University of the Western Cape

EMS Faculty

Institute for Social Development

AN APPRAISAL OF URBAN AGRICULTURE AS A LIVELIHOOD STRATEGY FOR HOUSEHOLD FOOD SECURITY: A CASE STUDY OF URBAN FOOD GARDENS IN WARD 51, LANGA, CAPE TOWN

A mini-thesis submitted in partial fulfilment of the requirements for the degree of Master of Arts in Development Studies at the Institute for Social Development, University of the Western Cape

FREDA RHONA PHILANDER

Student No 3369194

Supervisor: Dr Abdulrazak Karriem

May 2015

AN APPRAISAL OF URBAN AGRICULTURE AS A LIVELIHOOD STRATEGY FOR HOUSEHOLD FOOD SECURITY: A CASE STUDY OF URBAN FOOD GARDENS IN WARD 51, LANGA, CAPE TOWN

Freda Rhona Philander

KEY WORDS

Coping mechanisms

Food security

Hunger

Livelihood outcomes

Livelihood strategies

Resilience

Sustainable Livelihood Approach

Urban Agriculture

Urban Food Gardens

Ward 51, Langa

ABSTRACT

An Appraisal of Urban Agriculture as a Livelihood Strategy for Household Food Security: A Case Study of Urban Food Gardens in Ward 51, Langa, Cape Town

Food security is a development challenge in South Africa with 52% of the population being food insecure and 33% at risk of hunger. Inequalities and inefficient food distribution networks lead to inadequate access to sufficient and nutritional food. Poor communities experience *bad access to good food and good access to bad food*. Citizens have to be satisfied with cheap, low nutritious and high calorific food leading to malnutrition, and diseases – the *hidden hunger*. Being hungry is more than just a lack of food; it provokes despair, humiliation, sadness, low self-esteem – perceive as the *genocide of the mind*.

Urban agriculture has been advocated as a livelihood strategy to improve food security. The Urban Rural Development Capacity Building Project (URDCBP), a non-profit organisation (NPO), initiated three urban food garden projects within Langa, Cape Town to improve food security and create employment within that community. Ward 51, Langa is the study area of this thesis. The aim of this research is (1) to assess the contribution of urban food garden projects as a livelihood strategy for food security and the livelihood outcomes thereof; (2) to determine what other livelihood strategies and coping mechanisms poor communities adopt to be more food secure; and (3) to propose recommendations to improve and expand urban food gardens.

The mixed-methodology research paradigm was employed. In the quantitative design, 83 randomly selected participants completed the self-administered closed-ended questionnaires. STATA 12.1 was used as a tool for the quantitative analysis. The descriptive statistics present the socio-demographic and economic trends of the households by the scores of each variable and the existence of any relationships between the variables. Conclusions were drawn from the sample data about the populations with inferential statistics. The qualitative data collection included two semi-structured interviews with government officials and two focus group discussions with 17 community members and 13 beneficiaries respectively. Purposive sampling was used in the qualitative research and emerging themes were identified in response to the research objective supporting the quantitative analysis. The results attest that 82% of the respondents indicated that the urban food gardens contribute to their household food security. However, low levels of food security are still experience within the community.

With the Sustainable Livelihood Approach as theoretical framework, the study accentuates other livelihood outcomes of urban agriculture such as improving health, improving self-esteem and improving food security. Some of the coping strategies adopted include having willpower and skills, relying on family and friends for food and borrowing and dependency on social grants. The contribution of urban food gardens to food security is minimal in the Western Cape as only 2% of the households cultivate crops as their main source of food. In the study, 63% of the

respondents would like to start their own food gardens and 14% would like to extend their urban food gardens. In both instances, land has been identified as the greatest concern.

With the correct strategies and support, urban food gardens can be extended to make a larger contribution to the food security levels of the urban poor. Government intervention is much needed to fight hidden hunger, poverty and food security and this requires political commitment.

ACKNOWLEDGEMENT

I wish to thank my Heavenly Father for His sufficient grace throughout my journey to complete my studies; who bestows me with continuous much needed strength.

I am immensely grateful to my supervisor, Dr Abdulrazak Karriem for his guidance, insightful comments, immense knowledge and constructive criticisms which contributed to the successful completion of this study. Thank you for taking the time to invest in me on this academic journey. My sincere thanks go to Dr Mulugeta Dinbabo for the constructive feedback. I also wish to express my sincere gratitude and appreciation to Dr V McGhie for her guidance, assistance and constructive feedback and to Prof L de Vries for her guidance, moral support and continuous prayers. My sincere appreciation goes to Mr Michael Nuagem for his sharing of knowledge, valued assistance and encouragement in contributing to the success of this study.

My heartfelt gratitude and appreciation is extended to my dear friends, Mr & Mrs Wilfred Joseph for offering me a "haven" to write when deadlines were approaching. Special thanks to my girlfriends, Ms N Hendricks, C Christians, Z Mvula and C Arendse for their friendship, for cheering and motivating me and sharing precious times together and much needed "time-outs" to rejuvenate.

I would like to thank *PLAAS* for awarding me the Belgian Technical Cooperation (BTC) Scholarship to finance my studies at the University of Western Cape. My sincere gratitude and appreciation goes to Prof J May and the *Institute for Social Development* for awarding me the opportunity to complete my studies. I owe a great deal of gratitude to Ms Mpumie Nqoqo, CEO of the Urban Rural Development Capacity Building Project, for giving me consent to conduct the research and allowing me access to the project. My heartfelt gratitude is extended to all the respondents who participated in this research.

Last but not least, my sincere gratitude and appreciation goes to my husband, Mr Benjamin Philander. This study would not have been possible without your continuous love, encouragement, understanding and moral support. To my three amazing sons, Rheaman, Wiehann and Bjorn Philander: Thank you for always challenging me, for allowing me to complete my studies and for your continuous love, motivation and encouragement. My sincere appreciation goes to my sister, Mrs Christine Bosch and my brother, Mr Floors Van Wyk for your continuous prayers, concern and encouragement.

DECLARATION

I declare that "An Appraisal of Urban Agriculture as a Livelihood Strategy for Household Food Security: A Case Study of Urban Food Gardens in Ward 51, Langa, Cape Town" is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Freda Philander

May 2015

Signed: ……

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

AFSUN	African Food Security Urban Network
BMI	Body Mass Index
DAFF	Department of Agriculture, Forestry and Fisheries
DoA	Department of Agriculture
DSD	Department of Social Development
EPWP	Expanded Public Works Programme
FAO	Food and Agriculture Organisation
GHI	Global Hunger Index
IFPRI	International Food Policy Research Institute
IFSS	Integrated Food Security Strategy for South Africa
ILO	International Labour Organisation
NPO	Non-Profit Organisation
RDP	Reconstruction and Development Programme
SAIRR	South African Institute of Race Relations
SSA	sub-Saharan Africa
STATSSA	Statistics South Africa
URDCBP	Urban Rural Development Capacity Building Project
USA	United States of America

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 OVERVIEW AND RATIONALE OF RESEARCH

The concept of food security emerged as a response to the global food crisis in the mid-70s, and attracted global attention at the Rome World Food Conference. The Food and Agriculture Organisation (FAO) reported that globally in excess of 1 billion people were hungry (FAO, 2009a). Food security has been perceived as a major challenge experienced by both developed and developing countries. The main contributing factors of food insecurity are high domestic food prices, unemployment and lower income that reduce the access to food for the poor (FAO, 2009a). Maxwell (1999:1940) notes that food insecurity has historically been perceived as a rural problem. However, rapid urbanisation in the contemporary period has shifted food insecurity to include urban areas. The South African Social Attitude Survey of 2008 indicates that 20.5 percent of the urban households and 33.1 percent of the rural households in South Africa are food insecure (Labadarios, et al., 2011: 893). Urban agriculture has been advocated by various scholars as a livelihood strategy through which to improve food security of the urban poor (Battersby & Marshak, 2013:448; Mougeot, 2006). More specifically, urban agriculture can improve the nutritional status and health standards of the poor, enable them to earn additional income and provide employment (Battersby & Marshak, 2013). Urban agriculture could assist with the household budget and this is important as Oxfam (2014) indicates that 50 percent of the households' income is spent on food. In sub-Saharan Africa (SSA) cities, a large percentage of household food consumption is provided by urban agriculture. In Dar-es-Salaam, urban agriculture provides for 90 percent of the vegetables consumed by the household, in Dakar 70-80 percent and in Brazzaville 80 percent (Moustier & Danso, 2006; Cofie, et al., 2003; Nugent, 2000).

The United Nations Development Programme (UNDP) estimates that 800 million urban residents were engaged in either commercial or subsistence urban agriculture in the mid-1990s (Bryld, 2003). The economic rewards of urban food gardens are high. For example, Nugent (2000) notes that for every $1 invested in a community garden approximately $6 worth of vegetables can be grown, which suggests that urban agriculture can play a significant role in improving livelihoods and addressing food insecurity. As urban agriculture contributes

to the food baskets in other countries, it has become a necessity to investigate the contribution that it might have on household food security in South Africa.

Less than 2 percent of households in South Africa are actively involved in urban agriculture and the majority of rural households are unable to feed their families (Oxfam, 2014). However, urged on by their own instinct for survival, urban households adopt different livelihood strategies to be food secure. The Sustainable Livelihood Approach (SLA) is prevalent as framework as it conceptualizes the activities that poor people undertake to improve their standard of living or to provide for their basic needs (Scoones, 1998). Scholarly writings indicate that households that adopt more diverse livelihood strategies, are more resilient. Scoones (1998) further defines resilience as the manner in which the household copes with shocks and stress and how easily they can bounce back when they experience any shocks, e.g. a breadwinner becoming unemployed. Chambers (1995: 163) states that sustainable livelihoods are the different portfolios of activities that households adopt to improve their standard of living which includes their capabilities, social networks and economic sources.

With this as backdrop, this study intends to determine the extent to which urban agriculture contributes to urban household food security. Secondly, the study intends to identify the livelihood strategies and coping mechanisms adopted by households to be more food secure; and thirdly the study intends to establish what the livelihood outcomes are for these households. The findings of this study would make it possible to understand the relationship between urban agriculture and food security as well as the livelihood strategies adopted by households to be more food secure. As an essential outcome, the study could offer valuable insight to improve the level of food security in urban households and to determine what livelihood interventions can be promoted targeting urban households.

1.2 BACKGROUND AND CONTEXTUALISATION

1.2.1 Food security in South Africa: Situational Analysis

Food security was identified as a global development challenge (Zhou, 2010). Prior to the early 1970s, food security was defined as the availability of food on a global or national level (Maxwell, 1996). At the World Food Summit (WFS) in 1974, the concept was shifted to include that the available food should be adequate, sustainable and affordable (Zhou, 2010).

The FAO (2009a) defines food security as the social, physical and economic access to sufficient, safe and nutritious food for all people. This means that the food provided must be enough and meet the dietary requirements of the population to enable them to sustain an active and healthy life (FAO, 2009a). Household food security is defined similarly but the concept is applicable to the family level and it includes all individuals within the household (FAO, 2009a; Nord, et al., 2010) or local level (Donkin, et al., 1999). Lovendal & Knowles (2006) included the vulnerabilty aspect to food security.

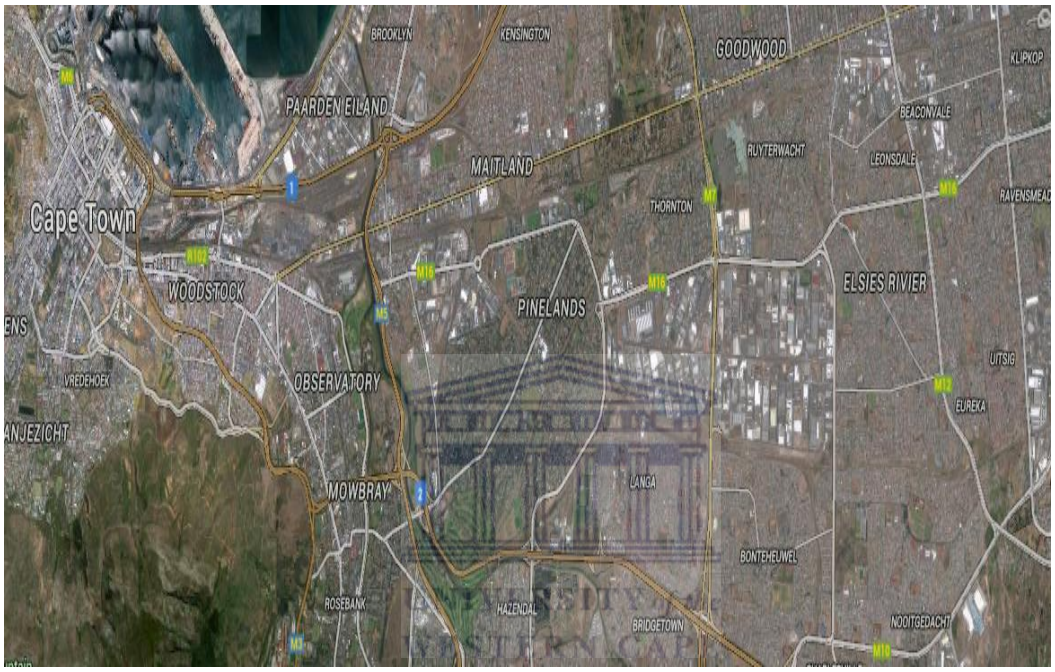
Food insecurity is experienced by a large number of South African households. The National Food Consumption Survey reports that only 20 percent of South Africans can be considered as being food secure (Labadarios, et al., 2009). Urban poverty is increasing as a result of the high unemployment rate. Statistics South Africa (STATSSA, 2011a) indicates that 34 percent of the Black African, 23 percent of the Coloured and 5 percent of the White population in Cape Town is unemployed. A study done by African Food Security Urban Network (AFSUN) in 2008 with 1060 households in 3 cities in Cape Town (Ocean View, Khayelitsha and Phillipi), found that 80 percent of the urban poor households are food insecure (Frayne, et al., 2009). Food insecurity in Cape Town is therefore mostly experienced by Black African and Coloured people. Food insecurity results in malnutrition which impacts the health and well-being of the individuals, leads to higher mortality rates as well as social challenges within the communities. It is therefore imperative that the food insecurity challenge be addressed. Urban agricultural policies and programmes that promote small scale urban agricultural production, has been advocated to improve urban food insecurity (Altman, et al., 2009a).

1.2.2 The case study area: Ward 51, Langa, Cape Town

Langa is a township on the Cape Flats in Cape Town, 11 kms south-east of the centre of Cape Town (Bray, 2008). Langa is a Xhosa name and it means "sun" (SAHO, n.d.). In 1923, the Urban Areas Act was passed to enforce the compulsory residence of Africans in locations (SAHO, n.d.). Black people were removed from areas that were classified as white residential areas and the authorities established Langa, designated for Black Africans (SAHO, n.d.). Langa is Cape Town's oldest township and was established in 1923, prior to the apartheid era (Siviwe, 2010). To control the migration of Africans into the city, the 1923 Urban Areas Act was strictly enforced by the Cape Town municipality. Education was however important for the residents of Langa and only primary schools were built. Parents and clergy protested

against this and in 1937, the authorities approved the extension of schooling to secondary school classes (SAHO, n.d.). It was only in recent years that the township has been rejuvenated as the government allocated a budget for infrastructure improvements. Most of the residents in Langa are of Xhosa descent. Langa has a population of 52400 people, who are predominantly Black African, and 40 percent of the population is unemployed.

Figure 1.1: Map of surrounding cities of Langa

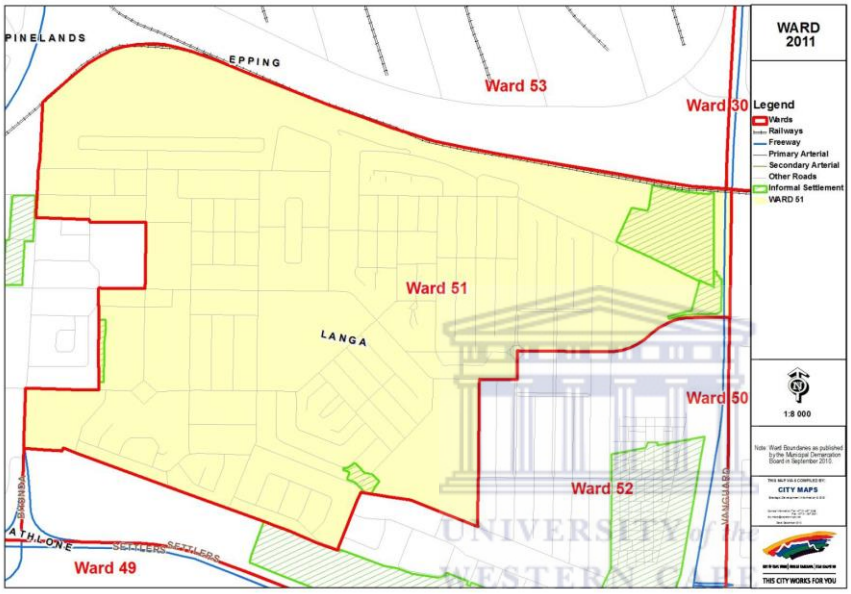


Source: Google Map.

The City of Cape Town has divided Langa into two sub areas as Ward 51 and Ward 52. Ward 51, the case study area, has a population of 23290 people with an unemployment rate of 58 percent and 7357 households (STATSSA, 2011b). The study area was selected (1) because of its high unemployment rate; and (2) to determine the impact of the urban food gardens project on the community. The Urban Rural Development Capacity Building Project (URDCBP) has implemented three urban food garden projects on school grounds and vacant land that belongs to the municipality. Community members are trained to cultivate, harvest and sell the vegetables. The URDCBP targeted feeding scheme provides food on a daily basis to 120 schoolchildren, 68 sick adults (referrals from local clinic) and 350 people that include seniors and the unemployed (Nqoqo, 2014). Community members that work in the urban food gardens and in the feeding scheme kitchen receive a monthly income of R984.06 from the

National Independent Development Trust (Public Works) and they are referred to as beneficiaries (Nqoqo, 2014). Currently the project has 100 beneficiaries. Agricultural training to the beneficiaries of the urban garden projects was provided and funded by the government. The urban food gardens produce broccoli, spinach, cabbage, carrots, potatoes, onions and lettuce. The crops are sold to the public and pre-schools and are used in the feeding scheme (Nqoqo, 2014). Ward 51 (see Figure 1.2 below), was the case study area for the research.

Figure 1.2: Map of Langa – Ward 51



Source: Statistics South Africa (2011b).

1.2.3 Urban agriculture as a livelihoods strategy to food security

Food policy discussions have been on the agenda of the FAO since the early 1970s (Zhou, 2010:252). High food prices exacerbate food insecurity in countries and this led to a number of policy responses by governments. Singh (2009) argues that the national food security level should be enhanced through good agricultural policies and the implementation of systems to allow farmers to increase their productivity, outputs and income. He advocates that great potential in the local sourcing of fruits and vegetables can be obtained with community gardens and agricultural activities extended to urban and peri-urban areas (Singh, 2009). Schmidt's (2012) viewpoint is that food security in urban households is the responsibility of the government of the country and strategies must be included in the policies on food security.

Urban agriculture emerges from the colonial era when urban farming catered for the consumption of the elites and bureaucrats. The purpose has however changed over the years as urban agriculture is perceived today as a development strategy for household food security (Arku, et al., 2012). Hovarka (2001) similarly comments that urban agriculture can significantly contribute to food security or provide income. In many instances urban households engage in urban agriculture either because they are from rural areas and brought along their agricultural practices to the cities or their desire is to provide food for the household. One of the main discussions in the literature is the contribution of farming within the urban boundaries to food security (Zezza & Tasciotti, 2010). Households that engage in urban agriculture will have direct access to cheaper and nutritional food such as vegetables and fruit. The harvest can also be a source of income. This is important especially in poorer communities with inefficient and expensive markets. Households will be able to consume greater amounts of nutritional foods in a more diversified diet (Zezza & Tasciotti, 2010). The relationship between food security and urban agriculture is evident although more research is needed to determine the extent to which urban agriculture contributes to food security.

1.2.4 Livelihood strategies and food security: A conceptual framework

With the vastness of the food insecurity dilemma, the level of food security of the urban poor is not always evident (Crush & Frayne, 2010). Households adopt many livelihood strategies to improve their standard of living, be more food secure and to provide an income. It is however not always known what strategies urban households adopt and their coping mechanisms to be more food secure. The ability to pursue different livelihood strategies, is dependent on the capabilities, resources and assets that people have (Scoones, 1998). Scoones presents an economic view of these assets and resources and considers them as social, financial, human and natural capital. The study will assess the influence of the assets and capabilities of the households on food security; what other livelihood strategies households adopt to be more food secure; their coping mechanisms and ultimately their livelihood outcomes. The study will employ the Sustainable Livelihood Approach (SLA) as the theoretical framework.

1.3 PROBLEM STATEMENT, RESEARCH QUESTIONS AND AIMS OF STUDY

1.3.1 Problem Statement

Food insecurity is prevalent in many urban poor households as they do not have access to regular nutritional meals and experience hunger. Various initiatives have been put in place by NPOs, e.g. feeding schemes and urban food gardens, to improve the levels of food security and the livelihoods of the urban poor. Feeding schemes are mostly dependent on government support or funding. However, urban agriculture can function with limited support from the government. Urban agriculture, as a livelihood strategy, has been advocated by many scholars to contribute significantly to food security. Households engaging in urban agriculture use the vegetables for households' consumption or as a market resource. Urban agriculture could improve the nutritional status and health standards of the poor; provide income and employment and contribute to the household budget (Battersby & Marshak, 2013:448; Mougeot, 2006). The latter is significant as fifty percent of the household budget is being spent on food (Oxfam, 2014). Altman, et al (2009b) note that in South Africa limited empirical research has been done to assess the contribution of urban agriculture to household food security. It is against this backdrop that this research attempts to assess the contribution of urban agriculture to improve household food security.

1.3.2 Research questions

The following research questions have been identified in response to the research objectives.

- What is the extent of food insecurity in Ward 51, Langa?
- What are the livelihood outcomes of the urban food gardens project?
- What coping strategies are adopted by the households to be more food secure?
- What livelihood strategies are pursued by the households in Ward 51, Langa?
- What is the contribution of the capabilities and assets to the community to be more food secure?
- What is required to ensure the sustainability of the urban food gardens?

1.3.3 Aims of the study

Inequalities and inefficient food distribution networks lead to inadequate access to sufficient and nutritional food. Poor communities experience "bad access to good food and good access

to bad food" (Oxfam, 2014). Urban food gardens have been advocated as the solution to improve food security, provide employment and income. The aims of this study are: firstly, to assess the contribution of urban food garden projects, as a livelihood strategy, to food security and the livelihood outcomes; and secondly, to determine what other livelihood strategies and coping mechanisms poor communities adopt to be more food secure. As most of the urban food garden projects are initiated by NPOs, the contribution of the urban food gardens project initiated by the URDCBP in Ward 51, Langa, will be assessed.

The research objectives of the research are:

- To investigate the literature on food security and urban agriculture, as a livelihood strategy.
- To provide a theoretical and conceptual framework for the research by analysing the relevant theories and concepts.
- To analyse the influence and access of livelihood resources to the success of the livelihood strategies.
- To report on the livelihood outcomes of livelihood strategies including urban agriculture.
- To report on the coping mechanisms adopted by households to be more food secure.
- To provide possible recommendations to government on improving the efficiency of the programmes implemented by NPOs.

1.4 STRUCTURE OF THESIS

This thesis consists of six chapters: ***Chapter one*** presents an overview and rationale of the thesis. The background information of the study is provided to the reader. Thereafter, the problem statement, research objectives and the aims of the study are presented. ***Chapter two*** documents the relevant literature regarding the concepts of food security and urban agriculture with the Sustainable Livelihood Approach as theoretical framework. The historical as well as the current perspectives are discussed. The ***third chapter*** presents the research design and methodology. Details of the sampling method, data collection and data analysis are included. ***Chapter four*** presents the quantitative study results, analysis and discussion. In ***Chapter five*** the qualitative research results, analysis and discussions are presented. The emerging themes identified enrich the quantitative analysis. The ***final chapter (Chapter six)***

presents the summary of the key findings, provides recommendations and areas for further research. It draws on study findings and discussions to make relevant recommendations to be considered for inclusion in the policies and strategies of National Government to ensure the sustainability of the urban food garden projects.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

As stated in Chapter 1, the aim of this study is three-fold. First, it determines the contribution of urban agriculture to household food security. Secondly, it identifies the livelihood strategies and coping mechanisms urban households adopt to be more food secure; and thirdly, it evaluates the livelihood outcomes for households in Ward 51 in Langa, Cape Town. Based on these aims, I begin this chapter with a literature review of the global state of food security, followed by a discussion on the state of urban food security in sub-Saharan Africa (SSA), with specific reference to Cape Town, South Africa. Thereafter, I will conceptualise the relationship between food security and urban agriculture and, subsequently, validate the role of urban agriculture in food security in South Africa. The chapter concludes with a detailed discussion of the Sustainable Livelihood Approach as the theoretical framework of the study.

2.2 CONCEPTUALIZING FOOD SECURITY

2.2.1 Food security in a global context

Embedded in the debate on international agricultural economy, is the challenge of a global food crisis. Hunger has become an inclusive phenomenon and no one is immune. Hunger is described as that "uneasy sensation and exhausted condition that is caused by a strong desire or want for food" (Sykes, J.B, 1976 as cited by Campbell, 1991: 409). Similarly, the IFPRI (2014) describes hunger as the feeling of distress that is associated with lack of food. However, participants in a study in South Africa describe hunger as not just a lack of food. For them, hunger is a physical feeling of emptiness, pain or cravings that cannot be satisfied. They describe hunger as a phenomenon that creates a "genocide of the mind" and this provokes despair, hopelessness, humiliation and the feeling of worthlessness (Oxfam, 2014). In 2009, in excess of one billion people experienced chronic hunger (FAO, 2009a). Chronic hunger is a persistent process and it occurs when people are unable to meet their minimum

food requirements over a longer continual period of time (FAO, 2008a; Vogel & Smith, 2002). The saddest part of hunger is that it is a painful killer, a holocaust of our time. The concept of "being hungry" has been changed to the phenomenon of "food insecurity". So many people around the world go to bed without food and this is immoral, unethical and unacceptable as people are deprived of their basic human needs and rights. The challenge is to secure food for the current global population of 6.9 billion and to double the production to feed the projected population of 9.2 billion by 2050 (Ash, et al., 2010; FAO, 2009b; Godfray, et al., 2010). Paradoxically, enough food is being produced to feed the growing population. However, structural changes in the livestock and agricultural sectors as well as access to adequate, nutritional and dietary diversified foods have a detrimental impact on food security (FAO, 2009b; Godfray, et al., 2010). Scholarly studies on food security highlight factors like population growth, the rising food prices, diversification of crops, and the changes in the eating habits of people to influence food security (Singh, 2009; Von Braun, 2007). Subsequently, the phenomenon of food security was included in many academic debates, evaluated through different lenses (e.g. nutrition; mortality; urban agriculture; sustainable livelihoods) and triggered various initiatives and policy discussions. It is imperative that solutions be found to improve the level of food security and to reduce the number of deaths as a result of hunger, starvation and malnutrition. The FAO's definition of food security is generally accepted and forms the foundation of all other subsequent definitions (Koc et al., 1999: 1-2),

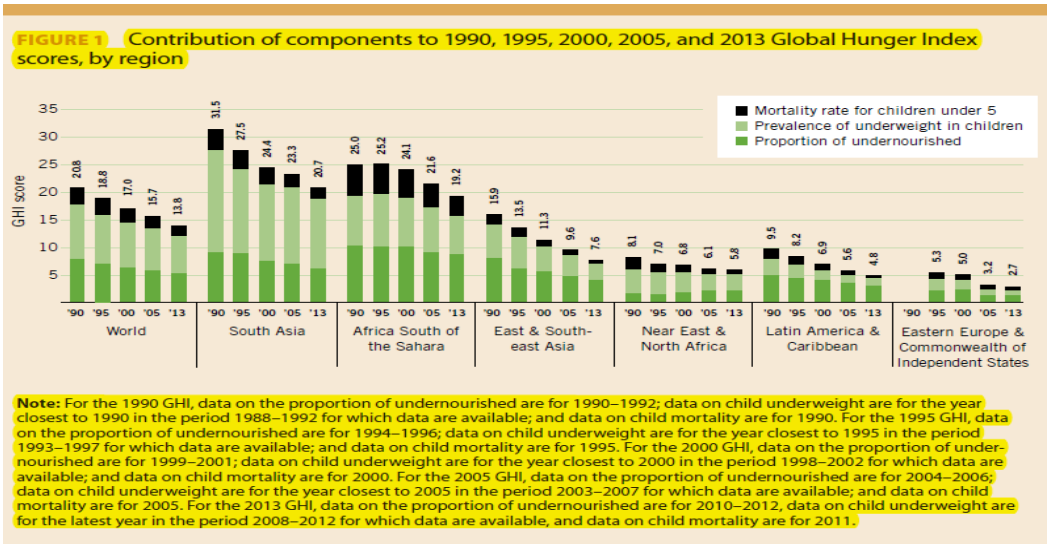
> *Food security means that food is available at all times; that all persons have means of access to it; that it is nutritionally adequate in terms of quantity, quality and variety; and that it is acceptable within the given culture. Only when all these conditions are in place can a population be considered food secure.*

The FAO's definition acknowledges the nutritional, sufficiency and safety aspects of food but relates the importance of accessibility of the food to a social, physical and economic context (Koc et al., 1999; World Food Summit, 1996; Zhou, 2010)**.** Similarly, households' food security can be defined as all members within the household having at all times physical and economic accessibility to sufficient and nutritious food to meet their daily dietary requirements to fulfill an active and healthy life (FAO, 2009a; Nord, et al., 2010). According to Koc et al. (1999), 35 000 people around the world die daily from hunger and 2.5 million

people are dependent on food banks. They further comment that in the USA, 30 million people are unable to buy enough nutritious food to maintain good health. This fact has been reiterated by Nord, et al. (2010) when they comment that 85 percent of the American households are food secure but 57 percent participate in food and nutritious programmes. The phenomenon of food security spans across both developing and developed countries. No one is immune against hunger. The Global Hunger Index (GHI), as reflected in Figure 2.1 below, is used to track and measure hunger globally (IFPRI, 2014). The measurement for the GHI includes the mortality rate of children younger than 5 years old, the prevalence of underweight children and the proportion of undernourished population. Factors like the social inequalities, low education, nutritional and social status of females indirectly influence the GHI. Figure 2.1 reflects that there is a decrease in the global GHI rate from 20.8 percent in 2010 to 13.8 percent in 2013. This declining occurrence is evident in all countries. In Eastern Europe and the countries in the Commonwealth of Independent States, it decreases from 5.9 percent to 2.7 percent; in Latin America and Caribbean the decrease is from 9.5 percent to 4.8 percent; in South Asia the decrease is from 31.5 percent in 2010 to 20.7 percent in 2013; and in Africa South of the Sahara, it decreased from 26 percent to 19.2 percent during the same period (Von Grebmer, et al., 2013). Despite the progress made to improve the level of global hunger, the figures still remain unacceptably high with 805 million people still being hungry (FAO, 2014). This implies that one in every nine people in the world have insufficient access to food to lead an active and healthy life (FAO, 2014). This total is higher than before the food and economic crisis of 2008-2009 (IFPRI, 2014).

Implicit to the phenomenon of hunger, is the issue of energy deficits which is referred to as *hidden hunger* or micronutrient deficiency (IFPRI, 2014). Hidden hunger is the impact that vitamin and mineral deficiencies have on people, resulting in serious and long-lasting health repercussions. The effects of hidden hunger include weakened immune systems, child and maternal deaths, physical disabilities and compromising intellectual abilities (IFPRI, 2014). Armar-Klemesu (2000: 99) argues that having food is a "fundamental right" and acknowledges food as the "primary economic right of a human being".

Figure 2.1: Global Hunger Index scores by region



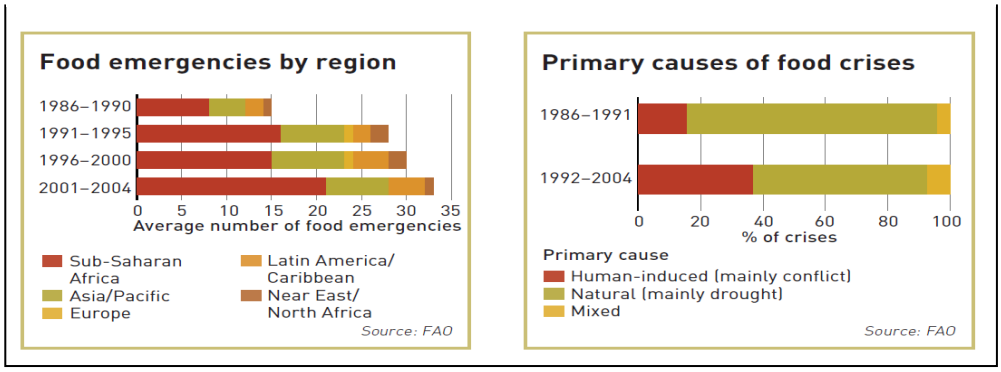
Source: GHI: International Food Policy Research Institute (Von Grebmer, et al., 2013).

Without nutritious healthy food, people would suffer from malnutrition and their health would deteriorate. Their inability to work would inherently lead to an unproductive nation. Food insecurity can also increase crime and break down the self-esteem of people. So many times we have seen people begging for food or even stealing food. This is a desperate outcry. One can conclude from the discussion above that more should be done to improve the food security levels so that people globally could lead healthy, productive, satisfied and food secure lives.

2.2.2 Urban food security in sub-Saharan Africa (SSA)

Figure 2.1 in the previous section illustrates that food insecurity is a challenge in both developed and developing countries. The FAO (2013) reports that 12 million fewer people were considered being hungry in SSA. Satisfactory economic conditions and the decline in the international and domestic food prices since 2008 attributed to the decline in the number of undernourished people. Despite this improvement, almost 33 percent of the SSA population or close to 200 million people still experience chronic hunger (Kidane, et al., 2006). Food aid has become part of the food distribution system in SSA. It has escalated over the years from 2.6 million tonnes in 1996 to 5.2 million tonnes in 2003 (WFP, INTERFAIS, 2005 as cited by Kidane, et al., 2006).

Figure 2.2: Food emergencies and primary causes of food crises



Source: FAO, 2004.

Figure 2.2 shows that SSA experienced 20 transitory food insecurity situations, i.e. temporary food insecurity as a result of drought, pest attack, and sudden unemployment in urban areas, since 1998 (Kidane, et al., 2006). In addition, 35 countries in the world experienced emergency food crises, during 2003-2004 to the extent that they required international assistance. Twenty-four of those countries were located in SSA (FAO, 2004). The primary cause of the food crises in 1992-2004 was mainly drought. Rural/urban migration has shifted food insecurity from the rural areas to include urban areas. SSA's rate of urbanisation has been amongst the highest and it was estimated that by 2030, over 50 percent of the population of SSA will be living in urban areas (Crush, et al., 2011; Maxwell, 1999). Evidently, urban food security has been recognised as one of the key development challenges in SSA and has become a chronic problem since 1990, mostly experienced by the poor (Battersby, 2012; Maxwell, 1999).

Undoubtedly, urban food security challenges are experienced in South Africa as well. South Africa's urban population has increased from 52 percent in 1990 to 62 percent in 2011 as people migrated from the rural to the urban areas in search of better work opportunities and living standards (Ndebele, 2013). Employment opportunities are not forthcoming with the result that unemployment increased within the cities or urban areas. The rapid urbanisation placed huge demands on employment, housing, land and water within urban areas. Urban households access the majority of their food requirements from the local food markets or shops. With the fluctuation in market prices and the dependency on the food markets, households remain vulnerable to food price inflation. The prediction is that 80 percent of South Africa's population will be urbanised by mid-century (Battersby, 2011a).

South Africa has managed to achieve its national goal as per the agricultural policies and produced surplus in most of the agricultural commodities (Van Zyl & Kirsten, 1992). Despite the surplus, many poor households in South African still experience food insecurity as a result of inequalities, and inefficient food distribution networks that lead to inadequate access to sufficient and nutritional food (STATS SA, 2012). Thus, South Africa might be considered as being food secure as a country but large numbers of households within the country still experience food insecurity (Altman, et al., 2009b; Oxfam, 2014). Other factors such as the increase in the price of domestic electricity and the increase in food prices, particularly wheat and maize which are the staple diet of many poor households, have decreased the purchasing power of many households (Altman, et al., 2009b: 102). Subsequently, the prediction of Hendriks (2011) can become a reality that household food insecurity in South Africa would increase and people would be more vulnerable to malnutrition and hunger. She emphasises the importance of monitoring food prices and the impact that they have on the households' vulnerability to food insecurity (Hendriks, 2011). In this study, the Labadarios, et al. (2009) definition of food security was employed using the Universal Household Food insecurity measurement tool (Nord, et al., 2010; FAO, 2003 as cited by Labadarios, et al., 2009). This is described in Table 2.1 below.

Table 2.1: Level of food security

Level of Food Security	**Definition**	**Evaluate level of food security (**Universal Household Food Insecurity measurement tool)
High food security	Households regularly having adequate food without difficulties	How often households consume a balanced meal If they experience anxiety that they would not have enough food Lost weight because of a lack of food
Marginal food security	Households sometimes having difficulties or anxiety to adequate food but the quality and variety of their food intake has not substantially reduced	
Low level food security	The quality and variety of household's intake are reduced, but quantity of food intake and normal eating patterns are not substantially reduced	
Very low food security	The quantity of the food intake and normal eating patterns are disrupted at certain times of the year due to lack of purchasing power or other access to food.	

Source: Author's compilation based on Labadarios, et al. (2009); Nord, et al. (2010); FAO, 2003 as cited by Labadarios, et al. (2009).

2.2.3 Urban Food Security in Cape Town, South Africa

As from the discussion above, urban food insecurity is a reality in Cape Town. Battersby (2011a) reports that food insecurity is both severe and chronic in the poorer areas of Cape Town. The local economic challenges, such as the rapid increase in electricity and food prices as well as unemployment, will increase the number of people experiencing food insecurity. It is also evident that households' food intake has decreased and they will settle to buy cheaper and non-nutrional food to consume which is detrimental to their health. Recent studies indicate that the urban population has grown by 29.3 percent since 2001 and currently 3,740 million people are living in Cape Town (STATSSA, 2011a). Cape Town has an unemployment rate of 24 percent (STATSSA, 2011a). Fourteen percent of the households have no income, 17 percent have an income of less than R1600 and 37 percent receive grants (STATSSA, 2014b; STATSSA, 2011a). Feeding the city remains a challenge. Frayne, et al., (2009: 12) make the point that "a city might be defined by what it eats (or not eat)". In essence, people with enough income will eat healthy nutritional meals, which in most cases are more expensive.

With limited income, people will often consume highly processed food that is calory dense and nutrient deficient. This is unhealthy and prevent people from living an active and productive life. If poverty is eradicated, the citizens will be able to have access to healthy, dietary diverse food and this will lead to a healthy, productive and satisfied city (Frayne, et al., 2009). Maxwell (1999) notes that in the 1970s to 1980s, urban food insecurity was the result of food shortages and rapid price changes. However, the 1990s brought about a shifting to a problem of access to food by the urban poor. According to Maxwell (1999) urban food insecurity has become invisible as urban managers focus on visible urban problems that are in most cases of a political nature like unemployment, infrastructure, delivery of services and housing shortages. Less attention has been given to the urban food insecurity dilemma. As 50 percent of a household's total income is being spent on food, issues of employment, income and livelihood are therefore directly linked to food security (Maxwell, 1999; Oxfam, 2014).

Unemployment is a challenge and crisis for South Africa with its unemployment rate of 25 percent and an expanded unemployment rate of 35 percent (STATSSA, 2014b). The expanded unemployment rate includes those people who desire employment but might not

actively try to obtain a job. A reason for concern is also the 14 percent unemployment rate for people with tertiary qualifications and the youth unemployment rate of 36.1 percent (STATSSA, 2014b). With such a high unemployment rate, food insecurity has shifted from a short-term crisis in the earlier years to a chronic problem experienced mostly by the poor.

Battersby (2011b) argues that the food geography of the city has an impact on the level of food security. As mentioned, access to nutritious meals contributes to food security. The access problems are not only due to limited financial resources, but also a result of the structure of the urban food system (Battersby, 2011b). In Cape Town, poor households access their food through purchasing from both formal and informal shops, through formal social safety nets, and through social networks (Battersby, 2011b). In addition, most of the households purchase their food only once a month at supermarkets, and make daily and weekly purchases at small shops or informal shops within the area (Battersby, 2011b). The exorbitant food prices and the additional purchase prices of food charged by the local shops within the communities, decrease the access to quality food, thereby increasing hunger and food insecurity.

Access to food instead of food production is perceived as the main reason for food insecurity (Crush & Frayne, 2011). They mention that inaccessibility to good nutritional food is hindered by the household's income, food prices and the location of the food outlets. Only a small proportion, which is 9 percent, of the urban households gains access to food through safety nets (Battersby, 2011b). Formal safety nets include food received from community food kitchens, food remittances, and food aid (Battersby, 2011b). What is quite remarkable is that a significant number of households are dependent on food acquired from their neighbours; others through sharing of food with other households (44%), food provided by others, e.g. family and friends (34%) and 29 percent borrow food (Battersby, 2011b). Social capital within communities s been written about by authors and Crush & Frayne (2011) mention that the church, 'stokvels' (collecting and sharing of money in communities) and social networks are integrated in the lives of people. This contributes positively to the well-being, livelihood and food security of households. It is evident that strong social networks exist within poor areas in Cape Town.

The point, however, is that many households are unable to access food through the markets. They are therefore reliant on informal networks for survival (Singh, 2009; STATSSA, 2012; Altman et al., 2009b; Battersby, 2011b). In the end, Frayne et al.'s (2009: 9) argument is so profound when they make the point that "cities are no longer there to be fed; but must start feeding themselves". To tackle the urban food insecurity dilemma, the cities must adopt new approches to food production and access (Frayne, et al., 2009). Urban agricultural activities can be key in this process. With this as background, it is evident that food security is a challenge and strategies should be put in place to cope with unemployment and food insecurity.

2.3 A TYPOLOGY OF FOOD SECURITY AND URBAN AGRICULTURE

Agricultural development has been promoted at the highest political and scholarly levels as crucial to the global food crisis. This is however not without challenges. Demographic and dietary changes, climate change, natural-resource constraints with the increase in bioenergy development result in structural changes in agriculture and the livestock sector (FAO, 2009b). Today, urban agriculture is perceived as a development strategy for household food security (Armar-Klemesu, 2000; Arku, et al., 2012). According to Rogerson (1993), urban agriculture was placed on the policy agenda during the 1980s. The purpose of urban agriculture was to ensure self-reliance in the urban population to improve the socio-economic condition of the urban poor (Rogerson, 1993). This is important as in most cases the urban poor is dependent on government support whereas urban agriculture would enable them to cultivate crops for their households. The impact of the economic recession and the crises of the 1980s and 1990s, triggered the spontaneous cultivation of food crops, especially vegetables, in urban public and open spaces throughout the Third World (Drakakis-Smith, 1991). The FAO (2013) reports that 800 million people worldwide are practicing urban agriculture and they promote policies that recognize urban food production as a legitimate land use that will assist low-income urban residents to save money on food purchases. Similarly, Zezza & Tasciotti (2010) agree that urban agriculture may play a role in meeting food security or providing income. In most instances, households engage in agricultural activities in the rural areas and with migration to the urban areas, they continue with their agricultural practices. Others might see the need to provide for the family and would participate in agricultural activities.

Food security was also evaluated through the lenses of child nutrition as a outcome indicator of food and nutritional security (Yeudall, et al., 2007; Zezza & Tasciotti, 2010). In a study conducted in Kampala, Maxwell, et al. (1998) found that urban agriculture has a positive and significant impact on the higher nutritional status of children. In their study, they investigated the relationship between food security, dietary intake and the nutritional status of children. The outcome of the study was that the nutritional status of children under the age of five years was significantly better than that of other children (height and weight for age) and that there was a significantly higher proportion of moderately to severely undernourished children in nonfarming households. Bellows, et al. (2003) evaluate urban agriculture in North America and Western Europe through the lenses of health benefits and found that (1) people will more easily eat of their own crops; (2) urban agriculture has health, recreation and active work benefits, and (3) empty municipality spaces and schools are being decorated with urban gardens. Furthermore, they note that for every $1 invested in a community garden, approximately $6 worth of vegetables can be grown.

Urban residents include vegetables and fruit of their own harvest in their daily intake and these substitute emergency food like bread, cereal and other high calorific meals. Armar-Klemesu (2000: 105) makes the important point that urban agriculture would not necessarily satisfy the urban demand for staple crops like cereal and wheat which are mostly harvested in rurul areas. However, the fact that urban agriculture produces vegetables and fruit that are part of the dietary requirements of human beings, must be recognized and appreciated. This validates the significant role that urban agriculture could play in improving urban livelihoods and addressing food insecurity.

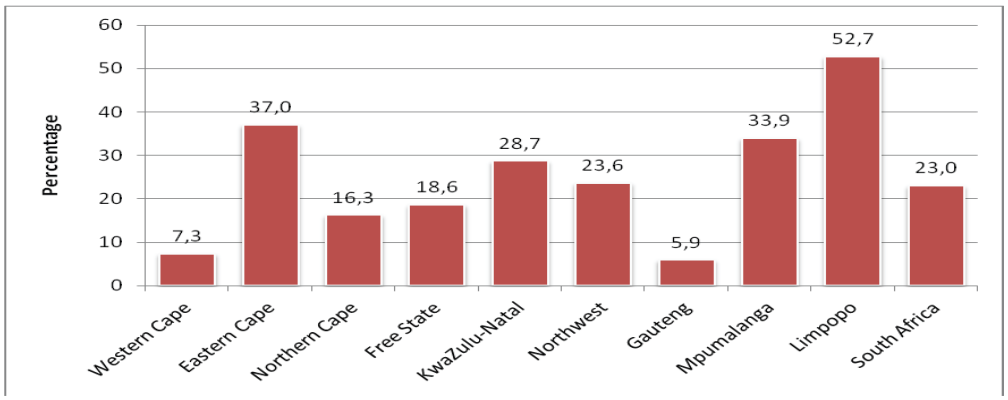
Various authors indicate that urban farmers are overwhelmingly females (Altieri, et al., 1999; Mougeot, 2000). Bellows, et al. (2003) claim that females will be mostly subsistence farmers whereas males will be involved in commercial agriculture. The main reason for this trend in female farming is that females are mostly responsible for the household's food supplies and food purchases. In some African cities, particular Dakar and Accra, it is the cultural tradition for males to farm (Seeth, et al., 1998). In these cases, the females and children work as labourers in the family urban plot and approximately 75 percent of these urban gardens are managed by the males of the households (Seeth, et al., 1998). In as much as the above

empirical evidence creates a platform for urban agriculture in food security, this is not evident in South Africa, where urban agriculture could be promoted on a larger scale.

2.3.1 Urban Agriculture in South Africa

STATS SA (2012) indicates that 21 percent of the South African population still experience difficulty to access nutritional and sufficient food. South Africa has an unemployment rate of 25 percent and 15 million South Africans' only source of income is some form of social grant (Oxfam, 2014). Urban agriculture has emerged as a significant contributor to address poverty and to improve food security. Subsequently, since 1998 municipalities embarked on formulating policies for "responsible governance" towards urban agriculture (Rogerson, 2010b: 378). Most of the people live in residential properties of less than 350 square metres and do not have enough land on their own plots to participate in urban agriculture (Crush, et al., 2011). However, the policy gave urban residents the opportunity to promote urban agriculture using farms and vacant land owned by municipalities (Crush, et al., 2011; Rogerson, 1993). Such projects include the Siyakhana Food Garden Project, which is located in the inner city of Johannesburg; Food and Trees for Africa, which addresses greening, food security and sustainable water and soil use and management; Abalimi Bezekhaya, an urban agriculture project operating in Khayelitsha and Nyanga; and the URDCBP that operates in Langa (case study area). Despite Maxwell's (1999) views that participation in urban agricultural activity will increase if it is included in the urban policies, the results indicate differently. In South Africa, less than a quarter of the households are involved in agricultural activities and this is mostly in rural households (STATS SA, 2012). In the Western Cape only 7.3 percent of households participate in agricultural activities (STATS SA, 2012) as indicated in Figure 2.3 below.

Figure 2.3: Households' involvement in agricultural activities, 201



Source: GHS Series Volume IV. In-depth analysis of the GHI (STATSSA, 2012: 43).

The discussion above has mapped out how imperative policies are to address food security. To increase food security by 2030 as per the Millennium Development Goal (MDG), South Africa has included the individual's right to have access to enough food, in Section 27, Constitutional Rights in South Africa (DoA, 2002). The policy stipulates that "every citizen has the right to have access to sufficient food and that the state must by legislation and other measures, within its available resources, avail to progressive realisation of the right to sufficient food" (DoA, 2002: 5). This corresponds with the viewpoint of Armar-Klemesu (2000: 99) where he states that enough food is the fundamental right of an individual. However, these policies failed the 13 million hungry people as it was only partially implemented due to a lack of coordination at the local level (Oxfam, 2014). In South Africa one in four people still suffer from hunger on a regular basis (Oxfam, 2014).

South Africa has come a long way with adopting policies to eradicate poverty and improve the level of food security. In 1994, the Reconstruction and Development Programme (RDP) was initiated with food security as a priority policy objective (DoA, 2002). The policy was refined and updated and in 2002 the Cabinet decided to launch a new strategy known as the Integrated Food Security Strategy of South Africa (IFSS). The purpose of this strategy was to eradicate hunger by 2015 by providing comprehensive agricultural support programmes, supporting vulnerable groups, initiating feeding scheme and creating a public works programme. This strategy was replaced in 2013 by the Food Security and Nutritional Policy (DoA, 2002). The purpose of this strategy is similar to the original strategy with some additional objectives. These include the increase in safety nets and food emergency

management systems, the provision of capacity building and the improvement of nutrition and food safety (DoA, 2002).

2.3.2 The Urban Agricultural Policy of the City of Cape Town

South Africa committed to increasing food security by 2030 as part of the Millennium Development Goals (FAO, 2009a). Subsequently, the City of Cape Town initiated the Urban Agricultural Policy in June 1997 (City of Cape Town, 2007). The ultimate purpose of this policy is firstly to give poor communities the opportunity to utilize urban agriculture as a survival strategy and thereby contribute to household food security. Secondly, the policy seeks to create sustainable economic opportunities that will create jobs and income. Thirdly, it will allow previously disadvantaged people to participate in land redistribution for agricultural development programmes and provide training and development in technical, business and social skills (City of Cape Town, 2007: 4)**.** As a response to the policy, NPOs initiated urban food garden projects across the Cape Flats where most of the poorer communities live. The community food gardens allow individuals, without land of their own, the opportunity to harvest crops thereby contributing to food security. In as much as this provides a platform for urban agriculture, the question arises whether or not this is effective and efficient. Monitoring and evaluation of these initiatives are imperative in order to determine whether the projects or programmes attain the strategic focus areas and the impact thereof on the community. The question, however, is: do urban food gardens assist the reduction of the food insecurity crisis?

2.3.3 Urban Agricultural Projects in Cape Town, South Africa

The contribution of urban agricultural projects implemented in Cape Town is reviewed in response to the question posed in the previous section. Reuther & Dewar (2005) acknowledge that most of the urban agricultural projects are undertaken as a survival strategy for households. These urban garden projects are in the backyards, if there is enough space. However, space is a concern for most households in the townships as they live in residential properties of less than 350 square metres (Crush, et al., 2011). Rapid urbanisation results in overcrowding in the City of Cape Town. This is evident in the increase in shacks on vacant plots. Housing is a great concern in the City of Cape Town and open spaces are primarily used for this purpose. Most of the community gardens are on school grounds, at clinics, libraries or vacant municipality grounds that are not earmarked for housing or schools. Urban

agriculture could give households access to vegetables which can be included in their diet thereby providing a nutritious diet with positive health benefits and reducing the dependency on buying vegetables at the local markets.

Reuther & Dewar (2005) critically examined the Scaga garden projects in Khayelitsha, a township in Cape Town, and concluded that the potential of urban agriculture in poverty alleviation and empowerment is indecisive. The possibility that urban agriculture will eradicate household poverty is limited and there was no proof that anyone would be able to support their household with income only from the urban gardens project (Reuther & Dewar, 2005). Urban food gardens are a form of subsistence farming with a limited possibility of eradicating poverty. Urban agriculture has more social and economic benefits. Urban food gardens strengthen social networks within the communities, create a sense of pride and promote agricultural training.

In another study of the potential of urban food gardens to household food security, Karaan & Mohamed (1998) evaluate the gardening promotion activities of Abalimi Bezekhaya, which started in 1983 with the primary objective of assisting poor communities to alleviate malnutrition "through home vegetable gardens". Due to poor response from the community, the project did not succeed. However, Abalimi Bezekhaya changed their strategy and initiated garden centres in Khayelitsha, Nyanga and Phillippi (Abalimi Bezekhaya, 2013; Frayne, et al., 2009). The purpose of these garden centres was to promote food gardens by providing skills training, community support and low cost gardening resources, e.g. seeds, tools and plants (Abalimi Bezekhaya, 2013; Frayne, et al., 2009). The centres expanded and Abalimi Bezekhaya currently provides support to 11,000 gardeners. In their study, Karaan & Mohamed (1998) seek to determine the motivation for community members to participate in food gardening. The study reveals that vegetables are grown for household consumption; that the gardeners experience savings on their food budget as they consume their own harvest instead of buying it; it generates an income, creates employment and encourages community interest in gardening (Karaan & Mohamed, 1998). What is quite significant in this study, is that the community members' primary motivation for participating in these food gardening projects, is to grow vegetables for household consumption. With 11,000 gardeners actively involved in food gardening through Abalima Bezekhaya, it indicates the pivotal role that urban food gardens play for households to be more food secure (Karaan & Mohamed, 1998).

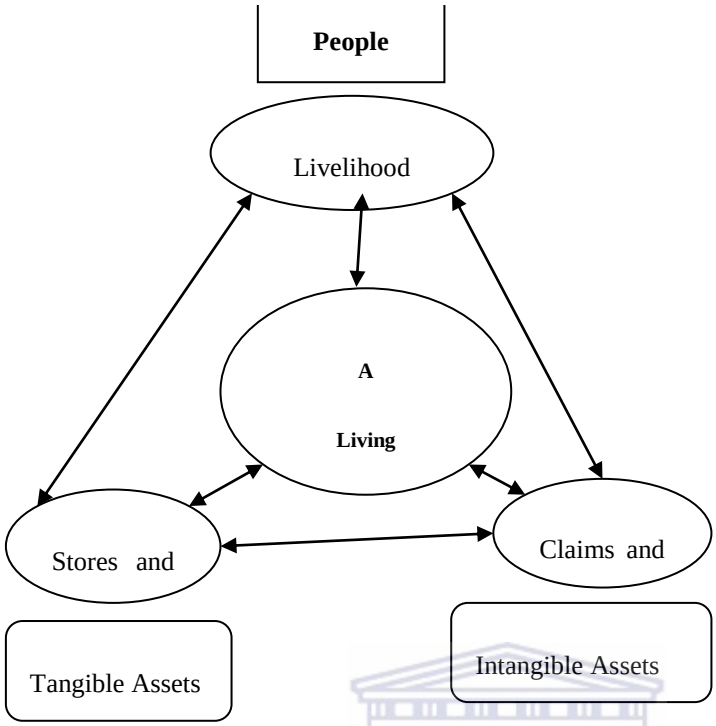
2.4 THEORETICAL FRAMEWORK: SUSTAINABLE LIVELIHOOD APPROACH

In the discussion and from the empirical evidence provided in the previous sections, it is evident that urban agriculture contributes positively to households' economic and social capital. Subsequently, I have mapped out the contribution of urban agriculture, as a livelihood strategy, to food security. For the purpose of this study, Chambers & Conway's (1992) definition of a livelihood will be employed:

> *A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. A livelihood is sustainable which can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in short and long term.* (Chambers & Conway, 1992: 7).

Poor households will only be able to live a productive and healthy life if they adopt different livelihood strategies. As indicated in Figure 2.4 below, a livelihood embraces the capabilities of people, their capabilities and available resources to survive (Chambers & Conway, 1992). They further proclaim that a household will diversify its livelihood strategies by using its tangible and intangible assets. Tangible assets are the available resources and stores and this includes land, water, food reserves and cash. Intangible assets are seen as the support that the household receives like food, family support or support from other organisations (Chambers & Conway, 1992). Social sustainable livelihoods must cope with and recover from stress and shocks quickly (Scoones, 1998). The resilience aspect is important to livelihood adaptation and coping (Davies, 1996). If households are unable or take longer to cope or adapt to stresses and shocks, they will inevitably be more vulnerable and would not achieve sustainable livelihoods. Subsequently, households with more diverse livelihood strategies, will be more tolerant to shocks and stresses and would cope better in unfavourable circumstances (Chambers & Conway, 1992; Scoones, 1998). Diversified livelihood strategies result in more resilient households.

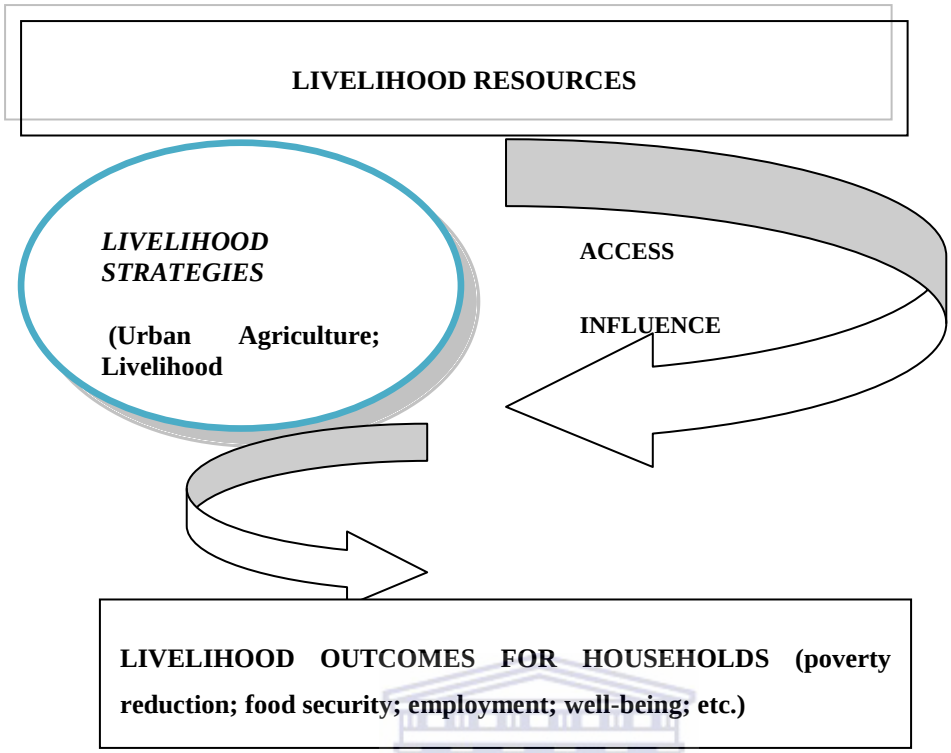
Figure 2.4: Components and Flows in a Livelihood



Source: Chambers & Conway (1992: 7).

With the vastness of the food insecurity dilemma, the level of food security of the urban poor is not always evident (Crush & Frayne, 2010). Households adopt many livelihood strategies to improve their standard of living, be more food secure and to provide an income. It is however not always known what livelihood and coping strategies urban households adopt to be more food secure. Although urban agriculture has been advocated as a livelihood strategy for food security, limited research has been done to determine the degree of the contribution of urban agriculture to household food security (Altman, et al.,2009b). The ability to pursue different livelihood strategies, is dependent on the capabilities, resources and assets that people have (Scoones, 1998). These livelihood resources are the social, financial, human and natural capital that influence the livelihood strategies. The influence of the assets and capabilities of the households, what livelihood strategies were adopted and the ultimate livelihood outcomes were evaluated with the Sustainable Livelihood Approach Framework as the frame of reference (see Figure 2.5 below).

Figure 2.5: Sustainable Livelihood Approach Framework



Source: Author's construct: Adapted from Sustainable Livelihood framework - DFID Guidance Sheets (1999).

In this study the influence and access to livelihood resources includes access to land, water, equipment, income, skills, knowledge, health and social networks, friends, and association. The Sustainable Livelihood Approach framework assisted me in my quest to identify the livelihood strategies and coping mechanisms adopted by the Ward 51, Langa community to survive and be more food secure. The framework has enabled me to report on the livelihood strategies adopted, the livelihood outcomes as well as the coping mechanisms adopted by the community.

2.5 SUMMARY

In this chapter, I contextualised the study through a discussion on the literature pertaining to food security as a global development phenomenon, urban food security in SSA and South Africa, and lastly the state of urban household food security in the City of Cape Town. Thereafter, I gave a typology of food security and urban agriculture, the contribution of urban agriculture to food security on a global level, the contribution of urban garden projects on the Cape Flats in the Western Cape Province and concluded with the urban agricultural policies

adopted in South Africa to improve the levels of food security, poverty and employment. The chapter concluded with a discussion of the Sustainable Livelihood Approach as theoretical framework and how it was employed to assess and evaluate the livelihood strategies adopted in Ward 51, Langa, Western Cape. In Chapter Three, I will describe and explain the research design and methodology process followed in this study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The previous chapter contextualised the relationship between food security and urban agriculture and concluded with a discussion on the Sustainable Livelihood Approach employed as the theoretical framework. In this chapter, the research process is outlined and it commences with the research objectives and subsequent research questions (see Table 3.1). Thereafter, I explain the research design and this is followed by the research methodology, sampling techniques, data collection methods and tools used. Subsequently, the data analysis process follows and the chapter concludes with the limitations of the study.

The primary aim of this study is to determine the contribution of urban agriculture to food security. To do this, it was important to first determine if food insecurity is a reality in the community. The research therefore first seeks to determine the level of food insecurity within the case study area, Ward 51, Langa. Thereafter, the benefits of urban agriculture to food security and other livelihoods are determined.

3.2 RESEARCH OBJECTIVES

The research objectives, research questions and sub-questions steer the study in choosing the most appropriate research design and research methodology. This is reflected in Table 3.1 below.

Table 3.1: Research objectives, research questions and research methods employed

Research Objective	**Corresponding research questions**	**Research Method employed**
To determine the levels of food security	What is the extent of food insecurity in Ward 51, Langa?	Literature review; Quantitative-Questionnaire with community members and beneficiaries of URDCBP – a NPO
To determine the contribution of the urban food gardens to food security	What are the livelihood outcomes of the urban food gardens project?	Literature review; Quantitative-Questionnaire with community members and beneficiaries of project; Qualitative-Focus group discussions with beneficiaries and community members; Personal Interviews with members of URDCBP; Officials at the Department of Social Development and Department of Agriculture
3. To identify other livelihood strategies	What coping strategies are adopted to be more food secure? What livelihood strategies are pursued by the households in Ward 51, Langa? What is the contribution of the capabilities and assets of the community to be more food secure?	Literature review; Quantitative-Questionnaire with community members and beneficiaries
To make recommendations to improve urban agriculture in Cape Town	What is required to ensure the sustainability of the urban food gardens project?	Literature review; Quantitative-Questionnaire with community members and beneficiaries; Qualitative-Focus group discussions with beneficiaries and community members; Personal Interviews with members of URDCBP; DSD, DOA

Source: Summative Research Design Construct by Author.

3.3 RESEARCH DESIGN

Scholars define research designs differently but the purpose is ultimately the same. In any research it is important to identify the purpose of the study, gather the appropriate evidence in the most best-fitted manner, analyse the data, and draw conclusions based on the evidence (Babbie, 2010; Mouton, 1996). This is considered as the plan or research design of the study. Mouton (1996) describes the research design as the entire research process with specific direction and guidance to address the purpose or research problem. Terre Blanche, et al. (2011: 167) describe research designs from a quantitative research paradigm as descriptive research, relational research and comparative research. In addition, Terre Blanche, et al., (2011: 161) consider the validity of the research design as important and argue that the research design must evaluate the purpose, methods and tools to maximise validity. Choosing the correct design is imperative as it must be adequate and appropiate to answer the research objectives. This research is an explanatory study as it presents the inter-relationship between food security and urban agriculture. Although this is not a very new phenomenon, limited research was done to assess the degree of the contribution of urban agriculture to food security as well as the other livelihood strategies that households adopt to be more food secure. This research hopes to add value to this gap. Babbie (2010) notes the importance of identifying the unit of analysis and describes the unit of analysis as the people or things within the study that will be observed, described and explained by researchers. The unit of analyis of this study are the community members of Ward 51, Langa.

3.4 RESEARCH METHODOLOGY

As mentioned in the previous section, the research design guides the researcher through the research process. The research methodology is the manner in which the researcher will go about conducting the research. Mouton (1996) differentiates three levels within the research process, namely the research techniques, research methods and research methodological paradigms. He defines research techniques as the specific ways used by the researcher to execute tasks related to specific stages in the research process, which includes sampling, data collection and data analysis. Furthermore, research methods are the type of techniques, instruments and skills required to execute each stage and research methodological paradigms can be quantitative, qualitative or participatory action paradigms (Mouton, 1996). The

participatory action paradigm is usually evident in community projects where the community members and the researcher work together to identify a problem within the community, find solutions for the problem and evaluate their work thereafter (Kelly, 2005). The research methodological paradigms were defined differently by Osborne (2008: 125) as qualitative, quantitative and mixed method research design. This study employed the research methodological paradigms as described by Osborn (2008).

3.4.1 Qualitative research methodology

Johnson & Onwuegbuzie (2004: 18) refer to qualitative research as inductive, discovering or exploring a phenomenon with the researcher being responsible for the primary data collection. Within the social science research field, a single event or phenomenon will be identified by the researcher and in-depth qualitative studies will bring about rich detail to this phenomenon (Creswell, 2003). To bring about this depth, Creswell (2003) mentions that open-ended questions are used in questionnaires for this purpose. With the open-ended questionnaires, the participants will have the opportunity to express their opinions whereas with closed-ended questionnaires, the responses will be more structured. In this study, closed-ended questionnaires have been employed for a more structured response. Qualitative data collection is non-numerical and includes interviews, focus groups, observations and secondary data like documents and reports (Babbie, 2010; Brannen, 1992). Scholars criticize qualitative research of scientific insufficiency and to compensate for this, qualitative researchers analyse the data collected by categorising it by specific themes (Mays & Pope, 1995; Terre Blanche, et al., 2011: 47). Categorising the data by specific themes makes the analysis and reporting so much easier.

In this research, specific themes have been identified based on the research objectives and the themes are described in Section 3.7.2. In qualitative research, the researcher is instrumental in the data collection. This is a great concern to scholars as researchers might be prejudiced and this might influence the study. In this study, it was important that I took cognisance of the different cultural assumptions and opinions between myself and the participants and took special care not to influence the outcome of the study with my own interpretations or ideas..

3.4.2 Quantitative research methodology

Johnson & Onwuegbuzie (2004) refer to quantitative research as hypothesis testing of the data collected with a statistical analysis. With quantitative research, influencing of variables can be eliminated and the researcher will be able to test cause-and-effect relationships (Creswell, 2003; Johnson & Onwuegbuzie, 2004). Quantitative research methodology is imperative for this study as the cause-and-effect relationship between poverty and food security was assessed. Brannen (1992) defines quantitative research as where the variables are linked to form a hypothesis before the data collection process and that the hypotheses are tested and verified with the data analysis process.

In this research, various hypothesis were tested in response to the research objectives. The phenomenon of food security was evaluated through lenses of urban agriculture as well as various variables like education, employment, monthly income and household size. This is a more focussed approach. But in as much as this is a positive attribute in quantitative research, some scholars criticize this narrow-focussed approach. Their concern is that the phenomenon in a quantitative research is tested numerically by specific variables and any other influences or phenomena will be excluded (Brannen, 1992). Another positive attribute of quantitative research is that it is very quick to collect data and the data analysis is also much easier and less time-consuming as in most cases statistical analysis software will be used for this purpose (Johnson & Onwuegbuzie, 2004). Creswell (2003) argues that quantitative research is more independent of the researcher as it can be used to study a large number of people and receive more credibility and acknowledgement with people in power. Furthermore, quantitative research can be used in complex experiments with many variables and when questionnaires as a data collection tool are being used in surveys, the population can be generalized from the sample (Creswell, 2003).

While acknowledging the positive attributes of quantitative research, it is important to note that it also has been criticized by scholars. Johnson & Onwuegbuzie (2004) describe the quantitative research as being too abstract. Quantitative methods include experiments, structured interviews and questionnaires and data collected will be numeric or converted to numeric and a statistical programme is required for analysis (Brannen, 1992: 58; Terre Blanche, et al., 2011:47). The quantitative data collection method is fundamental in my

research given the scope, which is the Langa population, and the sample size of the research. Self-administered questionnaires as a quantitative data collection tool were employed as they are cost- and time efficient.

3.4.3 Mixed-method research methodology

Eisenhardt (1989: 534) mentions that with a case study strategy, the combination of qualitative and quantitative data collections methods or designs is preferred although it can be either one of the two. I used a combination of quantitative and qualitative data techniques. The mixing of both quantitative and qualitative approaches into a single study is described by scholars as the mixed-method research design (Johnson & Onwuegbuzie, 2004: 17; Osborne, 2008: 129). The purpose of combining both quantitative and qualitative methods in the empirical research is that the weaknesses of the one strategy will be complemented by the strengths of the other (Babbie, 2010:287; Johnson & Onwuegbuzie, 2004: 18). Eisenhardt (1989) agrees and states that in mixed-method research, the quantitative design will indicate relationships whereas the qualitative design will be useful in understanding the rationale of these relationships. In my research, I have statistically proven the inter-relationship between different variables, for example education, employment and monthly income on the levels of food security within the case study area (Ward 51, Langa) and what the relationship is between urban agriculture and food security. With mixed-method research, multiple approaches are used in answering the research questions instead of restricted or limited research options (Johnson & Onwuegbuzie, 2004). The mixed-method research is considered as being inclusive, expansive and creative and the different approaches complement each other to obtain suitable answers for the research objective. As a quantitative research method, closed-ended questionnaire surveys were used and for the qualitative research methods, I used focus group discussions and semi-structured interviews.

3.4.4 Case study design

After a thorough review of the literature, I concluded that a case study design would be the most appropriate design for my research. For Yin (2009) the case study design focusses on answering the ‘how’ or ‘why’ questions of the researcher where the researcher has no control over the events happening at present. In this research, Ward 51, Langa, was the case study area and I present the current impact of urban agriculture on food security and other

livelihoods. Eisenhardt (1989: 534) and Babbie (2010: 309) state that in the case study strategy, the researcher will focus on understanding the dynamics or social phenomena that are present in a single setting. Eisenhardt (1989: 534) further describes that with case studies, different data collection methods, e.g. interviews, secondary data, questionnaires and observations, are combined and that the evidence can be quantitative, qualitative or both. With the case study strategy, the interviews conducted with the key stakeholders of the Department of Social Development (DSD) and the Department of Agriculture (DoA), provided detailed information in response to the research objectives. The focus group discussions revealed collaboration between the community and the urban agriculture project. Case study research is a powerful research method (Voss, et al., 2002).

Challenges with the case study design

From the above discussion, it is evident why case study design is considered as the most preferred strategy. However, the case study design does not come without any challenges. Some of the challenges of case study design include: conversion of the research data to significant knowledge; the cost of the research; time constrains; problems with access to the case study area and the requirement of skilled interviewers (Meredith, 1998: 443-444; Voss, et al., 2002: 195). Despite these challenges, the case study design remains the preferred strategy as it provides meaningful insights to a phenemenon (Rowley, 2002:16). The results are still significant as they will create new insights with high validity (Dubois & Gadde, 2002; Voss, et al., 2002). Scholars realised that learning from a particular case is a strength and not a weakness. What has been reflected as a problem before, has now been valued as an opportunity (Dubois & Gadde, 2002). In essence, case study research is still considered as the most powerful research strategy as it provides meaningful insights that might not be achieved by other approaches (Rowley, 2002; Voss, et al., 2002).

3.5 RESEARCH PARTICIPANTS AND SAMPLING CRITERIA USED

Scholarly research indicates the importance of selecting the correct sample population as it must be as reprentative as possible to the target population (Blumberg, et al., 2008: 232; Mouton, 1996: 110). This is important as with a sample, elements would be drawn from the population and inferences will be made from the sample to the whole population (Blumberg, et al., 2008). The sample population should be unbiased and should involve random selection

of elements of the target population. The sample size is also important as a very small random sample might be unrepresentative and the same is true for a very large non-random sample (Blumberg, et al., 2008; Terre Blanche, et al., 2011:49). In any research, interviewing or collecting data from the whole population would be challenging. However, identifying a representative sample from the population for the research, would be cost effective, the results would be more accurate, the speed of data collection would be quicker and there would be fewer challenges with the availability of participants for the research (Blumberg, et al., 2008).

Futhermore, the importance of selecting the correct sampling technique is imperative and the sampling error should be within the acceptable limits (Blumberg, et al., 2008: 259). Probability sampling and non-probability sampling have been identified as the sampling methods for this research (Babbie, 2010: 192; Blumberg, et al., 2008: 235). Probability sampling is a random selection where each person has an equal possibility to be included in the study. Systematic sampling, stratified sampling, cluster sampling and double sampling are the four approaches to probability sampling as defined by Blumberg, et al. (2008: 242). Probability sampling was similarly defined by Babbie (2010) although he replaced double sampling with simple random sampling as a sampling design.

Terre Blanche, et al. (2011:50) identify three types of sampling methods, namely convenience sampling, random sampling and purposive sampling. In convenience sampling, the available participants are selected for the research without any prior rationale. This is considered as unrepresentative (Terre Blanche, et al., 2011:47). With random sampling, everyone has an equal change to be selected in the research and this is considered as a more realistic sampling method. In purposive sampling, the researcher prior-selects the participants based on the depth and detail that they will bring to the research (Terre Blanche, et al., 2011:47). In this study, random sampling was used in the quantitative research and purposive sampling in the qualitative data collection. The qualitative data collection includes two semi-structured interviews and two focus group discussions. Interviews were conducted with key stakeholders in the Department of Social Development and the Department of Agriculture. The officials interviewed were chosen due to their roles played in food security and urban agriculture. The first focus group discussion included 13 of the 100 beneficiaries of the URDCBP that were randomly selected. The second focus group discussion included 17 randomly selected community members.

All participants signed the consent form as acknowledgement of the ethical principles of confidence, dignity and privacy (Babbie, 2010). Participants involved in the focus group discussion were asked not to divulge the confidentiality of group discussions. The principle of informed consent as described by Oliver (2003:28) was adhered to, where he states that all respondents have the "right to know" and the "right to be informed" about the research project. The purpose of the research project was also translated into isi-Xhosa for the better understanding of the participants. Permission had been requested from the participants for the recording of the focus group discussions and the personal interviews. The participants were informed that the recording would be transcribed in themes and included anonymously in the study. The participants were ensured of the anonymity and confidentiality elements in the event of the accidental reference to the interviewee by his/her name during the recording and that fictional names would be used (Oliver, 2003). The participants were also informed that they could request that some of the discussions be done "off record" in which case the recording would be paused. It was also communicated to the participants that the recording would be stored securely on the computer that is password protected until the transcribing process was completed (Remenyi, et al., 2011: 46). As soon as the recording was transferred to the computer, the recording would be deleted from the recorder. The participants who completed the self-administered questionnaires were informed that the data would be captured anonymously and stored securely on the computer that is password protected. The questionnaires would be stored securely and out of sight of anyone that was not involved in the research and that the questionnaires would be destroyed when the dissertation was accepted and the subsequent papers published (Remenyi, et al., 2011: 46 & 61).

3.6 DATA COLLECTION TECHNIQUES

Neuman (2000: 223) makes the point that identifying the correct research technique is important, as not all research questions can be addressed by the same technique. In essence, it is imperative to understand the strengths and weaknesses of the different techniques and make a judgement call deciding on the best technique to answer the research questions.

3.6.1 Quantitative Data Collection

Self-administered questionnaires

Babbie (2010:270) notes that it may be appropriate to administer self-administered questionnaires to a group of respondents gathered in the same place at the same time. Ward 51, Langa, has 7357 households. For the purpose of this study, 83 households were randomly selected to participate in the study and to complete the self-administered closed-ended questionnaires. The 83 households included community members as well as beneficiaries of the URDCBP. Some of the participants were gathered in the same place and completed the self-administered questionnaires whereas others were completed individually by the participants in their houses. The structured questionnaires acquired information such as the socio-demographic detail of the respondent, if the respondent participated in urban agriculture, questions to determine the levels of household food security and questions in relation to the livelihood strategies. The questions were structured around the research objectives and gave direct information as required by the study. Closed-ended questions forced the participants to select one or more of the choices from a fixed list of answers which were pre-coded. That made the comparative statistical analysis so much easier (Neuman, 2000; Terre Blanche, et al., 2011:487). Open-ended questions would perhaps have given more depth but would not have been so focused. Neuman (2000) raises a concern that with closed-ended questions, the respondent might answer the questions without having any knowledge or opinion. This was experienced in this study as some of the participants did not know the meaning of food security and I had to define food security.

The purpose of the quantitative approach is to determine the level of food insecurity or vulnerability to food insecurity; the livelihood strategies adopted and coping mechanisms of the households as well as the livelihood outcomes (DFID Guidance Sheets, 1999). This method gave me the opportunity to gain more understanding on the implementation of the livelihood strategies and the impact of governmental support that might influence the sustainability of the projects.

3.6.2 Qualitative Data Collection

Focus Group Discussions (FGDs)

According to Babbie (2010:322) focus group discussion is seen as group interviewing and is based on structured, semi structured or unstructured interviews. The focus group was selected on the basis of their relevance to the study topic. Each group member had an equal opportunity to comfortably express his/her views and to provide detailed and relevant information that was not captured by the questionnaire (Babbie, 2010). The technique assisted me to gain a detailed understanding on some of the issues raised in the questionnaire and served as a way of verifying the patterns of information provided in the questionnaire. Blumberg, et al. (2008: 204) refer to focus group discussions as an approach that enriches research questions and hypotheses. They further emphasize the importance of having a focus group that is not too big or too small as that would impact on the participation of the members. To bring the necessary depth to the study, two focus group discussions were conducted. One focus group discussion was with 17 randomly selected community members whereas the other focus group discussion was with 13 randomly selected beneficiaries. The assistance of an isiXhosa speaker was used to assist with translating the questions and the consent form to isiXhosa. The focus group discussions were recorded, with permission from the focus group participants and transcribed by me.

Semi-structured interviews

Face-to-face interviews can be a significant data collection tool as important information can be obtained. The questions or conversation with the participant will be controlled by the research questions. Neuman (2000: 273) comments that personal interviews have the highest response rate but at a high-cost. Blumberg, et al. (2008: 385) note that interviews as a data collection tool can be structured, semi-structured or unstructured. He further notes that structured interviews are descriptive as the questionnaires will be a specific set of questions. However, semi-structured and unstructured interviews are of an exploratory or explanatory nature (Blumberg, et al., 2008: 386). In this study, semi-structured interviews were employed with questions constructed on the research objectives. Semi-structured interviews are more flexible. Blumberg, et al. (2008) mention that semi-structured interviews usually guide the conversation as it starts with specific questions but participants will be probed and allowed to

elaborate on specific aspects. In this research, two semi-structured interviews were conducted with key officials in the Department of Social Development and the Department of Agriculture. I recorded and transcribed the interviews.

3.7 DATA ANALYSIS

The significance of data analysis is that the raw data collected will be transferred to information. Mouton (1996) describes data analysis as the stage where the researcher analyses the data by relating the individual findings to a hypothesis that would best describe the data. Terre Blanche, et al. (2011) note that the data analysis procedure can be divided into quantitative and qualitative techniques. Quantitative techniques employ a statistical analysis to make sense of the data whereas qualitative techniques identify themes in the data and the relationships between these themes (Terre Blanche, et al., 2011:52). It is important that the correct technique be used to answer the research questions. Details of my process to analyse the data is described below. I first analysed the quantitative data and thereafter the qualitative data.

3.7.1 Quantitative Data Analysis

Babbie (2010) describes quantitative data analysis as the numerical presentation of data collected with the intention to analyse and describe the phenomenon of the study. The data collected must be coded and imported to a statistical software package for easy analysis. In this study, the data was quantified to make it easier for assessment. The quantitative data collected via the questionnaire was pre-coded and transferred from the questionnaires to a codebook (Excel spreadsheet). Neuman (2000: 314) describes the data coding process as the "systematical reorganizing of the raw data into a format that is machine readable". After the data was coded, it was checked for accuracy and the data was "cleaned". The accuracy of the data is of utmost importance as it will influence the validity of the measures resulting in distorted results (Neuman, 2000). Data from the Excel spreadsheet was imported to the econometrics computer package, STATA 12.1, for analysis. STATA has been recognized as the most powerful statistical software to generate descriptive and inferential statistics (Anon, 1996). With descriptive statistics, the socio-demographic and economic trends of the households were investigated by the scores of each variable to determine if there were any relationships between the variables. Descriptive data analysis has given me the opportunity to

gain an impression of the data collected (Neuman, 2000). With the inferential statistics, conclusions were drawn from the sample data about the population.

The following paragraphs identify the statistical test that was conducted to analyze each research question outlined in Table 3.1 in this chapter of the thesis.

Research objective 1: Descriptive statistics were used in answering the first research question. The analysis describes the level of food security, source of food as well as the food included in the daily diet of the household, with summary statistics and frequency distribution tables. The graphs describe the shape, variability and central tendency of the distribution. The analysis determines if the participants experience high, marginal, low or very low levels of food security as defined by Labadarios, et al. (2009). Simultaneously, bivariate relationships between food security as a constant (dependent) variable and education, income and the number of people in the household as an independent variable were described (Neuman, 2000: 200).

Research objective 2: To answer this research question, both descriptive and inferential statistics were used. Descriptive analysis identifies with graphs and summary statistics the household's benefits from the urban food gardens project. Inferential statistics were used to test the association between the variable "food security" and the variable "benefits from the urban food gardens project". The test also indicates the other livelihood strategies outcomes and benefits from the urban food gardens. For this purpose, the chi- Square test (χ^2) goodness of fit was used.

Research objective 3: For the anwer in this research question, the study analysed the livelihood strategies adopted. The study determined what (1) capabilities, (2) what social resources and (3) what economic resources the participants employed to be more food secure. Descriptive statistics were used to identify the livelihood strategies adopted with graphs and summary statistics.

Research objective 4: In response to this research question, an analysis of the requirements as given by the participants to extend or to start-up an urban food garden was identified by descriptive statistics with graphs.

3.7.2 Qualitative Data Analysis

Babbie (2010: 394) describes qualitative data analysis as analysing non-numerical data (e.g. interviews or focus group discussions as to discover new relationships or meaning. The qualitative analysis brings more depth to the research topic. In the semi-structured interviews, the style was conversational and flexible and the in-depth discussions shed more light on the issues, solutions and experiences (May, 2002: 225). With the focus group discussions, it was important to hear the opinions of each participant. The data was recorded and transcribed.

Scholars recommend that the qualitative data collected, be coded in themes and in that way patterns can be identified (Babbie, 2010). The themes below have been identified as key to answering the research objectives and the data will be analysed accordingly.

Theme 1: *Participant's definition of food security*. The participant's perception of food security relates to the first research objective. The opinions of both the beneficiaries as well as the community members were included in the data analysis.

Theme 2: *Urban food gardens as a livelihood strategy.* This theme has been analysed in response to the second research question. It was imperative to understand the reasons for the participation of the community members in the urban food garden projects as well as the livelihood outcomes.

Theme 3*: Livelihood strategies adopted to be food secure.* In this theme, the coping mechanisms and the livelihood strategies of the households will be analysed and discussed. This theme sheds light on the third research objective.

Theme 4: *Sustainability and lessons learnt from the urban food garden projects.* This theme will shed more light on the fourth research question. The response to this theme is of utmost importance for recommendations and future research possibilities.

Table 3.2: Research techniques, data collection paradigms and participant

Research Techniques	Data Collected	Research Participants
Quantitative	Closed-ended Questionnaires	83 Participants which included community members and beneficiaries
Qualitative	• Focus Group Discussions • Semi-structured Personal Interviews	• 30 Participants - Community members (17) and Beneficiaries (13) • Two Interviews: Key official at the Department of Social Development (1); Key official at the Department of Agriculture (1)

Source: Author's field data 2014.

The preliminary interview was done in August 2014 with the Chairperson of the URDCBP to determine the possibility of conducting the research. The research started in November 2014 and concluded in December 2014.

3.8 LIMITATIONS OF THE RESEARCH

The data collection was conducted during the week with mostly unemployed household owners or respondents not working, on the data collection day. The results of this study may not be necessarily representative of all the households in Langa. The urban food gardens projects initiated by the Urban Rural Development Capacity Building Project (URDCBP), is in Ward 51, Langa. The case study area, Ward 51 in Langa, was chosen for its appropriateness to the study objectives defined in Chapter One and the subsequent literature in Chapter Two of this thesis.

3.9 SUMMARY

In this chapter, the case study design was justified as the best fitted research design and the mixed-method research methodology as the preferred data collection paradigm. Subsequently,

the data collection techniques as quantitative and qualitative data techniques and the process of data analysis for this research were discussed. Chapter four will present the quantitative data analyis and Chapter five, the qualitative data analysis.

CHAPTER 4

QUANTITATIVE DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 INTRODUCTION

This chapter is based on analysing the data, presentation of descriptive and inferential statistics as well as discussions of the results. In this research, 83 participants[1] from households in Ward 51 of Langa in Cape Town were randomly selected. The chapter presents the demographics of the respondents of the study in context to urban food gardens and household food security which includes the age, educational status, employment status and monthly income. The outcome of this analysis is in response to the first research objective.

The key objectives of this research include the assessment whether urban food gardens contribute to food security in Ward 51 in Langa, other livelihood strategies adopted by the respondents to be more food secure and the livelihood outcomes of the urban food gardens project. The study has employed different statistical tests for this purpose which includes regression analysis and inferential statistics. According to Babbie (2010), regression analysis describes the relationship amongst variables. In this study, the relationship between food security as a dependent variable and monthly income, employment status, education and density of households as independent variables, were assessed and presented. With the inferential statistics, inferences from the findings of the study can be made to a greater population (Babbie, 2010). Chi-square tests (χ^2) were employed to test the strength of the relationships between food security and urban food gardens and livelihood strategies adopted and urban food gardens and livelihood outcomes. This is in response of the second and third research objectives. The chapter concludes with an analysis of the requirements to start or expand gardens projects. The findings from the analysis of the study are discussed with recourse to the reviewed literature.

[1] See Annexure 4.1: Gender of Respondents

4.2 PRESENTATION OF RESULTS AND ANALYSIS

4.2.1 Demographic characteristices of the households

The purpose of descriptive statistics is to describe the numerical data by categorizing a number of variables (Neuman, 2000: 314). These variables give a clear image of the data and highlight its specific characteristics in terms of percentiles, tables, and graphs-histograms and pie charts. These variables will give a clear image of the data and highlight its specific characteristics. The variables describing the demographic profile of the households include whether the respondents were born in or migrated to Cape Town, their age, gender, educational status, income as well as the level of food security of the households.

Urbanisation

Urbanisation has been considered to be one of the key challenges to the cities as it results in an increase in unemployment and urban poverty with more demands on infrastructure and sanitary conditions. In Cape Town, the urban population has grown by 29.3 percent since 2001 (STATSSA, 2011a). Langa was established in 1923, for predominantly Black Africans (Siviwe, 2010). In the study, 29 percent of the population in Ward 51, Langa migrated to Cape Town[2]. Most of the migration was from the Eastern Cape region (96%) with 4 percent from the Northern Cape and no influx from any other provinces[3]. This corresponds with the results of STATSSA (2014b) that indicate that the Eastern Cape Province has the largest population outflow. Ndebele (2013) states in the South African Institute of Race Relations (SAIRR) report that individuals migrate to the closest place considered to be the next best and the Western Cape is the closest province to the Eastern Cape offering more opportunities and services.

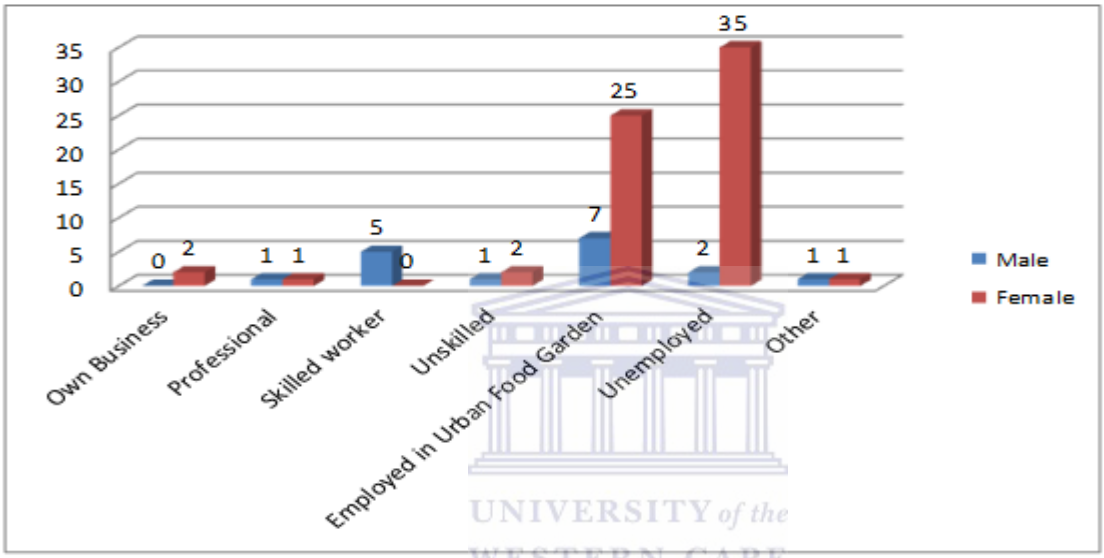
[2] See Annexure 4.2: Migration from rural areas

[3] See Annexure 4.3: Provinces migrated

Women and Urban agriculture

Furthermore, the data in Figure 4.1 below reflects that of the 66 female respondents that completed the questionnaire, 25 of them are employed in the urban food gardens project (38%) and 35 are unemployed (53%). However, of the 17 male respondents, 7 is employed in the urban food gardens project (41%) and 2 is unemployed (12%).

Figure 4.1: Gender distribution in relationship to employment



Source: Author's compilation based on field survey, 2014.

Urban agriculture can be a source of employment to women. In a research done by Binns & Lynch (1998) in Kampala, Uganda, women have been identified as the main producers in urban agriculture. They relate this to the fact that women produce the food for household consumption as in most cases it has been proven that women are responsible for the food budgets. The role of women in agriculture in South Africa stems from patterns in rural societies prior to democracy. During the apartheid era, women spent many years living without their husbands. Most women were involved in rural agriculture. They cultivated small backyard gardens to supplement their meals. That gave them a sense of belonging and a sense of worth as they could provide for the family and were less dependent on their working husbands. Women have the ability to convert agricultural products into food and nutritional

security and they are primarily responsible for taking care and feeding of the family (Slater, 2001).

Youth and Urban agriculture

In South Africa the national definition of youth are those persons aged between 15 and 34 years old (STATSSA, 2014b). In this research 5 percent of the household is between the ages of 19 years and 25 years old and 18 percent between the ages of 26 and 34 years old[4]. This implies that 23 percent of the household is younger than 34 years old. Taking cognizance of the employment status of the respondents in Figure 4.2 below, it is evident that the majority of them are working in the urban food gardens, i.e. 14 percent (12 of the 83 respondents). The expanding of urban agriculture projects would provide more work to people. However, it will still remain a low income job as the income is less than R1000 per month. Being employed in the urban food gardens project would not lift the households out of poverty but will ensure that food is provided to the households.

Figure 4.2: Age in relationship to employment

Source: Author's compilation based on field survey, 2014.

[4] See Table 4.1 below

Education and Food security

In a study done by De Muro & Burchi (2007) on the impact that education has on rural food security, they determined that hunger is highly correlated with educational deprivation. De Schutter (2013) states that equal access to education for women will contribute to food security. He elaborates on the issue of gender inequalities on education, access to land and credit that negatively influence food security. Similarly, STATSSA (2014a) reports that the relationship between education and food security are quite strong. Education influence income and adults that are poor, experience more intense levels of food insecurity.

The data in Table 4.1 below indicates that 63 percent of the respondents received some secondary education and 17 percent are primary school leavers. Respondents completing their Matric (Grade 12) constitute 7 percent and 5 percent of them indicated that they have completed their College education and another 2 percent their University education. Evidently, only 6 percent of the respondents have no formal education. Therefore, most of the respondents received some form of education. Taking cognizance of the scholarly studies and the role that education plays in food security, it implies that the level of food security in the case study should be relatively high. However, education does not cushion the population from the impact of economic crisis. Amidst high education levels, people still experience poverty and hunger as income is perhaps the only solution to this problem. STATSSA (2014a) indicates that 1 in 10 people still live in poverty despite their level of higher education. It is however important to appreciate the fact that better education will give someone the opportunity to a better standard of living than a person without any education. Education, with a job opportunity, seems to be the way out of poverty. As most of the better earned jobs require a Grade 12 or higher education, it is imperative that this level of education should be improved within the Langa community. Education, with job opportunity, seems to be the way out of poverty and to improve food security.

Table 4.1: Demographic profile of respondents

Characteristics		Frequency (n=83)	Percent (%)
Age Category (years)	19-25	4	4.82
	26-34	15	18.07
	35-40	6	7.23
	41-45	6	7.23
	46-50	10	12.05
	51-60	13	15.66
	60+	29	34.94
Educational status	No formal education	5	6.02
	Primary school	14	16.87
	Secondary school	52	62.65
	Matric(Grade 12)	6	7.23
	College education	4	4.82
	University education	2	2.41
Employment status	Own business	2	2.41
	Professional	2	2.41
	Skilled worker	5	6.02
	Unskilled worker	3	3.61
	Employed in urban food gardens	32	38
	Unemployed	37	44.58
	Other	2	2.41

Characteristics		Frequency (n=83)	Percentage (%)
Source of income	Full time employed	7	8.43
	Family members	1	1.20
	Casual	13	15.66
	Contract worker	24	28.92
	Tenants	2	2.41
	Social grant: Pension	27	32.53
	Social grant: Disability	6	7.23
	Social grant: Child Support	3	3.61
Monthly income	Less than R300	4	4.82
	Between R300 and R800	18	21.69
	Between R800 and R1200	20	24.10
	Between R1200 and R1600	32	38.55
	Between R1600 and R2000	3	3.61
	Between R2000 and R2500	2	2.41
	Between R2500 and R3000	1	1.20
	More than R3000	3	3.61

Source: Author's compilation based on field survey, 2014.

Income and Food Security

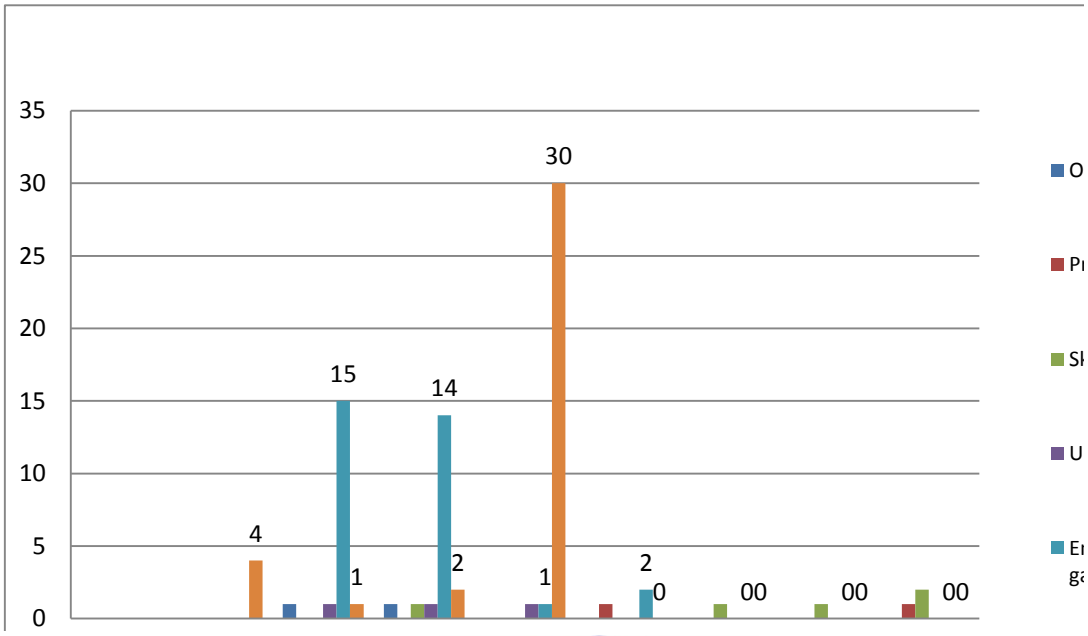
STATSSA (2011b) reports that 35.9 percent of the population in Ward 51, Langa, is unemployed and 16.6 percent has no income. This has a major impact on the level of food security as their greatest source of food is buying from the local food markets. In this study, 38 percent of the participants are employed in the urban food gardens and 45 percent are unemployed (see Table 4.1 above). These statistics are disturbing as the respondents live in

formal dwellings with electricity. With the drastic increase in the electricity prices in Cape Town and the payment of rent for their homes, the respondents have little money left to buy food.

Social grants have become a major livelihood strategy in South Africa and are seen as instrumental in reducing poverty. STATSSA (2014a) reports that the number of recipients of social grants increased by over 46 percent between 2006 and 2011. In the study, 43 percent of the respondents' source of income is a type of social grant. Alarmingly only 8 percent of the respondents receive their monthly income from full time employment whereas 45 percent of the respondents receive their monthly income from temporary employment, i.e. 16 percent from casual work and 29 percent from contract employment (See Table 4.1 above).

Labadarios, et al. (2009) indicate that the income status of the household influences the level of food security. In my quest to determine the level of food security of the case study area, I determine the impact that different factors have on food security. Figure 4.3 below reflects the relationship between the employment status and monthly income of the respondents. It reiterates the fact that the majority of the respondents are unemployed. The income displayed for the unemployed is in the range of R300 to R1200. This might seem conflicting but it is not. Respondents receiving social grants are unemployed and indicated the social grant as income. Most of the respondents are employed in the urban food garden project. Their income ranges from above R300 to less than R1200. Figure 4.3 indicates that most of the respondents receive an income of between R300 and R800. Hence, with nearly 45 percent of the respondents being unemployed and 38 percent employed in the urban food gardens, it relates to in excess of 80 percent of the respondents living on an income of less than R1000 per month. This implies that for an average household of three people (Table 4.3 further below) they need to live on approximately R11 per day. This monthly income assumption is based on the monthly income of R 984.06 received by the beneficiaries of the urban food garden projects.

Figure 4.3: Relationship between monthly income and employment status



Source: Author's compilation based on field survey, 2014.

Density of household and Food security

Poverty has been identified by numerous authors as a contributing factor to food insecurity. The International poverty line is between $1.25 and $ 2.50 per person per day. In March 2011 the South African poverty line was adjusted to R443 for the lower-bound poverty line and R620 for the upper-bound poverty line (STATSSA, 2014a). This research indicates that 39 percent of the respondents have an income between R1200 and R1600 whereas 24 percent have an income of between R800 and R1200. It is important to take the monthly income of a household into account in relation to the density of the household. Table 4.2 below illustrates that in excess of 6 people live in a household with a monthly income of less than R300. Thirteen percent of the households, with a density of 3 to 4 people, have an income of between R1200 and R1600 which is an average of R300 to R 400 per month, i.e. approximately R10 per day. This is less than the international poverty line of between $1.25 and $ 2.50 per person per day which is approximately between R15 and R30 per day (STATSSA, 2014a).

Table 4.2: Monthly income in relation to the density of household

	NUMBER OF PEOPLE IN HOUSEHOLD				
MONTHLY INCOME	**1-2**	**3-4**	**5-6**	**More than 6**	**Total**
Less than R300	1	1	1	1	4
Between R300 and R800	1	10	5	2	18
Between R800 and R1200	3	6	5	6	20
Between R1200 and R1600	9	11	4	7	31
Between R1600 and R2000	1	0	1	1	3
Between R2000 and R2500	0	0	1	1	2
Between R2500 and R3000	0	1	0	0	1
More than R3000	1	2	0	0	3
Total	16	31	17	18	82

Source: Source: Author's compilation based on field survey, 2014.

Frayne, et al. (2009) reflect that the median household size of Cape Town and Johannesburg is four and in Msunduzi it is five members. This study depicts that the average household size in Ward 51, Langa, is three (Table 4.3 below).

Table 4.3: Average number of people in the Household

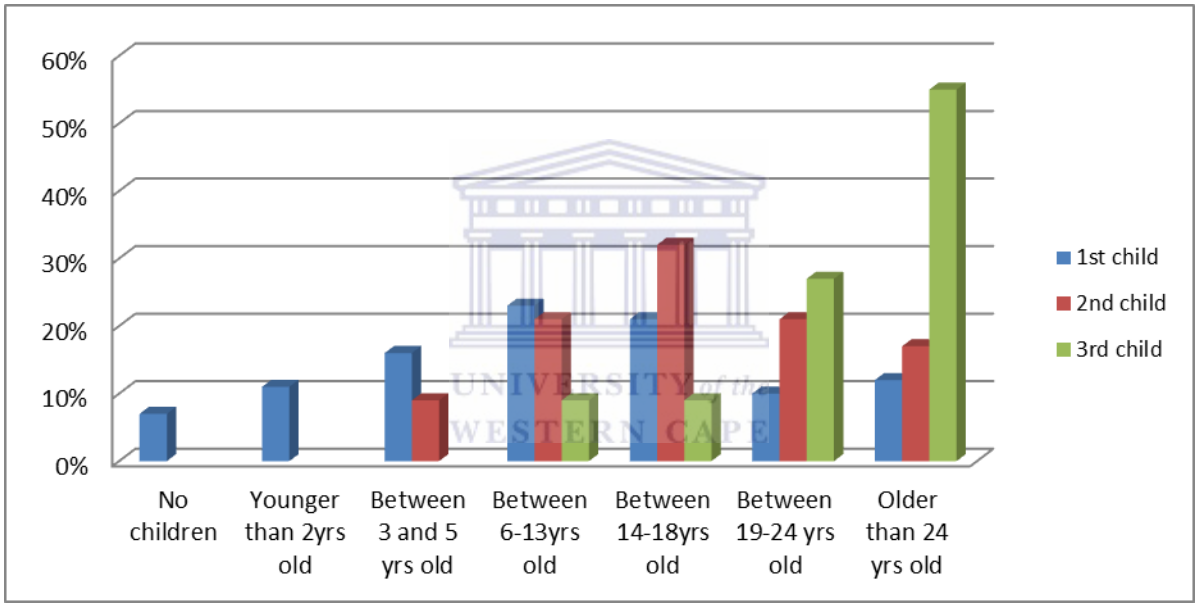
Variable	**Observation**	**Mean**	**Standard Deviation**	**Minimum**	**Maximum**
NUMBER OF PEOPLE IN HOUSEHOLD	82	2.45122	1.044119	1	4

Source: Author's compilation based on field survey 2014.

Health and Food Security

Figure 4.4 below indicates the percentage of children per age as the age of the 1st, 2nd and 3rd child in the households. The 1st child is a normal bell curve distribution as the children's ages range from younger than 2 years old to 24 years old[5]. Most of the households have over and above two children and the majority of the children are between the ages of 14 and 18 years (62%). Interestingly, 69 percent of the children in the households are younger than 18 years old. Food security is of utmost importance to children of school-going age as food insecurity and hunger have risk factors.

Figure 4.4: Age of children in household



Source: Author's compilation based on field survey, 2014.

Campbell (1991) notes that food insecurity affects the health and quality of life of any individual that experiences malnutrition. Olson (1999) agrees and further comments on the consequences of food insecurity on child-bearing women and school-aged children. Firstly, she concludes that women of child-bearing age and experiencing food insecurity are approximately 2 BMI (body mass index) units heavier than their counterparts who are food secure. She further notes that according to empirical evidence, two BMI units more than the

[5] See Annexure 4.4: Age of 1st child in household

normal BMI of less than 26, are associated with a 25 percent increase in risk of death (Manson et al., 1995 as cited by Olson, 1999). Morris (2010) similarly concludes that food insecurity results in overweight, obesity and non-contagious diseases with major increases in health problems. This was reiterated by Frayne, et al. (2009) who include the lack of dietary diversity to the list of causes of food insecurity and diseases. In this study it was important to determine the nutritional value of the food consumed by the respondents.

Holdsworth, et al. (2014) argue for the importance of seeking sustainable solutions to improve the nutritional status of the population. Furthermore, they raise the point that not enough is being done to improve the nutritional status of individuals and societies as human capital is not being promoted. They consider this as detrimental to development. Olson (1999) refers to empirical studies conducted by numerous authors (Kleinman et al., 1998; Murphy et al., 1998 as cited by Olson, 1999) on the relationship between food security and children of school-going age. The studies conclude that food insecurity and hunger experienced by these children result in stunting, have psycho-social consequences that include fighting with other children, trouble with teachers and stealing. Undoubtedly, the nutritional value of the daily meals of the households as tabulated in Table 4.5 below is a concern as children younger than 18 years (69%) do not consume nutritional meals. The households consume mainly bread and maize.

4.3 HOUSEHOLD FOOD SECURITY

The four pillars of food security are adequate availability of food; food access; food utilization and stability of food supply (DoA, 2013). Households must have at all times access to adequate nutritional food for consumption for each household member to be considered food secure. As point of departure of this study, it is important to determine the level of food security in the study area. This is in response of the first research objective. For this purpose, the Model of Labadarios, et al. (2009) as described in Table 2.1 in Chapter two[6] has been employed to determine the level of food security. The questions, as indicated in the 1st column of Table 4.4., were developed based on the Universal Household Food insecurity measurement tool. Respondents were asked to indicate, as 1st and 2nd choice, their experience concerning their eating patterns.

[6] See Annexure 4.5: Model to determine level of Food security

Table 4.4: Experience and conditions indicating food insecurity

How food secure is household?	Percent (%) 1st choice		Percent (%) 2nd choice
Did you worry at any time that food will run out?	73.49		4.76
Could not afford a balanced meal	4.82		30.95
Cut size of meal or skipped a meal	6.02		19.05
Ate less because of a lack of food	7.23		30.95
Cut or skipped meal in past 3 months	3.61		2.38
Did not eat for a whole day	1.20		7.14
Lost weight due to not eating	1.20		4.76

Source: Author's compilation based on field survey, 2014.

The results indicate that, as 1st choice, 73 percent of the respondents experience anxiety that their food will run out, 7 percent ate less because of a lack of food and 6 percent of the respondents skipped a meal. The analysis reflects that the respondents managed to eat a meal every day, as only one percent indicated that they did not eat for a whole day. However, worrying that one will run out of food at any time does not disclose if they had adequate nutritional meals. Consequently, the 2nd responses shed more light on the eating patterns of the respondents and also relate to the model. As their 2nd choice, 31 percent of the respondents indicated that they could not afford a balanced meal; 31 percent ate less because of a lack of food; 19 percent skipped a meal and 7 percent indicated that they did not eat for a whole day as they had no food. Although the level of households' food insecurity cannot explicitly be

slotted into the levels as per Table 4.4 above, the study indicates that low levels of food security is more appropiate to the households as the quality and variety of the food consumed by households are reduced although their normal eating patterns and quantity of food were not substantially reduced (Labadarios, et al., 2009; Nord, et al., 2010). The result of this was further elaborated by asking the respondents which food they most often consume on a daily basis (indicated as 1st choice) and the second choice of food that they might not consume daily but on a more regular basis (indicated as 2nd choice). Table 4.5 below reflects the result of their answers.

Table 4.5: Type of food consumed daily

1st Food choice	Frequency (n=83)	Percent (%)		2nd Food choice	Frequency (n=83)	Percent (%)
Bread	67	80.72		Maize	24	38.10
Maize	4	4.82		Vegetables	19	30.16
Vegetables	11	13.25		Meat	7	11.11
Fruit	1	1.20		Fruit	3	4.76
				Sour milk	8	12.70
				Rice	2	3.17

Source: Author's compilation based on field survey, 2014.

Bread has been indicated by 81 percent of the households as their primary food consumption on a daily basis (1st choice) with 38 percent of the respondents reflecting maize as their 2nd choice of food consumption; that means that they consume it more regularly but not daily. Thirteen percent of the households indicated that they included vegetables in their daily meals

as 1st choice. The 30 percent that included vegetables on a regular but not daily basis either received it for free or bought it from the urban food gardens project. Very little fruit is consumed with 1 percent on a daily basis and 5 percent on a regular but not daily basis. Only 11 percent of households include meat in their diet on a regular but not daily basis. They said that meat was only bought when they got paid (Focus Group Discussions, 2014). Most of them indicated that they eat their daily meals and sometimes only meal at the feeding scheme of the URDCBP. This includes a nutritional meal of maize or rice with vegetables and bread with fruit (Focus Group Discussion, 2014). From the above, it is evident that although the study area has low level of food security, they still experience high level of food nutritional insecurity.

4.3.1 Determinants to food security in Ward 51, Langa

Bless & Kathuria (1993: 255) state that social scientists often need to establish covariation without any need or interest to determine the type of relationship (causal or not). The regression line expresses mathematically the law underlying the relationship between the dependent and independent variables (Bless & Kathuria, 1993). In Table 4.6 below, the degree of relationship between the independent variables such as education, employment, monthly income, density of households and food security as the dependent variable is presented in the regression analysis. Labadarios, et al. (2009) identify these factors to influence food security. We expect that a higher education level, better employment status, more income and less number of people in the household would increase the food security levels of the household. Table 4.6 below indicates the testing results of the regression model.

Table 4.6: Effect of determinants on food security

Source	**SS**	**df**	**MS**	Number of observations = 82		
				F(4, 77) = 2.42		
Model	20.1017275	4	5.02543189	Prob > F = 0.0556		
Residual	160.008029	77	2.07802634	R-squared = 0.1116		
				Adj R-squared = 0.0655		
Total	180.10975681	81	2.22357724	Root MSE = 1.4415		
How food secure is Household	**Coef.**	**Std. Err.**	**T**	**P>t**	**[95% Conf. Interval]**	
EDUCATIONAL STATUS	.2182599	.1726933	1.26	0.210	-.1256164	5621362
EMPLOYMENT STATUS	-.2547154	.1382364	-1.84	0.069	-.5299792	.0205483
MONTHLY INCOME	.1391794	.1136699	1.22	0.225	-.0871663	.3655251
NUMBER OF PEOPLE IN HOUSEHOLD	-.1607547	.1542748	-1.04	0.301	-.4679551	-.4679551
_cons	2.250638	1.126794	2.00	0.049	.0069047	4.494371

Source: Author's compilation based on field survey, 2014.

The R-squared value of the model is 0.1116 and the Adjusted R-squared is 0.0655. This means that the independent variables education, employment status, monthly income and the number of people in the household explains 6.55% of the variability of the dependent variable, food security of the household. The regression model is not statistically significant at the 0.05 level (p=0.005), but only just so as F(4.77) = 2.42 and Prob > F = 0.0556 which is slightly greater than 0.05. This indicates that the model applied cannot statistically significant

predict the dependent variable, food security. Subsequently, the statistically significance of the four predictors to food security as well as the direction of the relationship is described.

Education

The coefficient for education is .2182599. This indicates that for every unit increase in education, a .2182599 unit increase in the household food security is predicted, holding that all other variables remain constant. This is expected as Labadarios, et al. (2009) argue that the level of education, especially that of the breadwinner of the household, influences household food security. In most cases the type of employment is correlated to the level of education and this determines the salary earned. However, the coefficient for education (.2182599) is not statistically significant at the 95% confidence level since the p-value = 0.21 is greater than 0.05. This is understandable as education is not enough to improve food security and that is the reason for the statistical insignificance of education to food security. If education results in better employment and better salaries, it might have a positive impact on food security.

Employment

The coefficient of employment is negative which indicates that a decrease in employment would result in a decrease in food security – which is what we would expect. Furthermore, Table 4.6 depicts that as the coefficient is -0. 2547154, for every unit decrease in the employment status there is a 0.2547154 unit decrease in food security, holding that all other variables remain constant. However, the coefficient for employment (-0.2547154) is not statistically significant at the 0.05 level because its p-value at 0.069 is greater than 0.05. This viewpoint is shared in the Oxfam (2014) report where the unemployment level of 25 percent nationally and the vast number of people dependent on social grants, is seen as the reason why people do not have enough money to buy nutritious food.

Monthly income

The coefficient for monthly income is .1391794. So for every unit increase in monthly income, the prediction is that the household food security will increase by approximately 0.14 unit points, holding that all other variables remain constant. However, the coefficient for monthly income (.1391794) is not statistically significant at the 0.05 level as the p-value is 0.225 which is greater than 0.05. The possibility that food security will increase with an

income increase is uncertain. In poor disadvantaged communities, most of the people are either unemployed, their only source of income is a social grant or they have unskilled labour jobs. Food prices and other household expenses (electricity and transport) continue to increase and an increase in social grants or the wages of unskilled labourers fail to adjust accordingly. Poor households spent in excess of 50 percent of their income on food and they are forced to buy less nutritional food (Von Braun, 2007). It has become expensive to buy nutritional meals for the family to consume on a daily basis.

Density of household

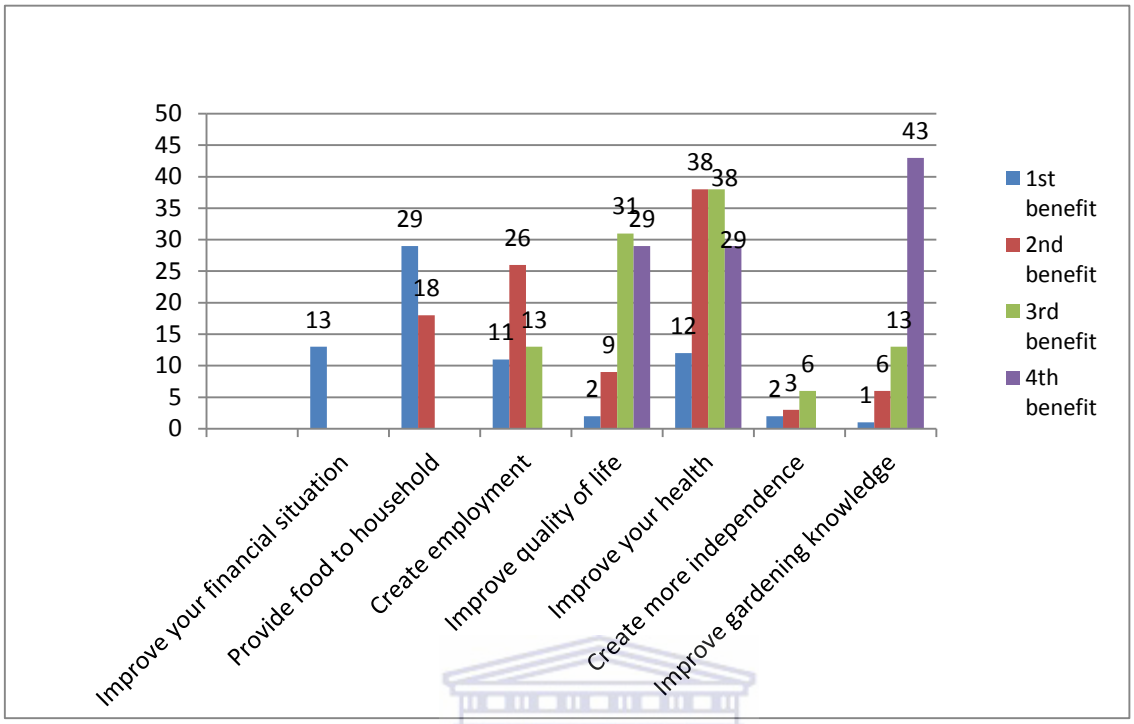
Lastly, the coefficient of the Density in the household is -.1607547. For every decrease in the number of people in the household, there will be a -0.1607547 decrease in the Household Food security levels. We would have expected that a decrease in the number of people in the household would result in an increase in the household food security level. However, the regression analysis predicted differently. The analysis however indicate that the coefficient for the number of people in the household (-0.1607547) is not statistically significant at the 95% confidence levels as the p-value is 0.301 which is greater than 0.05.

4.4 FOOD SECURITY AND URBAN FOOD GARDENS PROJECT

Benefits of urban food gardens project

In as much as the main purpose of urban agriculture is to contribute to food security, scholarly writings accentuate other benefits of urban agriculture. In this study the community members were asked the reasons why they participate in urban agricultural activities. Again the respondents had to indicate their 1st, 2nd, 3rd and 4th benefit of urban agriculture. The results are reflected in Figure 4.5 below.

Figure 4.5: Benefits of urban food gardens project



Source: Author's compilation based on field survey, 2014.

Interestingly, the outcome of the study indicates at most four benefits of the urban food gardens project to the households. The improvement of their health reflects as the most important benefit by 38 percent of the respondents as 2nd and 3rd benefits respectively and 29 percent as their 4th benefit. Only 29 percent of the respondents considered the urban food gardens as a method of providing food to the household as the 1st benefit and 18 percent indicated it as the 2nd benefit. Creating employment as the 1st benefit was indicated by 11 percent of the respondents and 26 percent indicated it as the 2nd benefit. This indicates that urban food gardens can be considered as a livelihood strategy as they create various benefits that are important for households. It is evident from this study that only 63 percent of the respondents benefited from the urban food garden project whereas 37 percent did not benefit at all. Some of the reasons indicated for not benefiting, was that they did not know of the existence of the urban food project in their community.

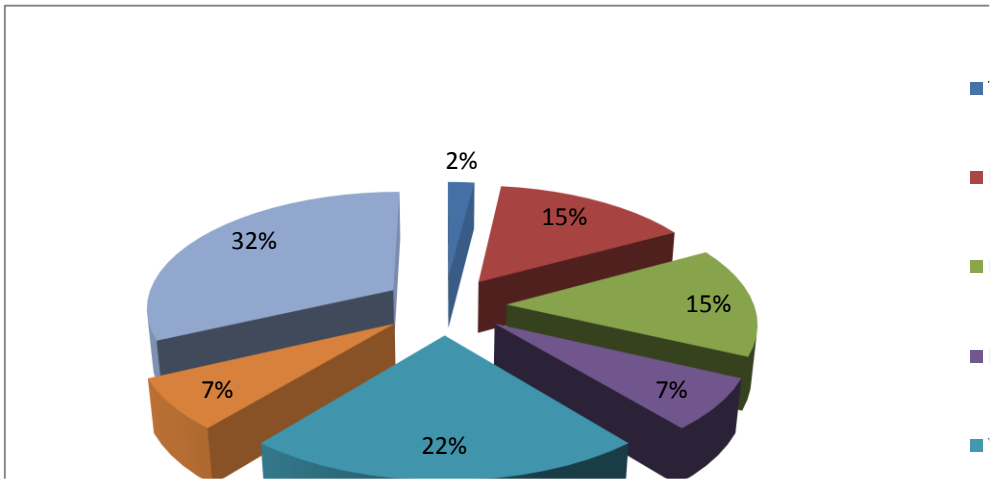
Similarly, a study was conducted in the United Kingdom where community gardens were initiated in the inner cities such as Bradford, Bristol, Leeds and Sandwell. The community

gardeners reflected their objectives as, in descending order, to improve their education, for community development, leisure, skills or training, improvement of their health, protection of land, food provision and job opportunity (Holland, 2004). Interestingly, food provision reflects as one of the not-so-important purposes (number 7 on the list). The reason for this might be that poverty and hunger is not so evident in the United Kingdom, as the government provides for the poor. Despite the difference in order of importance in these two studies, the purposes remain the same. It is also important to take cognizance of the fact that the study of Holland (2004) was conducted on a larger scale with 96 community gardens whereas this study reflects the results of only the community gardens in Ward 51, Langa.

Reason for not benefiting from the urban food gardens project

Hunger is a reality in the households of most of the respondents. Some of the respondents acknowledge that they did not know about the urban food gardens project and could see this as a solution to ease their hunger pains. Others admitted that pride prevented them from benefitting from the urban food gardens project but they would send their children (Focus Group Discussion, 2014). In Figure 4.6 above, the reasons given by respondents for not benefitting from the urban food gardens project, include "that they didn't know about the project" (32%); "that you need to know someone" (22%). This was elaborated upon in the focus group discussion as being too proud to ask for food (15%) as they considered it to be for the poor only. The perception of another 7 percent was that the urban food gardens were for senior citizens only. The lack of money was also highlighted by 7 percent of the respondents. It is encouraging to see that the respondents do indeed benefit from the urban food garden projects.

Figure 4.6: Reasons for not benefitting from the urban food gardens project



Source: Author's compilation based on field survey, 2014.

Urban agriculture as a livelihood strategy to food security

Figure 4.5 further above, indicates the various benefits of urban agriculture. As the aim of the study is to assess the contribution of urban agriculture as a livelihood strategy to food security, it was imperative to isolate the benefit "providing food to the household" from the other benefits. This was done by creating a new variable "provide food" which includes respondents 1st and 2nd choice of providing food to the households (see Table 4.7 below).

Table 4.7: Urban agriculture providing food as a benefit

Does urban food gardens provide food for the household? (variable: provide food)	Frequency	Percentage
No	6	17.65
Yes	28	82.35

Source: Author's compilation based on field survey 2014.

In this study, 82 percent indicates that the urban food gardens provide food for the family. This is a very high percentage. Again it demonstrates the important role that urban food gardens can play in improving the levels of household food security.

As mentioned before, "worrying if you will run out of food at any time" as illustrated in Table 4.4 (further above), does not disclose if respondents had adequate and nutritional meals. To determine how food secure the household is, the results of the 1st statement in Table 4.4[7] (worrying that the household will run out of food at any time) has been excluded. A new variable "Household Food secure all" has been created that includes the results of all the other statements as illustrated in Table 4.4. This includes (1) could not afford a balanced meal; (2) cut size or skipped a meal; (3) ate less because of lack of food; (4) cut or skipped a meal in the past 3 months; (5) did not eat for the whole day; (6) lost weight due to not eating. In Table 4.8 below, 64 percent of the households still experience food insecurity and 19 percent consider themselves as being food secure

Table 4.8: Household Food security

Is the household food secure? (variable Household food secure all)	Frequency	Percentage
No	64	77.11
Yes	19	22.89

Source: Author's compilation based on field survey, 2014.

Subsequently, a null and alternative hypothesis, as mentioned below, was developed to statistically test the relationship between the benefit "providing food" of the urban food gardens project (Table 4.7) and the household food security levels (Table 4.8). For this purpose the Pearson's chi-square test was employed. Neuman (2000: 128) describes the hypothesis as a testing of two statements of a relationship between two variables. Scholarly writings indicate that urban agriculture contributes to food security and therefore the null and alternative hypothesis below.

Ho: The urban food gardens project contributes to food security.

H1: There is no significant contribution of the urban food gardens to food security.

[7] See Annexure 4.6: Determine food security levels of households

A significance level of 0.05 (5%) was used for the test at 1degree of freedom. Furthermore, the general rule in Pearson's chi-square test is that if the level of the significance of the chi-square test is higher than the significance value of 0.05, the null hypothesis is accepted in favour of the alternative. This suggests that there is no significant difference between the two groups. Similarly, the null hypothesis is rejected in favour of the alternative hypothesis if the significance level of the chi-square test is lower or equal to 0.05, which implies that there is a significant difference between the two groups being studied.

Table 4.9: Relationship between food security and urban food gardens

Variable : Household food secure all	Variable: Provide food	
	No	Yes
No	10.34	89.66
Yes	60	40
Pearson chi2 (1) = 7.2355 Pr = 0.007		

Source: Author's compilation based on field survey, 2014.

In the results of the chi-square test illustrated in Table 4.9 above, the Pearson's chi-square value is 7.2355 at 1 degrees of freedom and a significance level of 0.007. The significance level is lower than the significance value of 0.05. Hence, the null hypothesis is rejected in favour of the alternative hypothesis. It is therefore significantly proven at 95% confidence level that no relationship exists between the two variables urban food gardens and food security. Therefore, the alternative hypothesis is accepted, i.e. that it cannot be statistically proven that urban food gardens significantly contribute to food security in Ward 51, Langa.

4.5 FOOD SECURITY AND LIVELIHOOD STRATEGIES ADOPTED

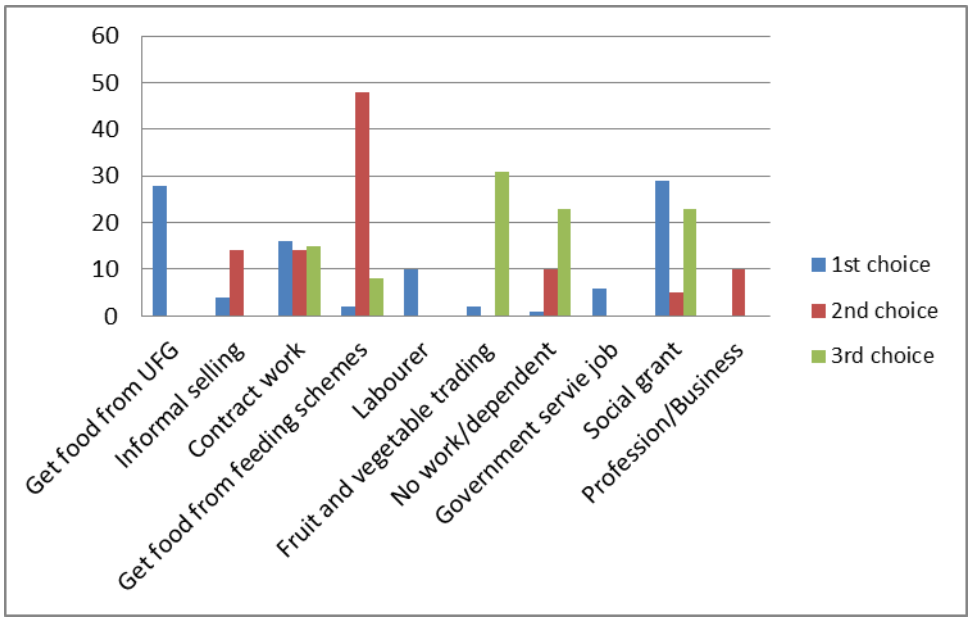
There is a fine line between livelihood strategies adopted and coping strategies. In this research, the livelihood strategies describe what the household do to be more food secure. The coping strategies describe what capabilities or skills they have and execute to be more food

secure. The Sustainable Livelihood Approach (SLA) was employed as the theoretical framework for the analysis.

Most households survive in very difficult socio-economic circumstances. They have learned to diversify their livelihood strategies to change or improve their socio-economic circumstances. Some livelihood strategies adopted by the urban poor include the diversification of household income sources, changes in their eating patterns or diet, increase use of credit and the cultivation of crops for household food consumption (Von Braun et al., 1993 as cited by Binns & Lynch, 1998; Maxwell, 1996). The Household Survey (STATSSA, 2013b) reflects that the livelihood strategy for 46 percent of the urban poor is social grants and salaries contribute to 65 percent. The report also indicates a minimal decrease in the experiencing of inadequate or severely inadequate access to food by households. In 2010, 23.9 percent of the households experienced problems with access to food and this decreased to 23.1 percent in 2013. However, the percentage of households experiencing hunger decreased from 29.3 percent in 2002 to 13.4 percent in 2013 (STATSSA, 2013b). Evidently, access to food is still a major concern.

The results of the livelihood strategies adopted by the respondents are displayed in Figure 4.7 below. Eight of the 83 respondents have an additional livelihood strategy whereas ten respondents indicated three livelihood strategies. Most of the respondents that indicated over and above one livelihood strategy, receive social grant as their main source of income (29%). Other additional livelihood strategies include “receiving food from the feeding schemes” (2% and 48% as 1st and 2nd choice respectively) and “vegetables from the urban gardens project” (23%). Thirteen percent of the respondents have contract work as a source of income and 10% are labourers.

Figure 4.7: Type of livelihood strategies adopted



Source: Author's compilation based on field survey, 2014.

From the above it is evident that households do diversify their livelihoods which will result in households being more resilient to economic shocks. The chi-square test was employed in Table 4.10 below to ascertain whether or not a significant relationship exists between food security and the livelihood strategies adopted with regards to association membership. The hypothesis to be tested here is:

Ho: Livelihood strategies contribute to food security.

Hı : There is no significant contribution of livelihood strategies to food security.

Table 4.10: Impact of livelihood strategies on food security

Livelihood strategies adopted	**How food secure is the household**					
	No worries about food	No money to buy balanced meal	Skipped a meal	Ate less due to lack of food	Skipped meal in 3 months	Did not eat for a whole day
Get food from urban food gardens	17 73.91	1 4.35	1 4.35	2 8.70	1 4.35	1 4.35
Informal selling	1 33.33	1 33.33	1 33.33	0 0	0 0	0 0
Contract work	10 76.92	1 7.69	1 7.69	1 7.69	0 0	0 0
Get food from feeding scheme	2 100	0 0	0 0	0 0	0 0	0 0
Labourer	6 75	0 0	0 0	1 12.50	1 12.50	0 0
Fruit and veg trading	2 100	0 0	0 0	0 0	0 0	0 0
Government service	3 60	1 20	0 0	0 0	0 0	0 0
Social grant	17 70.83	0 0	2 8.33	2 8.33	1 4.17	
Pearson chi2 (70) = 43.8060 Pr = 0.994						

Source: Author's compilation based on field survey, 2014.

As reflected in Table 4.10 above, the results of the chi-square test indicates the Pearson's chi-square value of 43.8060 at 70 degrees of freedom and a significance level of 0.994. As a general rule, as explained in the preceding sections, the level of significance is greater than the significance level of 0.05. Hence, the null hypothesis is accepted in favour of the alternative hypothesis. This implies that livelihood strategies contribute to food security and there is a relationship between the two variables.

The chi-square tests only the association between the two variables. In Table 4.11 below the strength of the relationship between food security and the livelihood strategies is tested by employing a regression. The coefficient for livelihood strategies adopted is -.0072818 and it is not statistically significant at the 95% confidence level since the p-value of 0.849 is greater than 0.05.

Table 4.11: Relationship between food security and livelihood strategies adopted

Source	**SS**	**Df**	**MS**	Number of observations = 83		
				F(1, 81) = 0.04		
Model	.080977364	1	.080977364	Prob > F = 0.8493		
Residual	180.47324	81	2.22806469	R-squared = 0.0004		
				Adj R-squared = 0.0119		
Total	180.554217	82	2.20188069	Root MSE = 1.4927		
How food secure is Household	**Coef.**	**Std. Err.**	**T**	**P>t**	**[95% Conf. Interval]**	
Livelihood strategies adopted	-.0072818	.0381964	-0.19	0.849	-.0832806	.068717
_cons	1.70371	.2706093	6.30	0.000	1.165282	2.242137

Source: Author's compilation based on field survey, 2014.

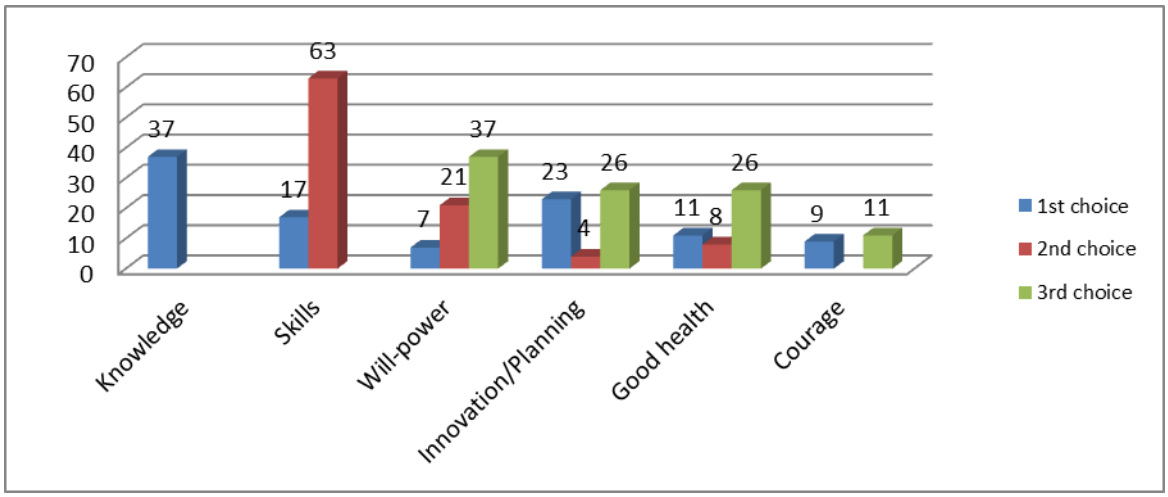
4.6 FOOD SECURITY AND COPING STRATEGIES ADOPTED

In poor communities, households adopt coping mechanisms to survive. Some of these coping strategies include skipping of meals, cutting the size of the meals and eating what is available. Others adopt coping strategies like buying less food, buy expired food, asking neighbours and relatives for food, borrowing food or money to buy food (Oxfam, 2014). Some people even engage in crime to provide food for their families. Despite these efforts, food security is not certain as the strategies do not guarantee adequate and sufficient food. The distinction between coping strategies and adaptive strategies was highlighted by Davies (1993). She notes that coping strategies are fall-back mechanisms adopted when short-term insufficiency of food is experienced whereas adaptive strategies are long-term or permanent changes made by households to acquire food or income. The strategies described below are more of an adaptive strategy for households to be more food secure. The difference between "coping" and "failure to cope" will impact the level of food security of the household (Maxwell, 1996).

4.6.1 Capabilities

The capabilities and assets available to households enable them to cope when experiencing unpredictable shocks and disasters. Households in different socio-economic groups will act differently and adopt different coping strategies (European Report of Development, 2010). Alinovi, et al. (2008) emphasize the importance of resilience in food security. A model for resilience in food security with four building blocks was proposed, i.e. income and food access; assets; access to public services and social safety nets (Alinovi, et al., 2008). Reflected in Figure 4.8 below, respondents consider knowledge (37%) and planning skills (23%) as the most important capabilities and they indicated these as their 1st choice. Skills were also indicated by 63 percent of respondents (2nd choice) as a coping mechanism to be more food secure. The respondents said that they knew how to stretch a little money and little food (Focus Group Discussions, 2014). The respondents tapped into different capabilities to be more food secure and the survival instinct within that community is very obvious.

Figure 4.8: Capabilities adopted to be more food secure



Source: Author's compilation based on field survey, 2014.

To test the association between food security and the coping strategies adopted by the respondents, a Pearson's chi-square test was employed. The following hypothesis has been applied to test this association:

Ho: There is a relationship between food security and the capabilites as a coping strategy.

H1: There is no relationship between food security and capablities.

The results presented below in Table 4.12, indicate the Pearson's chi-square value of 42.5679 at 35 degrees of freedom and a significance level of 0.177. Applying the general rule of the significance level being greater than the significance value, the null hypothesis is accepted in favour of the alternative hypothesis. This suggests that there is a relationship between food security and the capabilities of the respondents.

Table 4.12: Capabilities

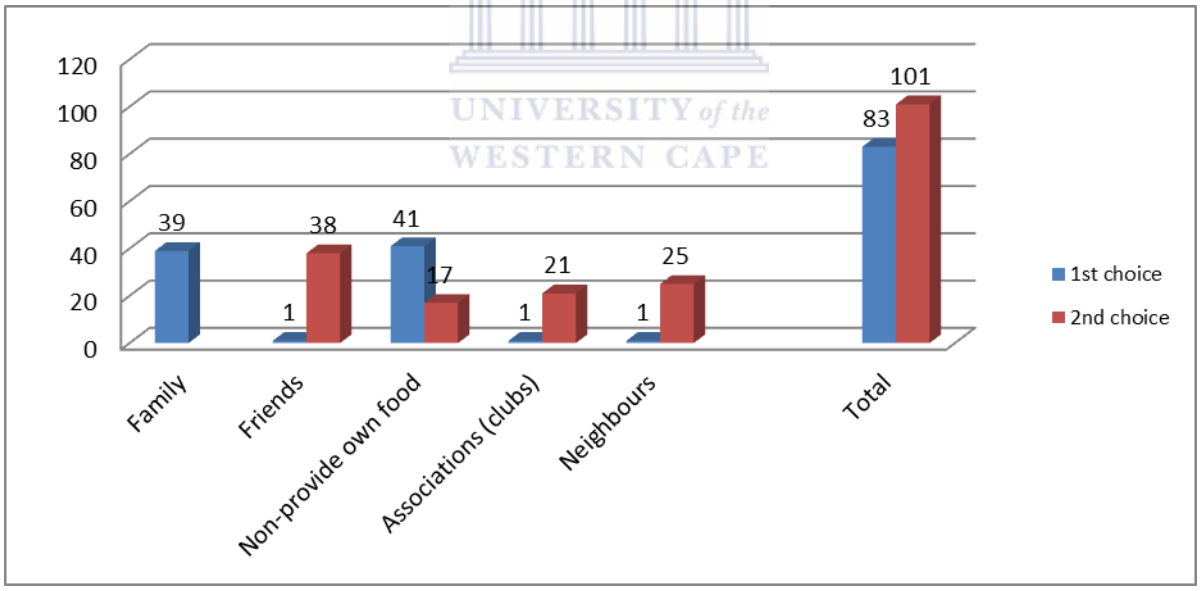
Capabilities to be more food secure	**How food secure is the household**					
	No worries about food	No money to buy balance meals	Skipped a meal	Ate less due to lack of food	Skipped meal in 3 months	Did not eat for a whole day
Knowledge	24 77.42	2 6.45	3 9.68	1 3.23	1 3.23	0 0.00
Skills	11 78.57	0 0.00	0 0.00	2 14.29	0 0.00	0 0.00
Will-power	4 66.67	0 0.00	1 16.67	0 0.00	0 0.00	0 0.00
Planning	15 78.95	0 0.00	0 0.00	1 5.26	1 5.26	0 0.00
Good health	5 55.56	1 11.11	1 1.11	1 1.11	1 11.11	2 0.00
Courage	2 50.00	1 25.00	0 0.00	1 25.00	0 0.00	0 0.00
Pearson chi2 (35) = 42.5679 Pr = 0.177						

Source: Author's compilation based on field survey, 2014.

4.6.2 Social resources

The spirit of 'Ubuntu' is part of the culture in Langa. Ubuntu means humanity to others and 'I am what I am because of who we all are'. This is exactly the spirit that exists within the Langa community. Zhou (2010) identifies community support mechanisms as one of the building blocks in the social stability framework of food security. In most cases adequate access to nutritional food is limited and households within the communities support each other and share meals. Households with more assets, that are better managed, are less vulnerable (Moser, 1997 as cited by Rogerson, 2010a). Social capital (resources) is the mutual benefit built on trust that exists in a community as a result of social ties, networks and associations (Rogerson, 2010a). In Figure 4.9 below, it is interesting to note the social resources that the respondents tapped into to be more food secure. The percentage of respondents that provide their own food (49%) is more or less the same as those that rely on their family for food (46%). Without social resources, more people will experience hunger.

Figure 4.9: Social resources adopted to be more food secure



Source: Author's compilation based on field survey, 2014.

Social resources are important for survival in most communities and they are one of the coping strategies adopted by poor households. The Pearson's chi-square test was employed in Table 4.13 below to ascertain whether or not a significant relationship exists between food

security and the social resources, as a coping strategy. The following hypothesis was applied to test this association:

Ho: There is a relationship between food security and social resources as a coping strategy.

Hı: There is no relationship between food security and social resources.

The results from the chi-square test indicate the Pearson chi-square value of 19.5742 at 28 degrees of freedom and a significance level of 0.879. The level of significance is greater than the significance value of 0.05. By applying the general rule of hypothesis testing, the null hypothesis is accepted in favour of the alternative hypothesis, which suggests that there is a relationship between food security and social resources.

These results are in agreement with the importance of social capital within communities as mentioned by various authors including Crush & Frayne (2011). They mention that churches, 'stokvels' (collecting and sharing of money in communities) and social networks are integrated in the life of people. Furthermore, they contribute positively to the well-being, livelihood and food security of households. It is evident that strong social networks exist within poor areas in Cape Town. The point, however, is that many households are unable to access food through the markets. They are therefore reliant on informal networks for survival (Singh, 2009; STATSSA, 2012; Altman, et al., 2009b; Battersby, 2011b).

Table 4.13: Social resources

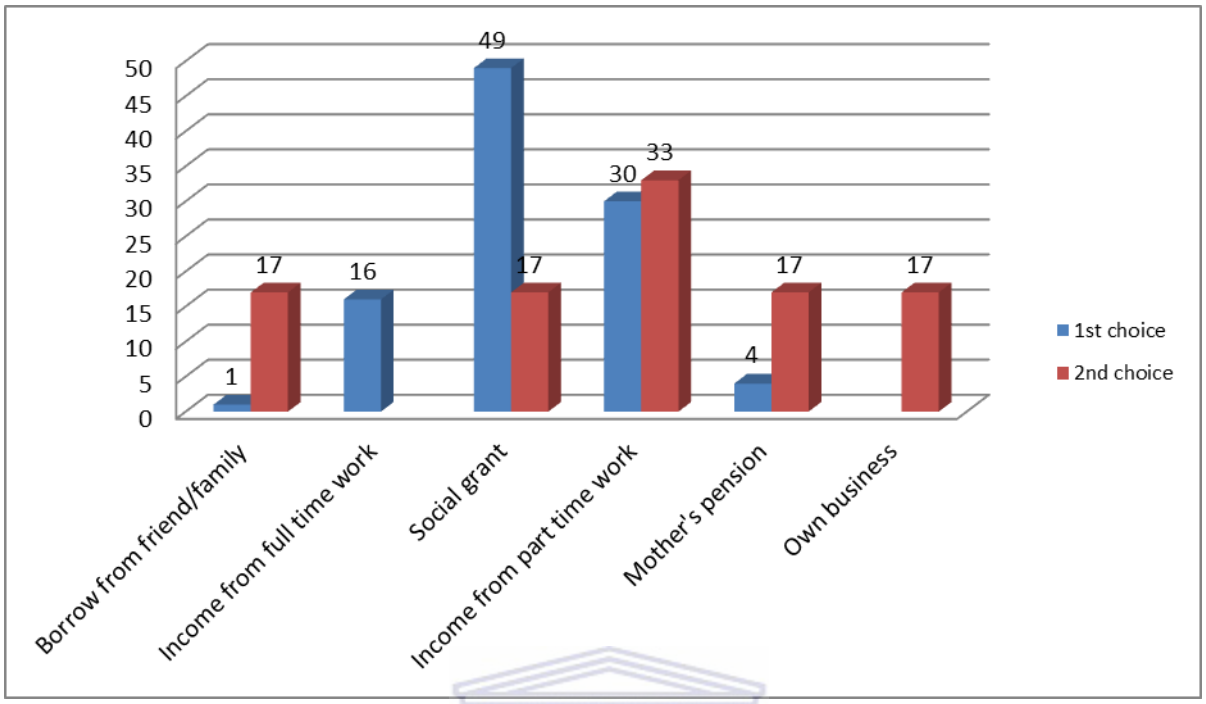
Social resources to be more food secure	**How food secure is the household**					
	No worries about food	No money to buy balanced meal	Skipped a meal	Ate less due to lack of food	Skipped meal in 3 months	Did not eat for a whole day
Family	29 74.36	3 7.69	3 7.69	2 5.13	1 2.56	1 2.56
Friends	0 0.00	0 0.00	0 0.00	1 100	0 0.00	0 0.00
Provide own food	30 73.17	1 2.44	2 4.88	3 7.32	2 4.88	0 0.00
Clubs	1 100	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
Neighbours	1 100	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
Pearson chi2 (28) = 19.5742 Pr = 0.879						

Source: Author's compilation based on Field survey 2014

4.6.3 Economic resources

Figure 4.10 below shows that the majority (49%) of the respondents receive income from social grants. Thirty percent of the respondents receive income from part-time work and only 16 percent receive income from full-time work. Most of the part-time income (30%) is received by respondents employed for a period of 8 months in the Expanded Public Works Programme (EPWP).

Figure 4.10: Economic resources adopted to be more food secure



Source: Author's compilation based on field survey, 2014.

Frayne, et al.(2009) make the point that in most communities social grants are considered as instrumental to relieving chronic hunger. They argue that high food inflation, a shrinking economy and recession plunge urban poor households into poverty and women are seen as the most vulnerable to food insecurity (Frayne, et al., 2009). The Household Survey indicates that 36.5 percent of the households in the Western Cape receive social grants (STATSSA, 2013a). Altman, et al. (2009b) agree with Frayne, et al., (2009) that social grants are the most important contributor to reducing hunger, poverty and food insecurity in poor households. Borrowing money from friends and family is also pertinent and 21 percent of the respondents are dependent on their mother's pension as a source of income (Figure 4.10 above). This view is echoed by Oxfam (2014) who said that price increases push people into hunger as the poorest spend nearly 50 percent of their income on food and 19 percent on housing, electricity and transport. In Table 4.14 below, the study reflects that 34 percent of the households spent between 20 percent and 30 percent of their budget on food, 27 percent between 30 percent and 40 percent and 25 percent spent in excess of 40 percent of their budget on food.

Table 4.14: Budget spent and source of food

Characteristics		Percent (%)
Budget spend on food **(n= 83)**	Less than 20%	14.46
	Between 20%-30%	33.73
	Between 30%-40%	26.51
	More than 40%	25.30
Source of food **(n=83)**	Buy from local shops	81.93
	Food from friends	2.41
	Food from family	7.23
	Grow own fruit/vegetables	2.41
	Community feeding schemes	2.41
	Community gardens	3.61

Source: Author's compilation based on field survey, 2014.

The results of the survey indicate that the major source of food for the respondents is buying food at the local shops (82%). The small local shops usually sell highly processed, low quality food and at a much higher price (Frayne, et al., 2009). Subsequently, poor communities have easy access to bad food and difficult access to good nutritional food (Oxfam, 2014). Highly processed food is detrimental to the health of an individual and might lead to diseases. The

association between food security and the economic resources as coping strategy was further tested to see if it does exist. In Table 4.15 below, the results of the Pearson's chi-square test is presented. The following hypothesis was applied to test this association:

Ho: There is a relationship between food security and the economic resources as a coping strategy.

H1: There is no relationship between food security and the economic resources.

Table 4.15: Economic resources

Economic resources to be more food secure	**How food secure is the household**					
	No worries about food	No money to buy a balanced meal	Skipped a meal	Ate less due to lack of food	Skipped meal in 3 months	Did not eat for a whole day
Income from full time employment	10 76.92	0 0.00	1 7.69	0 0.00	1 7.69	0 0.00
Social grant	33 80.49	0 0.00	1 2.44	3 7.32	2 4.88	0 0.00
Income from part time employment	15 60.00	3 12.00	3 12.00	3 12.00	0 0.00	1 4.00
Mother's pension	2 66.67	1 33.33	0 0.00	0 0.00	0 0.00	0 0.00
Pearson chi2 (28) = 27.6695 Pr = 0.482						

Source: Author's compilation based on field survey, 2014.

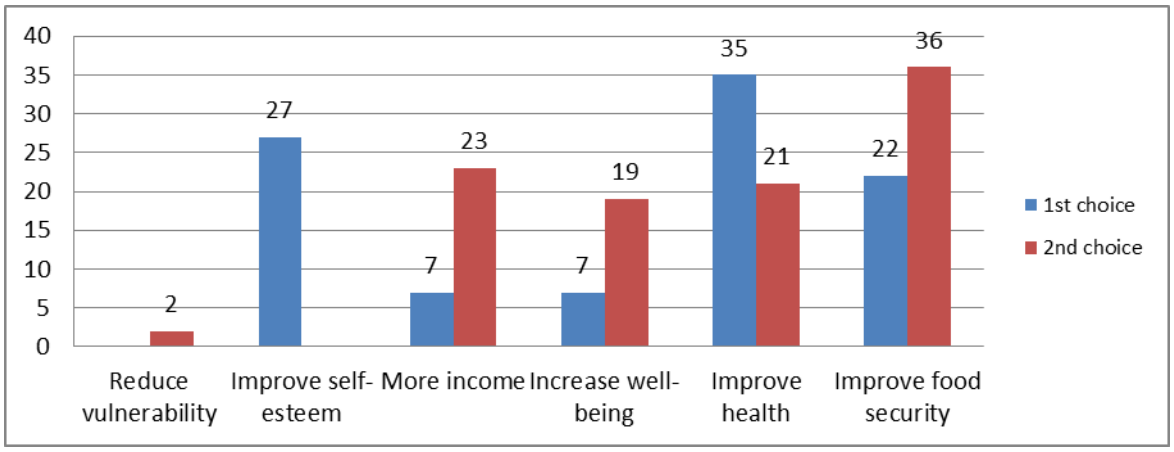
The Pearson's chi-square value is 27.6695 at 28 degrees of freedom and the level of significance is 0.482. As a general rule, the significance level is greater than the significance value; hence the null hypothesis is accepted in favour of the alternative hypothesis which

suggests that there is a relationship between food security and the economic resources of the respondents.

4.7 LIVELIHOOD OUTCOMES

Chambers & Conway (1992) define livelihoods as the capabilities, assets and activities that are essential for a household as a means of living. In the prior sections of Chapter 4, I have analysed the capabilities and assets affecting households' livelihoods. In this section, the livelihood outcomes will be analysed. Livelihood outcomes are the result of pursuing livelihood strategies and coping mechanisms adopted by households to achieve the goals to which they aspire (European Report of Development, 2010). In the Sustainable Livelihood Approach framework, livelihood outcomes include more income, increased well-being, reduced vulnerability and improved food security (Chambers & Conway, 1992). Most of the respondents indicated that improving their health (35%) would be their 1st choice as a livelihood outcome (see Figure 4.11). Secondly, 27 percent indicated that they would like to improve their self-esteem. This is in agreement with Oxfam (2014) who states that individuals who were hungry lost their self-esteem. Thirdly, 22 percent would like to improve their food security. As their 2nd choice, 36 percent of the respondents would like to improve their level of food security, 23 percent would like to improve their income and 21 percent would like to improve their health.

Figure 4.11: Livelihood outcomes



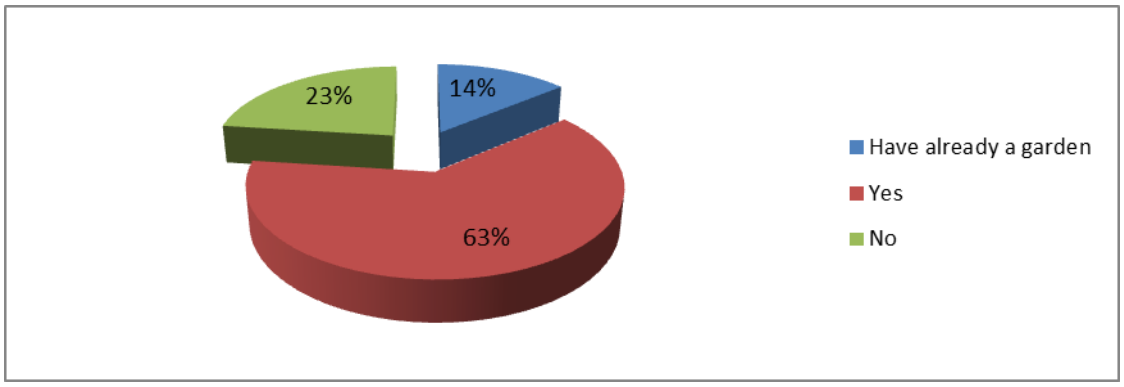
Source: Author's compilation based on field survey, 2014.

4.8 URBAN FOOD GARDEN PROJECTS IN THE WESTERN CAPE

Most South African households are dependent on shops and markets for their food. Oxfam (2014) notes that only 2 percent of the households cultivate crops as their main source of food and 17 percent of the urban households grow their own crops as supplements to their food purchases. Furthermore, only 5 percent of the formal urban households have access to gardens in their backyards (STATSSA, 2012 as cited by Oxfam, 2014).

It was important to understand if the respondents would like to start their own urban food garden and what the requirements would be. The response was phenomenal, as reflected in Figure 4.12 below where 63 percent indicated that they would like to have their own food garden and 23 percent indicated that they were not interested due to health and time constrains. Fourteen percent of the respondents indicated that they already have their own food garden.

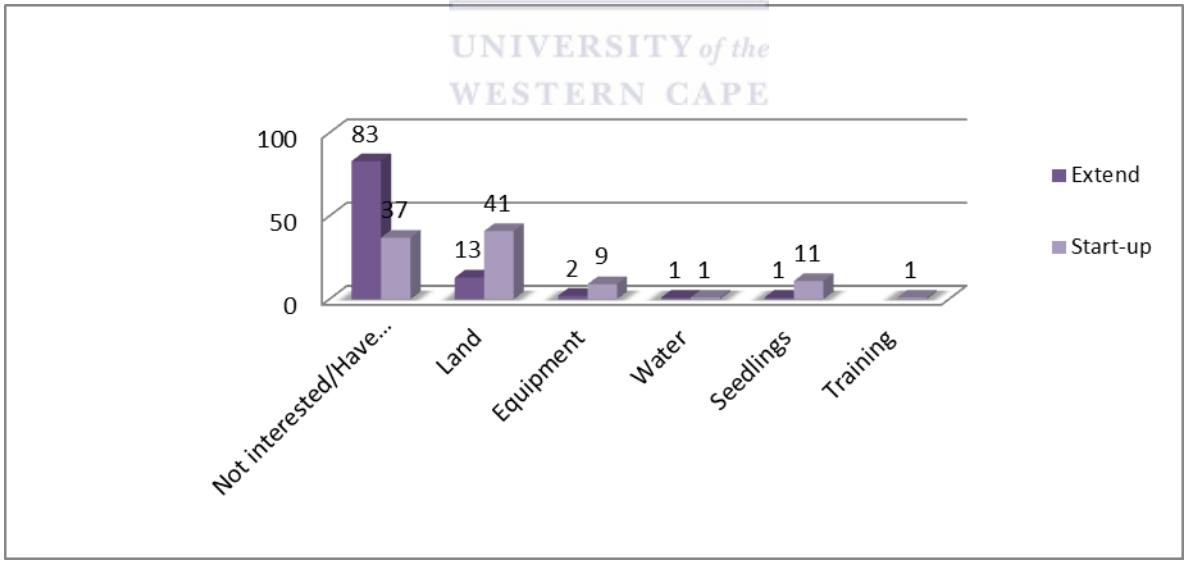
Figure 4.12: Own backyard food garden



Source: Author's compilation based on field survey, 2014.

Figure 4.13 below, reflects the requirements of respondents to either start or extend their current backyard gardens. In both instances land (41% and 13%), equipment (9% and 2%) and seedlings (11% and 1%) are the materials most required to start or extend backyard gardens. The unavailability of land was reiterated by the respondents as the greatest concern.

Figure 4.13: Requirements for Urban Food Garden Projects



Source: Author's compilation based on field survey, 2014.

4.9 SUMMARY

In this chapter the results of the descriptive statistics, bivariate and multivariate analysis were presented. The Sustainable Livelihood Approach as theoretical framework was employed to analyse and determine the relationship between food security and sustainable livelihoods which includes urban food gardens. Different variables have been identified to analyse the role that they play in food security. The relationship between urban food gardens and food security could not statistically be proven. However, the study attests that the capabilities, social resources and economic resources contribute to food security. In addition, other livelihood outcomes have also been identified. Hence, the mixed-methodology approach employed in this research is the best suited approach as the qualitative analysis, discussed in Chapter 5, will bring a better understanding to support the quantitative analysis.

CHAPTER 5

QUALITATIVE DATA ANALYSIS AND PRESENTATION OF RESULTS

5.1 INTRODUCTION

In Chapter Four, the results of the quantitative data analysis of the empirical findings of the study were presented and discussed. This chapter provides the qualitative analysis from the semi-structured interviews and focus group discussions. The research data from the interviews and focus group discussions will be entrenched by emerging themes. The data will give authentic insight into the respondents' and interviewees' experiences and perceptions (Silverman, 2001). The emerging themes build on the quantitative analysis with richness. Data was collected from two focus group discussions which included 17 randomly selected community members of Ward 51, Langa and 13 randomly selected beneficiaries from the 100 beneficiaries of the URDCBP. Semi-structured interviews were conducted with senior officials of both the DSD and the DoA. I will use pseudonyms to protect the identities of the participants.

The chapter commences with the research objectives entwined with the emerging themes. The findings emanating from the analysis will be discussed with reference to reviewed literature and other studies on food security and urban agriculture. Chapter Five will conclude with lessons learnt from the urban garden projects and how urban garden projects can be sustained and further developed to improve household food security.

5.2 DEFINING FOOD SECURITY

Although South Africa might be considered as being food secure, inaccessibility to nutritious food to all people is a major concern. One in four people in South Africa still suffers from hunger (Oxfam, 2014). To improve food security, the IFSS was developed to streamline and integrate diverse food security programmes. The programmes initiated to improve food security in South Africa was shifted since 2010 from the DSD, to urban agriculture being the responsibility of the DoA and the Basic Income Security, responsible for payment of the beneficiaries through the EPWP to the Department of Public Works (Interview: DSD, 2014).

The mandate of the Food Security Sub programme of the DoA, is to coordinate and implement food security initiatives within the context of the IFSS. This must be done in collaboration with the relevant stakeholders in the community. The target beneficiaries is the previous disadvantaged people and preference will be given to projects involving women, youth, aged, differently abled people and people affected by HIV & AIDS (DSD, D0A, 2013). The ultimate outcome of these programmes is to increase food security and trading; improve income generation and job creation; improve nutrition; improve safety nets and to reduce crime NPOs initiating urban food gardens projects must ensure the sustainability of these projects and the expected outcomes as indicated above, must be evident. It is however important that solutions are found to improve household food security otherwise the number of people experiencing inadequate access to nutritious food will increase. Theme 1 emanate in response to the first research objective.

Theme 1: Participants definition of food security.

It is interesting to note the perceptions of food security by the focus group discussions' participants. Some of them never heard the word "food security" before and didn't know the meaning. Others said that it means that food should not be wasted and that it means enough food for every day. One of them responded as:

Community member 2: *"We are hungry and do not have money to buy food, so why do they give it a fancy name"* (Focus group discussions, 2014).

For the respondents in Ward 51, Langa, food security is just a fancy word for the hunger they experience. Some of them explain the sadness that they feel when there is no food for their children to eat; others said that the economic conditions have worsen their situation as they have little money left to buy food after the electricity bill and rent has been paid. The

participants in the study done by Oxfam (2014) describe hunger as a phenomenon that creates "genocide of the mind" which leads to loss of dignity and self-esteem.

As the urban food gardens projects of the URDCBP provide vegetables for the feeding scheme, the respondents perceive these projects as one. What is evident in this study is that most of the respondents consider themselves as being food secure as they do have food to eat although the food lack nutritional diversity. The quantitative analysis confirms that daily meals consume at home consists of bread and maize and vegetables that they buy (if they have money) or receive for free from the urban food gardens projects. This is a high-calorific diet without any proteins. The respondents, as in most households, therefore experience Food and Nutritional Insecurity. Most of respondents indicate that the daily meals that they ate are at the feeding scheme of the URDCBP and it includes a nutritional meal of maize or rice with vegetables and bread with a fruit. Daily meals provided by the NPOs are part of the safety net programmes initiated by government and this project caters for food to 90-150 people per day. Sometimes more people will come and need to turn back without food because it is enough. However, concerns were raised by the respondents that the feeding scheme only provides food from Monday to Friday and closes during the December holiday. One meal is provided per day and people will be hungry for the rest of the day (Focus group discussions: Community members, 2014). As quoted:

Community member 4*: "(On) weekends they do not provide any food as well as Christmas times when the food gardens project is closed. Does that mean that we must stop eating during weekends and Christmas time?"* (Focus group discussions: Community members, 2014).

The above indicates government's intention to improve food security. However, it is on such a small scale that it would not make a drastic impact on the national or local levels of household food security. People still remain hunger and too little is being done by the government to improve the situation.

5.3 URBAN FOOD GARDENS AS A LIVELIHOOD STRATEGY

Scholarly writings advocate the significant role that urban agriculture can play in food security and the development of urban disadvantaged households and communities (Karaan & Mohamed, 1998). They further state that urban food gardens have been proven globally as a development strategy but it must be incorporated in a broader policy framework to be successful. In Cape Town, empirical studies of the Abalimi Bezekhaya project reveal that households engage in urban food gardening for the purpose of growing vegetables for household consumption (food security), savings on their food budget, as a source of income, employment and interested in gardening (Karaan & Mohamed, 1998). In Brazil, the Belo Horizonte Food Security Programme facilitates access to food to all citizens. They have implemented multiple programs to strengthen the food value chain from the local farmer, producer and consumer and to those unable to purchase vegetables (Metcalfe, 2012). The importance of educating people about food security, good nutrition and the transparency of the programs, contributed to the success of these initiative. The contribution of the urban food gardens project to food security was determine in response to the second research objective by Theme 2.

Theme 2*: *Urban food gardens as a livelihood strategy

The success of the URDCBP in Ward 51, Langa, is evident. Currently 100 beneficiaries are employed in the project and receive an income of R984.06 from National Independent

Development Trust (Public Works) to work in the urban food gardens. This is the only source of income to most of them. The beneficiaries have the opportunity to market their products and use the vegetables for household consumption. This contributes to a more nutritious diet. The respondents see the project as beneficial as it assist communities in not being so hungry anymore as vegetables are taken to schools, homes of the aged and sick and they have the opportunity to buy fresh vegetable at a much cheaper price (Focus Group Discussions, 2014). It is indeed encouraging to see that the respondents do benefit from the urban food gardens projects. The senior officials of the respective governmental departments respond to the question:

Researcher: "Do you think Urban Food Gardens assist with Food Security?"

Senior Official, DoA: *"Statistics indicate that only 3% of the population in the Western Cape has their own gardens but 98% of the people having their own gardens, is not hungry anymore"(*Interview: DoA, 2014).

Senior Official, DSD: *"Urban food gardens have a positive impact on families. Most of the families go to sleep without any food. Their house smells like water as they have no food. Food gardens play an important role as they are able to cook for their families, able to sell to have an income(maybe not a lot) to buy electricity and they are able to share food. Some people's life and health has improved"* (Interview: DSD, 2014).

The Senior official of the DSD mentions that the food gardens projects provide vegetables to feeding scheme projects within the communities and also sell the vegetables to the community at a cheaper price than that of the local shops. She also mentions that community food gardens provide vegetables to other NPOs who are interested in providing food parcels

to communities and require tons of vegetables to include in the food parcels. This is a source of income to the urban food gardens projects (Interview: DSD, 2014).

5.4 LIVELIHOOD OUTCOMES OF URBAN FOOD GARDENS

The Sustainable Livelihood Approach framework as defined by Chambers & Conway (1992) includes more income, increased well-being, reduced vulnerability and improved food security as livelihood outcomes. In this study most of the respondents indicated that improving their health would be their main objective as livelihood outcome, followed by improving of self-esteem and thirdly, improving food security. Although improving food security was not indicated as the main objective, being unhealthy and lack of self-esteem are consequences of food insecurity. The other livelihood outcomes identified by the respondents include more income and the increase of well-being. In the third research objective, other livelihood strategies adopted by the respondents have been identified. The responses of the focus group discussions and interviews bring richness to the following theme.

Theme 3: Livelihood strategies adopted to be food secure

The community members mention that they learnt about the urban food gardens project by word of mouth. The main reason for them was that they are hungry and need the food. Some of them come to relax, to pray together, to fellowship and to socialize and to forget about their problems (Focus Group discussions: Community members, 2014). As mentioned before, the inter-relationship between the urban food gardens project and the feeding scheme project is evident in their responses.

In the interview with the Senior Official of the DSD, she mentions that she has been involved in sustainable livelihood programs within the communities which includes food security programs (urban food gardens and feeding schemes), skills development programs and Basic

Income Security initiatives (Interview: DSD, 2014). Furthermore, the programs targeted the less skilled and unemployed population and it includes entrepreneurial programs and community nutritional feeding schemes. She however reiterated the fact that one or two projects within a community would not alleviate poverty. More should be done to improve the livelihoods and reduce poverty and sustainable solutions must be found to improve the level of food and nutritional security.

5.5 FOOD SECURITY AND COPING STRATEGIES ADOPTED

In a study done by Battersby (2011b) in Cape Town, the sources of food for households to be more food secure, in descending order includes buying food at a small shop; informal shop or street food; sharing meals with neighbours or other households; buying at the supermarket; food provided by neighbours or other households; borrowing food from others and community food kitchen. Buying food is first on the list and with limited income, the households cannot afford to buy nutritious meals. Households are also very much dependent on neighbours, family members and other households for food. Social grants provide the greatest source of income for most of the respondents. Community members employed by the Public Works Department for a period of eight months, receive an income from the EPWP. The length of the period of employment is a great concern to the respondents and they would be at home without an income thereafter (Focus group discussion: Beneficiaries, 2014).

5.6 SUSTAINABILITY OF URBAN FOOD GARDEN PROJECTS

Urban agriculture is not widely practiced in the Western Cape. Only a small minority of households (2%) practice urban agriculture and it is those with access to land. However, although urban cultivation is not widespread, it does not mean that it could not make a larger contribution to improving the level of food security of the urban poor. The interview with the Senior Official of the DoA highlighted the fact that households can initiate backyard urban food gardens. Government assistance will only be provided to the very poor that have no income. With the ‘suitcase’ concept, the DoA will provide training, seedlings, fertilizers, a hosepipe or small irrigation system and water tanks. Training is provided at the launching of the project and thereafter on request on an ad-hoc basis. The funding provided for the urban

food gardens project is R5000 per household. He further mentioned that 1250 urban food gardens per year have been initiated. No monitoring and evaluation takes place and therefore no records are available on the current existence of the projects (Interview: DoA, 2014). Furthermore, with community food gardens projects, R120 000 per project is budgeted. For these projects, the DoA would provide training, seedlings, fertilizers, a borehole, irrigation system, fencing and a tractor (Interview: DoA, 2014). The aim of these initiatives is to give households and communities the opportunity to produce their own vegetables and the only requirement is that it should be sustainable (Interview: DoA, 2014). Lack of land and access to clean water is of the greatest concern in urban areas. The households must therefore prove that they have access to 10m² land and water. As the municipality provides 5000 litres of free water per month, their gardens must be small enough. Otherwise, they need to have a borehole as water is expensive in the city (Interview: DoA, 2014).

In the community focus group discussions, the possibility of producing crops on vacant land within the municipal area was proffered. When I posed this question to the Senior Official of the DoA, he responded:

> *Previous attempts to allocate land to a group of people to produce food in Khayelitsha and other communities were not very successful. It is better to allocate land to family groups as there are less conflict and problems within the family circle.* (Interview: DoA, 2014).

It is imperative that a more focussed approach be adopted to improve urban cultivation. Theme 4 reflects on the fourth research objective and will be the framework of recommendations discussed in Chapter 6.

Theme 4*: *Sustainability and lessons learnt from urban food gardens

The importance of the sustainability of the urban food gardens was emphasised by the Senior Official of the DoA (Interview: DoA, 2014). To receive governmental support, the interested parties must apply and based on specific criteria, the necessary support and funding will be provided. Between 10-20 people will work in community gardens. The two greatest challenges experienced in community garden projects are conflict between the people working in the community gardens and lack of leadership. These challenges have been

identified as the reasons for failure in many community food garden projects (Interview: DoA, 2014). However, backyard urban food garden projects operate from a different angle. In most cases, only 3-4 people are in the group and it would usually be family members with more structure, less conflict and a senior family member being the leader in the project. One of the reasons for the failure of backyard food garden projects is that the household would lose interest in the food garden after some time; especially when experiencing financial burdens. Most of the people also work in Cape Town but their family homes are in the Eastern Cape. Customarily they would visit their family homes in December for a month or would go for other reasons (like sickness or death) during the year. Subsequently, the projects would be neglected during that period and many of the projects become non-existent thereafter. Hence, solutions to the challenges experienced with community urban food gardens and backyard food gardens would ensure the sustainability of those projects.

Community participation is key to the success of any community project.This is usually attained when self-development in the form of training and skills is allowed, if there are equal opportunities, if the project meets the different needs of the members, if economic opportunities exist and if people feel safe. The success of the URDCBP can be ascribed to effective and efficient leadership and the visible evidence of community involvement, self-help and self-development.

5.7 CHAPTER SUMMARY

In this chapter the qualitative analysis was discussed by four emerging themes endorsed by the research objectives to substantiate the contributing role of urban food gardens to food security. The qualitative analysis brought depth and better understanding to support the analysis. The data analysed raised the question if enough is being done to improve the levels of food security in the Western Cape to prevent people from dying from hunger and malnutrition. Urban food gardens can play an important role in the development strategy. With reference to the analysis of this research, recommendation will be provided and discussed in Chapter Six.

CHAPTER 6

SUMMARY, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

In Chapter 1, the aim of this thesis was articulated as to critically assess the contribution of urban food gardens to food security with Ward 51, Langa, as the case study area. In doing so, four research objectives were identified as described in Chapter 3. The data analysed sought to respond to the research objectives. In Chapter 4, the quantitative study described the demographic profile of the participants and the association between food security and variables like education, income, household size and employment. Multiple regression analysis, the Pearson's chi-square test, was employed to reflect the strength of the relationship between food security and the urban gardens project and food security and the livelihood strategies adopted. The qualitative analysis was presented in Chapter 5 with four emerging themes to bring depth and richness to the quantitative analysis. These themes shed more light on the research objectives defined in Chapter 3.

The core focus of this final chapter is to revisit the research objective and questions (Chapter 1 and Chapter 3) to establish the extent to which my findings substantiate the views in the literature (Chapter 1 and Chapter 2). In doing so, a summary of the key findings of the study will be deliberated in relation to the research objectives. Thereafter, the sustainability of the urban food garden projects will be discussed and this will be followed by recommendations. The chapter will conclude with possible areas for further research.

6.2 SUMMARY OF KEY STUDY FINDINGS

The results and discussions of the study presented in Chapter 4 reflect key findings that are critical to policy implications. These findings are outlined in the section below.

6.2.1 Demographic characteristics

The study reflects that 49 percent of the respondents are younger than 50 years old with 69 percent of the children in the households being younger than 18 years old. Ward 51, Langa,

has an unemployment rate of 58% (STATSSA, 2011). The unemployment rate of the case study area is extremely high. Subsequently, urban poverty is a reality within this community. Beneficiaries, employed in the urban food garden projects, receive an income of R 984.06 per month from the National Independent Development Trust (Public Works). This has given 38 percent of the respondents the opportunity to receive an income. The income is unlikely to eradicate poverty but households would be able to buy food for their families. Forty-six percent of the urban poor's livelihood strategy is linked to social grants and the number of recipients of social grants is gradually increasing (STATSSA, 2013b). In this study, 49 percent of the respondents' only source of income is from social grants. The exorbitant electricity and food prices plunge the urban poor into extreme poverty. Most of the urban households buy the bulk of their food at supermarkets or local shops. Limited income forces households to buy cheap calorific food as nutritious meals are more expensive. The study indicates that mostly bread and maize are consumed by households in the case study area. The respondents might consider themselves as being food secure but food and nutritious food insecurity is a reality within this community.

6.2.2 Impact of different variables on food security

The impact of the variables like income, employment, household density and education on food security was determined by employing a regression analysis. The study depicts that a unit increase in monthly income would result in a 0.14 point increase in household food security levels. However, this is not statistically significant at 95% confidence level. The reason for this might be that an increase in income would be absorbed by the high food prices and other domestic expenses. In the study, 82 percent of the households buy their food from supermarkets. High food prices exacerbate food insecurity.

The study also indicates that a unit increase in employment would result in a 0.25 point increase in household food security levels. This is not statistically significant at 95% confidence level. Employment is related to income. In poor disadvantaged communities, unskilled labour jobs are more prevalent and this is usually associated with minimal income. The possibility that employment might improve to the extent that income increases so much that it reduces household poverty, is very unlikely. It is a known fact that an increase in household size with the same income will reduce household food security levels. Labadarios,

et al. (2009) state that the household size determines the level of food security. The study reflects that a unit increase in household size will reduce the household food security levels by -0.16 points although it is not statistically significant at 95% confidence level.

Lastly, the study directs that a unit increase in the level of education will result in an increase of 0.21 point in household food security. However, this is not statistically significant at 95% confidence level. Scholarly writings attest that hunger is highly correlated with educational deprivation and that primary education is key to food security (De Muro & Burchi, 2007). The study reflects that only 6 percent of the respondents have no formal education. However, low levels of food security exist. Education does not mitigate the community from the impact of economic crisis or lack of employment. In summary, the study reflects that income, employment, household density and education have no statistical significance at a 95% confidence level to household food security.

6.2.3 Purpose of the study

The primary aim of the study is to critically assess the contribution of urban food gardens to food security. The case study area identified is Ward 51, Langa where urban food garden projects have been initiated by URDCBP, an NPO. In answering the research objectives, the mixed-methodology approach was employed. A summary of the findings of the quantitative analysis in Chapter 4 and the qualitative analysis in Chapter 5 will be presented in the following section. In the qualitative analysis, the four emerging themes will bring more depth to the quantitative analysis.

6.2.3.1 Research Objective 1 – Determine the levels of food security

Theme 1: Participants' definition of food security

In the study, some of the respondents did not even know what "food security" means. Others said that they were hungry and did not have money to buy food and saw food security as just a fancy word for the hunger that they experience. Respondents described the feelings of sadness and hopelessness if there was no food for the children to eat and said that economic conditions (high electricity and water accounts and food prices) had a detrimental impact on their standard of living (Focus group discussion, 2014).

As the urban food gardens provide the vegetables for the feeding scheme, most of participants in the study considered those two projects as one project. The feeding scheme, a project of the URDCBP, provides one nutritious meal a day for 90-120 people which includes senior citizens, differently abled people and people affected with HIV AIDS (Nqoqo, 2014). That meal is in most cases the only food that they will eat. As the meals are provided only from Monday to Friday, excluding the December holidays, respondents raised the question, if it meant that they should stop eating during weekends and Christmas time (Focus group discussions: Community members, 2014). The level of food security within Ward 51, Langa, was determined using Labadarios, et al.'s (2009) definition of food security and employing the universal household food insecurity measurement tool (Nord, et al., 2010; FAO, 2003 as cited by Labadarios, et al., 2009). In the study, 73 percent of the respondents worried about food all the time, 31 percent could not afford a balanced meal; 31 percent ate less because of a lack of food; 19 percent skipped a meal and 7 percent did not eat for a whole day as they had no food.

Based on the assessment tool, low levels of food security is an appropiate categorisation of the households in Ward 51, Langa, as the quality and variety of the food consumed by households are reduced although their normal eating patterns and quantity of food were not substantially reduced. Food and nutritious insecurity is more evident in this community as the households might have enough food to eat but it is a high-calorific diet that leads to malnutrition, health risks and other social problems.

6.2.3.2 Research Objective 2 – Contribution of urban food gardens to food security

Theme 2*: *Urban food gardens as a livelihood strategy

The outcome or benefits of participation in urban food gardens in this study are food security (58%), improving of health (56%), creating employment (37%) and improving self-esteem (29%). These figures are a combination of the 1st and 2nd benefits in the quantitative research. Subsequently, urban food gardens can be considered as a livelihood strategy. The beneficiaries (100) of the urban food gardens project receive an income of R 984.06 per month from the National Independent Development Trust (Public Works) to work in the urban food gardens. Working in the urban food gardens creates employment and an income and this inherently gives them the opportunity to buy food. The beneficiaries also have the

opportunity to market their products and use the vegetables for household consumption. The products of the urban food gardens are distributed to schools, homes of the aged and sick and communities have the opportunity to buy fresh vegetable at a reduced price (Focus group discussions, 2014). The view that urban food gardens positively contribute to food security is shared by the Senior Official of the Department of Agriculture when he said that although only 3 percent of the Western Cape population has their own food gardens, 98 percent of them are not hungry any more (Interview: DoA, 2014). In addition, the Senior Official of the Department of Social Development noted that the urban food gardens have a positive impact on families as they give them the opportunity to cook for their families and thereby improving their health; share food with neighbours, friends and family; sell some of the produce to acquire an income to buy electricity and food (Interview: DSD, 2014).

In most households, women are responsible for the food budgets, preparation of meals and taking care of their families. With the lack of income, many females have started participating in urban agriculture. Female urban agriculture is on the increase and women have been identified as the main producers in urban agriculture. In this research, 58 percent of females are employed in the urban food gardens project. Another 52 percent would like to cultivate their own crops but lack resources and access to land is one of the greatest challenges. The Pearson's chi-square test was employed to statistically test the relationship between food security and the benefit of "providing food to the household", presenting it with the following hypothesis.

Ho: The urban food gardens project contributes to food security.

H1: There is no significant contribution of the urban food gardens to food security.

The Pearson's chi-square value for this test is 7.2355 at 1 degree of freedom and a significance level of 0.007. Hence, the null hypothesis is rejected in favour of the alternative hypothesis. At a significant confidence level of 95% , it is accepted that urban food gardens do not significantly contribute to food security in Ward 51, Langa. With the test of strength of the relationship, a regression analysis was done. The coefficient for the provision of food was -0.429. This implies that for every unit increase in the provison of food, the prediction is that there will be a 0.43 decrease in the household food security levels. The p-value of the model is 0.006. The coefficient for the provision of food (-.429) is statistically significant at

the 95% confidence level since the p-value (0.006) is less than 0.05. Therefore, a strong relationship exists between providing food and food security; whether negative or positive.

6.2.3.3 Research Objective 3 – Livelihood strategies adopted to be more food secure

Theme 3: Livelihood strategies adopted to be food secure

The study employed the Sustainable Livelihoods Approach as the theoretical framework. In this research, the livelihood strategies adopted to be more food secure were identified. Diversification of livelihoods builds resilience in households and allows them to cope better and adapt quicker to shocks and stresses. In this research, 10 percent of the respondents have an additional livelihood strategy whereas 12 percent have three additional livelihood strategies. The main source of livelihood strategy is the social grant (29%). Other livelihood strategies adopted include receiving food from the feeding schemes (48%) and vegetables from the urban food gardens project (23%). The chi-square test was employed to determine whether there is a significant relationship between food security and the livelihood strategies adopted. The following hypothesis was tested:

Ho: Livelihood strategies contribution to food security.

Hı : There is no significant contribution of livelihood strategies to food security.

The results of the chi-square test indicate the Pearson's chi-square value of 43.8060 at 70 degrees of freedom and a significance level of 0.994. The null hypothesis was accepted in favour of the alternative hypothesis. This implies that at a confidence level of 95%, the livelihood strategies adopted make a significant contribution to food security of the respondents in Ward 51, Langa.

Households have different capabilities and assets available to enable them to cope when experiencing unpredictable shocks and disasters. In the research, knowledge (37%) and planning skills (23%) have been identified as the most important coping mechanisms used by the respondents to be more food secure. The Pearson's chi-square test was employed to test the association between food security and the capabilities of respondents as coping strategies. The following hypothesis was applied:

Ho: There is a relationship between food security and the capabilites as coping strategy.

H1: There is no relationship between food security and capabilities

The results from the chi-square test indicated the Pearson's chi-square value of 42.5679 as 35 degrees of freedom and a significance level of 0.177. The null hypothesis was accepted in favour of the alternative hypothesis. The results indicated that there is a relationship between food security and the capabilities of the respondents.

Although social capital is less than what it was before, smaller communities still draw on social capital. In the study, 49 percent of the respondents indicated that they provide their own food whereas 46 percent rely on family for food. To test the relationship between food security and social resources, the following hypothesis has been applied:

Ho: There is a relationship between food security and social resources as coping strategy.

H1: There is no relationship between food security and social resources.

The results from the chi-square test indicated the Pearson chi-square value of 19.5742 at 28 degrees of freedom and a significance level of 0.879. The null hypothesis was accepted in favour of the alternative hypothesis, which suggested that there is a relationship between food security and social resources.

Some of the participants are employed by EPWP and will have an income for a period of eight months. This has been raised as a great concern and they were already worried about how they would eat and pay their bills after the contract expired. The extention of the contract for a period of 3 years was mentioned as a solution to continue to receive income. The view of the government, however is that another person must have the opportunity to earn an income; therefore the contract is for 8 months only (Focus group discussion: Beneficiaries, 2014).

As 82 percent of the respondents buy their food at the local shops, the reliance on income or money is of utmost importance. A Pearson's chi-square test was employed to test the association between food security and the economic resources as a coping strategy. The following hypothesis was applied to test this association:

Ho: There is a relationship between food security and the economic resources as a coping strategy.

Hı: There is no relationship between food security and the economic resources.

The Pearson's chi-square value was 27.6695 at 28 degrees of freedom and the level of significance was 0.482. Hence the null hypothesis was accepted in favour of the alternative hypothesis. This implies that there is a relationship between food security and the economic resources of the respondents.

6.2.3.4 Sustainability of the urban food gardens project

Theme 4: ***Sustainability and lessons learnt from urban food gardens***

The contribution of urban food gardens to food security is minimal in the Western Cape as only 2 percent of the households cultivate crops as their main source of food (Oxfam, 2014). However, urban food gardens can improve food security drastically if they are extended to a larger scale. In as much as the government provides the necessary support and funding to households and communities that are interested in urban food garden projects, the lack of land in the cities is the greatest concern. In the study, 14 percent of the respondents have their own food gardens. Interestingly, 63 percent of the respondents would like to have their own food gardens whereas 23 percent are not interested due to health and time constrains. In the study, the respondents also indicated that they required land, equipment and seedlings to extend or start a food garden.

The Department of Agriculture provides training and the necessary equipment required to start-up a backyard garden or community garden (Interview: DoA, 2014). Funding of R5000 per household will be provided for the urban food gardens project and R 120 000 per project for community food garden projects (Interview: DoA, 2014). The objective of these food security programmes of the Department of Agriculture is linked to the IFSS. These programmes will give households and communities the opportunity to produce their own vegetables for consumption or sale but the urban food gardens must be sustainable as funding is only provided at commencement (Interview: DoA, 2014).

Lack of leadership and conflict have been identified as the greatest challenges experienced in community garden projects resulting in the ultimate failure of the projects (Interview: DoA, 2014). However, backyard urban food garden projects have more structure, less conflict and effective leadership. Despite this, the failure of backyard urban food garden projects is due to households losing interest in the food garden project, especially when experiencing financial burdens and households going to the Eastern Cape in December. Hence, solutions to the challenges experienced with community urban food gardens and backyard food gardens will ensure the sustainability of these projects. Community involvement, self-help and self-development are of utmost importance to the success of these projects (Holland, 2004).

6.3 RECOMMENDATIONS

The IFSS was developed to streamline and integrate diverse food security programmes. The focus of this strategy is the coordination and implementation of food security initiatives. The objectives of the strategy are to increase food security and trading, improve income and employment, improve nutrition, improve safety nets and reduce crime. However, the strategy does not make provision for how this would be achieved as the DoA approved some urban agricultural projects based on the criteria due to budget constraints. Social grants and feeding schemes are perceived as safety nets. This however, results in dependency on the government and is a fiscal burden. In South Africa, access to nutritious food at all times to everyone is the major reason for the food and nutritional food insecurity.

To overcome this, a food security strategy must be developed to facilitate access to food to all citizens. This food security access strategy must strengthen the food value chain from the local farmer, to the producer and consumer. Consumers include local and large supermarkets, communities and households as well as the underprivileged. This will improve the health and level of food security of the population and reduce hunger and malnutrition.

Currently, urban cultivation is not widespread in the Western Cape. With the correct strategies and support, urban food gardens can be extended to make a larger contribution to the food security levels of the urban poor. Government intervention is much needed to fight hidden hunger and poverty and this requires a political commitment. Urban agriculture, as a development strategy, is already incorporated into a broader policy framework. The success of urban agriculture requires partnerships between government and multilateral institutions,

corporates and farmers. Training must be provided that includes human resources and financial management, entrepreneurial skills, leadership skills and soft skills like conflict management, etc. It is important that a transparent monitoring and evaluation system be developed to measure the success of the projects and ensure that assistance be provided when needed. Incentives for private sector companies that support projects that provide nutritious food, must be available. Without the collaboration between government and multilateral institutions, hunger and food insecurity will increase and the Millennium Development Goals to improve food security by 2030 will never be realized (FAO, 2009a). As land is the greatest concern to communities that would like to participate in urban agriculture, vacant land must be available to households and communities to use for urban agriculture. The expansion of urban food garden projects will create more employment. The monthly payment of R984.06 to those employed in the urban food gardens project will provide income and enable households to buy food. This will also contribute positively to the self-esteem and self-worth of people.

Holland (2004) comments that the success of community projects are dependent on self-development, self-help and community involvement. She reiterates that skills training, equal opportunities and economic opportunities are of utmost importance. The Senior Official of the DoA stated that conflict and lack of leadership were the reasons for the failure of urban food garden projects (Interview: DoA, 2014). It is therefore imperative that the training, that is currently only on gardening skills, should include soft skills like conflict management, effective leadership training as well as entrepreneurial skills. The importance of educating people about food security, good nutrition and the transparency of the programmes will contribute to the success of these initiatives. Monitoring and evaluation systems should be implemented for all urban food garden projects with continued governmental support. These recommendations will improve the sustainability of the urban food garden projects.

The model employed by the Urban Rural Development Capacity Building Project is effective and the success of this project is visible. The model for resilience in food security has four building blocks, i.e. income and food access; assets; access to public services and social safety nets (Alinovi, et al., 2008). Currently they have three urban food garden projects on school grounds and vacant land that belongs to the municipality. The URDCBP employs 100 beneficiaries receiving an income of R984.06 per month from the National Independent

Development Trust (Public Works). The urban food gardens produce broccoli, spinach, cabbage, carrots, potatoes, onions and lettuce. The harvest is sold to the public and pre-schools and is used in the feeding scheme (Nqoqo, 2014). The success of this project is due to the effective leadership, efficient systems to streamline the business and the harmony between the employees. This urban food gardens project addresses food security and this model must be replicated in other areas and more funding and land should be provided to this NPO for expansion. Urban agriculture promotes self-sufficiency and can be considered as a livelihood strategy.

6.4 FURTHER RESEARCH

Further research is required to determine the impact of food and nutritional insecurity on the children of school-going age, to ascertain how they survive, how they perform at school and identify the psycho-social problems that they experience.

I propose a more in-depth study to increase the data set to see the trends of the diverse diets of the households and what the impact is on their health.

Further research is required to investigate the impact that bio-fuel will have on food security as South Africa is moving ahead with this roll-out. Research predicted that renewable fuels would take up only 1.4% of the arable land and thereby not jeopardise food security. Sorghum, sugar cane and sugar beet are permitted for producing bioethanol whereas canola, sunflowers and soya beans will produce biodiesel. They have however excluded maize, which is a common bioethanol feedstock, due to its importance to local food security (Burger, 2014).

6.5 CONCLUSION

The Integrated food security strategy for South Africa was developed to streamline and integrate the diverse food security programmes in South Africa. However, only social grants and feeding schemes receive more government support and is extended to most of the disadvantage communities. The study conducted in Ward 51, Langa demonstrate the extent to which urban agriculture can positively contribute to household food security as well as other livelihood benefits. It is therefore imperative that the urban food gardens should be expanded to improve the level of food security of the urban poor. Too little is being done to improve the food security levels and initiatives and projects requires the collaboration of the people,

government and multilateral institutions to ensure sustainability of the urban food gardens projects. The results also ascertained the diverse livelihood strategies that households adopt to be more food secure to be resilient to shocks and stresses.

BIBLIOGRAPHY

Abalimi Bezekhaya, 2013. *Abalimi Bezekhaya.* [Online]. Available at: http://www.abalimi.org.za [Accessed 06 04 2015].

Alinovi, L., Mane, E. & Romano, D., 2008. Towards the measurement of household resilience to food security: Applying a model to Palestinian household data. *FAO,* 1-186.

Altieri, M. A., Companioni, N., Canizares, K., Murphy, C., Rosset, P., Bourque, M. & Nicholls, C.I., 1999. The greening of the "barrios": Urban agriculture for food security in Cuba. *Agriculture and Human Values,* 16, 131-140.

Altman, M., Hart, T. & Jacobs, P., 2009a. *Food security in South Africa,* Pretoria: Human Sciences Research Council (HSRC).

Altman, M., Hart, T. & Jacobs, P., 2009b. Household food security in South Africa. *Agrekon,* 48(4), 345-361.

Anon., 1996. *STATA data analysis and statistical software.* [Online]. Available at: http://www.stata.com/why-use-stata/ [Accessed 17 06 2014].

Arku, G., Mkandawire, P., Aguda, N. & Kuuire, V., 2012. *Africa's quest for food security: What is the role of urban agriculture,* Zimbabwe: The African Capacity Building Foundation.

Armar-Klemesu, M., 2000. Urban agriculture and food security, nutrition and health. *Growing cities, growing food.Urban agriculture on the policy agenda,* 99-118.

Ash, C., Jasny, B. R., Malakoff, D. & Sugden, A., 2010. Feeding the future. *Science,*327*(*(5967), 797-797.

Babbie, E., 2010. *The practice of social research.* (12th ed). United States of America: Wadsworth.

Battersby, J., 2012. Beyond the food desert: Finding ways to speak about urban food security in South Africa. *Swedish Society for Anthropology and Geography,* 141-159.

Battersby, J., 2011a. *The state of urban food insecurity in Cape Town.*, Cape Town: Urban Food Security, Series 11.

Battersby, J., 2011b. Urban food insecurity in Cape Town, South Africa: An alternative approach to food access. *Development Southern Africa,* 28(4), 28.

Battersby, J. & Marshak, M., 2013. Growing communities: Integrating the social and economic benefits of urban agriculture in Cape Town. *Urban Forum ,* 24(4), 447-461. Springer, Netherlands.

Bellows, A., Brown, K. & Smit, J., 2003. Health benefits of urban agriculture. *Community Food,* North America: The Urban Agriculture Network.

Binns, T. & Lynch, K., 1998. Feeding Africa's growing cities into the 21st century: The potential of urban agriculture. *Journal of international development,* 10(6), 777-793.

Bless, C. & Kathuria, R., 1993. *Fundamentals of social statistics. An African perspective.* Cape Town: Juta and Co, Ltd.

Blumberg, B., Cooper, D. & Schindler, P., 2008. *Business research methods.* (2nd ed). Berkshire: McGraw-Hill Higher Education.

Brannen, J., 1992. *Mixing methods: Qualitative and quantitative research.* Aldershot, England: Avebury.

Bray, R., 2008. *Langa Township.* [Online]. Available at: http://www.capetown.at/heritage/city/langa.htm [Accessed 15 02 2014].

Bryld, E., 2003. Potentials, problems, and policy implications for urban agriculture in developing countries. *Agriculture and human value,* 20(1), 79-86.

Burger, S., 2014. *Engineering news.* [Online]. Available at: http://www.engineeringnews.co.za [Accessed 02 05 2015].

Campbell, C., 1991. Food insecurity: A nutritional outcome or a predictor variable? *The Journal of nutrition,*121(3), 408-415.

Chambers, R., 1995. Poverty and livelihoods: whose reality counts? *Environment and urbanization,* 7(1), 173-204.

Chambers, R. & Conway, G., 1992. *Sustainable rural livelihoods: Practical concepts for the 21st century.* Sussex: Institute of Development Studies (IDS).

City of Cape Town, 2007. *Urban agricultural policy for the City of Cape Town,* Cape Town: City of Cape Town.

Cofie, O., Veenhuizen, R. & Drechsel, P., 2003. *Contribution of urban and peri-urban agriculture to food security in sub-Saharan Africa.* Africa Day of the 3rd WWF in Kyoto, 17-3.

Creswell, J., 2003. *Research design: Qualitative, quantitative, and mixed methods approaches.* (2nd ed). California: Sage Publication, Inc.

Crush, J. & Frayne, B., 2011. Supermarket expansion and the informal food economy in Southern African cities: Implication of urban food security. *Journal of Southern African Studies,* 37(4), 781- 807.

Crush, J. & Frayne, B., 2010. The invisible crisis: Urban food insecurity in Southern Africa, Cape Town: *AFSUN Series* No 1.

Crush, J., Hovorka, A. & Tevera, D., 2011. Food security in Southern African cities: The place of urban agriculture. *Progress in Development Studies,* 4(11), 285-305.

Davies, S., 1996. *Adaptable livelihoods: Coping with food insecurity in the Malian Sahel,* London: Macmillan Press Ltd.

Davies, S., 1993. Are coping ctrategies a cop out? *IDS bulletin*, 24(4), 60-72.

De Muro, P. & Burchi, F., 2007. *Education for rural people and food security. A cross-country analysis,* Rome: Food and Agriculture Organization of the United Nations.

Department for International Development (DFID), 1999. *Sustainable livelihoods guidance sheets,* London: DFID.

Department of Agriculture (DoA), 2013. *National policy on food and nutrition security,* Pretoria: Department of Agriculture and Department of Social Development.

Department of Agriculture (DoA), 2002. *The Integrated food security strategy for South Africa,* Pretoria: Department of Agriculture.

De Schutter, O., 2013. *Gender equality and food security. Women's empowerment as a tool against hunger,* Philippines: FAO, Asian Development Bank.

Donkin, A., Dowler, E., Stevenson, S. & Turner, S., 1999. Mapping access to food at a local level. *British Food Journal,* 101(7), 554-564.

Drakakis-Smith, D., 1991. Urban food distribution in Asia and Africa. *The Royal Geographical Society,* 157(1), 51-61.

Dubois, A. & Gadde, L., 2002. Systematic combining: An abductive approach to case research. *Journal of Business Research,* 55(7), 553-560.

Eisenhardt, K. M, 1989. Building theories from case study research. *Academy of management review,* 14(4), 532-550.

European Report of Development, 2010. *Livelihoods strategies and household resilience to food security: An empirical analysis to Kenya.* Senegal: European Report of Development.

Food and Agriculture Organization (FAO), 2014. *The state of food insecurity in the world 2014: Strengthening the enabling environment for food security and nutrition,* Rome: FAO.

Food and Agriculture Organization (FAO), 2013. *The State of food insecurity in the world 2013: The multiple dimensions of food security,* Rome: FAO.

Food and Agriculture Organization (FAO), 2009a. *The State of food insecurity in the world.* Rome: FAO.

Food and Agriculture Organization (FAO), 2009b. *The State of food and agriculture. Livestock in the balance,* Rome: FAO.

Food and Agriculture Organization (FAO), 2008a. *FAO food security program.* [Online]. Available at: http://www.fao.org/docrep/013/al936e/al936e00.pdf [Accessed 10 09 2014].

Food and Agriculture Organization (FAO), 2004. *The State of food insecurity in the world 2004: Monitoring progress towards the World Food Summit and Millennium Development Goals,* Rome: FAO.

Fowler, H. & Fowler, F., 1919. *The Concise Oxford Dictionary of Current English.* (7th ed). Oxford: The Clarendon Press.

Frayne, B., Battersby-Lennard, J., Fincham, R. & Haysom, G., 2009. *Urban food security in South Africa: Case study of Cape Town, Msunduza and Johannesburg,* Midrand: Development Planning Division Working Paper Series No.15 , DBSA.

Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M., Toulmin, C., 2010. Food security: The challenge of feeding 9 billion people. *Science,* 327, 812-818.

Hendriks, S.L., 2011. The challenges facing empirical estimation of household food (in)security in South Africa. *Development Southern Africa,* 22(1), 103-123.

Holdsworth, M., Kruger, A., Nago, E., Lachat, C., Mamiro, P., Smit, K., Garimoi-Orach, C., Kameli, Y., Roberfroid, D., Kolsteren, P., 2014. African stakeholders' views of research options to improve nutritional status in sub-Saharan Africa. *Health Policy and Planning Advance Access,* 1-12.

Holland, L., 2004. Diversity and connections in community gardens: A contribution to local sustainability. *Local Environment: The International Journal of Justice and Sustainability,* 9(3), 285-305.

Hovarka, A., 2001. Gender and urban agriculture: Emerging trends and areas for future research. Graduate School of Geography, Clark University.

International Food Policy Research Institute (IFPRI), 2014. *Global Hunger Index. The challenge of hidden hunger,* Washington, DC: International Food Policy Research Institute (IFPRI).

Johnson, R. & Onwuegbuzie, A., 2004. Mixed methods research: A research paradigm whose time has come. *Educational Researcher,* 33(7), 14-26.

Karaan, A. & Mohamed, N., 1998. The performance and support of food gardens in some townships of the Cape Metropolitan Area: An evaluation of Abalimi Bezekhaya. *Development Southern Africa,* 15(1), 67-83.

Kelly, P. J., 2005. Practical suggestions for community intervention using participatory action research. *Public Health Nursing,* 22(1), 65-73.

Kidane, W., Maetz, M. & Dardel, P., 2006. *Food security and agricultural development in sub-Saharan Africa*, Rome: FAO Regional Office for Africa.

Koc, M., Mac Rae, R., Mougeot, L. & Welch, J., 1999. *For hunger proof cities. Sustainable urban food system.* Ottawa: International Development Research Centre (IDRC).

Labadarios, D., Davids, Y., Mchiza, Z. & Weir-Smith, G., 2009. *The assessment of food insecurity,* Pretoria: Human Sciences Research Council (HSRC).

Labadarios, D., Mchiza, Z. J., Steyn, N. P., Gericke, G., Maunder, E. M., Davids, Y. D., Parker, W., 2011. Food security in South Africa: A review of national surveys. *Bulletin of the World Health Organization,* 89(12), 891-899.

Lovendal, C. & Knowles, M., 2006. *Tomorrow's hunger: A framework to analysing vulnerability to food security,* Helsinki: United Nations University. World Institute for Development Economics Research.

Maxwell, D., 1999. The political economy of urban food security in sub-Saharan Africa. *World Development,* 27(11), 1939-1953.

Maxwell, D., 1996. Measuring food insecurity: The frequency and severity of "coping strategies". *Food Policy,* 21(3), 291-303.

Maxwell, D., 1995. Alternative food security strategy: A household analysis of urban agriculture in Kampala. *World Development,* 23(10), 1669-1681.

Maxwell, D., Levin, C. & Csete, J., 1998. Does urban agriculture help prevent malnutrition? Evidence from Kampala. *Food Policy,* 23(5), 411-424.

May, T., 2002. *Qualitative research in action.* London: SAGE Publications.

Mays, N. & Pope, C., 1995. Qualitative research: Rigour and qualitative research. *British Medical Journal,* 311 (6997), 109-112.

Meredith, J., 1998. Building operations management theory through case and field research. *Journal of Operations Management,* 16(4), 441-454.

Metcalfe, S., 2012. *Lessons from Brazil for the National Food Plan and global food security,* Australia: Future Directions International.

Morris, K., 2010. UN raises priority of non-communicable diseases. *The Lancet,* 375(9729),1859.

Mougeot, L., 2006. *Growing better cities: Urban agriculture for sustainable development.* Ottawa: IDRC.

Mougeot, L., 2000. Urban agriculture: Definition, presence, potentials and risks. *Growing cities, growing food: Urban agriculture on the policy agenda,* 1-42.

Moustier, P. & Danso, G., 2006. Local economic development and marketing of urban produced food. *Urban Agriculture for Green and Productive Cities.* RUAF Foundation, IDRC and IIRR, Volume 7.

Mouton, J., 1996. *Understanding social research.* Pretoria: Van Schaik Publishers.

Ndebele, T., 2013. *South Africa goes with the urbanisation flow.* South African Institute of Race Relations. [Online] Available at: http://www.sairr.org.za [Accessed 22 January 2014].

Neuman, W., 2000. *Social research methods: Qualitative and quantitative approaches.* (4th ed). Boston: Allyn and Bacon.

Nord, M., Coleman-Jensen, A., Andrews, M. & Carlson, S., 2010. *Household food security in the United States, 2009,* United States: Economic Research Report. Department of Agriculture.

Nqoqo, N., 2014. Urban Renewal Development Capacity Building Programme. [Interview] (05 08 2014).

Nugent, R., 2000. The impact of urban agriculture on the household and local economies. *Growing cities, growing food. Urban agriculture on the policy agenda,* 67-98.

Oliver, P., 2003. *The student's guide to research ethics.* England: McGraw-Hill Education.

Olson, C., 1999. Symposium: Advances in measuring food insecurity and hunger in the US, Introduction. *The Journal of Nutrition,* 129(2S Suppl), 504S.

Osborne, J., 2008. *Best practices in quantitative methods.* California: SAGE Publications Inc.

Oxfam, 2014. *Hidden hunger in South Africa. The faces of hunger and malnutrition in a food secure nation,* Oxford: Oxfam International.

Remenyi, D., Swan, N. & Van Den Assem, B., 2011. *Ethics protocols and research ethics committees.* United Kingdom: Academic Publishing International Ltd.

Reuther, S. & Dewar, N., 2005. Competition for the use of public open spaces in low-income urban areas: The economic potential of urban gardening in Khayelitsha, Cape Town. *Development Southern Africa,* 23(1), 97-122.

Rogerson, C., 2010a. Urban agriculture and urban poverty alleviation: South African debates. *Agrekon: Agricultural Economics Research, Policy and Practice in Southern Africa,* 37(2), 171-188.

Rogerson, C., 2010b. Resetting the policy agenda for urban agriculture in South Africa. *Journal of Public Administration,* 45(2), 373-383.

Rogerson, C., 1993. Urban agriculture in South Africa: Scope, issues and potential. *GeoJournal,* 30(1), 21-28.

Rowley, J., 2002. Using case studies in research. *Management Research News,* 25(1), 16-31.

Schmidt, S., 2012. Getting the policy right: Urban agriculture in Dar es Salaam, Tanzania. *International Development Planning Review,* 34(2), 129-145.

Scoones, I., 1998. *Sustainable rural livelihoods: A framework for analysis.* IDS Working paper 72, Institute of Development Studies, Sussex.

Seeth, H.T., Chachnov, S., Surinov, A. & Von Braun, J., 1998. Russian poverty: Muddling through economic transition with garden plots. *World Development,* 26(9), 1611-1624.

Senior Official, DoA., 2014. Urban food gardens as livelihood strategy for food security [Interview] (15 12 2014).

Senior Official, DSD., 2014. Urban food gardens as a livelihood strategy for food security [Interview] (09 12 2014).

Silverman, D., 2001. *Interpreting qualitative data.* (2nd ed). London: Sage Publications Ltd.

Singh, S., 2009. Global food crisis: Magnitude, causes and policy measures. *International Journal of Social Economics,* 36(1), 23-36.

Siviwe, 2010. *Cape Town Township Tours.* [Online]. Available at: http://www.townshiptourscapetown.co.za/about-langa [Accessed 23 04 2015].

Slater, R. J., 2001. Urban agriculture, gender and empowerment: An alternative view. *Development Southern Africa,* 18(5), 635-650.

South Africa History Online (SAHO), n.d. *South Africa History Online.* [Online]. Available at: www.sahistory.org.za/place/langa-township. [Accessed 23 04 2015].

Statistics South Africa (STATSSA), 2014a. *Poverty trends in South Africa. An examination of absolute poverty between 2006 and 2011,* Pretoria: Statistics South Africa.

Statistics South Africa (STATSSA), 2014b. *National and provincial labour market: Youth,* Pretoria: Statistics South Africa.

Statistics South Africa (STATSSA), 2013a. *Quarterly Labour Force Survey. Pretoria: Statistical release P0211, Quarter 3, 2013,* Pretoria: Statistics South Africa.

Statistics South Africa (STATSSA), 2013b. *General Household Survey,* Pretoria: Statistics South Africa.

Statistics South Africa (STATSSA), 2012. *Food security and agriculture 2002-2011. In-depth analysis of the General Household Survey data,* GHS Series Volume IV, Pretoria: Statistics South Africa.

Statistics South Africa (STATSSA), 2011a. *City of Cape Town-2011 Census-Cape Town ,* Pretoria: Statistics South Africa: Strategic Development Information and GIS.

Statistics South Africa (STATSSA), 2011b. *City of Cape Town-2011. Census Suburb Langa,* Pretoria: Statistics South Africa: Strategic Development Information and GIS.

Terre Blanche, M., Durrheim, K. & Painter, D., 2011. *Research in practice: Applied methods for the Social Sciences.* (2nd ed). Cape Town: University of Cape Town.

Van Zyl, J. & Kirsten, J., 1992. Food security in South Africa. *Agrekon,* 31(4), 170-184.

Vogel, C. & Smith, J., 2002. The politics of scarcity: Conceptualising the current food security crisis in southern Africa: Commentary. *South African Journal of Science,* 98(7 & 8), 315-315.

Von Braun, J., 2008. *Food and financial crises. Implications for agriculture and the poor,* Washington DC: International Food Policy Research Institute (IFPRI).

Von Braun, J., 2007. *The world food situation. New driving forces and required actions,* Washington, D.C: International Food Policy Research Institute (IFPRI).

Von Grebmer, K., Headey, D., Bene, D., Haddad, L., Olofinbiyi, T., Wiesman, D., Von Oppeln, C. & Iseli, C.B., 2013. *2013 Global Hunger Index: The challenge of hunger.*

Building resilience to achieve food and nutrition security, Bonn, Germany: Welthungerhilfe.

Voss, C., Tsikriktsis, N. & Frohlich, M., 2002. Case research in operations management. *International Journal of Operations & Production Management,* 22(2), 195-219.

World Food Summit (WFS), 1996. *Rome Declaration on World Food Security and World Food Summit Plan of Action,* Rome: FAO.

Yeudall, F., Sebastian, R., Cole, D. C., Ibrahim, S., Lubowa, A. & Kikafunda, J., 2007. Food and nutritional security of children of urban farmers in Kampala, Uganda. *Food and Nutrition Bulletin,* 28(Supplement 2), 237S-246S.

Yin, R., 2009. *Case study research.* (4th ed). California: Sage Inc.

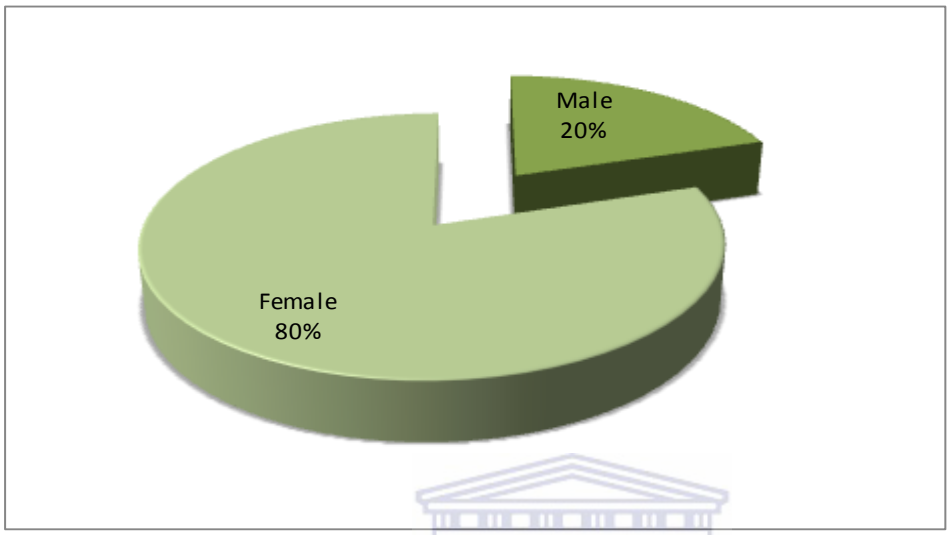
Zezza, A. & Tasciotti, L., 2010. Urban agriculture, poverty, and food security: Empirical evidence from a sample of developing countries. *Food Policy,* 35(4), 265-273.

Zhou, Z., 2010. Achieving food security in China: Past three decades and beyond. *China Agricultural Economic Review,* 2(3), 251-275.

ANNEXURES

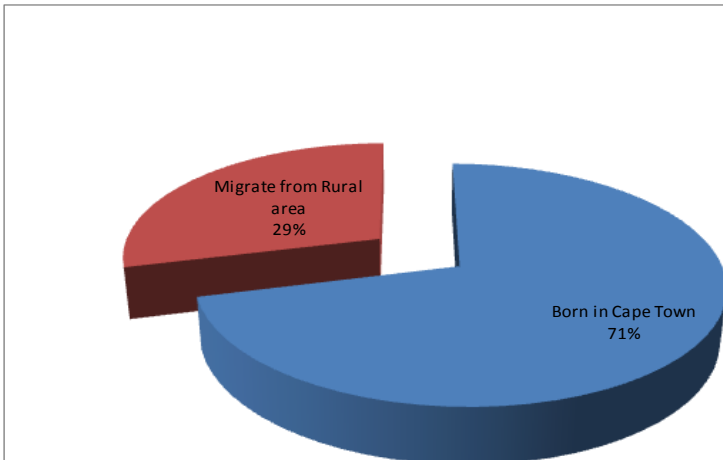
Annexure 4: PRESENTATION OF QUANTITATIVE RESEARCH RESULTS

Annexure 4.1: Gender of Respondents



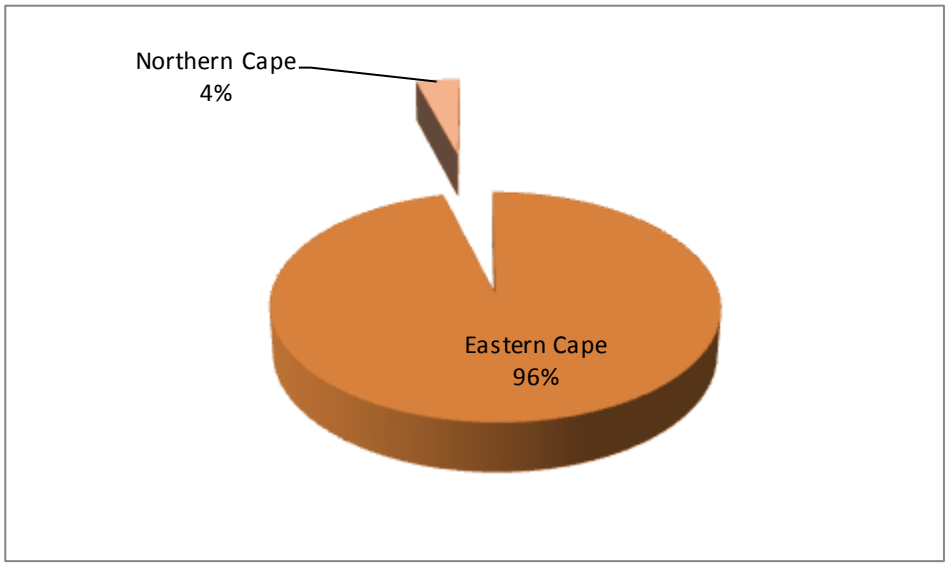
Source: Author's compilation based on field survey 2014.

Annexure 4.2: Migration from Rural Areas - Urbanisation



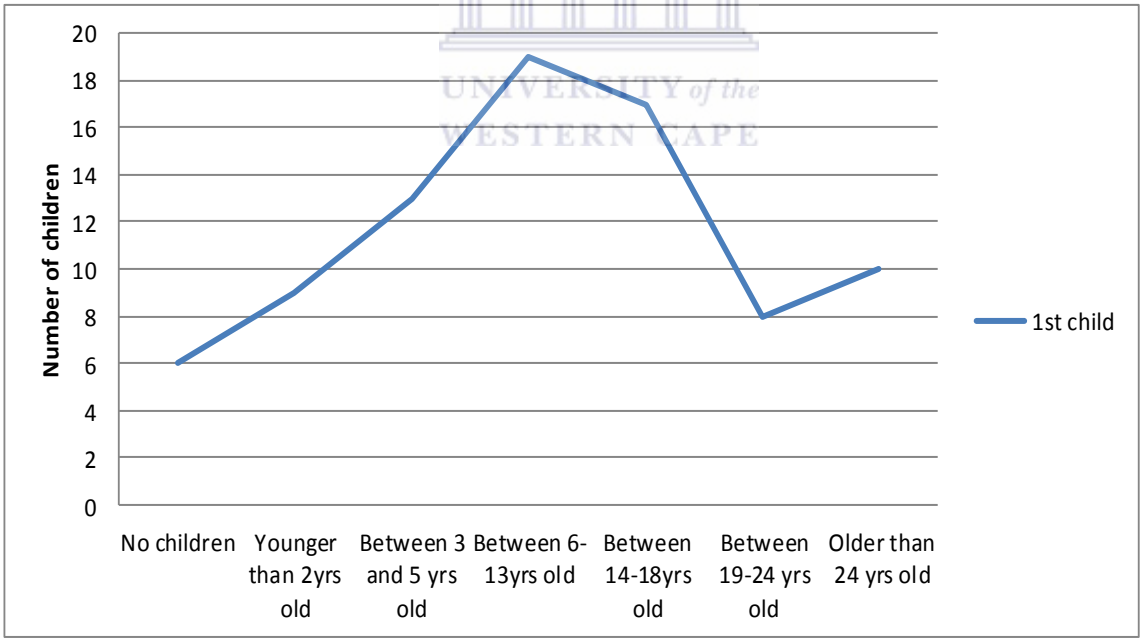
Source: Author's compilation based on field survey 2014.

Annexure 4.3: Province migrated from



Source: Author's compilation based on field survey 2014.

Annexure 4.4: Age of first child in Household



Source: Author's compilation based on field survey 2014.

Annexure 4.5: Model to determine level of Food security

(see Table 2.1: Level of Food security**)**

Level of Food Security	**Definition**	**Evaluate level of food security (**Universal Household Food insecurity measurement tool)
High food security	Households regularly having adequate food without difficulties.	How often households consume a balanced meal. How often households worry that they would not have enough food. Lost weight because of a lack of food.
Marginal food security	Households sometimes having difficulties to adequate food or worry that they might not have enough food. However, the quality and variety of their food intake has not substantially reduced.	
Low level food security	The quality and variety of household's intake are reduced, but quantity of food intake and normal eating patterns are not substantially reduced.	
Very low food security	The quantity of the food intake and normal eating patterns are disrupted at certain times of the year. This can be due to access to regular adequate nutritious meals.	

Source: Author's compilation based on Labadarios, et al. (2009).

Annexure 4.6: Determine food security levels of households

(see Table 4.4: Experience and conditions indicating food insecurity)

How food secure is household?	Percent (%) 1st choice		Percent (%) 2nd choice
Did you worry at any time that food will run out?	73.49		4.76
Could not afford a balanced meal	4.82		30.95
Cut size of meal or skipped a meal	6.02		19.05
Ate less because of a lack of food	7.23		30.95
Cut or skipped meal in past 3 months	3.61		2.38
Did not eat for a whole day	1.20		7.14
Lost weight due to not eating	1.20		4.76

Source: Author's compilation based on field survey, 2014.

Annexure 1: Research Questionnaire: Community members

INSTITUTE FOR SOCIAL DEVELOPMENT

UNIVERSITY OF THE WESTERN CAPE

PRIVATE BAG X 17

BELLVILLE, 7535

TEL: 021 959 3858

Dear Sir/Madam

Re: Questionnaire for Research on the relationship between Urban Food Gardens and Food Security: Case study of Ward 51, Langa

I am currently a final year Masters in Development Studies student at the University of the Western Cape busy with my thesis on the relationship between Urban Food Gardens and Food Security. I have chosen Ward 51 in Langa, as a case study for my thesis.

As a community member of Ward 51, I would appreciate it if you would voluntarily partake in the study and complete the attached research questionnaire.

Please note that all information will be treated with strict confidentiality.

I appreciate your time and patience to complete the questionnaire.

I thank you.

Yours sincerely

---------- ----------

Ms Freda Philander — Researcher

Dr A. Karriem — Supervisor

RESEARCH QUESTIONNAIRE ON THE IMPACT OF URBAN FOOD GARDENS ON FOOD SECURITY

The purpose of the Research Questionnaire is to assess the impact that the urban food gardens in Ward 51, Langa, have on Food Security. Please answer the questions without hesitation.

Kindly CIRCLE your answer

Purpose: Urbanisation: To determine of you were born in Cape Town or moved to Cape Town.

Born in Cape Town	**1**	**Migrated from rural community to Cape Town**	**2**
From where did you migrate to Cape Town:			

SECTION A: DEMOGRAPHIC INFORMATION

Tell us more about yourself and your household.

1. Age:

Up to 18	**1**	**41-45**	**5**
19 -25	**2**	**46-50**	**6**
26-34	**3**	**51-60**	**7**
35-40	**4**	**Above 60**	**8**

2. Gender:

Male	**1**	**Female**	**2**

3. Educational status

No formal education	**1**
Primary school	**2**
Secondary/High school	**3**
Matric (Grade 12)	**4**
College Education (FET college)	**5**
Tertiary education (University)	**6**

4. Employment status

Professional: Own business (spaza shop; other)	**1**	**Employed in Urban food gardens project directly or indirectly**	**5**
Professional: Salaried employee (e.g. teacher; clerk; manager; etc.)	**2**	**Unemployed**	**6**
Skilled worker (e.g. Technician, Mechanical; other)	**3**	**Other:**	**7**
Domestic worker or unskilled Labour	**4**		

5. What is your source of income?

Full time employed	**1**	**Part time employment/Casual**	**3**
Family members	**2**	**Contract worker**	**4**
Social grants: **Pension:** **Disability:** **Child Support:**	**5** **5.1** **5.2** **5.3**	**Other: Specify?**	**6**

6. Monthly income

Less than R300	**1**	**Between R1600 and R2000**	**5**
Between R300 and R800	**2**	**Between R2000 and R2500**	**6**
Between R 800 and R 1200	**3**	**Between R 2500 and R 3000**	**7**
Between R 1200 and R 1600	**4**	**More than R 3000**	**8**

7. How much of your budget do you spend on buying food?

Less than 20%	**1**	**Between 20% and 30 %**	**3**
Between 30% and 40%	**2**	**More than 40%**	**4**

8. How many people are in your household?

1-2	**1**	**5-6**	**3**
3-4	**2**	**More than 6**	**4**

9. What is the age group of the children in your household?

Younger than 2 years old	**1**	**14-18 years old (Secondary/High School)**	**4**
Between 3 and 5 years old	**2**	**19 -24 years old**	**5**
6-13 years (Primary school)	**3**	**Older than 24 years**	**6**

SECTION B: URBAN FOOD GARDENS

We would like to know the contribution, if any, of the Urban Food Gardens on your household.

10. Do you know about the Urban Food Garden projects in your community?

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

11. Do you benefit from the Urban Food Gardens project?

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

12. If no, what is the reason for not benefitting from the Urban Food Gardens?

Too much bureaucracy (government systems)	**1**	**You need to know someone**	**5**
It is only for the very poor	**2**	**I am not so under-privileged**	**6**
I am too proud to ask for food	**3**	**Other: Specify:**	**7**
I do not have money to buy vegetables	**4**	**No knowledge**	**8**

13. If yes, in what sense did you benefit from the Urban Food Gardens?

Improve your financial situation	**1**	**Improve your health**	**5**
Provide food to your household	**2**	**Create more independence**	**6**
Create employment	**3**	**Improve your knowledge in urban gardening**	**7**
Improve your quality of life	**4**	**Other: Specify:**	**8**

14. Do you include the proceeds of the Urban Food Gardens in your daily meals?

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

15. Which products would you buy on a regular basis from Urban Food Gardens?

Potatoes	**1**	**Mealies**	**5**
Carrots	**2**	**Beetroot**	**6**
Spinach	**3**	**Sweet potatoes**	**7**
Pumpkin	**4**	**Other: Specify:**	**8**

16. Do you have your own food garden at home?

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

If Yes, Answer Questions 17-21.

If No, Answer Questions 22-24.

17. What do you produce?

Potatoes	**1**	**Mealies**	**5**
Carrots	**2**	**Beetroot**	**6**
Spinach	**3**	**Sweet potatoes**	**7**
Pumpkin	**4**	**Other: Specify:**	**8**

18. How do you support your own food garden?

Own income	**1**	**Social grant**	**3**
Stipend received from food gardens project	**2**	**Other: Specify:**	**4**

19. What do you do with the produce?

Food for your family	**1**	**Sell to neighbours and friends**	**2**

20. Would you like to extend your food garden?

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

21. If yes, what would you require to extend your food garden?

Land	**1**	**Seedlings**	**4**
Equipment	**2**	**Financial Support**	**5**
Water	**3**	**Other: Specify:**	**6**

22. Would you like to plant your own vegetables and fruit?

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

23. If yes, what do you require to start-up an urban food garden at home?

Land	**1**	**Water**	**4**
Equipment	**2**	**Funding/Financial Support**	**5**
Seedlings	**3**	**Other: Specify:**	**6**
Training	**7**		

24. If no, what is the reason?

Health	**1**	**No knowledge of gardening**	**4**
Time	**2**	**Other: Specify:**	**5**
Not interested	**3**	**No land**	**6**

SECTION C: LEVEL OF FOOD SECURITY

We would like to determine the level of food security of your household.

25. What is your source of food?

Buy at the supermarket/local shops	**1**	**Community feeding schemes**	**5**
Food from neighbours	**2**	**Community Urban Food Garden**	**6**
Food from family	**3**	**Food from neighbours**	**7**
Grow own fruit/vegetables	**4**		

26. How food secure is your household? [8] If more than 1 is applicable, kindly indicate in descending order.

Did you at any time worry that your food will run out?	**1**	**Cut or skipped a meal in the past 3 months**	**5**
Could not afford a balanced meal	**2**	**Did not eat for a whole day**	**6**
Cut size of meal or skipped a meal	**3**	**Lost weight due to not eating**	**7**
Ate less than what you should because of a lack of food	**4**	**Did not eat for a whole day in the past 3 Months**	**8**

[8] **(Source: Calculated by ERS using data from December 2009 Current Population Survey Food Security Supplement)**

27. What food is included in your daily diet?

Bread	**1**	**Meat**	**4**
Maize	**2**	**Fruit**	**5**
Vegetables	**3**	**Other. Specify:**	**6**

SECTION D: LIVELIHOOD STRATEGIES

In the following section we would like to see what coping and livelihood strategies you adopt.

28. What capabilities do you have that you use to be more food secure?

Knowledge	**1**	**Innovation/Planning**	**4**
Skills	**2**	**Good health**	**5**
Will-power	**3**	**Courage**	**6**

29. What social resources do you have that you use to be more food secure?

Family	**1**	**Associations (clubs)**	**4**
Friends	**2**	**Neighbours**	**5**
None- provide own food	**3**	**Other**	**6**

30. What economic resources do you have that you use to be more food secure?

Income from full-time work	**1**	**Income from part-time work**	**3**
Social grant	**2**	**Other: Specify:**	**4**

31. What livelihood strategies did your household adopt to be more food secure?

Get food from Urban Food Gardens	**1**	**Professional/Business**	**6**
Informal selling (clothes, etc)	**2**	**Small livestock (chickens, sheep)**	**7**
Work part-time/contract	**3**	**Fruit and vegetable trading**	**8**
Get food from Feeding schemes project	**4**	**No work/dependant**	**9**
Labourer	**5**	**Government service job**	**10**
		Social Grant	**11**

32. What are your livelihood outcomes? Indicate in descending order.

Improve self-esteem	**1**	**Improve health**	**4**
More income	**2**	**Improve food security**	**5**
Increase well-being	**3**	**Reduce vulnerability**	**6**

Thank you for taking your time to complete this questionnaire.

Annexure 2: Semi-structured interviews with key stakeholders in urban gardens project: (Department of Social Development and Department of Agriculture)

INSTITUTE FOR SOCIAL DEVELOPMENT

UNIVERSITY OF THE WESTERN CAPE

PRIVATE BAG X 17

BELLVILLE, 7535

TEL: 021 959 3858

Dear Sir/Madam

Re: Semi-structured interviews on the relationship between Urban Food Gardens and Food Security: Case study of Ward 51, Langa

I am currently a final year Masters in Development Studies student at the University of the Western Cape busy with my thesis on the relationship between Urban Food Gardens and Food Security. I have chosen Ward 51, Langa, as a case study for my thesis.

As a key stakeholder in the Urban Rural Development Capacity Building Project (URDCBP) in Langa, I would appreciate it if you would voluntarily partake in the study and participate in the interview.

Please note that all information will be treated with strict confidentiality.

I appreciate your time and patience to participate in this one-on-one interview.

I thank you.

Yours sincerely

---------- ----------

Ms Freda Philander Dr A. Karriem

Researcher Supervisor

SEMI-STRUCTURED INTERVIEW ON THE IMPACT OF URBAN FOOD GARDENS ON FOOD SECURITY

The purpose of the Semi-structured interview is to assess the impact that the urban food garden projects in the City of Cape Town have on Food Security. Please answer the questions without hesitation.

1. Do you intend to fund more urban food gardens in communities?
2. What is required for NPOs to initiate urban food gardens in their communities?
3. Would you fund backyard urban food gardens too and what are the requirements to receive funding?
4. What other initiatives do you plan to improve food security in the households?
5. What is your impression and impact of urban food gardens in the Western Cape on food security within the communities?
6. What is your opinion of the urban food gardens project in Ward 51 Langa?
7. What is the lesson learnt from the urban food garden projects?
8. Does the government meet the objectives of the policy to reduce food security?
9. What do you think the government could do more to meet the objective for households and communities to be more food secure?

Thank you for taking your time to participate in the discussion.

Annexure 3: Focus Group Discussions with Beneficiaries and Community members, Ward 51, Langa

INSTITUTE FOR SOCIAL DEVELOPMENT

UNIVERSITY OF THE WESTERN CAPE

PRIVATE BAG X 17

BELLVILLE, 7535

TEL: 021 959 3858

Dear Sir/Madam

Focus Group Discussions on the relationship between Urban Food Gardens and Food Security: Case study of Ward 51, Langa

I am currently a final year Masters in Development Studies student at the University of the Western Cape busy with my thesis on the relationship between Urban Food Gardens and Food Security. I have chosen Ward 51, Langa, as a case study for my thesis.

As a key stakeholder in the Urban Rural Development Capacity Building Project (URDCBP) in Langa, I would appreciate it if you would voluntarily partake in the study and participate in the interview.

Please note that all information will be treated with strict confidentiality.

I appreciate your time and patience to participate in this one-on-one interview.

I thank you.

Yours sincerely

---------- ----------

Ms Freda Philander Dr A. Karriem

Researcher Supervisor

FOCUS GROUP DISCUSSIONS ON THE IMPACT OF URBAN FOOD GARDENS ON FOOD SECURITY

The purpose of the Focus Group Discussions is to assess the impact that the urban food garden projects in the City of Cape Town have on Food Security. Please answer the questions without hesitation.

1. What do you understand about food security?
2. What do you think of the Urban Garden Projects?
3. How did you learn about the project?
4. What is your reason for participating/initiating/funding it?
5. What are the strengths and weaknesses of the Urban Food Garden Projects?
6. How do you think it can be improved or how can the problems be resolved?
7. What would you like to change about the project and why?
8. What do you think would ensure the sustainability of the project?
9. How important is the funding from the government for this project?
10. What other government support is given and what more is required?
11. In which way do you think the Urban Food Gardens improve the health of the community?

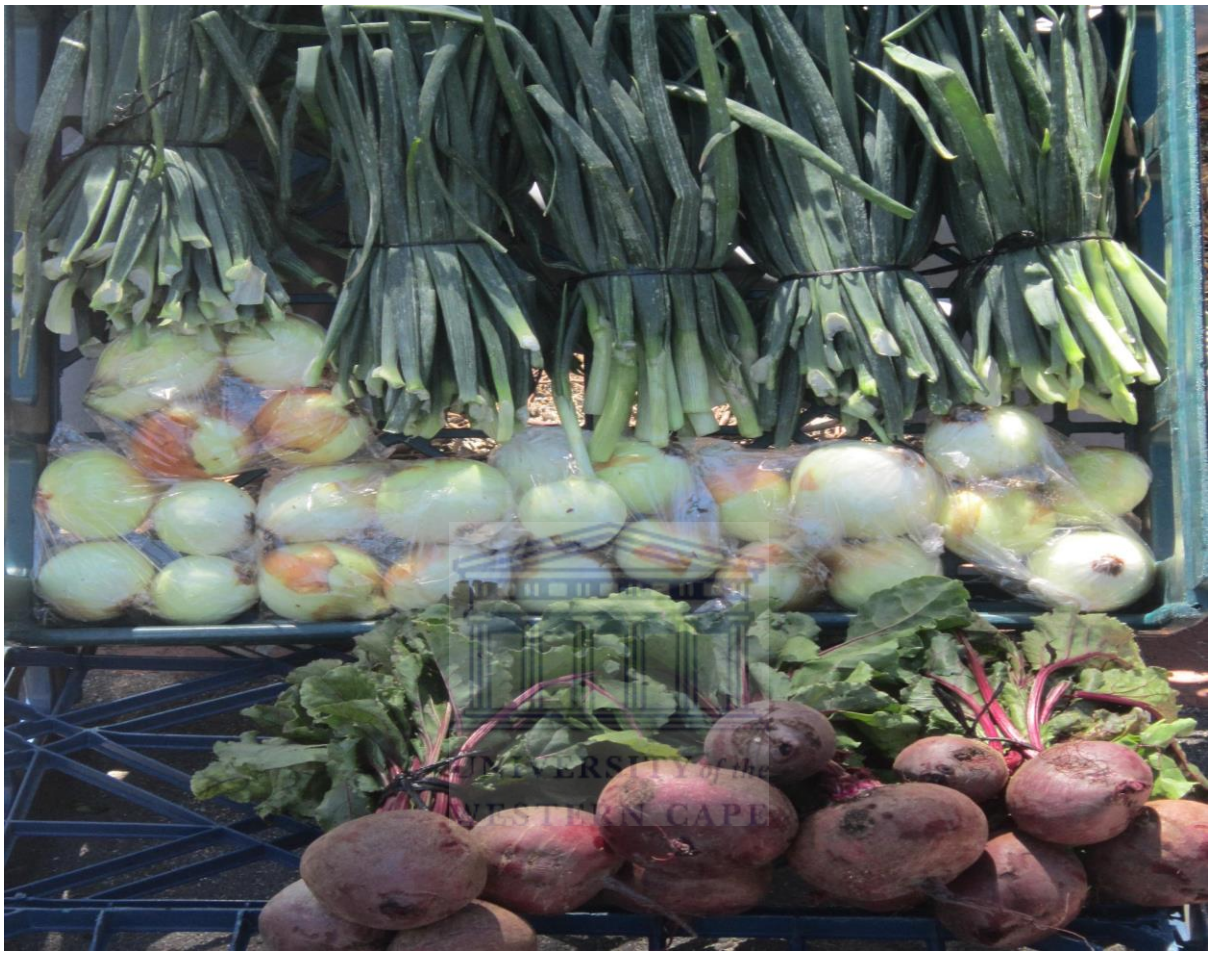
Thank you for taking your time to participate in the discussion.

Annexure 5: Pictures of Urban Food Gardens in Ward 51 in Langa, Cape Town

The pictures below depict the urban food gardens in Ward 51, Langa. Some of the vegetables that they plant include spinach, beetroot, onions, cabbage and carrots.


18/10/2013

The pictures below reflect the products that were sold within the community.




05/12/2014


05/12/201

Source: Photographs taken by Author based on field study, 2014.

Annexure 6: STATA DO-FILE

use "C:\Users\admin\Downloads\Freda 18March21h00.dta"

log using Fredafinal.log

des

label define BORNINCAPETOWN 1 "Born in Cape Town" 2 "Migrate from Rural area"

import excel "C:\Users\rhosadear\Documents\UWC\Development Studies\Mini thesis\Data collection\Questionnaires data collection FULL REPORT 12 Feb 2015.xlsx", sheet("Full report") firstrow

*Label and apply Values to categorical variables of questionnaire***

label define BORNINCAPETOWN 1 "Born in Cape Town" 2 "Migrate from Rural area"

tab BORNINCAPETOWN

label define Provincemigrated 1 "Eastern Cape" 2 "Northern Cape"

tab Provincemigrated

label define AGE 1 "0 to 18yrs" 2 "19-25yrs" 3 "26-34yrs" 4 "35-40yrs" 5 "41-45yrs" 6 "46-50yrs" 7 "51-60yrs" 8 "Above 60yrs"

tab AGE

label define GENDER 1 "Male" 2 "Female"

tab Gender

label define EDUCATIONALSTATUS 1 "No formal education" 2 "Primary school" 3 "Secondary school" 4 "Matric(Grade 12)" 5 "College education" 6 "University education"

label define EMPLOYMENTSTATUS 1 "Own Business" 2 "Professional" 3 "Skilled worker" 4 "Unskilled worker" 5 "Employed in urban food gardens" 6 "Unemployed" 7 "Other"

** Gender distribution by employment status, age by employment status, source of income, and educational status and monthly income***

tab Gender EMPLOYMENTSTATUS

tab EDUCATIONALSTATUS

tab EMPLOYMENTSTATUS

tab MONTHLYINCOME

tab SourceofIncome

Analysis of monthly income by empolyment status, number of people in the household,*

tab MONTHLYINCOME EMPLOYMENTSTATUS

tab MONTHLYINCOME PEOPLEINHOUSEHOLD

label define MONTHLYINCOME 1 "Less than R300" 2 "Between R300 and R800" 3 "Between R800 and R1200" 4 "Between R1200 and R1600" 5 "Between R1600 and R2000" 6 "Between R2000 and R2500" 7 "Between R2500 and R3000" 8 "More than R3000", replace

label define BUDGETSPENDONFOOD 1 "Less than 20%" 2 "Between 30% and 40%" 3 "Between 20% and 30%" 4 "More than 40%"

label define PEOPLEINHOUSEHOLD 1 "1-2" 2 "3-4" 3 "5-6" 4 "More than 6"

tab PEOPLEINHOUSEHOLD

label define KNOWABOUTURBANFOODGARDENSPROJECT 1 "Yes" 2 "No"

label define BENEFITFROMURBANFOODGARDENPROJEC 1 "Yes" 2 "No"

label define PRODUCEINCLUDEDINDAILYMEALS 1 "Yes" 2 "No"

label define OWNFOODGARDENSATHOME 1 "Yes" 2 "No"

label define SUPPORTFOODGARDENS 1 "Own income" 2 "Stipend from food gardens project" 3 "Social grant" 4 "Other"

label define PURPOSEOFPRODUCE 1 "Food for family" 2 "Sell to neighbours and friends"

label define EXTENDFOODGARDEN 1 "Yes" 2 "No"

label define DESIRETOURBANFOODGARDEN 1 "Yes" 2 "No"

label values BORNINCAPETOWNMIGRATE BORNINCAPETOWN

label values Provincemigratedfrom Provincemigrated

label values AGE AGE

label values GENDER GENDER

label values EDUCATIONALSTATUS EDUCATIONALSTATUS

label values EMPLOYMENTSTATUS EMPLOYMENTSTATUS

label values MONTHLYINCOME MONTHLYINCOME

label values BUDGETSPENDONFOOD BUDGETSPENDONFOOD

label values PEOPLEINHH PEOPLEINHOUSEHOLD

label values KnowaboutUFGproject KNOWABOUTURBANFOODGARDENSPROJECT

label values BenefitforUFGproject BENEFITFROMURBANFOODGARDENPROJEC

label values Proceedsincludedindailymeals PRODUCEINCLUDEDINDAILYMEALS

label values Ownfoodgarden OWNFOODGARDENSATHOME

label values Whatproduce PURPOSEOFPRODUCE

label values ExtendFG EXTENDFOODGARDEN

label values DesiretohaveownFG DESIRETOURBANFOODGARDEN

encode SupportFG, gen (SupportFG1)

recast byte SupportFG1

label values Provincemigratedfrom Provincemigrated

label define SourceofIncome 1 "Full time employed" 2 "Family members" 3 "Casual" 4 "Contract worker" 5 "Social grant Pension" 6 "Tenants" 7 "Social grant Disability" 8 "Social grant Child Support"

label values SOURCEOFINCOME SourceofIncome

label define Othersourceofincome 6 "Tenants" 8 "Social grant Child support"

label values OthersourceofIncome Othersourceofincome

label define Agegroupofchildreninhousehold 1 "Younger than 2yrs old" 2 "Between 3 and 5 yrs old" 3 "Between 6-13yrs old" 4 "Between 14-18yrs old" 5 "Between 19-24 yrs old" 6 "Older than 24 yrs old"

tab Agegroupofchildreninhousehold

label values AGEGROUPOFCHILDRENINHH Agegroupofchildreninhousehold

label define Ageof2ndchild 1 "Younger than 2yrs old" 2 "Between 3 and 5yrs old" 3 "6-13yrs old" 4 "14-18yrs old" 5 "19-24yrs old" 6 "Older than 24yrs old"

label values Ageof2ndchild Ageof2ndchild

label define Ageof3rdchild 1 "Younger than 2yrs old" 2 "3-5yrs old" 3 "6-13 yrs old" 4 "14-18yrs old" 5 "19-24 yrs old" 6 "Older than 24 yrs old"

label values Ageof3rdchild Ageof3rdchild

label define Ageof4thchild 4 "14-18yrs" 5 "19-24yrs" 6 "Older than 24yrs"

label values Ageof4thchild Ageof4thchild

label define Reasonfornotbenefitting 1 "Too much bureaucracy" 2 "Its only for the very poor" 3 "I am too proud to ask for food" 4 "I dont have money to buy vegetables" 5 "You need to know someone" 6 "I am not so under-privileged" 7 "Its only for seniors" 8 "I have no knowledge of the Urban Food gardens"

label define Secondreasonfornotbenefiting 3 "I am too proud to ask for food" 4 "I dont have money to buy vegetables" 6 "I am not so under-priviledge"

label define Thirdreasonfornotbenefiting 4 "I dont have money to buy vegetables"

label define BenefitfromUrbanfoodgardens 1 "Improve your financial situation" 2 "Provide food to your household" 3 "Create employment" 4 "Improve your quality of life" 5 "Improve your health" 6 "Create more independence" 7 "Improve your knowledge in urban gardening" 8 "Other"

label values BenefitfromUrbanFoodGardens BenefitfromUrbanfoodgardens

label define Secondbenefitfromurbanfoodgarden 2 "Provide food to your household" 3 "Create employment" 4 "Improve your quality of life" 5 "Improve your health" 6 "Create more independence" 7 "Improve your knowledge in urban gardening" 8 "Other"

label define Thirdbenefitfromurbanfoodgardens 2 "Provide food to your household" 3 "Create employment" 4 "Improve your quality of life" 5 "Improve your health" 6 "Create more independence" 7 "Improve your knowledge in urban gardening" 8 "Other"

label define Fourthbenefitfromurbanfoodgarden 4 "Improve your quality of life" 5 "Improve your health" 6 "Create more independence" 7 "Improve your knowledge in urban gardening" 8 "Other"

label define Fifthbenefitfromurbanfoodgardens 4 "Improve your quality of life" 5 "Improve your health" 6 "Create more independence" 7 "Improve your knowledge in urban gardening" 8 "Other"

label define Sixthbenefitfromurbanfoodgardens 6 "Create more independence" 7 "Improve your knowledge in urban gardening"

label define Seventhbenefitfromurbanfoodgarde 6 "Create more independence" 7 "Improve your knowledge in urban gardening"

label define Productboughtregularly 1 "Potatoes" 2 "Carrots" 3 "Spinach" 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Butternut" 11 "Turnips" 12 "Herbs"

label values Productwouldyoubuyregular Productboughtregularly

label define Secondproductboughtregularly 1 "Potatoes" 2 "Carrots" 3 "Spinach" 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Butternut" 11 "Turnips" 12 "Herbs"

label values ndProducttobuy Secondproductboughtregularly

label define Thirdproductboughtregularly 1 "Potatoes" 2 "Carrots" 3 "Spinach" 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Butternut" 11 "Turnips" 12 "Herbs"

label values rdProducttobuy Thirdproductboughtregularly

label define Fourthproductboughtregularly 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onions" 9 "Cabbage" 10 "Butternut" 11 "Turnips" 12 "Herbs"

label values thProducttobuy Fourthproductboughtregularly

label define Fifthproductboughtregularly 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Butternut" 11 "Turnips" 12 "Herbs"

label define Produceathome 1 "Potatoes" 2 "Carrots" 3 "Spinach" 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Celery" 11 "Peas" 12 "Cauliflower"

label values Whatdoyouproduce Produceathome

label define Secondproduceathome 1 "Potatoes" 2 "Carrots" 3 "Spinach" 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Celery" 11 "Peas" 12 "Cauliflower"

label values ndproductproduce Secondproduceathome

label define Thirdproduceathome 3 "Spinach" 4 "Pumpkin" 5 "Mielies" 6 "Beetroot" 7 "Sweet potatoes" 8 "Onion" 9 "Cabbage" 10 "Celery" 11 "Peas" 12 "Cauliflower"

label values rdproductproduce Thirdproduceathome

label define Fourthproduceathome 7 "Sweet potatoes"

label values thproductproduce Fourthproduceathome

label define Requirementstoextendfoodgarden 1 "Land" 2 "Equipment" 3 "Water" 4 "Seedlings" 5 "Financial support" 6 "Fertilizer"

label define Secondrequirementforextendoffood 1 "Land" 2 "Equipment" 3 "Water" 4 "Seedlings" 5 "Financial Support" 6 "Fertilizer"

label define Thirdrequirementtoextendfoodgard 1 "Land" 2 "Equipment" 3 "Water" 4 "Seedlings" 5 "Financial support" 6 "Fertilizer"

label define Fourthrequirementtoextendfoodgar 4 "Seedlings" 5 "Financial support" 6 "Fertilizer"

label define Requirementstostartup 1 "Land" 2 "Equipment" 3 "Seedlings" 4 "Water" 5 "Financial support" 6 "Fertilizer" 7 "Training"

label values ID Requirementstostartup

label values ID

label values ReasonfornotbenefitingfromUr2 Reasonfornotbenefitting

label values ndreasonfornotbenefitingfor2 Secondreasonfornotbenefiting

label values rdreasonfornotbenefitingfor2 Thirdreasonfornotbenefiting

label values ndBenefitfromUrbanFoodGarde2 Secondbenefitfromurbanfoodgarden

label values rdBenefitfromUrbanFoodGarde2 Thirdbenefitfromurbanfoodgardens

label values thBenefitfromUrbanFoodGarde2 Fourthbenefitfromurbanfoodgarden

label values AG Fifthbenefitfromurbanfoodgardens

label values AH Sixthbenefitfromurbanfoodgardens

label values AI Seventhbenefitfromurbanfoodgarde

label values AN Fifthproductboughtregularly

label values Requirementstoextendfoodgarde2 Requirementstoextendfoodgarden

label values ndRequirementstoextendfoodg2 Secondrequirementforextendoffood

label values rdRequirementstoextendfoodg2 Thirdrequirementtoextendfoodgard

label values thRequirementstoextendfoodg2 Fourthrequirementtoextendfoodgar

label values Requirementstostartupfoodgar2 Requirementstostartup

label define SecondRequirementtostartupfoodga 1 "Land" 2 "Equipment" 3 "Seedlings" 4 "Water" 5 "Financial Support" 6 "Fertilizer" 7 "Training"

label values ndRequirementstostartupfood2 SecondRequirementtostartupfoodga

label define Thirdreasonforstartupfoodgardens 3 "Seedlings" 4 "Water" 5 "Financial support" 6 "Fertilizer" 7 "Training"

label values rdRequirementstostartupfood2 Thirdreasonforstartupfoodgardens

label define Fourthreasonforstartupfoodgarden 4 "Water" 5 "Financial support" 6 "Fertilizer" 7 "Training"

label values thRequirementstostartupfood2 Fourthreasonforstartupfoodgarden

label values BA Fifthreasonforstartupfoodgardens

label define Fifthreasonforstartupfoodgardens 5 "Financial support" 6 "Fertilizer" 7 "Training"

label define Sixthrequirementsforstartupfoodg 6 "Fertilizer" 7 "Training"

label values BB Sixthrequirementsforstartupfoodg

label define Reasonfornodesiretohavefoodgarde 1 "Health" 2 "Time" 3 "Not interested" 4 "No knowledge" 5 "Other" 6 "No land"

label values Reasonfornodesiretohaveafo2 Reasonfornodesiretohavefoodgarde

label define Secondreasonfornodesireforurbanf 1 "Health" 2 "Time" 3 "Not interested" 4 "No knowledge" 5 "Other" 6 "No land"

label values ndReasonfornodesiretohave2 Secondreasonfornodesireforurbanf

label define Sourceoffood 1 "Buy at local shops" 2 "Food from neighbours" 3 "Food from family" 4 "Grow own fruit/vegetables" 5 "Community feeding schemes" 6 "Community urban food garden" 7 "Food from neighbours"

label values Sourceoffood Sourceoffood

label define Secondsourceoffood 1 "Buy at local shops" 2 "Food from neighbours" 3 "Food from family" 4 "Grow own fruit/vegetables" 5 "Community feeding schems" 6 "Community urban food gardens" 7 "Food from neighbours"

label values ndSourceoffood Secondsourceoffood

label define Thirdsourceoffood 1 "Buy from local shops" 2 "Food from neighbours" 3 "Food from family" 4 "Grow own fruit/vegetables" 5 "Community feeding schemes" 6 "Community urban food garden" 7 "Food from neighbours"

label values rdSourceoffood Thirdsourceoffood

label define Fourthsourceoffood 5 "Community feeding schemes" 6 "Community urban food gardens"

label values thSourceoffood Fourthsourceoffood

label define Howfoodsecureishousehold 1 "Did not worry that food will run out" 2 "Could not afford a balanced meal" 3 "Skipped meals " 4 "Ate less because of lack of food" 5 "Skipped meal in past 3 months" 6 "Did not eat for a whole day" 7 "Lost weight due to not eating" 8 "Did not eat for whole day in past 3 months"

label values HowfoodsecureisHH Howfoodsecureishousehold

label define Secondreasonforfoodsecureofhouse 1 "Did worry that food will run out" 2 "Could not afford a balanced meal" 3 "Skipped a meal" 4 "Ate less because of lack of food" 5 "Skipped meal in past 3 months" 6 "Did not eat for a whole day" 7 "Lost weight due to not eating" 8 "Did not eat for whole day in past 3 months"

label values ndreasonHowfoodsecureisHH Secondreasonforfoodsecureofhouse

label define Thirdreasonforfoodsecureofhouseh 1 "Did worry that food will run out" 2 "Could not afford a balanced meal" 3 "Skipped a meal" 4 "Ate less because of lack of food" 5 "Skipped a meal in past 3 months" 6 "Did not eat for a whole day" 7 "Lost weight due to not eating" 8 "Did not eat for a whole day in past 3 months"

label values rdreasonHowfoodsecureisHH Thirdreasonforfoodsecureofhouseh

label define Fourthreasonforfoodsecureofhouse 4 "Ate less because of lack of food" 5 "Skipped a meal in past 3 months" 6 "Did not eat for a whole day" 7 "Lost weight due to not eating" 8 "Did not eat for a whole day in past 3 months"

label values threasonHowfoodsecureisHH Fourthreasonforfoodsecureofhouse

label define Fifthreasonforfoodsecureofhouseh 5 "Skipped a meal in past 3 months" 6 "Did not eat for a whole day" 7 "Lost weight due to not eating" 8 "Did not eat for a whole day in past 3 months"

label values BM Fifthreasonforfoodsecureofhouseh

label define Sixthreasonforfoodsecureofhouseh 7 "Lost weight due to not eating"

label values BN Sixthreasonforfoodsecureofhouseh

label values FoodIncludedindailydiet Foodincludedindailydiet

label values ndchoiceofFoodIncludedinda2 Secondchoiceoffoodincluded

label values rdchoiceofFoodIncludedinda2 Thirdchoiceoffoodincluded

label values thchoiceofFoodIncludedinda2 Fourthchoiceoffoodincluded

label define Fifthchoiceoffoodincluded 5 "Fruit" 6 "Sour Milk" 7 "Eggs" 8 "Rice"

label values BS Fifthchoiceoffoodincluded

label define Foodincludedindailydiet 1 "Bread" 2 "Maize" 3 "Vegetables" 4 "Meat" 5 "Fruit" 6 "Sour Milk" 7 "Eggs" 8 "Rice"

label define Secondchoiceoffoodincluded 1 "Bread" 2 "Maize" 3 "Vegetables" 4 "Meat" 5 "Fruit" 6 "Sour Milk" 7 "Eggs" 8 "Rice"

label define Thirdchoiceoffoodincluded 1 "Bread" 2 "Maize" 3 "Vegetables" 4 "Meat" 5 "Fruit" 6 "Sour Milk" 7 "Eggs" 8 "Rice"

label define Fourthchoiceoffoodincluded 1 "Bread" 2 "Maize" 3 "Vegetables" 4 "Meat" 5 "Fruit" 6 "Sour Milk" 7 "Eggs" 8 "Rice"

label define Capabilitiestobemorefoodsecure 1 "Knowledge" 2 "Skills" 3 "Will power" 4 "Planning" 5 "Good health" 6 "Courage"

label values Capabilitiestobemorefoodsecu2 Capabilitiestobemorefoodsecure

label define SecondchoiceCapabilies 1 "Knowledge" 2 "Skills" 3 "Will power" 4 "Planning" 5 "Good health" 6 "Courage"

label values ndchoiceCapabilitiestobemor2 SecondchoiceCapabilies

label define ThirdchoiceCapabilities 1 "Knowledge" 2 "Skills" 3 "Will power" 4 "Planning" 5 "Good health" 6 "Courage"

label values rdchoiceCapabilitiestobemo2 ThirdchoiceCapabilities

label define FourthchoiceCapabilities 1 "Knowledge" 2 "Skills" 3 "Will power" 4 "Planning" 5 "Good health" 6 "Courage"

label values thchoiceCapabilitiestobemor2 FourthchoiceCapabilities

label define FifthchoiceCapabilities 5 "Good health" 6 "Courage"

label values BX FifthchoiceCapabilities

label define Socialresources 1 "Family" 2 "Friends" 3 "None-provide own food" 4 "Associations (Clubs)" 5 "Neighbours" 6 "Other"

label values Socialresourcestobemorefood2 Socialresources

label define SecondSocialResources 1 "Family" 2 "Friends" 3 "None-provide own food" 4 "Associations" 5 "Neighbours" 6 "Other"

label values ndchoiceSocialresourcestobe2 SecondSocialResources

label define ThirdSocialResources 3 "None-provide own food" 4 "Associations" 5 "Neighbours" 6 "Other"

label values rdchoiceSocialresourcestobe2 ThirdSocialResources

label values Economicresourcestobemoresec2 EconomicResources

label define EconomicResources 1 "Income from full time work" 2 "Social grant" 3 "Income from part time work" 4 "Mother's pension" 5 "Own business" 6 "Borrow from friends and family"

label define SecondEconomicResources 1 "Income from full time work" 2 "Social grant" 3 "Income from part time work" 4 "Mother's pension" 5 "Own business" 6 "Borrow from friends and family"

label values ndchoiceEconomicresourcesto2 SecondEconomicResources

label define ThirdEconomicResources 5 "Own business"

label values rdchoiceEconomicresourcesto2 ThirdEconomicResources

label define Livelihoodstrategiesadopted 1 "Get food from UFG" 2 "Informal selling" 3 "Contract" 4 "Get food from feeding scheme" 5 "Labourer" 6 "Professional" 7 "Small livestock" 8 "Fruit and vegetables trading" 9 "No work/dependant"save "C:\Users\rhosadear\Documents\UWC\Development Studies\Mini thesis\Data collection\Do file 12 Feb 2015.do"

label values ndBenefitfromUrbanFoodGarde2 Secondbenefitfromurbanfoodgarden

label values rdBenefitfromUrbanFoodGarde2 Thirdbenefitfromurbanfoodgardens

label define Thirdbenefitfromurbanfoodgardens 2 "Provide food to your household" 3 "Create employment" 4 "Improve your quality of life" 5 "Improve your health" 6 "Create more independence" 7 "Improve your knowledge in urban gardening" 8 "Other", replace

label values thBenefitfromUrbanFoodGarde2 Fourthbenefitfromurbanfoodgarden

label values AG Fifthbenefitfromurbanfoodgardens

label values AH Sixthbenefitfromurbanfoodgardens

label values AI Seventhbenefitfromurbanfoodgarde

label values AN Fifthproductboughtregularly

label values Requirementstoextendfoodgarde2 Requirementstoextendfoodgarden

label values ndRequirementstoextendfoodg2 Secondrequirementforextendoffood

label values rdRequirementstoextendfoodg2 Thirdrequirementtoextendfoodgard

label values thRequirementstoextendfoodg2 Fourthrequirementtoextendfoodgar

label values Requirementstostartupfoodgar2 Requirementstostartup

label define SecondRequirementtostartupfoodga 1 "Land" 2 "Equipment" 3 "Seedlings" 4 "Water" 5 "Financial Support" 6 "Fertilizer" 7 "Training"

label values ndRequirementstostartupfood2 SecondRequirementtostartupfoodga

label define Thirdreasonforstartupfoodgardens 3 "Seedlings" 4 "Water" 5 "Financial support" 6 "Fertilizer" 7 "Training"

label values rdRequirementstostartupfood2 Thirdreasonforstartupfoodgardens

label define Fourthreasonforstartupfoodgarden 4 "Water" 5 "Financial support" 6 "Fertilizer" 7 "Training"

label values thRequirementstostartupfood2 Fourthreasonforstartupfoodgarden

label values BA Fifthreasonforstartupfoodgardens

label define Fifthreasonforstartupfoodgardens 5 "Financial support" 6 "Fertilizer" 7 "Training"

label define Sixthrequirementsforstartupfoodg 6 "Fertilizer" 7 "Training"

label values BB Sixthrequirementsforstartupfoodg

label define Reasonfornodesiretohavefoodgarde 1 "Health" 2 "Time" 3 "Not interested" 4 "No knowledge" 5 "Other" 6 "No land"

label values Reasonfornodesiretohaveafo2 Reasonfornodesiretohavefoodgarde

label define Secondreasonfornodesireforurbanf 1 "Health" 2 "Time" 3 "Not interested" 4 "No knowledge" 5 "Other" 6 "No land"

label values ndReasonfornodesiretohave2 Secondreasonfornodesireforurbanf

```
/*Data Analysis*/

gen ufgbeneft=.

rename ufgbeneft ufgbeneft1stchoice

replace ufgbeneft1stchoice=1 if BenefitfromUrbanFoodGardens==1

replace ufgbeneft1stchoice=2 if  ndBenefitfromUrbanFoodGarde_2==1

label define BenefitfromUrbanfoodgardens 0 "No Benefit", add

tab ndBenefitfromUrbanFoodGarde_2

tab BenefitforUFGproject

codebook BenefitforUFGproject

tab BenefitforUFGproject BenefitfromUrbanFoodGardens

tab BenefitforUFGproject BenefitfromUrbanFoodGardens

gen Benefit1=  ndBenefitfromUrbanFoodGarde_2 + rdBenefitfromUrbanFoodGarde_2 +
thBenefitfromUrbanFoodGarde_2

tab Benefit1

sum Benefit1

ds

des Benefit1, detail

gen Ben1=.

replace Ben1=1 if ndBenefitfromUrbanFoodGarde_2==1 | rdBenefitfromUrbanFoodGarde_2==1 |
rdBenefitfromUrbanFoodGarde_2==1 |thBenefitfromUrbanFoodGarde_2

tab Ben1

tab  BenefitfromUrbanFoodGardens

tab  BenefitfromUrbanFoodGardens

tab  ndBenefitfromUrbanFoodGarde_2

gen varben1=.

tab BenefitfromUrbanFoodGardens, gen(benefits2)

tab benefits21

tab  benefits22

tab benefits23

rename benefits23 providefood
```

drop benefits21 benefits22 benefits24 benefits25 benefits26 benefits27

drop benefits28

tab ndBenefitfromUrbanFoodGarde_2, gen(choice)

tab choice2

tab providefood choice2

drop choice1 choice3 choice4 choice5 choice6

drop choice2

tab ndBenefitfromUrbanFoodGarde_2

label values ndBenefitfromUrbanFoodGarde_2 BenefitfromUrbanfoodgardens

tab ndBenefitfromUrbanFoodGarde_2

tab ndBenefitfromUrbanFoodGarde_2

tab ndBenefitfromUrbanFoodGarde_2, gen(secondbenefit)

drop secondbenefit2 secondbenefit3 secondbenefit4 secondbenefit5 secondbenefit6

tab secondbenefit1

tab secondbenefit1 providefood, chi ro

gen providfdall= providefood + secondbenefit1

tab providfdall

pwcorr HowfoodsecureisHH providfdall

tab HowfoodsecureisHH, gen(Hfoodsecure)

tab Hfoodsecure1

tab Hfoodsecure2

gen Hfoodsecure2P=Hfoodsecure3 + Hfoodsecure4 + Hfoodsecure5 + Hfoodsecure6 + Hfoodsecure7 + Hfoodsecure8

tab Hfoodsecure2P

tab ndreasonHowfoodsecureisHH

tab ndreasonHowfoodsecureisHH, gen(secondChoicHFS)

tab secondChoicHFS1

codebook secondChoicHFS1

drop secondChoicHFS1

gen secondChoicHFS7all= secondChoicHFS2+ secondChoicHFS3+ secondChoicHFS4+ secondChoicHFS5+ secondChoicHFS6+ secondChoicHFS7

tab secondChoicHFS7all

drop secondChoicHFS7 secondChoicHFS6 secondChoicHFS5 secondChoicHFS4 secondChoicHFS3 secondChoicHFS2 Hfoodsecure8 Hfoodsecure7 Hfoodsecure6 Hfoodsecure5 Hfoodsecure4 Hfoodsecure3 Hfoodsecure2 Hfoodsecure1

gen HfoodsecureAll= Hfoodsecure2P+ secondChoicHFS7all

tab HfoodsecureAll

tab HfoodsecureAll providefood, chi

tab HfoodsecureAll providefood, chi ro

regress HfoodsecureAll providefood

des

tab AGEGROUPOFCHILDRENINHH

tab Ageof2ndchild

tab Ageof3rdchild

tab Ageof4thchild

tab Ageof5thchild

tab HowfoodsecureisHH ndreasonHowfoodsecureisHH

tab HowfoodsecureisHH

tab ndreasonHowfoodsecureisHH

tab FoodIncludedindailydiet

tab ndchoiceofFoodIncludedinda_2

regress HowfoodsecureisHH EDUCATIONALSTATUS EMPLOYMENTSTATUS MONTHLYINCOME PEOPLEINHH

tab BenefitforUFGproject

tab BenefitfromUrbanFoodGardens

tab ndBenefitfromUrbanFoodGarde_2

tab rdBenefitfromUrbanFoodGarde_2

tab thBenefitfromUrbanFoodGarde_2

tab ReasonfornotbenefitingfromUr_2

tab ReasonfornotbenefitingfromUr_2

tab rdreasonfornotbenefitingfor_2

tab ReasonfornotbenefitingfromUr_2

graph pie, over(ReasonfornotbenefitingfromUr_2)

graph pie, over(ReasonfornotbenefitingfromUr_2) plabel(_all percent)

tab Livelihoodstrategiesadopted