located in urban areas and this will continue as virtually all global population growth in the next three decades is expected to be in cities and towns of Africa and Asia. Southern Africa is the only region in the world where the absolute numbers of those living in poverty has increased in the last decade (UN, 2006). A United Nations Development Programme (UNDP) report of 2006 pointed out that food insecurity is closely linked to poverty, income and unemployment. The report reveals that poverty and unemployment have strong

relationship with food insecurity and in most cases food insecurity manifest in multiple deprivations.

According to Ravallion *et al.*, 2007, ‘among those living on no more than \$1 a day, the proportion found in urban areas rose from 19% to 24% between 1993 and 2002.’ Compounding the rising levels of urban poverty in the world is the fact that the cost of living in cities is some 30% higher than in rural areas, and with limited economic opportunities, the ability of poor urban citizens to climb out of poverty remains constrained. By virtue of living in a ‘purchasing environment’, urban households normally require more income for survival than their rural counterparts (Parnell, 1998; Battersby-Lennard *et al.*, 2009). In Tanzania, for example, Kironde (1999) found that the income needed for 2000 calories/day was 98.2% higher in Dar Es Salaam than in the rural areas. Such observations underlie the fact that living in the city and maintaining household food security depends not only on a functioning urban labour market, but a reliable one as well. Given urban residents’ dependence on food purchases, food insecurity is an urban issue. Low-income urban residents in low- and middle-income countries are also likely to be the most vulnerable to the increase in the frequency and severity of extreme weather events such as heat waves, floods and cyclones (Satterthwaite, 2007). Urban households are likely to experience increased food insecurity as they are left to face the vagaries of the urban environment on their own. Rising costs of non-food items such as rent and transport compound the situation as households are forced to cut back on food expenses (Crush *et al.*, 2007) thereby rendering them more food insecure (Swift and Hamilton, 2001).

According to the report, the increase in numbers of chronically hungry people was due to increased food prices worldwide as a result of lower production of staple food around the world such as cereals. Tawodzera (2011) mentioned that while poverty encompasses many dimensions, the aspect that has most influence on household access to urban goods and services is income. Access to an adequate and stable income is vital for urban household food security because of the monetized nature of the urban environment where nearly everything has to be bought. Political instability, wars, and lack of agricultural inputs in many parts of African countries, played a role in food insecurity as arable land lay fallow (Du toit, 2011). As food prices continue to rise, the

cycle of poverty and hunger is perpetuated. The current economic crisis worsens the situation among the poor. Inability of a child to be educated or dropping out of school early in life affects future income potential and acquisition of basic skills such as farming, as farming skills are acquired through education.

Household structure contributes to household food insecurity. A survey done by Tawodzera (2011) in Zimbabwe, Harare shows that female-centred households and extended households are more vulnerable to food insecurity than other households, in addition, female household heads indicated that were generally unable to compete with men in sourcing food, given the physical strength that is required to stand in queues and to push and shove for extended periods of time. It reveals that securing food is no longer just an issue of money, but one of physical ability, female headed households become even more vulnerable to food insecurity. Thus, the gender aspect of food access becomes even more pronounced in situations such as those in Harare where food supplies are erratic. Frayne *et al.*, (2009), found that among the biggest cities of South Africa, female-headed households were hit hardest by the incidents of food insecurity compared to male-headed households. This is because females are most likely to take care of their extended families, and will usually sacrifice their food intake to feed other members of their household when threatened by food insecurity and moreover they are most likely to be single parents than their male counterparts.

A study conducted by Olayemi (2012) in Osum States, Nigeria, found that household size and food security are negatively linked; as household size increases food security decreases. Aidoo *et al.*, 2013 perceived that an increase in one additional member of a household generally reduces income per head, expenditure per head and per capita food consumption. This is because larger household sizes demand more food. The higher the number of inactive individuals in households the higher the burden for active individuals in the provision of food, which in turn increases the likelihood of food insecurity (Amaza *et al.*, 2009). Lack of skills is evident in Africa where sufficient food is produced, but there are no food preservation and storage skills (HSRC, 2009). Food preservation methods and the skills needed to retain the nutritional quality of food are still lacking. The HSRC (2004) report stated that all dimensions of food security – availability, stability, access to and use

of food – are affected where the prevalence of HIV is high. Poverty increases the risk of HIV infections among affected populations (Gillespie *et al.*, 2007). Disease and infections such as malaria, tuberculosis and HIV/AIDS continue to threaten the livelihood of many people around the world. These diseases have a direct effect on the labour market by reducing the opportunity cost of many people not working. This situation further contributes to agricultural production and household food attainment, by increasing the cost of household food insecurity (Mwaniki, 2011).

2.5 Food Security status in South Africa

South Africa ranks among the countries with the highest rate of income inequality in the world. Compared to other middle-income countries, it has extremely high levels of absolute poverty (Altman *et al.*, 2009). South Africa may be food secure at a national level, but large numbers of households within the country are food insecure. Although employment has risen in the country, it has not attained the level where it can significantly address the issue of income poverty (Aliber, 2009). Approximately 35% of the total South African population which equates to about 14.3 million people experience hunger and under-nutrition (Rose and Charlton, 2002). Recently, prices of wheat and maize which form part of the staple foods in South Africa have increased in world markets (Heady and Fan, 2008). This expansion worsens the food insecurity condition as households now face more difficulties in getting food items from their earnings. As the FAO (2009) notes that landless and female-headed households together with both the rural and urban poor constitute the major groups most affected and this situation is likely to persist over the next decade (Heady and Fan, 2008; Haysom, 2016).

In South Africa, the evidence shows that malnutrition rates are rising in urban areas, notwithstanding the fact that the country is nationally food secure and has a well-developed agricultural sector (McLachlan and Thorne, 2009). South Africa's population is already more than 60% urbanised and is expected to reach 80% by mid-century (Todes *et al.*, 2010). Meeting the food security needs of the country's population is and will be an increasingly urban challenge. Charlton and Rose (2002) reported household food insecurity in 43% of households in South Africa, also reports that more than 14 million South Africans (35% of the population) are estimated

to be vulnerable to food insecurity (HSRC, 2004). In South Africa food insecurity may be implied by unemployment and lack of income (Naicker, Mathee and Teare, 2015).

According to Stats SA's General Household Survey (GHS) (2009), an estimated 20% of South African households have inadequate or severely inadequate food access. The GHS report indicates further that during 2008, food access problems were mostly serious in Free State where 33.5% of the households have inadequate food access, followed by households in Kwa-Zulu Natal with 23%, Eastern Cape 21.4% and Mpumalanga 21.5%. Limpopo (11.9%) and Western Cape (14.5%) had the least food security problems in 2008 (Stats SA, 2009).

2.6 Urban livelihood and household food sources

Urban households rely heavily on their labour for income. Men's and women's activities are very different; however, men are likely to be involved in skilled or unskilled labour, sometimes self-employed, sometimes as wage labourers and some have office or professional jobs. Women are more likely to engage in petty trade or street food vending, where they earn far less than men, because households headed by males have more resources for earning income and fewer dependents, male-headed households tend to have higher per capita incomes than female-headed households. A study done by AFSUN (2016) in South African cities argue that survival in the challenging South Africa urban environment demands that household's members engage in other activities to expand income from formal employment and the most additional household livelihood strategy was casual labour with 45% of households reporting as a strategy. Casual employment included work such as gardening, washing clothes and car wash (AFSUN, 2016).

Problems of poor city dwellers have become more pressing, including the issues of how the urban poor earn their livelihoods and the ways in which this affects key indicators of human welfare, such as food security and nutrition, especially of children. Strategies employed by the urban poor to secure their livelihoods affect the household's food security; the care of household members, especially children; and the resulting health and nutrition outcomes (Whittle, 2016). Urban food environment investigation: Pretoria Gardens. Honours project, University of Pretoria. Household food consumption surveys include the "street foods" purchased from vendors. Urban households

spend more than half of their budgets on food, but nearly one fifth of the households spend more than 70% of their income on food. A correspondingly high proportion of calories-roughly 30% for the entire sample comes from street foods. Inter household transfers of money play a crucial role in livelihood strategies, especially for low-income households, indigenous communities, and for female headed households (Tawodzera, 2016).

Most of this transfer income is spent on personal and household consumption needs. A survey done by Frayne *et al.*, (2009) in three South African cities; Johannesburg, Cape Town and Msunduzi, shows that households obtain food from a wide variety of formal and informal sources. For the three cities in South Africa, the main sources are; supermarkets (30%), supermarkets are more important than the informal economy in some cities and the reverse is true in others, these are dominant sources of food for households in most cities (Crush and Frayne, 2011); small shops, restaurants and takeaways (20%), as well as informal and street food (20%). In contrast, only 5% grow their own food, while 25% of households obtain food from sources that may be described as ‘coping strategies’ (food aid, remittances (food), shared meal with neighbours and/or other households, food provided by neighbours and/or other households, community food kitchen, and borrow food from others). Strategies on food insecurity adopted by urban households include relying on less expensive foods like seasonal or locally available vegetables, limiting portion size of meals and reducing numbers of meals eaten in a day, households borrow food or lend money from friends or relatives, bought food on credit from private grocery shops, used reserves, and some rely on food aid (Abdu-Raheen and Worth, 2011). The South African government has applied several strategies to address food insecurity within the country. It has used social grants and, over decades, has established a number of institutions and programmes focusing on food security including the National Nutrition Council (NNC), the National Nutrition and Social Development Programme (NNSDP), the Community Based Nutrition Programme (CBNP), and the Primary School Nutrition Programme (PSNP) (Bonti-Ankomah, 2001).

However, having sufficient resources to afford a healthy diet is the most important dimension of food security in urban areas, because urban dwellers are net food buyers. In many cities of developing countries, inhabitants buy more than 90% of their food (Maxwell *et al.*, 2000; Ruel

and Garrett, 2004). Several studies have pointed out that this is also the case in South Africa. According to Rogerson (1996), the majority of urban farmers in South Africa produce food as part of their survival strategy and their farming activities are not expansionist enterprises. This was confirmed by Martin *et al.*, (2000) who reported that urban agriculture in Pretoria and Cape Town tended to be associated with lack of formal sector employment and aimed primarily at the production of food for home consumption, which enabled households to save on food expenditure. However, they also pointed out that besides providing food, urban farming performed other important functions, including, social, cultural, developmental, and aesthetic and environment. It could be argued that the limited urban agriculture as a source of food is likely to be a survival strategy too; this would bring the total number of households obtaining food from sources that are typically associated with high levels of food insecurity to 30%, as high as supermarkets. Food insecurity further threatens the livelihoods of people living in a country such as South Africa, which is undergoing demographic, epidemiological and nutritional transition.

2.7 Conclusion

This chapter has discussed the global and South Africa's trends of urbanisation. There is a consensus that developing countries are urbanising at high rate, mainly as a result of migration, rural-urban movement, triggered by pull and push factors. All impacts have been negative, bringing social and economic instabilities in the world. The literature review has shown that over 1.4 billion people in the developing countries are estimated to be living in extreme poverty thus are vulnerable to food insecurity. The chapter has also discussed urban livelihoods in understanding food security in urban areas. Surviving in the challenging urban environment forces households to engage in several activities to expand income from formal employment and obtain food from sources that are described as coping strategies.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodological approach that was used to assess household food security status and food security determinants in Brazzaville informal settlement, Pretoria. It commences by discussing the study area, then elaborates on the sampling techniques, data collection procedures as well as the methods used for data analysis. The chapter concludes by discussing ethical considerations as well as study limitations.

3.2 Study area

The study was conducted in Brazzaville informal settlement in Atteridgeville. Atteridgeville is part of the city of Tshwane Metropolitan Municipality, located to the west of Pretoria. Atteridgeville was established by the South Africa's government in 1939 as a settlement for black people (South African history online, 2007). Brazzaville informal settlement is located on the southern side of the formal township of Atteridgeville situated in Gauteng Province about 10km west of the Central Business District (CBD) of Pretoria, see Figure 3.1.

Brazzaville is one of the five informal settlements which were established in 1990 on state land as transitional residential areas to provide people with temporary residence. It has a total population of 7894 and 1968 households. The choice of the study area was motivated by the fact that Brazzaville consists of poor households with high level of poverty and the expectation that a study would yield a great deal of information on how the urban poor strategize to meet their food needs. Currently the residential area of Brazzaville accommodates many people from around the country and neighboring countries such countries as Zimbabwe, Mozambique and Lesotho. Brazzaville is a diverse area, the residents speak many languages such as Xitsonga, Tshivenda, Sepedi and Northern Sotho and now the languages has been fused together to form a unique language style of the township known as "Tsotsi taal". Most of the dwellings in the settlement are constructed of materials such as zinc and cardboards. Brazzaville accommodates many residents who seek to live

in a low cost housing environment and have easy access to the City of Tshwane as well as the nearby industrial areas.

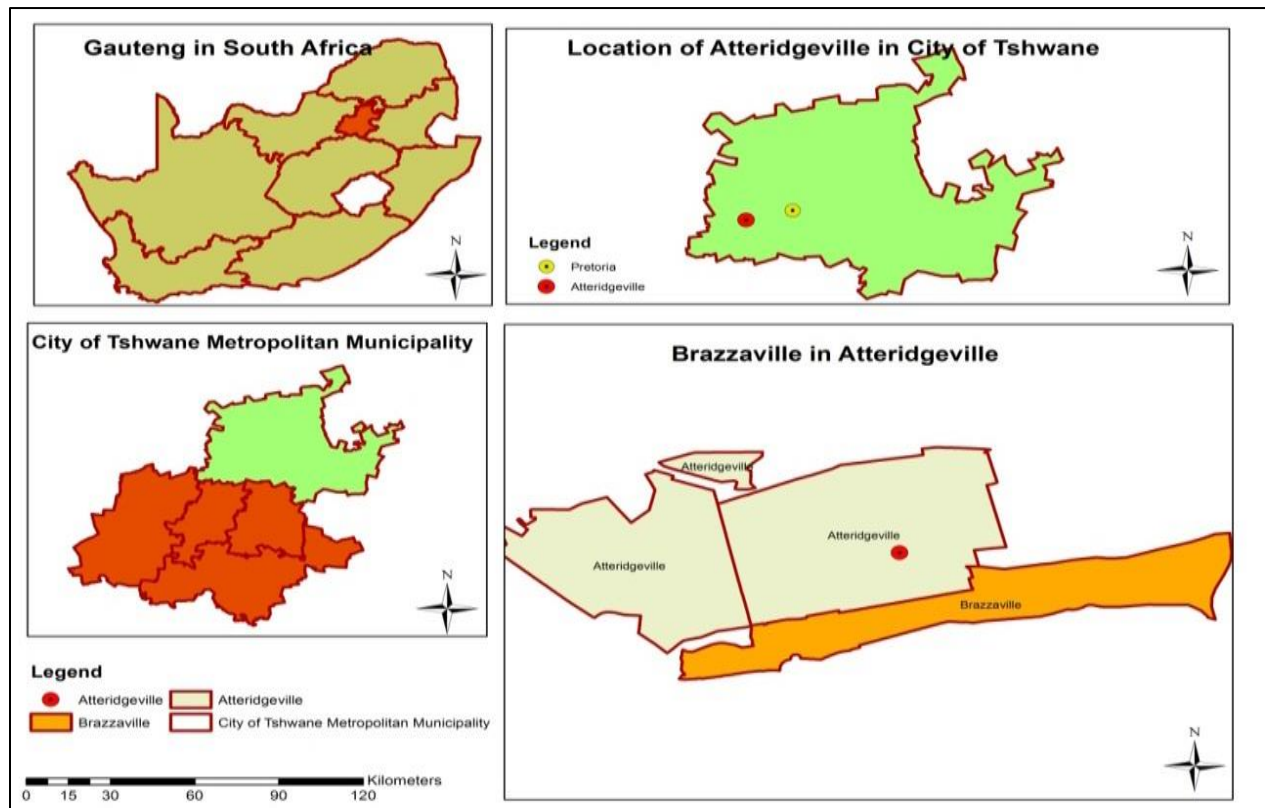


Figure 3. 1 Study area (Brazzaville informal settlement)

(Source: Mkhathshane Nhlamulo, 2017)

3.3 Research design

The study employed a mixed methods approach, combining both qualitative and quantitative methodological approaches. While most of the information sought in the study was quantitative in nature, the study also sought explanations about the various trends and patterns observed in the research. Thus quantitative data was complemented by qualitative information which helped to give underlying meanings.

3.4 Data

3.4.1 Primary data

A household questionnaire¹ was used as the primary data collection tool. This standardized household questionnaire was administered to a sample of households (95) in Brazzaville informal settlement. The questionnaire collected information on household demographics, income and expenditure statistics, poverty data, household food access issues, dietary diversity and periods in which households have adequate or inadequate food access.

3.4.2 Secondary data

Secondary data in this study entailed reviewing literature on food security, various conceptualisations of what food security is, the global, regional and national food security statistics and their implications as well as studies that have been done on urban food security elsewhere. Other secondary data involved gathering information on poverty, hunger and food access issues from government sources, Statistics South Africa (Stats SA) and from food security bulletins.

3.5 Sampling

Sampling is a process used which a predetermined number of observations are taken from a larger population (Webster, 1985). In this study, the population consisted of households in Brazzaville informal settlement. A household in this survey was defined as a group of people who share a dwelling and financial resources. As Statistics South Africa (Stats SA, 2008) indicates, a household may consist of a single person or a group of people who live together for at least four nights a week, eat from the same pot and share resources. The sampling methodology largely depends on the data sought as well as the type of analysis that will be performed. Through sampling, a researcher is able to infer certain characteristics about the larger population (Neelankavil, 2007).

¹ The study acknowledges the use of a modified version of a questionnaire designed by The African Food Security Urban Network (AFSUN).

3.5.1 Sampling frame

A sample survey was carried out in this study due to limited financial and time resources. A survey involves the enumeration of only a part of the total population in the sampling frame. The sampling frame for this study consisted of all the 1968 households in Brazzaville informal settlement.

3.5.2 Sampling size

An appropriate sample size for the study was derived using a formula developed by Yamane (1967) and later revised by Glenn (2004). The formula is applicable to populations where the total number of units in the sampling frame is less than 10000.

$$n = \frac{N}{1 + N(e)^2}$$

Where : n = required sample size
 N = sampling frame
 e = error margin (0.10)

Calculating the sample size for Brazzaville informal settlement

$$n = \frac{1968}{1+1968(0.10)^2} = 95 \text{ households (necessary sample size)}$$

3.5.3 Sampling techniques

3.5.3.1 Systematic random sampling

As indicated in the previous section, a total of 95 questionnaires were administered to selected households in the study area. The households that took part in the survey were selected into the sample through systematic random sampling. Random sampling was preferred because all households in the sample would have an equal chance of being selected into the sample, hence increasing the representativeness of the sample.

A sample of 95 households was selected according to a random starting point and fixed periodic interval. The sampling interval was calculated by dividing the population size by the desired sample size:

$$k = \frac{N}{n}$$

Where: k =required sampling interval

 N = Sampling frame

 n =sample size

$$k = \frac{1968}{95} = 20 \text{ sampling intervals}$$

$$m \leq k , \quad m \in [1,2,3, \dots 20]$$

Therefore $m = \text{random}[1,2,3, \dots 20] \approx 20$ starting point

A dice was cast in order to select the first household to administer the questionnaire. Thereafter, the questionnaire was administered to every 20th household until the desired sample size was achieved.

3.5.3.2 Purposive sampling

Respondents within households were selected purposively as the questionnaire was administered only to adults above 18 years (exception child-headed households). It was predicted that these adult members should have knowledge about the household income and expenditure patterns as well as food related issues. Where more than one potential respondent was available, the oldest person present was selected.

3.6 Data analysis

3.6.1 Quantitative data analysis (Questionnaires)

Data from the questionnaire was captured and transferred into Statistical Package for Social Science (SPSS) for computer-aided analysis. According to Kumar (1996) it is important that the information obtained should be in the language that the computer will be able to integrate during analysis in order to establish relationships between variables and review for the strength and direction of such relationships. The capturing of the data collected in this study was made easier by the fact that the questionnaire was pre-coded before fieldwork was undertaken.

3.6.2 Measuring household food security

Food security is multi-dimensional and no single compound measure has been developed yet. Hence, this study applied three measures of household food insecurity namely: (a) the Household Food Insecurity Access Prevalence Indicator (HFIAP); (b) the Household Dietary Diversity Score (HDDS); and, (c) the Months of Adequate Household Food Provisioning (MAHFP) measurement of household food access (Coates *et al.*, 2007). These measures were designed by the United States Agency for International Development (USAID)'s Food and Nutrition Technical Assistance (FANTA) project and have been used extensively in food security surveys internationally.

3.6.2.1 Household Food Insecurity Access Prevalence Indicator

The Household Food Insecurity Access Prevalence Indicator (HFIAP) is used to monitor whether household has become vulnerable to food access in the past 30 days. The scale comprises of 9 questions which ask about changes households made in their diet or food consumption patterns because of a lack of sufficient resources to purchase or produce food. The responses were captured and quantified through a survey and summarized in a scale. The HFIAP captures response in a scale between 0 (least food insecure) and 27 (most food insecure) and codes the response to calculate the index, which is then used to classify households into levels of household food security: food secure and food insecure.

3.6.2.2 Household Dietary Diversity Score

The Household Dietary Diversity Score (HDDS) is a simple count that uses a variety of different food groups consumed by the household over a given reference period to calculate a proxy measure for household food insecurity. Low dietary diversity was used as a predictor of food insecurity. The rationale for calculating dietary diversity is to get an insight into household food insecurity levels, as food insecure households tend to be over-reliant on starchy staples while excluding proteins and other dietary nutrients (Azadbakht *et al.*, 2005). Low dietary diversity was used as a good predictor of food insecurity among households.

3.6.2.3 Months of Adequate Household Food Provisioning

The Month of Adequate Household Food Provisioning (MAHFP) counts the months in which households have access to adequate food. It was used to capture the household's food security by capturing fluctuations in household food provisioning throughout the year.

3.6.3 Measuring household food security determinants

Spearman rank correlation and regression between food security and household variables (income, level of education, and household structure) was performed. Correlation was performed to establish the relationship between food security and household variable. Regression tests were also used to test the strength or degree of the relationship between household food security and household variables.

3.7 Ethical considerations

The researcher applied for and was granted ethical clearance from the University of Limpopo (UL) (Appendix B). To acquire permission from the respondents is an essential part of the research process. During the survey, the researcher explained the purpose of the research to respondents and ask for their consent to participate in the study. This enabled the respondents to volunteer to participate in answering the questions without feeling being coerced. Those who agreed to take part in the survey were asked to provide their consent by signing consent forms. Anonymity was maintained by stripping of the data of all identifying marks. All interviews were kept safe digitally

by means of passwords and no personal or household information that identifies respondents was collected.

3.8 Challenges and limitations of the study

Brazzaville is one of the well-known settlements for high level of crime and robbery. It was therefore not easy to conduct the survey due to safety concerns and extra precautions had to be taken. This included leaving the area before dark so as not to expose oneself to unnecessary risk. The other challenge related to the respondents' expectations, the majority of whom expressed their desire for government to improve their living conditions. Without overstating the significance of the research, the researcher explained to the respondents that while the recommendations of the research may find their way into the hands of local policy makers, the primary objective of the research was academic. Some few respondents were impatient during the questionnaire administration process because of the amount of time that it took to administer. It thus took the researcher more time to convince some of the respondents to finish the interview process. The survey prolonged the estimated period which was fixed to complete the sampled households and it raised the financial costs for data collectors.

CHAPTER FOUR

HOUSEHOLD FOOD SECURITY: STATUS AND DETERMINANTS

4.1 Introduction

This chapter presents and discusses the study findings regarding food (in) security amongst households of Brazzaville informal settlement, Pretoria. It commences by discussing the demographic profile of households, by presenting the descriptive data on household age distribution, gender, marital status, occupation and educational levels. The chapter then discusses the socio-economic status of households converging on employment status and income. It also discusses the level of food security among households through the use of three measures of household food insecurity discussed in Chapter 3. The chapter further discusses the numerous factors that are responsible for increasing urban household food insecurity, which include rising food prices, unemployment, household expenses as well as the economic conditions of the household. Lastly, various food security strategies used by households to cope with food shortages are identified and discussed.

4.2 Household demographic and socio-economic characteristics

A total of 95 households were sampled and interviewed in the study. In the process, information relating to population of 405 household members was collected. This section deals with the demographic as well as the socio-economic characteristics of the sample.

4.2.1 Gender of household members in sample population

The results on Figure 4.1 below indicate that the study encompassed 48.4% male and 51.6% female of the total population within the sampled households in Brazzaville. These statistics shows that females forms a large percentage of household members.

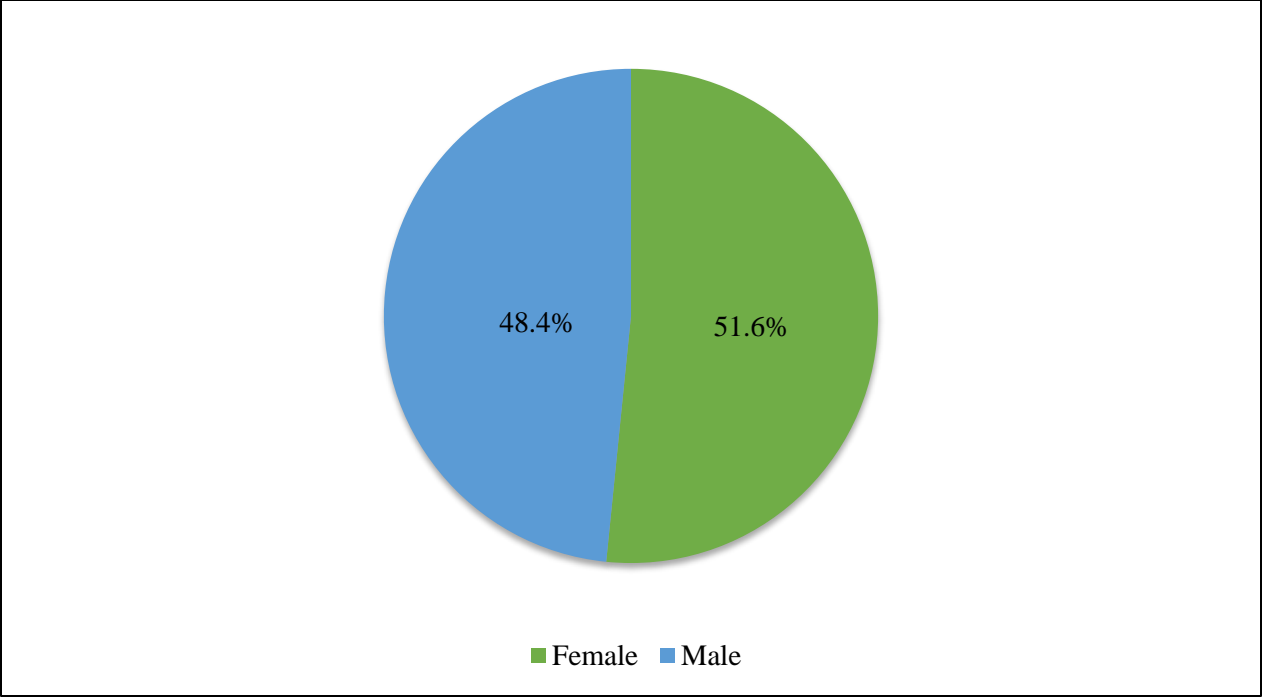


Figure 4. 1 Gender of the sampled household’s members in Brazzaville

(Source: Research Survey, 2017)

4.2.2 Age of household members

The figure below indicates the age of household members of the sampled population. Household age category with the highest proportion was 20-29 years (23.9%), followed by 30-39 years with 20.7%. The lowest age category of household members was for those with 70 years and above, constituting 1.2% of the sample. The mean population age was 29 years. This implies that Brazzaville’s population is generally youthful as 44.6% were between the ages of 20-39 years. In addition, 29.6% of the sample population was aged between 0-19 years.

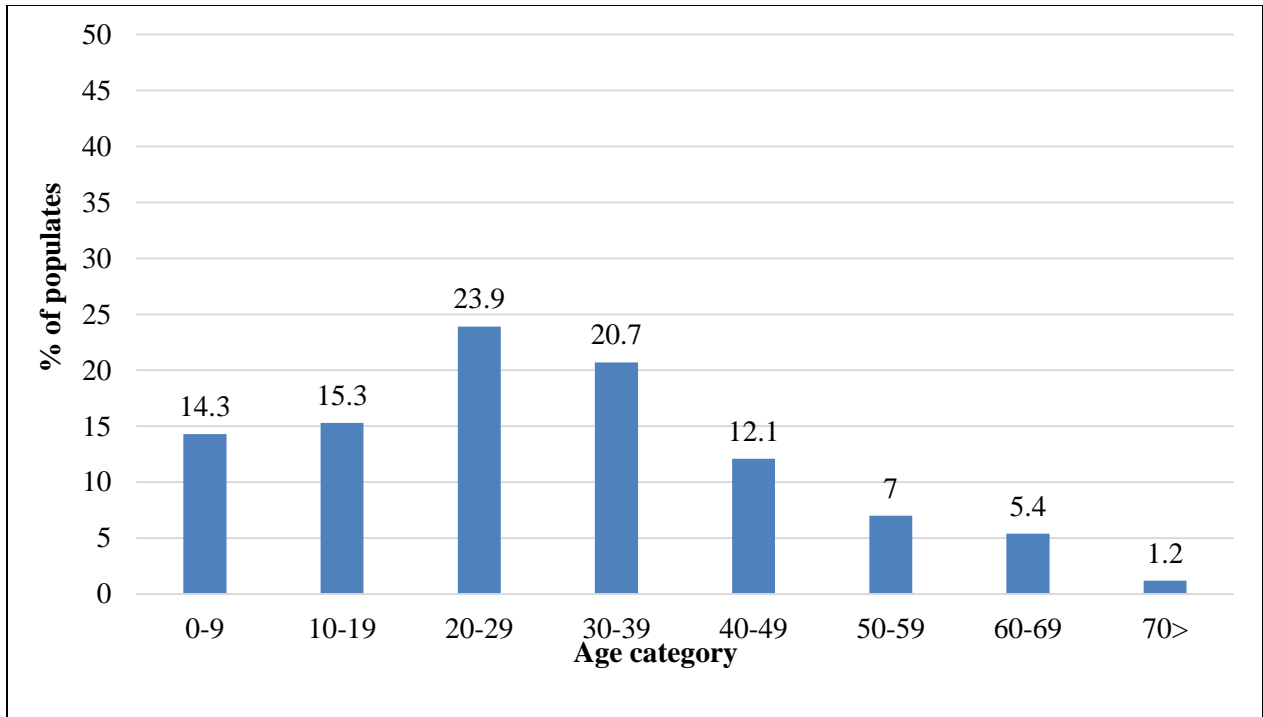


Figure 4. 2 Brazzaville’s household member’s age

(Source: Research Survey, 2017)

4.2.3 Household members’ relationship to household head

Table 4.1 below shows the household members’ relationship to household heads. Household heads made up 22.0% of the sample population, spouses/partners 12.1% and children had the highest share with 33.8%. Other household members included brothers/sisters (9.1%), parents (1.0%) and other relatives (7.2%). Less than 1% of the household members were adopted/foster children and grandparents. Non-relatives and son/daughter-in-law accounted for 2.2% and 1.7% respectively. This suggest that in Brazzaville few households lived with their in-laws and non-related members.

Table 4. 1 Household member’s relationship to household head in Brazzaville

Relationship to household head	N	%
Head	89	22.0
Spouse/ partner	49	12.1
Son/ daughter	137	33.8
Adopted/ foster child/ orphan	1	0.2
Father/ mother	4	1.0
Brother/ sister	37	9.1
Grandchild	40	9.9
Grandparent	3	0.7
Son/daughter-in-law	7	1.7
Other relative	29	7.2
Non-relative	9	2.2
Total	405	100.0

(Source: Research Survey, 2017)

4.2.4. Household structure

4.2.4.1 Household’s Size

Statistics drawn from Table 4.2 below indicate that the average households size in Brazzaville was 4, which is higher compared to the South Africa (SA) national average household size (3.4) (Stats SA, 2012). There was a wide range in the size of the households, with the smallest household (2.1%) being single-person households and the largest household of 15 people. The majority of households in the sample (54.7%) comprised 4-7 members. The second highest category of

households (37.9%) comprised of less than 3 members. Only 5.33% of the households had between 8 and 11 members in the household while only 2.1% of the households had 12-15 members.

Table 4. 2 Surveyed household size in Brazzaville

Household size category	N	%
<3	36	37.9
4-7	52	54.7
8-11	5	5.3
12-15	2	2.1
Total	95	100.0

(Source: Research Survey, 2017)

Brazzaville was dominated by female-centered households as these made up 32.6% of the surveyed households. The female-centered households comprised mostly of female household heads and their children (Table 4.3). The second highest proportion of household comprised of nuclear household (30.5%) while extended households made up 22.1% of the surveyed households. The extended family households included mainly the household head, spouse, children as well as relatives, non-relatives and in-laws. Nuclear households on the other hand comprised mainly the household head, spouse and children only. Male-dominated households (*i.e.* household without a female spouse or partner) constituted the smallest category with 13.7% of the sample households. The majority of these male-centered households were single-person households, or at most two people living together.

Table 4. 3 Surveyed household types in Brazzaville.

Household type	N	%
Female-centered	31	32.6
Nuclear	29	30.5
Extended	21	22.1
Male-centered	13	13.7
Other	1	1.1
Total	95	100.0

(Source: Research Survey, 2017)

Cross-tabulations of household size by household structure in Table 4.4 below shows that the largest household size was mainly found among the female-centered households where all the households with between 12 to 15 members fell in this category. Male-centered households in Brazzaville were few (13.7%) and no members above 7 were found within the male-centered household category. Households with less than 3 members were greater among nuclear households. Households with 8-11 members were found among extended households.

Table 4. 4 Household size by household structure (%)

Household size	Female-centered	Male-centered	Nuclear	Extended	Other	All households
<3	11.6	7.4	16.8	2.1	0	37.9
4-7	17.9	6.3	13.7	15.8	1.1	54.7
8-11	1.1	0	0	4.2	0	5.3
12-15	2.1	0	0	0	0	2.1
Total	32.6	13.7	30.5	22.1	1.1	100

(Source: Research Survey, 2017)

Almost all the households in Brazzaville (97%) were living in a squatter hut/shack house type (Figure 4.3). Squatter shacks are makeshift structures erected by households without approved architectural plans by the local authority. Most of the squatter shacks in Brazzaville were two roomed structures whose size depended on the size of the household, the larger households having comparatively larger shacks in comparison to those occupied by smaller households or single person households. The dominance of shacks in the area is a result of the fact that the settlement is informal and therefore household members are loath to build permanent structures that may, at some point in the future be demolished by the local authority. In addition, most people living in the area have low incomes, hence are unable to afford more durable building materials. Thus, only 2% of the households surveyed were living in brick structured dwellings while only 1% was living in backyard rooms.

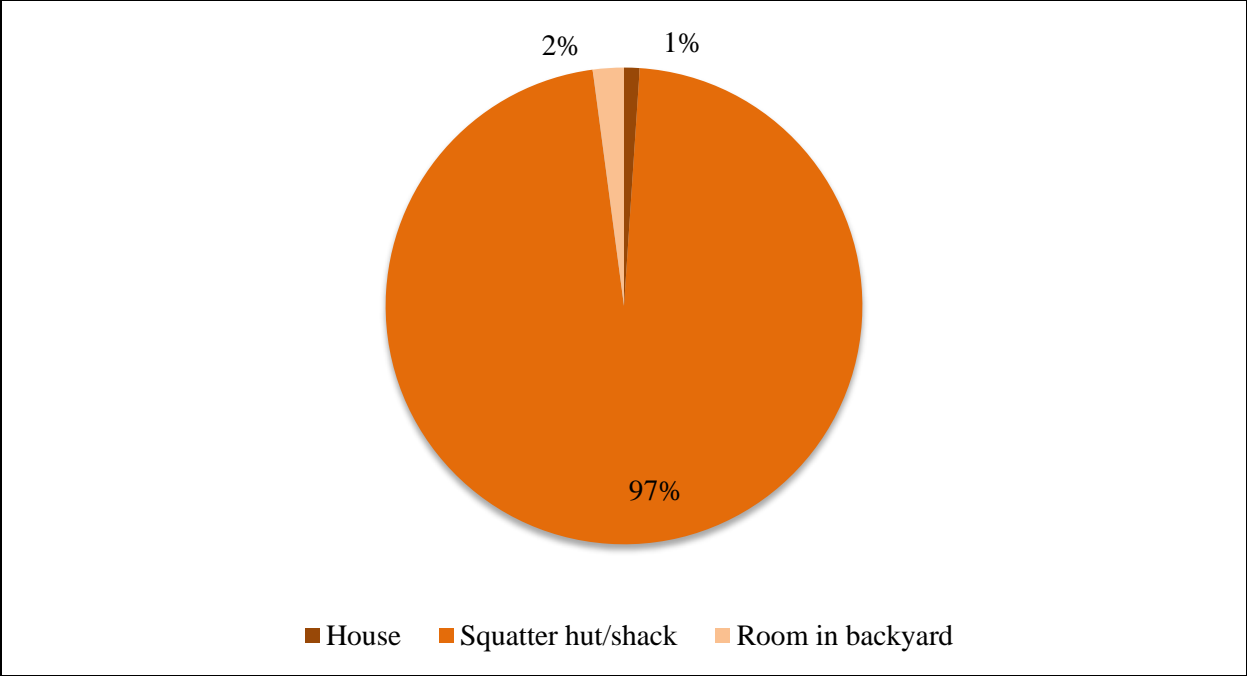


Figure 4. 3 Surveyed household type in Brazzaville

(Source: Research Survey, 2017)

4.2.5 Household marital status

Figure 4.4 below shows the marital status of the population in the sampled households in Brazzaville. About 18% of the sampled population were minors. The percentage of the persons married was 17%, and 41% adults never been married. The fraction of persons separated amounted to 5% and those that were widowed constituted 3% of the sample population respectively. About 13% were living together unmarried. This suggests that many households consisted of couples that were not married, but living together. Only 1% of persons were abandoned.

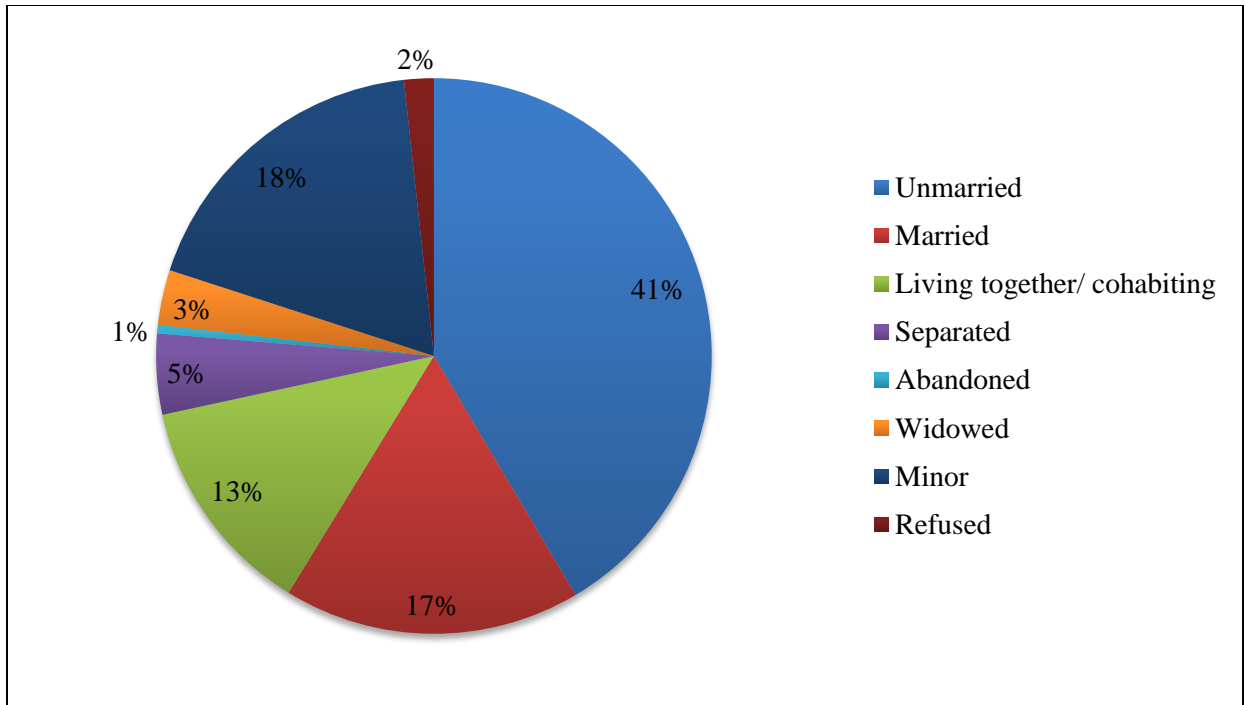


Figure 4. 4 Household member's marital status

(Source: Research Survey, 2017)

Cross-tabulations of household heads by marital status shows that a large proportion of household heads were married (36%), while 24% were unmarried and 21% were living with their partners (Figure 4.5). In addition, 10% of the household heads were widowed, while 8% were separated and 1% reported being abandoned. The results from survey also show that Brazzaville had no child-headed households.

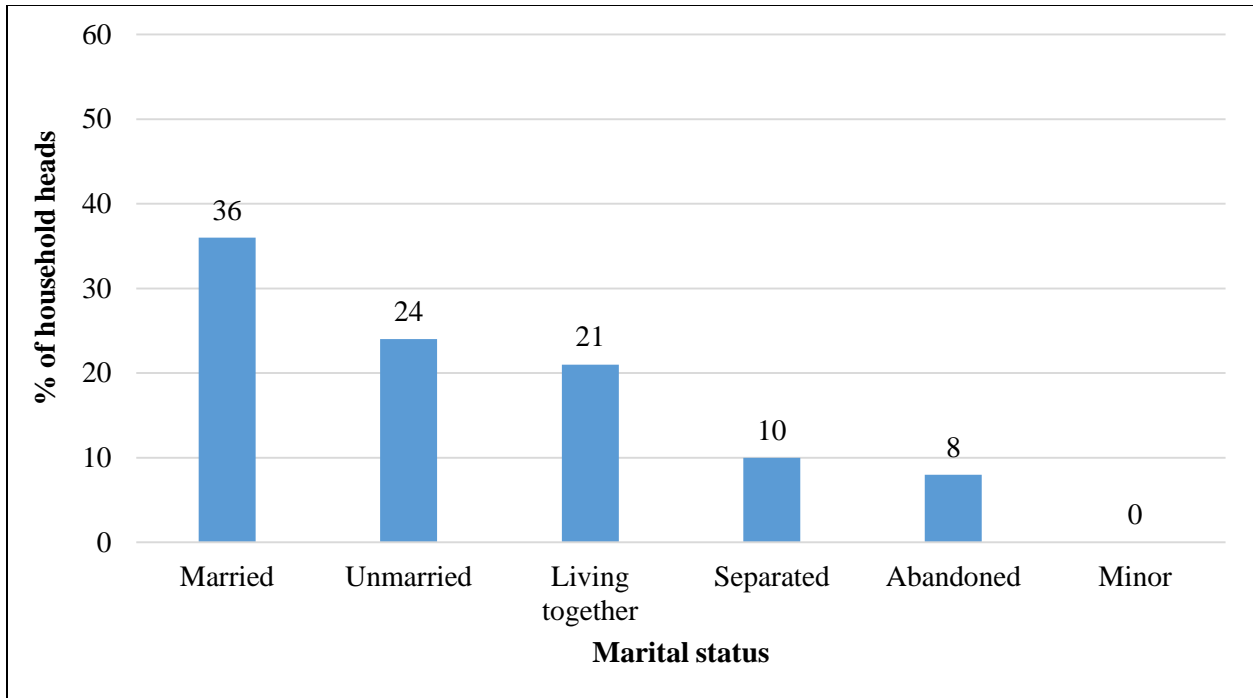


Figure 4. 5 Brazzaville’s household heads marital status

(Source: Research Survey, 2017)

4.2.6 Education level

The sampled population was relatively educated with only 13.1% of the population reporting no formal schooling (Figure 4.6). The majority of the sampled population (30.4%) indicated that they completed high school while 11.4% were still in high school. Just 10.1% of the population had primary education, 12.3% still in primary level. This can be explained that majority of members in Brazzaville had formal education. A smaller number (1.5%) obtained post-graduate qualifications, while 1.7% had undergraduate degrees or diplomas and 1.0% were still at the university or colleges. A total of 7.2% of the sample population were minors or were under-age to acquire formal/informal education.

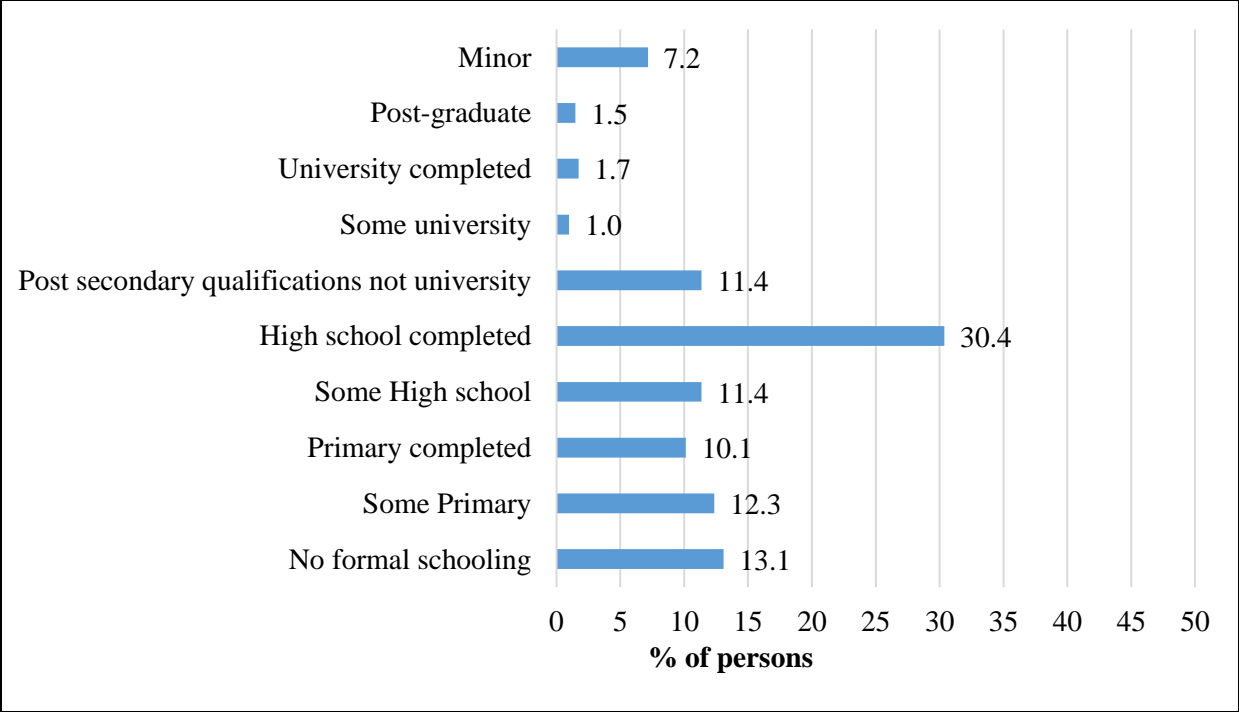


Figure 4. 6 Household education level

(Source: Research Survey, 2017)

The survey also sought to find out the level of education of the household heads. This is important as their level of education was envisaged to impact on their socio-economic status, and ultimately on household food security. Table 4.5 indicates that majority (36%) of the heads completed high school education while 16.9% had completed primary education. Only 1.1% of the household heads reported still being in high school. About 16.9% had degrees/diplomas and 3.4% were still in the process of obtaining their postgraduate degrees. One in four household heads had no formal education. This is because most of them grew up at a time when access to education was restricted to black people during the apartheid era.

Table 4. 5 Household head education level

Education level	Frequency	%
No formal school	23	25.8
Some primary	0	0.00
Primary completed	15	16.9
Some high school	1	1.1
High school completed	32	36.0
Post education qualification	12	13.5
Some university	0	0.00
University completed	3	3.4
Post graduate	3	3.4
Minor	0	0.0
Total	89	100.0

(Source: Research Survey, 2017)

4.2.7 Household Employment status

The survey found that 38.0% of the population was unemployed and not looking for work (Figure 4.7). Such a high percentage of people not working is reflective of the high unemployment rates that are currently being experienced in the country. Stats SA (2016) reported that the unemployment status in the country is 26.7%. Findings from Brazzaville study shows that merely 22.2% were not working, nevertheless looking for work. This means total of 60.2 % of the population was not working and 39.5% was working. From the working population, 26.7% were working full time and 12.8% working part-time/casual respectively.

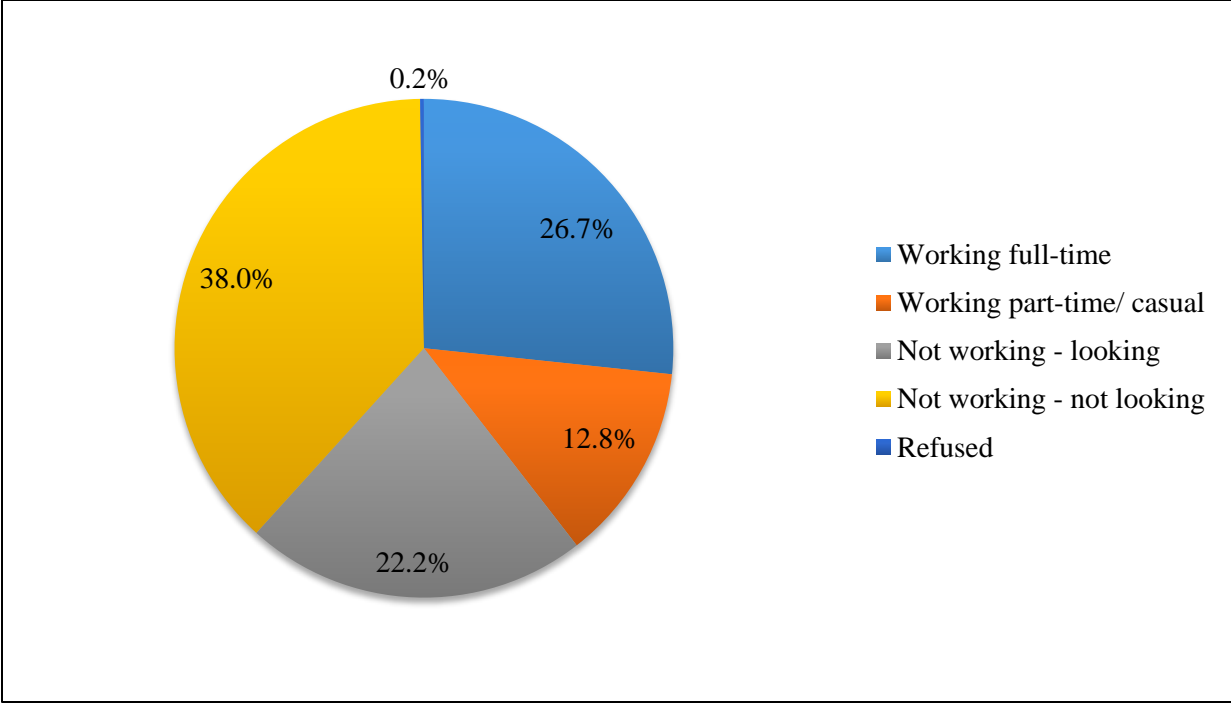


Figure 4. 7 Household employment status

(Source: Research Survey, 2017)

Table 4.6 below indicates that majority (80.8%) of the household heads in Brazzaville were among the working categories, 62.9% were working full-time and 17.9% working part-time. About 82.5% of son/daughters in Brazzaville households were unemployed. Among the sample households, no grandparent nor adopted child was working or looking for job.

Table 4. 6 Household head employment status

Relationship to Head	Working full-time %	Working part-time/casual %	Not working-looking %	Not working-looking %	Refused %
Head	62.9	17.9	10.1	8.9	0
Spouse/partner	30.6	18.4	26.5	24.5	0
Son/daughter	13.1	4.4	28.5	54	0
Adopted/foster child or orphan	0	0	0	100	0
Father/Mother	25	0	0	75	0
Brother/sister	18.9	18.9	35.2	24.3	2.7
Grandchild	0	5	7.5	87.5	0
Grandparent	0	0	0	100	0
Son/daughter-in-law	14.3	14.3	42.9	28.5	0
Other relative	20.7	27.6	34.5	17.2	0
Non-relative	44.4	33.4	0	22.2	0

(Source: Research Survey, 2017)

4.2.8 Household occupation

The most common occupation in Brazzaville was scholar/students (26%), and were mostly children and young. About 21.0% were unemployed job seekers whereas 8.9% were minors. Unidentified occupation accounted 7.1% and pensioners 4%. Employment was found to be the key source of household income in Brazzaville, yet the majority of the population were not employed (Table 4.7). With the passage of time, the nature of society is changing continuously and most people prefer to work in the administrative work and avoid jobs involving physical labor. However, the most common employment was security personnel and informal market traders/hawkers) (4.2%), followed by unskilled/semi-skilled labour (3.7%), skilled manual labour (3.5%) and domestic work (2.7%). Only 5% were traders and had business as their main

occupation. Taxi/truck drivers, police/military and office workers were other dominating occupations and altogether constituted 6.6% of the sample.

Table 4. 7 Household occupation

Occupation	Frequency	%
Security personnel	17	4.2
Unskilled/semi-skilled	15	3.7
Domestic worker	11	2.7
Truck driver	9	2.2
Police/military	9	2.2
Service worker	4	1
Mine worker	1	0.2
Skilled manual worker	14	3.5
Office worker	9	2.2
Professional worker	7	1.7
Health worker	6	1.5
Businessperson	4	1
Teacher	1	0.2
Trader/hawker/vendor	15	3.7
Student	107	26.4
Minor	36	8.9
Pensioner	18	4.4
House worker (unpaid)	6	1.5
Job seeker	85	21
Other	29	7.1
Total	405	100

(Source: Research Survey, 2017)

4.2.8.1 Household head main occupation

The main occupation amongst household heads was unskilled/semi-skilled (37.1%), skilled (20.2%) and informal market producers (6.7%) (Table 4.8). The results generally indicate that the majority of the heads were employed (64%). Only 22.5% of the head population were not employed and 13.5% were students, pensioners and the unpaid household duties workers.

Table 4. 8 Household head occupation

Household head Occupation	Frequency	%
Unskilled/semi-skilled	33	37.1
Skilled	18	20.2
Informal economy	6	6.7
Scholar/student	3	3.4
Pensioners and unpaid	9	10.1
Unemployed and unknown	20	22.5
Total	89	100.0

(Source: Research Survey, 2017)

4.2.8.2 Other household occupation

Table 4.9 below indicates that close to half of the household's population in Brazzaville (42.7%) had more than one occupation. The majority of household's members were domestic workers (39.5%). About 13.1% of the population were business people, traders and vendors. The study also found that 23% of the population could not classify their occupations in terms of employment.

Table 4. 9 Households other occupation

Household Occupation (b)	Frequency	%
Managerial/office worker	2	5.3
Informal sector producer	1	2.6
Trader/hawker/vendor	4	10.5
Businessperson	1	2.6
Pensioners	2	5.3
House work/unpaid	15	39.5
Unknown	9	23.7
Other	4	10.5
Total	38	100.0

(Source: Research Survey, 2017)

4.2.9 Household Income

4.2.9.1 Household monthly income

Figure 4.8 shows the household income categories for the sampled population in Brazzaville. Wage employment is the prime source of household income in Brazzaville. An average of 77% of households received income from wage/salary. The average household income was R4962 per month and the median was only R3200 per month. The highest monthly income received was R28600 and the minimum was R250. A few households (15.8%) received more than R10000. The category with low income was R500 – R999 and counted for 2.1% of the population.

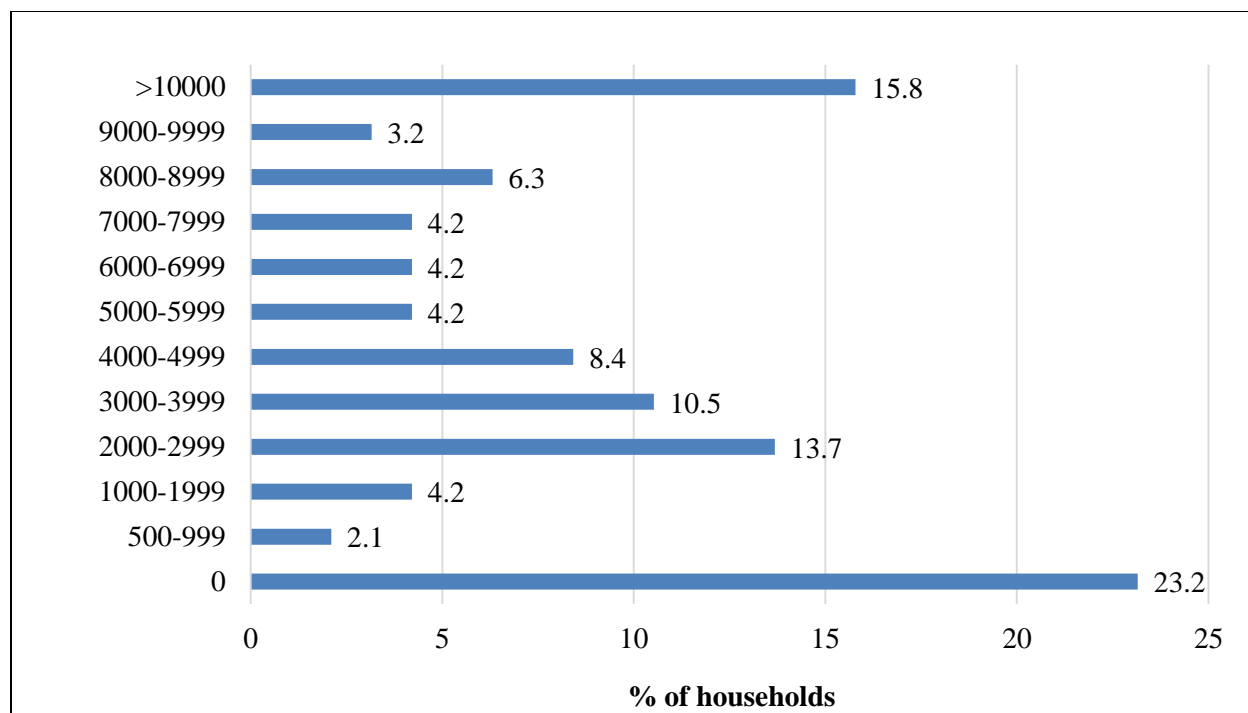


Figure 4. 8 Household monthly wage income

(Source: Research Survey, 2017)

4.2.9.2 Sources of household income

Table 4.10 shows various sources of income for the sampled population in Brazzaville. Single income source for households was generally inadequate, and household members relied on more than one source of income for survival. About 77% of the households received income as salary or payment. Approximately 52.3% of households sourced their income from government's social, pension and maintenance grant. About 21.1% sourced their income from informal business and casual work. Other significant source of income for households was rentals and formal business. Only 2.1% acquired income from selling farm products. However, 4.8% of the household received their income from other unidentified sources. The salary income contributed 37.1% of the household's income, followed by other sources such as the unclassified businesses which households did not mention (22.3%) and social or pension grant (11.5%). Informal business contributed 9.2% to household's monthly total income.

Table 4. 10 Household all income sources monthly mean

Source of income	%	Mean Monthly income (ZAR)
Wage/salary	76.8	4962
Social grants	52.6	1539
Informal business	21.1	1227
Rental income	21.1	383
Other	6.3	2983
Formal business	4.8	1000
Gifts	4.2	270
Farm products	2.1	1000
*more than one source permitted N=95		

(Source: Research Survey, 2017)

4.2.7.3 Household total income from all sources

Household's monthly average income was R6808 and the maximum of R28980. About 23.2% of households received a total income of more than R10000 and the minimum household income received was R750.

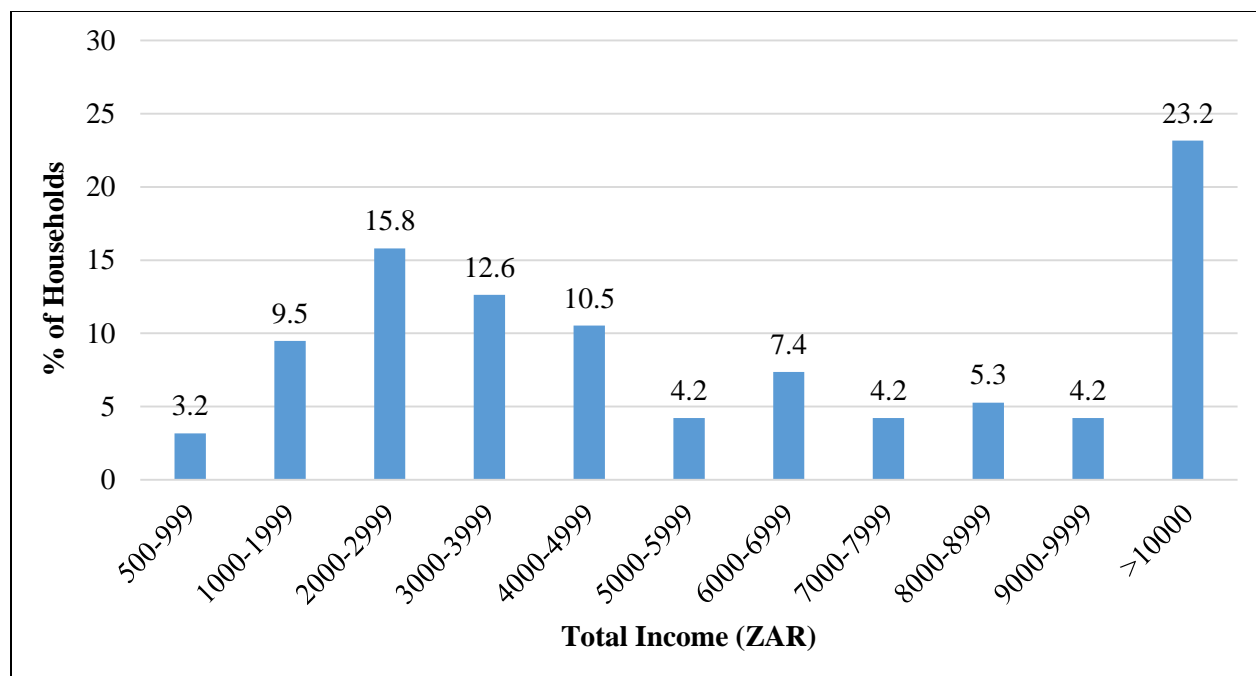


Figure 4. 9 Household total income from all sources

(Source: Research Survey, 2017)

4.3 Household food security status in Brazzaville

The sub-sections below discuss the results on food security levels in Brazzaville households. As already indicated in Chapter 3 in data analysis, the study used three international cross-cultural scales developed by the Food and Nutrition Technical Assistance Project (FANTA) to assess levels of food insecurity in Brazzaville.

4.3.1 Household food insecurity status by HFIAS

The HFIAS scores range from 0 to 27, where households at the upper end of the scale lack all food and while those at the lower end of the scale are well provisioned. The mean HFIAS score in the study was 11, with a median score of 12, a minimum score of 3 and a maximum of 21. The majority of surveyed households indicated that they could hardly maintain a steady supply of adequate food for all household members all the time. According to Coates *et al.*, (2007), food secure households do not have to worry about food access; they rarely experience anxiety about not having enough food and they are able to have a full meal three times in a day without running out of food. On

the other hand, food insecure households are anxious about not having sufficient food they usually consume inadequate diet or eat food that they do not prefer and sacrifice quality on a continuous basis by consuming inadequate diet as well as eating less preferred foods and reducing meal sizes.

4.3.2 Household food security levels using the HFIAP

The HFIAP assigns households to four food security groups based on their HFIAS score: a) food secure; b) mildly food insecure; c) moderately food insecure and, d) severely food insecure. For ease of analysis and interpretation however, the first two categories were collapsed into one to make the food secure category, while the latter two were also combined to make up the food insecure category. It is these two categories that will be used in this study to report on household food security levels. According to survey results, 29.5% of the surveyed households in Brazzaville were food secure compared to 70.5% that were food insecure (Figure 4.10). Previous studies on food security done in Cape Town by Battersby, (2011) found that about 80% of households in Cape Town's three poor areas (Ocean view, Khayelitsha and Philippi) were food insecure and 20% were food secure (Battersby, 2011). Although Brazzaville had fewer food secure households compared to Cape Town's urban areas mentioned in the study above, it is difficult to regard Brazzaville as being more food secure because of the different periods within which the studies were carried out.

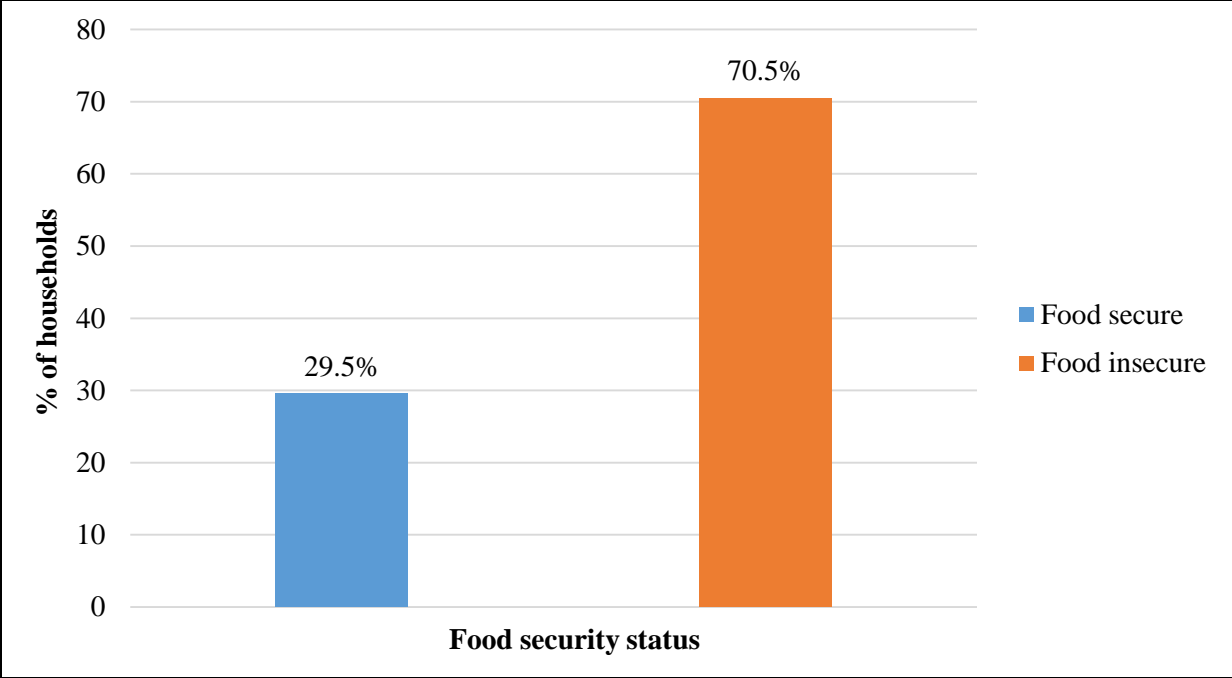


Figure 4. 10 Household food security status in Brazzaville

(Source: Research Survey, 2017)

Responses to food insecurity (HFIAS)

Majority of households worry that their households would not have enough food, meaning that households had access to food but not consuming a satisfactory amount of it and their source of income was vulnerable. To have a proper meal which would be enough for a single week for Brazzaville households was a challenge. Households were not able to eat the kind of food they preferred in 3 to 10 times a month due to a lack of resources. Most households consume some type of food because it was the only food available for them to eat since it is cheap or easy to access. This indicates that generally, households ate food they really do not desire when they were hungry. Households also mention that their diet was limited in terms of variety due to a lack of resources. Some revealed that they ate smaller meals because there was not enough food. In this context, households did not get satisfied with the meal they ate per day for the past month because they live from hands to mouth. Some households go to bed hungry and this occurred from time to time because the majority of households eat twice a day, in the morning and in the evening, so by the

time they went to bed they would be hungry again. Some households mentioned that they had gone without enough food several times and had begun to decrease the quality, range and quantity of foods consumed. One respondent explained the situation in their household as follows:

“We cannot afford to eat more than two meals in a day, food is very expensive, the least we can do to survive is to train our body and mind that we eat twice a day so that we can have a little saved for the next few days until we get another money to buy food” (Respondent 13, 30 May 2017, Brazzaville, Pretoria).

The number of meals taken by households in Brazzaville also determines the availability or access of food in a household. Household eat certain quantity of food according to what they have in the household. However, few households go a whole day without eating and this usually happens when there is no food in the household.

4.3.3 Household food insecurity status by HDDS

The HDDS shows the average food groups consumed by households in the previous day. Brazzaville households scored a mean HDDS of 5 (out of a possible 12). A mean HDDS of 5 out of 12 and a median 5 indicates that the dietary diversity was poor and no household reported consuming all 12 food types that were investigated. Under this measure, a score of under 6 is an indicator of malnourishment (Coates *et al.*, 2007).

Foods consumed in Brazzaville

Table 4. 11 Food eaten by households in the previous day

	N	%
Bread, rice noodles, biscuits, or any other foods made from millet, sorghum, maize, wheat and grain	91	95.8
Any potatoes, yams, manioc, cassava or any other foods made from roots or tubers	52	54.7
Any vegetables	46	48.4
Any fruits	32	33.7
Any beef, pork, lamb, goat, rabbit, wild game, chicken, duck other organ meats	53	55.8
Any eggs	24	25.3
Any fresh or dried fish or shellfish	16	16.8
Any foods made from beans, peas, lentils, or nuts	13	13.7
Any cheese, yoghurt, milk or other milk products	29	30.5
Any food made with oil, fat, or butter	20	21.1
Any sugar or honey	48	50.5
Any other foods, such as condiments, coffee, tea?	54	56.8

N=95

(Source: Research Survey, 2017)

The proportion of households that consumed foods with grain was very high, 95% of the interviewed households in Brazzaville indicated having had maize, bread and other food from grain the previous day. This result was expected because maize is South Africa's staple food which is used for porridge and for 'pap' – a favorite starch in many South African households. The majority of households indicated that grains are generally affordable; hence they are able to keep

their households replenished for longer periods. In addition, grains were also said to be easier and faster to prepare. In a context where energy costs are generally high, the reliance on grains foods is also strategic in saving energy costs. Despite such strategic decisions on what foods to purchase and consume, the survey found out that a high proportion of households in Brazzaville tend to be over-reliant on starchy staples while excluding proteins and other nutrients from their diet. Rather there was also a high consumption of non-nutritive foods such as tea and sugar, with 57% and 51% of the households indicating having consumed these foods in the previous 24 hours. Protein consumption was lower than the consumption of starchy foods. This is shown by the fact that only 56% of the surveyed households in Brazzaville indicated having consumed meat, chicken and organ meat during the recall period. Households indicated that the most common type of meat they were consuming was chicken offal such as feet, liver and gizzards popularly known in the area as ‘maotwana’, ‘dibiti’ and ‘dikilana’. The chicken offal’s are generally sold at train stations and busy street corners at a very low-prices that the poor can afford (Figure 4.11).



Figure 4. 11 The most eaten type of food in Brazzaville

(Source: Research Survey, 2017)

The majority of traders selling offal meat usually operate ‘after hours’ from 16h00-19h00 when workers are coming from work. This is because it is the period within which most households prepare their evening meals. Less than 30% of the households reported consuming eggs, fish, beans, butter and food made from milk in the previous 24 hours. Even less (13.7%) households were consuming beans and other food made from beans and peas. This was because beans take a lot of time to cook and thus consume a lot of energy which most households cannot afford. The few households that indicated eating beans were generally those households with kids that were eating the beans at the feeding schemes run at schools. Most respondents indicated that they always have the same meal almost every day. The most common meal was being pap, served with cabbages, potatoes or chicken offal meat. While it is possible that household members would consume enough food to meet the calorimetric food requirements, it is doubtful that the type of food they consumed would meet the required nutrients for physical and mental health development. Generally, the diet for most households in Brazzaville was poor nutritionally. This negatively impacts on the health and growth of household members, particularly children. One respondent described her household’s situation as follows:

“We sometimes just eat because we do not want to feel hungry; we cannot choose what we want to eat, we eat what we have not what we wish or crave to eat.”
(Respondent 14, 31 May 2017, Brazzaville, Pretoria).

With the food price increasing regularly, and lacking cash resources, most households did not eat enough food and thus constantly found themselves facing shortages. Although some households do not experience critical shortages to the point of spending the whole day and night without eating, they were nevertheless consuming poor-quality foods whose nutritional value could not be guaranteed. Some households indicated that they were eating foods that were available regardless of whether they wanted that food or not. Hence, consumption of non-nutritive foods which reflects a deeper food insecurity problem that goes beyond just the issue of food availability.

4.3.4 Household food insecurity status by MAHP

The third FANTA indicator is MAHP, which shows whether there are fluctuations in levels of food insecurity throughout the year. Figure 4.12 below shows the months in which households

experience inadequate food provision. Almost (94%) of sampled household's experienced inadequate monthly food provision and only 6% did not experience inadequate food provisioning. A mean score of 7.7 represents almost eight months of adequate food provisioning was recorded, with a median of 9.0, and a minimum of 1 and a maximum of 11 months. About 30% of the households indicated being inadequately provisioned in 3 months of the year, while 14% of the households also reported being inadequately provisioned for 5 months. Only 6% of households in the sample reported being adequately provisioned with food for all 12 months. This indicates that the majority of households suffer from inadequate food provisioning for a number of months, hence exposing them to the probability of becoming food insecure. It is instructive to note that all households that reported less than eight months of adequate food provisioning were also found to be food insecure. On the other hand, households that reported more than 10 months of adequate food provisioning were also food secure, indicating the importance of food access to the attainment of household food security.

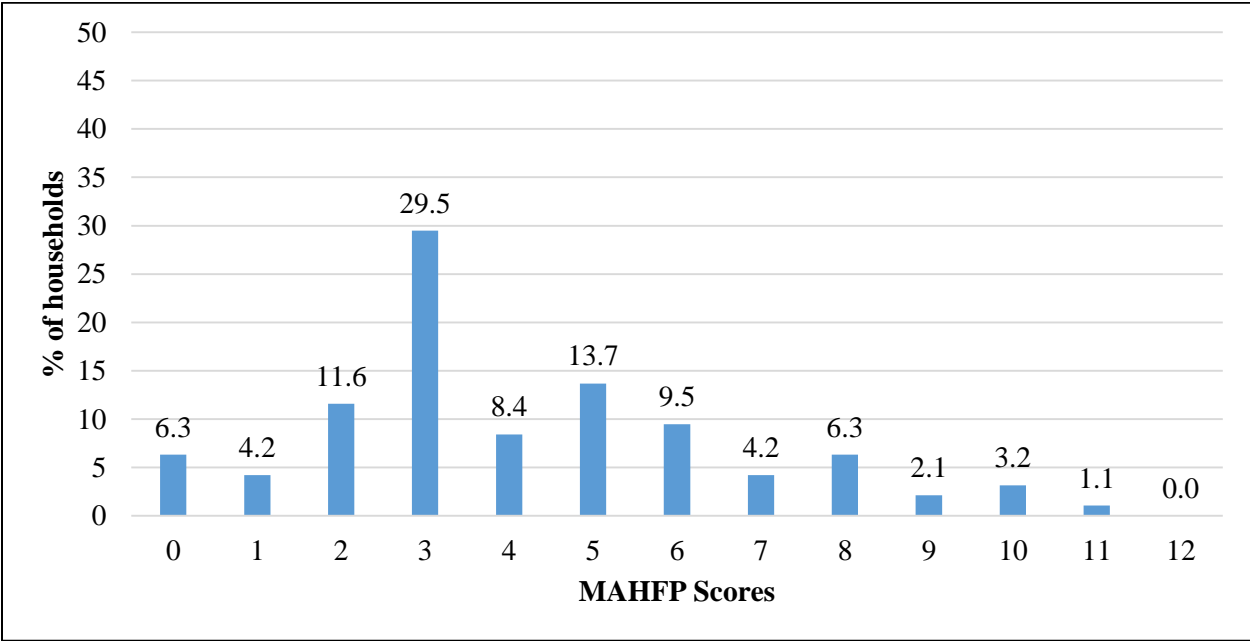


Figure 4. 12 Distribution of MAHFP Scores in Brazzaville

(Source: Research Survey, 2017)

Figure 4.13 below shows the months in which households were inadequately provisioned. The months in which most households experienced food shortages are from January to March and May and June. Almost 73% of the households experienced shortage of food in January, followed by 60% in February. The reasons provided is that households use a lot of cash resources during festive season (late December to early January), some even visiting their families outside the province and the country, hence spending huge monetary resources on transport, Christmas gifts, and January thus becomes a challenging month for them as they would have exhausted their cash resources in December. Most households thus have to live on a stringent budget in the first month of the year, generally sacrificing numerous needs such as food. In addition, the huge demand for cash for school's fees, uniforms, stationary, registrations and rentals means that the budget for food is very limited. The cash crunch spills over into February as households continue to experience food shortages. One respondent explained the household situation as follows:

“The first three months of the year were the worst in my household and was the period where things like school fees, and accounts instalments needed to be paid. With so much responsibilities and a lesser amount of finance, I was continuously forced to go to the loan shacks during that period of the year” (Respondent 22, 07June 2017, Brazzaville, Pretoria).

Seasonality is an issue affecting the food security status of Brazzaville households, because there are seasons and common to households when they experience severe shortage of food. About 40% of the households experienced inadequate food provision during June. Households revealed that during this period of the year food provision was comparatively low because there were generally many people at home during this month as children would be on a school holiday. One participant indicated that it was better when kids were at school because they have feeding schemes at school where the children would get food. In that scenario, the children only eat once at home, in the evening. During school vacations, however, the children require two or three meals a day, hence putting a strain on the household food budget. December was the least month with inadequate food provision with only 11% of households' experiencing inadequate food provisioning. This was because the majority of employed household members received their bonus payment in that month, hence availing the much needed cash resources to buy food. Additionally, some households engaged in food/grocery clubs “also known as stokvel in townships” throughout the year and only

shared the groceries amongst themselves during the month of December. This considerably increased food availability in the households.

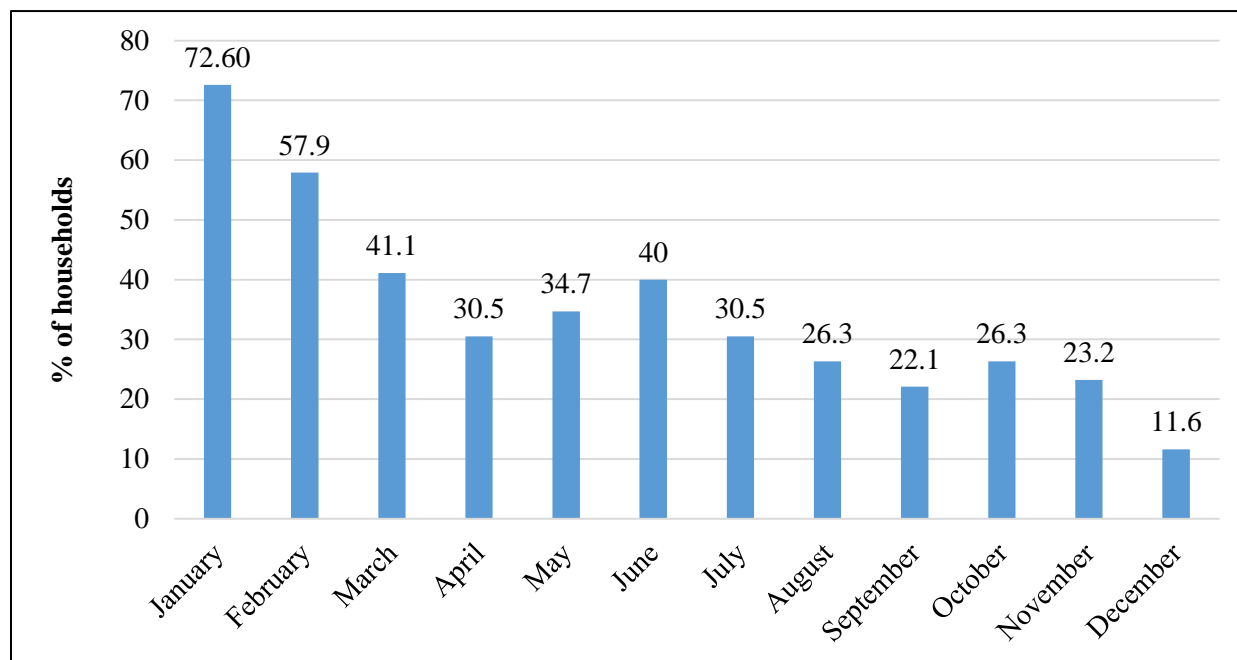


Figure 4. 13 Proportion of Households with inadequate food provision by month

(Source: Research Survey, 2017)

4.4 Determinants of household food security in Brazzaville

4.4.1 Poverty and urban food insecurity

Poverty in South Africa is driven by a combination of domestic factors such as low and weak economic growth, continuing high unemployment levels, higher consumer prices especially food, and greater household dependency on credit (Stats SA, 2017). Such conditions are bound to pull more households into food problems. This study used the Lived Poverty Index (LPI) to report on how often people in Brazzaville were able to secure a basket of basic necessities: food, clean water, medicine, and a cash income. The study reveals that most Brazzaville households were living in poverty as reflected by an average sample LPI of 1.70 and a median of 1.67. The minimum LPI of 0.5 was recorded and maximum LPI score was 3.16. These levels of poverty are indicative of the

high inequality levels that still exist in South Africa where a huge number of urbanites are poor and live in informal settlements such as Brazzaville.

Table 4. 12 Lived Poverty Index (LPI) Categories in Brazzaville

	N	%
0.00-1.00	10	10.5
1.01-2.00	63	66.3
2.01-3.00	21	22.1
3.01-4.00	1	1.10
Total	95	100.0

(Source: Research Survey, 2017)

Approximately 50% of the households indicated that they had gone without enough food several times, while 20% had gone without clean water several times in the past year (Figure 4.14). Households reported that some areas of Brazzaville had no access to water. Although there were households that had water taps inside their homes, some were using communal water taps, hence unequal access to water in the community. About 34% of the surveyed households indicated having gone without medicine or medical treatment. This was because the nearest clinic was a distance away (approximately 20 km) from their settlement, and medication was rarely available at the clinic. For those that opted to go to hospitals they were expected to pay, which money they did not have, hence some have no access to medication.

Electricity in Brazzaville was problematic. Many households indicated that they had gone without electricity in their households in the past year. The area experiences intermittent electricity supplies as electricity periodically trips because of illegal power connections that are prevalent in the area. Hence 43% of the households reported always going without electricity while 36% had gone without electricity many times. Due to intermittent supply of electricity, households went without fuel to cook their food, since they had to budget for and buy fuel for cooking.

About 28% of households reported that they had gone without income once or twice in the previous year. This was mainly due to loss of employment of a household member or the end of social grant.

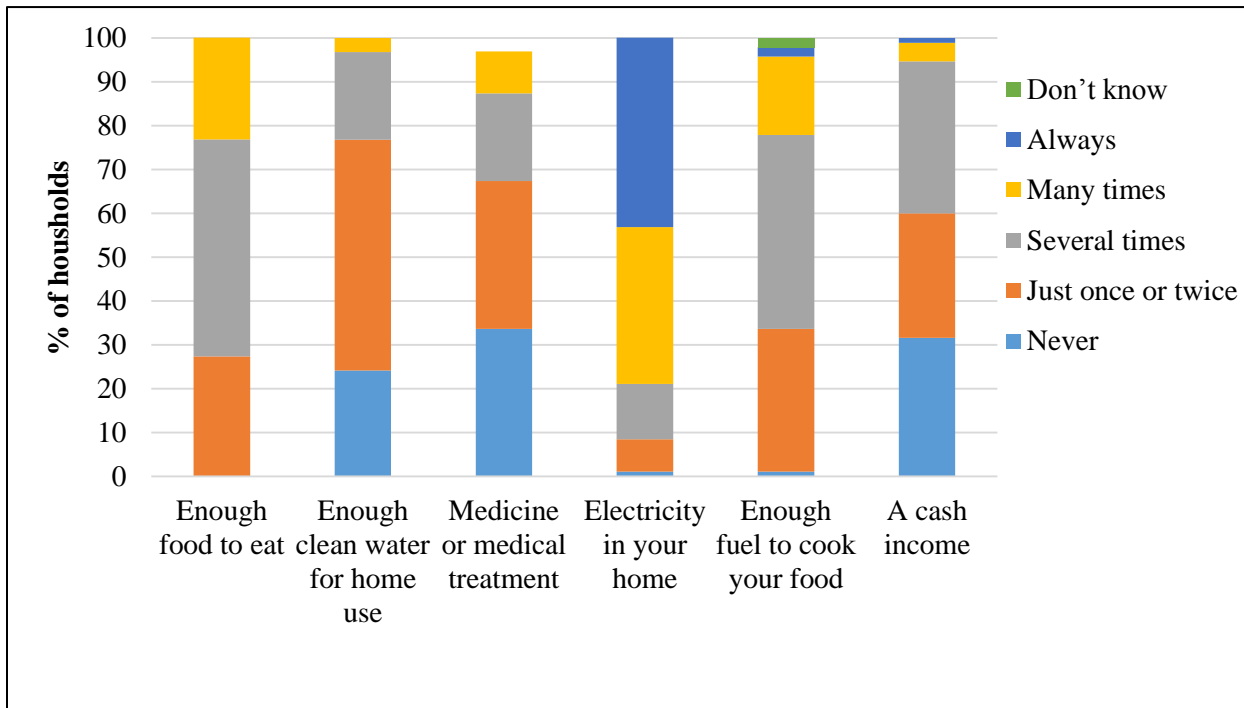


Figure 4. 14 Households frequency of going without basic necessities

(Source: Research Survey, 2017)

Besides the increase in food price, the survey found several problems faced by Brazzaville households that also prevented them from meeting their household food needs. From Table 4.13, a total of 26.3% of the sampled households reported experiencing loss or reduced employment, while about 20% experienced reduced income and theft and 15% experienced serious illness of a member in the households.

Table 4. 13 Problems prevented households from meeting their family needs

	N	%
Insecurity/Violence	12	12.6
Death of a working member	2	2.1
Death of the head	2	2.1
Death of other member	5	5.3
Serious illness	14	14.7
Accident	4	4.2
Loss/reduced employment	25	26.3
Reduced income	19	20
Relocation of the family	5	5.3
Reduced or cut-off of remittance	1	1.1
Taking orphans	2	2.1
Health risks	5	5.3
Floods and other environmental hazards	5	5.3
Increased cost of water	1	1.1
End of a social grant	8	8.4
End of food aid	2	2.1
Theft	20	21.1
Political problems	10	10.5
Other	10	10.5

(Source: Research Survey, 2017)

4.4.2 Income and household food security

Food insecurity in urban area is usually considered a problem of access to basic needs by poor households and the outcome of insufficient income to buy required food (Altman, 2010). Food poverty lines are usually drawn on the basis of how much income is required to meet basic food

needs (Tawodzera *et al.*, 2015). A higher income empowers households to make choices on what and where to buy food and makes households differ on food choices that may not be available to those with lower income. Without income, access to food in the urban area is problematic as most of the foodstuffs have to be purchased. Household income is an important determinant of household food insecurity. Several studies have confirmed this hypothesis in both urban and rural settings (Battersby, 2011; Akinboade and Adeyefa, 2017).

As the survey findings show on the Figure 4.15 below, 72.9% of the food insecure households had total monthly income below R6000. Only 19.4% of the food insecure households earned between R6000 and R10000 while only 7.7% of the food insecure households earned more than R10000. This shows, without doubt, that income is one of the greatest determinants of household food security. The higher the income a household has, the better the possibility of it being food secure. On the other hand, a lower income increases the chances that a household will be food insecure. Thus only 14.2% of the food secure households were earning below R6000. The greater proportion of the food secure households (60.7%) were earning above R10000. The quantum of household income therefore plays a major role in determining the food stability, food preference as well as the nutritional diet of the household. In this survey, households with an average monthly income of R6000 and above were likely to consume from more than 5 food groups. On the other hand, low income households generally had to rely on credit and borrowing money to purchase food. Although 7.5% of the households with incomes above R10000 were reported to be food secure, this was because such households were large and therefore had more members to feed. An observation made in the study was that households with higher incomes were generally headed by females. This may be because female-centered households also reported having multiple income sources which included running beauty salons in addition to their daily jobs.

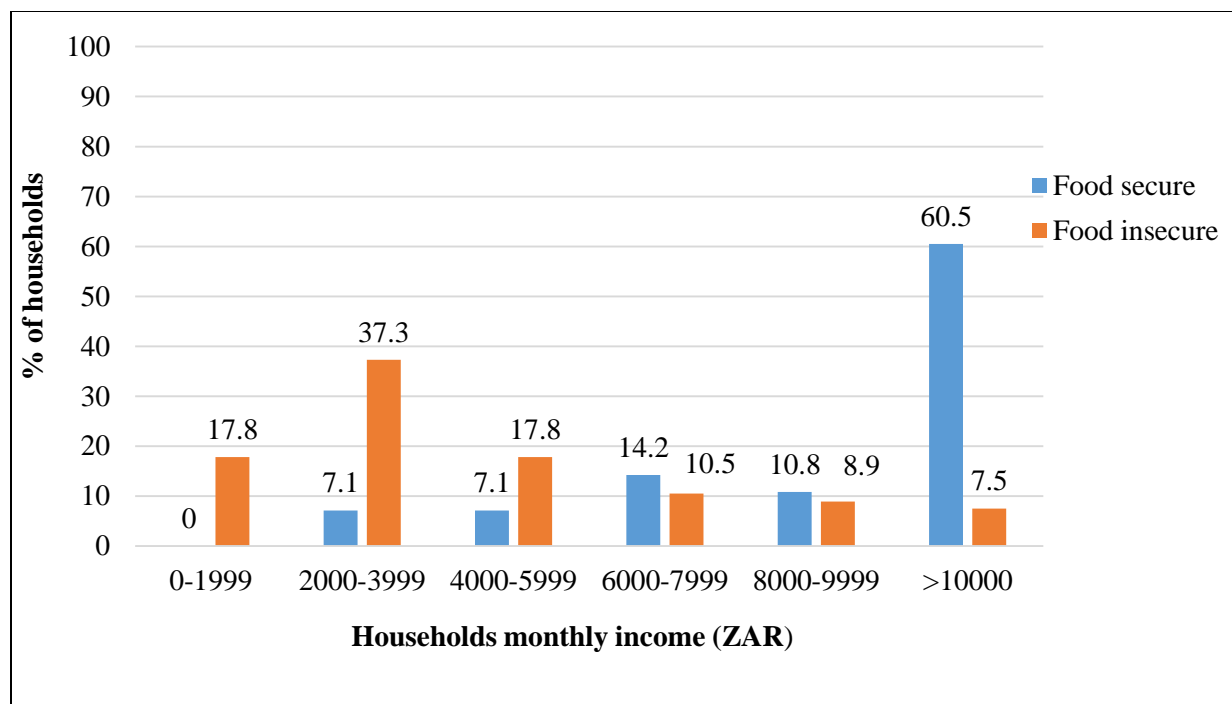


Figure 4. 15 Household food security status by household monthly income

(Source: Research Survey, 2017)

4.4.3 Employment status and household food security

The influence of food price changes is usually worse for low-income urban residents who rely mostly on informal sector activities as a source employment which provides low irregular earnings. Most households' members were unable to find jobs of their choice, particularly because jobs are scarce and difficult to find, so they remained unemployed which leave them vulnerable to food insecurity. Employment status determines food security status of a household, Figure 4.16 below show that the majority (82.2%) of food secure households in Brazzaville were among the working category and less than (17.8%) in 'not working' category. On the other hand, the majority (67%) of the food insecure households were among the 'not working' category and 33% among the "working" category. The results indicate that unemployed household's experiences high incidences of food insecurity as compared to the working households.

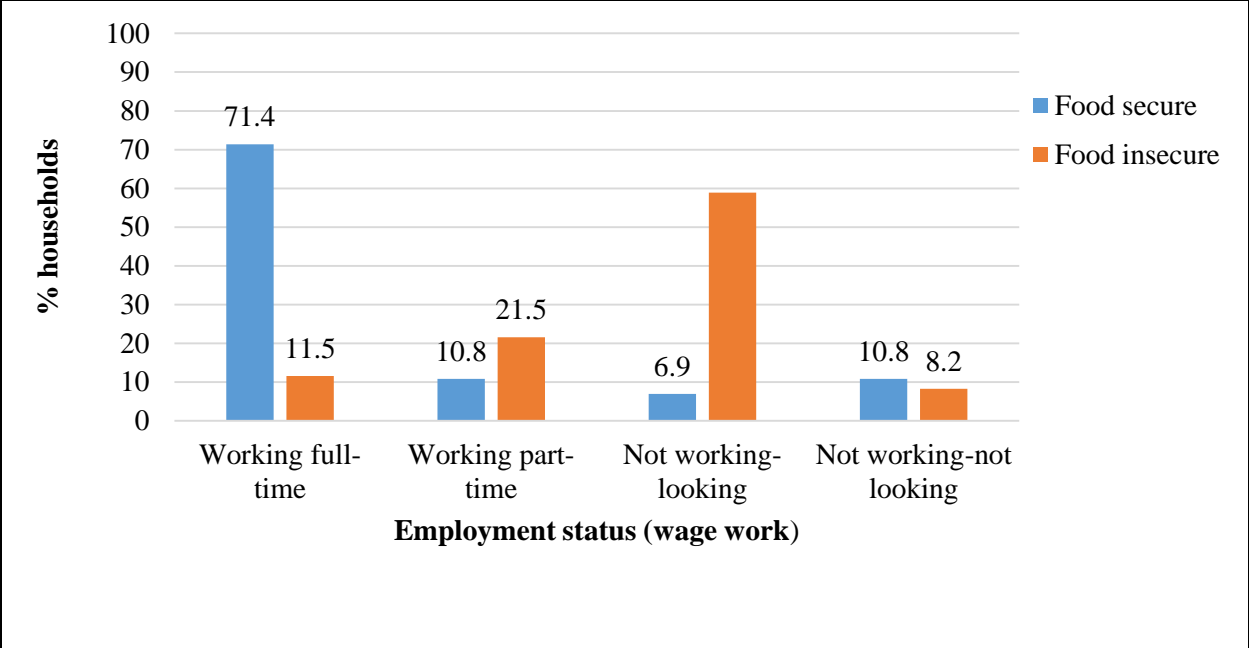


Figure 4. 16 Household food security by household head’s employment status

(Source: Research Survey, 2017)

4.4.4 Household structure and food security

The most food insecure households were the male centered households (32.8%). Female-centered households have been found to be generally food secure than male-centered households (Figure 4.17). The reason was that most female had multiple income sources like social grants, mainly because they generally receive their child grant money and buy food in the household. On the other hand, male-centered households were likely to go hungry several times in a month because not all male are able to buy enough food that is necessary and enough for the month since many of them cannot prepare some type of food and male. Extended households and nuclear households were food secure because more than one member in the household was working, and this has decreased the vulnerability of household to food insecurity because members were contributing to purchase food. Male-centered households were food insecure because male smoke and drink alcoholic beverages, and this has been found as one of the expenditure that uses much of the money because they buy them regularly more than just food.

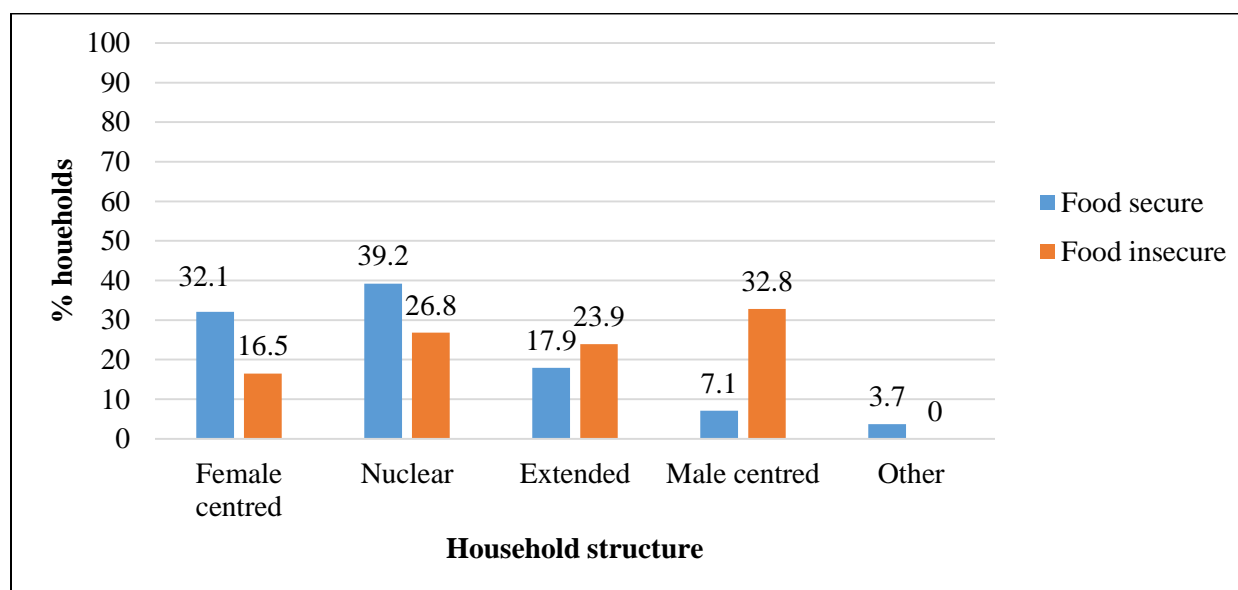


Figure 4. 17 Household food security status by household structure

(Source: Research Survey, 2017)

The differences in food security status between household structures was household income (Table 4.14). Extended households reported higher income (monthly total from all sources), followed by female-centered households and the slightest by male-centered household.

Table 4. 14 Urban household monthly mean income by household structure

Household structure	N	%	Mean monthly income
Female centered	31	32.6	R6617
Nuclear	29	30.5	R6128
Extended	21	22.1	R8310
Male centered	13	13.1	R4309
Other	1	1.1	*
Total	95	100.0	

(Source: Research Survey, 2017) *Missing value

Figure 4.18 below shows Household food security by household size. The study found that the majority (67.9%) of food insecure households had members between 4 and 7. No households with more than 12 and less than 15 members were food insecure, therefore the larger the household size, the more people in a household are involved in income generating activities and this rises the capacity in the household, since each one of the working members contribute in buying food.

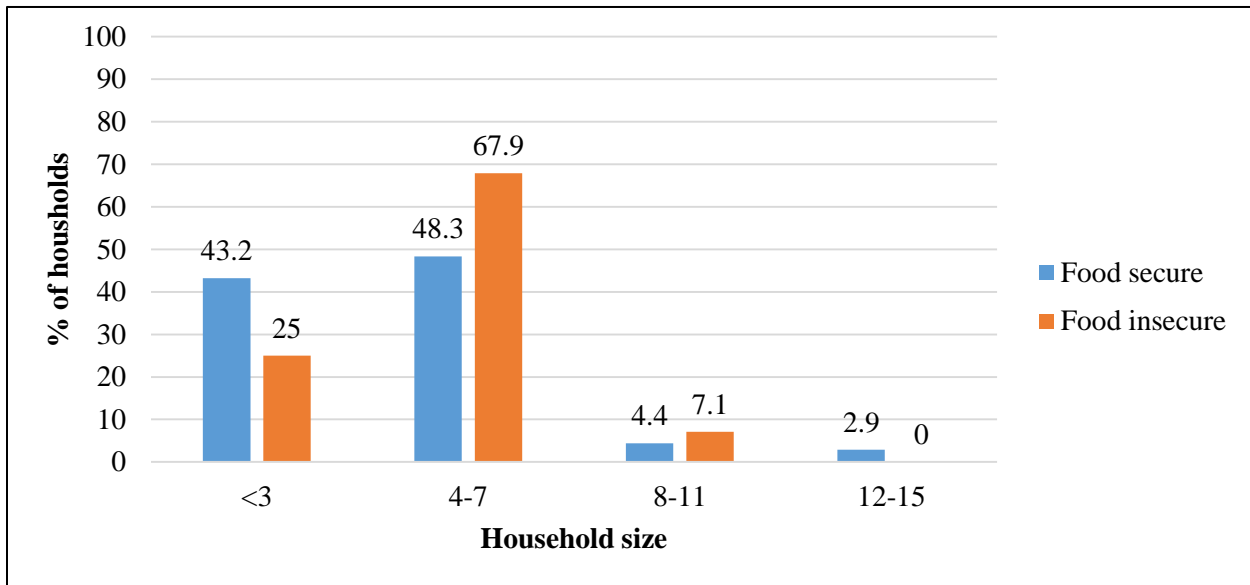


Figure 4. 18 Household food security by household size

(Source: Research Survey, 2017)

4.4.5 Education and household food security

Education is related to food security in a number of ways. It has a positive effect on employment and income, which in turn are essential determinants of food security in an urban setting (AFSUN, 2012). Hence the education of the household has an important role on the socio-economic status and food security of the household. Education and its attendant skills is associated with increasing employment prospects (Pendleton, 1996). The study found that 58.8% of educated household heads were food secure (Figure 4.19) and the most food insecure households were those whose heads had no formal education (35.1%). Food insecurity is mostly frequent in household with lower levels of education and no formal schooling (AFSUN, 2009). This is because better educated

people are able to improve the quality of life for generating-income, thereafter education influences the access to information on nutrition and better decision making.

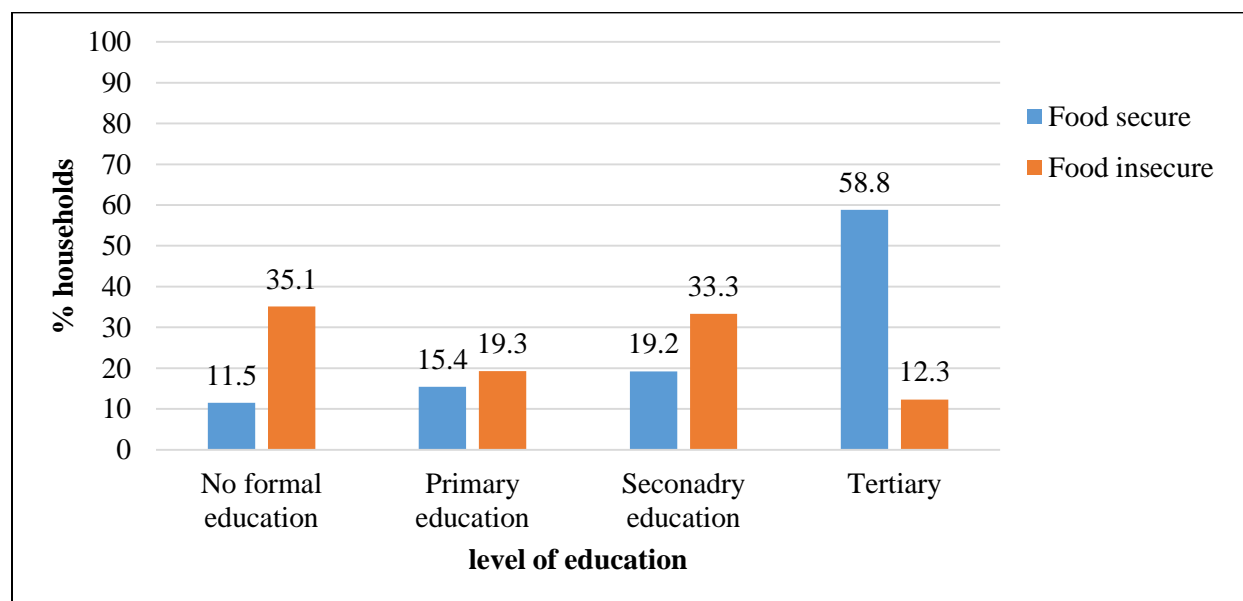


Figure 4. 19 Household food security status by household head’s educational status

(Source: Research Survey, 2017)

4.4.6 Urban household food security and food prices

According to National Agricultural Marketing Council (NAMC, 2017), inflation has remained consistently on the rise in the past few years. This has had an effect of decreasing the purchasing power of the average South African household, resulting in food insecurity (NAMC, 2017). The December 2017 Consumer Price Index (CPI) released by Statistics South Africa (Stats SA) indicated that the headline CPI and the food and non-alcoholic beverage price indices reached 4.7% and 4.8% respectively compared to the 4.6% and 5.2% in November 2017. Food prices had also risen due to drought conditions that have negatively affected South Africa’s staple food crop and therefore vital foods are now being imported at a higher cost. During December 2017 NAMC stated that urban food basket reached R849, 22 compared to the R844, 08 reported in November 2017, indicating a month-on-month increase of 0.61%. The price of white maize, which was found to be the most frequently eaten food in Brazzaville, has increased by 150% over the year 2016

(NAMC, 2017). Therefore, food inflation increases vulnerability of poor urban household to food insecurity.

Brazzaville households were asked of their frequency of going without enough food due to price increase in the previous six months. From Figure 4.20 below, 45% of the population reported going without what food for more than once a week. This was because many households buy groceries once a month and that the food they purchase does not last the whole month. About 34% of the households went without food for about once a week and 18% went without food about once a month and only 3% went without food every day.

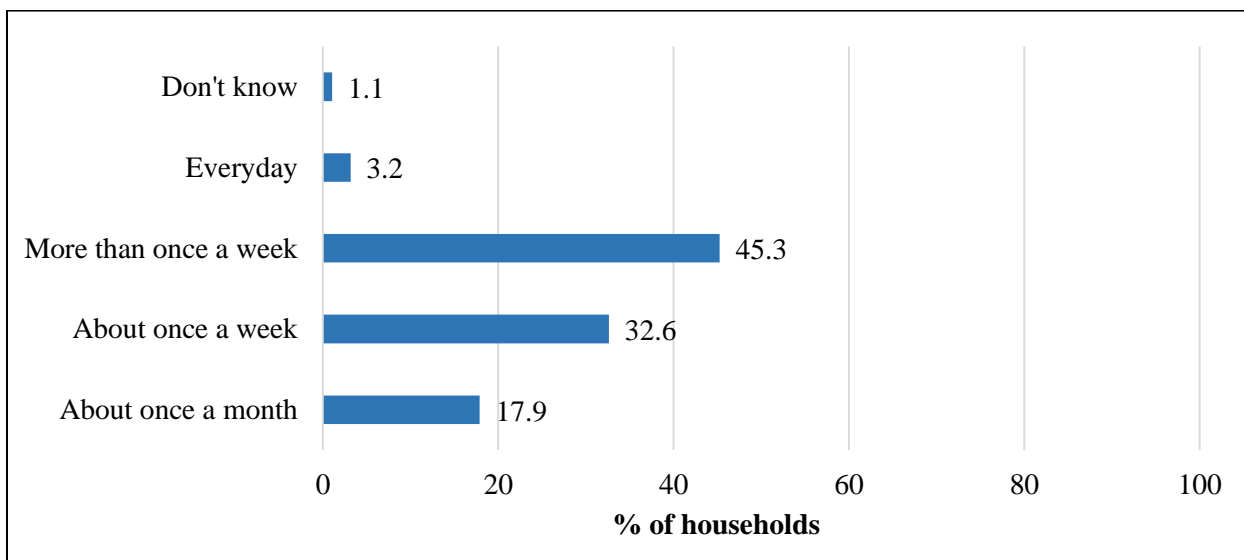


Figure 4. 20 Frequency of going without food

(Source: Research Survey, 2017)

The majority of the respondents in Brazzaville informal settlement reported that their economic conditions worsened in the year prior to the survey (Figure 4.21). About 79% of the households reported that their economic condition was much worse, while 19% indicated their condition to be worse, and the condition was the same for the remaining 2%.

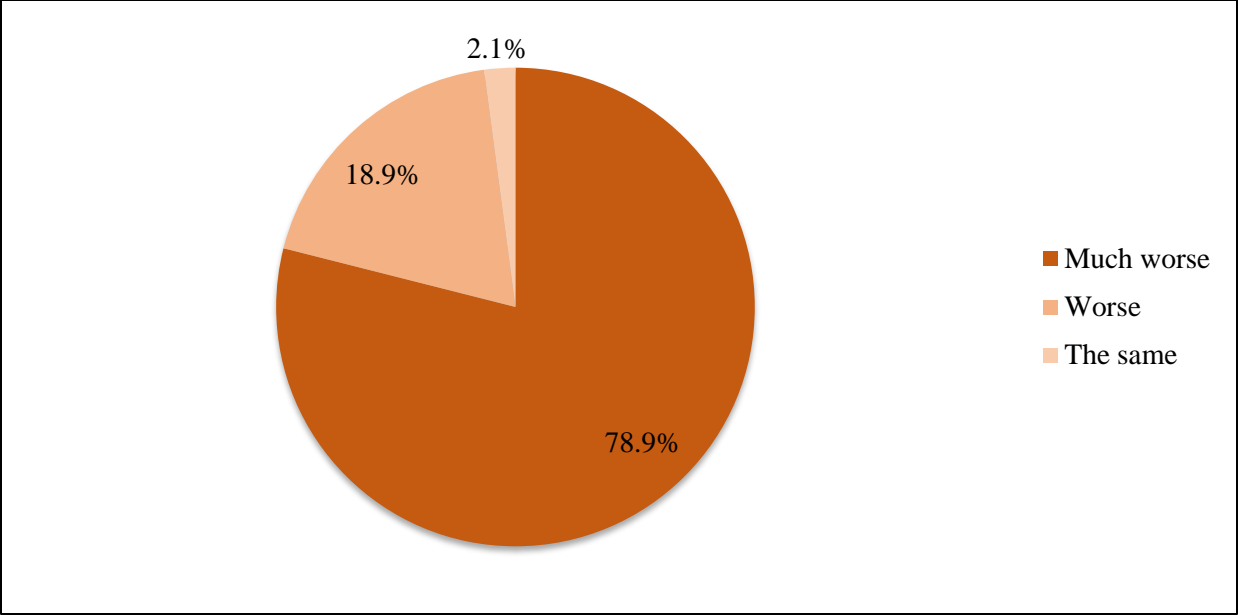


Figure 4. 21 Households economic condition 12 months ago

(Source: Research Survey, 2017)

Food price increases have a major impact on dietary diversity (Green, 2013). Some of the surveyed households indicated avoiding some type of food due to price increases. Figure 4.22 shows the type of foods households did not consume due to price increase. Over 75% of households went without milk and milk products eggs, fresh fish and fat or butter. About 78% of the households did not eat eggs due to its price increase (22.2% increase) year on year. As many as 65% went without fruits due to price increases as well. Beef in Brazzaville was rarely eaten, only 37% of the households ate meat, poultry or offal and among the stated percentages, the majority ate offal. The annual inflation rate for meat climbed to 15% in August 2017, which is the highest since December 2011. However, it is predicted by NAMC (year) to prevail as the livestock industry continue to normalize after the recent drought. Tea and Cabbage increased by 8.3% and 42.6% respectively, and these were the most common eaten food in Brazzaville. Apart from the above mentioned, sugar (8.1%) also had price above-target inflation.

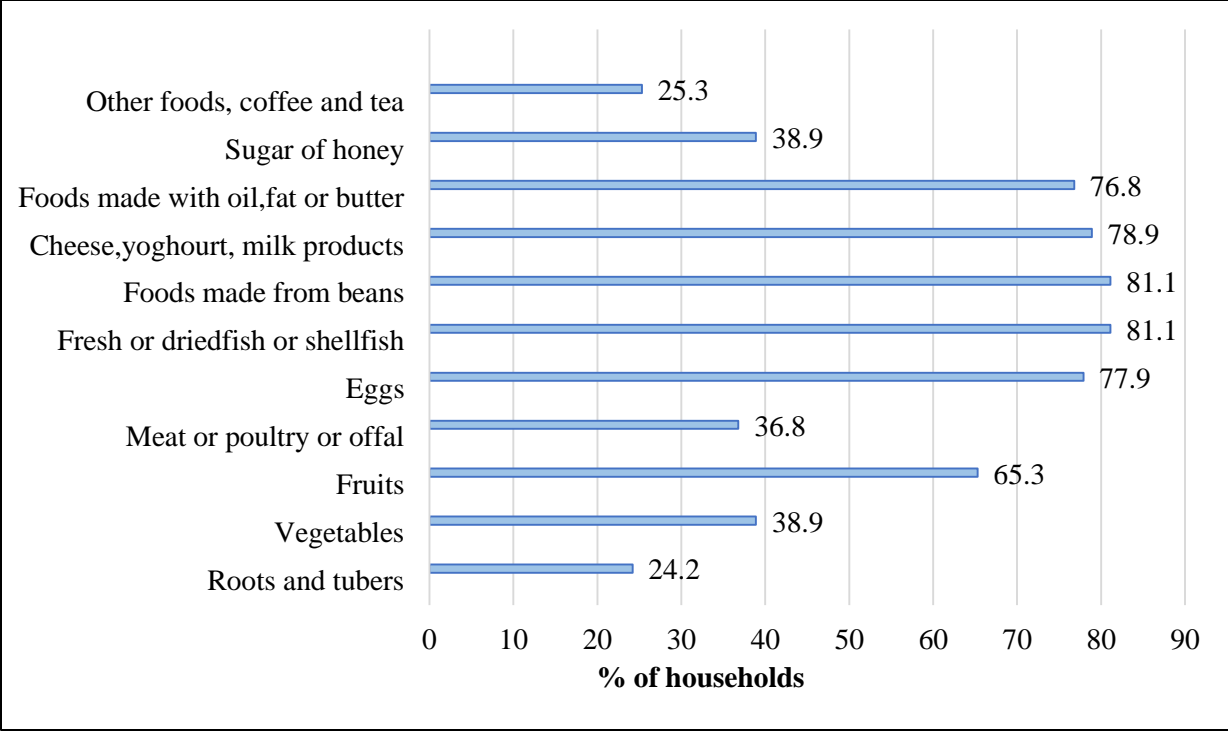


Figure 4. 22 Types of food not consumed due to price increases

(Source: Research Survey, 2017)

About 63% of the food insecure households reported going without particular foods every day and more than once a week (Figure 4.23). On the other hand, 50% food secure households reported never going without particular foods, while 32% reported going without particular food about once a week. Persistent food price increase forced households to go without particular foods, hence increasing food insecurity in urban households.

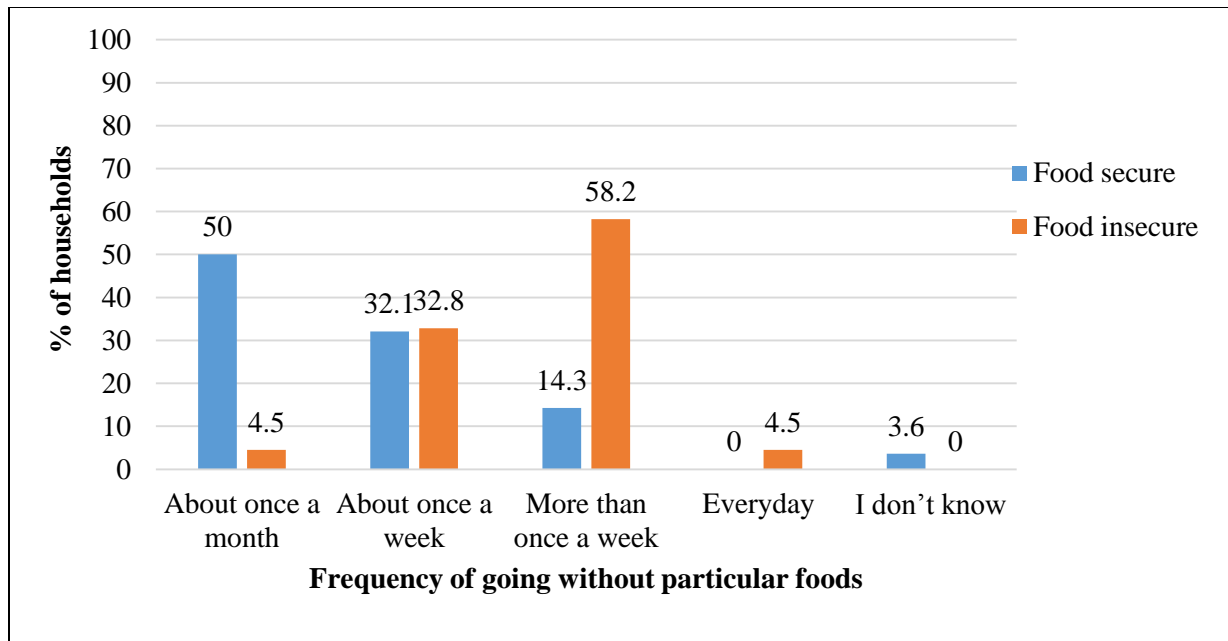


Figure 4. 23 Household food security status by frequency of going without particular foods

(Source: Research Survey, 2017)

4.4.7 Household expenditures and food security

The main components of expenditures in Brazzaville informal settlement is derived from food, medical expenses, transport, and miscellaneous goods and services (Table 4.15). With the increase of food prices, South Africans also experienced a rise in water charges, higher rates costs, education and possible 17% increase in electricity (Stats SA, 2017). Important items in the Health and Education sector exceeded the inflation target in 2017 in South Africa. Medical insurance/ medical aid increased to 10.3% and medicines to 7.2%. Educational expenses also increased, with primary and secondary school fees increased by 7.6% as well as tertiary education fees increased by 6.2% and university boarding fees increased by 8.5% respectively. Higher food prices typically point to the direct expenditure on food (Stats SA, 2017).

The survey results show that all households in Brazzaville were purchasing food. Food and groceries constituted the single largest expenditure, averaging R1150 per month. This implies that approximately 23% of the households' monthly income was used for purchasing food. Income was also used on transport, medical expenses and fuel (Table 4.15). About 86% of the households

spent money on fuel such as paraffin, diesel and charcoal for cooking, but with very few spending on electricity. Some household's members indicated that they have "bridged" electricity illegally hence they did not spend considerably on electricity. On average an amount of R92, 94 was spent on energy/fuel, firewood and charcoal in a month. The area experiences intermittent high electricity cuts due to high percentage of illegal energy connections which regularly leads to tripping of the electricity transformers. Nearly 80% of the households was spending about R692 a month on transportation, however this was not high enough compared to those who uses taxis to work, because most household's working members used the cheapest mode of transport such as a train. About 18% of the households spent R8640 on medical expenses and the average monthly amount of R794 was used on debt services. Only 7% were using income to make a supplementary by purchasing and reselling of products such as foodstuff and other goods. There were various expenditures which were not included that many households spent much of their income on, such as alcohol and tobacco, gambling, personal care and immediate purchase stuff. The consumer inflation weights published by Stats SA in December 2016 (for the total country) provided some insight into beer that is consumed at home. Beer accounted for 2.1% of the total household spending. This was the same as what is spent on personal care (2.1%), but higher than tobacco (1.9%), vegetables (1.5%) and fruit (0.3%). This explains why some individuals possibly go hungry without food but able to buy alcohol and tobacco on a regular basis.

Table 4. 15 Household Expenditure Categories

	N	%	Mean monthly expenditure (ZAR)
Food and Grocery	95	100	1550
Fuel	86	90.5	90
Debt services	81	85.3	794
Transportation	79	83.2	692
Insurance	57	60	253
Education	50	52.6	305
Housing	41	43.2	369
Utilities	29	30.52	158
Medical	17	17.9	720
Savings	12	12.6	245
Other expenditures	11	11.5	1306
Goods purchased to resell	7	7.4	426
Home-based care	6	6.3	426
Funeral costs	4	4.2	925
Note: More than one answer permitted N=95			

(Source: Research Survey, 2017)

4.4.8 Urban household food sources and food security

Figure 4.24 below shows food sources in Brazzaville. It is indicated that households from Brazzaville sourced most of their food from supermarkets (95%), small shops (89.5%) and informal market (87.4%). The supermarket sector has grown rapidly in South Africa, and has even expanded into the low-income areas (Tawodzera, 2015). Thus, large-scale supermarket retail chains are increasingly dominating urban food systems and are an important source of food for

both wealthy and poor households in South African cities (Battersby-Lennard *et al.*, 2015). About 39% of households obtained food from neighbors, where they shared the meal together in the past six months. Only 1% of the households obtained food from the community kitchen and food aid, with this less households obtaining food from the kitchen was because in Brazzaville there were very few community food kitchens and people did not know much about food aids available in the area.

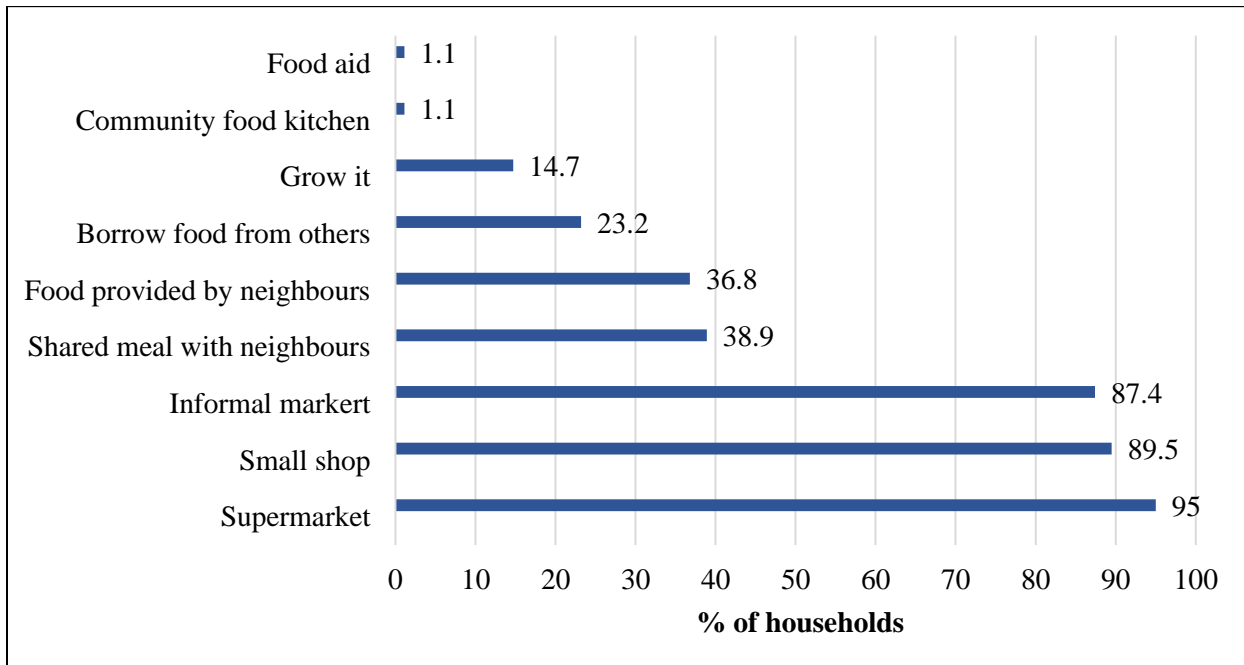


Figure 4. 24 Food Sources in Brazzaville

(Source: Research Survey, 2017)

The majority of household (85%) obtained food from the supermarket once a month, indicating that the pricing systems amongst supermarkets and small shop were different and prices are lower per unit in supermarket (Figure 4.25). Supermarkets sell food stuffs which are not commonly available in informal markets and in huge quantity, i.e. Maize meal and meat. Households in Brazzaville mentioned that supermarkets are located (approximately 30 km) a distance away from their area which makes them to shop there at least once in a month to save on transport money. Households that obtained their food from small shops frequently go at least once week, indicating that they were buying in small quantities that necessitated going back to the market more

frequently and the informal market are convenient for daily purchase since they are closely located to their households. About 5% of households obtained food from informal market at least five days a week, these were the people who did not cook everyday but buy prepared meals at nearby shops at low prices. The most common reasons for buying prepared meals is convenience in terms of time to prepare. Conversely, daily prepared meals purchasing is compelled by irregular daily income and lack of savings in a household. Another source of food for Brazzaville informal settlement households was fast food and franchise restaurants. A number of households mentioned that they obtained food at the restaurants only during month end or the week of pay day. Only a few households (7%) of the households that grow food, they obtained at least a month.

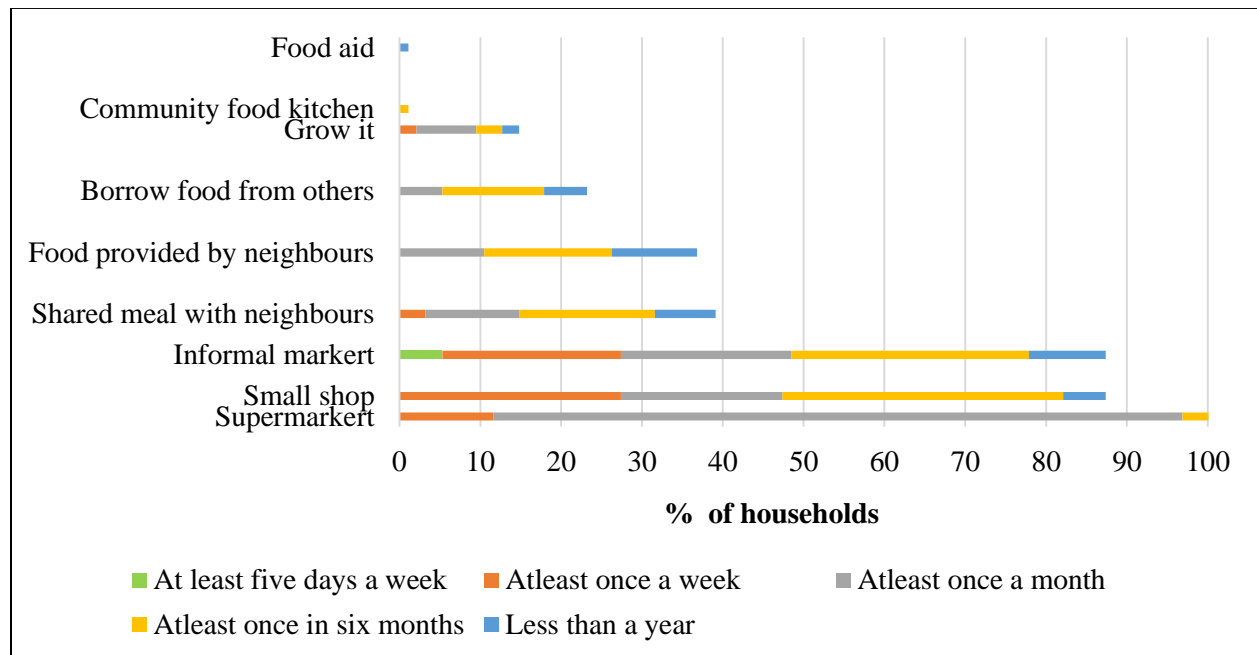


Figure 4. 25 Frequency of patronage of food sources

(Source: Research Survey, 2017)

Figure 4.26 shows food security status of households according to their food sources. The highest proportion of food secure households (34.2%) in Brazzaville were sourcing food from supermarkets and small shops (33.7%). The food insecure households sourced their food from informal shops (28.5%). The conclusion that one may draw from these findings about food sources

is that poor households mainly use supermarkets and informal shops often than restaurants. Food insecure households shared their meals with neighbors as compared to food secure households, this suggests that some urban poor are unable to access enough food through market and have to depend on asking from or sharing with neighbors for survival. No food secure household was found in food aid food source category, meaning households that received food aid were food insecure.

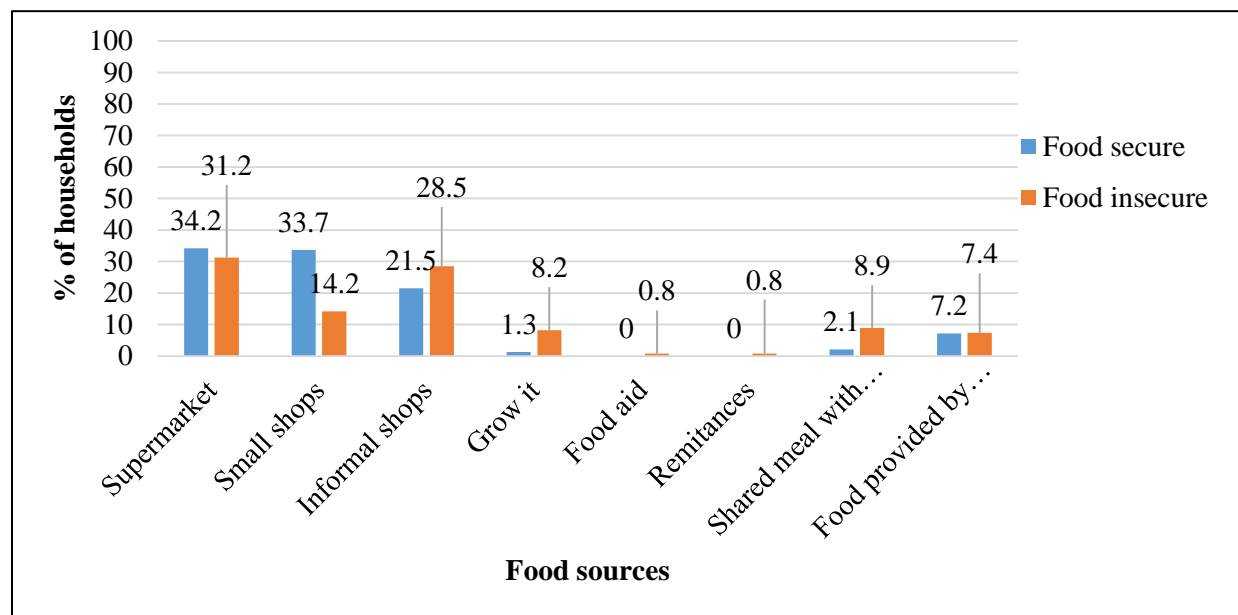


Figure 4. 26 Household food security status by food source

(Source: Research Survey, 2017)

4.5 Household food insecurity coping strategies

Snel and Staring (2001) defined coping strategies as “all the purposefully selected acts that individuals and households in a poor socio-economic situation use to limit their expense or earn some extra income to enable them to pay for their basic necessities (food, clothing, shelter)”. The strategies used by households differ in several aspects, both within the household and between households (Maxwell *et al.*, 2003). Due to differences in levels of capital among households, households at different poverty levels adopt different coping behaviors. Coping strategies vary from one household to another and also over time according to choices, objectives, opportunities

and constraints. However, some coping strategies are common to households. Coping strategies are an indication of the vulnerability of a household, because households that are poor are likely to use more coping strategies, clearly indicating their vulnerability to hunger. Household with less food access or low diet diversity, often resorts to using more coping strategies in order to deal with lack of food access and low quality of food. About 32% of households in Brazzaville adopted one coping strategy and 68.4% adopted more than two strategies (Table 4.16).

Table 4. 16 Number of coping strategies adopted by households in Brazzaville

	N	%
One	30	31.6
Two	31	32.6
Three	20	21.1
Four	9	9.5
Five	2	2.1
Six	3	3.1
Total	95	100

(Source: Research Survey, 2017)

4.5.1 Dietary change

Dietary change refers to altering the household’s diet by consuming less preferred or less expensive food. When there is a shortage of food, people’s behavior changes in order to adapt to the food shortages. The dietary change strategies characterize a low diet diversity; poor access to food and limit choice of preferred or nutritious food. All households in Brazzaville used dietary coping strategies. Households relied on less preferred food, less expensive food and lower quality food to maintain food security.

The results shown in Figure 4.27 indicate that 36.8% of households relied on less preferred food daily, 51.6% often and only 11.6% once in a while. About 44.2% of households relied on lower quality food daily and 38.9% more often. Households sacrifice quality food and shift from a

recognized brand of food to a generic one. These findings are consistent with the survey conducted by Mjonono (2008) which indicated that about 64% of sampled households in Umbumbulu (Durban peri-urban district) employed these strategies when they faced food shortages (Tembwe, 2010).

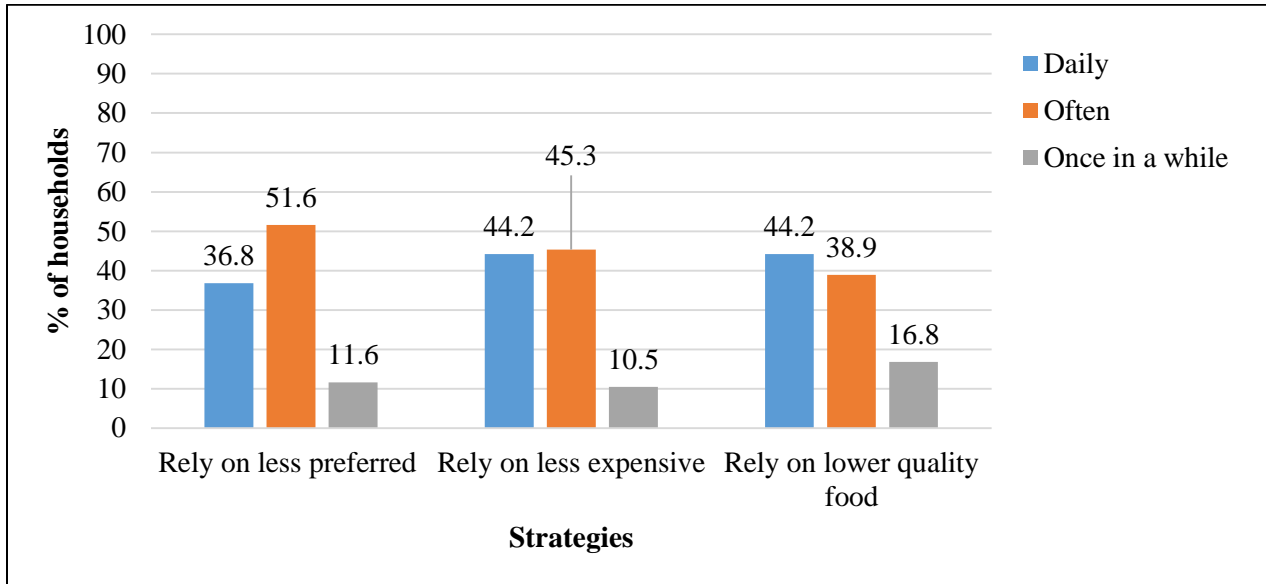


Figure 4. 27 Household’s frequency of using dietary change coping strategies

(Source: Research Survey, 2017)

4.5.2 Using short-term strategies

Short-term strategies are strategies used by households to increase food, namely to obtain food by borrowing, purchasing on credit, relying on a friend or relative (Maxwell *et al.*, 2003). Households in Brazzaville use short-term strategies to increase their food supplies. Figure 4.28 below show the household’s frequency of using the short-term strategies.

4.5.2.1 Purchasing food on credit

About 51% of the households never purchased food on credit. However, 4.2% purchased food on credit daily and 44.2 % often. About 35% of Households mentioned that they purchase food on credit at nearby informal shops because they can negotiate better with the owners the dates of payments than in a supermarket. Purchasing food on credit is a strategy that put a poor household

in a more vulnerable position in the long-term credit, particularly as the interest rates on credit for low-income households are often very high and buying food in credit is a sign of financial stress of difficulty (Collard *et al.*, 2013).

4.5.2.2 Borrowing money to purchase food

Only 30% of the population did not borrow money to purchase food. About 66.3% borrowed money in a while and 4.2% borrowed pretty often. Households mentioned that they usually borrow money towards the end of the month because it is the period where most households experience food shortage to the extreme. Most urban households end up in debt partly due to having inadequate income to meet their household expenses (Engelbrecht, 2009). Furthermost food insecure households of Brazzaville are likely to stuck in the debt cycle and living in poverty.

4.5.2.3 Relying on a friend/relative

Approximately 83% of the sample households in Brazzaville relied on help from a friend or relative. About 9.5% relied on a friend/relative daily and 72.6% relied once in a while. From the least 17.8% that do not rely on help from friends, one of the respondents mentioned that:

“It is not simple asking a friend or a relative for food, because food shortage and food price increases every now and then and it is affecting all of us, so you will never know if the person you are asking from is not experiencing the same situation”(Respondent 56, 08 June 2017, Brazzaville, Pretoria).

This indicates that there was no social relation among the few households, households rather adopt other strategy than asking for help from neighbors or friends. Study done by Duncan (2013) in Khayelitsha, Cape Town, found that residents may choose to go without food instead of asking neighbors to prevent themselves from eroding social capital to the extent that they are no longer able to approach friends/ relatives for food.

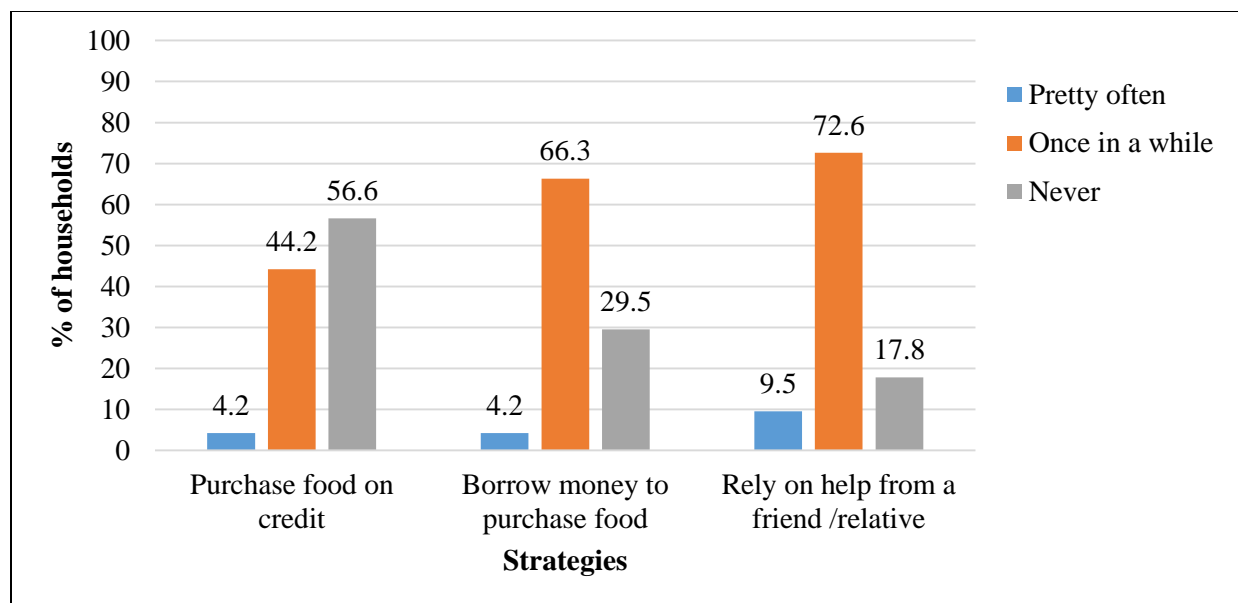


Figure 4. 28 Household’s frequency of using short- term strategies

(Source: Research Survey, 2017)

4.5.3 Rationing strategy

Rationing strategy is a strategy mostly used by households that cut back on quantity by reducing the size of meals or number of meals, limit portion and it is used by households that experiences conditions such as running out of food, going to bed hungry, or going a whole day and night without eating. This strategy is mostly used by food insecure households (Coates, 2007).

4.5.3.1 Limiting portion size at meal size

Results from the study indicate that approximately 95% of the household limited their portion size at meal time to save food for the next coming days. About 23.3% of the sample population limited portion size daily, 34.7% limited often and 36.8% once in a while (Figure 4.29). This strategy is alleged to enable all members of households to have something to eat although the quantity is small, which may enable a household to provide food for a longer period of time to all its members.

4.5.3.2 Reducing number of meal eaten in a day

Reducing the number of meals in Brazzaville was a common strategy when faced with the inability to provide sufficient food for their households, several households mentioned that they only eat twice a day, breakfast and supper, and this was a regular condition of greatest households. Household's members mention that they keep the little food available for evenings or afternoon meal that they only eat during evenings. However, there were households (14.7%) that did not use the strategy. Majority (43.2%) in this category reduced once in a while and 34.7% reduced often. Meal skipping is a common practice for food insecure households (Tawodzera, 2015).

4.5.3.3 Restricting consumption by adults

Restricting consumption by adults in order for small children to eat was one of the strategies used in Brazzaville, but was not used by many. Only 33% adopted the strategy, one respondent among the households that adopted the strategy explained:

“When there is insufficient food in the house, as a mother, I am supposed to share what is available amongst the children for them to have something in their tummies, because kids do not understand when you tell them that you do not have money to buy food, they want you to provide and it is heart breaking to see your kids starving” (Respondent 45, 05 June 2017, Brazzaville, Pretoria).

Households felt more inclined to restrict consumption by adults for children to eat. About 21% of the households used the strategy once in a while, one to two times in a week and 11.6% used the strategy often in the past month. Adults are able to restrict food, because, unlike children, they can subsist hunger for a longer period of time and are more likely to eat outside their households (Bikombo, 2014).

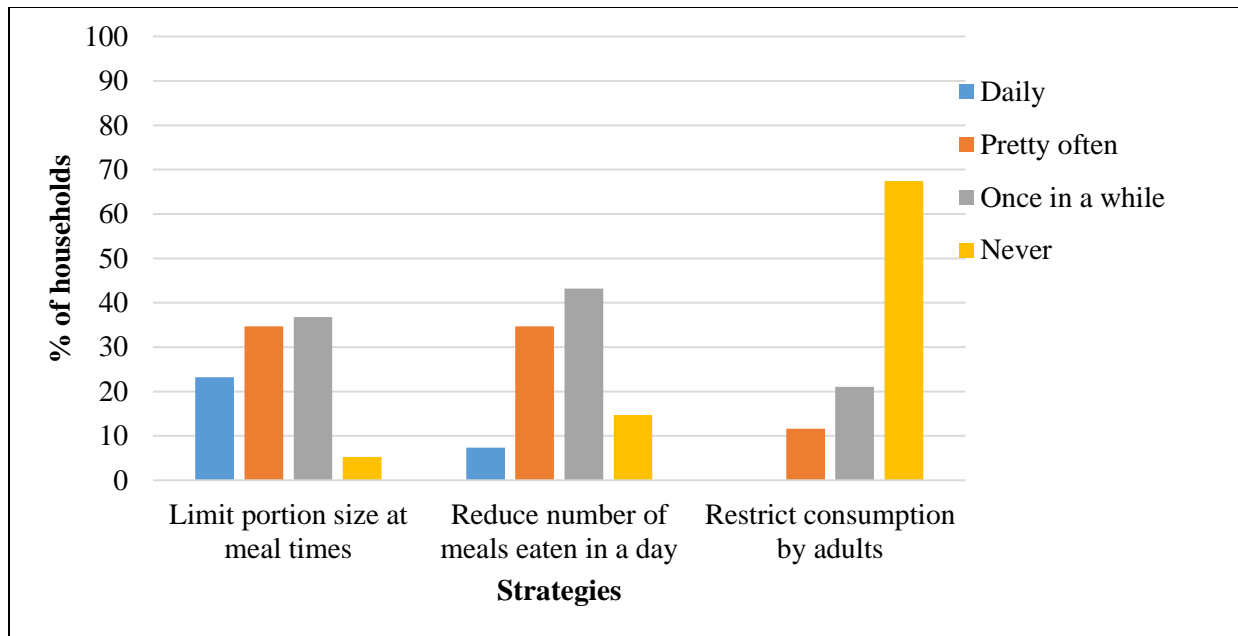


Figure 4. 29 Household’s frequency of using rationing strategies

(Source: Research Survey, 2017)

4.5.4 Additional coping strategies by urban poor households

Besides using the above mentioned strategies, in the past six months’ households adopted other strategies to help them to get food or spare money for food to survive food insecurity. Figure 4.30 below shows the variety of households coping strategies and their frequency to cope with food insecurity. The strategy that majority (51.6%) of the households used was using life savings. The survey results signpost that households also made intensive efforts to save income by excusing their needs and modifying them according to their income generating capabilities. Some members mentioned that they claimed their funeral or life cover insurances cash/saves to expense their households. About 47.4% of households did not pay bills so they could spare some money for food and this has caused them to sink in debts because the bills/utilities still needed to be paid after all and some with an extra interest. About 21% of the households reduced health expenses and 21.1% sold assets in the household. Roughly 18% changed place of stay, this was because the rent price increased and they could not afford to spend more money on rent. Few households (%) combined

non-relatives and engage in food clubs (Stokvel) where they contribute money to buy food in bulks in every six months or 12 months.

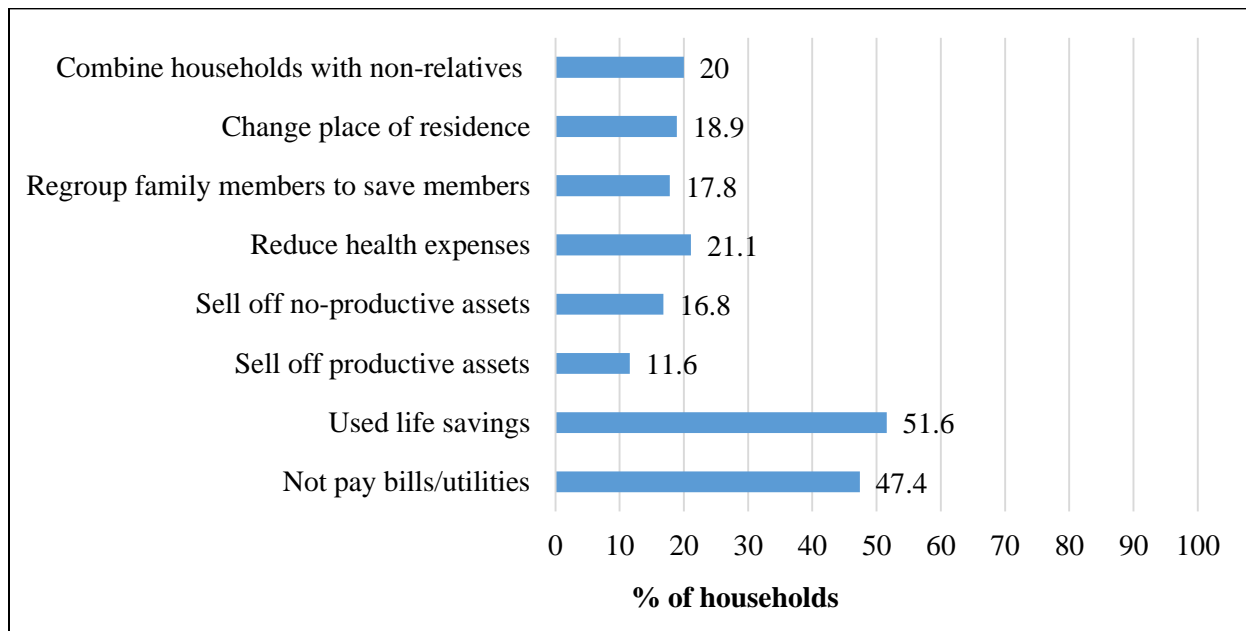


Figure 4. 30 Additional strategies used by households

(Source: Research Survey, 2017)

Figure 4. 30 below indicate that about 62.1% of the household population in Brazzaville depend on informal credit. Less than 2% depended on food crop and begging. Less than 5% depended on marketing, renting rooms for residence, gifts from friends, colleagues and philanthropists. Although Brazzaville informal settlement space is very limited, only 4.2% of the population had garden for crops.

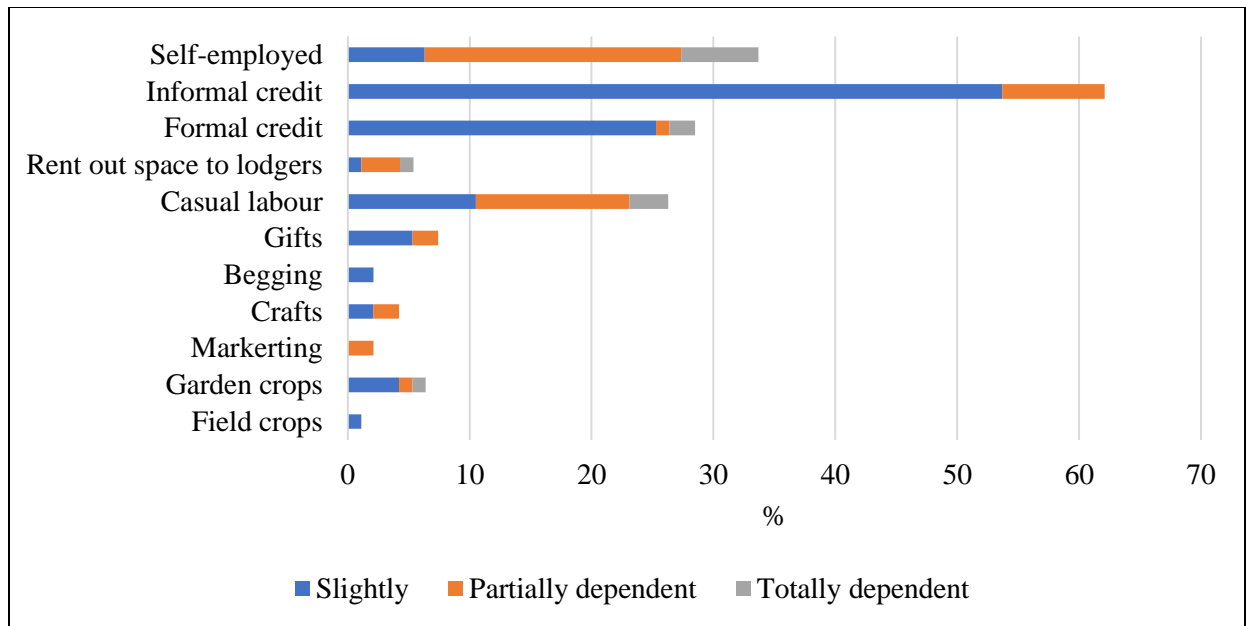


Figure 4. 31 Households additional coping strategies

(Source: Research Survey, 2017)

4.6 Conclusion

The findings of the study showed that 44.6% of the total population are between the ages of 20-39 years. Household mean size in Brazzaville is 4. The majority (32.6%) of the households in Brazzaville were female-centered, followed by nuclear households. Members among households in Brazzaville completed secondary education and only 13.1% had no formal education. However, the level of education amongst the household’s members was low. The low education level and the unstable socio-economic situation of households threatens the food access and affect the diet diversity of households. More challenges faced by households affected their households’ food security were income, unemployment and food price increase. The household mean monthly income was R4962 and it had been found as a challenge to expense all the necessity in the household because households have lots of expenditures, so these low income challenges pose a threat to household food security as they limit the purchasing power and thereby compromise food access and quality. The study found that 70.5% of the sample households were food insecure and 29.5% were food secure. Food insecure households were among male centered (32.8%)

households and nuclear households (26.8%). The majority of the food secure households had members that were working full-time. Dietary diversity in Brazzaville was poor. The HDDS score in Brazzaville indicated that households eat less than 5 food groups and no household reported consuming all 12 food types. The majority of households experienced more than three months of inadequate food provisioning. However, households in Brazzaville engaged in strategies to mitigate food insecurity which may increase vulnerability to food insecurity in the longer term. Under conditions of income stress, households adopted a range of strategies and changed their diet or consumption levels: reduced meal sizes and ultimately resorted to having fewer meals per day; almost 85% of households in Brazzaville reported eating only two meals per day. Most of the households in the area were depending on diets that were high in starchy foods, but limited in protein and other nutrients. It ought to be noted though that when households reduce the number of meals, they also become more vulnerable to malnutrition and therefore to food insecurity if this strategy is applied over a long period of time. Households also rely on less expensive food switching to cheaper alternatives and sacrifices quality.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the key findings of the study regarding food insecurity in Brazzaville informal settlement and draws conclusions upon which key recommendations for improving household food security are made.

5.2 Summary of results

5.2.1 Demographic and socio-economic characteristics

Brazzaville's population is generally youthful as 44.6% fall between the age 20-39 years and age mean was 29 years old. The study found that 51.6% of the sampled population were women and 48.4% were male. The main age differences between female and male is that more females were found in youth age category and more males in adult age category. About 22.8% of the sample population were pursuing tertiary education, 36% had completed secondary education while 13.1% of the population reported no formal schooling. The education levels in Brazzaville were thus low. More than 50% of the households had 4-7 members and the average household size was 4 persons. Brazzaville had four types of household structures, but the majority of households were female-centered (32.6%) while a few (13.7%) households were male-centered. More than 70% of the population were unmarried, and 13% were cohabiting/living together. Unemployment in Brazzaville was high as only 40% of the population reported to be working. The average household income for the surveyed households was R4962 per month R6808 per month.

5.2.2 Brazzaville household food security status

The results of the study indicate that close to two thirds of households in Brazzaville were food insecure and were experiencing difficulties in sufficiently provisioning their members. According to the HFIAP 70.5% of the households in Brazzaville were food insecure. In terms of diet, the HDDS mean score for Brazzaville was 5, which according to Coates *et al.*, (2007) indicates

undernourishment. Thus, on average, the dietary diversity score of households in the area was low. This means that on average food consumed in households was not sufficiently diverse for a healthy diet. Household's experiences inadequate month of food provision. Only few of the households in the sample did not experience any months of inadequate food provisioning. Eggs and fish were not often consumed as only 25.3% and 16.8% of respondents consumed them respectively. This low intake of vitamin A and iron by households can expose them to anemia and other vitamin related diseases. Hunger and malnutrition in Brazzaville stems from insufficient and unstable food supplies at the household level.

5.2.3 Determinants of household food security

Brazzaville informal settlement has high levels of food insecurity (70.5%). Food insecurity in Brazzaville is characterized by low dietary diversity and malnutrition and all these are influenced by factors such as household structure, household income, as well as unemployment rate. It is also caused by household factors including transport and rising food prices. Households in Brazzaville are affected by food price increase and with low income it threatens the food access and affect diet diversity of their households. In summary, one can argue that food insecurity in Brazzaville is not caused by one factor but rather by a combination of various factors. It is therefore essential to develop strategies, programmes and policies that are responsive to all broader factors in urban areas.

5.2.4 Household food insecurity coping strategies

Households that experience food insecurity among Brazzaville households employed a wide range of coping strategies with varying frequency of use of those strategies. However, the most common used coping strategies in times of inadequate food access were: relying on less preferred or less expensive food, borrowing food, relying on help from friends or relatives and reducing the size of food portions. Reducing number of meals in Brazzaville was a common strategy when faced with the inability to provide sufficient food for their households. Many households mentioned that the strategy worked for them because they saved a meal from a day for the following day than having three meals a day then have nothing the following day. This strategy enabled households to spend

less on food purchase per month. While this strategy was successful for some households, other households indicated that they were not coping at all.

5.3 Conclusions

Rising food insecurity in urban areas of South Africa is a cause for concern. This needs to be dealt with through concrete and clearly defined policies and/or effective implementation strategies. There is a need to think of policies of urban development and urban programming that will tackle these food security challenges. The study finds out that unequal access to food is due to household income, unemployment of household members and level of education. Furthermore, household food security is influenced by prevailing socio-economic factors such as poverty as well as rising food prices. Prolonged adverse macro-economic conditions in the country are undermining the ability of households to access food as most spend a greater proportion of their total income on food. Within the household, food insecurity often affects the more vulnerable members of the family, namely children. Complex environmental and economic factors impact excessively on the urban poor and informal settlements are a very visible form of urban poverty.

5.4 Recommendations

Food security has historically been considered to be a problem experienced mainly in rural area. However, it is becoming increasingly apparent that there is substantial food insecurity in South Africa's cities and towns. While the right of access to sufficient food is enshrined in Section 27 of the South African Constitution (1996), and the state is obliged to provide legislation and other supporting measures to ensure that all citizens are enabled to meet their basic food needs, much still needs to be done so that the food security of the poor sections of the country's population is guaranteed. Given the findings of the study, the following recommendations are made:

- Existing school feeding programmes should be strengthened in the study area in order to broaden access to food for the most vulnerable members of the society who are children. In addition, food coupons should be introduced and distributed to the poor households so that they can use these to access food and improve their food security status and improve access to nutritious and diverse diets.

- The government should invest in setting up facilities such as community kitchens to provide free food to the most vulnerable members of the community.
- Household food security (HFS) and nutrition training should be introduced and offered to community members in Brazzaville so that households are educated on food nutrition issues. This will enable households to make wise food choices as well as to know which foods are nutritious.
- Food preparation - Information related to benefits of a diverse diet, food preparation and sanitation information should be made available for households through free public education (billboards advert, household's visits) by the government or be catered at schools.
- Social grants - Since many household's members in Brazzaville are not working and depend on government grant money for a living and food purchase, extending social grants will allow eligible households to considerably improve the food security status.
- Cost of food – Government should consider lowering the cost of food through food subsidies so that poor members of the society are also able to afford basic meals and hence improve their food security status.

Policy-makers at all levels of government should pay sufficient attention to the food security concerns of households in the urban areas. As the findings of this study have shown, urban areas are also vulnerable to food insecurity and therefore deserve to be considered when policy makers plan for the different vulnerable populations in the country.

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APPENDIX A: Household questionnaire

Questionnaire No:

URBAN FOOD SECURITY HOUSEHOLD SURVEY	
IDENTIFICATION OF HOUSEHOLD	
Country	South Africa
Province	Gauteng
Name City	Pretoria (Brazzaville informal settlement)
Interview Status	[1=Completed; 2=Refused; 3=Not at home; 4=empty premises; 5=Not completed]
	<input type="checkbox"/>

TO BE COMPLETED BY INTERVIEWER	DATE OF INTERVIEW
TIME INTERVIEW: STARTED_____COMPLETED_____	DAY_____
NAME OF INTERVIEWER_____	MONTH_____
SIGNATURE_____	YEAR_____
COMMENTS_____	

PROJECT INFORMATION AND INFORMED CONSENT

Project Description

This study seeks to assess household food security levels and examine household food security determinants in Brazzaville, Pretoria.

The study also need to understand how Brazzaville households feed themselves under conditions of adversity in the urban environment .The current survey will involve 95 households in Pretoria, Atteridgeville (Brazzaville), South Africa. The interviews will give a better perspective of the food security experiences of poor households in the city as well as finding the strategies they use to cope with food insecurity. Some of the questions I am going to ask may seem personal, but please remember that we will not be recording your name on the interview sheet and everything you tell me will be strictly confidential.

Consent

READ OUT LOUD

I am working as a Researcher for the University of Limpopo. We are talking to people in Brazzaville about how they get food and other important and related social and economic issues. Your household has been randomly selected and we would like to discuss these issues with yourself, or an adult member of your household.

Your opinions will help us to get a better idea about how poor urban households in South Africa feel about these issues. There are no right or wrong answers. The interview will take about 20-30 minutes. Your answers will be confidential. They will be put together with over 95 other people we are talking to get an overall picture. We will not be recording your name, and it will be impossible to pick you out from what you say, so please feel free to tell us what you think.

Are you willing to participate? (CIRCLE THE ANSWER GIVEN)

Yes...1

No...2

IF NO: READ OUT: Thank you for your time.

IF YES: IF WILLING TO PARTICIPATE, READ OUT THE FOLLOWING:

Thank you for agreeing to participate in this study. Just to emphasize, any answers you provide will be kept absolutely confidential, and there is no way anyone will be able to identify you by what you have said in this interview. We are not recording either your address or your name, so you will remain anonymous. The data we collect from these interviews will always be kept in a secure location. You have the right to terminate this interview at any time, and you have the right to refuse to answer any questions you might not want to respond to.

Are there any questions you wish to ask before we begin?

Specify:

.....

SECTION A: HOUSEHOLD COMPOSITION

List on the grid below show the details for all people living in the household including people who are usual members of the household who are away working (migrants) or for other reasons. *See codes to be entered attached.*

1	PNO	1	2	3	4	5	6	7	8	9	10
1a	Relation to HHD head										
1b	Sex										
1c	Age										
1d	Marital status										
1e	Highest level of education										
1f	Occupation (most important first accept up to two)										
1g	Income last month for main occupation										
1h	Lives away from this household										
1i	Work Status										
1j	Where born										
1k	Why moved to present location? (enter up to three for moving)										

1l Health status (enter up to three health issues)										
1m Where was main meal eaten yesterday?										
1n1 Who in the household normally: 1n2 Buys food 1n3 Prepares food 1n4 Decides who will get food (allocates) 1n5 Grows food										
1o Social welfare support										

SECTION B: HOUSEHOLD DATA				
2	Which one of the following housing type's best describes the type of dwelling this household occupies?	Housing Type Code		Code
		a. House		1
		b. Squatter hut/shack		2
		c. Room in backyard		3
		d. Traditional dwelling/homestead		4
		e. Traditional dwelling with built-on rooms		5
		f. Traditional dwelling with built-on rooms		6
		g. Other (specify)		7

3	Which of the following best describes the household structure ?	Household Structure a. Female Centred (<i>No husband/ male partner in household, may include relatives, children, friends</i>) <hr/> b. Male Centred (<i>No wife/ female partner in household, may include relatives, children, friends</i>) <hr/> c. Nuclear (<i>Husband/ male partner and wife/ female partner with or without children</i>) <hr/> d. Extended (<i>Husband/ male partner and wife/ female partner and children and relatives</i>) <hr/> e. Under 18-headed households female centred (<i>head is 17 years old or less</i>)\ <hr/> f. Under 18-headed households male centred (<i>head is 17 years old or less</i>) <hr/> g. Other (<i>specify</i>):		<u>codes</u> 1 2 3 4 5 6 7
4	Household income from all sources (in the last (1) month: (a) & (b) <i>Read list aloud, circle the code that applies (column (b)) and complete the information for that row; leave rows blank for categories that do not apply.</i> (c) <i>Enter amount over the past one (1) month to nearest currency unit in column (c).For income in</i>	(a) <u>Income categories</u> a. Wage work b. Casual work c. Income from farm products d. Income from formal business e. Income from informal business f. Income from renting dwelling g. Income from Aid a) food b) cash c)	b) Code 1 2 3 4 5 6 7	(c)Amount (to nearest currency unit)

<i>kind i.e. 'Remittances – goods/food', 'Income from farm products' and in some cases perhaps also 'Gifts', estimate the monetary value over the past month and record this figure in (c).</i>	vouchers	
	h. pension/social grant	8
	i. Gifts	9
	j. Other (specify)	10

5 Household monthly expenses for the last month for items (a) through (f) & year for items (g) through (O).

(Read list aloud, circle the code that applies and complete the information for that row; leave rows blank for categories that do not apply; if an annual expense give a monthly estimate.

If the household has no expenses, circle ONLY code = '17' for 'NONE'.

If respondent refuses to answer, circle ONLY code = '18' for 'Refused to answer'.)

(a) Expense categories	(b) Code		(c) Amount (to nearest currency unit)
a. Food and Groceries	1		Last month
b. Housing (rent, mortgage)	2		
c. Utilities (write total for all: water, sewer, electricity, telephone etc.)	3		Last month
d. Transportation	4		Last month
e. Savings	5		Last month
f. Fuel (paraffin, gas, candles, etc.)	6		Last month
g. Medical (medical aid, medial costs)	7		Last month
h. Education (school fees, books, uniforms)	8		Last year
i. Insurance (life, burial etc.)	9		Last year
j. Funeral costs	10		Last year
k. Home-based care	11		
l. Remittances	12		Last year
m. Debt service/repayment	13		
n. Goods purchased to sell	14		Last year
o. Other (specify type of expenditure & time)	15		Last year
p. NONE	16		Last year
q. Refused to answer	17		Last year

	r. Refused to answer	18				
6	<p>To what extent do people in your household use strategies other than jobs (regular formal employment) to make a living?</p> <p><i>Use the code list below to record the extent to which people in the household use other strategies:</i></p> <p><i>1 = Not at all</i> <i>2 = Slightly</i> <i>3 = Partly dependent</i> <i>4 = Totally dependent</i></p> <p><i>Record the appropriate code in the last column.</i></p>	Ways to make a living				Code
		a. Field crops				1
		b. Garden crops				2
		c. Tree crops				3
		d. Livestock				4
		e. Marketing				5
		f. Crafts				6
		g. Begging				7
		h. Gifts				8
		i. Casual labour				9
		j. Rent out space to lodgers				10
		k. Formal credit				11
		l. Informal credit				12
		m. Self-employed at home				13
n. Other (specify)				14		
7	<p>How would you say the economic conditions of your household are today compared to your household a year ago? <i>(circle one answer only)</i></p>	Economic conditions				Code
		Much worse				1
		Worse				2
		The same				3
		Better				4
Much better				5		
Living Poverty Index						
8	<p>Over the past year, how often, if ever, have you or your family (household) gone without: <i>(Read each question aloud and circle the most appropriate response. Circle only ONE answer for EACH ROW).</i></p>					
Conditions	Never	Just once or twice	Several times	Many times	Always	Don't know
a. Enough food to eat?	1	2	3	4	5	6
b. Enough clean water for home use?	1	2	3	4	5	6
c. Medicine or medical treatment?	1	2	3	4	5	6
d. Electricity in your home	1	2	3	4	5	6
e. Enough fuel to cook your food	1	2	3	4	5	6

f. A cash income	1	2	3	4	5	6
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SECTION C: FOOD INSECURITY

9	HOUSEHOLD FOOD INSECURITY ACCESS SCALE (HFIAS) <i>(READ the list and categories and circle only ONE answer for each question)</i>			
Household Food Insecurity Access Scale (HFIAS) for last four weeks)	No (Answer question is 'No')	Rarely (Once or twice)	Sometimes (3 to 10 times)	Often (More than 10 times)
a. In the past four weeks, did you worry that your household would not have enough food?	1	2	3	4
b. 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 resources?	1	2	3	4
c. In the past four weeks did you or any household member have to eat a limited variety of foods due to a lack of resources?	1	2	3	4
d. 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 resources to obtain other types of food?	1	2	3	4
e. 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?	1	2	3	4
f. In the past four weeks, did you or any household member have to eat fewer	1	2	3	4

meals in a day because there was not enough food?				
g. 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?	1	2	3	4
h. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	1	2	3	4
i. 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?	1	2	3	4
10	<p>HOUSEHOLD DIETARY DIVERSITY SCORE (HDDS) Now I would like to ask you about the types of food that you or anyone else in your household ate yesterday during the day and night.</p> <p><i>(Read the list of foods. Circle yes in the box if anyone in the household ate the food in question, circle no if no one in the household ate the food)</i></p>			
	Types of food	Yes	No	
	a. Any [INSERT ANY LOCAL FOODS], bread, rice noodles, biscuits or any other foods made from millet, sorghum, maize, rice, wheat, of [INSERT ANY OTHER LOCAL AVAILABLE GRAIN]	1	2	
	b. Any potatoes, yams, manioc, cassava or any other foods made from roots or tubers?	1	2	
	c. Any vegetables?	1	2	
	d. Any fruits?	1	2	
	e. Any beef, pork, lamb, goat, rabbit, wild game, chicken, duck, other birds, liver, kidney, heart, or other organ meats?	1	2	
	f. Any eggs?	1	2	
	g. Any fresh or dried fish or shellfish?	1	2	
	h. Any foods made from beans, peas, lentils, or nuts?	1	2	
	i. Any cheese, yoghurt, milk or other milk products?	1	2	
	j. Any foods made with oil, fat, or butter?	1	2	
	k. Any sugar or honey?	1	2	
	l. Any other foods, such as condiments, coffee, tea?	1	2	
11	<p>MONTHS OF ADEQUATE HOUSEHOLD PROVISIONING (MAHP) Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions please think back over the last 12 months.</p>			

	<p>a) In the past 12 months, were there months in which you did not have enough food to meet your family's needs? (<i>READ the question and circle the appropriate answer</i>)</p>	Yes	1	
		No	2	
		(If NO, skip to Question 17 If YES, continue with Q16b)		
	<p>(b) If yes, which were the months (in the past 12 months) in which you did not have enough food to meet your family's needs? (<i>Do not read the list of months. Working backward from the current month: Circle the one ('Yes' column) if the respondent identifies that month as one in which the household did not have enough food to meet their needs. Circle the two ('No' column) if the respondent identifies that month as one in which the household did have enough food to meet their needs</i>)</p>	<p>Months in which Household did not Have enough food to meet needs</p>	<p>Yes</p>	<p>No</p>
		b. February	1	2
		c. March	1	2
		d. April	1	2
		e. may	1	2
		f. June	1	2
		g. July	1	2
		h. August	1	2
		i. September	1	2
		j. October	1	2
		k. November	1	2
		l. December	1	2
12	<p>EXPERIENCE OF FOOD PRICE CHANGES</p> <p>Now I would like to ask you about your household's experience of food prices over the past six months. Over the past six months, have you or your household gone without certain types of food because of the price of food (it is unaffordable)?</p> <p>(<i>Circle the appropriate answer</i>) (<i>If NEVER OR DON'T KNOW, skip to Q19 OTHERWISE, continue with Q18</i>)</p>	<p>Frequency of going without food</p>	<p>Code</p>	
		Never		1
		About once a month		2
		About once a week		3
		More than once a week		4
		Every day		5
		Don't know		9
13	<p>You have said that over the past six months, you or your household have gone without food because of the increase in the price of food items. Which types of foods have you gone without? (<i>Read the list of foods. Circle 'Yes' in the box if anyone in the household ate the food in question. Circle 'No' if no one in the household ate the food.</i>)</p>			
	<p>Types of food</p>	Yes	No	
	a. Any [INSERT ANY LOCAL FOODS],bread, rice noodles, biscuits			

	or any other foods made from millet, sorghum, maize, rice, wheat, or [INSERT ANY OTHER LOCALLY AVAILABLE GRAIN]?		
	b. Any potatoes, yams, manioc, cassava or any other foods made from roots or tubers?		
	c. Any vegetables?		
	d. Any fruits?		
	e. Any beef, pork, lamb, goat, rabbit, wild game, chicken, duck, other birds, liver, kidney, heart, or other organ meats?		
	f. Any eggs?		
	g. Any fresh or dried fish or shellfish?		
	h. Any foods made from beans, peas, lentils, or nuts?		
	i. Any cheese, yoghurt, milk or other milk products?		
	j. Any foods made with oil, fat, or butter?		
	k. Any sugar or honey?		
	l. Any other foods, such as condiments, coffee, tea?		
14	<p>Besides the increase in food price, what other problems (by order of importance) prevented you in the past six months from having enough food to meet your family's needs?</p> <p><i>(Do not read options, write number in front of the identified cause by order of importance (1=highest).</i></p> <p><i>Probe: Did you experience any other problem?)</i></p>	<p>Problem</p> <p>a. Insecurity/violence</p> <p>b. Death of a working household member</p> <p>c. Death of the head of the household</p> <p>d. Death of other household member</p> <p>e. Serious illness of household member</p> <p>f. Accident of household member</p> <p>g. Loss/ reduced employment for a household member</p> <p>h. Reduced income of a household member</p> <p>i. Relocation of the family</p> <p>j. Reduced or cut-off of remittances from relatives</p> <p>k. Taking in orphans of deceased parent(s)</p> <p>l. Health risks/ epidemics (e.g. cholera)</p> <p>m. Floods, fire and/or other environmental hazards</p> <p>n. Increased cost of water</p> <p>o. End of a social grant</p> <p>p. End of food aid</p> <p>q. Theft</p> <p>r. Political problems/issues</p>	<p>Rank</p>

		s. Other (please specify)
		t. None
		u. Don't know 99

15 a) **Where does this household normally obtain its food?**
(Read the list of food sources. Circle 'Food Code' in the box if anyone in the household answers yes to the food source on the list.)

b) **How often does the household normally obtain its food from these sources?**
(Probe for frequency that food is obtained from the source as given by respondent (a - k) and circle the appropriate number on the scale)

(b) Frequency Food Obtained from this source

Source of food	(a) Food Code	At least five days a week	At least once a week	At least one a month	At least once in six months	Less than once a year	Never
a. Supermarket	1	1	2	3	4	5	6
b. Small shop/restaurant/take away	2	1	2	3	4	5	6
c. Informal market/street food	3	1	2	3	4	5	6
d. Grow it	4	1	2	3	4	5	6
e. Food aid	5	1	2	3	4	5	6
f. Remittances	6	1	2	3	4	5	6
g. Shared meal with neighbours and/or other households	7	1	2	3	4	5	6
h. Food provide by neighbours	8	1	2	3	4	5	6
i. Community food kitchen	9	1	2	3	4	5	6
j. Borrow food from others	10	1	2	3	4	5	6
k. Other (specify)	11	1	2	3	4	5	6
l. Don't know	99						

16 **In the last week, where did members of this household obtain their food?**
(Read the list of food sources. Circle 'Yes' in the box if anyone in the household answers yes to the food source on the list.)
(Circle 'No' if no one in the household obtains food from the source being read out on the list.)

Source of food	Yes	No
-----------------------	------------	-----------

a. Supermarket	1	2
b. Small shop/restaurant/ take away	1	2
c. Informal market/ street food	1	2
d. Grow it	1	2
e. Food aid	1	2
f. Remittances (food)	1	2
g. Shared meal with neighbours and/ or other households	1	2
h. Food provided by neighbours	1	2
i. Community food kitchen	1	2
j. Borrow food from others	1	2
k. Other (specify)	1	2
l. Don't know	9	9

SECTION D: COPING STRATEGIES

17	In the past month, have you used any of these strategies when you did not have enough food or money to buy food? How often?					
	<i>(Circle the appropriate categories, as well as the frequency of occurrence. Accept multiple responses.)</i>					
	Strategy	Code	Frequency			
			1=Daily	2= Pretty often (3-6 days/week)	3= once in a while (1-2 times/week)	4= Never
	Rely on less preferred foods?	1	1	2	3	4
	Rely on less expensive foods?	2	1	2	3	4
	Rely on lower quality food?	3	1	2	3	4
	Limit portion size at meal times?	4	1	2	3	4
	Reduce number of meals eaten in a day?	5	1	2	3	4
	Restrict consumption by adults in order for small children to eat?	6	1	2	3	4
	Rely on help from a friend or relative?	7	1	2	3	4
	Borrow money to purchase food?	8	1	2	3	4
	Purchase food on credit?	9	1	2	3	4
	Other					
18	In the past 6 months, did you have to do any of the following so that the household could have food? How often?					

	<i>(Circle the appropriate categories, as well as the frequency of occurrence. Accept multiple responses.)</i>				
Strategy	Code	Frequency			
		1= Never	2= Rarely (Less than once a month)	3= Sometimes (once or twice a month)	4= Often (more than twice a month)
Not pay bills/utilities?	1	1	2	3	4
Used life savings?	2	1	2	3	4
Sell off productive assets? (e.g. sewing machine)	3	1	2	3	4
Sell of non-productive assets? (e.g. bed)	4	1	2	3	4
Reduce health expenses?	5	1	2	3	4
Reduce education expenses?	6	1	2	3	4
Regroup family members to save money?	7	1	2	3	4
Change place of residence to save money?	8	1	2	3	4
Combine households with non-relatives to save money?	9	1	2	3	4
Other					

SECTION E: URBAN FOOD AID					
19	Does anyone in this household receive food aid?				
		Yes			1
		No			2
		If NO, skip to the 'End'. If Yes, continue with Questions below			
20	What kind of food aid is received, and from which source(s)? <i>(Accept multiple responses for type of aid and source of aid).</i>	Type of Aid	Code	Source of Food Aid	Code
		Food	1	UN Agency	1
		Cash	2	CBO	2
		Vouchers	3	FBO	3
		Other (specify)	4	NBO	4
				Government	5
				Other (specify)	6
		Don't know	9		

21	How important is food aid to this household? (Probe for strength of opinion; circle only ONE answer)	Importance of food aid	Code
		Very important	1
		Important	2
		Neutral	3
		Not important	4
		Not important at all	5
		Don't know	6

I have finished my questions. Before we end, is there anything in particular that you would like to add to what you have said or to change?

Do you have any questions that you would like to ask?

Questions	
1.	
2.	

Thank you very much for spending this time talking to us. The information you have provided is very valuable and we appreciate you sharing it with us.

Goodbye.

Codes for question 1 (One code for each)

<p>1a Relation to head</p> <ol style="list-style-type: none"> 1. Head 2. Spouse/partner 3. Son/ daughter 4. Adopted/ foster child/ orphan 5. Father/ mother 6. Brother/sister 7. Grandchild 8. Grandparent 9. Son/ daughter-in-law 10. Other relative 11. Non-relative 97. Refused 98. Don't know 99. Missing <p>1b Sex</p> <ol style="list-style-type: none"> 1. Male 2. Female 99. Missing <p>1c Age at last birthday</p> <ol style="list-style-type: none"> 0. Under 1 year <p>Whole numbers only</p> <ol style="list-style-type: none"> 97. Refused 98. Don't know 99. Missing <p>(If respondent is older than 96, record 96)</p> <p>Age category</p> <ol style="list-style-type: none"> 1. 0-4 2. 5-9 3. 10-14 4. 15-19 5. 20-24 6. 25-29 7. 30-34 8. 35-39 9. 40-44 10. 45-49 11. 50-54 12. 55-59 13. 60-64 14. 65-69 15. 70 	<p>1d marital status</p> <ol style="list-style-type: none"> 1. Unmarried 2. Married 3. Living together/ cohabiting 4. Divorced 5. Separated 6. Abandoned 7. Widowed 97. Refused 98. Don't know 99. Missing <p>1e highest education</p> <ol style="list-style-type: none"> 1. No formal schooling 2. Some Primary 3. Primary completed (Junior or Senior) 4. Some high school 5. High school completed 6. Post-secondary qualifications not university (diploma, or degree from technikon or college) 7. University 8. University completed 9. Post-graduate 97. Refused 98. Don't know 99. Missing
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<p>1f Occupation</p> <ol style="list-style-type: none"> 01. Farmer 02. Agricultural worker (paid) 03. Agricultural worker (unpaid) 04. Service worker 05. Domestic worker 06. Managerial office worker 07. Office worker 08. Foreman 09. Mine worker 10. Skilled manual worker 11. Unskilled manual worker 12. Informal sector producer 13. Trader/ hawker/ vendor 14. Security personnel 15. Police/ Military 16. Businessman/ woman (self-employed) 17. Employer/ Manager 18. Professional worker 19. Teacher 20. Health worker 21. Civil servant 22. Fisherman 23. Truck driver 24. Pensioner 25. Scholar/ Student 26. House work (unpaid) 27. Unemployed/ Job seeker 28. Other (specify) 97. Refused 98. Don't know 99. Missing 	<p>1g income last month</p> <p>1h Lives/works away from this household but still a member of the household</p> <ol style="list-style-type: none"> 1. No 2. Yes, migrant-working 3. Yes, migrant-looking for work 4. Yes, attending school 5. Other (specify) 97. Refused 98. Don't know 99. Missing <p>1i Work status (wage employment)</p> <ol style="list-style-type: none"> 1. Working full-time 2. working part-time/ casual 3. Not working – looking 4. Not working – not looking 97. Refused 98. Don't know 99. Missing <p>1j Where born</p> <ol style="list-style-type: none"> 1. Rural area 2. Urban area 3. Foreign country rural area 4. Foreign country urban area 97. Refused 98. Don't know 99. Missing
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<p>1k Why to present location</p> <ol style="list-style-type: none"> 1. Housing 2. Land for livestock/grazing 3. Land for crop production 4. Formal sector job 5. Informal sector job 6. Food/hunger 7. Military Service 8. Drought 9. Overall living conditions 10. Safety of myself/family 11. Availability of water 12. Political exile 13. Asylum 14. Education/schools 15. Crime 16. Attractions of the city: urban life/modern life 17. Illness related (HIV/AIDS) 18. Illness related (not HIV/AIDS) 19. Moved with family 20. Sent to live with family 21. Marriage 22. Divorce 23. Abandoned 24. Widowed 25. Freedom/democracy/peace 26. Retirement 27. Retrenchment 28. Eviction 29. Deaths 30. Floods 31. Religious reasons 32. Returned to former home 33. Other (specify) 96. Not moved 97. Refused 98. Don't know 99. Missing <p>1L Health Status</p> <ol style="list-style-type: none"> 1. Accident 2. Diabetes 3. Asthma 	<ol style="list-style-type: none"> 4. Hypertension and stroke 5. Heart problems 6. Arthritis 7. Physical disability 8. HIV/AIDS 9. TB 10. Malaria 11. Chronic diarrhoea 12. Weight loss (severe) 13. Pneumonia 14. Cancer 15. Mental illness 16. Other 17. None of the above (healthy) 97. Refused 98. Don't know 99. Missing <p>1m where was main meal eaten yesterday</p> <ol style="list-style-type: none"> 1. Home (this household) 2. Small shop 3. Informal market/street food 4. Shared meal with neighbours/ or other households 5. Work place 6. School 7. Community food kitchen 8. Food provided by neighbours/ or other households 9. Did not eat a meal 10. Other (specify) 99. Missing <p>1n Household activity</p> <p>1o social welfare support.</p> <ol style="list-style-type: none"> 1. State pension 2. Disability grant 3. Maintenance grant 4. Orphan grant 5. Workman's Compensation/ Social security 6. Food for work 7. Child support grant
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8. Pensioners 9. Other 97. Refused 98. Don't know 99. Missing	
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APPENDIX B: Ethical clearance letter



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TURFLOOP RESEARCH ETHICS COMMITTEE CLEARANCE CERTIFICATE

MEETING: 15 May 2018

PROJECT NUMBER: TREC/103/2018: PG

PROJECT:

Title: An Assessment of Household Food Security Status and Food Security Determinants in Brazzaville Informal Settlement, Pretoria.


Researcher: NW Mkhathshane

Supervisor: DR G Tawodzera

Co-Supervisors: Mr TR Maisha

School: Agricultural and Environmental Sciences

Degree: Master of Geography and Environmental Studies


PROF. TAB MASHEGO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

- i) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.
- ii) The budget for the research will be considered separately from the protocol.
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.