



# **Exploring the Role of the Mixed Methods Approach in Facilitating an Improved Understanding of Food Access in Masiphumelele**

*A full dissertation submitted in fulfillment of the requirements for the award of the degree of*

*Master of Arts in Environmental & Geographical Studies*

*By*

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## Abstract

This thesis focuses on the food environment of Masiphumelele and seeks to understand how mixed-method approaches could be employed to facilitate an advanced understanding of food access in Masiphumelele. Masiphumelele was chosen as the case study for this research project as this work is sponsored by the IDRC-funded Nourishing Spaces project, which works in Masiphumelele. Based on the food-environment framework, this thesis embarked on the valuation of food environment literature to establish the interconnections between the four pillars of food security, food environments, and food systems in the urban context. The findings of this study endorse other work on food environments that issues of access should not only be understood through the physical and socioeconomic lens but also consider related social aspects that shape, enable or constrain food choices and behaviours in urban contexts. The findings of this thesis underscore the need for the reconceptualization of food environments beyond the simplistic physical and economic access framings which dominate earlier food environment work characterized by food deserts. Following the assessment of existing literature on food security, the discourse revealed that adopting the mixed-method approach that integrates participatory and retail mapping is an applicable conceptual framework for exposing socio-spatial dynamics influencing food utilization and food accessibility in the urban context. Building on the growing scholarly and policy interest of mixed methods approaches this thesis endeavours to establish the significance of the mixed-method approach in facilitating an improved understanding of food access in Masiphumelele.

*Keywords: Mixed-method approach, food access, food environments, food environment-framework, participatory retail mapping, qualitative choices, lived environment.*

## List of Terms

**Cash and carry Store** or wholesaler is a large shop that enables one to buy goods in larger quantities and at lower prices than supermarkets or wholesalers.

**Determinants of Food Security** entail; the physical availability of food, economic and physical access to food; food utilization, and the stability of the other three dimensions over time.

**Food and Nutrition Security** exists when all people at all times have physical, social, and economic access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences and is supported by an environment of adequate sanitation, health services, and care, allowing for a healthy and active life." FAO (1996, 2009).

**Food Behaviours** refers to what people do; that is, people's actions toward food. It refers to the set of sequential steps that people perform to maintain or enhance their well-being.

**Food Environments** are identified as physical features of the built environment, have impacts on food access, availability, and affordability.

**Food System** refers to an interconnected web of activities involving the production, processing, transport, and consumption that extends across all domains involved in providing human nourishment and sustaining health (Chase and Grubinger, 2014). It is comprised of issues of governance and economics of food production, its sustainability, the degree to which we waste food, how food production affects the natural environment, and the impact of food access and availability on individual and population health.

**Food Security** is the situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2002).

**Food Ways** refers to the intersection of food in culture, traditions, and history. It describes the social and economic practices relating to the production and consumption of food and how these influence how we experience the food system.

**Food Zone** refers to a mini shopping center servicing the food needs of the community of Masiphumelele and the surrounding areas.

**The informal** sector well encompasses street vendors, hawkers, small traders, micro-entrepreneurs, home-based workers. It does not have any written rules or agreements; it exists merely on verbal understanding and does not have fixed wages or fixed hours of work and the majority in this sector are dependent on daily

earnings as a livelihood strategy. In most cases, the spaces where they operate are congested and unhygienic (Mitullah, 2006).

**Participatory Mapping** refers to the set of approaches and techniques that combine the tools of modern cartography with participatory methods to represent the spatial knowledge of local communities (Mapping for Rights, 2011).

**Participatory Retail Mapping** is a mapping approach that combines the retail mapping approach with the participatory mapping approach to produce maps that illustrate the food environment of the study area.

**Socio/Spatial data** is the combination of socio-economic data and spatial data. Socio-economic data relates to the social and economic factors that shape individual choices, lifestyles, cultural beliefs, and how they respond to food in the urban context. Spatial data, also known as geospatial data, describe any data related to or containing information about specific locations on the Earth's surface.

**Spaza Shop** refers to a general retailer of household goods within a township context. For this study, a spaza shop enterprise has the following features: situated in a stand-alone and dedicated structure/space (operating from a room primarily used as a private residence); has a sign advertising the business; has at least one glass-door (commercial) fridge; is open to retail customers for five days per week or more; and sells at least six of the following eight grocery items: maize meal, rice, bread, milk, sugar, cool drinks, cigarettes, and, or cooking oil.

**Urban/ Food Systems** refers to a series of activities ranging from production to consumption (Ericksen, 2008 cited in Smit, 2016). These activities include production, processing, and packaging (whereby usually only a proportion of these activities would be undertaken in and around the city where the food source is exhausted, distribution, retailing, and consumption (Ericksen, 2008 cited in Smit, 2016).

**Wholesalers** refer to a business that sells to retailers who in turn on-sell to consumers. These enterprises can be formal or informal businesses. The category includes independent operators as well as corporate and multinational businesses.

## Chapter 1: Introduction & Research Framework

Daily, people buy and consume food through their food environment. Herforth and Ahmed describe food environments as the range of food available, affordable, convenient, and desirable to people in each context (Herforth and Ahmed, 2015). On the other hand, Hawkes *et al.* (2015) maintain that food environments are daily prompting within food systems that nudge consumers' food choices in particular directions. These contribute to dietary habits and preferences that can have long-term impacts (Hawkes *et al.*, 2015). Both definitions trace a clear trajectory between food environment, food systems, diet choices, and nutrition. The most prevalent form of food environment research has been that focusing on the prevalence of food deserts. The findings of this thesis underscore the need for the reconceptualization of food environments beyond the simplistic physical and economic access framings which dominate earlier food environment work characterized by food deserts. The discourse situates food environments as possible entry points for establishing the interconnections between food systems and food environments and addressing access issues in African cities (Battersby, 2013). However, the interconnections between food environments, the pillars of food security, and food deserts are not well-conceptualized in policy and practice (Turner *et al.*, 2018).

Through a comprehensive review of the literature on the food environments, this thesis puts forward the need to adopt a food-environment framework to understand the role of the food environments in clarifying food acquisition and consumption patterns. The food environment encompasses multiple, interrelated dimensions. These include availability (including prices, vendor and product properties, physical access of nutrition information and messaging of food labels and food-based dietary guidelines) and personal dimensions such as accessibility, affordability, convenience, and desirability of food sources and products. Therefore, the food-environment framework helps bring food environments closer to people. It helps make food systems more tangible and improves communities' understanding of their food environments and their agency for change. The literature ascertains that the food environment is key entry-points to improved food access. The food-environment framework contextualizes questions of who, what, when, where, why, and how food acquisition and consumption occur. Food environments encompass external dimensions such as the availability (including prices, vendor and product properties, physical access of nutrition information, and messaging of food labels and food-based dietary guidelines) and personal dimensions such as the accessibility, affordability, convenience, and desirability of food sources and products. They determine what foods consumers can access at a given time, at what price, and to the degree of convenience. Food environments both constrain and prompt food choices. Scholars and researchers from ranging perspectives and fields advance the food environment as an entry point for establishing these interrelationships to improve nutrition and diet quality (Grace, 2016). However, the existing literature on food environments has failed to successfully draw linkages between the different dimensions of access (physical, economic, and

social) and utilization in the urban context (Turner *et al.*, 2018; Battersby, 2018). This thesis asserts that drawing linkages between the different dimensions of access (physical, economic, and social) is crucial to improving food and nutrition security. It further posits that establishing the linkage between the different dimensions of access can potentially influence the food environment to better support food choices.

The findings of this study endorse other work on food environments. It advances those issues of access be comprehended beyond the physical and socio-economic lens (Turner *et al.*, 2018; Agyeman and McEntee, 2014; Mikkelsen., 2011 and Furst *et al.*, 1996) to consider social aspects that shape, enable or constrain food choices and behaviors in urban contexts (Delormier, 2010). It concurs with the findings of other scholars that it is crucial to expand our understanding of accessibility further to reconnect to Sen's entitlement framework as entitlements are a necessary means of providing food ((Turner *et al.*, 2018 and Furst *et al.*, 1996). The assessment of access should go beyond the household scale. It should consider the structure, function, income and expenditure, individual food choices and behaviours, and other household-scale characteristics as they impact how people experience their lived environment. Yet, limited studies have endeavoured to establish these interconnections, specifically for low-income areas in urban settings. This thesis addresses this gap and builds onto this growing body of literature. The findings of this thesis underscore the need for expanding our understanding of accessibility to further reconnect to Sen's entitlement framework as entitlements as a necessary means of providing food. It includes giving greater recognition to the utilization pillar that often shapes or constrains food choices, behaviours, and impacts the ability of communities to utilize the food that is available and accessible to meet their food needs.

The existing discourse on food security reveals that adopting the mixed-method approach integrating participatory mapping and retail mapping as an applicable conceptual framework for understanding the socio-spatial dynamics influencing food utilization and food accessibility in the urban context. The mixed-method approach, which integrates the participatory retail mapping, interviews, and focus group discussions with the research participants enabled a rich expression of the ways people engage in the food choice process by incorporating the meanings and understandings that they create in their food choice negotiations, including elicitation of the range and strength of the factors affecting food choice. This method was monumental in exposing people's lived geographies and further challenged dominant narratives on food environments in low-income areas. It further revealed that ensuring equality in access entails addressing questions relating to the relative balance of types of food being made available, the structure-function of the food environment, and motivations for why certain types of food are available than others (Battersby, 2018). It should clarify how communities experience their food systems, food security, and the food environment in the urban context. Framed this way, the issue of availability raised fundamental questions about the other drivers and determinants of food security. Building on the growing scholarly and policy interest in the use of mixed methods approaches (Bryman, 1988; Tashakkori and Creswell, 2007; Plano Clark, 2010; Wills *et al.*,

2019), this thesis demonstrates the value of the mixed-method approach in facilitating an improved understanding of issues of access in Masiphumelele.

The first chapter provides an overarching view of the research aims, objectives and sets the context for this study. The second chapter of this thesis embarks on a discussion of the four pillars of food security: availability, accessibility, utilization, and stability. This chapter provides an evaluation of the four pillars of food security and builds a case for the consideration of urban food security through the four pillars. It proceeds to review the discourse on food environments, food deserts, and the broader food systems in urban contexts. It presents an argument for the food environment as the entry point for establishing the interconnections between the food environment, people's qualitative choices, and the broader food system.

Following the assessment of existing literature on food security, this thesis provided a valuation of the literature on mixed methods. It emphasizes the potential value of participatory retail mapping in providing information-rich findings on the multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) impacting the structure, function, lived geographies, and qualitative choices. Upon establishing this understanding, this thesis then highlights the significance of the mixed-method approach as a conceptual framework for understanding the socio-spatial dynamics influencing food utilization and food accessibility in the urban context. With the view of improving access, the subsequent chapters of this thesis demonstrate how the inquiry into the food-retail environment with the mixed method approach establishes the interconnections between the food environment, food access, and people's qualitative choices in their lived environment. The last chapter concludes the research findings and describes the significance of the mixed-method approach in facilitating an improved understanding of food access in Masiphumelele.

## **1.1 Towards a Nuanced Understanding of the Mixed Method**

Recent years have resulted in a greater appreciation for mixed-method research as a research approach. Mixed methods research is becoming articulated, attached to research practice, and recognized as the third prominent research paradigm (Johnson, Onwuegbuzie, & Turner, 2007). (Mixed methods research is well delineated as a research approach or methodology utilizing multiple methods (e.g., intervention trials and in-depth interviews) to explore the meaning and understanding of constructs (Tashakkori and Creswell, 2007; Creswell and Plano Clark, 2011). Mixed methods research employs rigorous quantitative methods, assessing the magnitude and frequency of constructs, and meticulous, qualitative research and seeks to intentionally integrate or combine different techniques to draw on the strengths of each method, framing the investigation within philosophical and theoretical positions (Creswell and Plano Clark, 2011). It explicitly focuses on research questions that call for real-life contextual understandings, multi-level perspectives, and cultural influences (Creswell and Plano Clark, 2011).

A salient strength of qualitative research is its focus on the contexts and meaning of human lives and experiences for inductive or theory-development-driven research outputs. It is a systematic and rigorous form of inquiry that uses data collection methods such as in-depth interviews, ethnographic observation, and review of documents. Qualitative data help researchers understand processes, especially those that emerge over time, provide detailed information about the setting or context, and encourages the representation of a range of views. Qualitative methods facilitate data collection when measures do not exist and provide a depth of understanding of concepts (Creswell and Plano Clark, 2011). Mixed methods research is more than simply collecting qualitative data from interviews or collecting multiple forms of qualitative evidence (e.g., observations and interviews) or different types of quantitative evidence (e.g., surveys and diagnostic tests).

In a mixed-methods study, researchers intentionally integrate or combine quantitative and qualitative data (Johnson, Onwuegbuzie, & Turner, 2007). The integration of quantitative and qualitative data maximizes the strengths and minimizes the weaknesses associated with the data type (Johnson, Onwuegbuzie, & Turner, 2007). This idea of integration separates current views of mixed methods from older perspectives where researchers collected both forms of data but kept them separate or casually combined them rather than using systematic integrative procedures. However, amongst some of the limitations of this approach remains how to integrate different forms of data (Creswell & Plano Clark, 2011) for convergence and corroboration of results from distinct methods and discover paradoxes and contradictions that lead to a reframing of the research question (Greene, Caracelli, and Graham, 1989). This thesis seeks to demonstrate this and contribute to the growing body of literature on mixed methods research about local food environments.

As the theoretical underpinning, this study explores the value of the mixed-methods research in facilitating an improved understanding of food access in Masiphumelele.

## 1.2 Research Question

This thesis will explore how participatory retail mapping can be employed as a tool to facilitate an improved understanding of food access in Masiphumelele?

## 1.4 Objectives

- To assess the four pillars of food security.
- To evaluate how the four pillars of food security intersect, enable, or constrain food environments in the urban context.
- To provide a conceptual framework to understand the socio-spatial dynamics influencing food utilization and food accessibility.

- To investigate the linkages between food environment, food accessibility, and people's qualitative choices in their lived environments.
- To explore how the findings of retail mapping, participatory mapping, and focus groups can effectively communicate community member's life experiences, physical, social, and economic realities shape experiences of food and food choices and behaviours?
- To evaluate the characteristics of the food environment in Masiphumelele and describe how multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) impact the structure, function, and lived experiences of their food environments.

## 1.5 Outline of the Chapters

Chapter 1 introduces the research project. It starts by setting the context for this study, providing an overarching view of the research aim, objectives, and study approach.

Chapter 2 provides an in-depth review of relevant literature, exploring contributions of the social sciences. Through a discussion of the four pillars of food security: availability, accessibility, utilization, and stability, this chapter endeavours to build a case for the consideration of urban food security through the four pillars. It proceeds to review the discourse on food environments and food deserts in urban contexts. This chapter presents an argument for a food environment focus. It posits that the food environment is a central component of the access part of food security and plays a prominent role in shaping diets. Against this background, it explores the potential of participatory retail mapping in providing information-rich findings on people's lived geographies and qualitative choices.

Chapter 3 describes the research methodology and the suite of methods used for data collection. It discusses the philosophical assumptions and describes the approach used for analysis.

Chapter 4 comprises the analysis, presentation, and interpretation of the research findings. Guided by the socio-ecological approach as the theoretical framework underpinning the study, it reiterates the research question, presents the methods used to investigate critical findings considering what past papers have already established. It acknowledges alternative explanations for the study results, identifies research limitations, and makes recommendations for future research.

Chapter 5 provides a critical discussion of the research findings and provides an analysis and interpretation. It discusses themes that have emerged from the research results and establishes links to the literature.

Chapter 6 is the concluding chapter. It concludes the research findings and describes key research contributions to existing literature.

## Chapter 2: Literature Review

### 2.1 Introduction

The history and thinking about food security can be conceptualized through overlapping paradigm shifts (Maxwell, 1994). Food security has evolved, developed, and diversified (Maxwell, 1994) from its first articulation as a “secure, adequate and suitable supply of food for everyone” (Weingartner 2004: 4 cited in Battersby *et al.*, 2018). The continuing evolution of food security as an operational concept has been widely reflected by the numerous formulations and conceptual frameworks put forward by researchers and practitioners alike (Faridi and Wadood, 2010). Food security, as defined in the 1974 World Food Summit refers to the "availability at all times of adequate world food supplies of basic foodstuff to sustain a steady expansion of food consumption and to offset fluctuations in production and prices" (United Nations, 1975). The initial focus of attention was primarily on food supply problems of assuring the availability and to some degree the price stability of basic foodstuffs at the international and national level (Clay, 2002).

The issues of famine, hunger, and food crisis were also being extensively examined, following the events of the mid-1970s. The assessment of issues of food availability and access in the 1980s pioneered a renewed understanding of hunger and malnutrition, including undernutrition and micronutrient malnutrition. Scholars argued that aspects of food safety and nutritional balance were critical and that greater attention to food composition and minor nutrient requirements for an active and healthy life were crucial considerations. The outcome was a redefinition of food security, which recognized the behaviour of the potentially vulnerable as a critical aspect in the food security debate (Clay, 2002).

In 1983, FAO expanded its concept to include securing access by vulnerable people to available supplies, implying a need for a balance between the demand and supply side in the food security equation need to (Clay, 2002). Food security was redefined as “ensuring that all people at all times have both physical and economic access to the basic food that they need” (FAO. 1983). This definition implied that a balance needed to be attained between demand and supply.

In 1986, the highly prominent World Bank report “Poverty and Hunger” (World Bank. 1986) introduced the widely recognized distinction between chronic food insecurity. This definition of food security now paid closer attention to problems of continuing or structural poverty and low incomes, and transitory food insecurity, which involved periods of intensified pressure caused by natural disasters, economic collapse, or conflict (Clay, 2002; World Bank, 1986). The definition of food security was now inclusive of the access “access of all people at all times to enough food for an active, healthy life”.

The 1994 UNDP Human Development Report promoted the construct of human and social security and is representative of the human rights perspective on development that has, in turn, influenced discussions about food security (UNDP. 1994).

The 1996 World Food Summit continued to adopt a more complex definition which argued that food security, at the individual, household, national, regional, and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO. 1996). The State of Food Insecurity 2001: "food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO. 2002).

This new frame of thinking about food security was pivotal in shifting emphasis from natural causes of food insecurity (drought, pests, etc., within the productive realm) to social, economic, and political motivations of vulnerability (Battersby *et al.*, 2018). Emphasis on consumption, which relates to the demand side and issues of access by vulnerable people to food, is closely identified with the seminal study of Amartya Sen (1981) that expanded the concept of food security with a focus on the entitlements of individuals and households. This study led to the recognition that the sufficiency of the food supply was not enough to guarantee food security unless poor and vulnerable people also had physical and economic access to that food. It shifted the framing of security from a problem that manifests at the individual level to a problem at the universal level. It pioneered the four pillars of food security as availability, accessibility, utilization, and stability.

There was consensus in the discourse that food security framings needed to consider several causes and measurements that have uniform impacts on food availability, accessibility, utilization, and stability. This framing further recognized that simply making food available is not enough to ensure food security as low-income households must be able to purchase it (Feleke *et al.*, 2005). Similarly, the availability of sufficient food within any food environment will not ensure good nutritional outcomes if poor health results in frequent sickness (Feleke *et al.*, 2005). Feleke *et al.* (2005) and Gross *et al.*, (2009) maintain that food availability is adequate food is ready to have at people's disposal. Similarly, Riely *et al.*, (1995) and Gross *et al.*, (2009) underscore that equality in access is achieved when all households and all individuals within those households have sufficient resources to obtain appropriate foods (through production, purchase, or donation) for a nutritious diet within their food environments (Riely *et al.*, 1995 cited in Bokeloh *et al.*, (2009).

Current approaches to food security largely ignore the principle of the four pillars on which food security is supposedly built (Battersby, 2018). The dominant assumption is that adequate food production ensures adequate availability of food in the market as well for households. These approaches position food

production as the cornerstone strategy for alleviating global food security (Olaniyi, 2014). The Better Meets Reality Report (2021) provides evidence that more than enough food is currently being produced per capita to feed the global population (Olaniyi, 2014). However, more than 1.9 billion people worldwide are moderately or severely food insecure (Max Roser and Hannah Ritchie, 2019). It demonstrates that increased food production alone is inadequate for ensuring food security for all (Olaniyi, 2014; Gartaula *et al.*, 2017; Battersby, 2018).

Contemporary food environment work has primarily focused on addressing issues related to access (e.g., impacts on food prices), utilization (e.g., impacts on nutritional quality), and stability (e.g., impacts of increasing extreme events) (Bailey *et al.*, 2015 cited in Mbow *et al.*, 2020). It is increasingly evident that even if availability and access are satisfactory, the biological absorption of food in the body is related to the consumption of clean drinking water and environmental hygiene (Gartaula *et al.*, 2017; Battersby, 2018).

The discourse demonstrates that even if physical and economic access to food is guaranteed, ecological factors will determine the long-term sustainability of food security systems (Gartaula *et al.*, 2017). Physical and socioeconomic access indicators alone are insufficient to gauge whether a household has enough money to buy food (Battersby, 2012). Shaw (2006) and Battersby *et al.* (2018) critique that the location (in terms of the household and the immediate neighbourhood) and scale (in terms of context, policy focus, and governance) are equally important indicators of food security when considering food access. Scholars and researchers from a range of perspectives and fields advance that relying solely on understanding access constraints through the lens of physical and economic access at household scale has limitations, as fails to consider interrelated social aspects that shape, enable or constrain food choices and behaviours in urban contexts. The assessment of access should go beyond the household scale. It should consider the structure, function, income and expenditure, and other household-scale characteristics which impact how people experience their lived environments. It should pay specific attention to establishing interconnections between food and issues like gender dynamics, food choice, dietary diversity, age, occupation, value negotiations or perceptions of food quality and quantity, and perceptions of what socially accepted means of obtaining food resources.

Earlier work on food environment research has drawn connections between decreased availability of and accessibility to supermarkets access and dietary outcomes (Bodor, 2011; Short *et al.*, 2007, Raja *et al.*, 2008 cited in Battersby, 2019). Other studies have assessed environmental and policy influences on nutrition and eating behaviour (Story *et al.*, 2008). To date, limited food environment studies have endeavoured to establish the interconnections between the four pillars of food security, food environments, and food systems in the urban context. (Furst *et al.*, 1986; Clark 2002; Power, 2008; Battersby *et al.*, 2018; Turner *et al.*, 2019).

This thesis argues that the utilization pillar is a key component of food access. It positions that even if physical and economic access to food is assured, ecological factors will determine the long-term sustainability of food security systems (Gartaula *et al.*, 2017) as physical and economic access indicators alone are not sufficient to gauge whether a household has enough money to buy food (Battersby, 2012). This thesis argues that food environments need to be understood beyond the simplistic physical and economic access framings that dominate much of the earlier food environment. Understanding these linkages is crucial to making food systems work for improved nutrition and influencing the food environment to better support food choices. This chapter will underscore the need of expanding our understanding of accessibility further to reconnect to Sen's entitlement framework as entitlements as a necessary means of providing food. This includes assessing the factors that impact the ability of communities to utilize the food that is available and accessible.

Through a discussion of the four pillars of food security: availability, accessibility, utilization, and stability, this chapter will build a case for the consideration of urban food security through the four pillars. It proceeds to review the discourse on food environments, food deserts, and the broader food systems in urban contexts. It argues that the food environment provides an entry point for establishing the interconnections between the food environment, people's qualitative choices, and the broader food system. Against this background, the final section will examine the significance of the mixed-method approach as a conceptual framework for exposing socio-spatial dynamics influencing food utilization and food accessibility in the urban context. It concludes to provide a comprehensive assessment of a range of case studies to demonstrate the value of the mixed-method approach in facilitating an improved understanding of food access.

## 2.2 Defining Food Security

The history and thinking about food security since the World Food Conference can be conceptualized through overlapping paradigm shifts (Maxwell, 1994). The food security concept has evolved, developed, and diversified (Maxwell, 1994) from its first articulation as a "secure, adequate and suitable supply of food for everyone" (Weingartner 2004: 4 cited in Battersby *et al.*, 2018). These shifts are reflected in successive definitions of the term from (a) the global and the national to the household and the individual, (b) from a food first perspective to a livelihood perspective, and (c) from objective indicators to subjective perception (Maxwell, 2001). Food security, as defined in the 1974 World Food Summit refers to the "availability at all times of adequate world food supplies of basic foodstuff to sustain a steady expansion of food consumption and to offset fluctuations in production and prices" (United Nations, 1975). This definition was conceptualized as a response to the rapid rise in world food prices in the preceding two years and fear that the world food system was running out of control (Maxwell, 2001). However, this definition was critiqued for being too narrow in its coverage and definition (Young *et al.*, 2015) and its emphasis on supply

(Maxwell, 2001). Scholars and researchers from a range of perspectives argued that this definition paid too much attention to national and international level assessment and paid special attention to stable food prices and food availability (Young *et al.*, 2015). The discourse further positioned that this framing was flawed as it further implied that sustained access by all consumers to sufficient food that is affordable, safe, nutritious, and appropriate for active and healthy life (Dowler *et al.*, 2011). Furthermore, the rapid rise in food insecurity globally demonstrated that widespread hunger could and did co-exist with the presence of adequate food supply at the national and international levels (Maxwell, 2001).

FAO further expanded its concept to the aspect of access for vulnerable groups. This further implied that attention should be balanced between the demand and supply side of the food security equation. The definition of food security then shifted to refer to “access of all people at all times to enough food for an active, healthy life” (FAO, 1983). However, scholars and researchers argued that this definition stressed individual access, in all seasons and all years. Furthermore, they maintained that it was not enough to have food just for survival, but for active participation in society. This heralded a second paradigm shift which moved the issue of access to food to the center stage (Maxwell, 2001).

The second paradigm shift shifted the focus from a food-first perspective to a livelihood perspective, and beyond that to a preoccupation with the long-term resilience of livelihoods (Maxwell, 2001). The World Food Summit of 1996 maintained that "food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996). However, this definition was critiqued for its narrow framing and over-emphasis on individual-specific hunger. It did not consider Sen's (1981) entitlements of individuals and household food security. Hopkins (1986) described food security as a fundamental need, basic to all human needs and the organization of social life (Hopkins, 1986, p. 4).

He further advanced that access to necessary nutrients is fundamental, not only to life per se but also to stable and enduring social order (Hopkins, 1986, p. 4). The assumptions underlying this view were further questioned. Scholars increasingly recognized that food, especially short-term nutritional intake, was only one of the objectives people pursue. de Waal (1989) found in the 1984/85 famine in Darfur, Sudan, that people chose to go hungry to preserve assets and future livelihood. Other studies further reflected an issue of time preference: people going hungry now, to avoid going (more) hungry later which indicated that time preference remains important, nevertheless: not just livelihood, but secure and sustainable livelihood (Chambers, 1988b cited in Maxwell, 2001). Oshaug (1985) further argued that a society that can be said to enjoy food security is not only one which has reached (a) food norm, but which has also developed the internal structures that will enable it to sustain the norm in the face of crises threatening to lower the

achieved level of food consumption (Oshaug, 1985, pp. 5-13). These conceptualizations of food security identified livelihood security as a necessary and often sufficient condition for food security (Maxwell, 1988, 1991, p. 22) and which focuses on the long-term viability of the household as a productive and reproductive unit (Frankenberger and Goldstein, 1990).

The third shift was from an objective to a subjective approach. There was increasing recognition that attaining food security is more complicated than just producing more food. This was well-captured by the State of Food Insecurity Paper of 2001 which described food security as “a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2002). Accordingly, the World Health Organisation described that food security means that; “all people at all times have both physical and economic access to enough food for an active, healthy life; how food is produced and distributed are respectful of the natural processes of the earth and thus sustainable; both the consumption and production of food are governed by social values that are just and equitable as well as moral and ethical; the ability to acquire food is ensured; the food itself is nutritionally adequate and personally and culturally acceptable, and the food is obtained in a manner that upholds human dignity” (WHO, 1996).

This definition considered the complex inter-linkages between the individual, the household, the community, the national and international economy (Maxwell, 2001). and resulted in the reconceptualization of food security. It shifted the emphasis from natural causes of food insecurity (drought, pests, etc., within the productive realm) to social, economic, and political causes of vulnerability (Battersby *et al.*, 2018). This reconceptualization endorsed the work of Sen (1981) of entitlements, considering issues of consumption, the demand side, and the problems of access by vulnerable people to the food of individuals and households and which. As such, food security could no longer be characterized as a demand issue affecting the poor’s access to food (Sens, 1981), or an issue of supply affecting availability at the national level (Feleke *et al.*, 2005). Such reconceptualization gradually shifted the conceptual framing of food security from pre-occupation food security with food availability to the inclusion of multiple dimensions of food security (Battersby *et al.*, 2018). It advanced that food security should consider the entitlement of individuals of a country to food at the relative ease of access and affordable prices (Kolawale, 1989 cited in Muktar, 2011).

To summarize, this section has demonstrated that food security is a multi-dimensional and flexible concept (Maxwell, 2001) that has been the subject of contentious debate. The food security concept has “evolved, developed, multiplied and diversified” (Maxwell, 1996). as such, there is no consensus definition of the concept (Devereux, 2016). The literature posits that the lack of entitlements of access is a crucial determinant of food insecurity (Maxwell, 2001). However, more contemporary works on food environments have challenged this notion and further outline that attaining food security is more complicated than just producing more food (Connell *et al.*, 2020; Capone *et al.*, 2014; Ingram *et al.*, 2014; Rosegrant and Cline,

2003). To further explore this, the world produces enough food for everyone, yet, globally, over 1.9 billion people are severely food insecure and lack reliable access to adequate quantities of nutritionally sufficient food (Banfield, 2020). It demonstrates that the fundamental issue concerns access rather than food production. For this reason, food security requires a holistic definition that takes the multiple pillars and preferences into account.

## 2.3 The Pillars of Food Security

According to the FAO, the achievement of food security is based on four pillars or critical dimensions that include: availability, access, utilization, and food stability. By drawing on the deep body of scholarship on food security across fields, this section presents a discussion of the four pillars of food security: availability, accessibility, utilization, and stability and builds a case for the consideration of urban food security through the four pillars.

### 2.3.1 Food Availability

The United Nations Food and Agriculture Organisation earliest definition of food availability provides that food availability refers to “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (UN, 1974 cited in Burchi and De Muro, 2016). Scholars critique this approach for its over-focus on the balance or imbalance between population and food. They further argue that the aggregate level is about sufficient food for all and not about individual access issues. This definition was later defined as “all people have sufficient quantities of food and resources available consistently to meet their unlimited needs” (FAO, 2008). Considering the narrow framing of this definition, the World Food Programme redefined this definition as “the amount of food present in a country or region through all forms of domestic production, imports, food stocks, and food aid” (Napoli *et al.*, 2011). This definition then considered domestic food production, commercial food imports and exports, food aid, and domestic food stocks (Committee on World Food Security, 2011). Nkwana (2015) further defined food availability as the production and procurement of adequate quantities of food available continuously (The National Development Agency (2013:3 cited in Nkwana, 2015). It further considered that availability implies the efficient supply of sufficient quantities of food consistently at national and household levels. This framing of food availability gave rise to competing perspectives on what food availability should entail between scholars and researchers alike.

The dominant framing of food insecurity as determined by the lack of food availability has led to production-based solutions proposed to address the food insecurity. Food security policies for urban areas

typically promote urban agriculture as the solution to food insecurity. There is a body of literature that has advanced increased food production as a possible solution to the food insecurity challenge. Scholars imply that if people cannot access food (usually by monetary means), they should be encouraged and enabled to grow their food to ensure sufficient supply (Battersby *et al.*, 2018). However, these assumptions are flawed as in some cases, communities are unable to produce their food as a result of a range of constraints such as inappropriate agricultural technologies or practices; lack of natural resources or productive land; climate constraints; emergencies like natural disasters; or health constraints, such as HIV/AIDS, that prevent people from engaging in labor (US Agency for International Development, 2020). This narrow conceptualization which promotes urban agriculture does not consider these into account as well as other dimensions necessary to ensure that people can access the available food.

The world produces enough food for everyone, yet over 1.9 billion people globally, are severely food insecure and lack reliable access to adequate quantities of nutritionally sufficient food (US Agency for International Development, 2020). On the other hand, urban areas are experiencing the triple burden of obesity, overweight, and associated diet-related non-communicable diseases co-existing in households (Gómez *et al.*, 2013 cited in Battersby *et al.*, 2018). The fundamental issue concerns access to food rather than food production (Maxwell, 2001). There is consensus in the literature that, simply making food available is not enough to ensure food security as low-income households must also be able to purchase it (Feleke *et al.*, 2005 cited in Battersby *et al.*, 2018). It is particularly evident in how low-income households are heavily reliant on food items procured on credit from informal street vendors or informal retail and spaza shops (Ahmed *et al.*, 2009). Therefore, improved food availability is not the corrective to limited accessibility (Battersby *et al.*, 2018). A focus on availability alone is not achieving food and nutrition security. Achieving a relative balance in the types of food being made available within the food system and understanding why certain types of food are more available than others (Battersby, 2018) is crucial to transforming food systems and making them work to support improved food choices. The ability to source different food types is a fundamental aspect of food and nutrition security. However, food availability indicators do not provide sufficient information on food system drivers (Battersby, 2018). Turner *et al.*, (2017) argue that availability only considers the presence (or absence) of a food source or product within a given context while ignoring the distance and time-based aspects, including transportation opportunities that impact people's ability to access the food that is available (Turner *et al.*, 2017). To demonstrate this, while food may be available, poor communities often lack the foreign exchange to purchase food needed to meet their food needs (Barrett, 2001). Political instability, instability in food prices, and the lack of transportation further limit their ability to import food from other places. While aggregate food availability is a necessary condition for food security, it is insufficient to ensure access or proper utilization (Barrett, 2001).

The discourse has revealed that food availability assesses the supply side and the extent to which sources of nutrition are physically available through local food production and sales. Scholars and researchers underscore that a focus on availability alone is not enough to achieve food and nutrition security. The literature posits that the achievement of food security is dependent on adequate accessibility, the capacity to utilize foods, and the stability of availability, accessibility, and utilization (Battersby, 2018). Simply making food available is not enough to ensure food security as low-income households must be able to purchase it (Feleke *et al.*, 2005 cited in Battersby *et al.*, 2018). Similarly, the availability of sufficient food will not ensure good nutritional outcomes if poor health results in frequent sickness (Feleke *et al.*, 2005). To ensure food availability, questions relating to the relative balance of types of food being made available within the food system, the structure-function need to be addressed. Questions about why certain types of food are available than others should be adequately addressed (Battersby *et al.*, 2018).

### 2.3.2 Food Access

The concept of accessibility as articulated in the FAO's documents is informed by Sen's work on entitlements, which primarily focuses on the household's capacity to access food by a range of means (Battersby *et al.*, 2018). According to this framework, individuals and households can draw on a wide "entitlement set" to meet their needs. These entitlements are characterized into four categories namely, production-based (growing food), trade-based (buying food), own labor-based (working for food); and inheritance or transfer-based (being given food) (Battersby *et al.*, 2018).

Recent research favours the view that access to food by individuals in a household is pervasively linked to the control they have over household resources and the access they have to household income (Hart, 1986; Evans, 1991; Kabeer, 1991 cited in Maxwell, 2001). Bajagai (2011) maintains that the use of the resources that households have available to them, as well as the level of those resources, depends to some extent on the nature of the environment within which they operate, and the specific forms of the institutions which regulate the relations between the various economic agents. She further specifies that "all these entitlements give an individual control over resources which they can use, within the rules and regulations laid down by society, to satisfy their needs, including the very basic need of food" (Bajagai, 2011). When analyzing how people meet their food requirements, the assessment goes further than purely economic analysis of prices and income, insofar as it allows for consideration of both traditional community institutions, such as communal warehouses or access to common grazing land, and state institutions such as feeding programmes. This reflects the level of complexity of food accessibility. The discourse reveals that it is important to expand our understanding of accessibility further to reconnect to Sen's entitlement framework as entitlements are a necessary means of providing food. Physical access considers the physical means, infrastructure, and transport networks necessary for households to obtain the food they require at the

household level (Napoli *et al.*, 2011) as determined by the type of infrastructure that is available in terms of roads, railways, and ports of entry (Nkwana, 2015).

Minaker *et al.* (2011) argue that the physical dimension of food access often reflects a geographical perspective of the food environment as it includes measures such as proximity or distance to the nearest specified type of food retail outlet (Apparicio *et al.*, 2007; Larsen & Gilliland, 2008; Sharkey & Horel, 2008; Zenk, Schulz, Israel, *et al.*, 2005 cited in Minaker *et al.*, 2011), density and the ratio of food stores within limits; the population size in the geographic area; concentration of fast food outlets within a certain distance (Inagami, Cohen, Brown & Asch, 2009; Moore & Diez-Roux, 2006; Moore, Diez-Roux, Nettleton & Jacobs, 2008; Spence, Cutumisu, Edwards, Raine, & Smoyer-Tomic, 2009 cited in Minaker *et al.*, 2011) and the variety of food stores or food service places within a specified buffer zone (Andreyeva, Blumenthal, Schwartz, Long & Brownell, 2008; Aparicio *et al.*, cited in Minaker *et al.*, 2011). A combination of these factors acts to promote or inhibit food access in urban contexts.

Turner *et al.* (2017) argue that the “Accessibility Pillar” is often used as a multifaceted determinant of food acquisition (i.e., physical, social, economic access) to signify the act of acquiring food. Access is generally simplified within FAO documents to specify only physical and economic access to food. Battersby *et al.* (2018) argue that while it is important to consider aspects relating to economic and physical access, the consideration of just these aspects is not sufficient to gauge whether a household has enough money to buy food. Shaw (2006) concurs with Battersby *et al.* (2018) that the location (in terms of the household and the immediate neighborhood) and scale (in terms of context, policy focus, and governance) are particularly important when considering food access and the other pillars of food security (Battersby *et al.* 2017). For example, the consumer must be physically able to travel to and from a food retailer, and transporting the food back home, unless consumed on restaurant-type premises (Shaw, 2006). On the other hand, travel, unless on foot, demands financial resources that form part of the considerations of physical access (Battersby *et al.*, 2018). Understanding the location of the sources of affordable and nutritious food and lived geographies of home, work, and travel is crucial to tackling issues of access (Minaker *et al.*, 2011).

It is similarly important to understand the pricing, food sector business strategies, and the composition of the food retail environment as food access is also shaped by issues of the economy and financial resources. Economic access to food is determined by the income that households and individuals have at their disposal, the fluctuations in the prices of food, and how individuals and households have access to social assistance and people’s power to procure food (Nkwana, 2015). The economic theory suggests that, given tastes and preferences, individuals seek to maximize their utility from food, subject to the constraints of the neighborhood food environment, competing time needs, income, food costs, and costs of other needs (Rose *et al.*, 2010). The Food Price Monitor’s (2021) analysis on how food price has been impacted worldwide from the coronavirus pandemic from 2019 to 2020 showed that in South Africa food prices strongly influence livelihoods and dietary choices of farmers, traders, processors, and consumers (Food Security

Portal 2021). For this reason, when markets are tight, prices are sensitive to shocks such as a bad harvest or, in today's context, supply disruptions caused by Covid-19 (Food Security Portal 2021). For the poor who spend most of their income on food, any food price increase may put their food security at risk. This largely demonstrates that other factors, seemingly unrelated to food, also have significant impacts on household food accessibility, such as instances in which households sacrifice economic access to food to meet other urban costs of living, such as health, the cost of transportation, rent, or water (PACSA 2017 cited in Battersby *et al.*, 2018).

The social aspect of food access remains largely absent and is not well documented and explored in global and national food security policies. Socio-cultural dimensions like religious background or social grouping (Bajagai, 2014) which enhance or constrain food security at a local level and social constructs such as safety concerns, and residents' concerns about food quantity or food quality have an impact on physical food access and may also impede food choices and communities use of local food stores (Gittelsohn & Sharma, 2009 *et al.*, 2009 cited in Minaker *et al.*, 2011) continue to remain unrecognized in policy and practice. There is a vast and growing body of literature investigating different aspects of culture and how it affects the drivers of food security (Alonso *et al.*, 2018). Yet, despite this growing recognition, socio-cultural dimensions of access have too often remained on the fringes of discussions on the fight against malnutrition among policymakers and researchers. There are many examples of well-intended food security interventions that failed because they did not take cultural settings into account (e.g., UN, 2013 cited in Alonso *et al.*, 2018) from rejected deliveries of culturally inappropriate food aid to disregard for dietary recommendations that conflict with the cultural meaning of certain foods (Alonso *et al.*, 2018). A typical shortcoming is that these frameworks which identify socio-cultural dimensions as important drivers rarely clarify through what specific channels it affects food security, nor how important its influence is relative to other factors. Put differently, the consideration of socio-cultural dimensions in terms of ensuring access has been widely acknowledged as fundamental to improving and achieving equality of food access. However, Alonso *et al.*, (2018) identify those questions relating to how and the extent socio-cultural dimensions are of significance remain largely unanswered in policy and practice. Drawing on this notion, this thesis asserts that a clearer understanding of the interconnections between economic, physical, social access at micro-level and macro-level scale is crucial to making food systems work for improved nutrition and influencing the food environment to better support food choices.

The inquiry into the social dimension of food access as often manifested in uneven inter and intra-household food distribution and socio-cultural limits on the types of foods that are consistent with prevailing tastes and values within communities (Barrett *et al.*, 2010) makes it evident that the accessibility pillar fails to contextualize socio-economic barriers which impact on community's ability to access food that is available in the food system. Socioeconomic barriers and other household or individual-level constraints to accessing healthy such as geographic barriers, physical limitations due to difficulty lifting groceries, lack of access to a

car for food shopping, or perceptions of neighbourhood safety (Burns, Bentley, Thornton & Kavanagh, 2011; Casagrande *et al.*, 2011; Cummins & MacIntyre, 2006), decrease the ability of communities to access food even if this food is readily available to meet their prevailing food needs. Questions relating to where the available food can be accessed, how to secure this access, and the resources that are required to utilize these foods are crucial to determining whether access is achieved. A study conducted on low-income food environments in Mexico established that socioeconomically disadvantaged people tend to have decreased access to grocery stores (Block & Kouba, 2006; Moore & Diez Roux, 2006; Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007; Zenk, Schulz, Hollis-Neely, *et al.*, 2005 cited in Minaker *et al.*, 2011) where healthy foods tend to be more available and affordable (Block & Kouba, 2006; Bodor, Rose, Farley, Swalm, & Scott, 2008; Glanz, Sallis, Saelens, & Frank, 2007). It further identified that they also have increased access to fast food outlets, where unhealthy foods tend to be more available (Fleischhacker, Evenson, Rodriguez, & Ammerman, 2011). It is widely demonstrated that the relationships between people's food environments and diet and/or health status are not explained by socioeconomic status (Dubowitz, Heron, Bird, *et al.*, 2008 cited in Minaker *et al.*, 2011). The literature situates that an improved understanding of social access could enable the development of policy instruments and strategies that can improve the ability of urban households to access quality food regularly in the right quantities.

This section has established that it is important to expand our understanding of accessibility further to reconnect to Sen's entitlement framework as entitlements are a necessary means of providing food. Scholars and researcher posit those issues of access transcends mere availability of food to encompass other structural systems such as the broader food system and urban system, socio-cultural variables, and non-food factors such as the spatial characteristics of the urban settlement and governance interventions (Battersby *et al.*, 2018). Therefore, relying solely on understanding access through the household scale or the lens of physical and economic access has limitations as it does not consider the social aspects that are related and shape or constrain food choices, behaviours, and how communities interact with the food environment. Food access also encompasses issues like age, gender, health, dietary diversity, nutritional adequacy, food quality and quantity, household income/financial resources, occupation, educational background, and family structure which are seemingly unrelated to food but significantly impact how people experience their lived environments. To date, there are few well-articulated theoretical models with related data to establish these interconnections. Little research has been conducted on which aspects of the food environment are more influential than others. Furthermore, limited studies have assessed feasible and effective interventions and policies to improve food environments in various populations (Story *et al.*, 2008). Building on the growing body of scholarly and policy interest in the global and local food environment, this thesis seeks to achieve an improved understanding of access issues. It asserts that drawing linkages between the different dimensions of access (physical, economic, and social) is crucial to improving food and nutrition security and influencing the food environment to better support food choices.

### 2.3.3 Food Utilization and Use

FAO describes utilization as the ability of individuals and households to utilize food through an "adequate diet, clean water, sanitation, and health care to reach a state of nutritional wellbeing where all physiological needs are met" (FAO, 2006). Use considers the way the body makes the most of various nutrients in the food. According to this definition, sufficient energy and nutrient intake by individuals ensures adequate care and feeding practices, food preparation, diversity of the diet, and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals. While this definition was largely acceptable, scholars critiqued it for not considering issues of availability, access, nutrition security, income-nutrient linkages, and complementary interventions like effective sanitation, water, and health care services which are critical to addressing utilization. Bajagai (2014) argues that the utilization pillar needs should be expanded to consider the range of factors that shape utilization capacity, such as access to sanitation, water, health care *inter alia*. Adhikari (2018) endorses that food utilization encompasses issues of intra-household food distribution, like food safety, hygiene, and manufacturing practices applied in primary agricultural production like; harvesting and storage; food processing; transportation, retail, households, diet quality, and diversity: meeting needs in terms of energy, macro-and micronutrients. These were not well conceptualized by this definition. A range of scholars and researchers argued that food utilization should not only consider how much food people eat (Napoli *et al.*, 2011) but also the socio-economic aspects of household food and nutrition security as determined by knowledge and habits (Adhikari (2018). They further expanded that utilization should consider issues of; dietary diversity deficit, food preservation, and utilization, morbidity, the prevalence of diseases, lack of nutrition, education, and the environment individuals are exposed to which are crucial to improving utilization (Department of Agriculture Forestry & Fisheries, 2014).

Scholars argue that although utilization is acknowledged as one of the four pillars of food security by the FAO, it is consistently under-acknowledged in national food policies and programmes. Food utilization as presented in national policies and policy programs continue to place great emphasis on availability or physical and economic (Battersby *et al.*, 2018). FAO maintains that food security exists when households are physically, economically, or socially able to access "sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO 1996). However, issues of availability, access, nutrition security, income-nutrient linkages, and complementary interventions like effective sanitation, water, and health care services which are critical to addressing issues of access are not well-outlined in the consideration of the accessibility pillar alone. Poor urban households continue to remain food insecure even if they have physical, economic, or social ability to access "sufficient, safe and nutritious foods due to several household-scale challenges (Battersby *et al.*, 2018) which are not well encapsulated by the accessibility pillar.

Battersby and Haysom (2018) identify three asset constraints that impact on household's ability to make appropriate use of foods. The first being the lack of adequate refrigeration and storage. Battersby and Haysom (2018) argue that, without these assets, households are unable to safely store perishable foods, particularly in the context of extreme heat. Consequently, these households are required to make a series of dietary choices like consuming more food than they ordinarily would, giving away some of the food, or resorting to purchasing perishable foods in smaller units (Ballantine *et al.*, 2008 cited in Battersby *et al.*, 2018) to prevent spoilage. Consequently, urban poor residents are incapable of taking advantage of the cheaper per unit cost-benefits of buying in bulk. Furthermore, they are also unable or choose fresh produce as it typically requires refrigeration (Battersby and Haysom., 2018). This results in them resorting to energy-dense and micronutrient deficient processed foods which promotes less healthy diets and reduced ability to meet their food security needs (Battersby and Watson, 2018). Battersby (2012) argues that informal retailers often sell products in small quantities so "break bulk" which might be more expensive per unit. However, these are more affordable to the urban poor. Comparably, the need to buy smaller amounts is in most cases driven by low and inconsistent incomes and limited storage space (Skinner and Haysom, 2016). These dynamics which influence households at a micro-level and macro-level scale are not well-documented in the policy.

Battersby and Haysom (2018) further identify a second set of asset constraints faced by poor urban households as the high cost of energy and water, which increase the cost of food preparation. As demonstrated by a range of case studies, the high costs of water or electricity often mean that households must modify their diets to minimize consumption costs. Communities often resort to fast foods or street foods as they are perceived to be cheaper, quantities are broader, more filling, and entails less effort of investment in water, electricity, and other cooking resources to prepare. The last factor asset constraint is the long travel times incurred daily by urban residents because of inadequate transport infrastructure and long distances between home and work (Battersby *et al.*, 2018). As a result of spatial inequalities of the past, urban-poor residents often find themselves compelled to travel long distances to commute between home and work. Therefore, they often resort to ready-made meals or foods which are easy to prepare to minimize preparation time and reduce preparation costs. These choices, although small, all impact the quality of diet and food security in different ways (Battersby & Haysom., 2018). Therefore, to understand the utilization dimension, Battersby argues that it is essential to view urban food security as multi-scalar and multi-dimensional (Battersby and Haysom., 2018). At the household scale, it is essential to consider the economic, infrastructural, social, and physical asset base of the household as it shapes food behaviours and food choices within these food environments (Battersby *et al.*, 2018).

Bajagai (2019) further maintains that disease prevention and management, including proper sanitation and hygiene practices, are also essential for food utilization. Undernourished human bodies are more susceptible to illnesses like tuberculosis, diarrheal disease, and pneumonia (Bajagai, 2019). However, with adequate nutrition, sanitation, and hygiene, many diseases, especially those caused by food and waterborne contaminants are less likely to occur (Bajagai (2019).

FAO's utilization pillar correctly links the food system and possible food security outcomes to systemic issues beyond the food system. The review of the literature reveals that it is important to understand the range of assert constraints that impact on household's ability to make appropriate use of foods. Establishing the interlinkages between availability, accessibility, and utilization in urban food environments is the key to addressing food and nutrition insecurity and improving the capacity of the food system to better support food choices.

This section has established that food environments need to be conceptualized beyond the simplistic physical and economic access framings that dominate much of the earlier food environment work characterized by food desert work. At the household scale, it is essential to consider the economic, infrastructural, social, and physical asset base of the household as it shapes food behaviours and food choices within these food environments (Battersby and Haysom., 2018). The review of the literature reveals that it is important to understand the range of assert constraints that impact on household's ability to make appropriate use of foods. The evident systemic issues which impact food security outcomes beyond the food system ascertain that establishing the interlinkages between availability, accessibility, and utilization in urban food environments is the key to addressing food and nutrition insecurity and improving the capacity of the food system to better support food choices. While adequate food supply, good preparation, and equitable food distribution at the household level, the ultimate nutritional status of an individual (South Africa Food Security Policy, 2014) is influenced by the non-food inputs in food security like an adequate diet, clean water, sanitation, and health care to reach a state of nutritional welfare (Battersby and Watson., 2018). The discourse has revealed that the key to addressing food and nutrition insecurity lies in establishing an improved understanding of these linkages and addressing issues such as income-nutrition linkages, food safety issues, and complementary interventions (effective sanitation, water, healthcare services) that deters individual's ability to use food for their nutritional wellbeing.

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environment (Battersby and Haysom., 2018). The review of the literature reveals that it is important to understand the range of assert constraints which impact on household's ability to make appropriate use of foods. The evident systemic issues which impact on food security outcomes beyond the food system ascertain that establishing the interlinkages between availability, accessibility and utilisation in urban food environments is the key to addressing food and nutrition insecurity and improving the capacity of food system to better support food choices. While adequate food supply, good preparation and equitable food distribution at the household level, the ultimate nutritional status of an individual (South Africa Food Security Policy, 2014) is determined by the non-food inputs in food security like an adequate diet, clean water, sanitation, and health care to reach a state of nutritional well-being (Battersby and Watson., 2018). The discourse has revealed that the key to addressing food and nutrition insecurity lies in establishing an improved understanding these linkages and addressing issues such as income-nutrition linkages, food safety issues and complimentary interventions (effective sanitation, water, healthcare services) that deters individual's ability to use food for their nutritional wellbeing.

### 2.3.4 Food Stability

The World Food Summit argues that stability must be present “at all times” in terms of availability, access, and utilization for food security to exist (Napoli *et al.*, 2011). In terms of this definition, to be food secure, a population, household, or individual must always have access to adequate food (Battersby and Haysom., 2018). They should not risk losing access to food because of sudden shocks (e.g., an economic or climatic crisis), temporal variations (food price fluctuations, political conflicts, or changes in demand), or cyclical events (e.g., seasonal food insecurity) (FAO, 2006). For food stability to exist, the supply at the household level should remain constant during the year and in the long-term in terms of food, income, and economic resources when external risks such as natural disaster and climate change, price volatility, conflicts, or epidemics are reduced (Napoli *et al.* (2011). Food stability is affected by external shocks and stresses like; natural, market, political, economic forces, and international agreements that affect sources differently (Battersby *et al.*, 2018). Equally, political conflicts and fluctuating prices of certain foods due to the changes in demand place an additional barrier to food consumption. Therefore, it is essential to minimize external risks such as natural disasters and climate change, price volatility, conflicts, or epidemics through activities and implementations aimed at improving the resilience of households (Battersby and Haysom., 2018).

Battersby *et al.* (2018) propose that a means by which the urban poor can enhance their stability of food access is through accessing food from a range of sources. She expands that food prices do not change uniformly. Retailers respond differently to changes in prices of the supply. Consequently, the prices for different food types vary in response to market changes. This is evident in differences in pricing strategies

among retailers in both formal and informal markets. Therefore, to improve stability, households need to shop around to ensure they get the best value for money (Battersby and Watson, 2018).

Battersby & Watson (2018) further add that another means by which households can ensure the stability of food security in the context of unstable livelihoods and fluctuating food prices is through participation in collective savings clubs or stokvels, that individual members can be drawn on, in times of need. These ensure that households have a stable food supply during certain times of the year. However, these savings clubs are heavily critiqued for being unfeasible for the most vulnerable who cannot afford to invest in such savings groups (Davies, 2016 cited in Battersby and Watson, 2018).

FAO recommends that scaling up support for schemes that distribute food to the vulnerable; improving access to nutritious food for all and promoting education campaigns to help communities reduce food waste and buy food responsibly are some of the strategies that can be used to improve stability (FAO, 2020). In addition, the UN Food Agency makes a series of recommendations to improve the food supply situation in the short term. For example, it recommends the use of technology to map vulnerable people and their access to food and the development of more effective programmes that address the shortages in supply. Battersby and Watson (2018) further add that food access could further be improved through the promotion of local food suppliers (inclusive of street food vendors and informal sector), maintenance of a diversity of retail types, and non-market sources of food, including own production and social safety nets. However, these strategies require policymakers and planners to adopt an approach to food security that is based on achieving an improved understanding of the food system that feeds the urban poor and improving capacity for the development of policy interventions that support rather than inhibit food security.

As revealed by the literature, to be food secure, a population, household, or individual must always have access to adequate food. They should not risk losing access to food because of sudden shocks (e.g., an economic or climatic crisis), temporal variations (food price fluctuations, political conflicts, or changes in demand), or cyclical events (e.g., seasonal food insecurity) (FAO, 2006). As established by the literature, stability is highly impacted by external shocks and stresses which have different impacts on different sources. Equally, political conflicts and fluctuating prices of certain foods due to the changes in demand place an additional barrier to food consumption. Therefore, it is essential to minimize external risks such as natural disasters and climate change, price volatility, conflicts, or epidemics through activities and implementations aimed at improving the resilience of households (Battersby and Watson, 2018). Scholars have advanced a range of food sourcing strategies that the urban poor can implement to ensure stable access. As an example, scaling up support for schemes that distribute food to the vulnerable, promoting the maintenance of a diversity of retail types, non-market sources of food, including own production, and encouraging social safety nets. However, these strategies require policymakers and planners to adopt an

approach to food security based on achieving an improved understanding of the food system that feeds the urban poor and improving capacity for policy interventions that support rather than inhibit food security.

## 2.4 Conclusion

To summarize, this section has demonstrated that food security is a multi-dimensional and flexible concept (Maxwell, 2001) that has been the subject of contentious debate. The food security concept has “evolved, developed, multiplied and diversified” (Maxwell, 1996). As such, there is no consensus definition of the concept. Several authors continue to demonstrate that the lack of entitlement of access is a crucial determinant of food insecurity (Maxwell, 2001). This section has shown that attaining food security is more complicated than just producing more food. The world produces enough food for everyone, yet, globally, over 1.9 billion people are severely food insecure and lack reliable access to adequate quantities of nutritionally sufficient food. It demonstrated that the fundamental issue concerns access rather than food production. For this reason, food security requires a holistic definition that takes the multiple pillars and preferences into account.

The literature has ascertained that food availability assesses the supply side and extent to which sources of nutrition are physically available through local food production and sales. Scholars and researchers underscore that a focus on availability alone is not enough to achieve food and nutrition security. The literature posits that the achievement of food security is dependent on adequate accessibility, the capacity to utilize foods, and the stability of availability, accessibility, and utilization (Battersby, 2018). Simply making food available is not enough to ensure food security as low-income households must be able to purchase it (Feleke *et al.*, 2005 cited in Battersby and Haysom., 2018). Similarly, the availability of sufficient food will not ensure good nutritional outcomes if poor health results in frequent sickness (Feleke *et al.*, 2005).

The literature further revealed a need for expanding our understanding of accessibility further to reconnect to Sen’s entitlement framework as entitlements are a necessary means of providing food. Scholars and researchers posit that access issues transcend the mere availability of food. They encompass other structural systems such as the broader food system and urban system, socio-cultural variables, and non-food factors such as spatial characteristics of urban settlements and governance interventions (Battersby and Watson, 2018). Therefore, relying solely on understanding access through the household scale or the lens of physical and economic access has limitations. It does not consider the social aspects and other household-scale characteristics which shape or constrain food choices and behaviours that impact how people experience their lived environments. Yet, limited studies have endeavoured to establish these interconnections. This thesis addresses this gap and builds on this growing body of literature. The findings of this thesis underscore

the need for expanding our understanding of accessibility further to reconnect to Sen's entitlement framework. It entails giving greater recognition to the utilization pillar that often shapes or constrains food choices, behaviours, and impacts the ability of communities to utilize the food that is available and accessible.

The section utilization and use revealed that it is essential to establish a link between availability, accessibility, and utilization in urban food environments. It further outlines the importance of viewing urban food security as multi-scalar and multi-dimensional (Battersby and Watson, 2018). At the household scale, it is essential to consider the economic, infrastructural, social, and physical asset base of the household as these shapes food behaviours and food choices within these food environments (Battersby *et al.*, 2018). The literature revealed that FAO's utilization pillar correctly links the food system and possible food security outcomes to systemic issues beyond the food system. However, how the utilization pillar is exemplified in National policies or policy programs continues to place great emphasis on availability or physical and socioeconomic, or even social accessibility (Battersby and Watson., 2018). The literature reveals that it is essential to understand the range of assert constraints that impact a household's ability to make appropriate use of foods. Establishing the interlinkages between availability, accessibility, and utilization in urban food environments is the key to addressing food and nutrition insecurity and improving the capacity of the food system to better support food choices.

The final section advanced that to be food secure, a population, household, or individual must always have access to adequate food. They should not risk losing access to food because of sudden shocks (e.g., an economic or climatic crisis), temporal variations (food price fluctuations, political conflicts, or changes in demand), or cyclical events (e.g., seasonal food insecurity) (FAO, 2006). As established by the literature, food stability is more commonly by external shocks and stressors that affect sources differently. Equally, political conflicts and fluctuating prices of certain foods due to the changes in demand place an additional barrier to food consumption. Therefore, minimizing external risks such as natural disasters and climate change, price volatility, conflicts, or epidemics through activities and implementations aimed at improving the resilience of households is crucial (Battersby *et al.*, 2018). Scholars have advanced a range of food sourcing strategies that the urban poor can implement to ensure stable access. An example of this is scaling up support for schemes that distribute food to the vulnerable, promoting the maintenance of a diversity of retail types, non-market sources of food, including own production, and encouraging social safety nets. However, these strategies require policymakers and planners to adopt an approach to food security centred around achieving an improved understanding of the food system that feeds the urban poor and improving capacity for policy interventions that support rather than inhibit food security.

## 2.5 Navigating the Food Environment

Daily, people buy and consume food through their food environment. However, the role of the food environment in ensuring food access remains largely unrecognized in policy and practice (Laar *et al*, 2020). The dominant framing of food environment research has been a focus on food deserts; however, this has been increasingly challenged and research focuses on the broader food environment has become more prevalent. Through the adoption of a food-environment framework, this section will draw on the literature on food environments and food deserts to better understand the role of the food environments in determining clarifying food acquisition and consumption patterns. This section makes a case that viewing food and nutrition security through a food-environment lens improves our understanding of the role of people's daily lives and activities in the food environment. It further ascertains that the food environment is the interface' or 'link' between food systems and diets. Therefore, the food-environment framework helps bring food environments closer to the people to make food systems more tangible which improves communities' understanding of their food environments and their agency for change. Drawing on the deep body of literature, this section provides a comprehensive review of the literature on food environment, food systems, and food deserts with the view of establishing the interconnections between food accessibility and utilization in the urban contexts.

### 2.5.1 Establishing the Interconnections between the Food Environment & the Food Systems

Since the late 1990s, several definitions have been developed to conceptualize the food environment. Swinburn *et al.*, (2013) earliest definition of the food environment describes the food environment as “the collective physical, economic, policy and socio-cultural surroundings, opportunities and conditions that influence people's food and beverage choices and nutritional status”. This framing of the food environment was crucial in identifying the structural drivers of food acquisition, consumption, nutritional status, AND inequities in the food system. However, several scholars challenged this framing. They argued that while the identification of structural drivers of food acquisition, consumption, and nutritional status was important, at an operational level, a set of measurable dimensions were necessary to guide empirical research. Herforth and Ahmed (2015) identified these dimensions as availability, affordability, convenience, and desirability of various foods.

Herforth and Ahmed described food environments as the range of foods that are available, affordable, convenient, and desirable to people in each context (Herforth and Ahmed, 2015), while Hawkes *et al.* (2015) described the concept as comprised of the everyday prompts which nudge consumers' food choices in particular directions, and which contribute to dietary habits and preferences that can have long-term impacts (Hawkes *et al.*, 2015). Both definitions traced a clear trajectory between food environment, food systems, diet choices, and nutrition. Key publications by the Global Panel on Agriculture and Food Systems for

Nutrition, (2016) and the Food and Agriculture Organisation of the United Nations, (2016) built on this body of literature by introducing the role of people’s daily lives and activities to the food environment. FAO (2016) now defined food environments as “all the foods which are available and accessible to people in the settings in which they go about their daily lives. That is the range of foods in supermarkets, small retail outlets, wet markets, street food stalls, coffee shops, tea houses, school canteens, restaurants, and all the other venues where people procure and eat food. Accordingly, food environments differ enormously depending on context. They can be extensive and diverse, with a seemingly endless array of options and price ranges, or they can be sparse, with very few foods on offer because they determine what foods consumers can access at a given time, at what price, and with what degree of convenience, food environments both constrain and prompt food choices.

Drawing on this conceptual framing, the Food and Agriculture Organisation of the United Nations, (2016a) provided a critical contribution by framing food environments as the ‘interface’ or ‘link’ between food systems and diets (Food and Agriculture Organisation of the United Nations, 2016a:21) that mediate one’s food acquisition and consumption within the wider food system (Turner *et al.*, 2017). Turner *et al.*, 2017 further advanced that food environments encompass external dimensions such as the availability (including prices, vendor and product properties, physical access of nutrition information and messaging of food labels and food-based dietary guidelines) and personal dimensions such as accessibility, affordability, convenience, and desirability of food sources and products.

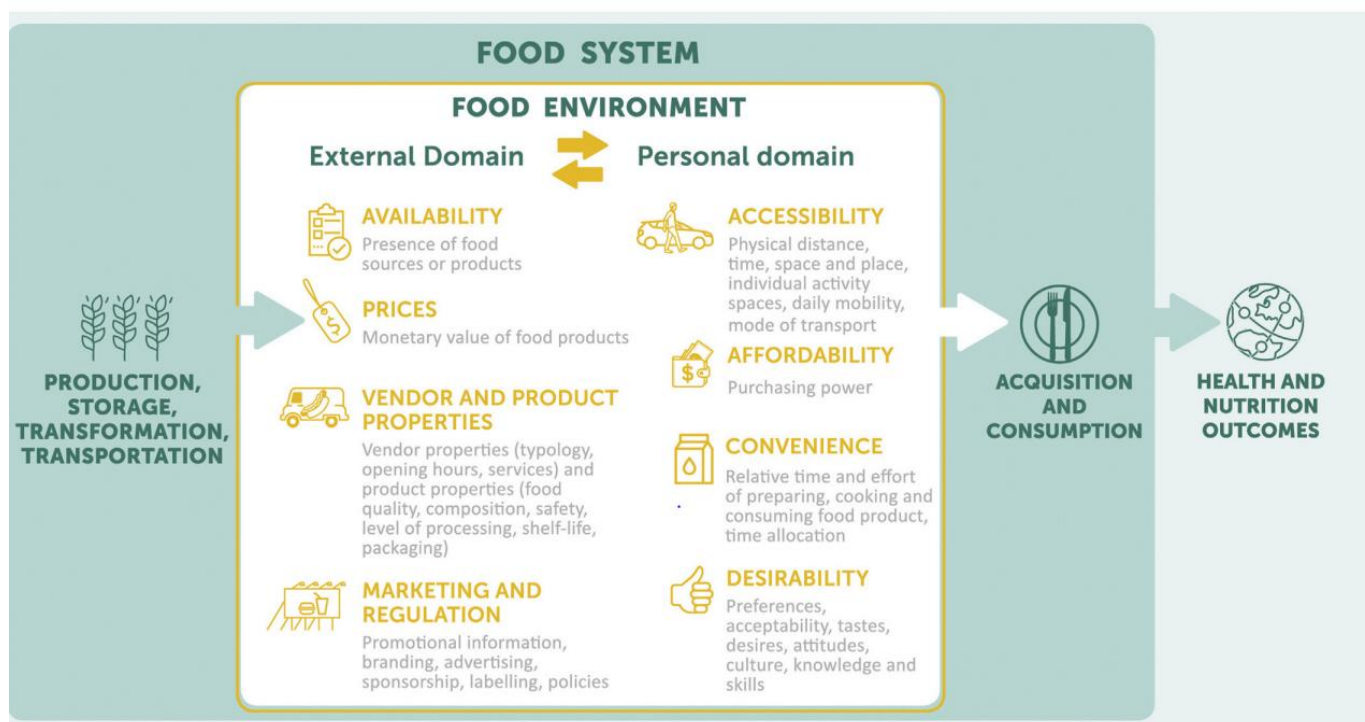


Figure 1: Conceptual framework. The conceptual framework depicts the food environment as the interface within the wider food system. Key dimensions are mapped to external and personal domains. Interactions between these domains and dimensions shape people’s food (Turner *et al.*, 2019).

Drawing on this notion, Turner *et al.* (2017) argue that a key commonality amongst these existing definitions is the conceptualization of the food environment in terms of the spaces within which food acquisition occurs and the series of market-based opportunities and constraints that influence people's food acquisition and consumption. However, clear differences exist in terms of the articulation of dimensions which is not only reflected in the diversity of food environments globally but also the wide array of academic disciplines undertaking research, each with their respective areas of interest and expertise. Accordingly, recognizing the need for harmonizing definitions with theoretical concepts and measurable dimensions of food environments to guide empirical research (Caspi *et al.*, 2012, Cobb *et al.*, 2015, Penney *et al.*, 2014 cited in Turner *et al.*, 2017).

While a range of studies has described the interrelationships between food environments, the broader food systems, and individual diets, limited studies have endeavoured to establish the interconnections between food systems, food environments, and the interrelated social aspects that shape, enable, or constrain food choices and behaviours in urban contexts. Much of the food environment work has focussed on establishing interconnections between food environments and food systems for improving diet outcomes in low-income countries (Turner *et al.*, 2018; Swinburn *et al.*, 2015; Story *et al.*, 2008) or for achieving health-related outcomes (Laar *et al.*, 2020). There has surprisingly been little work that investigating the interrelationships between the dimensions of food security and the qualitative choices that individuals make as a response to a range of socio-economic factors that shape, enable, or constrain their food choices in urban contexts. Several studies advance that the food environment could provide a way to engage the food security debate. Scholars and researchers from a range of perspectives and fields advance the food environment as an entry point for establishing these interrelationships and addressing issues of access. The literature reveals that improving knowledge and understanding about food environments, including the who, what, when, where why, and how of food acquisition and consumption is central to addressing malnutrition and food insecurity in all its forms. Drawing on this conceptual framing, this thesis proposes the adoption of a food-environment framework as an approach to better understand the role of the food environments in clarifying food acquisition and consumption patterns.

## **2.5.2 Establishing the Interconnections between the Food Deserts & the Food Environment**

The phrase "food desert" conceptualized in the early 1990s in Scotland (Cummins and Macintyre, 2002) was used to describe the plight of residents in terms of accessing an affordable food supply supportive of healthy diets (Ramkisson, 2015). At the time, food stores were moving away from urban city centres to the edges of town, leading to a larger and fewer concentration of grocery stores on the outskirts of the city (Lucan *et al.*, 2018). This resulted in urban residents having to travel farther distances to access fresh and affordable

food, and thus, creating a significant barrier for individuals without access to reliable public or private transportation. Since then, the expanding scholarship on food desert studies has occasioned the development of a range of framings and interpretations by different researchers (Walker, 2010). The USDA (2009) maintains that food deserts are geographic areas where residents' access to affordable, healthy food options (especially fresh fruits and vegetables) is restricted or non-existent due to the absence of grocery stores within a convenient traveling distance (USDA, 2009 cited in Silver, 2015).

According to Cummins *et al.* (2009), while the term "food desert" could mean a literal absence of retail food in a defined area, studies of food deserts more commonly assess differential accessibility to healthy and affordable food between socioeconomically advantaged and disadvantaged areas (Cummins *et al.*, 2009). In a study by Hendrickson *et al.* (2006) which examined access to fruits and vegetables by low-income residents living in selected urban and rural Minnesotan community's, food deserts were described as "urban areas with 10 or fewer stores and no stores with more than 20 employees" (2006: 372). The findings established that low-income residents of urban and rural communities did not believe that healthy foods were affordable near where they lived, and identified cost, as well as limited variety and poor quality as primary barriers to shopping in their community (Hendrickson *et al.*, 2006). This perception was further supported by data gathered from store inventory audits in these neighbourhoods, as numerous food items were found to be more expensive than the average Thrifty Food Plan's (TFP) market basket price (MBP). The findings established that people who live in urban food deserts are often required to travel more than one kilometre to access a supermarket or large grocery store, and over 10 kilometres if they live in rural food deserts (USDA, 2009 cited in Silver, 2015). As a result, residents of food deserts disproportionately low-income and racial and ethnic minority groups often suffer from poor dietary intakes (Silver, 2015).

Drawing on this notion, the adoption of a national food desert mapping project by the USDA in 2009 reinforced this simplistic framing of the issue. The USDA described food deserts as "low-income census tract where a substantial number or share of residents has low access to a supermarket or large grocery store," and "large grocery stores" are "stores with at least \$2 million in sales that contain all the major departments found in a traditional supermarket" (USDA, 2019 cited in Battersby, 2019). Activist scholars critiqued the food desert framing for simplifying the relationship between consumer and food retail and ignoring people's lived geographies and foodways (Battersby, 2019). Scholars highlighted that the food desert failed to acknowledge the reasons for current retail geographies. Secondly, researchers also underscored how it has incentivized supermarket entrance into areas labelled as food deserts acts as a form of environmental gentrification, ultimately driving multiple forms of displacement (Battersby, 2019). In so doing, privileging large retailers over other forms of access to healthy foods, whether they were small retailers, farmer's markets, or urban agriculture (Battersby, 2019). This narrowing of the concept makes it inappropriate for informal areas of cities in the Global South and in the broader context as it does not consider the informal retail economy and how they respond to the gaps in terms of food access. Lastly, it

made the food desert a problem to be solved by large private sector actors which reduced the agency of residents (Battersby, 2019).

Despite cautions from academia to not conflate food deserts with the absence of supermarkets (Short *et al.*, 2007, Raja *et al.*, 2008 cited in Battersby, 2019), several studies situate supermarkets as the proxy for physical and economic access to healthy foods. Supermarketization is often viewed as the pathway to improved food security outcomes (Battersby, 2019). The work on food deserts in the United States, United Kingdom, and elsewhere in the global North argue that; supermarkets provide better access to healthier food; low-income areas have poor access to healthy food; and that food security can be reduced to economic and physical accessibility (Battersby, 2019). To further reflect on these, the first assumption is that supermarkets provide better access to healthier food (Battersby, 2019). Increasingly, scholars position supermarkets as the solution to food insecurity in African cities (Battersby (2019)). However, a range of case studies has demonstrated that this assumption is flawed in that it fails to consider the type of stores that are made available and how consumers choose to use them (Battersby, 2019). The findings of household surveys, neighbourhoods-scale food retail mapping, and city-wide supermarket mapping conducted in Cape Town (South Africa), Kisumu (Kenya), and Kitwe (Zambia) revealed that supermarkets are not providing better access to healthy food, but instead have been implicated in making more highly processed foods more available (City of Cape Town, 2018; Reschke *et al.*, 2014 cited in Battersby, 2019). This is further supported by the work of Ghosh *et al.* (2015) which established that the introduction of a supermarket did not result in healthy food availability. It is further supported by the work of Demmler *et al.* (2017) which contributes to higher consumption of processed and highly processed foods and lower consumption of unprocessed foods.

There has also been some interest in supermarkets as indicators of food environment change in the African context. However, more recently there has been a move towards focussing on the wider food environment. There is consensus in the literature that food deserts often represent "poor, often informal, neighbourhoods characterized by high food insecurity and low dietary diversity, with multiple markets and non-market food sources but limited household access to food" (2006). Scholars link living in a neighbourhood without supermarkets or sources of healthy foods to worse dietary intakes (Laraia *et al.*, 2004; Moore *et al.*, 2008; Rose and Richards, 2004 cited in Diez *et al.*, 2017) and diet-related health outcomes such as obesity and type 2 diabetes (Black and Macinko, 2008; Bodor *et al.*, 2010; Keenan and Rosendorf, 2011; White, 2007). Academic scholars further identify that food deserts are populated by low-income residents, who work minimum wage jobs, and often multiple jobs, and where many people do not have cars. For this reason, people's choices about what to eat are severely limited by the options available to them and what they can afford. In these communities, people who manage to make a decent living often must use up any extra money to tend to the needs of less well-off family members. Therefore, even if the people living in this area work full-time, and even if they do have access to full-service grocery stores with healthy items, they might

not feel able to afford healthy foods as healthy food sometimes costs more than unhealthy choices (Robbins, 2020). However, these perceptions can be challenged for implying, often inaccurately, that food deserts are only populated by low-income residents who work minimum jobs, that many people in these food deserts don't have cars, and that these communities are utterly devoid of healthy food resources (e.g., Cummins and Macintyre 2002; Morton *et al.*, 2005; Raja *et al.*, 2008; Short *et al.*, 2007; Sparks *et al.*, 2011; Widener *et al.*, 2011; Taylor and Ard 2015 cited in De Master and Daniels, 2019). Contemporary work on food environments and food deserts demonstrates the large disconnect between how food deserts are conceptualized in policy and practice and what happens on the ground. Many people that live in food deserts do have access to public transportation and in some cases fall within the middle-income bracket, yet they are classified as food deserts because they do not provide access to the types of foods that are culturally appropriate, at the right quantities and meet the choice specifications of the communities in terms of health and diet-related outcomes. The findings of a study by Crush *et al.* (2019) on access to an affordable and healthy diet in food-deprived inner-city neighbourhoods in the United Kingdom and North America further demonstrate this. The findings of this study revealed that food deserts limit access to food resources, particularly healthy and culturally appropriate foods.

Crush *et al.* (2019) contend that food deserts represent "areas of relative exclusion where people experience physical and economic barriers to accessing healthy food. Accordingly, he maintains that food deserts are characterized by an overabundance of fast-food chains selling cheap "meat" and dairy-based foods that are high in fat, sugar, and salt as these areas tend to be oversaturated with liquor stores, convenience stores, and fast-food restaurants that sell highly processed foods that provide excessive levels of sugar, oil, salt, and artificial ingredients, as well as factory-farmed meat and dairy (Robbins, 2020). Processed foods (such as snack cakes, chips, and soda) are typically sold by street vendors, informal traders, or corner shop convenience stores (Crush *et al.*, 2009) which often presents a challenge for those living in food deserts to locate foods that are culturally appropriate than those living in food swamps. Skina (2006) further identifies that residents' access to affordable, healthy food options (especially fresh fruits and vegetables) is restricted or non-existent due to the absence of grocery stores within a convenient traveling distance (Skina, 2006). This can have a profound and lasting negative effect on people's lives and their health outcomes (Robbins, 2020). The literature ascertains that people living in food deserts who often rely on fast food have seven times the risk of having a stroke before age 45, double the risk of heart attack and type 2 diabetes, and four times the risk of kidney failure (Robbins, 2020). This widely demonstrates that food deserts are rooted in social inequalities.

The second assumption underlying the promotion of supermarkets implies that low access to healthy food is a naturally occurring circumstance (Battersby, 2009). However, several studies have demonstrated the flaws associated with this assumption. A 2018 study published by the National Bureau of Economic Research

revealed that even with access to supermarkets and grocery stores that have healthy food options in food deserts, the eating habits and shopping patterns of communities living in food deserts remain unchanged (Rogers, 2018). In other words, residents in these areas still purchase unhealthy food options, perhaps because unhealthy eating has been engrained in daily routines. The findings of this study confer with recent work published by Demmler *et al.*, (2017) in urban Kenya which found that consumers shopping in supermarkets were not accessing healthier food or better diets. Instead, shopping in supermarkets was found to contribute to higher consumption of processed and highly processed foods and lower consumption of unprocessed foods (Demmler *et al.*, 2017). These findings further endorsed findings of work in Cape Town, Kisumu, and Kitwe which demonstrated the failure of supermarkets to provide access to healthy foods (Battersby, 2019).

The final assumption is that food insecurity in urban areas is attributed to economic and physical access. This is evidenced in long-term agricultural policy to control maize prices as the central urban food security strategy in many Africa countries (Battersby, 2019). Historically, and currently, global- and national-scale food security reports and policies have disproportionately framed food insecurity as a rural problem (Battersby, 2019). Current approaches to food insecurity largely ignore the principle of the four pillars on which food security is supposedly built. It highlights availability and access through direct provision. Christiansen (2016) argues that the "food desert" narrative in its focus on economic status cannot account for the lack of quality supermarkets in black urban areas, independent of income (Christiansen, 2016). While physical and economic access is necessary, they are not sufficient determinants of food security. There is a need to better appreciate how households choose to use limited household economic resources.

Battersby (2019) argues that food expenditure is often one of the few discretionary expenditures for poor households. The urban poor often sacrifices economic access to food to meet other urban costs of living, such as the cost of transportation, rent, or water (PACSA, 2017 cited in Battersby, 2019). During periods of economic stress, households decrease expenditure on food to meet other household needs and preserve household assets (Battersby, 2019). Research conducted in Manenberg; Cape Town established that income stability rather than the amount of income alone was an important determinant of food security. Households with fixed, guaranteed incomes were found to be more food secure than households with equal, or even greater, inconsistent income, as they were able to plan food purchase and preparation better (Cooke, 2012 cited in Battersby, 2019). This demonstrates the need for food security policy in cities to consider the multidimensionality of poverty and how these shape food security outcomes. It requires expanding the framing of food security beyond simple physical and economic access. It demands consideration of the third pillar of food utilization.

Battersby (2019) maintains that unlike in the African context where food insecurity has generally been analyzed and responded to at the household scale, the way the food desert concept has been mobilized by

academics and civil society actors privileges the community/neighbourhood scale. In doing so, it has the potential to raise issues about structural inequalities in the food system and how this inequality co-exists and is compounded by other forms of structural inequality through evocative maps providing undeniable evidence of inequity when poor food access data are overlaid on other spatial indicators (Battersby (2019). This broader food environment work moves away from the very technical mapping of the early food desert work and draws on mixed methods approaches. This approach enables some of those wider issues of intra-household food distribution, like food safety, hygiene, and manufacturing practice and macro-and micronutrients to be addressed, to consider how the various dimensions of access and utilization come together in space.

The review of the literature further supports that, while the food desert concept may be valuable for African researchers to provoke debates about systemic inequality, the food desert policy narrative should be rejected as it is ill-informed by the lived experiences of food insecurity in African cities (Battersby, 2019). While the food desert concept is crucial for highlighting inequalities of the food system, particularly in African countries, it also has the potential to promote policy interventions that erode rather than enhance the capacity of the food system to meet the food security needs of African urbanites (Battersby, 2019). Food security policies and planning remain largely focussed on issues of availability whereas the challenge of urban food insecurity is primarily one of access (Battersby *et al.*, 2012). Food access inequalities highlight how the experience of living in poorer communities is hugely different from the experience of living in wealthier ones (Block *et al.*, 2017). This thesis asserts that insights on food system challenges, people's lived geographies demonstrate how the various dimensions of access and utilization come together in space. As such, foodways need to be acknowledged as they provide useful insights for the development of policies that are not only aimed at improving the community's capacity to access food that is appropriate but also their capacity for change.

## 2.6 Conclusion

The review of literature has ascertained that since the late 1990s, the dominant approach to researching food environments in North America and Europe has been the study of food deserts to highlight inequities in the food system. However, much of the food environment work has focussed on food deserts, which has come to be conflated with supermarket access and does not accurately capture the realities of food inaccessibility in Africa's urban informal food deserts (Crush *et al.*, 2019). This has been highly critiqued in the global north and further in the global south, particularly for its lack of engagement with the informal food sector. As outlined in this chapter, the discourse of food deserts in the United States, United Kingdom, and elsewhere in the global North position that; supermarkets provide better access to healthier food; low-

income areas have poor access to healthy food; and that food security can be reduced to economic and physical accessibility (Battersby, 2019). However, more recently there has been a move towards focussing on the wider food environment with increasing research attempting to highlight the structural inequalities in the food system within the broader context of urban poverty and intra-urban inequalities. This section has revealed that the rhetoric of the food desert is not a problem to be solved by the establishment of new supermarkets. Supermarkets are not proxy for physical and economic access to healthy foods. The literature makes it evident that improving the physical and economic access to healthy foods is not the solution to improving access as food deserts are impacted by a range of ‘physical’ barriers which originate at various levels. These barriers range according to consumer’s physical ability to access and acquire foods and the nature of the landscape they must traverse to access food. This section further revealed that people’s lived geographies and their foodways need to be acknowledged as they provide key insights that can inform policies aimed at improving the community’s capacity to access appropriate food. The discourse asserts that a clearer understanding of these is crucial to improving a community’s agency for change.

## **2.7 Exploring the Mixed-Methods Approach to Food Environment Research**

There is a strand within the food environment work that calls for greater attention to be paid to the lived environment and people’s qualitative choices (Caspi *et al.*, 2012, Engler-Stringer *et al.*, 2014, Penney *et al.*, 2014). Echoing calls from the wider literature highlight the potential for the greater use of mixed methods in food environment research to better understand communities lived environments and qualitative choices. Scholars and researchers from a variety of perspectives stress that integrating qualitative and quantitative approaches in mixed-method studies offers the potential to triangulate multiple data sources, further improving knowledge and understanding of people’s interactions with their food environment (Turner *et al.*, 2018). Building on the growing scholarly and policy interest in the use of mixed methods approaches, this chapter seeks to understand how the mixed method approach could be employed as an approach to facilitate an advanced understanding of food access in Masiphumelele. Through a review of mixed-methods literature, this chapter will explore the potential of participatory retail mapping in providing information-rich findings on the multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) impact on the structure, function, people’s lived geographies and qualitative choices.

### **2.7.1 Mixed- Methods Research**

While researchers have combined qualitative data with quantitative data for many years, contemporary conceptualizations of mixed methods research did not emerge until the 1980s (Bryman, 1988; Greene, Caracelli, and Graham, 1989 cited in Plano Clark, 2010). Before the 1980s, the role of analytically

combining quantitative and qualitative methodologies was not recognized as a community of practice (De Lisle, 2011). Up to the 1970s, positivist researchers deemed quantitative research as the gold standard of education research (Howe, 1992, 2009) which prompted an increasing appreciation for quantitative research methods across a range of academic disciplines (Plano Clark, 2010). However, by the end of the 1980s, a period recognized as the golden age of qualitative research, scholars increasingly adopted the constructivist-interpretive paradigm as the dominant research paradigm (Denzin and Lincoln, 2005; Ridenour and Newman, 2008 cited Plano Clark, 2010). Increasingly, quantitative, and qualitative methodological strategies were the subject of contentious debate as scholars increasingly began identifying limitations of each research approach. This occasioned a conflict between scholars. Onwuegbuzie (2002) contended that a combination of these methodologies failed to draw a link between "knowledge and the knower"-quantitative methods and natural science (positivist) or qualitative methods and social science (interpretivism). They were further critiqued for not considering the idea of multiple realities. This resulted in increasing conflict between paradigm purists who vociferously argued for the superiority of one method over another (Johnson and Onwuegbuzie, 2004) and constructivist-interpretivist who argued for the myth of good science, and the absurdity of strong relativism (Plano Clark, 2010). Some scholars argued that research needed to be pragmatic when responding to different constituencies (Plano Clark, 2010). Others further questioned the unchangeable, immutable, and exclusive nature of belief structures (Morgan, 2007 cited in Plano Clark, 2010). Charles Sanders Peirce, William James, and John Dewy promulgated that researchers should apply or use a mixture of approaches that co-ordinate best in a real-life situation (Essays, 2018). Increasingly, scholars began to realize that the messiness of complexity demands multiple investigative tools (Greene, 2008 cited in Plano Clark, 2010) as some issues are best captured by adopting multiple mental models and employing different methodological approaches (Plano Clark, 2010). This heralded a shift towards mixed methods research which was termed the "The third methodological movement" (Tashakkori and Teddlie, 2003a, p. ix cited in Plano, 2010), "the third research paradigm" (Johnson and Onwuegbuzie, 2004, p. 14 cited in Plano, 2010), and "a way of thinking" (Greene, 2007, p. 20).

Mixed methods research is defined as a methodology for conducting research that involves collecting, analyzing, and integrating quantitative and qualitative research in a single study or a longitudinal program of inquiry (Tashakkori and Creswell, 2007; Creswell and Plano Clark, 2011). This research approach has been critiqued in academic discourse across disciplines about its distinctiveness as a methodology, the coherency of its literature base, and the level of consensus around fundamental issues such as its philosophical foundations (Hesse-Biber and Leavy, 2006, 2008; Creswell and Plano Clark, 2007 cited in Plano, 2010). Equally, scholars further recognize the significance of mixed methods strategies in terms of enhancing transferability, generalizability, and practicality of significance of research (Onwuegbuzie and Leech, 2004). Scholars argue that applying mixed method approaches to food environment research enables the researcher to tackle a broader and complex range of research questions (UKEssays, 2018). This method allows for

multiple, dynamic factors to be described and explored (different people, in different settings, doing different things, at different times) (Creswell and Clark, 2007; Mason, 2007 cited in Wills *et al.*, 2019). It enables the researcher to add insights and methods that might be omitted when only a single method is adopted to produce more complete knowledge necessary to inform theory and practice (UKEssays, 2018).

There is a strand within the food environment work that calls for greater attention to be paid to the lived environment and people's qualitative choices (Caspi *et al.*, 2012, Engler-Stringer *et al.*, 2014, Penney *et al.*, 2014). Echoing calls from the wider literature highlight the potential for the greater use of mixed methods in food environment research to better understand people's lived geographies and qualitative choices. Within the background of food insecurity, poverty, and malnutrition, previous studies underscore the need for studies aimed at advancing the understanding of the lived experiences and people's qualitative choices (Williams *et al.*, 2012; Giskes *et al.*, 2009 cited in Diez *et al.*, 2017). Without the background knowledge of the lived environments (structure, function, and socio-economic issues that impact on food availability, accessibility, and stability) and qualitative choices which influence individual diets and behaviour, we are unable to design strategies that will the gaps in the food environment and broader food system challenges.

In one study, a mixed-methods approach combining quantitative, spatial, and qualitative data was used to shed light on the understudied associations between local food environments and health outcomes across areas of varying suburban development in an Australian context (Murphy *et al.*, 2018). The findings of this study revealed that access to supermarkets and fast-food chains was greater in established areas compared with urban-growth areas, and that fast food access was positively associated with the body-mass index in established areas and negatively associated with growth areas (Murphy *et al.*, 2018). This study made an important contribution to the evidence base by highlighting intra-urban associations between the food environment and health outcomes to guide urban planning and design policy in other rapidly growing cities worldwide (Murphy *et al.*, 2018).

In a similar study, the mixed-method approach was used to assess healthy food availability, accessibility, and affordability using GIS-based measures and in-store audits to evaluate low-income neighbourhoods of Los Rosales, Spain (Diez *et al.*, 2017). The study found that residents experienced the retail food environment differently from what researchers analyzed through GIS-based measures and in-store audits (Diez *et al.*, 2017). The quantitative results revealed a widely served and highly accessible retail food environment, where 98% of residents could access a healthy food store within a walking travel distance of fewer than 15 meters (Diez *et al.*, 2017). The findings of this study advanced that local food is influenced by; macro-level system drivers (political and economic factors, industry and market forces, and cultural and social factors), meso-level drivers (environmental and socio-cultural factors), and micro-level/ individual factors (individual characteristics, individual behaviour, and heredity factors) which manifest in health

outcomes (Diez *et al.*, 2017). The findings demonstrate that using both objective neighbourhood-level measures and subjective perceptions enables researchers to gain a more comprehensive understanding of how the food environment influences residents' diets (Diez *et al.*, 2017).

Bridle-Fitzpatrick (2015) employed a multidimensional approach to explore the role of the food environment in shaping eating patterns in low, middle, and high-income communities in Mexico. The findings of this study established that it is important to consider the context in which we make choices about food as these choices often influence our decisions, behaviour, and preferences (Payne and Bettman, 1999; Thaler and Sunstein, 2003 cited in Bridle-Fitzpatrick, 2015). He further expands that the environment in which people make decisions can “nudge” us toward behaviours that satisfy immediate impulses, on one hand, or that serve our long-term interests, on the other (Thaler and Sunstein, 2009 cited in Bridle-Fitzpatrick, 2015). Bridle-Fitzpatrick (2015) argues that individuals' interactions with their food environments are more complex than can be grasped by GIS analysis of residential neighbourhoods alone. Therefore, there is a need to adopt a multidimensional approach to reach beyond a narrow focus on food store types and the distance from residence to grocery stores when analyzing food access (Kwan, 2012; Rainham *et al.*, 2010; Widener *et al.*, 2013 cited in Bridle-Fitzpatrick, 2015).

The discourse widely demonstrates that the mixed-method approach which integrates quantitative and qualitative research and data, in breadth and depth of understanding and corroboration of the research topic can be an applicable conceptual framework for the inquiry into the food environment. The literature has established that the mixed method approach provides an opportunity for researchers to continuously look at a research question from different angles and clarify unexpected findings and/or potential contradictions. It also enables for elaborating, clarifying, or building on findings from other methods. The subsequent section will explore how participatory retail mapping as a mixed-method approach could be employed to expose people's lived geographies and their foodways and their qualitative choices in their lived environments.

### **2.7.2 Participatory-Retail Mapping**

Participatory mapping is a general term used to define a set of approaches and techniques that combines the tools of modern cartography with participatory methods to record and represent the spatial knowledge of local communities (Warren, 2004). Participatory mapping is a map-making process that attempts to illustrate the association between land and local communities by using the commonly understood and recognized language of cartography (Buchanan, 2016). In its broadest sense, participatory mapping means the creation of maps by local communities – often with the involvement of supporting organizations including governments, NGOs, or other actors engaged in the development or land-related planning. Participatory maps provide a valuable visible representation of what a community perceives as its place and the

significant features within it. The process of mapping can contribute to building community cohesion, help to engage participants to be involved in resource and land-related decision-making (Jankowski, 2009), raising awareness about pressing land-related issues, and ultimately contribute to empowering local communities and their members (IFAD, 2009).

Retail mapping is described as a mapping approach used to identify and represent spatially demographic locations of food and retail stores in the study area. It has emerged as a powerful tool for identifying the demographic characteristics of people who use retail stores, find locations with desirable demographics and promoting strategic site selection (Maptitude Geographic Information System, 2018). Past studies have employed retail mapping techniques to determine the retail structure or identify geographic locations with inadequate food availability and food access (Donkin *et al.*, 1999), while other studies have employed retail mapping to assess the determinants of food security in the urban context (Cummins, 2005). However, a few studies have employed retail mapping and participatory mapping in a single study. This thesis addresses this gap in the literature.

Participatory retail mapping has been used for a whole range of other purposes, some of which can combine with or complement uses for natural resource management and indigenous cultural knowledge (Chambers, 2006). Moreover, it has emerged as a useful approach for introducing the food system concept, which is somewhat abstract (Wilsey and Dover, 2009). Participatory maps provide a valuable visible representation of what a community perceives as its place and the significant features within it (Chambers, 2006). Participatory mapping has been used in a range of fields, including food systems research. A study conducted by Jacobi *et al.* (2019) which maps the food system in Kenya and Bolivia to achieve an improved understanding of the system actors and activities and identify bottlenecks and leverage points that interventions or policies should address to make a food system more sustainable demonstrates that participatory mapping can be a powerful technique in visualizing food system challenges which are widely misunderstood in policy and planning. In a similar study, participatory mapping is employed to capture the geography of foodscapes and contextualize local knowledge of low-income settlements in Nairobi (Ahmed *et al.*, 2019) and advocate for increased recognition of the role that street vendors and the informal sector plays in ensuring food access to low-income communities.

A separate but similar study has employed participatory mapping to identify desirable food pathways to ensure a sustainable food system that provides nutritious food (Bellay, 2012), while other studies have employed participatory mapping techniques to capture the diversity of personal food systems within community food systems (Wilsey, 2009) to mobilize attention on food insecurity issues and advocate for a transformation of the global food system (Bellay, 2012). More recent studies have employed participatory mapping to evaluate the food systems cycle from inputs to production, distribution, processing, consumption, and waste management in efforts to refine small-scale farmers' mental models (Kopainsky *et al.*, 2017). However, limited studies have employed participatory mapping to assess the socio-spatial

dynamics influencing food utilization and food accessibility in the urban context and more particularly in the South African context. Limited studies have endeavoured to employ participatory retail mapping to describe how the physical environment affects food access, availability, and utilization in the urban context. This thesis, which focuses on the food environment of Masiphumelele aims to address this gap in the literature. It seeks to understand how the mixed method approach could be employed as an approach to facilitate an advanced understanding of food access in Masiphumelele.

### **2.7.3 The Socio-Ecological Approach as the Theoretical Framework**

The socio-ecological approach, which is based on ecological systems theory, is a framework or set of theoretical principles for understanding the dynamic interrelations among various personal and environmental factors (Bronfenbrenner, 1989). Bronfenbrenner (1989) postulated that to understand human development, the entire ecological system in which growth occurs needs to be considered. The socio-ecological theory espouses that human development is shaped by several systems or contexts (Bronfenbrenner, 1989 cited in Moore *et al.*, 2013). These include: “the immediate settings in which individuals participate (e.g., home, school, workplace) and relationships within and between them; relationships between settings in which the person does not participate but which affect the immediate environment (e.g., the education system); and generalized patterns that define the substance and structure of other systems like societies and social groups” (Bronfenbrenner, 1989 cited in Moore *et al.*, 2013).

Robinson’s (2008) literature review which employed the socio-ecological approach to examine the dietary behaviours, focusing on fruit and vegetable intake, of low-income African Americans to offer a rationale for and guidance on integrating socio-ecological concepts into health-promoting programs revealed that the socio-ecological model provides a useful framework for achieving an improved understanding of the multiple factors and barriers that impact dietary behaviours. Moore’s *et al.* (2013) review of case studies on the socio-ecological framework revealed that, rather than being seen as competing alternatives, diverse approaches to improving the diets of school children should be considered in terms of their potential to be complementary and synergistic, acting at multiple levels to improve acceptability, fidelity, effectiveness, and sustainability. These findings were crucial in highlighting the pertinence of recognizing intrapersonal, interpersonal, organizational/settings, community, environment, and political influences, and their interactions when seeking to develop effective and sustainable solutions to improving dietary outcomes (Moore *et al.*, 2013). In a similar study, de Villiers and Faber (2013) found that socio-ecological theory posits that health outcomes and behaviours are influenced by complex and interacting factors across multiple levels of influence including the individual, social (family or social group), community, institutional, and policy levels.

The discourse reveals that the socio-ecological model provides a useful framework for achieving an improved understanding of the intrapersonal, interpersonal, organizational/settings, community, environment, and political influences, and their interactions in terms of shaping food behaviours. The review ascertains that the socio-ecological approach can guide the development of culturally appropriate and sensitive food intervention strategies for African countries (de Villiers and Faber, 2016). However, most interventions that aim to alter food choice and related behaviours have been developed using principles from health psychology and health education, with interventions largely targeted at the individual level (Moore *et al.*, 2013). Increasingly, scholars are beginning to recognize that food choice and consumption are strongly influenced by a range of other factors operating at multiple levels of influence across domains including the environment, social context, policy, and culture (Moore *et al.*, 2013). The discourse widely acknowledges the value of the socio-ecological perspective enables the increased awareness of interdependencies and interrelationships that exist between people, communities, and society at large. The socio-ecological approach enables for the improved understanding of how broader physical, social, political, economic, ethical, and cultural contexts and histories influence the food environments in ways in which they (and other people) do and enables people to deduce meaning out of their observations and experiences within these environments. Guided by the socio-ecological approach as the theoretical framework underpinning the analysis, this thesis will interpret the interrelationships that exist between people and their food environments as shaped by the complex interplay of personal, cultural, and environmental factors which shape how they respond to these challenges.

## 2.8 Conclusion

This chapter explored the broad definition of food and nutrition security, food systems, food environments, and the interaction of individuals with their food environments. It started with a review of the definition of food security in policy and practice. This section solidified that the concept and definition of food security have evolved dramatically during the last decades in theory and practice (Gross *et al.*, 2000) from the first introduction of the concept in the early 1940s (Pangaribowo *et al.*, 2013). Since then, several conceptual frameworks have been developed to define food security and its nexus (Pangaribowo *et al.*, 2013) which have contributed to the change in the conceptualization and framing of the food insecurity problem from being defined as a problem that manifests at the individual level (which defines food security implies that every individual has access to enough food to maintain a healthy and active life (McCalla and Revoredo, 1999: 96 cited in Nkwana, 2015)) to a problem at the universal level where it ensures access by all people at all times to food required for a healthy life (Nkwana, 2015). This section further ascertained that food security in both urban and rural South African households is largely dependent on cash incomes (Faber and Drimie 2016). Many urban households do not (or cannot) grow their food, and rely on local supermarkets,

convenience stores, informal retailers, and street vendors to purchase the foods they consume (Battersby-Lennard and Haysom 2012, Faber and Drimie 2016). It advanced that food security should consider the entitlement of individuals of a country to food at the relative ease of access and affordable prices (Kolawale, 1989 cited in Muktar, 2011).

This chapter proceeded to evaluate the four pillars of food security. The literature revealed that to draw the interconnections between availability, accessibility, and utilization in urban food environments, it is essential to view urban food security as multi-scalar and multi-dimensional. At the household scale, it is essential to consider the economic, infrastructural, social, and physical asset base of the household as it shapes food behaviours and food choices within these food environments (Battersby *et al.*, 2018). The discourse revealed that a focus on availability alone is not enough to achieve food and nutrition security as the achievement of food security is dependent on adequate availability, accessibility, the capacity to utilize foods, and the stability of this availability, accessibility, and utilization (Battersby *et al.*, 2018). Simply making food available is not enough to ensure food security as low-income households must be able to purchase it (Feleke *et al.*, 2005 cited in Battersby *et al.*, 2018). Similarly, the availability of sufficient food will not ensure a good nutritional outcome if poor health results in frequent sickness (Feleke *et al.*, 2005). The literature further underscored the need for expanding our understanding of accessibility further to reconnect to Sen's entitlement framework as entitlements are a necessary means of providing food. This includes giving greater recognition to the utilization pillar which often shapes or constrains food choices, behaviours, and impacts on the ability of communities to utilize the food that is available and accessible. Scholars and researcher posit those issues of access transcends mere availability of food to encompass other structural systems such as the broader food system and urban system, socio-cultural variables, and non-food factors such as the spatial characteristics of the urban settlement and governance interventions (Battersby and Watson, 2018). Therefore, relying solely on understanding access through the household scale or the lens of physical and economic access has limitations as it does not consider the social aspects and other household-scale characteristics that are related which shape or constrain food choices and behaviours and how people experience their lived environment. Scholars and researchers from a variety of perspectives stress that the assessment of access should go beyond the household scale and consider the structure, function, income and expenditure, and other household-scale characteristics which impact how people experience their lived environment. Yet, limited studies have endeavoured to establish these interconnections. Building on the growing body of scholarly and policy interest in food environments, this thesis seeks to better understand the issues of access. It asserts that drawing linkages between the different dimensions of access (physical, economic, and social) is crucial to improving food and nutrition security influencing the food environment to better support food choices.

The section on stability further revealed the stability of different sources of food is largely impacted by external shocks and stresses that do not have uniform impacts on the different sources. Therefore, the urban poor need to draw on food sourcing strategies to ensure the stability of access. However, these strategies require policymakers and planners to adopt an approach to food security that is based on achieving an improved understanding of the food system that feeds the urban poor and improving capacity for the development of policy interventions that support rather than inhibit food security.

The review of literature has ascertained that since the late 1990s, the dominant approach to researching food environments in North America and Europe has been the study of food deserts to highlight inequities in the food system. However, much of the food environment work has focussed on food deserts, which has come to be conflated with supermarket access and does not accurately capture the realities of food inaccessibility in Africa's urban informal food deserts (Crush *et al.*, 2019). This has been highly critiqued in the global north and further in the global south, particularly for its lack of engagement with the informal food sector. As outlined in this chapter, the discourse of food deserts in the United States, United Kingdom, and elsewhere in the global North position that; supermarkets provide better access to healthier food; low-income areas have poor access to healthy food; and that food security can be reduced to economic and physical accessibility (Battersby, 2019). However, more recently there has been a move towards focussing on the wider food environment with increasing research attempting to highlight the structural inequalities in the food system within the broader context of urban poverty and intra-urban inequalities. This section has revealed that the rhetoric of the food desert is not a problem to be solved by the establishment of new supermarkets. Supermarkets are not proxy for physical and economic access to healthy foods. The literature makes it evident that improving the physical and economic access to healthy foods is not the solution to improving access as food deserts are impacted by a range of 'physical' barriers which originate at various levels. These barriers range according to consumer's physical ability to access and acquire foods and the nature of the landscape they must traverse to access food. This section further revealed that people's lived geographies and their foodways need to be acknowledged as they provide useful insights for the development of policies aimed at improving the community's capacity to access appropriate food. The discourse asserts that a clearer understanding of these is crucial to improving communities' agency for change.

The discourse further revealed that there is a strand within the food environment work that calls for greater attention to be paid to the lived environment and people's qualitative choices (Caspi *et al.*, 2012, Engler-Stringer *et al.*, 2014, Penney *et al.*, 2014). Echoing calls from the wider literature highlight the potential for the greater use of mixed methods in food environment research to better understand people's lived geographies and qualitative choices. The discourse widely demonstrates that the mixed-method approach which integrates quantitative and qualitative research and data, in breadth and depth of understanding and

corroboration of the research topic can be an applicable conceptual framework for the inquiry into the food environment. The literature has established that the mixed method approach provides an opportunity for researchers to continuously look at a research question from different angles and clarify unexpected findings and/or potential contradictions. It also enables for elaborating, clarifying, or building on findings from other methods.

Guided by the socio-ecological approach as the theoretical framework underpinning the analysis, this thesis will describe how the physical environment affects food access, availability, and utilization in the urban context. Having established this understanding, this thesis will further identify and interpret the interrelationships that exist between people and their food environments as shaped by the complex interplay of personal, cultural, and environmental factors. The subsequent chapter will further explore how participatory retail mapping as a mixed-method approach could be employed to expose people's lived geographies and their foodways and their qualitative choices in their lived environments.

## Chapter 3: Research Methodology

### 3.1 Introduction

According to Henning *et al.* (2014), research is not conducted in a vacuum, it is framed within a research paradigm (Henning *et al.*, 2004:12). Research is often viewed through the lens of a mindset and constructed using specific approaches and techniques. All research is based on some underlying philosophical assumptions about what constitutes 'valid' research. It will further account for the range of research methods that are considered appropriate for the development of knowledge (Clavier, 2013). This is characterized as the research methodology. Research methodology describes the way that research is conducted. It describes the set of methods used for data collection, analysis, and findings that suit the research purpose and answer the research questions.

According to Walsham (1995), to conduct and evaluate any research, researchers must provide evidence and justification for the choice of research methods applied (Walsham, 1995 cited in Clavier, 2013). Through a high-level review of the research methodology, this chapter describes the research paradigm and the suite of methods applied for data collection. It concludes to discuss the philosophical assumptions and describes the approach used for analysis.

## 3.2 Background and Description of Study Area



Figure 2: Map produced for Nourishing Spaces project by Christian Alexander.

Masiphumelele which means “we shall succeed” is a largely Xhosa-speaking low-income high-density settlement located on the edges of a wetland between Kommetjie, Fish Hoek, and Noordhoek in Cape Town. Masiphumelele, which is part of Ward 69 is effectively hemmed in on three sides: with the Sunnyvale residential area to the East, the Kommetjie industrial area to the west, and the main Fish Hoek, Kommetjie Road to the South (MasiCorp, 2020). Part of Masiphumelele is an informal settlement area that lies to the north of Masiphumelele densely populated formal housing area widely known as the Wetlands. Many of those living here, some since the 1990s, are former “backyarders” who built shacks on illegal infilling or on stilts within the permanent wet zone that is part of the greater Noordhoek wetlands system (Yeld, 2020).

Masiphumelele was initially established in the early 1980s by a group of 400-500 people close to the bush area near the junction where the Long Beach shopping mall is now located. Under the old Apartheid laws, families were forcibly removed. These people were told that they had to live in the poorly set up township of Khayelitsha, on the outskirts of Cape Town, more than 30 kilometres away. For those who had found work

in the Fish Hoek area, it meant that they had to travel long journeys on a bicycle or public transport daily to commute to work (MasiCorp, 2020). Nearly ten years later, in 1991/92 as Apartheid was ending, a group of people from Khayelitsha, joined by a few thousand people from the Eastern Cape who hoped to find work in the area, tried to move back into the area so that they could be closer to work (MasiCorp, 2020). This area was renamed Masiphumelele by the people soon after. In the early 1990s, about 8000 people built their shacks and simple homes and started to set up their community. This area has grown rapidly over the years to accommodate a mix of people that now live in the area (MasiCorp, 2020).

At present, Masiphumelele is home to a population of more than 15 970 (Statistics South Africa, 2011) with estimates as high as 30,000 people (Living Hope, 2020). Official census statistics in all townships in South Africa are unreliable, mainly because the residents are very often unwilling to cooperate with the census-takers for fear it will be to their disadvantage in some way. Furthermore, the population has more than doubled over the years and has grown by more than three times since then which means that these figures are now very out-of-date.

The most recent census data available date from 2011. Given the rate of growth of Masiphumelele, this data has limited utility, and so a survey conducted by local NGOs is used here. Accordingly, about 15% of residents are housed in brick or block-built houses and 85% in shacks of various types. Thousands of shacks have been built around the brick houses as the population has continued to explode. This has led to even poorer living conditions for the inhabitants of this township (Living Hope, 2020). Most Masiphumelele families, of up to 5 or 6, live in one or two-roomed shacks with little to no resources (running water, electricity, and adequate sanitation) (MasiCorp, 2020).

According to the draft report on the socio-economic profile of Ward 69 which contains Fish Hoek, Masiphumelele, Noordhoek, and Sunningdale, just over 35% of the population in Masiphumelele has an annual income of less than R19,200 (i.e., zero or less than approximately R 25 000 per year). Within Ward 69, Fish Hoek, Noordhoek, and Sunningdale are pleasant residential areas, so one can assume that most of the people on low incomes live in Masiphumelele (MasiCorp, 2020).

Residents come from diverse backgrounds, including the Eastern Cape, other parts of South Africa, Somalia, Zimbabwe, and other neighbouring countries. According to the 2011 Census, approximately 90% of the population is predominantly Black/African and isiXhosa speaking (StatsSA, 2011). Masiphumelele has a large proportion of young people: 48% of the population is under the age of twenty-five (Census, 2011). Moreover, the rate of unemployment is high and currently stands at about 75-80% (Living Hope, 2020).

Unemployment and lack of employment opportunities, alcohol and substance abuse, housing/land issues, and criminal behaviour (particularly break-ins) are identified as key socioeconomic issues that this community is battling with (Living Hope, 2020). Many South African community members in Masiphumelele depend on home rentals as their main source of income. This has been such a norm in this

community to an extent that South Africans let their homes to mainly South African residents and foreign nationals and move to the nearby Wetlands shack settlement or stay in backyard shacks in their own houses (Freedom House, 2017) to make ends meet. A sizable number of people work as domestic workers, gardeners, or contractors in the nearby ‘white’ and local industrial areas and malls, while many foreign nationals own small businesses in the area. These include spaza shops, internet cafes, barbershops, and car repair shops (Living Hope, 2020). Others work for NGOs and local community organizations like Hokisa, Living Hope, and the Masiphumelele Public Library.

Until 1995, there was no formal infrastructure in this area. Social and recreational resources in the area are scarce and access to service delivery remains a principal challenge, especially for those residents living in the wetlands area (Ntongana, 2017). Residents living in the Wetlands part of Masiphumelele are subjected to appalling conditions where they face major health and safety risks (Ntongana, 2017). During the winter months, the living conditions in the Wetlands worsen with the winds, rain, and cold and the rising waters of the wetlands (Ntongana, 2017) and new pressures on this environment. According to the documentation on the Proposed Road Upgrading Project 2020, water in this area has become polluted, degrading the wetland, and diarrhoeal diseases are a significant and constant problem among residents, particularly children (Yeld, 2020). Fire represents another also a “constant and significant risk” (Yeld, 2020). The densely packed shacks, the lack of road access, and limited water resources make firefighting operations difficult (Yeld, 2020). This often results in many people being distressed after losing their homes and belongings. While plans to upgrade parts of Masiphumelele by maximizing housing opportunities in the space between the proposed new road and the existing formal housing in Masiphumelele (Upgrade project formally called the Houmoed Avenue Extension: Phase 2), the lockdown disrupted the standard decision-making process which also affected progress in getting this project off the ground (Yeld, 2020).

Other socio-economic challenges in Masiphumelele include high rates of crime, scarce police presence which contributes to increased crime and domestic violence rates, lack of adequate infrastructure, health care facilities to cater for the growing population, lack of adequate access to basic services like water and sanitation, lack of adequate housing, and high risk of fire and flooding (Living Hope, 2020). Other key threats in this community include rapid growth in the size of the population, uneven development, a high rate of poverty, xenophobia, and malnutrition (Yeld, 2020).

More than 85% of the households in Masiphumelele are extremely poor and food insecure. They lack adequate access to food, running water, and sanitation (Römmelmann, 2018; MasiCorp, 2020). Despite research efforts and interventions piloted to address food security challenges and increase household's capacity to secure food, the state of food security continues to remain a principal challenge. The recent Covid-19 pandemic and national lockdown further exacerbated the state of food insecurity and rendered this community more vulnerable to external shocks in the food supply. During this period, many families

experienced hunger as many people lost their jobs or forms of income and became reliant on social grants, emergency food aid, and community kitchens to meet their everyday food needs.

Against this background, Masiphumelele is a suitable setting for this study. The severity of the food insecurity, spatial complexities of the local situation, and range of socio-economic factors which influence the structure, function of the food environment in Masiphumelele situates it as a context for this study.

### 3.3 Methodology

The methodology is well-delineated as a strategy of inquiry that guides a set of procedures (Denzin and Lincoln, 2000; Creswell, 2009 cited in Petty *et al.*, 2012). It describes the broad philosophical underpinning of your chosen research methods and the set of methods, ideas, or guidelines used to analyze, evaluate, and interpret qualitative and quantitative data to investigate an underlying phenomenon (Creswell, 2009). Informed by the food environment literature, a mixed-methods approach was employed for the collection of data for this study. The mixed-method approach was used to provide information-rich findings that describe people's lived geographies and qualitative choices. This chapter describes the broad philosophical underpinnings of this study and a suite of methods and mapping approaches used to analyze, evaluate, and interpret qualitative and quantitative data.

### 3.4 Fieldwork & Data Collection Methods

Four phases of fieldwork were carried out between January 2019 and February 2021 for this study. The first phase of the fieldwork entailed a food retail mapping exercise and semi-structured interviews conducted with retailers within the study area. The retail mapping exercise recorded GPS coordinates of formal and informal (street food vendors, backyard shop operators, spaza shops, food containers) locations within the study area where food is sold. These were recorded on Google Maps and later used to produce a map. The second phase of the fieldwork entailed conducting participatory mapping exercises with participants from the study area in a focus group setup. The same participants were used for the participatory mapping and focus group discussions. The participatory mapping served to describe the physical environment of Masiphumelele and how it affects food access, availability, and utilization. It identified the multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) which shape how participants respond to food system challenges at different scales. The third phase of the fieldwork entailed a focus group discussion with the same group of participants that partook in the participatory mapping. The aim of using the same participants was for continuity and to build on the concepts and information provided in both sessions. The focus group described the social environment of food access. It expounded the

multiple, interrelated interpersonal factors like taste preferences, individual habits, nutritional knowledge, and skills), interpersonal level/social environment (processes whereby culture, social traditions, family structure, and role expectations impact eating practices; and patterns within peer groups, friends, and family) which impact on individual's ability to access and utilize available food to meet their food needs. During the focus group, the researcher played the role of the facilitator. The focus group provided information about the drivers of the food system and how the community responds to food system pressures at multiple levels.

The fourth phase of the fieldwork entailed GIS mapping. For the mapping, the GPS coordinates were exported from Google Maps and extrapolated onto an Excel spreadsheet. The accuracy of the recorded GPS coordinates was confirmed, and the data was cleaned. The cleaned spreadsheet was then added as a data layer on ArcGIS 10.4 and manipulated using the capabilities of the system to reveal the locations of the formal and informal retail stores within the study area. Another data layer inclusive of roads, street names, were added to this map as part of the spatial data and the social data from the participatory mapping was added as an overlay data layer. This created a map that enables the assessment of the food locations in the context of spatial attributes and socio-economic considerations for analysis.

### 3.5 Retail Mapping

Retail mapping was employed as the quantitative method of this study. Retail mapping was used to illustrate the spatial element of the food environment. The retail mapping exercise recorded GPS coordinates of formal and informal (street food vendors, backyard shop operators, spaza shops, food containers) locations within the study area where food is sold. The mapping was inclusive of the Wetland portion of Masiphumelele, as a strategy to provide a comprehensive account of the food environment in the study area.

The retail mapping process was conducted between 01 January 2019 and 31 March 2019. Six retail mapping sessions were conducted. The first session was intended to pilot the mapping and establish rapport in the study area, the subsequent four sessions captured the formal and informal retail locations and the last session conducted between January and February 2020 was to validate GPS points recorded and to corroborate the findings. For analysis, only the sessions where mapping took place are discussed.

Two research assistants were recruited to assist the researcher in undertaking the mapping and facilitating the focus group meetings. Mapping was conducted at different times of the day and month to ensure diversity in the dataset, corroborate the data, and ensure authenticity in the dataset. Each retail mapping session was for four hours with each session covering different areas of the study area. The areas that were to be mapped in each session were planned before actual mapping. This decision was based on the discretion of the research assistants' overall understanding of retail activity patterns and operating times of each

retailer. The identification of the broad categories and typologies for the mapping and noting of possible questions for the semi-structured interviews was also established as part of the pilot session.

### 3.5.1 Retail Mapping Part 1

The retail mapping exercise recorded GPS coordinates of formal and informal (street food vendors, backyard shop operators, spaza shops, food containers) locations within the study area where food is sold. The mapping was in the form of a street survey where the researcher, along with two research assistants conducted a street moved door-to-door around the study area recording the GPS coordinates and conducting semi-structured interviews with the retailers. With the use of a hand-help smartphone device, A4 size printed topographical map of the study area, a clipboard with the interview questionnaires, a smartphone device with a camera, the mapping also recorded the name, type, and geographic coordinates of the formal of each retail location. With the permission of the retailer, the mapping procedure entailed; recoding the category of the retail location, recording the name of the retail store or food vendor, street/location, pin their GPS location on Google Maps and mark this location on the A4 topographical map for triangulation of the data set and take a picture of the retail store. To get consent, the researcher introduced the aims and objectives of the study and explained the type of information that was required. Full voluntary verbal consent was sought to record; the retail activity of each location, types of foods sold at each store, areas of non-trade, and other non-participant observations. The researcher also ensured that the conditions of the ethical clearance were upheld, and relevant ethical norms and standards were adhered to. After having obtained verbal consent, the researcher then proceeded to conduct a semi-structured interview with the retail owner or any employee in the store. The semi-structured interview questions provided more information on; the food types sold at the location, the operating hours, retail activity, the motivation for the types of food retailers stock and sell, challenges that retailers are confronted with in their efforts to provide access to safe and affordable foods.

The first retail mapping exercise was conducted at the beginning of the week, around midday. The areas that were mapped include Myeza Road; Ntantala Road, Nonkqubela Road, Masemola Road; Riverside Road; Masakhane Road; Mbekweni Road; Masonwabe Road; Kolobe Road; Nonkqubela Road; Masibulele Road; Luntu Road and Sobukwe Road (as reflected in *figure 2* below). A notable feature about this area was that it had the most foot traffic and was the most central.

The first retail locations that were mapped were the fruit and vegetable vendors located at the corner of Myeza and Ntantala Road. Most commonly, street vendors operate from open spaces in front of people's yards, while others were stationed near key public areas like near Masiphumelele Clinic, Masiphumelele High School Ukhanyo Primary School, the taxi rank, and M65 Kommetjie Road.

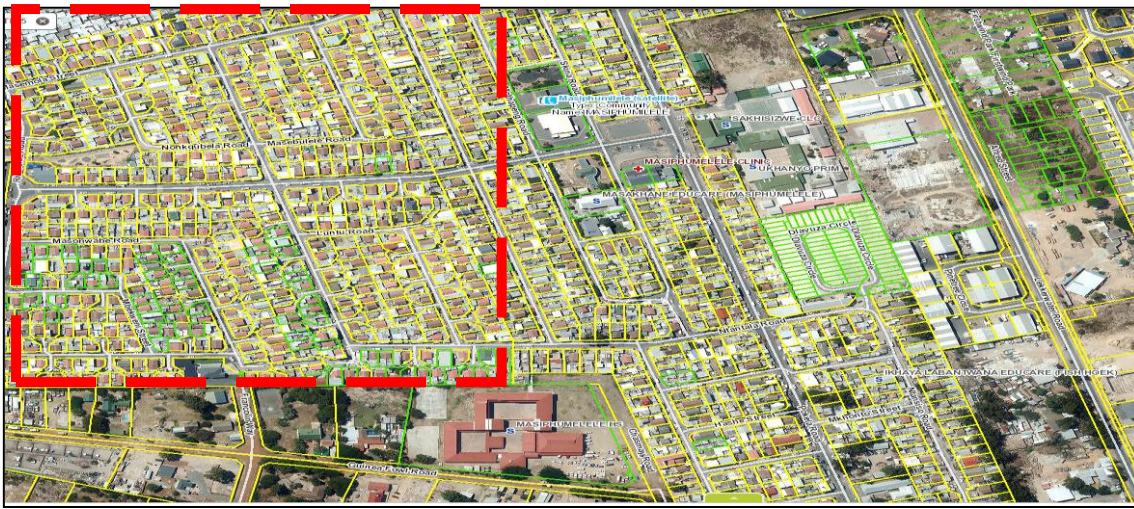


Figure 3: Locality Map of Area 1 of Retail Mapping

The limitations of mapping the street vendor locations were that some vendors were located directly next to each other or shared the same coordinate identity on Google Maps. For this reason, recording the vendor under a unique coordinate system was challenging. To mitigate this and ensure accuracy in the mapping, the researcher exercised discretion, either by pinning the locations directly next to each other or as close as possible on Google Maps. The research assistant recorded the street names and locations on the hard copy of the A4 topographical map and ensured that this was recorded as part of the field notes to ensure data triangulation during the final stage of mapping. The researcher then proceeded to conduct the semi-structured interview based on a set of questions drafted on an A4 sheet.

The interviewer ensured that participants were informed of their rights to anonymity and that they could withdraw from the study at any given point should they wish to do so. The interviews proceeded while the retailer attended to customers in the store. The researcher and research assistants are predominantly isiXhosa speaking. Taking into consideration that most of the common language spoken in the study area is predominantly isiXhosa, most of the retail interviews were conducted in isiXhosa. In cases where the participants were foreign traders who did not understand isiXhosa, the researcher switched to English and the interviews were conducted in English. The responses that were in isiXhosa were translated by the researcher into English during the interaction and in instances where the information was not translated, it was recorded and later transcribed to English. The responses to the questions were recorded on an A4 paper and later analyzed as part of the research findings.

The accuracy of the GPS points recorded was confirmed to corroborate the findings. The points were then extracted onto an Excel spreadsheet for mapping. Interview findings and fieldwork notes were transcribed and analyzed in English.

### 3.5.2 Retail Mapping Part 2

The second retail mapping exercise was conducted mid-week, around midday where the most retail activity was experienced. The areas that were mapped include Sobukwe Road, Mothapeng Road, Skina Road, Pokela Road, Masemola Road, Vilakazi Road, and Ntantala Road (as reflected by *figure 3* below). The same mapping procedure was applied to capture the formal and informal retail locations. The same procedure was undertaken to conduct the semi-informal interview.

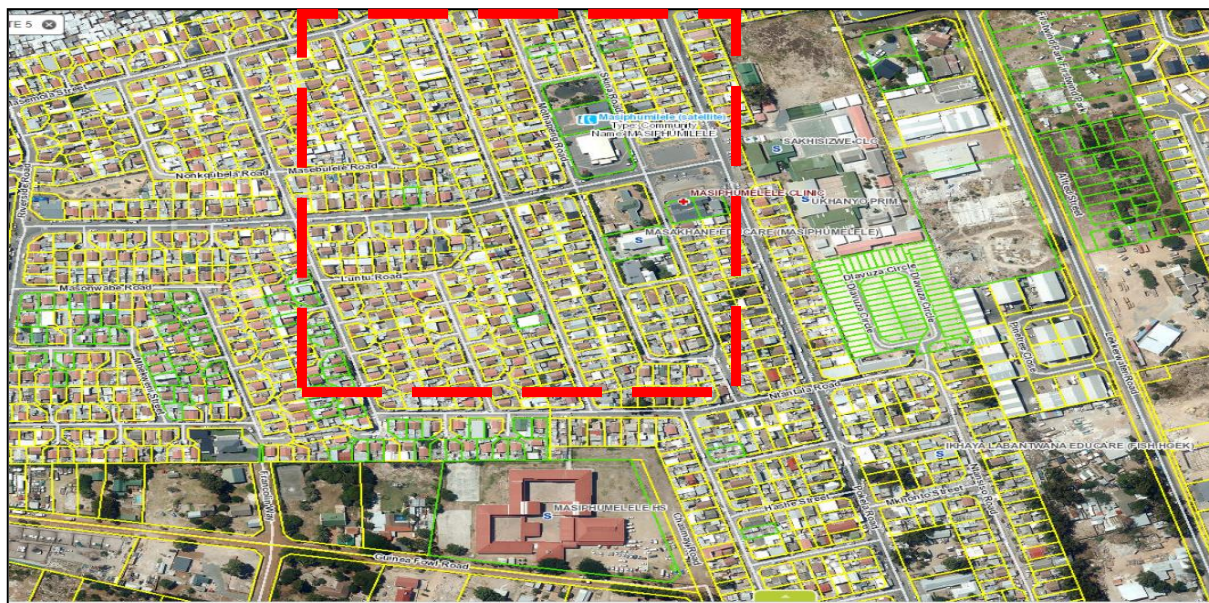


Figure 4: Locality Map of Area 2 of Retail Mapping

### 3.5.3 Retail Mapping Part 3

The third retail mapping exercise was conducted on a Saturday morning, around 11 am. The choice to conduct mapping over the weekend was to compare retail activity during the week as supposed to activity over the weekend and to record street food vendors that only operate over the weekends. The areas that were mapped include Sobukwe Road, Sisulu Road, Pokela Road, Mlokothe Road, Hashe Road, Mpetha Road, Linga Road, Tambo Road, M65 on Kommetjie Road; Food Zone, Leballo Road, and Ntantala Road. The same mapping procedure was applied to capture the formal and informal retail stores and food vendors. To ensure that all the retail locations were captured, the researcher went to all the streets previously recorded to check if the retail locations were recorded to correspond with the locations on site. This was to corroborate the findings and increase the reliability of the results. In cases where the retail stores were closed, the researcher pinned the coordinates of the location and the retail location recorded. Information on the food type sold at these locations was based on the readily available information.

The accuracy of the GPS points recorded was confirmed to corroborate the findings. The points were then extracted onto an Excel spreadsheet for mapping. Interview findings and fieldwork notes were transcribed and analyzed in English.

### 3.5.4 Retail Mapping Part 4

The fourth retail mapping was conducted towards the end of the week around midday. This covered the portion of Masiphumelele that lies on the outskirts, commonly known as the Wetlands. The same mapping procedure was applied to ensure all the retail and street food vendor locations were recorded. The limitations of mapping retail stores and food vendors located in the wetlands area were that the locations in this area were difficult to pin on Google Maps or not recognized by Google Maps. As a result, the accuracy of locations recorded in this cannot be confirmed. As an approach to addressing this mapping challenge, these retail locations were recorded on the hard copy of the topographical map, and images of the stores were taken to get the geotag identity of these retail locations for mapping.

An additional constraint in mapping the retail locations in the wetland area relates to accessibility and perceived fear of danger by the researcher and research assistants. The Wetlands part of Masiphumelele does not have formalized walkways or street names. As a result, this presented a safety challenge. For this reason, the accuracy of the retail locations recorded cannot be confirmed as only the locations located on the periphery were recorded on Google Maps. Other locations recorded were based on participant observations and field notes from the retail interviews.

The accuracy of the GPS points recorded was confirmed to corroborate the findings. The points were then extracted onto an Excel spreadsheet for mapping. Interview findings and fieldwork notes were transcribed and analyzed in English. The map with the pinned locations was saved and recorded as part of the retail mapping results. A total of 98 retail locations were recorded as part of the retail mapping process.

### 3.5.6 Post Mapping

The final post-mapping was conducted in February 2020. This was conducted in the form of a street survey. The researcher walked through the retail area and confirmed locations that were recorded against the information on the ground. The researcher also noted new locations that were not previously recorded as part of the mapping and field notes of the changes in the retail activity over time. This was intended to validate the information gathered and corroborate the findings.

Upon concluding the retail mapping process, the coordinates of the retail locations and street food vendors recorded on Google Maps were exported into an Excel Spreadsheet using Google Take Out. Using the A4 hardcopy of the topographical maps, the coordinates recorded on Google Maps were compared against the ones recorded on the hard copy. Coordinates that were not recorded were added to the spreadsheet following confirmation of these points on Google. The data on the Excel spreadsheet was then cleaned, verified, and input into ArcGIS for manipulation.

Six retail typologies were developed to represent retail locations in the study area. These were classified as; cash and carry retailers, cash store retailers, prepared food vendors, fruit, and vegetable vendors, braaied meat vendors, and butchery. A cash-and-carry or wholesaler is a large shop that enables one to buy goods in larger quantities and at lower prices than in supermarkets or wholesalers. For this study, a distinction was made between the general retailers. The cash and carry retailers represent cash and carry stores and wholesalers stores in the study area that sell in bulk and larger quantities. The cash store retailers represent extreme savers, convenience stores, or spaza shops around the study area that sell food in smaller quantities and sell a limited range of food and household items. The distinction made between the general retailers is based on the size and range of goods they sell, the pack sizes, prices, and location are to make it easier to assess access and availability of food in this food environment.

Prepared food vendors represented food vendors selling foods like fish and chips vendors, amagwinya generally in their front yards, backyards, or in containers structures, and street food vendors selling prepared food on street corners. Fruit and vegetable vendors represented fruit and vegetable vendors, mealies vendors, and vendors trading in indigenous food types. Butcheries included poultry stores and shops that trade in uncooked meat products. Braaied meat vendors represented retail locations trading in braaied meat (pork, chicken, chicken wings, sausage, beef, chicken feet, and liver kebabs).

Key findings from interviews conducted with retailers were used to inform the types of questions drafted for the participatory mapping exercises and the structure of the focus group. The findings of this chapter informed Chapter 4, the results discussion chapter.

**A table representing the number of retail locations captured for each typology.**

| Typology                    | Number of retail locations captured | Typical locations                                                                                                                                                                                               |
|-----------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cash and carry retailers    | 5                                   | Main roads and busy intersections with high foot traffic                                                                                                                                                        |
| Cash stores                 | 18                                  | Main roads and busy intersections with high foot traffic, within/in front of people's yards, backyards, containers, around street corners of busy intersections with high foot traffic, in between the houses   |
| Prepared food vendors       | 27                                  | close to education facilities, in front of people's yards, backyards, containers, around street corners of busy intersections with high foot traffic, in between the houses.                                    |
| Fruit and vegetable vendors | 31                                  | close to education facilities, main roads, and busy intersections around the study area; in front of people's yards, backyards, containers, around street corners of busy intersections, in between the houses. |
| Braaied meat vendors        | 11                                  | Near shebeens/taverns, main roads, and busy intersections with high foot traffic                                                                                                                                |
| Butchery                    | 5                                   | Near Food Zone with high foot traffic, in between houses.                                                                                                                                                       |

## 3.6 Participatory Mapping

Participatory mapping was employed as the mixed-method approach of this study. This section builds onto the research findings by outlining how the use of the participatory approach served to describe the physical environment of Masiphumelele and how it affects food access, availability, and utilization in Masiphumelele. This section begins to introduce the participatory methods applied for data collection and their significance in ensuring the achievement of the research aims and objectives. It proceeds to present the key findings of the mapping exercises and describes the socioeconomic data obtained.

### 3.6.1 Participatory Mapping Overview

The participatory mapping and the focus group discussions were sessions conducted in sequent where the first session entailed the participatory mapping exercises, followed by a second session where the focus group discussions were conducted. The same group of participants was used for the participatory mapping and focus group discussions. This was intended to gain an in-depth understanding of social issues, ensure continuity between the two sessions, and build on the knowledge sets provided in each session. The group of participants who partook in the participatory mapping and focus group were community members from Masiphumelele who displayed interest in taking part in the study. Participants were recruited with the help of two research assistants from Masiphumelele. The research participants were identified and recruited with the help of the supervisor's contact who had conducted a similar type of study in the research area. Upon having met with the researcher and having discussed the research aims and objectives, the research assistants identified possible participants to be approached to participate in this study. The selection of participants was based on a criterion for participation determined by the researcher. This criterion considered participants' knowledge about the food environment of the study area, food system issues, and overall understanding of the main challenges that the community is confronted with. The researcher also considered ethical considerations and the availability of participants for all scheduled sessions. Most commonly, participants who previously participated in a similar study were selected. As a recruiting strategy, each participant has presented an R50 voucher in the first focus group session and an R100 voucher for the second focus group to compensate for their time.

About twenty (20) participants were scoped for potential participation. As part of the scoping process, the researcher called participants and provided a brief scope of the research aims and objectives. As part of the scoping call, the researcher asked these participants to provide information on their age group, the area in Masiphumelele where they reside, occupation, availability, past participation in similar studies, and any constraints that would hinder their participation in both participatory mapping sessions and the focus group discussions should they be selected. Based on the information that was provided by participants during the scoping call, the researcher selected the twelve (12) participants who took part in this study. Subsequently,

participants were requested to join the Masiphumelele Food Environment WhatsApp Group in which the proposed session's date and times were confirmed, to communicate availability, and to remind participants to attend the sessions on the agreed-upon time.

Before mapping, questions were drafted and a structure for the mapping was formulated to pilot mapping and familiarize participants with the applied research method. The type of questions posed was intended to provide more context on the food and retail culture within the study area, expose cross-purpose issues of access, availability, and stability at multiple scales, and people's qualitative choices. These questions were printed, and each group was provided with a printout on the day of the mapping. The researcher also ensured that there were adequate resources (stationary, magazines, A4 maps) to be allocated to participants to ensure that the success of the mapping.

The participatory mapping and focus group were conducted on the same day. However, these were split into two sessions. The first session was the participatory mapping session and then the second session was the focus group session. The participatory mapping sessions took place from 09h00-11h00 at Masiphumelele Public Library. Each participatory mapping session lasted for two hours. In this time, 30 minutes were dedicated to an ice-breaker map training exercise. The ice-breaker exercises trained participants about maps/map-making, it elucidated the different purposes of maps and provided more education on the various mapping methods. Participants were also trained on how to draw on existing maps, how to represent features on a map, and how to indicate different forms of land uses on a map. The ice-breaker activities were useful in setting the context, introducing participatory mapping as a concept, and enabled the researcher to gauge participants' understanding of maps and map-making skills.

The researcher ensured that the scope of the activities to be conducted was clarified, ethical consideration and ethical clearance forms were signed, and general research expectations were communicated. The researcher provided participants with the opportunity to ask any questions, seek clarity, or provide any comments about the mapping procedure or the research study in general, and following this, the mapping exercises proceeded as scheduled. The participatory mapping findings are discussed in the subsequent chapter.

The 30 minutes' icebreaker exercises were conducted as a group where all participants were allowed to participate and provide inputs into the mapping process. Ice breaker exercises provide an effective way of making the sessions fun and interactive and help participants get to know each other better. By getting to know each other, the facilitators, and learning about the objectives of the study, participants can become more engaged in map-making and therefore, contribute more effectively towards a successful outcome. The researcher facilitated the ice breaker exercises to achieve these objectives.

As part of this exercise, participants were broken up into two groups and asked to use the hard copy map provided to identify as many key geographic features as they could in the study area. Participants were requested to identify key geographic features like; the Masiphumelele Library, Masiphumelele Clinic, Ukhanyo Primary School, the taxi rank, Masiphumelele High School, the Sports Field, Fire Station, Old Kommetjie Road and the Food Zone, and any other feature they considered to be a key feature. The two groups then had to present their maps to see which group had identified the most features. The winning group members were all given a small prize. Upon concluding the ice-breaker exercise and addressing all questions raised, the participatory mapping session continued as planned.

### 3.7 Participatory Mapping Session 1

The first participatory mapping exercise took place on Saturday, 02 March 2019 from 08h00-10h00 at the Masiphumelele Public Library. The library was selected as a suitable venue for this session because its neutral, easily accessible to all participants, and had the necessary amenities to enable the sessions to be conducted efficiently. The researcher adopted the role of a facilitator and the two research assistants assisted with the logistics.

Participants were divided into two groups of six. A research assistant was assigned to each group to assist with questions during the mapping, to ensure discussions were moderated, and ensure that key responses were recorded for data analysis. Each group also selected a group leader who was responsible for transcribing and representing key points from the group discussions. Each group was allowed to self-organize and select their group leaders. Breaking participants into groups proved to be a useful strategy for enabling the representation of different views and ensuring that discussions are controllable.

Each group was allocated with A3 paper, an A4 exam pad, a topographical map of the study area, exercise questions, newspapers, and magazines, and drawing tools such as colored pens, markers, and color-coded stickers. Participants were requested to use the topographical maps provided to identify key geographic features in the study area like; their street names, key geographic features like; the Masiphumelele Library, Masiphumelele Clinic, the taxi rank, Ukhanyo Primary School, Masiphumelele High School, the Sports Field, Fire Station, Old Kommetjie Road, and the Food Zone. These were marked with an X. For the second component of this exercise, participants had to identify formal and informal retail locations within the study area. Participants were asked to identify cash and carry stores, cash stores, spaza shops, prepared food vendors or street food vendors, fruit and vegetable vendors, and other locations where they purchase most of their food items from. These were marked in green.

As part of the debriefing, participants were asked to discuss within their groups the retail locations they had identified, describe the types of food they obtain at these locations, how often they access these locations, and activities they associate with these locations. Participants were then asked to identify locations where they purchase most of their food items from, the frequency (periods of the day or month) of buying, and their motivation for choosing these locations as supposed to others. Responses were recorded on the A4 sheet provided.

The theme of the subsequent exercise was around food access. Participants were asked to use the magazines allocated to make a collage describing food access. The participants were requested to use the magazines allocated to find pictures of the things that represent what they considered to be key factors impacting their ability to access different foods to meet their food needs or to utilize the food that is available in their food environment. The participants were then requested to paste these pictures that they had cut from these magazines on the A3 paper provided in the order of their importance. Participants could choose how they demonstrate importance either by choosing bigger pictures to represent importance or by drawing arrows on the map to connect different aspects. As part of the second exercise, participants were asked to make a collage of the asserts that they would require to access different foods in their food environment. Participants were requested to cut and paste these pictures on their maps in the order of their importance. The last mapping exercise illustrated the qualitative choices around food access. Participants were asked to make a collage of the type of things that determine their food choices, where they choose to buy, what they buy, and how they make these purchases. The participants had to describe which factors impact these choices or conditions which either enable or constrain these choices. The collages produced and responses were recorded on the A4 sheet provided and are further discussed in the results chapter.

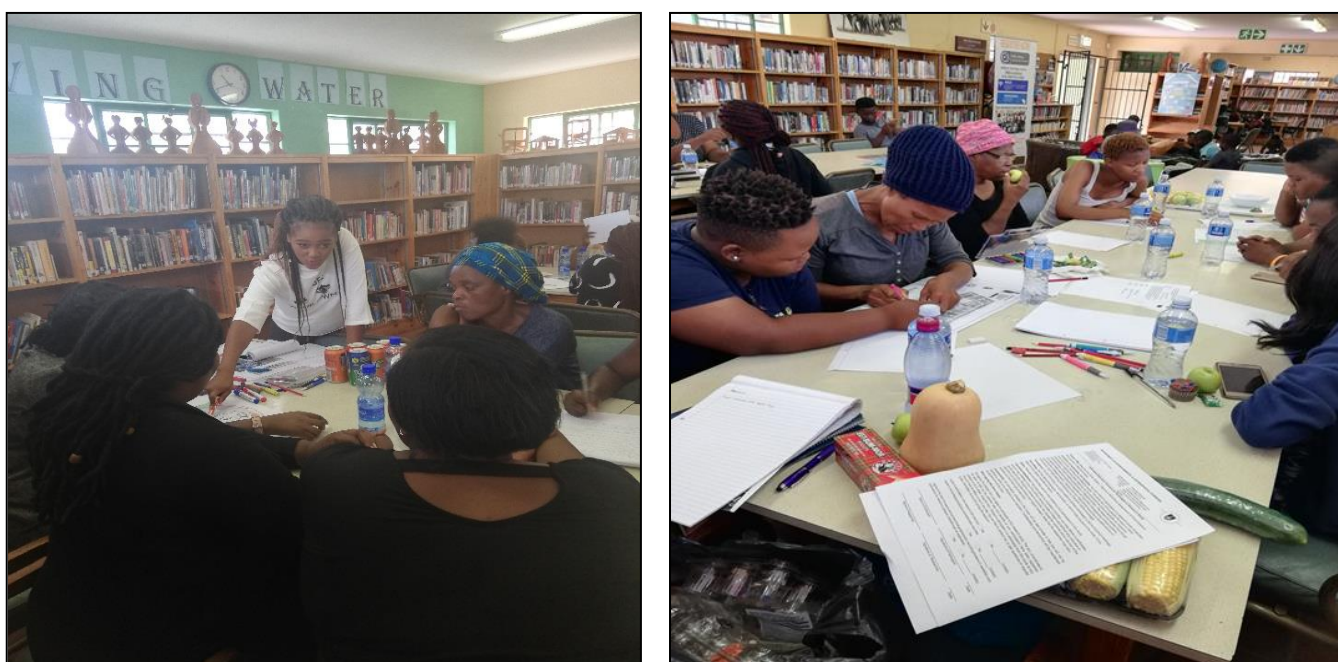


Figure 5: Participants engaging in the participatory mapping exercises during the session.

### 3.7.1 Participatory Exercise 1

This participatory exercise was centred around getting participants to describe their physical environment and access barriers that they chose to represent on the maps. This exercise was more about interpreting the representations, making meaning to the maps, and establishing a comprehensive understanding of participant's representations. The methodology applied here is endorsed by Matei and Ball-Rokeach (2005) within their study of Los Angeles geo-ethnic spaces.

For the first part of the exercise, participants were asked to present their collages to the whole group. Participants were asked to describe the things that they chose to represent on their collages, the motivations for their choices, and how these factors impact their lives as they navigate their food environment daily. Group discussions around participants' first map described the factors impacting on participant's ability to access different foods to meet their food needs or to utilize the food that is available in their food environment revealed the complexity of food access issues. The discussion further described representation on participant's second collage on the different types of asserts participants would require accessing different food in their food environment revealed that assert constraints are indeed complex. The last part of the discussion third was around factors for the qualitative choice's participants make around food access.

### 3.7.2 Participatory Exercise 2

For this exercise, participants were asked to use the magazines allocated to make a collage that describes the dominant retail types in the study area. The participants were requested to use the magazines allocated to find pictures of the things that represent the retail locations dominant in the study area. The participants had to further identify the types of food sold at each retail location and describe the distance that they had to travel from their houses to access these locations. The participants were then requested to paste these pictures that they had cut from these magazines on the A3 paper provided.

As part of the post mapping discussion, participants further presented their collages to the group and elucidated on their choices. Participants were then requested to identify the types of retail locations where the greatest amount of food is obtained and where most of their money is spent. They could also use pictures from the magazines to describe the type of foods that they typically source at these locations. The retailers could include formal retailers Shoprite, shopping malls, wholesalers or local spaza shops, cash and carry stores/ cash stores, and informal street traders like fruit and vegetable/mealies vendors, prepared food vendors/restaurants, butchery, braaiied meat vendors, and other convenience outlets. Participants were further asked to describe their individual experiences about; how they feel about food sold at these locations; the distance that they must travel to source food types sold at these retail locations and foods that they would

like to access but cannot access at the locations and provide reasons. These responses were recorded on the A4 sheet provided.

### Example of Dominant Retail Types of Maps 1





### 3.7.3 Participatory Exercise 3

This exercise was intended to contrast participatory mapping strategies to assess the visual outcome of both mapping strategies. For this exercise, participants were allocated an A4 topographical map of Masiphumelele. Participants were then asked to use the topographical map provided to illustrate the location of the dominant retail types in Masiphumelele. Participants could use their knowledge of the study area to locate these locations and describe their physical location about their residential homes. Participants were further requested to identify where the greatest amount of food is obtained and where most of their money is spent. These could include formal retailers Shoprite, shopping malls, wholesalers or local spaza shops, cash and carry stores/ cash stores and informal street traders like fruit and vegetable/mealies vendors, prepared food vendors/restaurants, butchery, braai meat vendors, and other convenience outlets. The participants had to describe how they feel about the food that is sold at these locations; the distance that they must travel to source food types sold at these retail locations. These were recorded on the A4 sheet provided.

Perceived fear of danger emerged as a key theme during the mapping and interviews process. The interview participants elucidated that this was attributed to the high level of crime in the community which increased the prevalence of community members getting robbed on their way to work or when accessing food locations. To better understand these dynamics and how this influenced the trends in this food environment, the researcher included questions relating to the perceived danger aspect as part of the mapping exercises to further explain this. Using a radius of between two- and ten-meters' distance as a buffer, participants had to identify and map retail locations they perceived to be associated with danger. Within their groups, participants described the types of locations they associated with danger and provided reasons. The participants were then asked to specify whether perceived fear for their safety influences their willingness or ability to access food sold at these locations. To make the mapping easier, the researcher explained that a two- four-meter radius represents a safe walking zone where participants felt safe walking from their homes to the shop at different times of the day. The six to eight-meter radius was considered only safe during certain periods or times of the day. The eight to ten-meter radius represented the danger zones where participants did not consider it safe to walk to at all regardless of time, climate, or associated factors. The responses were recorded and are further analyzed in the results chapter.

Upon conclusion of this exercise, the maps and A4 paper answer sheets were collected and handed over to the researcher. This session was concluded, and participants took a break before the start of the focus group session. The participatory mapping findings were later reviewed, and notes captured were transcribed into English.

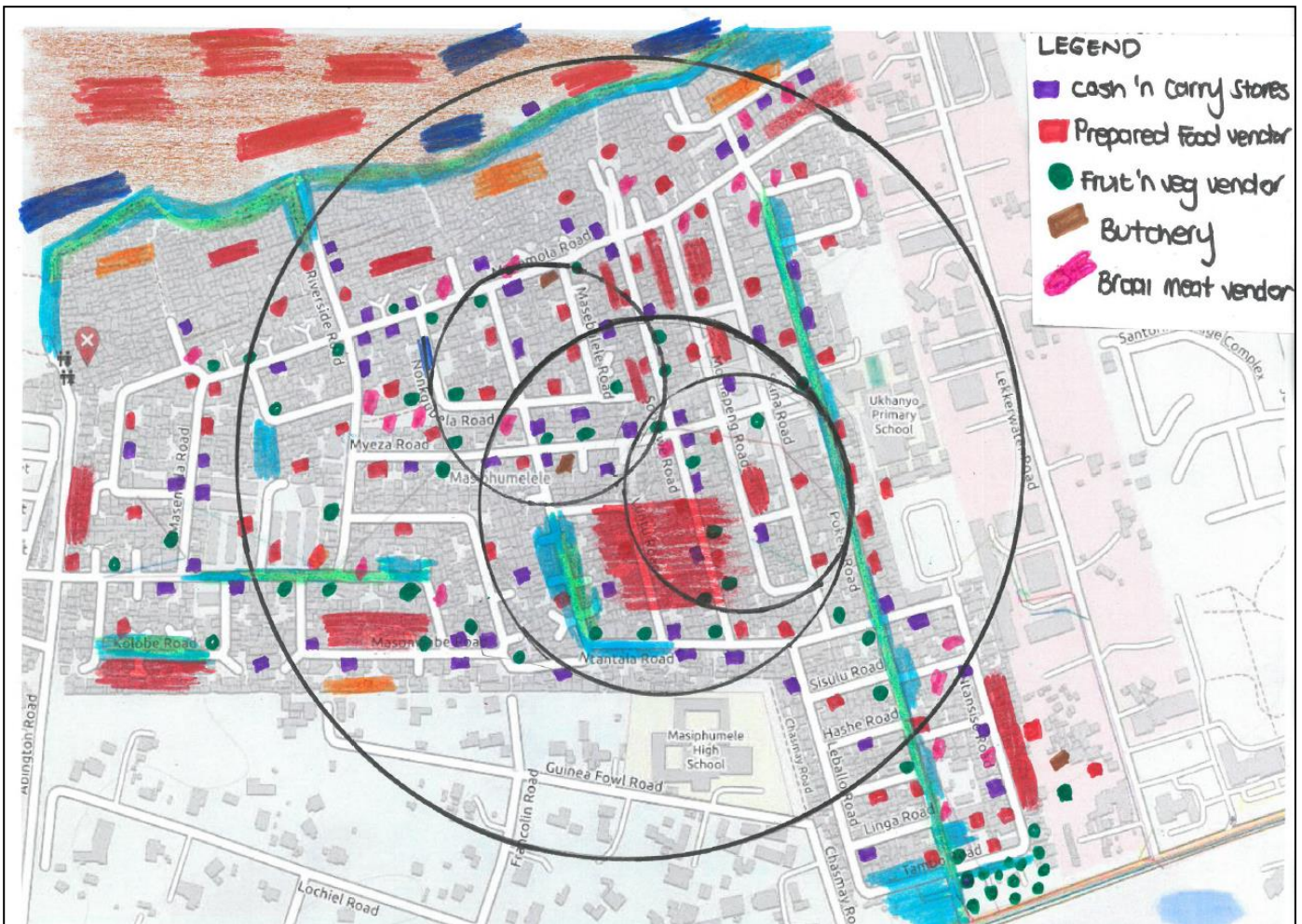


Figure 4: Map produced by Group A as part of Participatory mapping exercises.

Participatory map 4 representing the physical environment and the environmental factors that affect food access and availability in Masiphumelele. The map illustrates the key retail location in the study area as reflected; cash and carry stores, prepared food vendors, fruit and vegetable vendors, butchery and braai meat vendors, and the range of environmental factors that affect their ability to access the type of food that they require, at the time that they require and in the quantities that they desire. The red shading on the map illustrates areas participants perceive with danger at different times of the day. The blue shading illustrates areas where there are physical, environmental, or infrastructural constraints that impact the participant's ability to acquire or consume available and accessible food within the food environment to meet their food needs. These include lack of adequate water and sanitation, electricity, adequate housing, structures for businesses, etc. The circles illustrated the distance that participants travel to access the available food, and the physical infrastructure required to access the available food. The biggest circle representing 10m walking distance from participants' house to the shop/vendor location. The middle circles representing a 5m walking distance from participants' house to the shop/vendor location. The small circles representing 2m or less walking distance from participants' house to the shop/vendor location.

### 3.8 Participatory Mapping Session 2

Participatory mapping session 2 took place on Saturday 09 March 2019, from 08h00-10h30 at the Masiphumelele Public Library. This session took place over two and a half hours to ensure that there was adequate time for the group discussions. The same group of participants was used to ensure continuity and an opportunity to reflect on the findings. Each group was allocated with A3 paper, A4 exam pad, a topographical map of the study area sourced from Google Maps, a copy of the retail map with locations of the retail locations recorded as part of the retail mapping, and group collages populated as part of the first session exercise questions and drawing tools such as colored pens, markers, and color-coded stickers.

Before undertaking the mapping, the researcher demonstrated how each question should be represented on the map before the groups started working amongst themselves. This approach was useful in that the participants seemed more confident about the mapping which contributed to more robust mapping and discussion. This activity was followed by a debriefing discussion about maps and how the information presented on maps should be interpreted. Participants reflected on the maps they had populated and how they had chosen to represent different features on the map, they provided motivations for the patterns observed on the maps and their personal views on their food behaviours and their interactions with the food environment and what they perceive their future food environment to be like. The post-mapping was aimed at achieving an improved understanding of the local food and retail culture in the area and how the community members respond to social, environmental, and economic constraints that shape how they respond to certain pressures within their food environment.

Exercise 1 entailed the comparison of the map populated with the retail locations as part of the retail mapping with the maps participants had populated from their understanding of the retail store locations, the types of food sold at these locations, and socio-economic challenges associated with these locations. In groups, the participants had to review the map that was populated and comment on its representation of the characteristics of the food system and food environment in the study area. The participants were then asked to identify locations where they normally purchase food items from, that were not included in the maps they had generated and the possible reasons for non-inclusion. The participants also commented on the availability of food items that they prefer, the accessibility of the store, utilization, and use, and the stability of the food source sold at each location.

The responses were captured and recorded on the A4 sheet provided. This was followed by a debriefing discussion in which both groups presented their maps and their findings to the group, engaged in a brief discussion about the findings, share ideas and ask questions on the data presented. These inputs were captured and are further discussed in the results discussion chapter. Upon conclusion of this exercise, the

maps and A4 paper answer sheets were collected and handed over to the researcher. This information is further analyzed in the subsequent chapter.

### 3.9 Focus Group Discussions

A focus group can be defined as a small, but demographically diverse group of members of society whose reactions are studied in guided or open discussions about an issue or phenomenon to understand the broader views of the larger population. Focus groups provide an efficient way to gain a range of rich data to support research work. They are often structured and directed at providing in-depth information about a community's thoughts and opinions (Ahmed *et al.*, 2015).

A focus group enables researchers to study and encourage people to actively debate and deliberate on the subject matter in a more natural conversation pattern. It also allows for consensus-building that typically occurs in a one-on-one interview. Focus group discussions were selected as part of the mixed methodological approach for this study as it produces a large amount of rich and detailed information about a small group or number of people without being constrained through pre-determined categories of analysis. The focus group described the social environment of food access. It expounded the multiple, interrelated interpersonal factors like taste preferences, individual habits, nutritional knowledge, and skills), interpersonal level/social environment (processes whereby culture, social traditions, family structure, and role expectations impact eating practices; and patterns within peer groups, friends, and family) which impact on individual's ability to access and utilize available food to meet their food needs.

Two focus groups were conducted during March 2019. Each focus group session was approximately 2-3 hours. Twelve (12) participants were part of the focus group. The same group of participants were used for the focus group discussions and participatory mapping for continuity and to enrich findings. A set of ten (10) questions were drafted for the focus group to guide the discussions. The focus groups took place within two weeks. They were conducted at Masiphumelele Library between 10h00 and 12h00. The selection of two weeks for conducting the focus group meetings was to accommodate participants who are not available during the week and ensure that there was an appropriate gap in between the two focus groups to allow participants to reflect.

#### 3.9.1 Focus Group Meeting 1

The first focus group took place on Saturday, 02 March 2019 at Masiphumelele Library from 11h00-13h00. Twelve participants took part in the first focus group. The focus group was conducted in isiXhosa and

English as all the participants were predominantly isiXhosa speakers. The idea of recruiting more participants in the first focus group was intended to mitigate the risks of low attendance and to ensure that the researcher had an adequate number of participants remaining at the second focus group should it happen that some participants decide they no longer want to take part in the study. All participants attended both focus group sessions and actively took part in the discussions. The method applied during the participatory mapping was different from the focus groups in that the participatory mapping was more closed as it was orientated on the mapping with brief discussions around main themes that emerged in the mapping. However, focus groups were more open-ended and centred around group discussion. The participants could ask questions, challenge each other's views, and openly express their unsolicited opinions on the subject matter.

The researcher adopted the role of a facilitator and two research assistants provided support with the logistics. To introduce the research topic and situate the aims and objectives into a broader perspective, the researcher presented the group with a few food items (mealies, whole wheat bread, white bread, a bunch of carrots, butternut, spinach, a bunch of apples, tinned fish, prepared fish, and chips, amagwinya, prepared braai meat, small indigenous dried fish, sparkling water, still water, orange juice, can of coke). From the options presented, the researcher asked the group to differentiate between what they perceived as healthy and nutritious food types versus what they perceived as unhealthy foods. As the participants made their selection of what they deemed healthy or unhealthy foods, the researcher then probed the group as to why they perceived each food type to be healthy or unhealthy and their general attitude towards the food type by asking them questions about the different food items were being displayed. These responses were recorded and later transcribed in English.

To elicit responses, the researcher then presented participants with a scenario. Participants were presented with a variety of food items participants, both healthy (uncooked foods) and non-healthy foods (prepared foods). From the food items presented, participants had to discuss which of these food types were more likely to buy if they were allocated a set amount of money to buy the food they need for a day. The participants were also asked to motivate their choices and provide a brief explanation for why other items of food were not selected. This sparked debate among participants as they began challenging each other's choices and critiquing each other's understanding of money.

Upon conclusion of this discussion, the A4 paper exam pads were collected and handed over to the researcher. The data was transcribed into English for data analysis. The researcher assessed how well the groups worked together, methods that enabled the achievement of the research objectives, and those that did not work which needed amendment. This information informed the structure and questions explored in the subsequent focus group.

### 3.9.2 Focus Group Meeting 2

The second focus group took place on Saturday 09 March 2019 from 10h00-12h30 at the Masiphumelele Public Library. The initial idea was that this focus group would involve the local councillor and local community leaders. However, this was revised of the fear that the power dynamics would potentially affect the scope and topic of the discussions. This focus group was intended to provide participants with the opportunity to reflect on some of the key insights and ideas presented in the first focus group.

This focus group session evaluated the characteristics of the food environment in the study area to describe how multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) impact the structure and function of the food system. It aimed to provide a narrative that would explain some of the spatial patterns in the dataset and inform a new understanding of the characteristics of the food environment. These findings build on the participatory mapping findings by revealing why participants chose to represent the things on the map in the manner that they have, and how food moves through geographic spaces in the context of several food system drivers and challenges.

The first question, based on the characteristics of the food environment in the study area, required participants to identify the types of foods that are readily available in the study area and the times of the year that this food was available. The participants were asked to comment on the types of food that they would like to access but are not able to due to challenges (physical, economic, infrastructural, social, or cultural). The participants were then asked to reflect on whether there is enough food in the study area to cater to the local growing population at present and if not, the reason for the shortages. The participants had to reflect on how they deal with socio-economic challenges like the lack of housing, infrastructure, poverty and malnutrition, crime, and unemployment and how this affects how they experience the food system.

The participants provided an account of how the food system and food environment has changed over time to include a diversity of offerings such as foods that are indigenous to other countries to cater for the foreign national population, while others commented on how there an increase in prepared food vendors over time has been. Other key discussion points were around the evolution of food and food behaviours over time. Participants provided an account of how their food practices and food behaviours have changed and modified over time in response to changes in climate, geographic location, economic constraints, socio-economic factors, modernization, and the rapid move towards fast foods. As part of the discussion, participants illustrated how a combination of these factors has enabled the adoption of nutrition-poor diets and a shift from culturally orientated food beings enjoyed more exclusively to more widely.

Upon conclusion of this discussion, the A4 paper exam pads were collected and handed over to the researcher. The findings are analyzed in the subsequent chapter.

### **3.10 Ethical Considerations & Limitations**

Ethical considerations in research ensure that appropriate norms and values are adhered to throughout all stages of conducting research. Considering that this research project involves the use of human participants, and ethical clearance process was undertaken to gain informed consent, to ensure that participants are protected and that the research adheres to accepted ethical standards.

A formal ethical clearance process was undertaken before commencement with fieldwork. A formal ethical clearance application was submitted to the Departmental of Environmental & Geographical Science to be assessed and reviewed by the Ethics Department for Postgraduate Research. These were then submitted to the Faculty of Humanities office for ethical approval. In this application, the researcher submitted a research proposal that clearly stated the research question, research aims, and objectives, methodology to be applied, ethical considerations to be considered by the researcher, and methods of acquiring consent. Upon receipt of this application, the ethical clearance forms were then forwarded to the Faculty of Humanities and Ethics Department for Postgraduate Research for assessment and to ensure that all ethical codes in the research were adhered to. Ethical approval for this research to commence was granted by the Faculty of Humanities (Approval Code: FSREC 82-2018). Following this, fieldwork commenced.

Before commencing with the fieldwork, the researcher ensured full and voluntary consent was obtained from all the retailers taking part in the study including written consent from focus group participants. The focus group participants were required to fill in a form to provide consent to participate in the study as per the requirement for ethical clearance. In instances where participants expressed reservations or were unwilling to participate, participant's unwillingness was respected, and other participants were sought. As part of the interviewing process, the researcher tried to remain neutral and objective and as far as possible of respecting the participant's views and ideas presented throughout each stage of the research process.

The researcher ensured the inclusiveness of respondents and that the confidentiality and anonymity of key informants were maintained by not revealing the participant's real names throughout all stages of the research process. The researcher approached the participants before conducting fieldwork and ensured that the participants understood consent, provided consent through signing consent forms, and was well-informed of the research project aims and objectives, what participation entails, and the role that they would play in each stage of the research project.

The researcher also explained how the research data will be captured and managed throughout all stages of the research and participants were also reassured of their right to retract from the research at any time during the research process. The researcher ensured that the research participant's involvement in the study was acknowledged and that the data and information provided by various authors, institutions, and participants remained confidential and properly referenced in this thesis. Further efforts were made to ensure that participants have access to this thesis and its research findings and to comment on how the data provided was used and analyzed to achieve the research aims.

### **3.11 Limitations in the Dataset**

Amongst some of the unanticipated patterns in the data for this research project were data accuracy and representation. When the retail locations were recorded on Google Maps following the fieldwork, the pinned locations had to be extracted from Google Maps to be exported on Open Street Maps and ArcGIS 7.0 to generate a map representing the retail outlets in the study area. However, there were challenges in the recording of these locations. This meant that the researcher had to confirm the location of each point recorded to see if the coordinate recorded matches with where the point was taken.

An additional constraint was that different retail outlets were situated on a single coordinate on the map had a similar description. Therefore, these points were automatically grouped on Google Maps. This resulted in some discrepancies in the accuracy of the locations recorded and the retail mapping itself. To mitigate this, the researcher had to re-export the pinned locations onto an excel spreadsheet and check the accuracy of the pin generated for each pinned location before taking down the coordinates. This process was repeated for all the locations. In cases where the pins were located on the same coordinate, a unique identity was attached to each coordinate to ensure that it was not recorded as a single point on the map.

Following this, a new map was then generated, and the data accuracy issues were resolved.

## Chapter 4: Results

This chapter of the thesis comprises the analysis, presentation, and interpretation of the research findings considering what past research papers have already established. It reiterates the research question and elucidates the type of methods used to investigate major findings. Guided by the socio-ecological approach as the theoretical framework underpinning the analysis, this chapter begins to interpret the retail mapping and semi-structured findings to establish an understanding of the characteristics of the food environment. It proceeds to provide an overview of key findings, their underlying meanings, significance to situate the findings within broader food environment discourse. It concludes by acknowledging alternative explanations for the study results, identifies some of the research limitations, and makes recommendations for future research.

### 4.2 Results

The research process was conducted in three ways. The first part entailed retail mapping and semi-structured interviews, the second process was participatory mapping, and the last part was focus group discussions. The information captured and analyzed is presented in a narrative form. This section provides an overview of key research findings.

#### 4.1 Overview of the Retail Mapping Process

The retail mapping endeavoured to establish the physical locations of retail stores and the dominant retail types in the study area. The semi-structured interviews and non-participant observations further assessed the retail activity, ascertained the types of food sold at each location, and non-food related dynamics. The retail interviews were administered to formal and informal retailer owners, shop assistants, and street food vendors in the study area. The motivation for the selection of these participants was based on their knowledge about the day-to-day operations, operational challenges, food sourcing strategies, and consumer patterns. 98 retail locations were mapped during the retail mapping process. From the 98 locations recorded, 75 participants provided consent and responded to the interview questions. These respondents were inclusive of retail owners, store assistants, or family members of retailers assisting with the day-to-day operation of the retail store. Most of the respondents who were more eager to participate in the interview process were street vendors. Cash and carry retailers were more prone to declining the interview citing fear of divulging too much information on their business operations. Non-interviews were not excluded from the mapping. Their locations were recorded and included as part of the retail mapping.

It is by no means certain that the methodology identified and captured all the formal and informal retail locations within this urban space. This is due to various limitations like time, technological constraints, and the unwillingness of the participants to partake in the study. Other limitations were based on retailer's concerns about being rendered visible to the state and therefore to regulation (taxes, health checks, etc.) which made them suspicious of the aims and objectives of the study. Service delivery protests and xenophobic attacks on foreign-owned spaza shops around the same time that fieldwork was being conducted made them hesitant about divulging information about their day-to-day operations (Gastrow and Amit, 2015).

In other instances, omissions were as a result of technical issues with the mapping where the GPS signal in some instances was lost or point being too close to each other, on the same coordinate (for example the open space near the taxi rank and M65 Kommetjie Road). This resulted in the inability to accurately record the locations. From the interview sample, about 33% of participants were female and 67% were male. Non-responses from participants that did not want to take part in the study were subtracted from the total sample size of interviewed participants and this data was not included as part of the mapping.

From the 98 formal and informal food trader locations recorded, 22 of these were cash and carry stores/cash stores/extreme savers/convenience stores/spaza shops, 27 prepared food vendors or restaurants operating from backyards or side-street containers on street corners and open spaces near the busy intersections, 31 were fruit and vegetable /mealies street vendor's operating from street corners of busy intersections or in open spaces near people's yards, 11 braaied meat (barbeque) street vendors and the last 5 butcheries operating from formal structures of RDP houses with poor/no refrigeration.

The data gathered for the mapping was recorded on Google Maps. Interview data was recorded in tabular form on an A4 sheet. The results of the mapping are discussed below.

| <b>Retailer Category Type</b>                                                                                                                                                                                                                                              | <b>Typical Location</b> | <b>Number of retailers in each location</b> | <b>Typical food types sold</b>                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Cash and carry stores/ wholesalers.</u><br>* self-service basis where customers pay at each visit and take the goods, they have bought away with them.<br>* Sell in bulk/bigger quantities (10kg mealie meal, rice, flour, sugar etc.)<br>*wider range of food offering | Myeza Road              | 4                                           | Bread, milk, eggs, sugar, cooking oil, mealie meal, soft drinks, chicken, sausage, beef, spices, tinned fish, sugar, eggs, salt, soft drinks, fruit and vegetables, sweets, chips and lollipops, frozen chicken, carrots, green pepper, tomatoes, potatoes, onions, |
|                                                                                                                                                                                                                                                                            | Ntantala Road           | 3                                           |                                                                                                                                                                                                                                                                     |
| <u>Cash stores/ Extreme savers/Convenience stores/.</u>                                                                                                                                                                                                                    | Masemola Road           | 4                                           |                                                                                                                                                                                                                                                                     |

|                                                                                                                                                                                                                                                                             |                         |    |                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----|------------------------------------------------------------------------------------------------------------------------|
| <u>supermarkets, Spaza shops</u><br>*self-service basis where customers pay at each visit and take the goods, they have bought away with them.<br>* Sell in smaller quantities (2.5/5kg of mealie meal, rice, flour)<br>* Stock a limited range of food and household items | Masonwabe Road          | 2  | butternut, banana, cucumber.                                                                                           |
|                                                                                                                                                                                                                                                                             | Kanana Road             | 1  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Food Zone               | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Ntantiso Road           | 1  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Skina Road              | 1  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Pokela Road             | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Myeza Road              | 2  |                                                                                                                        |
| Prepared food vendors/ restaurants                                                                                                                                                                                                                                          | Sobukwe Road            | 3  | Fish and chips, amagwinya and chips, amagwinya with russian/ polony and chips, boiled eggs, home-cooked meal offerings |
|                                                                                                                                                                                                                                                                             | Ntantala Road           | 5  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Masonwabe Road          | 3  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Riverside Road          | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Myeza Road              | 5  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Masemola Road           | 3  | such as chicken, rice and vegetables or beef with rice and vegetables, or pap and beef.                                |
|                                                                                                                                                                                                                                                                             | Ntantiso Road           | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Pokela Road             | 1  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Masakhane Road          | 1  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Capri Food Zone         | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             |                         |    |                                                                                                                        |
| Fruit and vegetable /mealies vendor's                                                                                                                                                                                                                                       | Sobukwe Road            | 5  | Carrots, green pepper, tomatoes, potatoes, onions, butternut, banana, cucumber.                                        |
|                                                                                                                                                                                                                                                                             | M65 Kommetjie Main Road | 10 |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Masemola Road           | 3  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Riverside Road          | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Skina Road              | 4  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Mothapeng Road          | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             | Pokela Road             | 2  |                                                                                                                        |
|                                                                                                                                                                                                                                                                             |                         |    |                                                                                                                        |

|                                 |                |   |                                                                                                                       |
|---------------------------------|----------------|---|-----------------------------------------------------------------------------------------------------------------------|
|                                 | Masonwabe Road | 3 |                                                                                                                       |
|                                 | Sobukwe        | 2 |                                                                                                                       |
| Butchery                        | Myeza Road     | 1 | chicken feet, braaied liver kebabs, sausage, and beef.                                                                |
|                                 | Ntantala Road  | 1 |                                                                                                                       |
|                                 | Masonwabe Road | 1 |                                                                                                                       |
|                                 | Food Zone      | 1 |                                                                                                                       |
| Braaied meat (barbeque) vendors | Sobukwe Road   | 4 | Meat products: lamb, chicken, chicken feet, sausage, beef, spices, braai sauces, eggs. chicken, liver kebabs, spices. |
|                                 | Masemola Road  | 2 |                                                                                                                       |
|                                 | Masemola Road  | 2 |                                                                                                                       |
|                                 | Ntantiso Road  | 2 |                                                                                                                       |
|                                 | Food Zone      | 1 |                                                                                                                       |

#### 4.1.1 A Map Representing the Retail Locations in Masiphumelele

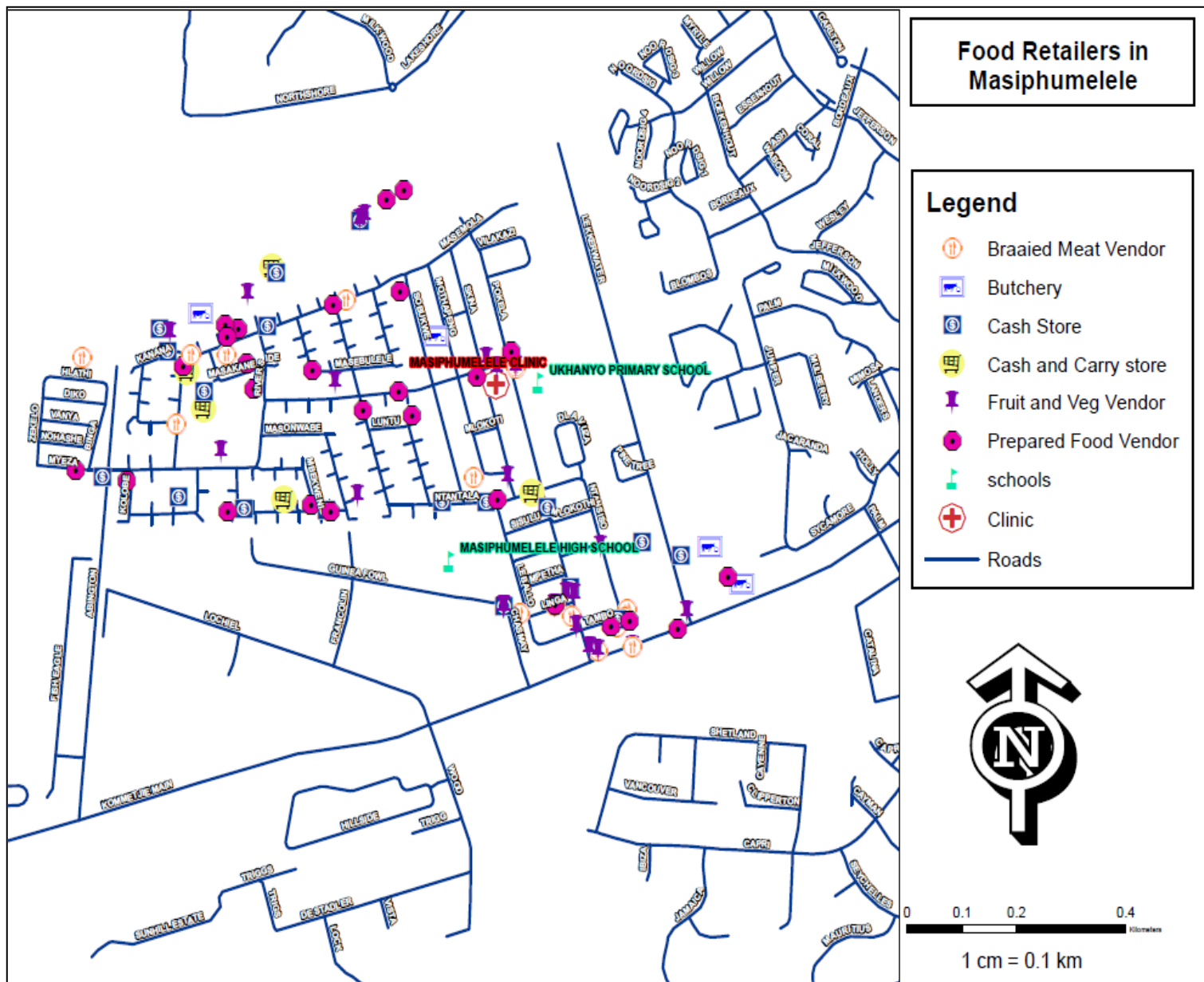


Figure 5: A map representing the retail locations in Masiphumelele.

## 4.2 Analysis of the Retail Mapping and Retail Mapping Interviews

### 4.2.1 Retail types in Masiphumelele

The retail mapping findings establish that the food retail environment in Masiphumelele is dominated by a range of formal and informal retailers which play a crucial role in maintaining the food system and contribute to food security. The dominant retail types in Masiphumelele were inclusive of; cash and carry retailers, cash stores retailers, prepared food vendors, fruit, and vegetable vendors, braaiied meat vendors, and butcheries.

A cash-and-carry or wholesaler is a large shop that enables one to buy goods in larger quantities and at lower prices than in supermarkets or wholesalers. Cash and carry stores, cash store and extreme savers, convenience stores, or spaza shops are typically operated on a self-service basis where customers pay at each visit and take the goods, they have bought away with them. Most of these businesses were operated by foreign nationals from Somalia, Bangladesh, and Ethiopia. Most of the respondents in this category were male, between the ages 30 and 45 who were permanent residents of Masiphumelele.

In terms of prepared food vendors, a distinction was made between types of prepared food vendors. The first type of prepared food vendors was vendors operating from permanent structures like containers and structures erected in their yards, family members' yards or they may pay rent to the owner. The second type of food vendor was those selling food from mobile units that they erect on the street when they want to trade. The findings establish that mobile vendors were exposed to extremely unhygienic conditions as they operate from open spaces on street corners used for illegal dumping of refuse or alongside open drains, blocked sewers where there are rodents or other pests are found roaming around near where the food is being prepared. This presents a food safety concern as it places the community at risk of food poisoning due to food contamination. However, participant observations conducted as part of the retail mapping indicate that this factor is not a key determinant of the retail activity at each vendor location which speaks to participants different valuing of food safety versus the need to source food to ensure that their needs are met. Most of the respondents in this category were females, between the ages 25 and 35, unemployed, and use the business as a means of maintaining their livelihood.

In terms of the fruit and vegetable vendors, non-participant observations revealed that there were differences between fruit and vegetable vendors in the study area. For example, on one hand, were fruit and vegetable vendors which had been operational for quite several years versus fruit and vegetable vendors operating on an ad-hoc basis. Fruit and vegetable vendors that had been in operation for longer could be distinguished by their customer base (the store was always busy), they have a designated location along the main roads where

foot traffic is high, they operate on an everyday basis and for longer hours, and they offer a wide range of fruit and vegetables. In comparison, pop-up vendors operate from their houses or in open pieces of land in front of someone's house, they operate for shorter periods, and they sold a limited range of fruit and vegetable items and did not have a fixed location (often moved their stands around depending on where retail activity is concentrated). In terms of the types of fruit and vegetable items they sold, the smaller/pop-up fruit and vegetable vendors sold more commonly sourced fruit and vegetable items like tomatoes, onions, butternut, potatoes, bananas, and apples while the other vendors sold a wider variety of products like spinach, green pepper, butternut, cabbage, mealies, cucumber, peaches, prunes, grapes, and watermelon. Most of the respondents in this category were unemployed females, between the ages of 30 and 45 who were permanent residents of Masiphumelele.

Braai meat vendors operated from shacks or open-air in open spaces along the main roads and busy intersections or front of people's yards. Like prepared food vendors, braai meat vendors were competing for space on the busy intersections and main roads where they were exposed to open drains, blocked sewers where there are rodents or other pests. Some of the vendors were selling meat that was had been exposed to long periods of sun, flies/open air, and were often stored in containers without refrigeration. Vendors sold a variety of meat types including chicken, liver kebabs, chicken wings, sausage, beef, chicken feet). Most commonly, braai meat vendors were only operational from Thursday to Friday during the afternoon or late evenings. Most of the respondents in this category were unemployed males, between the ages 25 and 35 who have resorted to opening their own business as a means of maintaining their livelihood.

For this study, butcheries and abattoirs were grouped under the same category. While there were a few butcheries in the area, there were similarities in all butcheries. One butchery operated from a makeshift structure/container constructed in someone's home. There was no/limited refrigeration, no meat products on display. However, the formal butcheries had refrigerators, marketing of meat products, and proper display of product offerings.

#### **4.2.2 Retail Locations**

The findings of the retail mapping indicate that retail locations are scattered across all areas within the study area. It further established that retailers locate close to their potential customers who are known to purchase little and often close to home. This means that their customer base does not have to travel for long distances to access retail stores to meet their daily food needs. The retail mapping indicated that, while some streets have a range of retail types (a spaza shop, fruit, and vegetable vendor, or prepared food vendor) in the residential side streets within proximity to their houses. Other areas within the study area like the Wetlands have limited to no retail activity. Even in terms of transportation, their physical location acts as a barrier.

The interview findings reveal that there was a correlation between the geographic location and foot traffic. Cash and carry retailers, fruit and vegetable vendors, prepared food vendors, and braaied meat vendors located around the main roads experienced the most foot traffic, were more competitive in their prices, were often the busiest during peak hours than retailers and vendors located in between the houses away from the main transport routes. The patterning in the dataset further revealed that the frequency at which retailers or vendors experienced high foot traffic was dependent on the geographical location of the store, the price vendors charge for their goods and services, and perceived safety risks associated with accessing the retail location. Participant 5 revealed that "I prefer taking a taxi to Long Beach Mall or Sunny Valley to do my grocery shopping because I feel safer when making purchases and I benefit from the specials they have at Pick N Pay". Participant 3 further added that she patronized the local wholesalers or cash and carry stores that were along her route that she takes on her way home from work to get bread and daily essentials like milk, vegetables, or spices when she runs out of supplies during the month because the cash store on her street is always empty and the food is not always fresh. The retail mapping interviews and focus group discussions have revealed that the physical location of retail stores can also be an important determinant of food access as it also has an impact on individual food choices and behaviours. The time-distance aspect not only shapes choices about where and how often people choose to buy but also what they buy and how they feel when buying which also shapes how much of each product they buy.

A distinct feature in the mapping was the physical locations from which spaza shops operate. Spaza shops in Masiphumelele operate from formal structures like RDP houses that have been renovated or rented spaces. This is a unique characteristic because it does not conform to the dominant conceptualization of a spaza shop in other townships. Spaza shops are known for their informality, operating informally in backyards or open spaces around street corners. They are perceived as a form of making an extra income that can support the household on a day-to-day basis. However, in this community, spaza shops are formal businesses situated in a stand-alone and dedicated structure/space (not operating from a room primarily used as a private residence) which has signage and appropriate marketing for advertising the business and sell a range of household goods.

Most commonly, the spaza shops, extreme savers, and convenience stores in the study area are largely operated by Somalians and Ethiopians while cash and carry and cash stores are predominantly operated by Somalians. The findings established that cash and carry stores, cash stores, extreme savers, convenience stores had the longest operating hours from Monday to Sunday between 06h30-21h00. The fruit and vegetable vendors, prepared food vendors, braai meat vendors, and butcheries are predominantly operated by locals. Most of these vendors operate from Monday to Sunday between 07h00-18h00. More commonly of the spaza shops, cash and carry stores, cash stores, fruit, and vegetable vendors, and braaied meat vendors were located on the main roads where there is high foot traffic and an influx of consumers or close to home so that they can be closer to their potential customers. Commonly of the prepared food vendors and extreme

savers, convenience stores retailers were located in between the houses in the residential side streets. A distinct finding in the mapping is that most of these retailers were located far away from residents residing in the Wetlands. More especially for residents whose houses were located further inside the Wetlands and away from the main roads. The only Wetlands residents who had relatively easier access to these retail stores were the residents located on the periphery of where the Wetlands start.

The mapping findings further establish a correlation between the physical location of retailers and the diversity of the food types offered. Most commonly, cash and carry retailers were located on the main roads and busy intersections where there was a lot of foot traffic offered a wider range of food (bread, milk, eggs, mealie meal, flour, tinned fish, sugar, eggs, salt, soft drinks, fruit and vegetables, sweets, chips, and lollipops) and vegetable types and the opportunity to buy in bulk (10kg and 20kg of rice, flour, etc.). In comparison, cash stores, extreme savers, and convenience stores offered a limited range of food and vegetable types in smaller quantities (2kg or 2.5 kg). This was a key distinguishing feature between cash and carry stores from the cash store, convenience store, and extreme savers. The same trend was observed among fruit and vegetable vendors. Commonly, fruit and vegetable vendors were located on the main roads and busy intersections where there was a lot of foot traffic were more established and offered a wider range of fruit and vegetable type (cauliflower, green pepper, broccoli, cabbage, onions, carrots, spinach, tomatoes, butternut, potatoes, banana, apples, grapes, mealies, cucumber, peaches, prunes, grapes, and watermelon. etc.). However, fruit and vegetable vendors located in between the houses offered a limited range of fruit and vegetable types (mealies, onions, tomatoes, potatoes, bananas, apples, grapes). The business strategy of these retailers was on a more 'ad-hoc basis where vendors sold to make ends meet or for additional income.

The findings further established a relationship between the physical location of the retailers and food selling practices. Prepared food vendors located on the busy intersections offered food that was pre-packaged in plastic wrap or polystyrene containers depending on the food sold. This reduced the waiting time and improved sales as vendors were able to attend to more customers per time. These retailers also had a more established customer base and often met standard food safety standards. In contrast, for prepared food vendors located in less busy intersections, the food was prepared based on demand. In the case of braai meat vendors, meat braai'd prior would often be exposed to flies and drying out. Therefore, vendors would braai when the customer comes to buy which often entailed meant slightly longer waiting times and long queues during peak periods. The same trend was observed among prepared food vendors.

#### **4.2.3 Types of food sold at each retail location.**

The semi-structured interviews probed the types of food sold at each location. The interview findings establish that more commonly; prepared food vendors operate from backyards or side-street containers sell

the same similar food. This means that the competition amongst vendors is high. Mostly, prepared food vendors sold easy to prepare fast foods like fish and chips, chips parcel, amagwinya (vetkoeks/ fat cakes) with a choice of stuffing of either chip, russians, burger, livers, fried eggs, or full house (amagwinya, russian, chips, eggs, cheese, and lettuce). This is attributed to the fact these food types require limited resources to prepare. The general take is that because of the limited resources required, it is relatively easy for people with little capital to start these businesses which is why most of the vendors venture into this business.

Other prepared food vendors sold bunny chow<sup>1</sup> with eggs, polony and chips or eggs, burger, pizza, fried chips, and bread or boiled eggs. A few restaurants sold home-cooked meal offerings such as chicken, rice, and vegetables or beef with rice and vegetables, or pap and beef. These restaurants were mostly located near the taxi rank as this type of food is a popular food choice among taxi drivers.

Street prepared food vendors sold more traditional meals in an open fire around a busy intersection like ofal<sup>2</sup> and trotter with samp (cooked intestines and livers of a slaughtered goat or sheep) and cooked sheep head served in disposable containers that are easy to takeaway.

Braaied meat vendors sold similar and more common food items like chicken feet, braaied liver kebabs, sausage, and beef. The data revealed that very few vendors offered braaied pork, a common meat choice in most townships like Nyanga and Philippi. Instead, most vendors sold chicken, sausage, or beef products. This is also attributed to the fact that these are generally cheaper meats.

In one of the retail interviews, the vendor explained that they source their meat locally instead of traveling to butcheries/abattoirs in Philippi or Wynberg, etc. as a means of minimizing costs. This participant further explained that for many years, pork products were not available in local butcheries. They would only buy pork products from the wholesalers or Shoprite. This resulted in them being accustomed to consuming chicken, mutton, or beef as these were more easily available. More commonly, formal butcheries in the area are owned and operated by South Africans and Somalians. According to their religious belief, pork products are non-halaal and therefore, the sale or consumption of these products is contrary to their cultural and religious beliefs. This demonstrates the influence of culture and religious beliefs on individual diets and food behaviours. It further illustrates the impact that it has in determining the structure and function of the food system in this area.

Another distinct feature of the food environment in Masiphumelele was the presence of street vendors selling dried fruit and vegetables indigenous to Zimbabwe and Malawi. The types of food items sold by

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<sup>1</sup> Bunny chow: South African fast-food dish consisting of a hollowed-out loaf of white bread filled with any stuffing of your choice e.g., eggs, polony, vienna, burgers, chips, etc.

<sup>2</sup> Ofal: organ meats of animals e.g., heart, liver, tongue, kidney, sweetbreads, etc. that are cooked in open fire and prepared as a traditional delicacy.

these vendors were inclusive of; usiba, <sup>3</sup>nyemba<sup>4</sup>, matemba<sup>5</sup>, kapeni<sup>6</sup> (sour berries), ngumbi<sup>7</sup>, utaka<sup>8</sup>. This trend is not common to many other townships in Cape Town. These vendors identified a gap in the food system in terms of the provision of indigenous foods to foreign nationals living in this community and addressed this gap. With each visit to the study area, the researcher noted that the number of street vendors that stock and sell these food types were increasing. One could hypothesize that this could have been impacted by when the retail mapping was done, the time and day of the week, or other limitations in the retail mapping process. A study that reviewed the potential of underutilized indigenous and traditional crops to bring about a transformative change to South Africa's food system concluded that mainstreaming of indigenous traditional crops offers real opportunities for developing a sustainable and healthy food system, while, at the same time, achieving societal goals such as employment creation, wellbeing, and environmental sustainability (Mabhaudhi *et al.*, 2019). Comparably, the increased need for opportunities of generating income and a gap in supply within this food environment has provided an opportunity for these food types to be introduced into this food environment.

#### 4.2.4 Challenges Retailers in ensuring Food Availability, Accessibility and Stability

The last aspect of the retail interviews probed some of the challenges that retailers face in their efforts to provide access to safe, nutritious, and affordable foods that meet the community's expectations in terms of price, taste, quality, quantity, and preferences while also ensuring stability in the supply. The findings indicate that there is a correlation in the type of challenges faced by retailers and vendors throughout all retail typologies. The need to provide quality food at competitive prices emerged as a key theme. Retailers identified the economic situation and the plight of poverty in the area as an additional constraint in terms of ensuring stability in supply as it often meant that retailers had to be creative in their food sourcing strategies to ensure that they minimize costs and maximize profits while also ensuring that the communities food needs are met. Considering Masiphumelele's geographic location and distance to other markets, vendors often pay exorbitant petrol prices to access bigger wholesalers that quality sells food products at lower prices. Somali shop owners have been successful in their response to this challenge as they tap into their own sophisticated collaborative distribution networks and pass on bulk discounts and transport savings to customers. Retailer 10 communicated that retailers within this category form networks where the only retailer will go to the market and source enough goods for three or four other stores within the area at

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<sup>3</sup> Usiba: refers to small fish prepared using boiling water indigenous to Zimbabwe and Malawi.

<sup>4</sup> Nyemba: refers to dried beans that can be cooked and prepared as a meal.

<sup>5</sup> Matemba: refers to roasted peanuts.

<sup>6</sup> Kapeni refers to sour berries that can be enjoyed as a snack.

<sup>7</sup> Ngumbi: small insects that can be added to potatoes or vegetables to make a meal.

<sup>8</sup> Utaka: Mopani worms indigenous to Zimbabwe.

discounted prices. As a result, the retailers save on transportation costs, negotiate better prices for their goods and services with the suppliers and ensure stability in the supply which has a positive impact on ensuring that all people have access to the food that is available in the food environment. This was also observed in a study conducted by (Terblanche, 2010) which investigated the factors that inhibit the effective start-up and growth of South African-owned spaza shops in the Gugulethu and Nyanga townships. The findings ascertain that the collectivist nature of foreign-owned spaza shops and cash and carry retailers enables them to do collective buying and thereby qualify for bulk discounts, which impacts directly on pricing strategies (Terblanche, 2010). This also makes their businesses more resistant to external shocks and stressors impact on food supply.

The interview findings further establish that among other challenges, the distance to the market, lack of/ cost of transportation, and competition between vendors served as major constraints for street vendors. The distance to the market was identified as a key constraint as it often results in them having to pay high petrol prices to access cheaper markets. Retailer 5, a spaza shop operator explained that, although he wants to diversify and sell a wider variety of food items in his store, he is limited in his efforts to expand his business because he does not own a “bakkie” (large vehicle) that he can use to travel to the different wholesalers that provide quality food items at a lower price. Fruit and vegetable vendors discussed that they commonly source their fruit and vegetables from areas like Cape Town Fresh Produce Markets, Philippi, Grabouw, or Paarl because it is cheaper and fresh, so it lasts longer. However, this means that they must factor in the changing transportation costs in their pricing. Changing petrol costs and changes in demand and supply and market influences often means that vendors need to be flexible in their pricing strategies results. This often makes this business volatile as profits are not always guaranteed. This presents as an added constraint in this environment that is already strained. These findings corroborate Mah *et al.* (2015), findings that transportation to and from wholesalers, supermarkets, and grocery stores or the proximity of retailer’s and food vendors to the market acts as a barrier to low-income transit-dependent individuals or those with limited mobility (Mah *et al.*, 2015).

Economic barriers like the high rate of unemployment, crime, and lack of business opportunities coupled with the lack of basic services and physical infrastructure further exacerbate this. Some households are extremely poor and often go without food for some periods of the month. Therefore, they are heavily reliant on social grants, and the ability to buy food on credit cater to their family’s food needs on a day-to-day basis. Infrastructural constraints such as over-proliferation of informal housing, lack of land for housing, lack of running water and sanitation, high electricity prices/ high rate of illegal connections, lack employment opportunities and lack of land to accommodate other formal business types places a further burden on the ability of the community to maintain their livelihood and secure their food sourcing strategies. The findings of this section have demonstrated that inequitable food availability resulting from the relative remoteness of the geographic location, supply chain issues, distance to the market, food travel distance, low

economic growth in the area, unfavorable living conditions, and lack of access to basic services represent key socioeconomic issues further exacerbating food system challenges.

### 4.3 Analysis of Spatial Findings

This analysis aims to establish the correlations in the dataset. The spatial findings of the mapping process ascertained that there is a relationship in the clustering of wholesalers and big cash and carry stores and cash stores foot traffic in the study area. More commonly, retailers and street vendors are strategically located along the main transport routes and busy intersections where foot traffic is very high. Notably, retailers and street vendors were all competing for a spot on these busy intersections which often meant that the concentration of vendors and competition between retailers was very high.

The findings further demonstrate that there is a relationship the physical location of retail store, type of food offerings, vendor operating hours and retail activity. Cash and carry stores and street vendors operating along the main roads and busy intersections experience the most foot traffic (perceived to contribute to higher turn-over on profits daily), offered a wider range of food offerings (5kg, 10 and 20kg sizes) and operate for a shorter period of hours than the smaller spaza shops and convenience stores located closer to residential dwellings. The perceived high turn-over on profits render cash and carry wholesalers more at risk to burglaries and robbery attempts as retail activity is limited to peak travelling hours. For this reason, cash and carry retailers and cash store operators located around these areas were only operational from 07h00-18h00 Mondays to Fridays and 07h30-17h00 over the weekend while convenience stores and extreme savers operated Monday to Sunday between 06h30-21h00 daily. Other factors which were equally significant contributor to high foot traffic included taste, quality of the food, relationship with the vendor, service delivery and relative accessibility of the store in terms of location.

The findings further demonstrate that there is a relationship between the physical location of the retail store, type of food offerings, vendor operating hours, and retail activity. Cash and carry stores and street vendors operating along the main roads and busy intersections experience the most foot traffic (perceived to contribute to higher turn-over on profits daily), offered a wider range of food offerings (5kg, 10 and 20kg sizes), and operate for a shorter period of hours than the smaller spaza shops and convenience stores located closer to residential dwellings. The perceived high turn-over on profits renders cash and carry wholesalers more at risk to burglaries and robbery attempts as retail activity is limited to peak traveling hours. For this reason, cash and carry retailers and cash store operators located around these areas were only operational

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Braai meat vendors and prepared food vendors represented an interesting trend in terms of their geographic location and the types of food they sold. According to the retail mapping findings, commonly prepared food vendor's braai meat and were located near the busy intersections, the taxi rank, and shebeens/taverns where foot traffic is high. The findings show that there is a relationship between the geographic location and the types of food types. For example, braai meat vendors located near busy intersections and the taxi rank sold braai liver kebabs, chicken feet, quarter chicken, chicken wings, or boerewors rolls which required minimal packaging and were easy to consume on the go in between trips. However, braai meat vendors located near shebeens sold more filling portions of braai liver kebabs, beef, quarter chicken, chicken, chicken wings, chicken feet, and sausage wrapped in foil, white sheets of paper, or plastic. This could have been attributed to the difference in price between the types of meat sold, the operational times of the vendor, and the target audience. Braai meat vendors located near shebeens were mostly only operational from Thursday to Friday at the beginning of the month and nearing month-end. The selling price of these vendors was slightly more than the price of vendors located near the intersections because of the type of meat they sold and competition between vendors is less. Braai meat vendors near the intersections were operational daily. Their selling price was slightly less and competition between vendors was high.

Most commonly, prepared food vendors were more clustered around the school and main transport routes located streets like Sobukwe Road, the taxi rank, Ntantala Road, Myeza Road, or Masemola Road. Others were found in between the residential dwellings, within proximity to the participant's homes. These vendors sold affordable easy to have on the go takeaways that could be enjoyed by school children (amagwinya with liver/chips/russian or fried fish and chips wrapped in plastic wrap). The amagwinya is perceived to be cheap and filling. Therefore, it is well established as a food of choice among school children and low-income families. It is argued that these vendors shape food patterns, diets, and behaviours, specifically among school children as there is a vendor at every street corner. These vendors ensure that scholars have something to consume in the mornings on their way to school if they missed breakfast, during lunch breaks, and after school.

In contrast, prepared food vendors operating in containers located near the taxi ranks sold more traditional home-cooked plates such as pap and meat, ofal, spinach, and pap or chicken and rice at an affordable price. These are meal types that are very popular among taxi drivers. Competition between these vendors was

perceived to be low as the consumer's choice about where to buy was largely influenced by the relationship with the vendors, quality, quantity, and taste of the food. Vendor 17 explained that "taxi drivers and operators are mostly on the road the whole day. They spend most of their days at the rank. So, their meals are something they take very seriously". Prepared food vendors are tasked with ensuring that this customer base has access to food that meets their taste, price, quality, and quality preferences. Vendor 19 indicated that "I have customers that are very particular about their food. You know how taxi guys are. They love their meat". This largely demonstrates that vendors take the needs and wants of their target audience into account when making choices about the types of foods they need to make available and accessible in their food environment and how stable this food supply needs to be. For example, some vendors only sell plates on certain days based on the number of orders that they receive. Or vendors that operate daily from Monday to Sunday. Vendor 21 explained that "I plan my meals two days in advance so I can take my orders and get supplies in time. My customers are very loyal and support me because they know that I make the best beef stew". This also reflects on the aspect of ensuring stability in the supply. Customers trust that the vendor will meet their food needs, their taste, quality, and quantity requirements and that they will ensure that there is a steady supply. A combination of these examples demonstrates how the determinants of food security, intersect, enable, or constrains the food environment urban contexts.

The fruit and vegetable vendors were also clustered around the main roads, taxi rank and street corners near key geographical nodes like the Ukhanyo Primary School, Masiphumelele Clinic, Masiphumelele High School, Hokisa, Masiphumelele Library and outside the flats in Masemola Road. Some streets have dense coverage of fruit and vegetable vendors, while others only have a few. Most commonly of streets with the most fruit and vegetable vendors were main roads or roads connecting the smaller streets to the main road.

## 4.4 Analysis of Participatory Mapping Workshops

To understand the relationship between the food environment and food security, it is necessary to also provide qualitative data on the lived experiences. Participatory mapping was employed as an approach to understand the physical environment in which people make a range of qualitative choices about how they access and utilise food that is available in their food environments. This section interprets the multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) which shape how participants respond to food system challenges at different scales and further clarifies how a combination of these impact on affects food access, availability, and utilisation. To achieve the aims and objectives of this study, this section presents the analysis of participant's verbal responses and participant observation's during the participatory mapping exercises and brief reflection on the results. The information captured was analysed and presented in a narrative form.

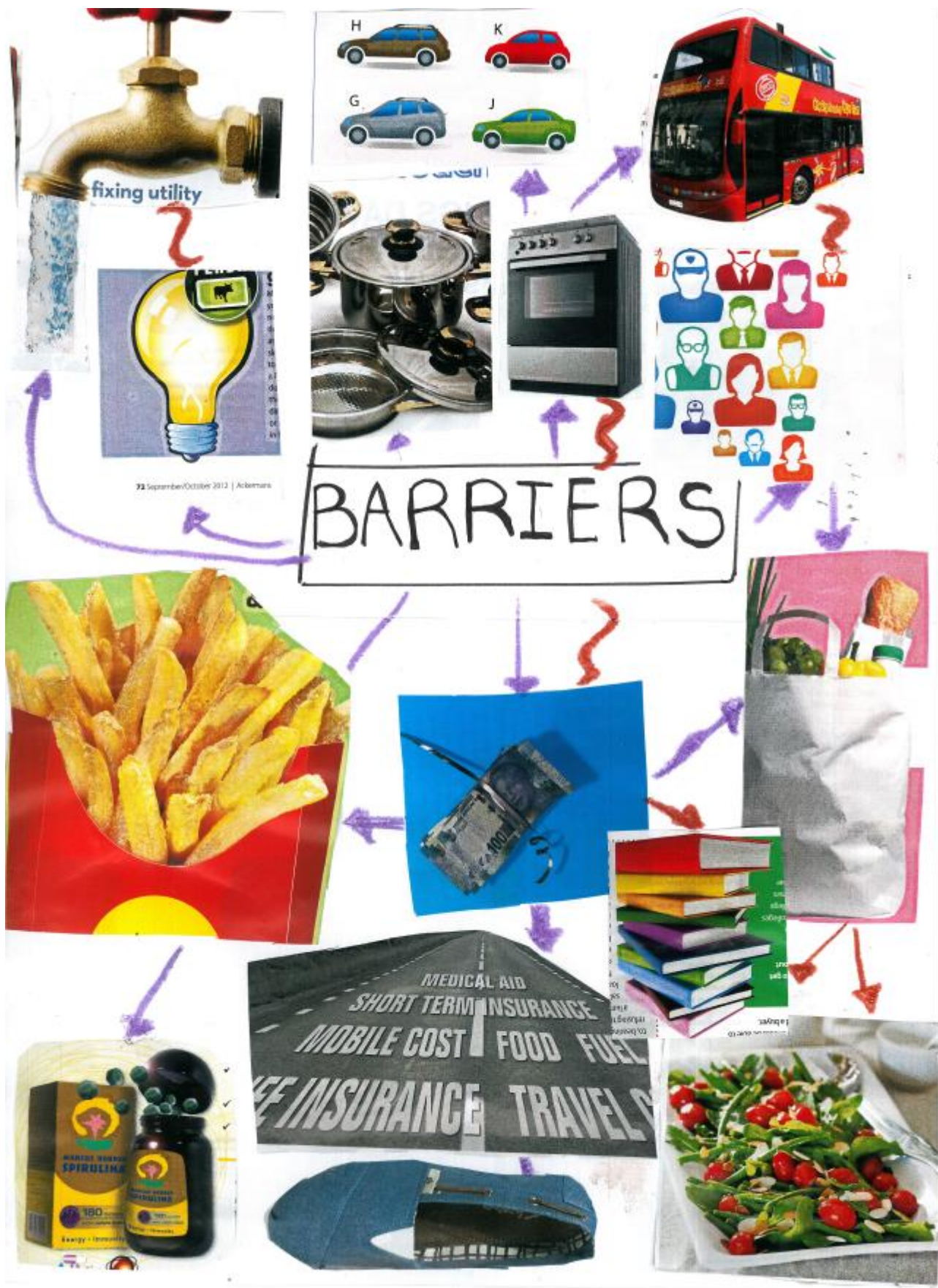


Figure 6: Collage representing the barriers to food access.

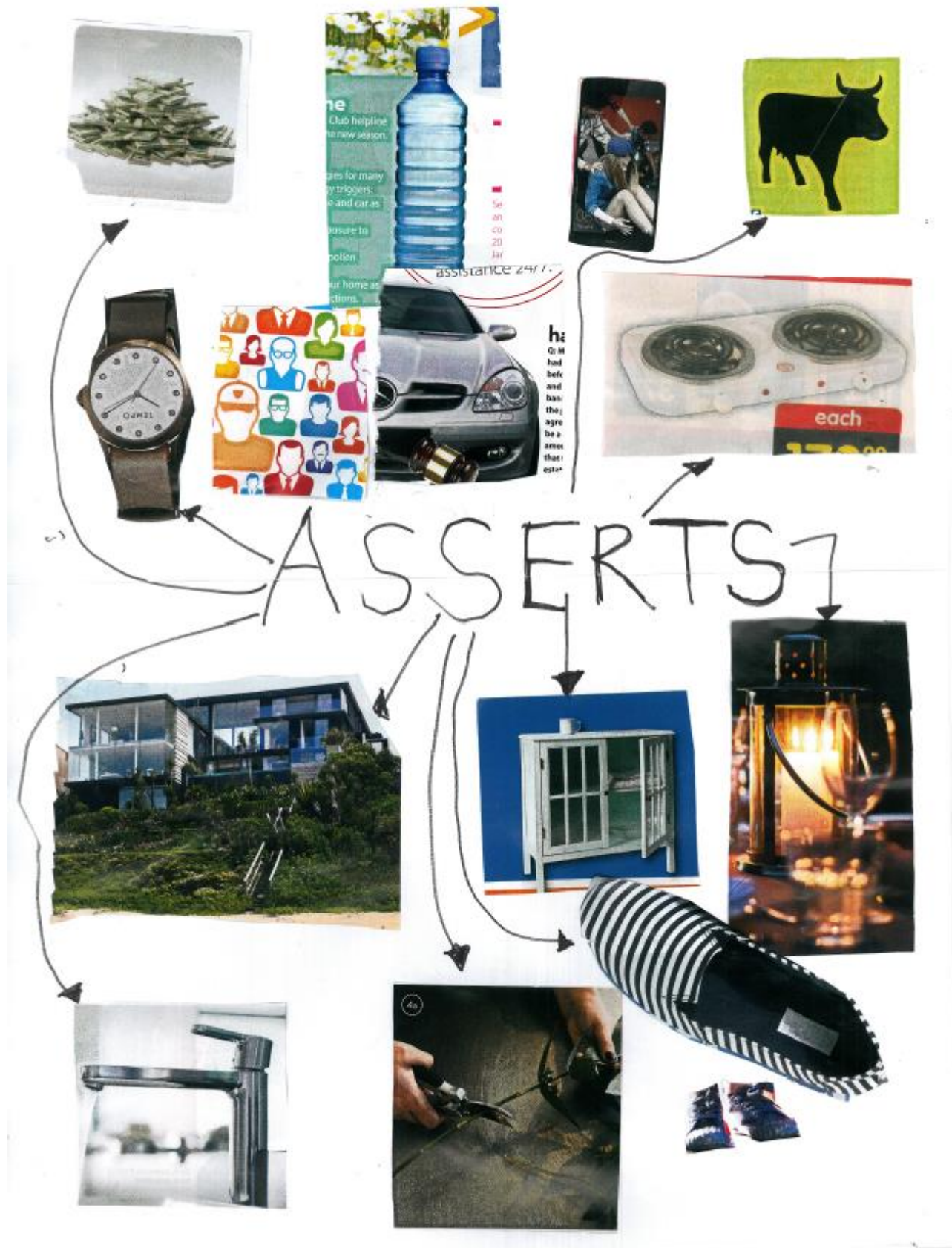


Figure 7: Collage representing asserts required by participants to source food.

### Example of Participatory Map 3

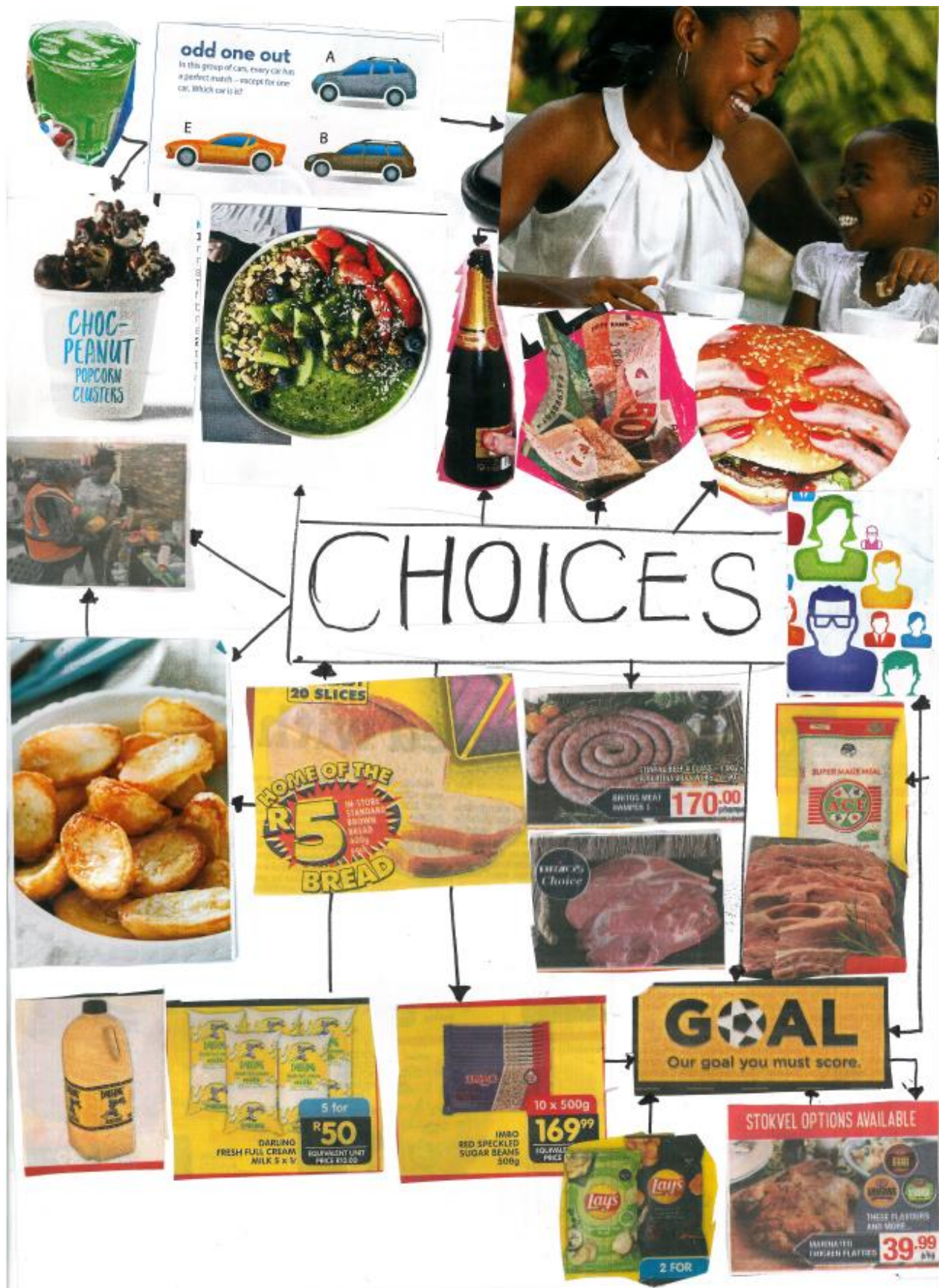


Figure 8: Collage representing factors which determine participants qualitative choices.

#### 4.4.1 Analysis of Participatory Mapping Collages

The process of making collages was adopted as part of the participatory mapping methodology. As part of the first exercise, participants were asked to describe the factors impacting on participant's ability to access different foods to meet their food needs or to utilize the food that is available in their food environment revealed the complexity of food access issues. The participants' responses on this varied. Amongst some of the key barriers identified were; the lack of financial resources (money/ cash incomes as a result of unemployment), the lack of cooking utensils like pots, refrigerators, plates, cupboards, or space to store the food that they needed to utilize, poor healthy options available in their food environments which contributes to poor diets and health outcomes like frequent sickness and cardiovascular diseases and lack of physical infrastructure like running water, electricity, adequate land for housing and community networks on which food can be sourced. These findings revealed the level of complexity that is involved in food access. It demonstrated that multiple factors, often unrelated to food have a significant impact on the physical environment in which food people interact with food and make choices about food. This further supports other work on food environments that issues of access transcend mere availability of food. As demonstrated by these collages, they encompass other structural systems such as the broader food system and urban system, socio-cultural variables, and non-food factors such as spatial characteristics. For this reason, when seeking to understand the barriers to food access, it is important to consider the characteristics of the food environment and how these enable, shape, or constrain food choices.

The second collage which illustrated the different types of asserts participants would require to access different types of food in their food environments revealed that assert constraints are indeed complex. The competing responses between participants demonstrated that access is a multifaceted determinant of food security. This supports other work on food environments which proposes that, given tastes and preferences, individuals seek to maximize their utility from food, subject to the constraints of the neighbourhood food environment, competing time needs, income, food costs, and costs of other needs. Participants want financial assets to enable them to afford a range of other food system offerings like; access to a car, adequate houses with utensils and resources that they need to store, prepare, and utilize food, the ability to travel even if on public transportation to access different markets and make different choices about the types of food that they buy. They want the ability to choose the type of food that they want to eat, when and where these foods are sourced, the ability to afford healthier food options, and choose foods that will meet their nutritional requirements, taste preferences, and individual diets. However, pressures in their physical environment, including the lack of economic asserts often limit their choices and force them to make different choices about how they navigate their food environment and respond to different pressures.

This further demonstrates that physical and economic access is important when considering issues of availability. Equally important is the consideration of a range of constraints that influence the ability of individuals or households to maximize their food access. Factors such as age, gender, health, household income, occupation, educational background, family structure seemingly unrelated to food also have significant impacts on household food accessibility and ability to utilize food that is available in these food environments. This further demonstrates that understanding the location of the sources of affordable and nutritious food and lived geographies of home, work, and travel is crucial to tackling issues of access.

The third collage which exemplified factors that influence qualitative choices around food access revealed that salient interpersonal factors like taste preferences, individual habits, nutritional knowledge, and skills), interpersonal level/social environment (processes whereby culture, social traditions, family structure, and role expectations impact eating practices; and patterns within peer groups, friends and family) and social constructs such as safety concerns, concerns about food quantity or food quality have an impact on physical food access and may also impede food choices. Furthermore, socioeconomic barriers and other household or individual-level constraints further reveal the environment in which all these choices about food are made to inform what changes can be affected to improve access.

#### **4.4.2 Visual Outcomes of the Mapping Exercises**

The participatory retail mapping, which intended to establish correlations, clarify patterns in the dataset and establish the characteristics of the food environment revealed people's qualitative choices and decisions they make in their lived environments are often shaped by a range of socio-economic issues that constantly evolve and develop over time. Factors like unemployment, limited cash incomes, or lack of social means to secure access directly impact how often participants patronize food retail locations, the types of foods that they prioritize to buy, and the choices that they make about which types of foods they buy.

The retail mapping data revealed that the food retail environment in Masiphumelele offers a range of healthy (fruits and vegetables) and unhealthy food (amagwinya and chips, fish, and chips, braaied meat, sausage, liver kebabs, etc.) items. From the formal cash stores and cash and carry stores retailers to informal or street vendors, the food environment is widely serviced by a range of retail types. The participatory mapping collages indicated the range of multiple, interrelated factors which are often unrelated to food have a significant impact on the physical environment in which food people interact with food and make choices about food. It further revealed that salient interpersonal factors like taste preferences, individual habits, nutritional knowledge, and skills), interpersonal level/social environment (processes whereby culture, social traditions, family structure, and role expectations impact eating practices; and patterns within peer groups,

friends and family) and social constructs such as safety concerns, concerns about food quantity or food quality have an impact on physical food access and may also impede food choices. Furthermore, socioeconomic barriers and other household or individual-level constraints further reveal the environment in which all these choices about food are made to inform what changes can be affected to improve access.

Participatory exercise 3, which intended to contrast participatory mapping strategies to assess the visual outcome of both mapping strategies revealed that people understand maps better when simple methods like pictures are used to represent issues that they deal with in their food environment. The use of the collages simplified the research aims and objectives and enabled the comprehensive assessment and identification of food access issues in the study area. It enabled participants to openly reflect on food system challenges, physical, economic, and social constraints which constrain their ability to access or utilize the food that is available in this food environment to meet their food needs.

The post mapping discussions around the retail activity in the study area revealed that there is a relationship between economic and physical access. Participants can better access different types of foods available to meet their food needs at different times when they have the money to do so. For example, when considering when each retail location was the busiest, the findings revealed that retail locations experience high foot traffic during certain periods of the day or time of the month. More commonly, participants access retail locations like cash and carry stores, spaza shops, wholesalers, and fruit and vegetable vendors daily to get basic everyday essentials such as bread, milk, vegetables, and around month end to purchase in bulk. While retail activity is limited to peak hours, time of the week, or nearing month-end for some prepared food vendors, butcheries, and braai meat vendors. To demonstrate this, Participant 3 maintains that "I go past the spaza on my way home or in the mornings to get bread for my kids". On the other hand, Participant 5 maintained that "I go to Kwa Adam whenever the need arises or when I want to take a walk because I am always at home ". This participant describes that she patronizes the local spaza shop at various times of the day because she is always at home. Participant 3 further states that "I travel to Shoprite or Longbeach Mall once or twice a month depending on when on when I have money to collect my children's grant and buy my monthly supply of groceries because I don't have money to spend every day buying at the spazas ". In both these examples, it is evident that the decision on where to buy, when to buy, and how much to buy is largely influenced by cash incomes. This also coincides with the retail mapping data. When people have money to buy, they patronize the retail locations more than when they do not have money to buy. As a result, retailers operate for longer hours during periods when people have more to spend. However, when people do not have money to buy, the stores are quiet, and more people want the option to buy on credit.

As demonstrated by the participatory mapping collages, participant's choices about where what, and how often to buy are also influenced by individual preferences, diet, cultural/religious beliefs, and food

behaviours. Participant 3 maintained that "I always buy fish and chips parcel or amagwinya and chips from KwaChomi because I trust the owner, they practice good hygiene because the shop is always clean when I go there, the quantities of food is big and their food tastes nice. Even I do not have money, I can always speak to the owner because we have a good relationship to allow me to buy on credit". Participant 1 further corroborated this view in they perceived the price for basic foods and vegetables to be more affordable in the cash stores located in the residential side streets within proximity of the houses than other retailers that are not situated in the main roads or around the busy intersections. She further maintained that "The retailer is friendly, the store is always clean, and you can rest assured that there is always fresh bread in the mornings". Similarly, Participant 10 continued that they "prefer by fast foods from the African Food restaurant because how they advertise their foods is appealing and appetizing, the setup in the store is neat and accommodates sit-downs so I can sit while I wait for my food. Participant 1 further corroborates this in her comparison that "Unlike the other prepared food containers, the African food restaurant operates in good lighting, and you can see the food that you are buying because it is displayed properly".

Another participant maintained that "I don't go to the White House to buy food even if it's closer to my house because the lines are always full which means I have to wait long, and their service is slow". Participant 2 corroborated this and further added that "they prioritize certain customers over others, their prices are always different, and the quality of food is not satisfying at all. Sometimes they sell you chips that are cold and not fresh from the deep fryer". Participant further critiqued that "their quantities are small, but their prices are high. I can get a bigger hake and chips parcel from KwaChomi for the same, but that one can feed the whole family". Participant 4 elaborated that their "choice of retail location differs depending on which food item she is buying. For example, when it came to buying essentials that she would need for the month, she preferred to buy all her household supplied in bulk at the bigger supermarkets and malls located in Noordhoek or Fish Hoek" because she believes that these retailers meet the food safety standards, regardless of the price that she pays to travel to these locations and spends on food at these locations because she values food safety more than the option of paying less. She further elaborated that when buying daily everyday essentials like bread, milk, and sugar when she runs out, she would only purchase from one retailer that is located on the main road as they have been in business for a long and have established trust with the retailer. In terms of prepared food, she communicated that she visits only one vendor that is located close to where she lives because the location meets the food safety standards that she prefers, the food is always fresh, and the quantity and taste are always consistent. This demonstrates community members are cognisant of food security and safety. However, other factors like the lack of economic resources, infrastructure constraints, and the lack of opportunities often constrain their options and limit the food choices that can make.

Participant 6 critiqued that she does not visit cash and carry stores due to the perceived fear of getting robbed. She further attributed this fear to the fact that “there are always young boys hanging around the store asking for R2 whenever you go there”. Participant 3 further corroborated this notion. She further discussed that her motivation for buying food from certain locations was motivated by the proximity of the store to where she lives. Since she has not been a resident of Masiphumelele of the other participants, she communicated that she often fears traveling too far from the streets that she is familiar with. She further added that her being a female makes her more vulnerable to getting robbed if she makes trips to the stores too late in the evening when it is already dark. She also explained that apart from this, another motivation for not purchasing food items from some stores is motivated by her fear of getting sick from food poisoning based on what she has heard about the food sold at certain locations.

Four themes are evident in this interaction. One, that community choice about what and where to buy are largely influenced by their economic capacity (how much money they must spend on food, the cost of food), the taste aspect which considers quality and quantity. The second theme is perceived general food safety standards. Participants prioritize food safety and general hygiene standard when it comes to food. Participants want to buy food from clean retail stores, where the food that is sold meets general food safety standards (does not sell counterfeit or expired foods) and where there is physical access such as water, electricity for lighting, and resources for appropriate advertising.

The third theme is the relationship with the retailer. An interesting, yet different dynamic presented in the discussions was that participants with higher incomes considered other factors beyond price, quality, and their relationship with the retailer as motivating their choice about which retail location they choose to buy from. In the food environment, interpersonal relationships between retailers and their customers, or retailers with their employees often impact decision making (Schwartz *et al.*, 2011). Establishing trust between the retailer and the consumer is directly linked to the overall long-term success and longevity of the business within the community. Aspects such as intrapersonal factors, in-store environment factors trust, religious and cultural beliefs, general stereotypes, customers' implicit beliefs about the relationship between taste and healthfulness were key elements that shape customer purchase intentions and choice within this food system. Participants prioritize retail locations where they have a good relationship with the retailer, where the retailer is approachable, and where they can buy on credit. Given the socio-economic situation in this area, this aspect was very crucial to participants.

The final theme is perceived fear of danger. This includes the fear of being robbed, fear instilled in participants by community members about the retailer, and the fear of consuming a mix of foods that they may be allergic to due to health reasons. The findings indicate that gender dynamics also act to increase fear in participants and play a role in determining were participant's food choices and behaviours. Participants

want to patronize locations where they always feel safe at different times of the day, day of the week, or day of the month. Participants do not want to visit retail locations which they associate with danger, regardless of the price. Participants also want to be certain that the foods they eat will not compromise their health. This makes them shop at locations where this need will be satisfied. These responses are further discussed in the results discussion chapter.

#### **4.4.3 Factors that impede access**

The findings established that key factors impeding access related to price, socio-economic factors of infrastructural constraints. Participant 7 communicated that “I don’t buy from certain retailers even if they are closer to my house because they charge too much on certain goods. Participant 10 further identified that “general bad habits by the retailer like not returning the correct change when they send children, disparities in price and perceived crime due stories they hear of community members getting robbed by young boys that hang outside the store”, was another impeding factor. Participants identified that a combination of these was more common among cash and carry stores or cash stores.

Participant 12 commented on the inconsistencies in the quality and quantity of the food, taste. Her comment related mostly to the dissatisfaction over vendors selling food in spaces with limited lighting to cut down on electricity costs and the changing prices for their goods and services. She elaborated that to make matters worse, "the service at some of these vendor locations is slow and they lack basic customer service etiquette". She further elaborated that even if that was the case, there are always long queues, so the vendor constantly changes the price for the goods and services because they know they have a solid customer base. Participant 5 indicated that she preferred walking an extra distance to access the other vendor that has fixed prices and is consistent in the quality and quantity of the amagwinya and chips that she sells. She further added that she deliberately chooses not to visit and support vendors that sell the same food items in her street because their location is always full, and the service is slow which means she often must stand in long queues before she gets her food.

Participant 6 discussed that she doesn’t purchase food from other vendors because “they sell small portions of food at a higher price, the retailer prioritizes their regulars rather than attend to all customers with the same zeal and because they are not always satisfied with taste and quality of food sold by the location. This notion was further supported by Participant 7 who expressed dissatisfaction about the conditions of some stores located close to where she lives in terms of their inability to meet general hygiene standards and that the retailer often sells expired foods at a cheaper price. Participant 8 also added that she often does not visit other stores due to the retailer operating with food under conditions of low lighting. While she communicated her understanding of the challenge with electricity in the area, she believed selling food in low lighting does not conform to general food safety standards.

The participants further identified that Masiphumelele lacks sufficient land to build crops or use for the construction of more retail stores, lack of adequate sanitation and water supply, and lack of soil moisture means that community members are unable to plant their crops to meet their food needs. Participant 2 described that "unlike Eastern Cape, Masiphumelele is cramped. There is no space to move, let alone live so the idea of planting crops is foreign" She further elaborated that she has been waiting for a house since 1997, yet she still lives in the Wetlands with no hope of ever getting a decent house. She explained that, while she, along with many other older women in the community can start food gardens, there are no opportunities for this in the environment that she finds herself in. Participant 7 further corroborated this. He explained that "I had a business idea to start my fruit and veg business some years back. However, when I learned about the time, effort, and resources that come with owning that business, I got demotivated and started looking for a job. The distance that we had to travel and petrol costs just to go to Paarl to get vegetables at an affordable price was just too much!" This widely demonstrates that economic barriers relating to affordability, physical and infrastructural constraints such as the distance to the market, reduced mobility due to lack of/ cost of transportation, inadequate land to build houses which result in overcrowding, lack of land to support entrepreneurship or the expansion of businesses are also non-food related factors which impede access.

## **4.5 Analyses of Focus Group Discussions**

This section reviews the results and analysis of the focus group discussions. The findings are discussed in the light of previous research findings and available literature, where applicable, to identify similarities and differences between this study and previous studies and literature. This section aims to provide a comprehensive description of participant's life experiences with the food systems and how external factors such as physical, social, and economic realities shape their experiences of food, their overall food choices, and food behaviours within their food environment. This analysis is based on the interpretation of these quantitative responses based on the researcher's understanding of the research findings.

### **4.5.1 Towards an Improved Understanding of Food Choices and Behaviours**

The discussion on how different perceptions participants maintain affects food choices and behaviours revealed that, while all participants know the difference between healthy and unhealthy food when it comes to food choice, participants were more likely to buy the prepared food items like amagwinya, fried fish, and chips, bunny chow, ofal or braai meat, soft drinks, etc. Participant 1 maintained that "I know it's probably better to eat the healthier food options and adopt a healthier diet which includes changing my attitude about food and healthy living making better food choices, but I can't because eating healthy requires a lot of

money". She further elaborated that, while this might be her goal, other socio-economic challenges like unemployment, not having a decent house with running water and electricity, or the space to practice healthy living often means that this falls off the table. While participants would like to eat healthy in concept, the reality is that the food system has made healthy living expensive. In the context where community members often battle with social ills while trying to ensure that they have food on the table, the idea of ensuring food security through encouraging green or agricultural intensive initiatives will always remain mere concepts that do not yield results in real life. This demonstrates that the root of the food insecurity problem is the physical challenges within which these food systems operate. For this reason, affecting a change in the food choices and food behaviours of communities starts with understanding the challenges within the physical environments in which these food systems challenge. It is understanding that food systems and the broader food environment are directly affected by the changes in these environments which force them to adapt in response to changes in their structure and function.

A separate but also contributing factor to food choices is taste. Participants perceived unhealthy foods to be tastier and, more enjoyable during consumption than healthier foods. This introduces the second element in food choices which is intention. Participants perceived the consumption of ready-made/takeaways as more rewarding than choosing the healthier options of a 'seven colours' <sup>9</sup>home-cooked meal. They also associated ready-made/takeaways with more enjoyment, less effort, time, and more convenience than the latter. The consumption of ready-made/takeaways was symbolic of a special occasion or an act of spoiling themselves after a long day or long month of hard work.

Participant 11 maintained that she prefers more traditional meals like samp, ofal, and amathumbo<sup>10</sup> (intestines of sheep) instead of the takeaway options offered by most of the prepared food vendors in this community. She revealed that her reasons for not enjoying some of the foods that she prefers on an everyday basis were because electricity is expensive which means that enjoying these meals which take a long time to prepare comes at an expense. She further added that "back home in the Eastern Cape, meals would be prepared outside in open fire, and one would be able to feed their whole family. However, living in Masiphumelele at someone's backyard, where the space is little means that you can't practice this without putting your neighbours at risk of a fire outbreak". Participant 4 further added that "Fire is a big problem for our community so we also cannot run away from that fact". Participants further supported this statement in that the high electricity prices often discourage them from preparing meals in their homes as supposed to eating outside the home. Participants maintained that the distance that they travel home from work also acts as a barrier because it means that they must wake up extra early to get to work on time and long traveling

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<sup>9</sup> Seven/Several colors meal: An African term which refers to a traditional meal that is prepared on special occasions like a Sunday which includes a variety of meat types, vegetables that are enjoyed over a dinner table.

<sup>10</sup> Amathumbo: Intestines of sheep prepared over an open fire and served as a traditional dish.

hours after home from work which means that they get home extremely tired. This participant further added that "For those who are lucky and have kids that are old enough to cook, it works out better because they can cook mostly during the week but for us, takeaways are a better option". Participant 9 further discussed that "I recently moved from where I was staying and now live alone. I don't have proper pots, a stove, refrigerator and cutlery to prepare food yet which means that takeaways are my only option". Participants further supported this view that takeaways are already prepared, and thus do not require electricity, time, and other supplementary resources like a stove, pot, cutlery, cooking oil to prepare. Nor do they need a refrigerator for storage. One can just enjoy these on the go. An interesting characteristic shared by these participants was that they all came from small families of two or three people each. For this reason, they shared similar perspectives and beliefs which often shape how they navigate and experience their food environment. This finding widely demonstrated that family structure does have an impact on the qualitative choices that individuals make in their lived environments and how they experience these food environments. Aspects such as beliefs, cultural values are embedded in the family and the family structure. For this reason, the choices individuals make in their food environments are widely shaped by family background, their family structure, their associations with food, and their perspectives on food which shapes how they navigate their food environment. This further outline that the family structure is also pivotal in shaping qualitative choices, food behaviours and determining how individuals respond to barriers of access.

This was also visible in their responses. The fact that most of the participants came from the Eastern Cape also contributed towards shaping the views on food, food practices, and food behaviours and the overall qualitative choices that participants make in this food environment. These trends could not be clarified in the use of either methodological strategy alone.

Participants who chose the healthier options like the mealies, butternut, and spinach were motivated by the price, the availability, the health aspect, and that these meal types could be prepared to cater for the whole family on a small budget. Participant 4 maintained that "although I love takeaways, I can only afford to eat out once or twice a month. So, for me, it is not worth it if I cannot maintain the takeaway lifestyle. I just prepare my meals and store them in the fridge. That way I know there is always food at my house". Participant 6 elaborated that, "While I enjoy takeaways, given my income, I prefer to make meals that can be enjoyed by the whole family because there are six of us at home so it's often never enough for all of us if I buy takeaways". Participant 11 further supported this view in that "My mom often gets upset if I come home with a barrel of KFC. When she considers the cost of it versus the number of items that you could have gotten from Shoprite for the same amount, coupled with the fact that you can eat over several days, it's never worth it so I'm less motivated to buy takeaways". The discussion ascertained that while traditional meals initially cost more than just buying food that is already prepared, it works out cheaper if you have larger families because one meal using the same ingredients can feed the whole family, over several days using less capital. Furthermore, to reduce electricity costs, one could also cook several meals at the same time and

refrigerate these to limit the electricity costs of cooking daily. This ensures that participants entail fewer costs and that they have enough food to last them the month as supposed to eating out of the home every day.

The findings of the discussion demonstrate that the decisions that people make each day are influenced by a variety of personal, social, cultural, environmental, and economic factors. It further reveals that every day, people make conscious choices around food products, what they purchase, and what they consume (Axelson and Brinberg, 1989) as a result of unique factors or independent factors such as the time, poverty, and convenience conundrum. While some participant's food choices were reflective of an individual's decision based on the list of items presented at that given time and day, others were more linked to behaviours participants practice in their home environments. To demonstrate this, some participant's food choices are influenced by what they found to be visually appealing to them at the time and not necessarily because they can motivate their choice. Therefore, they often found themselves in the trap of always wanting to eat out even if they cannot afford to. In contrast, other participant's decisions were shaped by social and economic factors which causes them to make choices that will ensure that they have enough food to meet their needs on a day-to-day basis on a more long-term basis.

## 4.6 Conclusion

The chapter has demonstrated that Masiphumelele has a pool of formal and informal food retail stores which contribute significantly to local diets, especially among the urban poor. The findings of the retail mapping interview, participatory mapping, and spatial mapping ascertained those retailers not only do they play an essential role in ensuring the consistent provision, accessibility, and affordability of food for low-income houses, they also ensure stability in the food source that is supplied, and that the community has equal opportunity to access the foods available and that the utilization of food that is available, accessible is steady in supply. From the formal traders of cash stores, cash and carry stores to informal or street vendors such as prepared food vendors, fruit, and vegetable stands, braaied meat stands, butcheries, these retail locations each play a crucial role in ensuring a functioning food system. Fish, and chips backyard vendors, fruit, and vegetable stands, braaied meat stands, butcheries, mini spaza shops, to takeaway containers, this community has adopted a range of coping strategies to address some of the challenges they face. Within Masiphumelele there is physical access to a range of foods, including healthy food options. However, socio-economic challenges that plague this community such as infrastructural constraints, the high unemployment rates, lack of transportation networks connecting this area to the main central business districts, renders the stability of the food system vulnerable to a range of threats. Transportation costs, changes in the market prices/supply are all factors that have the potential to negatively impact the stability of the food source in this area.

The retail mapping was crucial in describing the physical locations of retail stores and the dominant retail types in the study area. The semi-structured interviews and non-participant observations further provided significant insights about the retail activity, types of food sold at each location, and non-food-related dynamics that impact the food system. The findings established that the dominant retail types in Masiphumelele were cash and carry retailers, prepared food vendors, fruit, and vegetable vendors, braai meat vendors, and butchery. The findings further demonstrated that the food retail environment in Masiphumelele is dominated by a range of formal and informal retailers which play a crucial role in maintaining the food system and contribute to food security. This section demonstrated that inequitable food availability resulting from the relative remoteness of the geographic location, supply chain issues, distance to the market, food travel distance, low economic growth in the area, unfavorable living conditions, and lack of access to basic services places a burden on food systems. Conversely, economic barriers like the high rate of unemployment, crime, and lack of business opportunities coupled with the lack of basic services and physical infrastructure further exacerbate this. Some households are extremely poor and often go without food for some periods of the month. Therefore, they are heavily reliant on social grants, and the ability to buy food on credit cater to their family's food needs on a day-to-day basis.

The participatory mapping was crucial in starting the discussion about the salient aspects of food access. The participatory mapping illustrated the food access issues within the food environment in Masiphumelele and opened the discussion about the barriers to food access and the qualitative choices that people subconsciously make in response to pressures or changes within their food environment. The participatory mapping findings established that participant's choices about where, what, and how often to buy are also influenced by their family structure, individual preferences, diet, cultural/religious beliefs, and food behaviours. People's qualitative choices and decisions they make in their lived environments are often shaped by a range of socio-economic issues that constantly evolve and develop over time. Factors like unemployment, limited cash incomes, or lack of social means to secure access directly impact how often participants patronize food retail locations, the types of foods that they prioritize to buy, and the choices that they make about which types of foods they buy. Community choices about what and where to buy are largely influenced by their economic capacity (how much money they must spend on food, the cost of food), the taste aspect which considers quality and quantity. Participants also prioritize food safety and general hygiene standard when it comes to food. Participants want to buy food from clean retail stores, where the food that is sold meets general food safety standards (does not sell counterfeit or expired foods) and where there is physical access such as water, electricity for lighting, and resources for appropriate advertising. Establishing trust between the retailer and the consumer is directly linked to the overall long-term success and longevity of the business within the community.

Aspects such as intrapersonal factors, in-store environment factors trust, religious and cultural beliefs, general stereotypes, customers' implicit beliefs about the relationship between taste and healthfulness were key elements impacting how people experience their food environments and the choices that they make in their lived environments. Participants prioritize retail locations where they have a good relationship with the retailer, where the retailer is approachable, and where they can buy on credit. Given the socio-economic situation in this area, this aspect was very crucial to participants. Participants want to patronize locations where they feel safe always of the day, day of the week, or day of the month. Participants do not want to visit retail locations which they associate with danger, regardless of the price. Participants also want to be certain that the foods they eat will not compromise their health. This makes them shop at locations where this need will be satisfied.

## Chapter 5: Results Discussion

### 5.1 Introduction

This thesis, which focussed on the food environment of Masiphumelele endeavoured to explore how the mixed method approach could facilitate an improved understanding of food access in Masiphumelele. This study employed a mixed-methods approach which integrates qualitative and quantitative methodological strategies to provide information-rich findings on people's lived geographies and qualitative choices. Guided by the socio-ecological approach thinking as the theoretical framework underpinning this analysis, this chapter will describe how effective the research method was in ensuring the achievement of the results. This analysis and interpretation of results are carried out in two phases. The first part, which is based on the results of the retail and participatory mapping, deals with a quantitative analysis of data. The second, which is based on the results of the retail mapping interviews, participatory mapping, and focus group discussions, is a qualitative interpretation.

#### 5.1.1 Theoretical framework

All retailer data was extracted and organized according to the social-ecological framework. The social-ecological model was used to describe multifaceted factors (individual, interpersonal, environmental, community, systems or sectors of influence, policy, and norms/values) on retailer decision making and their ability to access food. The Social-Ecological Model (SEM) is a theory-based framework for understanding the multifaceted and interactive effects of personal and environmental factors that determine behaviours. It is also useful for identifying behavioural and organizational leverage points as it places emphasis on multiple levels of influence (such as individual, interpersonal, organizational, community, and public policy) and the idea that behaviours both shape and are shaped by the social environment to adopt healthy behaviours. The socio-ecological approach is useful in understanding health behaviour as determined by a set of interconnected individual and contextual factors, rather than a prescription for intervention (McLeroy, 2011).

### 5.2 Overview of Chapter

This chapter provides a discussion and reflection around the key research findings of this study. The first section outlines the multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical and communities' life experiences) which shape the food retail environment in Masiphumelele and impact the ability of the community to access food. Using the broad themes of time, poverty and

convenience nexus, and distance versus safety considerations, it discusses some of the key research findings and situates these within the broader literature on the food environment. It proceeds to describe the characteristics of the food system to establish a link between food systems and the food environment. It concludes to discuss unanticipated patterns within the data and provides recommendations for future studies.

### 5.3 Barriers to Food Access: Expensive Food

The findings of the participatory retail mapping reveal that the food retail environment offers a range of healthy (fruits and vegetables) and unhealthy food (amagwinya and chips, fish, and chips, braaied meat, sausage, liver kebabs, etc.) items. The cash and carry and cash stores provide the day-to-day products, and the fast-food vendors and restaurants provide a combination of hearty traditional meals and fast foods that are easy to consume on the go in between destinations. A combination of these formal and informal outlets is a direct response to the community's food needs for easily accessible food at an affordable price. However, street vendors have been heavily critiqued in academic literature in that they promote energy-dense diets that contain higher quantities of refined cereals, sugar, and fat, but little to no nutritionally dense foods such as lean meats, fish, vegetables, and fruit (Temple & Steyn 2009, Rehm *et al.*, 2011, Pereira 2014, Faber & Drimie 2016, Mbhenyane 2016).

The most frequently mentioned barrier to accessing foods in general healthy foods, quality foods were high prices. Most participants stated that high prices prevented them from accessing certain foods or types of foods. Participants stated that high prices were deciding factors that determined in which stores they would shop and which types of products they would or would not buy. Food security in both urban and rural South African households is largely dependent on cash incomes (Faber & Drimie 2016). Income has a strong influence on both what people purchase and where they shop. The poorer people are, the more the price of food is an important factor; and the richer they are, the more can be selective in the quality and types of foods that they buy (Connell, 2007). Many urban households do not (or cannot) grow their food and rely on local supermarkets or wholesalers to purchase the food they consume (Battersby-Lennard & Haysom 2012, Faber & Drimie 2016).

Existing research suggests that spaza shops often offer credit, making it possible to “buy” food without cash in times of shortage (Skinner and Haysom, 2016). Two separate studies on spazas owned by international migrants in Ivory Park and Soweto in Johannesburg, and by Somalians in Cape Town, suggest that offering credit was a key part of their business model (Crush *et al.* 2015:13). Ligtehelm's (2005) study, albeit more dated, confirms this finding on credit provided (Skinner and Haysom, 2016). This was also observed in this case study. Some households are extremely poor and often go without food for some periods of the month. Therefore, they are heavily reliant on social grants, and the ability to buy food on credit cater to their

family's food needs on a day-to-day basis. This largely demonstrates that economic barriers to the affordability of accessing nutritious food including the cost of transportation, unemployment and lack of income, the price of food, and other socio-economic barriers have an impact on food access, food supply, and food choices that people make as community members constantly must negotiate their food choices based on what they can afford. This suggests that there is a need for an expanded view of what is meant by the type of food access needed. The locality, transport options, dwelling typology, refrigeration, employment patterns, and places of work all determine the food access options open (or not) to urban residents (Skinner and Haysom, 2016).

While good nutrition was identified as a top priority to participants and their families, participants expressed the frequent need to adapt their meals because certain healthy food items are difficult to obtain due to distance, lack of time, or limited availability. Given the same amount of money to choose between fast food and fresh fruit and vegetable that can be prepared at home, community members continue to choose fast foods as they are perceived to be cheaper, quantities are bigger which means that its more filling and entails less effort of investment in water, electricity, and other cooking resources to prepare. One participant described her attempt to buy fresh tomatoes in her neighbourhood. After finding only rotten tomatoes at the cash and carry store, she bought tomato sauce. This confirms the findings of other studies which indicate that low-income communities are more concerned with food that fill you up than with those that are healthy (Caraher, 1998).

This is not to say that they are unaware of healthy eating messages, but that other priorities operate in their lives (Caraher, 1998). A key finding from this thesis is that focus group participants are very aware of what is taking place in their neighbourhoods and how the importance of what they eat impacts their health. However, eating a healthier diet is not as simple as choosing to eat healthier foods as sometimes, healthy food is expensive for people to buy. To eat healthier diets, people need better access to healthy and affordable foods (Public Health Law Centre, 2017). This demonstrates that barriers to accessing healthy food are complex (Food Empowerment Project, 2012).

## 5.5 Selection, Affordability, Location

Recent years have witnessed a growing interest in studying the attitudes and beliefs associated with food choices and food behaviours in local food environments. Previous studies have presented several models that outline factors, influences, and eating patterns (Sanjur, 1982; Kristal *et al.*, 1990; Smith & Owen, 1992; Trenkner *et al.*, 1990 cited in Steptoe *et al.*, 1995), and several attempts have been made to develop more comprehensive portraits of the food choice process (Parraga, 1990; Shepherd, 1989). However, food choice

remains a topic that is not well understood (Rozin, 1980; Rozin & Fallon, 1980; Stellar *et al.*, 1980 cited in Steptoe *et al.*,1995).

The findings of this study build upon the work of others within a variety of fields and disciplines that have studied and described factors and processes germane to food choices (Furst *et al.*, 1989). It further supports the view that it is important to explore the role of other influences on food to distinguish value negotiations (involves weighing different considerations in making food choices (Steptoe *et al.*,1995) and strategies influencing choice patterns. It employs theory and methods that differ from those typically chosen in studies examining food choice (Fine & Leopold, 1993 cited in Steptoe *et al.*, 1995) to understand more fully the complexity of the food choice process (Furst *et al.*, 1989).

The choices people make about food are determined by their life courses, societal influences, and personal value systems. Life courses are personal roles and the social, cultural, and physical environments to which individuals have been and are exposed. A person's life course generates a set of influences: ideals, personal factors, resources, social frameworks, and food context (Furst *et al.*, 1989) which inform and shape people's systems. It also includes conscious value negotiations and unconsciously operationalized strategies that may occur in a food-related choice situation (Furst *et al.*, 1989). Value negotiations consider the full set of considerations for acquisition, preparation, or consumption of food in a wide variety of settings including grocery stores, restaurants, and vending machines; parties and social events; and meals and snacks at home.

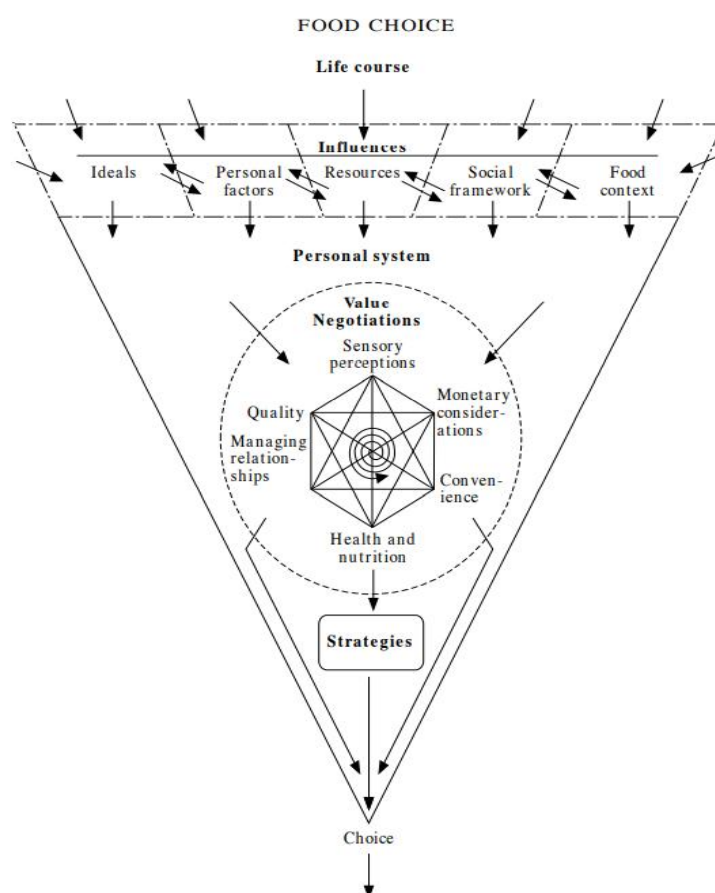


Figure 9: A conceptual model representing the components in the food choice process (Furst *et al.*, 1989)

The life course emerged as a crucial element in the food choice process as it shapes the influences that emerge in a food choice situation as well as the manner and extent to which the social and physical settings affect how people construct and execute personal systems of food choices (Furst *et al*, 1989). Several participants referred to ways their upbringing, as members of a given culture during a particular historic period and as participants in a family life course, exerted an influence upon how they made food choices. One woman described how at home they were never allowed to eat certain parts of a traditional home-cooked chicken. "This would be reserved for the elders or males in the family". After moving to Cape Town as the head of her own family, she still practiced this and does not eat certain parts of a traditional chicken. This largely demonstrates how past influences, personal experiences, and historical eras, impact food choice patterns.

A distinct feature that emerged from the data analysis is that characteristics of a given age cohort or generation affected the way people regard, use food and their relationship to food. One participant reflected on how food was used as a determiner of wealth and status in the rural areas that she was from. She reflected how food acquisition and the diversity in supply were reflective of the financial standing and relative importance of a family in the rural areas given limited transportation options, food prices, production challenges, and lack of diversity in the retailers. Participant 2 further elaborated that "The greater the diversity of food available in that home, the wealthier that family was perceived as you could just open the cupboard and pick and choose what you want to eat at different times of the day or period of the month". In this example, food choice is linked to how much money individuals have, to spend on food. This largely demonstrates that while food choice is an important aspect, the resources available to people making food choices are an equally influential component of the decision process. Tangible resources like money, equipment, space, and the degree of availability affect the scope and nature of food choice decisions.

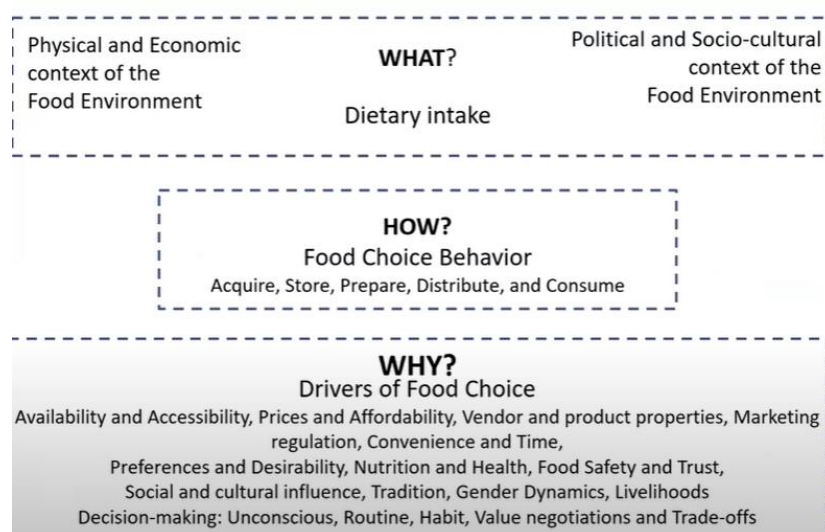


Figure 10: A visual representation of the drivers of food choice in low-income areas (Blake *et al.*, 2021)

Monetary considerations, consisting of price and the perceived worth of food to be bought, comprised another very salient value for many people and often dominate food choices. While this is not the only determinant, people's perceptions of the cost and price of foods underlay the role of price in several food choice situations. Limited financial resources to purchase different types of food directly impacts food choices as it compels participants to make a series of decisions on what to buy and eat, when, and how. To demonstrate this, Participant 9 maintained that her choice about the types of food that she enjoys is highly influenced by price and how much money she can spend on food. She further explained "I come from a family of 5, therefore, we can't afford to eat out on a daily even though we enjoy eating takeaways. Also, we buy meals that the whole family can enjoy like a fish and chips parcel, KFC family bucket, or Hungry Lion depending on whether or not they have a special running." This sentiment was also shared by Participant one who discussed that "because I come from a big family, back home when I was growing up, we never used to eat eggs. They were only eaten by my older siblings who were working and could afford to buy them. As a result, I grew up thinking that I do not eat them. However, when I got to Cape Town and started my family, I found that I do enjoy eggs, including all the other foods I never got to enjoy because my family couldn't afford them". This further demonstrates that, while we may look at the price to determine what type of decisions individuals make about what type of food to eat, when, why, and how, but food choice can also be influenced by other characteristics that correspond to personal preferences (e.g., sustainability labels for fair trade, organic labels, or health-related information such as health claims).

Price also could be exempted in particular situations, as in the choice by personal factors influencing food choice like food habits ("I always buy this"), taste, or quality. It can also depend on our mood and other factors such as appetite or being in a rush. This further reveals that food choice encompasses a complex set of factors that vary from person to person and depend on culture, heritage, and upbringing which all influence the decisions that they make about food and the type of food that they choose to buy.

Participant 3 focus group participants also revealed that knowing that the food that they want to eat is cheap, tasty, and comes in big quantities also encourages their food choice and automatically makes them like that certain food types. Participant 7 corroborated this and further made the example of amagwinya. In her illustration, she discussed that "different people prepare amagwinya and sell them as a means of making ends meet. However, we only buy from vendors that sell amagwinya that is fresh, tasty, visually appealing, and sold in filling quantities. It introduces the second aspect of selection which is the effect of advertising. Advertisements have a way of persuading people to make specific decisions about food. Food manufacturers and shops advertise their products through television, radio, magazines, newspapers, posters, and leaflets to encourage people to buy. Participants want to consume visually appealing foods while also meeting their taste, cost, and individual preferences.

For most people, the food budget represents one of the major expenses. For this reason, cautious planning and shopping can result in substantial savings. Generally, if you have money, you tend to spend more money

on food and if you are poor, you spend less. The choice about how much money to spend on food is highly influenced by; skills and personal preferences, values, and lifestyle which determines your food selection and hence the money you spend buying food. To demonstrate this, Participant 9 discussed she only patronizes the supermarkets or shopping malls in Noordhoek or Oceanview once or twice a month to buy all the groceries that she needs for the month. It is often around month-end just after payday. It ensures that she has all the household food necessities before she spends money on luxuries.

The skill of bargaining is another critical aspect of selection. The ability to bargain helps individuals buy goods at the cheapest possible cost of purchasing foods in season, and bulk also helps cut costs. As established by the retail mapping, Somali shop owners tap into their own sophisticated collaborative distribution networks and pass on bulk discounts and transport savings. As revealed by the retail mapping interviews, cash and carry retailers form networks where the only retailer will go to the market and source enough goods for three or four other stores within the area at discounted prices. As a result, the retailers save on transportation costs, negotiate better prices for their goods and services with the suppliers and ensure stability in the supply which has a positive impact on ensuring that all people have access to the food available in the food environment. This is one example of the skill of bargaining when selecting which retailers to purchase from.

As established by the participatory mapping findings, participants want the ability to choose the type of food that they want to eat, when and where these foods are sourced, to afford healthier food options, and choose foods that will meet their nutritional requirements, taste preferences and individual diets. Food selection or food choice refers to the ability to select what individuals want to buy, where they purchase this food (physical location) when they buy (time-distance aspect and convenience), and how they buy. Food selection is highly influenced by monetary constraints, nutritional needs that individuals want to meet, the effect of advertising, and constraints in their food environments in which decisions about food are made. The more money one has, the more food one can buy and the greater their choices about what type of food they can buy. Generally, people who have a lot of money can afford a range of meals and can afford to eat away from home more regularly than those without money.

Recent research has investigated the trade-off between money expenditure and time expenditure in food production. These studies have found that low-income individuals and households are time-constrained for meal preparation. A household needs both sufficient money and sufficient time to prepare healthy meals (Davis and You, 2011 cited in National Research Council, 2013). People with limited household incomes have limited food choices and buying enough food to meet the family needs becomes a difficult task. The focus group findings established that cash incomes and time are key determinants of food choice and food selection. The amount of time individuals spend on preparing food for consumption in the household is

affected by household and individual factors such as earnings; labor force participation; the number of children in the household; and sociodemographic characteristics such as education, ethnicity, and gender (Mancino and Newman, 2007 cited in National Research Council, 2013).

As established by the previous section, the amount of time on obtaining and preparing food also has an impact on food choice. Given that more commonly, the population in Masiphumelele work in areas outside, they often must travel over long distances using public transport. It means that leave home in the early hours of the morning and regularly get home late. For those who do not have older children able to prepare food, it means that they must start preparing food later or resort to alternative options like takeaways. In other instances, the self-employed spend most of their time in their businesses or taking care of their children. Therefore, they do not have a lot of time left to prepare home-cooked meals. It often results in them resorting to street foods. For example, Participant 9 discussed in the focus groups that "I recently moved from where I was staying and now live alone. I don't have proper pots, a stove, refrigerator, and cutlery to prepare food yet. This means that takeaways are my only option". Participants further supported this view that takeaways are ready-to-eat and thus do not require electricity, time, and other supplementary resources like a stove, pot, cutlery, cooking oil to prepare. Nor do they need a refrigerator for storage. One can enjoy these on the go. It demonstrates that time, convenience, and poverty contribute to food choices and nutrition outcomes. For this reason, enhancing the dietary quality and consumption diversity requires an inquiry into the motivating factors shaping the community's food choices.

As part of the focus group, Participant 8 maintained that she only chooses to buy from one cash and carry retailer because he allows her to bargain when she feels that the prices on goods and services are too high. She further outlined that her choice of where to buy is highly influenced by where she perceives she can get good quality food for less. She further outlined that this choice is also determined by whether the retail location is clean, and that the food is adequately stored. Participant 12 further challenged this notion. She argued that she shops at multiple stores to compare prices and assured that she was getting the best deal. She further elaborated that her decision about where to purchase, food choices, and food preferences are determined by price and what she deems affordable. Getting the best value for money". Participant 5 motivated that her choice was motivated by the physical location and distance between her home to the shop. "Whether the store is close or if they're not." She further discussed that she often shops at stores near home or work because they are cheaper and more convenient.

About a retail location, Participant 2 stated that she "regularly visits about four cash and carry stores within the study area because they all stock specific products that the others do not stock." Another participant further echoed a similar sentiment in that she prefers buying different products from different retailers. For example, she only purchases bread and polony or boiled eggs at specific cash and carry stores because she is confident that the bread is always fresh. The vendor practices safe food handling strategies and observes general food hygiene practices. Participant 10 further identified that "general bad habits by the retailer like

not returning the correct change when they send children, disparities in price and perceived crime due stories they hear of community members getting robbed by young boys that hang outside the store," were other impeding factors. Participant 8 further explained that she often sends her children to the store because she cannot go herself. For this reason, her motivation for only choosing vendors is motivated by the level of trust between herself and the retailer. She discussed that the retailer always provides the right change and has the option to return the product if the children bought the wrong thing or if they are not happy with it without hassles. This aspect contributes to her frequenting the store regularly.

This section has demonstrated that food selection and choice are influenced by a set of complex factors that vary from person to person and depend on culture, heritage, and upbringing. Although different, these aspects influence decisions people make about; food, the type of food they choose to buy, where they purchase this food, and frequency. The data analysis indicates that the role of the life course should be explicitly considered when conceptualizing food choice. A range of experiences contributes to individuals' food choices, patterns, and decisions they make about food over their life course. The intertwining of ideals and value negotiations reveals a need for a greater appreciation for and depth for how individuals apply value criteria to negotiating food choices in situations in which personal values conflict. However, this framing fails to clarify the barriers within their food systems that impact their ability to make food choices as determined by their personal preferences, health, financial status, etc., specifically for low-income communities. It, therefore, necessitates an assessment of the barriers of access to facilitate an improved understanding of the complex, interrelated factors that shape food choices for low-income communities.

## **5.2 Barriers to Food Access: Distance to the Market**

The distance traveled between participant's homes to local food markets was identified amongst some of the barriers to food access. The retail participatory mapping data and focus groups revealed that participants viewed the distance that they had to travel between their homes to access cheaper markets as a barrier as this often means more investment in financial capital to enable them to afford the transportation costs. Vendors argue that the distance to the local markets often results in them having to pay exorbitant petrol prices to access bigger wholesalers that quality sells food products at lower prices. While the food environment in Masiphumelele is well-serviced by formal and informal retailers which provide the type of food that they would require daily, participants want to take advantage of the option of buying in bulk and comparing prices in a market that supports different supermarkets and wholesalers competing to provide better prices in their goods and services. Long traveling distances also means that participants cannot make frequent trips to supermarkets or distant food retailers in Noordhoek, Wynberg, Philippi, or Bellville as much as they would

like as this entails increased transportation costs. In other cases, they must be physically fit to travel by foot to access the local retailers and vendors. Shaw (2006) argues that travel, unless on foot, demands financial resources. Similarly, consumers need to be physically capable of traveling to a food retailer, or an allotment, and of transporting the food back home, unless the food is consumed on restaurant-type premises (Shaw, 2006). Considering that participants are low-income residents who do not have access to their cars and were primarily dependent on public transportation to transport them from their homes to the shops, they are forced to buy locally to minimize travel costs.

To demonstrate this, Participant 6 mentioned that it was not her lack of money that prevented her from shopping, it was the far distance in a taxi that she would have to travel to arrive at the store. Additionally, many stated that the drive to a store was often 30 minutes or longer and required more transportation costs than families could afford. Another stated that she used to travel by bus to do shopping but bringing the purchases home on the bus was difficult. Several participants stated that the far distance they must travel results in them only patronizing the shopping malls and wholesalers once or twice a month and often making do with what they can get from the local cash and carry stores if they do not have an item they need at home. This further endorses the findings of other work on food environments that transportation to and from wholesalers, supermarkets, and grocery stores or the proximity of retailer's/ food vendors to the market acts as a barrier to low-income transit-dependent individuals or those with limited mobility (Mah *et al.*, 2015). This further demonstrates that the time-distance aspect not only shapes choices about where and how often people choose to buy, but also what they buy and how they feel when buying which also shapes how much of each product they buy.

In a study conducted by Shaw (2016), he established that restricted access to affordable, healthy food options (especially fresh fruits and vegetables) due to the absence of grocery stores within a convenient traveling distance (Skina, 2006) means that participants often resort to purchasing less healthy food available closer to home. This was also observed in this study. The participants maintained that the distance to the market also discouraged them from doing their grocery shopping for all the monthly food essentials as it often entailed transportation costs, cash incomes to purchase this food, refrigeration, or storage to store this food, and physical fitness to be able to transport the food from the store to their residential homes. Therefore, they often adopted eating from the streets to overcome this challenge. This means that they resort to buying processed foods (such as amagwinya, chips, and fizzy drinks) typically sold by street vendors, informal traders, or corner shop convenience stores (Crush *et al.*, 2009).

Participants further revealed that they often altered their meals or food choice as a result of not being able to source the ingredients that they require to prepare the meals or the lack of availability of the food type in their local food environments. Several participants stated that this often occurs due to the distance they would have to travel to the stores. Participant 12 maintained that "it often depends on where the stores are, if they're close or if they're not, one has to settle for/make do with what one can grab." This comment was

echoed by two others who said they often end up buying fast foods because they get home, to cook, only to find that they do not have all the ingredients necessary to prepare the meal. For example, one participant said, "As a simpler and quick solution, I pop by the nearest prepared food vendor and purchase amagwinya with chips for me and my family to ensure that we at least have something to eat."

Several other participants mentioned lack of time as another reason for not being able to purchase the types of food they needed for a meal, thus having to use alternative ingredients. For many, this challenge goes back to the issue of the distance to the market. Others simply do not have the time, money, and resources to walk or drive to a store for various reasons, whether close or far.

These findings demonstrate further support the findings of Diez *et al.* (2017) that local food environments are influenced by; macro-level system drivers (political and economic factors, industry and market forces, and cultural and social factors), meso-level drivers (environmental and socio-cultural factors) and micro-level/ individual factors (individual characteristics, individual behaviour, and heredity factors) which shape how the food environment responds to different food system challenges as different scales.

## 5.4 Time, Poverty vs Convenience Nexus

Convenience is arguably the genesis of food-related routines as it is determined the structure of the food environment. Time is a luxury for many living on the outskirts of the city centre like Masiphumelele. For this reason, the findings revealed that it was an important component of convenience. Participants described time as a scarce resource and commodity to be spent or saved in their weighing of the value of convenience in terms of time in negotiation with other values (Furst *et al.*, 1989). When time is a scarce resource, convenience maybe even more important than the Rand cost of food. Consumers' decisions on how many different types of foods they purchase are influenced by time constraints, prices, the food environment, and financial resources, and in other instances, taste (Glanz *et al.*, 1998). Understanding what motivates these consumers to purchase convenience foods has important implications for public health, given that convenience foods are often associated with lower nutritional value.

Employment creates time constraints from both the time spent working and the time spent commuting. These time constraints shift consumer demand from traditional foods to restaurant meals. Traditional meals significantly take more time to prepare (cooking vs. buying prepared food), and in some cases to obtain. To demonstrate this, Participant 11 maintained that she prefers more traditional meals like samp, ofal, and amathumbo<sup>11</sup> (intestines of sheep) instead of the takeaway options offered commonly by prepared food vendors in this community. She revealed that her reasons for not enjoying some of the foods that she prefers

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<sup>11</sup> Amathumbo: intestines of a sheep, chicken, or goat which cooked and are prepared as a traditional delicacy.

on an everyday basis were because electricity is expensive which means that enjoying these meals which take a long time to prepare comes at an expense. She further added that “back home in the Eastern Cape, meals would be prepared outside in open fire, and one would be able to feed their whole family. However, living in Masiphumelele at someone’s backyard, where the space is little means that you can't practice this without putting your neighbours at risk of a fire outbreak”. Participant 4 further added that "Fire is a big problem for our community so we also cannot run away from that fact". In some "food deserts," getting to a supermarket can take significantly more time than buying food from a local fast-food restaurant (Herforth and Ahmed, 2015). Fast food, street food, and highly processed shelf-stable food have grown quickly in urban areas because it is convenient. As people spend more time working informal labour markets, they spend less time on food preparation (Herforth and Ahmed, 2015).

Time spent on obtaining and preparing food represents a significant time burden, especially for women (Monsivais *et al.*, 2014). The findings of this study further corroborate these findings. The data reveals that in addition to time, other components of the convenience value also appeared, such as ease of access or preparation (Furst *et al.*, 1989). Given that more commonly, the population in Masiphumelele work in areas outside, they often must travel over long distances using public transport. This means that leave in the early hours of the morning and often get home late. For those who do not have older children able to prepare food, this means that they must start preparing food later or resort to alternative options like takeaways. In other instances, the self-employed spend most of their time in their businesses or taking care of their children, therefore they do not have a lot of time left to prepare home-cooked meals which often results in them resorting to street foods. For example, Participant 9 discussed in the focus groups that “I recently moved from where I was staying and now live alone. I don’t have proper pots, a stove, refrigerator and cutlery to prepare food yet which means that takeaways are my only option”. Participants further supported this view that takeaways are already prepared, and thus do not require electricity, time, and other supplementary resources like a stove, pot, cutlery, cooking oil to prepare. Nor do they need a refrigerator for storage. One can just enjoy these on the go. This demonstrates that time, convenience, and poverty contribute to food choices and nutrition outcomes. For this reason, enhancing the dietary quality and consumption diversity requires an inquiry into the motivating factors shaping the community's food choices.

According to Lemon and Battersby-Lennard (2011), the prevalence of fast-food traders close to education facilities reflects an entrenched challenge that most scholars face in accessing education. Due to high levels of informality and few adequate education facilities in their communities, scholars leave their homes early, often without breakfast, and then use fast food traders near schools (Lemon and Battersby-Lennard 2011). In the case of Masiphumelele, most of the children walk to school. Unlike other case studies, the consumption of fast foods by school children as a means to fill the gap of not having has time for breakfast in the mornings is more of a routine practice that one has amagwinya on their way to school as they are more appealing to school children, they sell in big quantities and even for those children whose parents cannot

afford them, they are a popular meal of choice not only for school children but also for those commuting to work in the early mornings.

## 5.6 Food Safety Vs Affordability: Negotiating Access

Despite the challenges identified above, food safety and the affordability of food is also a key aspect of food access. Inappropriate and unhygienic processing and handling practices, the poor personal hygiene of vendors, and the polluted vending environment represent key threats to food access as these render foods that are available unsafe for human consumption. Unsafe food undermines food and nutritional security outcomes, human development, and efforts to ensure security in access in the broader food economy. This section provides an analysis of the role of food safety in creating healthy food environments. Safe food is an essential component of a healthy food environment. However, nutrition and food safety objectives are not always well aligned. In particular, the most nutritious foods are the riskiest, and most labelling and information approaches are not well suited to ensuring food safety.

The early hour at which the hawkers start selling suggests that foods are prepared well in advance of the dawn commute. Some of the foods, such as amagwinya and chips or fried fish and chips are transported to the roadside, where they are displayed on top of containers that are also used as food warmers. Among the food safety and health concerns here is the fact that the braaied meat vendors often handle the items directly and expose them to sunlight until they are purchased. The result is that foods that are supposed to be kept under refrigeration for safety end up being handled at higher temperatures, while those that require storage at low temperatures for safety are handled at higher temperatures - both of which are conducive to bacterial growth.

There is no doubt that street vendors play a pivotal role in ensuring food access and that the dietary needs of urban dwellers are met. While some commuters take the food to their destination to be eaten later, others start eating while stuck in traffic. This is evident in how people eat their food in the taxi on their way to work in the mornings. This ability to eat in transit means fewer people skip breakfast, reducing associated health risks, such as the increased risk of heart disease (Shafiee *et al.*, 2013). Except that a lot of these foods are extremely unhealthy as they are highly processed and have minimal nutritional value to aid development. For example, if you are having amagwinya for breakfast that is setting you up for heart disease and other cardiovascular diseases.

Some of the meat vendors sell sheep heads, intestines, and various other traditional meat. These vendors largely operate from their homes, making use of open fire to prepare the food. While these vendors do not

conform to basic food safety standards in terms of the method of storage, method of food preparation, and display, these retailers experience high foot traffic as they sell their foods in large quantities and at affordable prices. This demonstrates the value-laden attached to the types and quality of food that people prefer to buy. It also shows that in some instances, food safety standards are not the priority and do not have an influence on the types of food people chose to buy and how often they consume these foods.

Reviews of toxicology of South African street foods (including Lues *et al.*, 2006; Mboganie Mwangi *et al.*, 2001) challenge this notion (Skinner and Haysom, 2016). The review found that ‘street food vendors in South Africa were capable of producing relatively safe foods, with low bacterial counts, however, there is still a need for proper hygiene conditions and access to basic sanitary facilities’ (von Holy and Makhoane 2006: 89). This widely demonstrates that food safety is often a subjective choice that individuals make as it is entrenched in individual choices and values. What qualifies as safe food to some may not qualify as safe food to another. Equally important is what different people regard as a safe food in the context of hunger and poverty or limited cash incomes which enable people to have a variety of choices about the types of food they eat.

Another determinant of food access is perceived safety. As part of the focus group, Participant 3 discussed that her motivation for buying food from certain locations was motivated by the proximity of the store to where she lives. During this interaction, she explained that she has not been a resident of Masiphumelele of the other participants. Therefore, she often fears traveling too far from the streets that she is familiar with. She further added that her being a female makes her more vulnerable to getting robbed if she makes trips to the stores too late in the evening when it is already dark. This demonstrates that the issue of access also needs to consider gender dynamics as these also have an impact on determining participant's food choices and behaviours. Participants want to patronize locations where they feel safe always of the day, day of the week, or day of the month. Participants do not want to visit retail locations which they associate with danger, regardless of the price. Participants also want to be certain that the foods they eat will not compromise their health. This makes them shop at locations where this need will be satisfied.

## **5.7 Establishing the Interconnections Within Food Systems That Affect Access- Contribution to the Literature**

The findings of this study have demonstrated the complexity in terms of issues affecting access. Issues relating to access are wide-ranging from expensive food, affordability and location, the distance to the market, time, and convenience, to food safety and affordability. Access continues to be an area of food

security that requires constant negotiation to ensure universal access to sufficient food for a nutritionally adequate diet. However, the literature is salient about how a greater appreciation and understanding of access will ensure policy reform, making food systems work for improved nutrition and influencing the food environments to better support food choices.

The accessibility pillar" represents a multifaceted determinant of food acquisition (i.e., physical, socioeconomic, and economic access). This study has advanced that access should go beyond a purely economic analysis of prices and income. It is critical to expanding our understanding of accessibility to reconnect to Sen's entitlement framework as a necessary means of providing food. The findings of this thesis have demonstrated the importance of establishing where the available food is situated, how it can be accessed, and the necessary resources required to utilize these foods. The findings further reveal the need for an improved understanding of; price/pricing, locations of affordable sources of food (in terms of immediate and neighbourhood scale), lived geographies of home, work, and travel, food choice, food behaviours, socioeconomic barriers including individual-level constraints and neighbourhood safety and socio-cultural dynamics like religion culture and gender which impact different food systems differently, especially for low-income areas. This type of work has been largely absent and not well documented in global and national food security policies.

The findings of this thesis further demonstrate that achieving a nuanced understanding of the interconnections between economic, physical, social access at micro-level and macro-level scales is crucial. Understanding these interconnections is key to making food systems work for improved nutrition and influencing the food environments to better support food choices.

## **5.8 Limitations of this Study**

This section will provide a brief review of the study limitations and provide further recommendations for future research.

### **5.8.1 Limitations of Applied Research Methods**

The main challenges associated with having conducted a mixed-method study were around the complexity of the research data. The different types of data acquired presented a challenge in terms of converging the data, interpreting, and analyzing the information presented.

Further to this, organizing the information in a manner that is coherent and logical required a lot of time in terms of planning and how each phase of the data collection was executed.

Given that a range of data techniques was employed to acquire the data that informed the findings, there was a greater chance that discrepancies in the data arose than if single method research was employed. The researcher tried to address this through triangulation of data and employing different methods to test the research question.

### **5.8.2 What Was Uncovered About the Most Effective Ways to Make Use of Applied Research Tools?**

This study revealed that the most effective method of doing mixed method research is applying creativity and innovation in how you approach the research topic and the strategies used to elicit information from participants. It is important that when you structure your mixed-method research, you clarify this in the methodology section and cover the data collection and analysis methods separately for qualitative and quantitative research. The applied methodology should be adopted to suit the context, the type of study that is to be undertaken, and the participants that will be taking part in the study.

The findings of this study further revealed that the mixed method is effective for food environment research as it provides new insights and information-rich findings that can add value to the research topic of different types of data. The combination of theories and methods applied enabled for a rich expression of the ways people engage in the food choice process, by incorporating the meanings and understandings that they create in their food choice negotiations, including elicitation of the range and strength of the factors affecting food choice. It was also effective in acknowledging and illuminating the complexities of food, food systems and food environments rather than reduce information according to the requirements of quantitative methodologies.

In terms of recommendations for future research, one must ensure that they have a clear research strategy that describes the methodological approach to be undertaken and how the research results will be interpreted. The different phases of research, such as exploration, triangulation, complementarity, the transformation of data, and the dissemination of the results need to be conceptualized and sketched out before going on the field. This will ensure that the information gathered can be used effectively and that each methodology to be applied will ensure the achievement of the research aims and objectives.

## 5.9 Conclusion

This section has demonstrated that multiple factors affect a household's ability to transform foods available for purchase into foods that can be consumed. Apart from foods purchased in prepared form, individuals within the household must have the necessary knowledge and physical ability to prepare foods from ingredients and sufficient time available for all the activities involved in food preparation. Moreover, the household must have the necessary equipment to refrigerate, prepare, and cook foods. This section further established that the barriers to accessing healthy food are complex, and include the physical environment (geographic proximity, transportation to food retailers, and availability); the economic environment (affordability); and the socio-cultural environment (cultural taste preferences). These barriers are not just related to proximity; transportation issues, the lack of a living wage and infrastructure issues (water, sanitation, energy, storage, etc.), and lack of time (people working several jobs to make ends meet while juggling numerous other responsibilities). In addition, food knowledge and choices are strongly influenced by the social and cultural preferences of individuals and households which shape the qualitative choices that people make about food in their lived environments. The research findings have established that the barriers to access are multidimensional. Therefore, a comprehensive assessment of food environments is necessary to understand how these impact the structure and function of the food environment to tackle the scourge of food insecurity that manifests in local food environments. The findings address this gap in the literature. This thesis has underscored the need for the assessment of food access to go beyond the household scale and consider the structure, function, income and expenditure, and other household-scale characteristics which impact how people experience and make choices about food in the food environments. This section has revealed the value of adopting the mixed-method approach which integrates participatory mapping and retail mapping as an applicable conceptual framework for exposing these lived realities and an approach to understanding the socio-spatial dynamics influencing food utilization and food accessibility in the urban context.

## Chapter 6: Conclusion

This thesis, which focussed on the food environment of Masiphumelele endeavoured to explore how the mixed method approach could facilitate an improved understanding of food access in Masiphumelele. Based on the food-environment framework, this thesis embarked on examining the literature on food environments to establish interconnections between the four pillars of food security (availability, accessibility, utilization, and stability), food environments, and food systems in the urban context. This chapter underscored the need for the consideration of urban food security through the four pillars of food security. It further underscored the need for food environments to be understood beyond the simplistic physical and economic access framings which dominate earlier food environment work characterized by food deserts. The discourse revealed that relying solely on understanding access through the lens of physical and economic access has limitations as it does not consider the social aspects that are related and shape how communities interact with, how their behaviours and food choices are shaped by or constrained within the food environment.

The literature outlined the need of expanding our understanding of accessibility further to reconnect to Sen's entitlement framework as entitlements as a necessary means of providing food. This includes giving greater recognition to the utilization pillar which often shapes or constrains food choices, behaviours, and impacts the ability of communities to utilize the food that is available and accessible. This endorses other work on food environments that establishing a linkage or addressing the challenges of food accessibility and food utilization is central to curbing food insecurity. The literature further established that the assessment of access should go beyond the household scale and consider the structure, function, income and expenditure, and other household-scale characteristics which impact how people experience their lived environment. This includes assessing the factors that impact the ability of communities to utilize the food that is available and accessible.

Through a comprehensive review of the literature on the food environments, this thesis put forward that there was a need to adopt a food-environment framework to better understand the role of the food environments in clarifying food acquisition and consumption patterns. The literature demonstrated that the food environment encompasses multiple, interrelated dimensions such as the availability (including prices, vendor and product properties, physical access of nutrition information and messaging of food labels and food-based dietary guidelines) and personal dimensions such as accessibility, affordability, convenience, and desirability of food sources and products. Therefore, the food-environment framework helps bring food environments closer to the people to make food systems more tangible which improves communities' understanding of their food environments and their agency for change.

After examining what the existing literature on food security, food environments, and food systems reveal, this thesis proceeded to review the literature on mixed methods to explore the potential value of

participatory retail mapping in providing information-rich findings on the multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) impact on the structure, function, people's lived geographies and qualitative choices. The findings of this revealed that adopting the mixed-method approach which integrates participatory mapping and retail mapping as an applicable conceptual framework for exposing socio-spatial dynamics influencing food utilization and food accessibility in the urban context.

The participatory retail mapping, which intended to establish correlations, clarify patterns in the dataset and establish the characteristics of the food environment revealed that people's qualitative choices and decisions they make in their lived environments are often shaped by a range of socio-economic issues that constantly evolve and develop over time. The visual outcome of the mapping demonstrated that factors like unemployment, limited cash incomes, or lack of social means to secure access directly impact how people experience their lived environments and the choices they make. It directly impacts the structure and function of the food environment, how many retail locations are available in the food environment, what type of food is available, how often participants patronize food retail locations to source these food types, the types of foods that they prioritize to buy when they patronize these locations, at what cost/sacrifice and the choices that they make about which types of foods to buy.

The retail mapping, which illustrated the physical locations of retail stores and the dominant retail types in the study area was pivotal in highlighting the availability of food in this food environment. It demonstrated that the food environment in Masiphumelele is well-serviced by a range of formal and informal retail outlets that ensure food availability in a range of ways. Yet, more than 85% of the households in Masiphumelele are extremely poor and food insecure. When reflecting on this, it became evident that the issue in this community, as in various other case studies is that food availability is not the principal challenge as there is more than enough food to feed everyone. However, the available food is not accessible to all which contributes to the inability of people to access food to be food secure. As revealed by the discourse, this is due to a range of access entitlements such as physical, economic, and social access. As revealed by the literature, physical access through infrastructure and transport networks, economic access through household income and financial resources and socio-cultural variables, and non-food factors such as the spatial characteristics of the urban settlement and governance interventions are necessary for households to obtain the food, they require at the household level.

The participatory mapping findings established that the barriers to accessing healthy and affordable food are complex, as they include the physical environment (geographic proximity, transportation to food retailers, and availability); the economic environment (affordability); and the socio-cultural environment (cultural taste preferences). These barriers are not just related to proximity; transportation issues, the lack of a living

wage and infrastructure issues (water, sanitation, energy, storage, etc.), and lack of time (people working several jobs to make ends meet while juggling numerous other responsibilities) are all contributing factors that make it difficult for people to have access to and be able to afford healthy foods. Furthermore, asset constraints faced by poor urban households such as the lack of adequate refrigeration and storage; the high cost of energy and water and the long travel times incurred daily by urban residents because of inadequate transport infrastructure are multifaceted and are not uniform. Therefore, designing initiatives to address food insecurity requires individual-specific responses to food system challenges. This includes a comprehensive assessment of each food environment to better understand the complex socio-spatial dynamics influencing food utilization and food accessibility in the urban context.

The findings of this thesis further endorse other work on food environments that to understand the utilization dimension, it is essential to view urban food security as multi-scalar and multi-dimensional (Battersby & Haysom., 2018). At the household scale, it is essential to consider the economic, infrastructural, social, and physical asset base of the household as it shapes food behaviours and food choices within these food environments (Battersby *et al.*, 2018). However, as highlighted by the literature, it is also equally important to address issues such as income-nutrition linkages, food safety issues, and complementary interventions (effective sanitation, water, healthcare services) that deters an individual's ability to use food for their nutritional wellbeing. This thesis further outlined that utilization is an important aspect of access. Therefore, a nuanced understanding of all these components is crucial to addressing issues of access. This further highlights the value of the findings of this thesis in terms of establishing these interconnections between the four pillars of food security and outlining how these pillars intersect, enable, or constrain food environments in the urban context.

The visual outcome of the participatory mapping collages demonstrated that issues of food access are complex and interrelated. It further supported the findings of other food security studies that posit that food access is a multifaceted determinant of food security. The findings indicate given tastes and preferences, individuals seek to maximize their utility from food, subject to the constraints of the neighbourhood food environment, competing time needs, income, food costs, and costs of other needs. Participants want financial assets to enable them to afford a range of other food system offerings like; access to a car, adequate houses with utensils and resources that they need to store, prepare, and utilize food, the ability to travel even if on public transportation to access different markets and make different choices about the types of food that they buy. They want the ability to choose the type of food that they want to eat, when and where these foods are sourced, the ability to afford healthier food options, and choose foods that will meet their nutritional requirements, taste preferences, and individual diets. However, pressures in their physical environment, including the lack of economic asserts often limit their choices and force them to make different choices about how they navigate their food environment and respond to different pressures.

This further demonstrates that physical and economic access is important when considering issues of availability. Equally important is the consideration of a range of constraints that influence the ability of individuals or households to maximize their food access. Factors such as age, gender, health, household income, occupation, educational background, family structure seemingly unrelated to food also have significant impacts on household food accessibility and ability to utilize food that is available in these food environments. This further demonstrates that understanding the location of the sources of affordable and nutritious food and lived geographies of home, work, and travel is crucial to tackling issues of access.

Collectively, the results revealed the complexity of food access issues. Amongst some of the key barriers identified were; the lack of financial resources (money/ cash incomes as a result of unemployment), the lack of cooking utensils like pots, refrigerators, plates, cupboards, or space to store the food that they needed to utilize, poor healthy options available in their food environments which contributes to poor diets and health outcomes like frequent sickness and cardiovascular diseases and lack of physical infrastructure like running water, electricity, adequate land for housing and community networks on which food can be sourced. These findings revealed the level of complexity that is involved in food access. It demonstrated that multiple factors, often unrelated to food have a significant impact on the physical environment in which food people interact with food and make choices about food. This further supports other work on food environments that issues of access transcend mere availability of food. As demonstrated by these collages, they encompass other structural systems such as the broader food system and urban system, socio-cultural variables, and non-food factors such as spatial characteristics. For this reason, when seeking to understand the barriers to food access, it is important to consider the characteristics of the food environment and how these enable, shape, or constrain food choices.

The findings situate that community member's life experiences, physical, social, and economic realities also act as an additional barrier to access. These ranging factors often shape how individuals experience the food system, how they respond to food system challenges, and their qualitative choices. The findings of this thesis revealed that salient features of the social environment like interpersonal factors like taste (preferences, individual habits, nutritional knowledge, and skills), interpersonal level/social environment (in-store environment factors, processes whereby culture, social traditions, family structure), and role expectations, impact eating practices, and patterns within peer groups, friends, and family. The data analysis further revealed that social constructs such as safety concerns, concerns about food quantity, or food quality impacts physical access of food access and may also impede food choices. Participants prioritize retail locations where they have a good relationship with the retailer, where the retailer is approachable and can purchase food on credit. Given the socioeconomic circumstance in this area, this aspect was very crucial to participants. The results revealed that participants want to patronize locations where they always feel safe at different times per day, day of the week, or period of the month. Participants don't want to visit retail

locations which they associate with danger, regardless of the price. Participants also want to be assured that the foods they eat will not compromise their health. It makes them shop at locations where this need will be satisfied. Socioeconomic barriers and other household or individual-level constraints further reveal the environment in which all these choices about food are made to inform what changes can be affected to improve access.

The focus group findings ascertained that while food availability and accessibility are not key challenges within this food environment, socio-economic barriers for example; infrastructural constraints, high unemployment rates, lack of transportation to access markets (transportation costs, changes in the market prices/supply) and economic barriers to affordability like lack of income/financial resources, present a major threat to the food system and renders the stability of the food system vulnerable to a range of threats. As such, these barriers impact the ability of the community to access the foods available that they require to meet their ever-changing food needs consistently.

These also have an impact on how communities navigate their food environment and the qualitative choices that they make about food. The participatory retail mapping exercises proved that challenges that communities face that are non-related to food-lived environments often force them to constantly negotiate their food choices based on what they can afford. In an example during the participatory mapping, most of the participants indicated that they preferred fast foods to traditional meals, even if the allocation of financial resources was the same as they perceive them to be cheaper, quantities are bigger which means the food is more filling and entails less effort of investment in water, electricity, and other cooking resources to prepare. In one example, the participant described her attempt to buy fresh tomatoes in her neighbourhood. After finding only rotten tomatoes at the cash and carry store, she bought tomato sauce. It confirms the findings of other studies that indicate that low-income communities are more concerned with food that fill you up than with those that are healthy (Caraher, 1998).

These research findings endorse other work on the food environment that access to healthy and affordable food options is not the only barrier to healthier diets and improved health outcomes. This case study has demonstrated that with other pressing needs such as shelter, water, electricity, and transport to and from work and school, many cannot afford to spend most of their incomes on food. It results in them resorting to buying the cheapest, most affordable options: energy-dense diets that contain higher quantities of refined cereals, sugar, and fat, but little to no nutritionally dense foods such as lean meats, fish, vegetables, and fruit (Temple & Steyn 2009, Rehm *et al.*, 2011, Pereira 2014, Faber & Drimie 2016, Mbhenyane 2016). The findings of this study widely demonstrate that, when seeking to improve food access, one needs to engage in a thorough assessment that strives to understand the characteristics of the food system (through identifying the social, economic, and environmental factors which shape the food system and understanding how

physical, social) and the economic realities shape experiences of the food environment and qualitative choices.

This thesis has demonstrated that the mixed-method approach, as a methodological strategy was crucial in enabling the scrutiny into the food environment to understand the physical, economic, including social food environment which impacts food access in Masiphumelele. This thesis has proved that a nuanced understanding of food access issues, barriers to access, and the lived environment in which people make different choices about food can enable a renewed appreciation of access. Furthermore, it can inform the development of strategies that seek to improve local food environments by designing initiatives to address food insecurity. It has outlined that an improved understanding of the type of food that is available, utilization (how food should be utilized, what this food can be utilized for, and how often), how this available food is accessed, the stability of the supply, and interpersonal factors which shape food choices in the social environment could be an applicable approach to food sensitive planning and advocating for improved food security outcomes to tackle food insecurity.

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## Appendix A: Focus Group Facilitator Guide

| Research Objectives                                                                                                                                                                                                                                                                | Method used to address this                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| To assess the four pillars of food security.                                                                                                                                                                                                                                       | Comprehensive review of global and African literature and debates on food environments, food systems, food deserts and food security and establish linkages or gaps. |
| To evaluate how the four pillars of food security intersect, enable, or constrain food environments in the urban context.                                                                                                                                                          | Comprehensive review of global and African literature and debates on food environments, food systems, food deserts and food security and establish linkages or gaps. |
| To provide a conceptual framework to understand the socio-spatial dynamics influencing food utilization and food accessibility.                                                                                                                                                    | Comprehensive review of global and African literature and debates on food environments, food systems, food deserts and food security and establish linkages or gaps. |
| To investigate the linkages between food environment, food accessibility and people's qualitative choices in their lived environments.                                                                                                                                             | Mixed-method approach balancing retail mapping, participatory mapping and focus group discussions.                                                                   |
| To explore how retail mapping, participatory mapping and focus groups be used to effectively communicate community member's life experiences, physical, social, and economic realities shape experiences of food and food choices and behaviours?                                  | Mixed-method approach balancing retail mapping, participatory mapping and focus group discussions.                                                                   |
| To evaluate the characteristics of the food environment in Masiphumelele and describe how multiple, interrelated factors (socio-economic, cultural, economic, environmental, and geopolitical) impact on the structure, function and lived experiences of their food environments. | Analysis of qualitative and quantitative data extracted from retail mapping, participatory mapping and focus group.                                                  |

## **Focus Group Questions**



### **Exploring the Role of the Mixed Methods Approach in Facilitating an Improved Understanding of Food Access in Masiphumelele**

My name is Thandeka Mbambo, a master's student at the University of Cape Town. This study evaluates how people in Masiphumelele access their daily foods within their food environments. Building on the food-environment framework, this study explores food access, going beyond physical food environment parameters and beyond economic definitions of food access.

**Informant type: Community Member/ Citizen**

#### **Section A: Socio-Economic Considerations**

1. Name of the respondent .....
2. Ward/ Area .....
3. Age .....
4. Sex .....
5. What is your occupation? .....
6. What is your highest qualification? .....
7. How many people live in your household? .....
8. How long have you been a resident of Masiphumelele? .....
9. Have you ever participated in a food environment/food related study? .....
10. Please specify your level of availability in terms of participation  
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11. Are there any limits/barriers to participation that we need to be aware of that may hinder or affect your ability to actively participate? Please specify.  
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12. What social and economic issues that you are faced with in Masiphumelele?

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***‘Social issues: general factors which affect a particular area or group of people. This often involves problems that affect real life and how people react to different situations.***

13. How do you deal with these issues?

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## **Section B: Navigating the Food Retail Environment**

14. Which places in Masiphumelele do you buy food from? e.g., prepared (take-away), fresh fruits & vegetables, food that you prepare at home.
15. From these, list the names of the places that you choose to buy your food from most of the time.
16. What types of foods do you buy at each location? Is it prepared (take-away), fresh fruits & vegetables, food that you prepare at home)?
17. Indicate using numbers how often you buy food? daily, weekly, monthly.
18. During which periods of the day do you buy the most food?
19. What type of food is that?
20. Are there weekend foods?
21. Are there certain types of foods that you only eat month end? If yes, why?
22. Why do you choose to buy foods from this/these places?
23. What type of foods are sold at these places?
24. Which of the food items sold at these places do you prefer?
25. Identify your favourite food store in Masiphumelele and provide a brief explanation as to what are the factors make this your favourite store?
26. List 3 of your most frequent food items you buy from these stores.
27. How often do you visit these food outlets or buy food from these outlets?
28. When visiting these stores, which factors impact/determine when and how often you go?
29. When visiting these stores, which factors impact upon your ability to the food types you prefer?
30. Which factors do you consider to be important when buying food?
  - ☐ Quality
  - ☐ Price
  - ☐ Quantity
  - ☐ Taste
  - ☐ Hygiene (food safety)
  - ☐ Location
  - ☐ Weather/Climate
31. When buying food, which aspects do you consider to be the most important? Rate these from the most important to least important?

- ☐ Street safety?
- ☐ Relationship with seller (about credit, about trust, about person's origins)
- ☐ Quality
- ☐ Price
- ☐ Quantity
- ☐ Taste
- ☐ Hygiene (food safety)
- ☐ Location
- ☐ Weather/Climate

32. Rate the most important consideration when choosing where to buy food.

- ☐ Location
- ☐ Street safety
- ☐ Relationship with seller (about credit, about trust, about person's origins)
- ☐ Quality
- ☐ Distance to travel
- ☐ Type of foods sold.
- ☐ Quality of foods sold.
- ☐ Price/ Affordability

### Concluding Remarks

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Thanks for your participation in this research project!

Signature

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## i) Focus Group Plan

**Venue:** Masiphumelele Library

**Dates:** Saturday, 02 March 2019 (11h00-13h00) and 09 March 2019 from 10h00-12h30

**Focus Group 1:** Will consist of 12 people aged between the ages 18-45+ mixed gender group of males and females who are community members and some will be retailers.

| Actions                                                                                                                                     | Completion Status                                        | Due Date for Completion |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------|
| Confirm method to be used to get the coordinates needed for retail mapping- download app                                                    | 100%                                                     | 01/02/2019              |
| Practice using the app/ confirm if the proposed technique works                                                                             | 1000%                                                    | 01/02/2019              |
| Print topographical maps and demarcate walking plan for retail mapping 1&2                                                                  |                                                          |                         |
| Conduct the mapping on Masiphumelele – Area 1                                                                                               | Not Completed                                            | 03/02/2019              |
| Conduct the mapping on Masiphumelele – Area 2                                                                                               | Not Completed                                            | 05/02/2019              |
| Conduct a scoping call to all participants to assess the suitability of participants to participate in this study and confirm availability. | 50% Complete<br>(6 participants unable to get a hold of) | 01/02/2019              |
| Secure venue for the focus group                                                                                                            | 100% Completed                                           | 01/02/2018              |
| Visit venue and ensure that you have a feel for the surroundings                                                                            | Not Completed                                            | 05/02/2019              |
| Collect vouchers from Marlene                                                                                                               | Not Completed                                            | 05/02/2019              |
| Jane to confirm with Jo on the addition of 4 older participants                                                                             | Not Completed                                            |                         |
| Print out topographical and retail maps from the retail mapping exercise for all participants-                                              | Not Completed                                            | 06/02/2018              |
| Organise focus group material (Flip charts, A4 paper, colour pens) for all participants including 2 recorders                               | Not Completed                                            | 05/02/2018              |
| Focus Group 1                                                                                                                               | Not Completed                                            | 07/02/2019              |
| Focus Group 2                                                                                                                               | Not Completed                                            | 09/02/2019              |
| GIS Mapping- produce maps for analysis                                                                                                      | Not Completed                                            | 31/02/2018              |
| Semi-structured Interviews                                                                                                                  | Not Completed                                            | 31/03/2018              |

## Focus group on Navigating the Food Environment

### **Aim**

The aim of this focus group is introducing the research topic and develop rapport with the focus group participants. It will seek to gain an improved understanding of the food security context in Masiphumelele, how people experience their food systems and how their food systems are in turn influenced by other factors in the urban context and how participants respond to social, cultural, economic, and environmental drivers at multiple scales where food security is concerned.

### **Actions**

Researcher to introduce herself to the group and provide a brief overview of the study aims and objectives. The researcher will explain how the selection of the participants was done. The researcher will then run through some of the ethical consideration and specify that a copy of the thesis will be made available to all participants on request. The researcher will then go through some of the ground rules regarding cell phones, refreshments).

The participants will then be asked to introduce themselves and provide a brief description of themselves. As the stimuli, the researcher will present the participants with a few food items. From this, participants will be asked to share what they understand about the food types presented and what they perceive as healthy and unhealthy foods. This exercise is intended to be the icebreaker and to situate the context of the research topic.

The researcher will proceed to give a brief conversation about maps and map making to establish an atmosphere of trust between the facilitator and the participants, introduce participants to the participatory mapping context and set the context for the participatory mapping exercises.

The researcher will then clarify the scope of the activities that will be conducted, carefully and patiently explaining the entire process, including how the findings will be used, and whether the session will be recorded in a language that the participants will feel comfortable in. The researcher will also provide the opportunity for participants to ask any questions or provide any comments about the mapping procedure or the research study in general and then after answering any questions the researcher will begin with the participatory mapping exercises.

The researcher will begin by separating the participants into 3 groups of 4 people each and each team will be expected to select a group leader who will represent the views of each group. 2 Research assistants will be allocated to the groups to provide clarity or answer any questions from the participants during the exercises. The participants will be separated according to their age groups and overall understanding of food security issues as determined during the scoping call.

Describing the food retail culture in Masiphumelele

Each group will be provided with a topographical map and a base map of Masiphumelele a blank A3 page, drawing tools such as coloured pens, markers, and colour coded stickers.

### **Activity 1**

Collectively as a group, the researcher and participants will identify main areas or important landmarks in Masiphumelele like the Library, Public Clinic, etc. which will be recorded on the map provided to ensure that participants are able to orientate themselves and participate in the exercise. Following this, the participants will be asked to work in their groups and use stickers to mark areas within Masiphumelele where food insecurity is rife and provide reason why these areas are identified.

### **Post-Mapping Exercise**

The post-mapping discussion will give the participants an avenue to explain and reflect on their visual representations, within the larger group. Participants will be asked to interpret their own maps and to openly reflect on their representations, share any insights, ideas and reasons behind their choices and give their personal views on urban space and geographic mobility. The post-mapping discussion will be centred on achieving an improved understanding

of the local food culture in the area and how the community members respond to social, environmental, and economic constraints where food is concerned. It will also include the evaluation of issues of food availability, food access, and food utilisation and the food stability and use. The participants will also be encouraged to identify connections or disconnections between the areas identified, similarities or differences between their choices and ascertain whether the identified problems were related to each other or in isolation of each other.

## **Activity 2**

Using the base map and A3 sheet and coloured markers, participants will be asked to indicate locations of particular importance to them as far as food is concerned, where the greatest amount of food is obtained, where most of their money is spent on food, how they feel about the food that is sold at these particular locations and the distance that they have to travel to source these foods and areas that they can access foods from but don't due to some constraints.

Sample Questions relating to this include:

1. Where in Masiphumelele do you buy most of your food items from?
2. How far do you have to travel to access this place?
3. Why do you choose this place to get your food?
4. How often do you buy food from this place?
5. What types of food do you buy at this place?
6. How do you feel about the quality and price of foods that are sold at this place?
7. What factors influence the types of food that you buy?
8. What factors influence the types of food that you eat?
9. Which factors prevent you from accessing the food types of your choice?
10. What do you think can be done to improve access to better food?

## **Post Focus group Activities**

In the end, the researcher will collect maps and exercises from both groups and this information will be used for the visual analyses of patterns, trends, and linkages in the dataset. In addition to the maps, complementary data that will be collected during the activities in the form of ethnographic field notes written by the researcher and audio recordings of the session will be used to inform and generate a map that will be presented at the following focus group meeting.

Assess how well the groups worked together, methods that worked or did not work and how the meeting informed the establishment of new thoughts and perspectives on the research topic. Record some of the main points raised and consolidate overall findings. Assess how well the use of a recording device worked or did not work and how this could be improved in the next focus group.

Prepare the GIS map that has been informed by ideas and perspective presented in focus group. Present this map in the next focus group.

## **Focus Group 2:**

### **Aim**

The aim of this focus group meeting will be the reflection of key ideas, narratives and findings about food systems, physical constraints of the food system in terms of infrastructure provisions for food access, food stability, availability and use, challenges, barriers, and entry points for a regime change in food systems governance in Masiphumelele. An added objective of this focus group is to also consolidate main ideas and findings and present a collaborative idea of how the information needs to be presented to officials.

## **Actions**

This focus group will be of the same participants that participated in focus group 1. No additions or substitutions will be made for any participants that are not able to make it to this focus group.

The researcher will begin the focus group with a reflection of key ideas reflection and insights evident in the first focus group.

### **i) How Does One Run an Effective Participatory Mapping Session?**

A successful mapping session relies on enough participants turning up in the right place at the same time, therefore careful planning is required. Recruiting participants can be the hardest part of the project, so ensure invites are sent out through a wide range of channels. Facilitators need to pay close attention to the environment in which a mapping session takes place. This means you should think carefully about the time of day that you will hold the sessions. You will need to book a room large enough to allow people to walk round the room freely. Using places that are familiar and easy to find is essential.

Participants in mapping, like all qualitative research, must be able to give their ‘informed consent’ to take part in the research study and take photographs during the session. It is very important that the participants taking part in the mapping session understand why you are running the session, how the maps and research findings will be used and that they are free to leave the session at any time. You can explain this verbally to the whole group at the start of the session, but you also should consider preparing an information guide explaining the project. Another strategy is asking each participant to sign a consent form; you could leave these on a table and ask individuals to come up during the session to sign as and when they feel comfortable doing so.

Ideally the room should be arranged with several round tables so that small groups are able to sit around each table. Provide coloured pens, pencils, sticky notes, or other drawing materials. Make sure you offer refreshments.

Information gathered during the mapping sessions should be recorded. Ensure that you also have a camera so that you can take photographs of the maps produced.

## Facilitation

There need to be enough facilitators or research assistants to make the session run smoothly. It is important to note that the aim of the mapping session is not just to produce a series of maps, but to use the maps as a tool to encourage discussion. The role of the facilitators is therefore to get participants to talk about what they are mapping and why.

The facilitators should begin by setting the scene. They need to introduce the purpose of the research to the whole group, explain how the session will work, and negotiate consent to use the information that will be provided. It is then best to start with introductions and conduct an icebreaker activity to get the group warmed up and talking to one another. A good plan is to then run an opening exercise such as asking individuals to write down answers to the question. This should be related to the research topic to get participants to start thinking about the topic. They can then share their answers with others and begin to group responses into themes. The next stage is to begin to ‘map’ experiences or ideas about the topic in a visual fashion. This may involve drawing or listing ideas on paper.

The facilitator’s role here is to manage the process, not direct the content. A good facilitator should:

- Ask questions that enable participants to ask the right questions.
- Ask questions that enable participants to challenge dominant views and assumptions on research question.
- Ensure participants follow through their own emergent ideas.
- Explore implications of connections that are mentioned.
- Ensure the essence of conversations is recorded / noted It is important to end the session on a positive note as well as thanking the participants. You could ask each table to present their maps back to the rest of the group or ask each participant to offer a final comment.

### Analysis

Taking notes during the mapping is important, but these should be written up very soon after the session ends. It is wise to set aside an hour after the close of the mapping in order to type up notes and record your reflections of the session. Once notes are written up and transcripts produced, it is a good idea to hold a group analysis session with the participants to reflect on the main ideas presented. You are analysing the maps produced, the content of conversations and the field notes or reflections produced by all the facilitators. Those taking part in analysis should begin by identifying the key thought streams or themes that seem to have emerged through the data. You can then begin to group related or linked streams and name these under themes. It is important to review and refresh the themes. You can write up a mapping session under a series of thematic headings, illustrated by quotations from participants and the images of the maps.

## ii) What makes a good facilitator for this activity and how should the outputs be analysed?

Your role as a focus group facilitator is very important. Your ability to make everyone comfortable, encourage everyone to speak up, enforce a respectful tone, and manage the pace will determine the quality of the discussion and therefore, the information you gather. It is a good idea to enlist the help of a note taker who will assist in the recording of the information presented. An idea is to assign one of the group members to be responsible for the note taking aspect during the participatory mapping exercises then the research assistants can take over the note taking during the focus group discussions. This allows the facilitator to focus their attention on the discussion while also ensuring accurate notes.

### Preparing the room

Arrive an hour early with your assistants to set up the room. This allows time to deal with unexpected room scheduling, and to set up materials and refreshments. Ensure communication of the venue has been clear to all participants. Check in with participants 30 minutes before the session starts via the WhatsApp platform to ensure that participants are reminded to attend the session.

Opening the session. Introduce yourself, your assistant, and the purpose of the focus group. Explain to participants that they have been invited to share their opinions and that you will guide the discussion by asking the group to reflect on specific questions. Tell them what time the session will conclude. Explain the ground rules for the focus group discussion. These will set the tone and expectations for behaviour so that everyone will feel safe and willing to participate. Allow time for questions, and then ask participants to introduce themselves.

### **Facilitating the focus group**

#### DO's

- Open the session with a fun, non-threatening, open-ended question; this will enable everyone to develop a comfort level with speaking in front of the group and sharing their ideas.
- Pay attention to non-verbal signals—someone might be sending a cue that she/he is uncomfortable or might have something to say.
- Ask open-ended questions, one at a time. Probe when a response is unclear. Ask, “Can you say more about...” instead of “Why do you think...” The latter may make participants feel they need to defend their point of view.
- Balance participation by asking, “Who else has something to say?” or “I would like to hear more from...”
- Redirect the discussion when it strays too far off topic. Say something like, “These are important and interesting points. However, we need to bring the discussion back to our focus on....”

- Record the participants' actual words as much as possible. Avoid the temptation to paraphrase. This will show each participant that his/her ideas are unique and important.
- Check with participants that you understand what they are saying.
- Allow participants to use the language that they are comfortable in. The data can be transcribed after the session.

#### DON'T

- Read the script questions verbatim; this may come across too stiff and formal.
- Finish people's sentences or make assumptions about what is being said by someone.
- Allow one or two people to dominate or to use the focus group for their own agenda.
- Permit side discussion: this can distract others from the main discussion.
- Take sides or challenge what is being said, remain impartial.
- Share your own opinions (verbally or non-verbally).
- Favour one participant over the others.
- Use jargon or technical terms.

## Appendix B: List of Figures

1. Figure 1 Source: Bing. Available from: [https://www.bing.com/images/search?view=detailV2&ccid=7Soaoaac&id=42FCD1DB9384067B4A677FA9D7FEB7C697771DFA&thid=OIP.7SoaoaceIMu1kqmf7ScQHaK1&mediaurl=https%3A%2F%2Fdorseytoafrica.files.wordpress.com%2F2008%2F06%2Fmap\\_cape\\_peninsula\\_mr1.jpg&exph=1000&expw=683&q=map+of+masiphumelele&simid=608018428772483415&ck=AAD8E97B8387B1870E7B8598774FC1A1&selectedindex=1&form=IRPRST&ajaxhist=0&vt=0&sim=11.](https://www.bing.com/images/search?view=detailV2&ccid=7Soaoaac&id=42FCD1DB9384067B4A677FA9D7FEB7C697771DFA&thid=OIP.7SoaoaceIMu1kqmf7ScQHaK1&mediaurl=https%3A%2F%2Fdorseytoafrica.files.wordpress.com%2F2008%2F06%2Fmap_cape_peninsula_mr1.jpg&exph=1000&expw=683&q=map+of+masiphumelele&simid=608018428772483415&ck=AAD8E97B8387B1870E7B8598774FC1A1&selectedindex=1&form=IRPRST&ajaxhist=0&vt=0&sim=11.)
2. Figure 2: Source: The City of Cape Town Open Data Portal. Available from: <https://www.capetown.gov.za/City-Connect/All-City-online-services/open-data-portal.>
3. Figure 3: Source: The City of Cape Town Open Data Portal. Available from: <https://www.capetown.gov.za/City-Connect/All-City-online-services/open-data-portal.>
4. Figure 4: Source: The City of Cape Town Open Data Portal. Available from: <https://www.capetown.gov.za/City-Connect/All-City-online-services/open-data-portal.>
5. Figure 5 Source: Source: The City of Cape Town Open Data Portal. Available from: <https://www.capetown.gov.za/City-Connect/All-City-online-services/open-data-portal.>

