



Addis Ababa University
College of Development Studies
Center of Food Security Studies

**Food Security Status of Street Vendors Found in Kolfe
Keraniyo, Addis Ababa, Ethiopia.**

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Advisor: Solomon Tsehay (PhD)

February 2025
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Declaration

I, Ephrata Alemayehu Mamo, declare to Addis Ababa University School of Graduate Studies that this thesis is a product of my original research work, and has not been submitted to any other university for any academic degree. Materials and information other than my own are duly acknowledged.

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Acronyms and Abbreviations

AA	Addis Ababa
AAU	Addis Ababa University
CSA	Central Statistical Agency
CSI	Coping Strategy Index
DDS	Dietary Diversity Score
ETB	Ethiopian Birr
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
HFIAS	Household Food Insecurity Access Scale
ILO	International Labor Organization
OECD	Organizational Economic Co-operation Development
SNNPR	Southern Nations, Nationalities and Peoples
SSA	Sub Sharan Africa
SV	Street Vending
UN	United Nations
WFP	World Food Programme

Abstract

Despite the economic importance of street vending, limited research has examined its impact on the food security of those involved. This study explores the relationship between street vending and food security, focusing on vendors' food security status in the Kolfe Keraniyo sub-city, Addis Ababa. A descriptive-exploratory research design with a quantitative cross-sectional approach was employed, involving a total sample size of 196 street vendors. A multistage sampling strategy was used, a purposive selection of Kofele Keranio Sub City as the primary sampling unit, followed by systematic sampling of key vending areas and simple random sampling of vendors. Food security was assessed using the Household Food Insecurity Access Scale, Food Consumption Score, Coping Strategies Index, and Dietary Diversity Score. Zero-inflated binomial regression, negative binomial regression, and ordered logistic regression analyses identified socio-economic factors affecting food security. The results reveal that while most vendors maintain acceptable food consumption and dietary diversity levels, they face significant vulnerabilities, including severe food insecurity and reliance on coping strategies. Key determinants of food security outcomes include gender, marital status, migration history, income, and years of experience in vending. Women and migrant vendors are disproportionately affected, with gender disparities evident in food consumption scores and coping strategies. These findings highlight the precarious nature of street vending and underscore the need for policies that support vendors by addressing economic instability, social protection gaps, and barriers to sustainable livelihoods.

Keywords: Informal Economy, Migration, Food Security, Vulnerability, Urban livelihood.

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Chapter One: Introduction

1.1. Background of the study

The informal economy represents the commodity flows outside the formal systems, operating largely without legal scrutiny, taxation, or inclusion in government statistics (Dell'Anno, 2022).

A pivotal segment of the informal economy is street vending, a practice involving the sale of goods and services in public spaces without formal permits or licenses (Bromley & Wilson, 2018). Globally, informal economic activity has approximately two billion individuals who engage in the informal economy sector (Recchi, 2021). This surge in the prevalence of the informal sector, particularly street vendors, has been observed globally, notably in major urban centers of developing regions such as Asia, Latin America, and Africa (Tsegay & Mesele, 2019).

In many developing countries, like African cities, street vending serves as a vital source of employment and income, particularly for marginalized groups, including women and recent migrants (Tamirat & Nega, 2015a). The sector's flexibility allows individuals to engage in entrepreneurial activities with minimal capital investment. Street vendors in Africa offer a wide range of products, from fresh produce to artisanal crafts, thereby contributing to the accessibility and affordability of goods for urban residents (Igudia, 2020; Recchi, 2021a). Despite its significance, street vending often operates in a legal gray area, facing challenges such as lack of recognition, inadequate infrastructure, and policy neglect (Engidaw et al., 2024).

In Ethiopia, street vending occupies a central role in urban economies, similar to the various countries in SSA (Desta, 2018a). According to (CSA, 2021), the informal sector consists of 16.1% of urban employment in Ethiopia. The informal economy sector is renowned for its

flexibility and adaptability, which gives rise to the vendors that play a pivotal role in income generation and livelihoods, offering economic opportunities, especially for individuals with limited education and skills (Tsegay & Mesele, 2019a). This surge is attributed to rapid urbanization in developing countries like Ethiopia, marked by swift population expansion and prevalent poverty, which has led to a significant dependence on the informal economy sector, evolving into a survival strategy for the growing urban poor population (Tamirat & Nega, 2015a). In addition to Urbanization and poverty, there is extensive rural-to-urban migration, which is overwhelming the capacity of formal sectors in expanding cities to accommodate the influx of new residents, especially internal migrants in SSA (Martínez & Short, 2022).

Building on these dynamics, urban food security emerges with the urban livelihood of street vendors. In urban areas of Sub-Saharan Africa, households primarily rely on purchased food for their sustenance. As a result, their food security is closely linked to income from employment and the availability of affordable food suppliers throughout the city. When examining the connection between urban food systems and household food security, it is essential to consider food accessibility, which is largely determined by affordability (Blekking et al., 2019). Due to the intricate interplay of socio-economic factors, unemployment exacerbates poverty, causing Ethiopia to face an escalating issue of food security in urban areas that poses challenges for urban residents to access nutritious and affordable food (Etana & Tolossa, 2017). Amidst these challenges, the informal economy sector, especially street vending, has emerged as a crucial economic shelter for the urban poor serving as a vital source of livelihood, particularly in areas where formal job opportunities are scarce (Kebu et al., 2023; Kefelegn, 2020; Tsegay & Mesele, 2019).

There is a pivotal role street vending plays in urban food security, which street vendors provide with accessible and affordable food options that meet food and nutritional requirements to a large segment of the urban population at affordable prices to the lower- and middle-income groups, especially in lively areas like Addis Ababa (Abagissa, 2020; Z. Birhane, 2015; Tesema, n.d.; Zinabe Reta, 2020). Furthermore, many researchers ((Adeosun et al., 2022; Blanck et al., 2014; Coletto et al., 2021; Gupta et al., 2018; Kotval-K, 2021; Patel et al., 2014; Sharma, 2016)) linked street vending with food security exclusively to street food vending, explaining its positive and negative impacts on food security. Their relationship depends on various factors such as the types of goods sold, affordability, and accessibility. On one hand, street vendors often provide affordable and convenient food options, particularly in areas with limited access to supermarkets or formal food markets, thereby contributing to food security by ensuring a steady food supply for urban populations, especially those with low incomes (Blekking et al., 2019).

Adding to this understanding, this study aimed to explore street vending in its entirety, focusing on its contribution to food security. Specifically, it explores street vending as a source of employment and income in urban Addis Ababa, with a particular emphasis on Kolfe Keranio sub-city, a district home to many informal sector workers (Hundecha, 2020).

1.2. Statement of the Problem

Ethiopia has recently been experiencing rapid population growth, along with a substantial increase in rural-to-urban migration (Tamirat & Nega, 2015). This rapid urbanization, similar to trends across Sub-Saharan African cities, is straining infrastructure, the economy, and food security systems (Giroux et al., 2021). Rural-to-urban migration in Ethiopia is comprised of young people who are driven by various factors such as limited rural employment, smaller farm

sizes, the appeal of better social infrastructure in urban areas, as well as socioeconomic insecurity in addition to lack of access to information, are some of the key drivers of their decision to migrate (Kefelegn, 2020). Street vending, a major component of the informal economy, provides livelihood opportunities for a substantial portion of the urban population. However, its role in urban food security remains an under-explored area of research, particularly in the Ethiopian context.

Street vending in Ethiopia, particularly in Addis Ababa, has been widely studied, emphasizing its role as a livelihood strategy, its challenges, and its implications for urban food safety (Berhanu, 2021.) examined street vending as a crucial means of employment for the urban poor, highlighting its economic importance and the difficulties vendors face due to restrictive urban policies. Other studies have explored the socio-economic factors influencing individuals to engage in street vending (Alaro, 2019; Mahopo et al., 2022), while gender-based research in Nifas Silk Lafto sub-city has shown that women vendors encounter unique struggles, including harassment and lack of legal protection (Engidaw et al., 2024). Additionally, research on rural-urban migrant vendors in Addis Ababa has revealed how migration and limited formal employment opportunities drive people into the informal vending sector (Desta, 2018b). Street food vending, a specific category within street vending, has also been analyzed in terms of its contributions to food accessibility and affordability for low-income urban dwellers. Studies in Addis Ababa and other Ethiopian cities, such as Hawasa and Jima, have assessed the nutritional value, hygiene concerns, and regulatory challenges of street food vending, demonstrating its dual role in improving food access while also raising public health concerns (Lorato et al., 2023; Tamirat & Nega, 2015b). These studies collectively highlight the complex relationship between street vending, employment, urban food systems, and food security in Ethiopia. While studies on

the informal sector have largely focused on employment, regulatory challenges, and economic contributions, limited attention has been given to its implications for food security.

Given that urban households in Sub-Saharan Africa primarily rely on purchased food (Crush et al., 2011; Raimundo et al., 2016) The affordability, accessibility, and availability of food through urban food systems are critical to their food security. In urban centers like Addis Ababa, unemployment and unstable incomes are major contributors to rising food insecurity, which is driven by a complex interplay of socioeconomic factors (Birhane et al., 2014). Most urban residents must purchase food rather than grow it for themselves, making food accessibility a critical factor in ensuring food security. Limited access to affordable food leaves large portions of urban populations in a state of chronic food insecurity. In Sub-Saharan Africa, food systems are increasingly unable to meet the demands of urban residents, a crisis referred to as *'the emerging development issue of this century.'* (Giroux et al., 2021) while street vending contributes to this system by distributing goods including food across cities, yet there is little empirical evidence directly linking street vending with food security outcomes. Understanding this relationship is essential for developing policies that balance economic inclusion, food safety, and public health concerns.

This study aims to bridge this gap by examining the role of street vending in urban food security, exploring both its contributions and challenges. By analyzing vendor operations, food accessibility, and affordability in the informal sector, the research seeks to provide valuable insights that can inform urban food policies and interventions. The findings will be particularly relevant for policymakers, urban planners, and development organizations seeking to enhance food security while supporting the livelihoods of informal workers.

1.3. Objectives

1.3.1. General objective

- The general objective of this study is to assess the food security status of street vendors found around Kolfe- Keraniyo sub-city in Addis Ababa, Ethiopia.

1.3.2. Specific objectives

- To assess the food security status of street vendors.
- To identify the determinants influencing food security among street vendors.
- To analyze the characteristics and dynamics of street vending.
- To evaluate the impact of street vending activities on vendors' food security.

1.4. Research Questions

- What is the current food security status of street vendors in Kolfe Keraniyo, Addis Ababa, Ethiopia?
- What are the key factors influencing the food security of street vendors?
- What are the main characteristics of street vending activities in Kolfe Keraniyo, Addis Ababa, Ethiopia?
- How does engagement in street vending impact the food security of the vendors?

1.5. Significance of the study

Despite the prevalence of street vending in the urban cities in Ethiopia, especially the capital city Addis Ababa, the government of Ethiopia had no recognition policies on this business that acknowledge their contribution and seek to protect their existence. Therefore, this research aims to provide a comprehension of the intricacies of food security in the realm of street vending which holds paramount importance for policymakers, urban planners, and scholars. As a

pervasive component of informal economies in urban areas, street vending plays a crucial role in shaping the socio-economic landscape. By delving into the dynamics of food security within this context, this study seeks to provide nuanced insights. These insights are invaluable for policymakers as they formulate targeted interventions aimed at enhancing the overall well-being of street vendors. Additionally, urban planners can benefit from a deeper understanding of how street vending influences food security, allowing for more informed and sustainable urban development strategies. Scholars, too, stand to gain from this research by contributing to the academic discourse on the complex interplay between informal economies, food security, and urban development. Ultimately, the knowledge generated by this study is poised to foster more inclusive and sustainable approaches that address the unique challenges faced by street vendors and contribute to the overall improvement of urban living conditions.

1.6. Scope of the study

This study is focused on the Kolfe Keraniyo sub-city in Addis Ababa, Ethiopia, specifically examining the dynamics of street vending activities in prominent sidewalk areas and roundabouts. A total of 196 street vendors, engaged in various forms of street vending, were surveyed through a random selection process. The data collection took place over a month from May to June 2024.

The research aims to explore the relationship between street vending and food security among vendors in this specific urban context. It will provide insights into the socio-economic characteristics of street vendors, their operational dynamics, and the impact of their activities on food accessibility and security within the sub-city.

1.7. Organization of the study

This study is organized into five chapters, each addressing different aspects of the research.

Chapter One: Introduction – This chapter provides the background of the study, statement of the problem, research objectives, research questions, significance of the study, scope, and limitations. It also presents an overview of the study's structure.

Chapter Two: Literature Review – This chapter explores existing research on street vending and food security. It examines relevant theoretical frameworks, including neoliberalism, modernism, and dualism. Additionally, empirical studies related to the impact of street vending on food security are reviewed to highlight gaps in the literature.

Chapter Three: Research Methodology – This chapter outlines the research design, data collection methods, sampling techniques, and analytical approaches used in the study. It also presents the regression models and expected relationships among key variables.

Chapter Four: Results and Discussion – This chapter presents the findings of the study, supported by descriptive and statistical analyses. The results are compared with existing empirical studies to provide a comprehensive discussion on the role of street vending in food security.

Chapter Five: Conclusion and Recommendations – The final chapter summarizes the key findings, discusses their implications, and provides recommendations for policymakers, stakeholders, and future researchers.

Chapter Two: Literature Review

2.1. Introduction

The informal economy is defined as an income generation process lacking regulation in a legal and social context, where similar activities are regulated, which encompasses various categories identified by the (International Labour Office Geneva, 2018). This includes individuals working in the informal sector as employers, employees in informal enterprises, and self-employed workers. The scope extends to those informally employed outside the informal sector, such as in formal firms or as domestic workers without labor law protections. Additionally, unpaid family workers, whether in informal enterprises, formal firms, or domestic service, are also considered part of the informal economy (Bromley & Wilson, 2018).

Within the broader informal economy lies the informal sector, which consists of unregistered, small-scale enterprises like street vendors, artisans, and home-based businesses. The informal sector doesn't have a universally definitive definition (Lorato et al., 2023). According to (International Labour Office, 2021) the informal sector encompasses unregistered enterprises. Additionally, informal employment within this sector pertains to work that lacks legal protection or social regulation. The broader concept of the informal economy includes all activities and outputs generated by workers and enterprises operating in this sector, distinguishing it from formal counterparts not subject to such informal arrangements. In many developing countries, this informal economy constitutes a significant portion, up to 50%, of overall economic activity, sustaining livelihoods for billions of people (Martínez et al. 2022).

Among the various activities within the informal sector, street vending stands out as one of the most visible and widespread. Street vending involves unregulated trading occurring in public

spaces like streets, sidewalks, bridges, and pavements, that are characterized by the production and sale of legal goods and services in urban public spaces. This form of commerce is not officially regulated by the law and typically takes place in non-permanent built structures. Despite being a significant component of the informal sector, the precise global count of street vendors remains unknown (Recchi, 2021b; Tsegay & Mesele, 2019b).

Street vending stands out as a notable expression of the informal economy. According to (Roever & Skinner, 2016) The proportion of street vendors in total non-agricultural informal employment varies, ranging from 26% in Hanoi, Vietnam, to 44% in Lomé, Togo (Martínez & Short, 2022). The majority of studies on street vending are concentrated in urban areas, specifically examining neighborhoods or informal clusters throughout the city. Numerous case studies on street vending can be found in various cities worldwide, in Accra (Takyi et al., 2023), Cameroon (Fonchingong, 2005), Myanmar (Goudet et al., 2020) , India (Kotval-K, 2021; Patel et al., 2014; Van Den Bold et al., 2015) , African cities (Giroux et al., 2021) , Latin America (Bromley & Wilson, 2018). Street vending has served as a gateway to the local job market for numerous migrants, while also playing a crucial role as a significant provider of goods and services. This sector has been instrumental in meeting the increasing needs of the population employed in the most economically challenged service sectors.

In several regions, particularly South Asia, Africa, and Latin America, women constitute the largest segment of informal employment. Primarily engaged in the informal service and commerce sectors, women dominate this workforce (Martinez & Estrada, 2017; Martínez & Short, 2022). In developed economies, women are often overrepresented in non-standard employment categories within the informal sector, encompassing roles such as caregivers, service providers, cleaners, and self-employed individuals. Across many countries, women

exhibit higher participation rates than men in non-agricultural informal economic activities. Furthermore, female-headed households are notably prevalent among those engaged in informal economic endeavors (Bromley & Wilson, 2018).

2.2. Drivers of Street Vending

Street vending globally and in developing countries is driven by various factors. Globally, rapid urbanization creates demand for informal goods and services, making street vending a prevalent phenomenon. Economic opportunities, such as low barriers to entry and flexibility, attract individuals seeking employment or supplemental income (Giroux et al., 2021; Igudia, 2020; Recchi, 2021b). Moreover, consumer demand for affordable and accessible goods and services further fuels street vending activities. Cultural and social factors also play a significant role, with street vending deeply ingrained in many societies as a traditional form of commerce (Abagissa, 2020; Ergano, 2019.; Tsegay & Mesele, 2019b) . In developing countries, the dominance of the informal economy, limited formal employment options, and urban poverty contribute to the proliferation of street vending. Additionally, government policies, which may either restrict formal economic activities or fail to provide adequate support for informal vendors, influence the prevalence of street vending (Berhanu, 2021.; Desta, 2018a; Lorato et al., 2023). Finally, rural-to-urban migration in search of better opportunities drives the growth of street vending in developing country cities, as migrants often face barriers to entering the formal labor market. These drivers interact in complex ways, shaping the dynamics of street vending across the globe (Craven & Gartaula, 2015; Kebu et al., 2023; Kefelegn, 2020).

Likewise, Ethiopia is undergoing swift urbanization and significant migration from rural to urban areas. This accelerated urbanization places considerable strain on Ethiopia's urban centers, with

one notable consequence being a heightened challenge of unemployment which the formal sector is unable to provide with job opportunities (Lorato et al., 2023). In Ethiopia, street vending stands out as a crucial and unrestrained facet of the informal sector, serving as a vital economic refuge for the urban poor amidst the prevailing demographic changes and limited job prospects. Engaging in street vending emerges as a significant pathway for income enhancement and livelihood improvement in urban centers, contributing substantially to poverty reduction and job creation (Ergano, 2019). Furthermore, the informal sector not only offers a diverse array of services but also produces essential goods accessible to various consumer classes, particularly benefiting low-income groups (Berhanu, 2021.)

These drivers interact in complex ways, shaping the dynamics of street vending and the informal sector within the Ethiopian and other developing countries' urban environments. In addition to the factors previously mentioned, the prospect of participation in the informal economy, including street vending and other informal sector activities, is highlighted as a significant driver of rural youth migration to urban areas in Ethiopia. This suggests that the allure of engaging in informal economic activities in urban centers serves as a pull factor for rural youth seeking better economic opportunities and livelihoods. (Kebu et al., 2023); (Kefelegn, 2020).

2.3. Characteristics of Street Vending

Street vending encompasses a diverse range of economic activities that take place in public spaces, providing goods and services to consumers. Some common types of street vending according to the Ethiopian Statistics Service (CSA, 2021) includes:

- **Food Vendors:** These vendors sell a variety of ready-to-eat food items such as snacks, fruits, beverages, and local delicacies from mobile carts or stalls located on sidewalks or public areas.
- **Artisans and Craft Sellers:** Street vendors engaged in artisanal activities offer handmade crafts, artwork, jewelry, and other artisanal products to passersby, often displaying their goods on makeshift tables or portable displays.
- **Clothing and Accessories:** Street vendors selling clothing, accessories, footwear, and fashion items often operate from temporary stalls or display their merchandise on racks or hangers along busy streets and market areas.
- **Mobile Merchants:** These vendors move from one location to another, carrying their merchandise with them, and may offer a variety of products such as household items, electronics, or personal care products.
- **Street Performers and Entertainers:** Individuals engaged in street performances, busking, or entertainment activities, including musicians, dancers, and other performers, who entertain and engage with the public in exchange for voluntary contributions.
- **Flower and Plant Vendors:** Street vendors specializing in the sale of flowers, plants, and gardening-related products, often setting up temporary stalls or displays in public areas or near markets.
- **Secondhand Goods and Flea Market Vendors:** Sellers offering used or secondhand items, antiques, collectibles, and miscellaneous goods in open-air markets or along streets and sidewalks.
- **Mobile Food Trucks and Carts:** Mobile food vendors operate from trucks or carts, offering a variety of prepared meals, snacks, and beverages at different locations throughout the day.

- These are just a few examples of the diverse types of street vending activities that exist, reflecting the wide array of goods and services provided by informal vendors in urban and public spaces. Each type of street vending activity may have its unique characteristics, challenges, and contributions to the informal sector.

2.4. Food Security and Urban Food Security

Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2008). Food security comprises four key dimensions. Firstly, physical availability hinges on production, stocks, and trade. Secondly, economic and physical access, essential for household security, requires attention to income, expenditure, and market dynamics. Thirdly, utilization involves optimal nutrient absorption, influenced by care practices, diet diversity, and distribution. Lastly, stability across these dimensions is vital; even with adequate intake, periodic access challenges due to weather, political, or economic factors can jeopardize nutritional status (FAO, 2013). In contrast, food insecurity exists when people lack access to sufficient amounts of safe and nutritious food for normal growth and development (Etana & Tolossa, 2017b).

While the four dimensions of food security availability, access, utilization, and stability are interconnected, their dynamics are particularly pronounced in urban areas, where rapid urbanization and poverty create unique challenges. Urban settings often rely heavily on markets for food supply, making economic access pivotal. However, high food prices, low income, and limited social safety nets can exacerbate food insecurity among urban dwellers. Moreover, the stability of food systems in cities is often influenced by global and local supply chain disruptions, as well as environmental and political factors. Addressing these challenges requires targeted

policies that consider the multi-dimensional nature of food security in urban contexts (Jones et al., 2013).

The proportion of the world's poor living in urban areas is increasing, not simply because the poor urbanize faster than the non-poor, but also because the conditions in many urban areas drive many existing and new urban residents into poverty. These demographic and economic shifts raise several pressing development issues, of which food insecurity is one requiring for substantial research and policy intervention (Mekonen, Berlie, et al., 2023). According to (Teng et al., 2011) Food supply, food consumption, and food stability in cities are very different from traditional rural patterns, as some governments have learned to their cost. A predictable outcome of this massive population shift is urban poverty; and the link is strong between poverty and hunger (as well as malnutrition and undernourishment).

Despite significant expansion of government programs to combat food insecurity, food price shocks remain the biggest threat to Ethiopia's poorest households (International Monetary Fund [IMF], 2015). According to (Tolossa, 2010), urban poverty in the country has been a neglected area both within research and in poverty reduction policies (Ayerakwa, 2017) also explained that urban poverty is not sufficiently studied in Ethiopia. As (Tolossa, 2010) pointed out that many poverty and food security-related research studies in Ethiopia have overlooked the urban settings, noting that there is only a limited focus on understanding urban livelihoods (Yirga, 2021).

Food Availability, City-dwellers do not grow their food, they buy it. This makes the urban and rural lives intertwined through goods, services, and people, urban food security will ultimately continue to depend on rural food security, within national borders and outside them. Many factors affect rural food security: pest outbreaks and bad weather; rising energy prices; competition from bio-fuels for land; policy changes and the diversion from staple crops to cash

crops; under-investment in rural infrastructure and agricultural innovation; climate change; increasing water and land scarcity; unfriendly policies towards farmers; declining number of farmers; and a slow-down of increases in agricultural productivity which all these will ultimately have an impact on urban food security (van Weezel, 2016).

Access to food, Urban dwellers' food consumption patterns and preferences changed and the food they buy is different. There is a higher consumption of meat, dairy produce, fruits, vegetables, and processed foods. They eat a wider variety of foods. And they are more vulnerable to changes in the global market. In the urban context, supermarket chains are increasingly becoming major stakeholders in the control of access to food. High food prices have greater adverse effects: in developing countries, most of the urban poor spend 40–60% of their income on food per year. They live in crowded conditions with poor-quality housing, poor to non-existent garbage disposal systems, unsafe drinking water, and non-functional or non-existent sewage systems; and they hold jobs that are casual, insecure, uncertain, low-paying, and vulnerable to outside forces. These differences potentially render urban residents more vulnerable to disruptions in the global food supply chain and to fluctuations in the price of food (Tadesse & Shively, 2009). Food prices worldwide have risen dramatically since the beginning of the last decade. In June 2008, they had increased overall by 83%. The price of maize tripled, wheat prices increased by 127%, and that of rice by 170%. As a result, the number of undernourished people reached a historic high of 1.02 billion in 2009. While this number decreased slightly in 2010 to 925 million, the rise in food prices in the first quarter of 2011 could push this number back up. According to the annual joint report by the Organization for Economic Co-operation and Development (OECD) and the FAO, agricultural commodity prices are unlikely to drop back to the average levels of the past decade. The report predicted that the

average wheat and coarse grain prices over the next 10 years will increase by 15–40% in real terms compared to the average levels during 1997–2006. Real prices for vegetable oils are expected to be more than 40% higher, while dairy prices are projected to be on average 16–45% higher.

Utilization Urban growth can have an important impact on food utilization. Because urban residents, as largely net buyers of food, are particularly vulnerable to volatile food prices, they are often forced to reduce other expenditures in order to meet their basic food requirements. In the context of developing countries, poor urban dwellers are thus at risk of consuming insufficient and low-quality food, including street food, which may be unhygienic, exposing them to health risks (Matuschke, 2014). The informal food sector can contribute to food insecurity because of the low quality of the food sold and the lack of hygiene during food preparation and sale (Tamenu Abera & Mogessie Ashenafi, 2023). As a result, among the rural poor, many city dwellers incur infections, and great risk of life-threatening diseases. Recognizing the importance of sanitation for food security outcomes, FAO included the percentage of the population with access to sanitation facilities as an official indicator of food security. A crucial aspect of food consumption in both developing and developed countries pertains to the quality of food, which is linked to the food supply system. Among the consequences of rapid urbanization, there has been a shift in the production patterns of food. It has been shown that urbanization is highly correlated with access to processed food stuffs, which have higher sugar levels (Sharma, 2016). In addition to sugar and artificial sweeteners, processed food tends to contain artificial coloring agents, hydrogenated fats, preservatives, and chemical pesticides. In the contemporary world, processed food is often the most accessible type of food, both in terms of physical

proximity as well as price. The urban poor also tend to consume high-energy processed food due to its affordability and accessibility (Szabo, 2016).

2.6. Impact of Street Vending on Food Security

To address the issue of food insecurity, we need to look to the entitlement approach, as outlined by (Muzerengi et al., 2021) involves analyzing three key conceptual elements: the endowment set, entitlement set, and entitlement mapping. The endowment set encompasses all legally owned resources by an individual. The entitlement set represents the full spectrum of goods and services a person can acquire by converting their endowments through exchange entitlement mappings (Devereux, 2006) Sen identifies four entitlement components related to food sources: trade-based (buying food), production-based (growing food), own-labor (working for food), and inheritance/transfer (obtaining food through social security, pensions, and distributions) ((Muzerengi et al., 2021; Devereux, 2001)) These entitlements grant households access and control over resources to meet living requirements, including food.

In urban areas where food is available in the market, access to food depends on income and food prices. Income dictates households' purchasing capacity, and rising food prices exacerbate food insecurity (Assefa et al., 2016). Unemployment, predicted by socio-demographic and economic factors is positively associated with food insecurity (Tolossa, 2010). Food insecurity, rooted in lack of access, results from entitlement failures concerning endowments, production possibilities, and exchange conditions (Muzerengi et al., 2021) As per capita food availability alone is insufficient for food security and the entitlement approach emphasizes socioeconomic conditions.

Many researchers ((Adeosun et al., 2022; Blanck et al., 2014; Coletto et al., 2021; Gupta et al., 2018; Kotval-K, 2021; Patel et al., 2014; Sharma, 2016)). linked street vending with food

security exclusively to street food vending, explaining the positive and negative impacts on food security. Their relationship depends on various factors such as the types of goods sold, affordability, and accessibility. On one hand, street vendors often provide affordable and convenient food options, particularly in areas with limited access to supermarkets or formal food markets, thereby contributing to food security by ensuring a steady food supply for urban populations, especially those with low incomes. However, concerns exist regarding the nutritional quality and safety of street food, as well as the vulnerability of street vendors to economic shocks or regulatory crackdowns, which can affect their ability to provide consistent access to food. Moreover, informal food vendors may operate in unregulated conditions, posing potential health risks to consumers.

Therefore, the role of street vending on the food security status of the vendors is as the result of the flexibility and adaptability of this informal sector in providing economic opportunities that influence entitlements for various individuals. Street vending can serve as a crucial source of income, potentially contributing to entitlements related to trade-based and own labor components, contributing to urban food security. Yet understanding in particular how street vending intersects with these entitlement dynamics to ensure food security status is vital for comprehending the broader socio-economic landscape in which individuals secure their living requirements, especially access to food.

2.6. Determinants of Food Security Among Street Vendors

The determinants of food security among the street vendors begin with the dynamics of the informal economy in Ethiopia, which presents both challenges and opportunities for street vendors, who directly affect or impact their food security. One of the major challenges they face

is the regulatory environment, as they often encounter punitive measures, fines, and forced relocations due to exclusionary policies that seek to eliminate them (Birhane, 2015; Engidaw et al., 2024; Lorato et al., 2023). Institutional distrust further contributes to the high prevalence of informal vending, as many individuals turn to this sector for greater autonomy. Additionally, limited access to capital restricts their ability to expand businesses, while intense competition and market saturation result in price wars and reduced profit margins. Vendors also struggle with limited access to resources, such as loans, affordable selling spaces, and efficient supply chains, which impact their profitability (Abagissa, 2020; Desta, 2018a).

Despite these difficulties, street vending provides key economic opportunities, serving as a crucial source of income and employment, particularly in developing countries. It plays a role in poverty alleviation, offering flexibility and autonomy to those engaged in it. Vendors also contribute significantly to the urban economy by providing essential goods and services at affordable prices, benefiting both consumers and local economies (Giroux et al., 2021; Martinez & Estrada, 2017; Recchi, 2021b). Moreover, the sector's flexibility and adaptability allow vendors to quickly respond to changing market conditions, making it accessible to individuals with limited education and skills.

2.7. Conclusion

In synthesizing the literature, it becomes evident that street vending, a vital component of the informal economy, is intricately linked to urban development and food security dynamics. The drivers of street vending such as rapid urbanization, poverty, and migration underscore its role as a livelihood strategy for vulnerable populations. Moreover, the characteristics and determinants

of food security among street vendors highlight the dual challenges they face: sustaining their economic activities while ensuring adequate access to food.

However, the literature also reveals notable gaps, particularly in the Ethiopia's informal sector, where street vending plays a significant role in urban livelihoods. Limited research explores how this diverse sector contributes to or interacts with food security. existing studies often overlooked the broader implications of street vending beyond economic survival, including its potential to shape urban food systems and resilience. By addressing these gaps, this study will provide context-specific insights into the relationship between street vending and urban food security, contributing to more informed policy decisions and practical solutions.

2.7. Conceptual framework

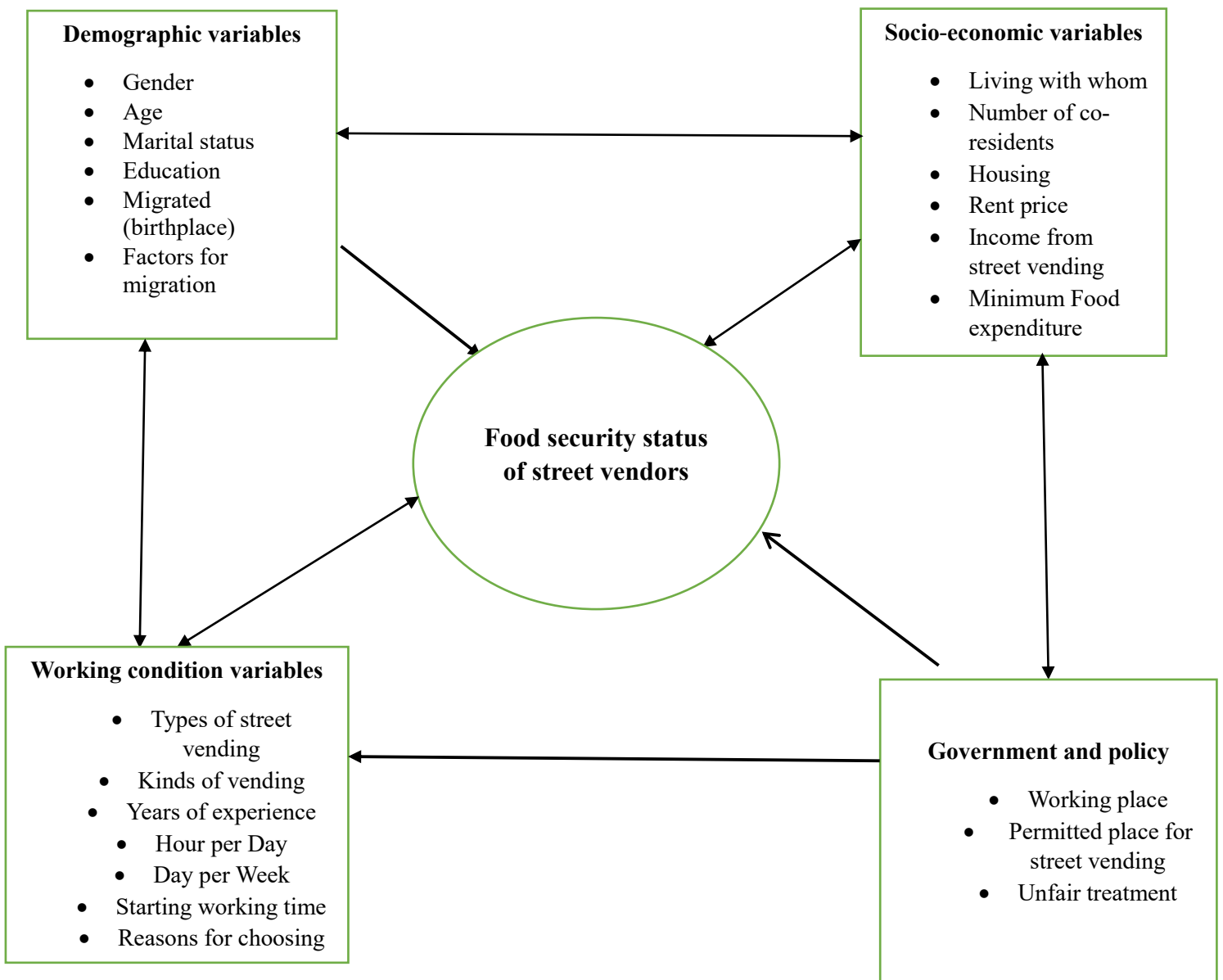


Figure 2.1: Conceptual Framework

Chapter Three: Research Design and Methodology

3.1. Study Area

Ethiopia's capital city Addis Ababa is the political, economic, and cultural center. The urban population is primarily concentrated in Addis Ababa having a rapidly growing population due to rural-urban migration, a large number of individuals move to the city in search of better economic opportunities; consisting of 46.7% of residents migrating from rural and other urban areas within the country (Bikis & Pandey, 2023). However, rapid urbanization has led the city to face challenges such as unemployment, inadequate housing, limited access to essential services, clean water, and sanitation (UNICEF, 2020).

This research focuses on the sub-city of Kolfe Keranio. Kolfe Keranio is one of the ten sub-cities in Addis Ababa, located in the western part of the city which comprises 15 woredas in the sub-city. The sub-city is characterized by a high number of rural migrants who come to the area seeking employment, particularly in informal sectors like street vending and small-scale trade (CSA, 2021).

The informal sector, specifically street vending, plays a significant role in the economic activities of this sub-city. Kolfe Keranio's streets host a variety of vendors offering different goods and services (CSA, 2021). Amidst rapid urban growth, this study explores the complex relationship between street vending and food security in the most populated sub-city, which has a high concentration of rural-urban migrants engaged in the informal sector, particularly as street vendors.

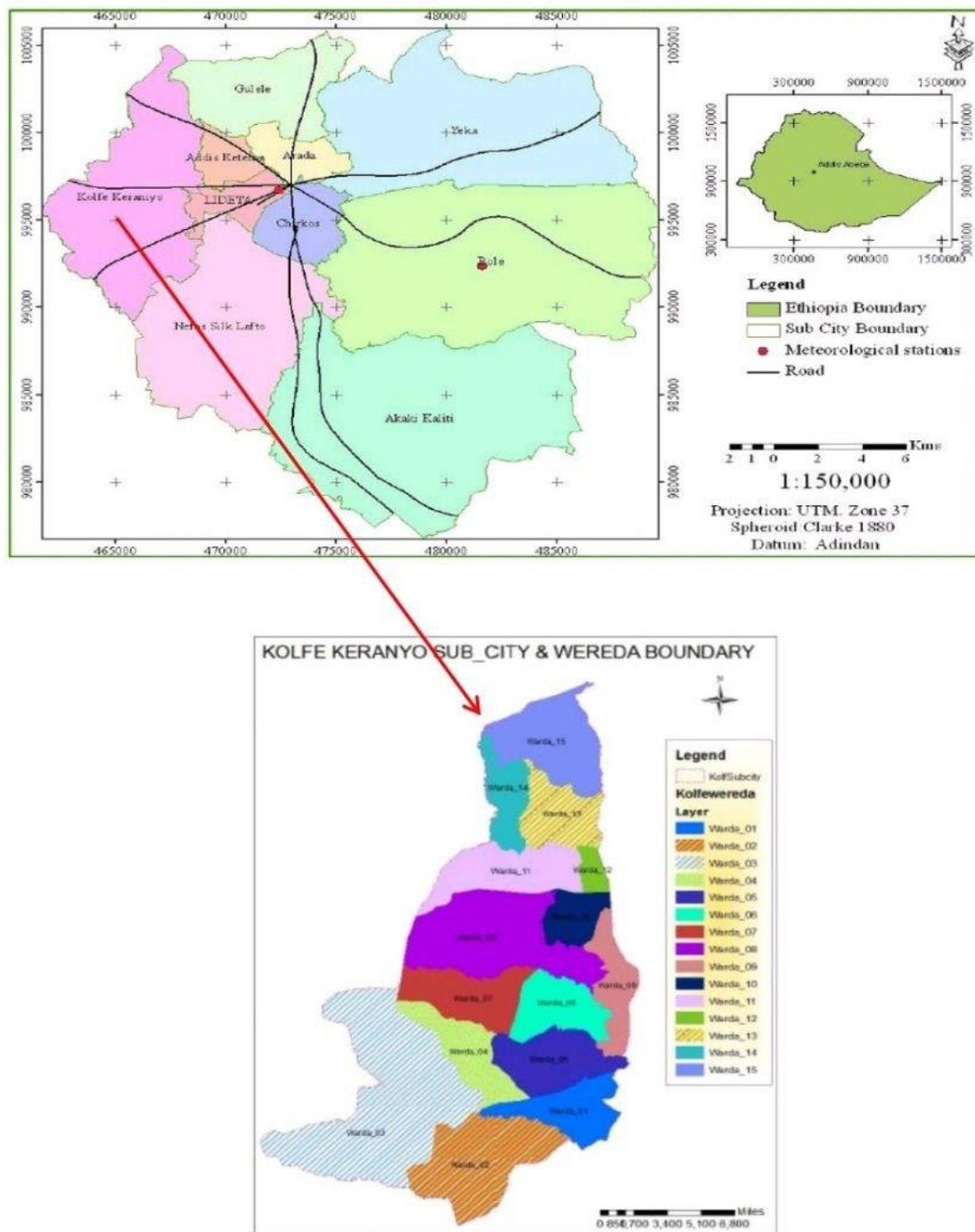


Figure 3.1: Kolfe Keraniyo sub-city, Addis Ababa Ethiopia. Taken from (Hundechea, 2020)

3.2. Research Design

This study employs a descriptive-exploratory research design with a quantitative cross-sectional approach to assess the food security status of street vendors in Addis Ababa, Ethiopia. The descriptive component aims to outline the demographic, socio-economic, and working conditions of the street vendors, while the exploratory aspect seeks to uncover the underlying factors influencing their food security status.

Given the complex socio-economic landscape of street vending and its implications for food security, this study is grounded in a deductive approach. The research begins with specific hypotheses derived from existing theories and literature on informal economies, food security, and urban livelihoods. These hypotheses are then tested through the analysis of collected data.

3.3. Research Approach

This study adopts a quantitative research approach to examine the relationship between street vending and food security in [study area]. A quantitative approach is appropriate for this study as it allows for the collection and analysis of numerical data, enabling the identification of patterns, relationships, and statistical significance between key variables.

By employing this approach, data was gathered through structured surveys/questionnaires, ensuring consistency and reliability in responses. The use of statistical tools facilitates objective measurement and comparison, providing empirical evidence on the extent to which street vending influences food security.

This approach ensures that findings are generalizable and replicable, contributing to a broader understanding of the issue in similar urban settings. Additionally, it allows for a systematic

examination of factors affecting street vendors and their role in food security, leading to data-driven conclusions and policy recommendations.

3.4. Data Collection Methods

The data was gathered on May 6, 2024 – June 6, 2024, using a structured questionnaire administered to a randomly selected sample of street vendors across prominent streets and roundabouts in the Kolfe Keraniyo sub-city of Addis Ababa. This method allows for a systematic collection of data at a single point in time, making the cross-sectional design suitable for capturing a snapshot of the current food security situation among street vendors. Also, the data was collected directly from the respondents through face-to-face interviews, which allowed for the clarification of any questions and ensured that accurate and reliable data was obtained. A structured questionnaire-based survey was conducted with a sample of 196 street vendors in the study area. The survey covered various demographic, socio-economic, and working conditions, including the respondents' migrated place and demographic details, vending practices, and the broader social and economic swings impacting them. Additionally, the survey used established tools such as HFIAS, FCS, CSI, and DDS to gauge the food security status (particularly food access), dietary diversity, and coping strategies vendors employ during periods of food scarcity. For clarity and accessibility, the questionnaire was translated into the local language, Amharic. The structured nature of the questionnaire facilitated the consistent collection of data across all respondents, making it easier to perform quantitative analysis in subsequent stages of the research.

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Given the complex socio-economic landscape of street vending and its implications for food security, this study is grounded in a deductive approach. The research begins with specific hypotheses derived from existing theories and literature on informal economies, food security, and urban livelihoods. These hypotheses are then tested through the analysis of collected data.

3.6. Sampling technique and sample size determination

This study used a multistage sampling strategy for a more focused investigation into street vending practices in Addis Ababa. The study initially employed purposive selection by choosing Kolfefe Keranio Sub City as the primary sampling unit. Subsequently, a systematic sampling method has been applied to select prominent city squares, streets, and roundabouts within the sub-city because of the accumulation of street vendors. Finally, street vendors were selected by simple random sampling from these specific locations.

Given the inherent characteristics of street vendors and the nature of their working conditions, there is a notable lack of dependable data sources that provide information on their exact numbers. Consequently, treating the population size as unknown is deemed the most appropriate approach. To determine the sample size for this study, the Cochran formula is used:

$$n = \frac{Z^2 * P * (1-P)}{E^2}$$

Where:

- n is the required sample size,

- Z is the Z-value corresponding to the desired confidence level (1.96 for a 95% confidence level),
- P is the estimated proportion of the population with the characteristic of interest (assumed to be 0.50 for maximum variability),
- E is the desired margin of error.

Given the constraints of time and resources, a margin of error (E) of 0.07 (7%) was selected instead of the more common 5%. This decision is justified by the high costs and logistical challenges associated with conducting research among street vendors, as well as the practical limitations imposed by the study's time frame (Dowdy et al., 2004)

Using these parameters, the sample size calculation is as follows:

$$n = (1.96)^2 * 0.50 * (1-0.50) / (0.07)^2$$

$$n = 3.8416 * 0.25 / 0.0049$$

$$n = 0.9604 / 0.0049$$

$$n = 196$$

Therefore, based on these parameters, the calculated sample size for this study is approximately 196. This sample size is deemed sufficient to achieve reliable results while balancing the practical considerations of conducting field research under constrained conditions.

3.7. Technique of data analysis

3.7.1. Descriptive analysis

This study used statistical analysis which allows to answer the research questions through data collection, analysis, modeling, interpretation and presentation. As part of this statistical analysis, this study used both descriptive and inferential analysis. The statistical analysis was conducted using STATA version 17 software, which provided a comprehensive platform for data modeling, interpretation, and presentation.

In this study, descriptive statistics were employed to summarize key data points, utilizing measures such as percentages, means, minimums, and maximums to explore essential information about street vendors and their circumstances. Additionally, inferential statistical methods, including the chi-square test and F-test (ANOVA), were applied to examine the significance of relationships among various variables using STATA version 17.0.

Chi-Square Test

The chi-square test of association was utilized to assess the relationship between two categorical variables, such as marital status, origin, and previous occupation, and to determine whether these variables are independent or associated. The formula used for the chi-square statistic is:

$$X^2 = \sum_{i=1}^n \left(\frac{O-E}{E} \right)^2$$

Where,

O =observed value

E =expected value

F-Test (ANOVA)

The one-way analysis of variance (ANOVA) was employed to identify statistically significant differences between the means of two or more independent groups. This analysis was particularly relevant in this study for evaluating variables such as age, number of children, educational status, park experience, factory experience, salary, and other economic indicators across different food security groups among street vendors. The F-test allowed for an in-depth examination of how these factors correlate with food security outcomes, helping to draw meaningful conclusions from the data. The equation for computing the F-test is as follows:

$$F_c = \frac{GSS / c - 1}{WSS / n - c}$$

Where,

GSS = (Group Sum of Squares) represents the sum of the deviations of each group mean from the overall grand mean, capturing the variability attributed to the differences between the groups.

WSS = (Within Sum of Squares) indicates the sum of the deviations of each observation from its respective group mean, reflecting the variability within each group. If the calculated F-value exceeds the critical F-value from the F-table, we reject the null hypothesis.

3.7.2. Analysis of food security

Household Food Insecurity Access Scale (HFIAS): is a standardized tool developed by the Food and Nutrition Technical Assistance FANTA project to measure the degree of food insecurity in households. It assesses food availability, access, and the quality of food. HFIAS assesses the frequency and severity of food insecurity based on respondents' experiences over the past month. (Coates et al., 2007). HFIAS comprises two types of interrelated questions. The first type is occurrence questions that inquire whether questions describing their food insecurity experience

at any point in the previous four weeks (30 days). Each occurrence question includes two response options (0 = no, 1 = yes). The second type, frequency-of-occurrence questions asks the respondents how often they experienced the reported condition within the same timeframe of the past 30 days. These questions offer four response options reflecting different frequencies (0 = never, 1 = rarely, 2 = sometimes, 3 = often). Based on the responses, each household is categorized into one of four food insecurity access categories: food secure, mildly food insecure, moderately food insecure, and severely food insecure.

Table 3.1: HFIAS indicators and category

Category	Indicator	HFIAS
Food secure	If [(Q1a=0 OR Q1a=1) and Q2=0 and Q3=0 and Q4=0 and Q5=0 Category and Q6=0 and Q7=0 and Q8=0 and Q9=0]	HFIAS category 1
Mildly food insecure	If [(Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1), and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]	HFIAS category 2
Moderately food insecure	If [(Q3a=2 or Q3a=3 or Q4a=2 or Q4a=3 or Q5a=1 or Q5a=2 or Q6a=1, or Q6a=2) and Q7=0 and Q8=0 and Q9=0]	HFIAS category 3
Severely food insecure	If [Q5a=3 or Q6a=3 or Q7a=1 or Q7a=2 or Q7a=3 or Q8a=1 or Q8a=2 or	HFIAS category 4

Coping Strategy Index (CSI): This tool assesses the strategies that vendors employ to cope with food insecurity, capturing both the frequency and intensity of these coping behaviors. The Coping Strategy Index (CSI) measures how households adapt to food insecurity over a 30-day

recall period by evaluating the frequency and severity of various coping strategies. These strategies may include reducing meal sizes, skipping meals, relying on less preferred or cheaper foods, borrowing food from friends or neighbors, or purchasing food on credit. (Maxwell, 2008)

The CSI is calculated by assigning weights to these coping strategies based on their severity and frequency, which reflects the extent to which each behavior indicates food insecurity. The total score is obtained by summing these weighted values, allowing for the classification of households into different levels of food insecurity: with a CSI score of (0 to 10) are considered to have low food insecurity, those scoring between (11 to 20) are moderately food insecure, households with scores from (21 to 30) are highly food insecure, and those scoring (31 and above) are categorized as experiencing severe food insecurity, reflecting varying levels of reliance on coping strategies to manage food access challenges.

Table 3.2: for CSI Calculation

Coping Strategy	Weight	Frequency	Score (Weight × Frequency)
Reduce meal sizes	2	5	10
Skip meals	3	2	6
Rely on less preferred foods	1	10	10
Borrow food from friends	2	3	6
Purchase food on credit	3	1	3
Total CSI Score			35

Based on the total score, households are categorized into food insecurity levels, providing valuable insights into their coping strategies and overall food security status.

Food Consumption Score (FCS): was utilized to gather data on dietary diversity over a recall period of seven days, serving as a complementary measure alongside the Household Food Insecurity Access Scale (HFIAS). The FCS is a more complex indicator of a household's food security status, as it accounts not only for dietary diversity and frequency but also for the nutritional importance of various food groups. The FCS was collected using a standardized questionnaire that includes nine food groups, which are as follows: (1) Maize, maize porridge, rice, sorghum, millet, pasta, bread, and other cereals; (2) Beans, peas, groundnuts, and cashew nuts; (3) Vegetables and leaves; (4) Fruits; (5) Beef, goat, poultry, pork, eggs, and fish; (6) Milk, yogurt, and other dairy products; (7) Sugar and sugar products, including honey; (8) Oils, fats, and butter; and (9) Spices, tea, coffee, salt, fish powder, and small amounts of milk used for tea (INDDEX, 2018).

To calculate the FCS, the consumption frequencies of these food groups are summed and multiplied by their respective standardized weights. The equation used to calculate the FCS is:

$$\text{FCS} = a \times f(\text{staple}) + \beta \times f(\text{pulse}) + \gamma \times f(\text{vegetables}) + \delta \times f(\text{fruit}) + \epsilon \times f(\text{animal}) + \zeta \times f(\text{sugar}) + \eta \times f(\text{dairy}) + \theta \times f(\text{oil}),$$

where $f(x)$ represents the frequency of consumption for each respective food group. Based on the resulting score households can be classified as having poor (0 – 21), borderline (21.5 – 35), or acceptable (> 35) food consumption, following the World Food Programme's recommended cut-offs (WFP, 2008).

Dietary Diversity Score (DDS): Dietary diversity is measured by the number of different food groups consumed in a specified period. The DDS has demonstrated reliability and validity in assessing dietary quality (Kennedy et al., 2011). DDS uses 12 food items to assess the respondents' food insecurity level based on the variety of nutrients consumed in the previous 24 hours. Two possible values will be assigned in this measurement: 1 (Yes) if the respondent consumed that particular food group, and 0 (No) if they did not consume these foods within the last 24 hours. Consequently, the DDS values range between 0 and 12. In this study, the DDS results were categorized into three levels: Low DDS (for those who consumed 1 to 3 food items), Medium DDS (for those who consumed 4 to 6 food items), and Adequate DDS (for those who consumed 7 or more food items).

$$\text{DDS} = 1(\text{Cereals}) + 0(\text{Pulses}) + 1(\text{Vegetables}) + 1(\text{Fruits}) + 0(\text{Meat}) + 1(\text{Dairy}) + 0(\text{Oils/Fats}) + 1(\text{Sweets}) + 0(\text{Nuts}) + 0(\text{Eggs}) = 5$$

Hypothesis Testing

Each of the regression models will be used to test specific hypotheses derived from the conceptual framework:

- **H1:** Demographic factors (e.g., gender, age, education) significantly influence the food security status of street vendors.
- **H2:** Economic factors (e.g., income, initial capital) have a significant impact on the food security outcomes of individuals engaged in street vending.
- **H3:** Social factors (e.g., number of dependents, co-residence arrangements) are significant predictors of food security among street vendors.

- **H4:** Work-related factors (e.g., type of street vending, hours of work) significantly affect the food security status of street vendors.

3.7.3. Econometric analysis

This study has employed regression analysis to examine the relationship between the independent variables with the dependent variables in order to assess the factors influencing food security among street vendors. By using regression models, the study aims to identify significant predictors and quantify their effects providing insights into how each variable contributes to food security outcomes. This approach allows us to evaluate the strength and direction of associations between various socio-economic and demographic factors such as age, gender, income, education level, household size, housing and so on with food security status of the street vendors. This analysis is not only highlighting individual variables impacts but also controls for other influencing factors, offering a comprehensive understanding of the complex interplay between these variables within the context of food security.

Ordered logistic regression

For HFIAS we used an ordinal logistic regression model. Given that the HFIAS measures food insecurity levels across ordered categories, ordinal logistics regression is appropriate as it accommodates the ordinal nature of the dependent variable. This model allows us to assess how independent variables like demographic, socio-economic and street vending related variables relate to shifts in food insecurity levels.

The ordered logit model has continuous unmeasured latent variable Y^* whose values determine what the observed ordinal variable Y equals. The continuous latent variable Y^* has various threshold points. The values on the observed variable Y depend on whether or not the values

have crossed a particular threshold. In this case, the thresholds could be presented as follows.

$Y_i = 1$ if Y^* is $\leq K_1$, $Y_i = 2$ if $Y^* K_1 \leq Y^*_i \leq K_2$, $Y_i = 3$ if Y^* if $K_2 \leq Y^*_i \leq K_3$, $Y_i = 4$ if $Y^* > K_3$

Based on these hierarchical cut points, the Ordered Logit Model will be estimated in the following way:

$$Z_i = \sum \beta_k X_{ki} = E(Y_i^*)$$

The estimated cut-off terms to calculate the probability Y will take on a particular value could be computed as follows.

$$P(y=1) = 1 - \frac{\exp(X_i \beta_i - k_1)}{1 + \exp(X_i \beta_i - k_1)}$$

Thus, the ordered logistic regression enabled us to identify socioeconomic, factor-specific, and institutional factors that influence the level of food insecurity at the industrial park. The authors used indicators in a hierarchical order to measure food insecurity.

A generalized ordered logit model is an improvement upon the ordered logit model, as it accounts for the parallel assumption, thereby avoiding bias in the estimation. The generalized ordered logit model is specified as follows, following Richard Williams and Quiroz (2019).

$$P(Y_i > j) = g(X\beta_j) = \frac{\exp(\alpha_j + X_i \beta_j)}{1 + \{\exp(\alpha_j + X_i \beta_j)\}}, \quad j = 1, 2, \dots, M - 1$$

Where M is the number of categories of the ordinal dependent variable. From the above, it can be determined that the probabilities that Y will take on each of the values 1,...,M are equal to

$$\begin{aligned} P(Y_i = 1) &= 1 - g(X_i \beta_1) \\ P(Y_i = j) &= g(X_i \beta_{j-1}) - g(X_i \beta_j) \quad j = 1, 2, \dots, M - 1 \\ P(Y_i = M) &= g(X_i \beta_{M-1}) \end{aligned}$$

Where X_i denotes all relevant socio-economic and institutional variables affecting food insecurity.

Negative Binomial Regression

Dietary Diversity Score (DDS) and Food Consumption Score (FCS) are count-based indicators of food security, where a negative binomial regression is appropriate to model the overdispersion in the count data.

Since the dependent variables such as coping strategic index have binomial distribution¹. In negative binomial regression, the mean of y is determined by the exposure time t and a set of k regressor variables (the x's). The expression relating these is given by the following expression.

$$\pi_i = \exp(\ln(t_i) + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki})$$

Often, $x_1 \equiv 1$, in which case β_1 is called the intercept. The regression coefficients $\beta_1, \beta_2, \dots, \beta_k$ are unknown parameters that are estimated from a set of data. Their estimates are symbolized as $b_1, b_2, \dots, b_k$. Using this notation, the fundamental negative binomial regression model for an observation i is written as

$$pr(Y = Y_i | \pi_i, \alpha) = \frac{\tau(Y_i + \alpha^{-1})}{\tau(\alpha^{-1})\tau(Y_i + 1)} \left(\frac{1}{1 + \alpha\pi_i} \right)^{\alpha^{-1}} \left(\frac{\alpha\pi_i}{1 + \alpha\pi_i} \right)^{Y_i}$$

$$L = \sum_{i=1}^n \{ \ln[\tau(Y_i + \alpha^{-1}) - \ln \tau(\alpha^{-1})] - \ln \tau(Y_i + 1) - \alpha^{-1} \ln(1 + \alpha\pi_i) + Y_i \ln \alpha - Y_i \ln(1 + Y_i \ln \mu_i) \}$$

The regression coefficients are estimated using the method of maximum likelihood.

Zero-Inflated Binomial Regression

This model is used if the count data of coping strategy index which has excessive zeros, suggesting that many vendors might not experience these events frequently or at all. The Zero-Inflated Binomial Regression model accounts for two groups within the data: one group with a high probability of zero occurrences and another that follows the binomial distribution.

Zero-Inflated Negative Binomial (ZINB) Model Formula

The ZINB model assumes that the observed count Y is generated by two processes:

1. **Zero-inflation process:** Determines whether Y is an "excess zero."
2. **Negative binomial process:** Models the count data (including zeros that are not excess zeros).

The probability mass function for Y is:

$$P(Y = y) = \{\pi + (1 - \pi)PNB(Y = 0), (1 - \pi)PNB(Y = y), \text{ if } y = 0, \text{ if } y > 0,$$

Components

1. **Zero-inflation probability (π):**

$$\pi = \exp(X\beta) / 1 + \exp(X\beta)$$

where:

- X : Predictor variables for the zero-inflation process (e.g., environmental factors, vendor type, or other characteristics influencing zero coping strategies).
- β : Coefficients estimated for the zero-inflation process.

Negative Binomial probability ($P_{NB}(Y=y)$):

$$PNB(Y = y) = y \cdot \Gamma(\alpha - 1) \Gamma(y + \alpha - 1) \cdot (\alpha - 1 + \mu \alpha - 1) \alpha - 1 \cdot (\alpha - 1 + \mu \mu) y$$

where:

- $\mu = \exp(Z\gamma)$: Mean of the negative binomial distribution, modeled as a function of predictors Z (e.g., income, household size, education level).
- α : Dispersion parameter (controls overdispersion; smaller values indicate greater overdispersion).
- $\Gamma(\cdot)$: Gamma function.
- y : Observed coping strategy index score.

Combined ZINB model: Substituting the components:

$$\text{if } y=0, \text{ if } y>0.$$

Table 3.3: The expected signs for each variable across the four regression models

Variable name	Ordered logit regression (HFIAS)	Zero-inflated binomial regression (CSI)	Negative binomial regression (FSC)	Negative binomial regression (DDS)
Increased in Age	+	+	-	-
Gender	+/-	+/-	+/-	+/-
Marital status	+/-	+/-	+/-	+/-
Level of education	+	+	+	+
Migrated to AA	+	+	+	+

Reason for migration	NA	NA	NA	NA
With whom	+/-	+/-	+/-	+/-
Co-residents	+/-	+/-	+/-	+/-
Income SV	+	+	+	+
Housing	+/-	+/-	+/-	+/-
Rent price	-	-	-	-
Experience	+	+	+	+
Kind of SV	+/-	+/-	+/-	+/-
Hours/day	+	+	-	-
Days/week	+	+	+	+
Types of SV	+/-	+/-	+/-	+/-
Choice of SV	NA	NA	NA	NA
Food expenditure	+	+	+	+
Beginning of working hours	+/-	+/-	+/-	+/-
Unfair treatment	-	-	-	-

3.8. Definition of Variables

Dependent variable

The dependent variable for analysis was the operators' food security status measured by the household food insecurity access scale, coping strategy index, food consumption score, and dietary diversity score.

Independent variables

The independent variables of the model are those variables that were expected to have a relationship with the food security status of the operators and the determinants of the food security status. These variables stand alone and are not changed by other changes in dependent variables. These independent variables were identified based on reviewing different literature.

Gender of the street vendor: it is a categorical variable (Male, Female). Gender could have positive or negative outcomes on the food security status of street vendors.

Age: it is a Continuous variable (measured in years). Age may have a negative or positive effect on the dependent variable. For instance, older vendors might have more experience, which could impact income or resilience to food insecurity.

Level of Education: it is a Continuous variable (years of education completed). Education level could affect vendors' ability to manage their businesses, navigate regulations, and find additional job opportunities.

Marital Status: It is a Categorical variable (single, married, divorced, widowed). Marital status may influence household income requirements, dependency ratios, and resilience, as married individuals might have additional family support or obligations.

Place of Birth: Type: It is a Categorical variable (capital city, rural area) Vendors from rural areas might have different migration motivations and support systems, potentially impacting their income stability and vulnerability.

Reason for Migration: It is a Categorical variable (specific reasons may need to be defined).

Understanding the reason for migration can reveal push and pull factors contributing to economic vulnerabilities or food security issues.

With Whom They Live: It is a Categorical variable (specific categories depending on data collection design, e.g., alone, with family, with other vendors). Co-residence can influence living expenses and emotional support levels, affecting overall stability.

Co-Residents: it is a Continuous variable (number of co-residents). The type and number of co-residents may impact household expenditure and income pooling.

Income from Street Vending: it is a Continuous variable (measured in Birr. likely per day, week, or month). The primary indicator of financial stability is directly related to food security and the ability to cover living expenses.

Housing Situation: it is a Categorical variable (rented, owned, informal settlement, etc.)
Stability and costs associated with housing affect disposable income and food security.

Rent Price: it is a Continuous variable (Birr). A major expense for most households, with high rent potentially exacerbating financial vulnerability.

Years of Experience: it is a Continuous variable (years in street vending). Experience can correlate with higher income, customer trust, and operational knowledge.

Kind of Street Vendor: It is a Categorical variable (e.g., food vendor, clothing vendor, etc.). The type of goods sold may impact daily income variability, working hours, and exposure to risks.

Working Hours per Day: it is a Continuous variable (hours). Longer working hours may result in higher income but also greater exposure to health and safety risks.

Working Days per Week: it is Continuous (days). The number of working days contributes to income stability and may reflect resilience or necessity.

Types of Street Vending: it is a Categorical variable (could specify mobile, stationary, etc.).

Different types may come with unique challenges or advantages, like mobility or stable customer bases.

Choice for the Type of Street Vending: it is a Categorical variable (reasons for choosing vending type). Insights into decision-making that may reflect economic or social constraints.

Initial Capital: it is a Continuous variable (In Birr). Initial investment capacity can impact business sustainability and scale.

Average Food Expenditure: it is a Continuous variable (In Birr). It Measures financial prioritization and food security, critical for assessing vulnerability.

Beginning of Working Hours: it is a Continuous variable (time of day). Starting time might affect revenue and the type of customers, as well as health due to prolonged exposure.

Encounter of Unfair Treatment: it is a Categorical variable (yes, no, frequency of encounters, if applicable). Frequency and type of unfair treatment, such as harassment or bribes, impact psychological well-being and business stability.

3.7. Ethical consideration

This research prioritizes ethical considerations by obtaining informed consent, ensuring participant confidentiality, and respecting cultural norms. Transparency and communication will be maintained, and participants will have the right to withdraw without repercussions. Ethical approval will be sought from relevant review boards to align with standards and guidelines,

ultimately aiming to contribute valuable insights to the understanding of street vending and food security in Addis Ababa.

3.9. Limitations of the study

The study used random sampling within selected prominent streets and roundabouts in Kolfe Keraniyo sub-city, Addis Ababa. While this approach aims to ensure representativeness, it is constrained by the inability to account for vendors operating in less visible or informal locations. This may result in an incomplete representation of the entire street vending population in the city.

The cross-sectional design captures data at a single point in time, limiting the ability to observe changes or trends in food security status over time. This design does not allow for the examination of causal relationships or the impact of interventions on food security among street vendors.

The reliance on self-reported data through structured questionnaires may introduce biases, such as social desirability bias or recall bias. Street vendors might unreported or misreport their food insecurity experiences or coping strategies due to the sensitive nature of the questions.

The study faced constraints related to limited time and financial resources, which may have affected the sample size and scope of data collection. Adjustments to the margin of error in sample size calculations were made to balance the need for precision with practical limitations.

Chapter Four: Results and Discussions

4.1. Introduction

In this thesis chapter, the study's major findings are presented, narrated, discussed, and organized into several sub-sections. The chapter begins by describing the socio-demographic and socio-economic characteristics of the respondents. It then explores the various components of different types of street vendors and assesses their food security status using multiple measurement scales. Specifically, the food security status of the street vendors is analyzed through the Household Food Insecurity Access Scale (HFIAS), Coping Strategy Index (CSI), Food Consumption Score (FCS), and Dietary Diversity Score (DDS). These analyses and this study provide a wide-ranging understanding of the food security status of street vendors and the impact of street vending on their food security status in Addis Ababa, Ethiopia, in particular, Kolfe Keraniyo sub-city. The regression analysis further examines the effects of independent variables on the dependent variables related to food security. The results then presented discuss the findings compared to the existing literature by highlighting correlations and divergences.

4.2. Descriptive Analysis

4.2.1 Socio-demographic and Economic Characteristics of the Respondents

This sub-section presents the descriptive results that show the demographic and socio-economic characteristics of street vendors, including gender, age, educational status, birthplace, marital status, Co-residents, housing situation, rent prices, income from street vending, years of experience, working hours per day or week, and food expenditure. These factors are analyzed across four types of street vending that are categorized as the major ones found in the Kolfe Keranyio area clothes and shoe merchandize, food and drinks vending, shoe-shining and service

vending, and the rest are categorized under ‘other’; assess their impact on the food security status of the vendors.

Table 4.1: Demographic characteristics of respondents

Variables	cloth and shoe	Food vending	Shoe shinning a	Others	P value
Gender (%)					0.000
Male	72.97	26.14	89.29	44.19	
Female	27.03	73.86	10.71	55.81	
Age (mean)	30.16	30.55	23.96	29.58	0.096
Education (mean)	8.16	8.79	7.18	7.6	0.240
Birthplace (%)					0.300
Addis Ababa	5.41	7.95	14.29	4.65	
Amhar	16.22	18.18	3.57	13.95	
SNNPR	51.35	53.41	67.86	46.51	
Oromia	16.22	12.50	14.29	27.91	
Tigray	10.81	7.95	0.00	6.98	
Marital status (%)					0.096
Single	51.35	42.05	85.71	46.15	
Married	43.24	43.18	3.57	41.86	
Others	5.41	14.77	10.71	11.63	
Why migration					0.002
For work	70.27	40.91	67.86	48.84	
Better opportun	13.51	11.36	21.43	25.58	
Came with fam	2.50	22.73	3.54	16.28	
Other	13.51	25.00	7.14	9.30	

According to the result shown in Table 4.1 above, the socio-demographic characteristics of street vendors reveal significant variations across different types of street vending activities. Gender distribution among the participants shows a marked difference, with Shoe-shining being predominantly male (87.50%), compared to the other occupations, with Food and drink vending having the highest percentage of females (73.86%). The mean age of the street vendors is relatively consistent across all categories, with shoe shiners being the youngest group, having a mean age of 25.37 years, compared to the rest of the groups, whose average age is around 30

years. This shows that the street vending population in Kolfe Keranio is predominantly composed of young people, with the majority aged between 25-30 years. The educational attainment of the respondents is relatively low, with an average of 7-8 years of schooling.

When looking into the birthplace, it shows the presence of migration of the respondents to the capital city of Ethiopia which is Addis Ababa, the distribution across regions does not significantly differ among the groups ($p = 0.642$), although the Southern Nations, Nationalities, and Peoples' Region (SNNPR) is the most common origin for all groups, with percentages ranging from 51.28% to 59.38%. Marital status also differs significantly between the groups. "Shoe Shining" workers are predominantly single (81.25%), while other categories show a more balanced distribution between single and married individuals.

The Reasons for migration reveal that Cloth and Shoe workers most frequently migrated for work (70.27%). In comparison, shoe-shining workers also cited work as the primary reason (62.50%), but a significant portion (25.00%) cited better opportunities. The "Others" category shows a more diverse range of migration reasons, with work still being predominant (51.28%), followed by migration for family reasons (17.95%).

Table 4.2: Socio-economic characteristics of respondents

Variables	cloth and shoes	Food vending	Shoe shining a	Others	P value
With whom (%)					0.000
Friends	18.92	11.36	50.00	27.91	
Relatives	18.92	22.73	21.43	20.93	
Alone	16.22	17.05	28.57	11.63	
Spouse/family	45.95	48.86	0.00	39.53	
Co-residents (mean)	2.8	3.2	2.6	3.4	0.384
Housing (%)					0.563
Private	2.70	9.09	7.14	11.63	
Rent	86.49	73.86	85.71	76.74	

Kebele's	10.81	17.05	7.14	11.63	
Rent price (mean)	3,667.43	2,607.37	2,517.86	2,756.36	0.000
Income SV (mean)	15872.9	13158.2	11692.1	10447.6	0.000
Food expenditure (mean)	7262.1	6141.5	7132.1	5962.8	0.085

The socio-economic characteristics of street vendors reveal interesting patterns. Table 4.2 provides a comparison of variables. Regarding the living arrangements of street vendors ‘with whom, Cloth and Shoe and Food and drink Vendors predominantly live with their spouse/family (45.95% and 48.86%, respectively). However, Shoe Shining respondents show a significantly different pattern, with half (50.00%) living with friends, and only 6.25% living with spouse/family. The "Others" category has a more mixed distribution, but a notable percentage also live with friends (25.64%). The mean Co-residents is similar across all groups, having an average of 3 people living with them.

Regarding the housing situation of the respondents, the majority across all groups live in rented accommodations, with "Cloth and Shoe" workers having the highest percentage (86.49%). The rent prices differ significantly, with "Cloth and Shoe" workers paying the highest average rent (3,667.43), compared to other groups, with "Shoe Shining" workers paying a lower average rent (2,722.86). Income earned from street vending shows a notable disparity, with "Cloth and Shoe" workers earning the highest average monthly income (15,872.9), followed by "Food Vending" (13,158.2). "Shoe Shining" and "Others" have lower average incomes, with the "Others" category earning the least (10,237.6). Food expenditure of the street vendors is relatively high across all categories, with "Cloth and Shoe" workers spending the most (7,262.1) on average.

4.2.2. Components of Street Vending

Table 4.3: Street vending-related questions

Variables	cloth and shoe	Food vending	Shoe shining a	Others	P value
Kind (%)					0.002
Mobile	59.46	25.00	28.57	44.19	
Stationary	40.54	75.00	71.43	55.81	
Experience (mean)	7.28	6.06	4.70	6.31	0.017
Hours_day (mean)	9.45	10.60	10.92	9.55	0.022
Days_week (mean)	6.54	6.47	6.39	6.37	0.086
Ini_cap (mean)	5,870.27	3,611.59	2,421.96	4,450.51	0.109
Time					0.000
Morning	51.35	94.32	100	86.05	
Afternoon	48.65	5.68	0.00	13.95	
Choice of SV (%)					0.555
Income potential	45.95	43.18	35.71	32.56	
Low start-up cost	10.81	27.27	25.00	30.23	
Lack of employment	21.62	15.91	25.00	16.28	
Others	21.62	13.64	14.29	20.93	
Unfair Treatment (%)					0.007
Never	8.11	43.18	32.14	27.91	
Occasionally	29.73	26.14	28.57	23.26	
Frequently	62.16	30.68	39.29	48.84	

Table 4.3 presents the components, natures of street vending, and characteristics related to street vending activities, which highlights significant differences in several areas. A majority of "Cloth and Shoe" workers (59.46%) are mobile, whereas most "Food Vending" and "Shoe Shining" workers are stationary (75.00% and 68.75%, respectively). The "Others" group is more balanced but leans slightly towards stationary work (56.41%). The mean years of experience also vary, with "Cloth and Shoe" workers having the most experience (7.28 years) and "Shoe Shining" workers having the least (4.50 years), a statistically significant difference ($p = 0.005$). The average working hours per day are relatively high across all groups, with "Food Vending" and "Shoe Shining" workers putting in the most hours (10.60 and 10.46 hours, respectively). The

number of working days per week is consistently around six and a half across all groups, with no significant differences observed.

The initial capital required for starting work differs among the groups, with "Cloth and Shoe" workers investing the most on average (5,870.27), while "Shoe Shining" workers start with significantly less (2,421.96), though this difference is not statistically significant ($p = 0.109$). The time of day when work is conducted also varies significantly. The majority of "Food Vending" and "Shoe Shining" workers operate in the morning (94.32% and 96.88%, respectively), while "Cloth and Shoe" and "Others" have a more even split between morning and afternoon work. Regarding the choice of street vending (SV), the most common reason across all groups is income potential, especially among "Cloth and Shoe" workers (45.95%), with other factors like flexibility, low start-up costs, and lack of employment opportunities being less influential and showing no significant differences ($p = 0.679$). However, there is a significant difference in experiences of unfair treatment, with "Cloth and Shoe" workers reporting the highest frequency of frequent unfair treatment (62.16%), while "Food Vending" workers reporting the least (30.68%).

4.2.3 Food Security Status of Street Vendors

The Household Food Insecurity Access Scale (HFIAS) is particularly relevant to studies involving vulnerable populations, such as street vendors, because it captures the nuances of food insecurity that arise from being on a daily wage with irregular incomes that expose them to economic instability. Using the HFIAS will provide the current food security status of the street vendors and infer the factors that will influence the food security status of street vendors found in the Kolfe Keraniyo sub-city of Addis Ababa, Ethiopia, where the tool is widely adopted to evaluate food insecurity in similar contexts.

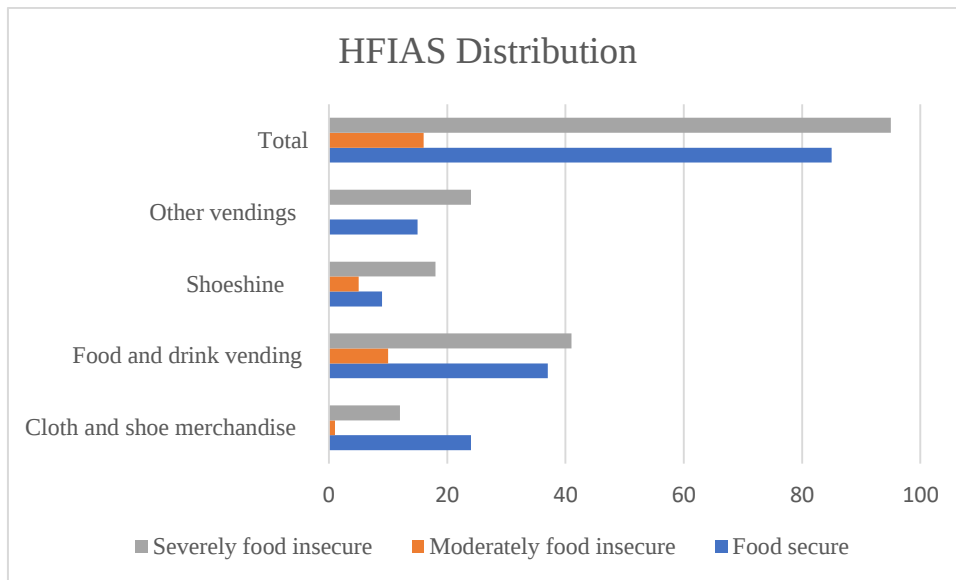


Figure 4.1: Household food insecurity access scale distribution across types of street vending

The above graph illustrates the distribution of respondents across the types of street vending with different levels of food security as measured by the HFIAS. This finding is categorized into "Severely Food Insecure," "Moderately Food Insecure," and "Food Secure."

The largest portion of respondents falls into the "Severely Food Insecure" category, indicating that the majority of the respondents engaged in street vending activities in Kolfe Keraniyo face severe challenges in accessing adequate food. When comparing the different types of street vending within the Kolfe Keraniyo sub-city, food and drink vendors and shoeshine vendors have the highest levels of severe food insecurity, indicating significant vulnerability in these groups. In contrast, cloth and shoe merchandise vendors show a larger proportion of food-secured households, suggesting relatively better food security in this category. Other vending types exhibit a mix of both food-secured and severely food-insecure households, reflecting moderate variability.

The Food Consumption Score (FCS) was developed by the World Food Programme (WFP) and is widely used in food security assessments to evaluate dietary diversity and food frequency. It

helps categorize households into different food security levels "Acceptable," "Borderline," and "Poor" based on their eating habits over a 7-days by assigning a weighted score to each food group based on its nutritional importance and the frequency of consumption (though only "Acceptable" and "Borderline" are presented in this graph). The total score reflects the overall food consumption pattern and quality. This tool is highly relevant to the study conducted in the Kolfe Keraniyo sub-city of Addis Ababa, as it provides an outlook of the food security status of street vendors by identifying those at risk of nutritional deficiencies.

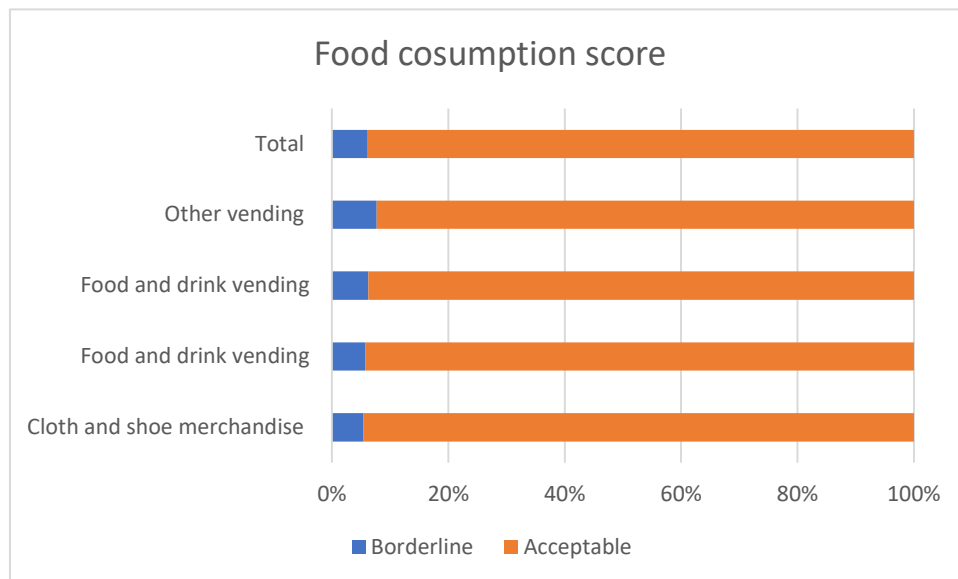


Figure 1.2: food consumption score level across the types of street vending

The study's findings indicate as shown in the above graph, that the majority of respondents across the different types of street vending fall within the "Acceptable" category suggesting that most street vendors have diets that are sufficiently diverse and nutritionally adequate. Their Food Consumption Scores (FCS) are typically above the threshold that signifies stable food access, with regular consumption of a wide range of food groups, including staples, proteins, vegetables, and fats. This indicates that their dietary habits meet the minimum requirements for maintaining health and well-being.

However, a smaller portion of respondents across the various street vending categories fall into the "Borderline" category. These individuals have a diet that, while somewhat varied, lacks consistent frequency and diversity in essential food groups. Their FCS falls within a middle range, placing them at risk of food insecurity and potential nutritional deficiencies if their situation does not improve. This suggests that while they may have access to food, it may not always provide the necessary variety and frequency to ensure optimal nutrition.

The Coping Strategy Index (CSI) is measured by recalling over 30 days how households adapt to food insecurity by evaluating the frequency and severity of coping behaviors, such as reducing meal sizes, skipping meals, or relying on less preferred foods. It is calculated by assigning weights to these strategies based on their severity and frequency, and then summing them to produce a total score. This score classifies households into different levels of food insecurity low, moderate, high, and severe across the types of street vending. In the Kolfe Keraniyo sub-city of Addis Ababa, the CSI is crucial for understanding how street vendors cope with food shortages, offering insights into the effectiveness of their strategies.

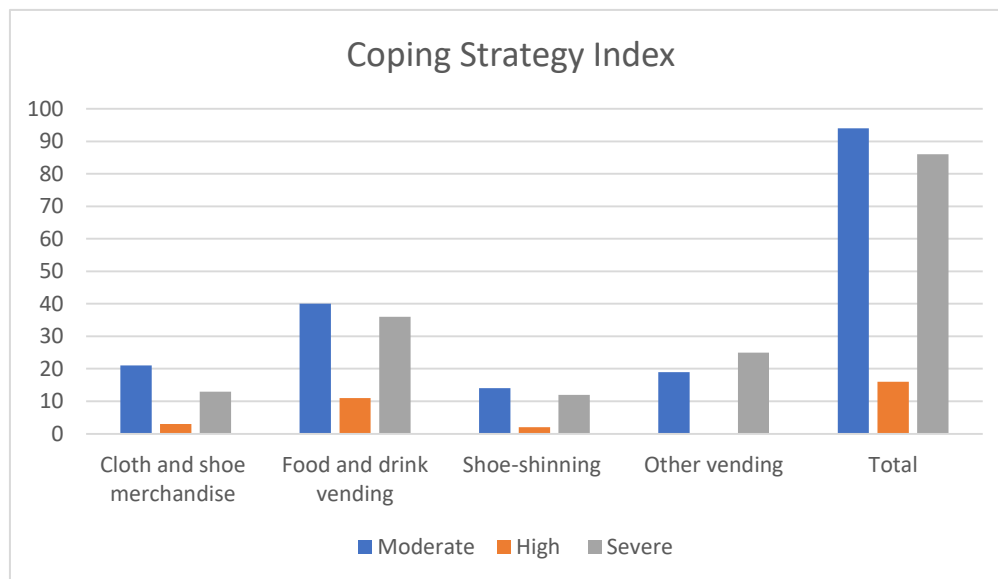


Figure 4.3: levels of coping strategy index across types of street vending

The bar chart illustrates the Coping Strategy Index across different types of street vendors, highlighting their levels of vulnerability. Three levels of coping strategy are presented in this result Moderate, High, and Severe. This reflects how vendors rely on various coping strategies to manage food insecurity and financial stress.

Regarding the coping strategy distribution across the types of street vending, food and drink vending stands out with a significant portion of vendors falling into the Moderate category, suggesting they are using some coping strategies but are not in critical distress. However, this group also shows several vendors falling in the Severe category, indicating that many are facing extreme difficulties and relying on more desperate measures to survive.

Cloth and Shoe Merchandise vendors primarily fall within the Moderate category as well, with fewer in the Severe range, signifying that while they experience some level of stress, it is not as intense as in the other vendors. Shoe-Shining and Other Vending show a more balanced split between Moderate and Severe, with very few vendors in the High coping category, which represents a moderate to high level of stress but not extreme distress.

The Dietary Diversity Score (DDS), developed by the Food and Agriculture Organization (FAO), measures the variety of food groups consumed over a 24-hour recall period. It is recorded by listing and counting the number of distinct food groups consumed, such as cereals, legumes, vegetables, fruits, meat, and dairy. This score is used to classify diets like Low Diversity, Medium Diversity, or High Diversity, reflecting the range of food variety. Incorporating DDS in addition to the Food Consumption Score (FCS) provides a supplementary view of dietary quality. While the FCS evaluates both the frequency and nutritional value of foods, the DDS specifically highlights dietary diversity, offering deeper insights into nutritional adequacy and food security.

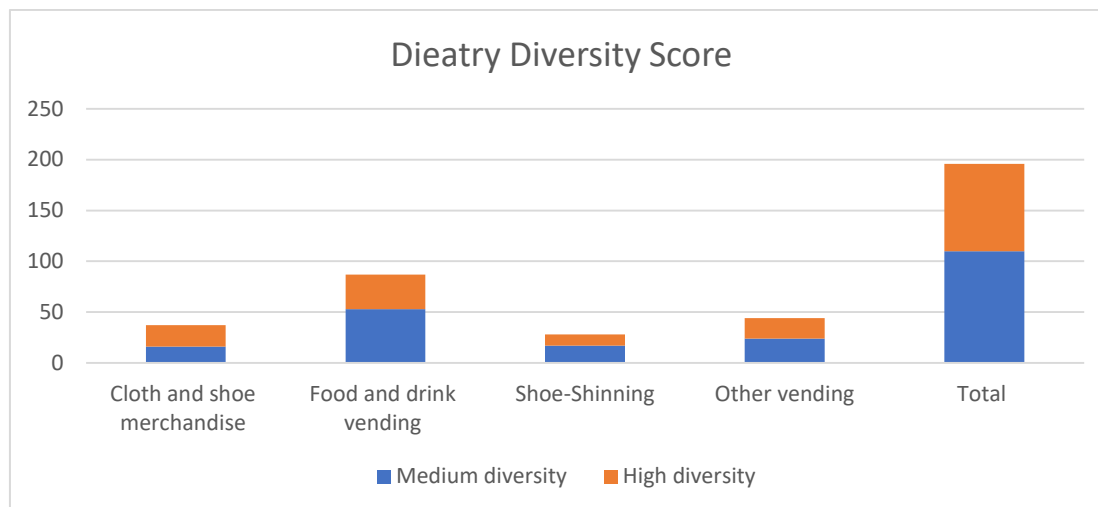


Figure 4.4: the dietary diversity score of vendors across the types of street vending

The graph distinguishes between two categories of dietary diversity: medium diversity and high diversity. The results show that food and drink vendors have the highest dietary diversity overall, with a significant portion in the high diversity category. In contrast, cloth and shoe merchandise and shoe-shining vendors exhibit lower dietary diversity, with the majority falling into the medium diversity range. The other vending category has a more balanced distribution of medium and high dietary diversity. Overall, a significant number of them achieve relatively high dietary diversity.

4.2.4. Interconnections Among Food Security Indicators

In addition to the descriptive and regression analyses, this research will also highlight the correlations among the four key food security indicators: The Household Food Insecurity Access Scale (HFIAS), Food Consumption Score (FCS), Dietary Diversity Score (DDS), and Coping Strategies Index (CSI). These indicators provide a multidimensional view of the food security status of street vendors in Kolfe Keraniyo sub-city, Addis Ababa. Below, we discuss the key findings in light of urban food security.

Table 4.4: Correlation analysis and predictive outcomes of street vending, food expenditure, income, and food security indicators

	<i>Type</i>	<i>HFIASI</i>	<i>FCS</i>	<i>DDS</i>	<i>CSI</i>
<i>Type</i>	1.0000				
<i>HFIASI</i>	0.1742	1.0000			
<i>FCS</i>	-0.0264	-0.0664	1.0000		
<i>DDS</i>	-0.0333	-0.4528	0.2234	1.0000	
<i>CSI</i>	0.1292	0.5514	-0.0742	-0.4415	1.0000

HFIAS and CSI, the correlation coefficient between HFIAS and CSI is 0.5514, indicating a strong positive relationship. This suggests that households experiencing higher levels of food insecurity (as measured by HFIAS) also report severe coping strategies, reflecting a reliance on different coping mechanisms to manage food insecurity. This finding aligns with studies on urban food security that highlight the vulnerability of low-income households to food access challenges, particularly in informal employment settings (Crush & Frayne, 2011).

HFIAS and DDS, the negative correlation between HFIAS and DDS (-0.4528) indicates that households with higher food insecurity tend to have lower dietary diversity. Research on urban food security has consistently shown that food-insecure households often compromise dietary diversity, favoring cheaper and less nutritious foods to stretch limited resources (Maxwell D, 2008).

DDS and CSI, the correlation between DDS and CSI (-0.4415) reveals that households employing severe coping strategies often have less diverse diets. This finding underscores the trade-offs faced by food-insecure households, who prioritize caloric sufficiency over dietary

quality when resources are constrained. Urban food security literature highlights this as a common adaptive strategy among vulnerable populations (Frayne et al., 2010).

HFIAS and FCS, the weak negative correlation between HFIAS and FCS (-0.0664) suggests a limited association between food insecurity and food consumption quality. While this result may appear counterintuitive, it reflects the complexity of measuring food security using different indicators. FCS emphasizes dietary frequency and food groups, which may not fully capture the challenges of food access faced by urban street vendors. Similar findings have been documented in urban food security studies (Coates et al., 2007a).

FCS and DDS, the positive correlation between FCS and DDS (0.2234) suggests that households with higher dietary diversity also score better on food consumption metrics. This finding aligns with research showing that these indicators complement each other in assessing food security outcomes (Faber et al., 2009).

4.3. Regression Analysis

4.3.1. Determinants of Household Food Insecurity Access Scale Among Street Vendors

The table below shows the relationship between the Household Food Insecurity Access Scale (HFIAS) and various demographic, socio-economic, and other variables. The analysis shows that demographic features of the street vendors, such as gender, age, and education, are not statistically significantly correlated with household food insecurity. For instance, the p-values for gender ($p=0.114$) and education ($p=0.441$) indicate no strong association with food insecurity. Similarly, marital status, whether married ($p=0.228$) or other ($p=0.205$), does not appear to impact household food security significantly. This suggests that food insecurity is not strongly linked to these basic demographic factors in the context of street vending.

Among the socio-economic variables, income from street vending approaches significance ($p=0.073$), highlighting that income may play a crucial but not definitive role in food security outcomes. Experience in street vending, however, emerges as a significant factor ($p=0.012$ for Outcome 2, $p=0.009$ for Outcome 3), indicating that vendors with more experience may either have developed coping strategies or face different levels of vulnerability to food insecurity.

The living arrangements also present an interesting dynamic those living with relatives have a marginally significant association with food insecurity ($p=0.076$ in Outcome 2), suggesting that living arrangements can influence food access this is due to the respondents living with relatives are single and young which will have financial support, housing or/and food expenses from their relatives which will minimize the cost of providing for one or more of the basic necessities for themselves. However, the rest of the living arrangement types, such as living alone ($p=0.702$) or with one's own family ($p=0.911$), do not show any significant correlation, underscoring the nuanced impact of living conditions.

The time of street vendors starts their vending in the morning, afternoon, and evening. Among those street vendors who begin their work in the afternoon stand out as statistically significant in predicting their food insecurity ($p=0.016$ for Outcome 2, $p=0.035$ for Outcome 3). This suggests that vendors who primarily work in the afternoon are more prone to food insecurity, potentially due to fluctuating customer patterns that result in the afternoon, when it is considered a working hour for most, which will cause time-related factors affecting their earnings. On the other hand, the type of street vending they engage in, for instance, food and drink vending or shoe shining and working hours (days per week and hours per day) do not strongly correlate with food insecurity, indicating that the nature and intensity of street vending alone may not directly determine food security status.

Migration-related factors, such as birthplace (Amhara, SNNPR, Oromia, or other regions) and the reasons for their migration to the capital city of Ethiopia (e.g., seeking better opportunities or coming with family), do not show significant correlations with food insecurity. This suggests that regardless of their origin or cause for their migration, street vendors in the area face similar food security challenges. However, other reasons for migration, such as economic distress ($p=0.084$ for Outcome 3), approach significance, explaining the possible link between migration and food insecurity.

Interestingly, street vendors experiencing unfair treatment by governmental bodies while working on the streets, whether experienced occasionally or frequently, do not significantly correlate with the household food insecurity access scale. This indicates that while vendors may feel unjustly treated, this perception does not necessarily translate into higher levels of food insecurity, at least in a statistically significant way.

Table 4.5: The regression analysis of the household food insecurity access scale with independent variables

Variables	P value	Outcome 2 dy/dx	Outcome 3 dy/dx	Outcome 4 dy/dx
Gender (female)	0.114	0.114 (-.125)	0.150 (.0816)	0.088 (.0430)
Age	0.235	0.229 (-.005)	0.242 (.003)	0.241 (.002)
Education	0.441	0.440 (.007)	0.450 (-.004)	0.436 (-.002)
Marital Status				
Married	0.228	0.244 (.132)	0.268 (-.087)	0.227 (-.045)
Others	0.205	0.211 (.117)	0.247 (-.075)	0.192 (-.041)
Birthplace				
Amhara	0.207	0.226 (-.201)	0.266 (.156)	0.178 (.045)
SNNPR	0.189	0.212 (-.217)	0.257 (.165)	0.109 (.052)
Oromia	0.805	0.803 (.0403)	0.801 (-.036)	0.819 (-.004)
Others	0.660	0.661 (-.092)	0.663 (.078)	0.660 (.014)

Why migrate				
Better opportunities	0.602	0.592 (-.058)	0.553 (.036)	0.650 (.021)
Came with family or relatives	0.516	0.522 (.058)	0.541 (-.042)	0.472 (-.015)
Other reasons	0.129	0.112 (-.112)	0.084 (.063)	0.193 (.049)
Co-residents *	0.047	0.047 (-.045)	0.076 (.029)	0.043 (.016)
(Living arrangements) *				
Relatives *	0.076	0.090 (.151)	0.110 (-.109)	0.111 (-.041)
Alone	0.702	0.698 (-.036)	0.694 (.019)	0.706 (.017)
Own family	0.911	0.910 (-.013)	0.909 (.007)	0.912 (.005)
Income earned from SV *	0.075	0.073 (4.81e-06)	0.078 (-3.09e-06)	0.111 (-1.72e-06)
Housing				
Rent	0.855	0.857 (-.032)	0.863 (.021)	0.855 (.010)
Kebele's	0.953	0.953 (-.006)	0.953 (.004)	0.953 (.002)
Rent Price	0.843	0.843 (-3.01e-06)	0.844 (1.94e-06)	0.843 (1.08e-06)
Experience *	0.012	0.009 (.016)	0.015 (-.010)	0.012 (-.005)
Work Hours				
Days per week	0.963	0.963 (.002)	0.963 (-.001)	0.963 (.006)
Hours per day	0.219	0.210 (-.018)	0.239 (.011)	0.219 (-.000)
Type of Work				
Food and drink vending	0.678	0.683 (-.041)	0.690 (.030)	0.678 (.010)
Shoe shining and service	0.808	0.083 (-.175)	0.149 (.104)	0.080 (.070)
Other types of vending	0.364	0.375 (-.087)	0.410 (.061)	0.364 (.026)
Choice of Vending				
Low start-up cost	0.418	0.411 (.048)	0.405 (-.029)	0.418 (-.018)
Lack of employment	0.355	0.347 (.066)	0.351 (-.042)	0.355 (-.024)
Other reasons	0.894	0.894 (.010)	0.896 (-.006)	0.894 (-.004)
Food Expenditure	0.523	0.526 (4.99e-06)	0.538 (-3.20e-06)	0.523 (-1.78e-06)
Time (afternoon) *	0.016	0.022 (.252)	0.035 (-.204)	0.016 (-.048)
Perceived Unfairness				
Occasionally	0.717	0.721	0.727	0.717

		(-.034)	(.026)	(.007)
Frequently	0.157	0.178 (-.132)	0.239 (.089)	0.157 (.042)

4.3.2. Drivers of Coping Strategy Adoption

In analyzing the factors associated with the Coping Strategy Index (CSI), several variables show notable significance in influencing coping behaviors among street vendors. The regression results that are presented in Table 4.6 demonstrate that marital status significantly impacted the CSI score and the inflated model. For instance, married individuals have a CSI score of 0.711 with a highly significant negative impact of -1.656 ($p < 0.01$) compared to the singles, suggesting that being married decreases the likelihood of severe coping, likely due to shared contributions or household resources. Additionally, the divorcees and widows referred to as the other category of marital status show a similar trend, with a significant negative inflation value of -0.500 ($p < 0.001$).

Regarding the type of vending, different categories show varying impacts, though they are not statistically significant. For instance, food and drink vendors, compared to clothing and shoe merchandise, have a positive relationship with CSI (0.0854) but an insignificant inflation score. Other types of vendors show minor variances in CSI scores and inflation values, such as shoe-shining and service vendors, which have a positive CSI score of 0.207 and a negative inflation score (-0.0927), yet these results are not statistically significant.

Income from street vending (Income_SV) is negatively associated with the CSI score (-1.49e-05), suggesting that higher income reduces the need for coping mechanisms, but it has a significant positive inflation value (6.10e-05), which could indicate that there is still a need to rely on certain coping strategies due to the instability of their income or economic shocks. Moreover, experience has a noteworthy effect on the CSI, with a negative score (-0.0144) and a

significant positive inflation value (0.176), suggesting that while experience may reduce reliance on coping mechanisms, it can also lead to an increase in certain coping strategies depending on context. Hours worked per day also have a significant positive association with the CSI score (0.0335) and a highly significant negative inflation value (-0.312, $p < 0.001$), indicating that longer working hours contribute to higher stress levels but also result in fewer severe coping strategies.

Lastly, the constant term for both models is positive, with a CSI score of 3.458 and a significant inflation score of 0.657, implying that other unmeasured factors could contribute to the overall coping behavior of vendors.

Table 4.6: The regression analysis of the coping strategy index with independent variables

Variables	CSI Score	Inflate
Gender (female)	0.0133	-0.211
	(0.166)	(0.493)
Age	-0.0147	-0.0500
	(0.0125)	(0.0337)
Education	0.0262	0.00192
	(0.0228)	(0.0650)
Marital Status (married) **	0.0223	-1.656
	(0.313)	(0.823)
Others *	0.711	-0.500
	(0.268)	(0.787)
Type (food and drink vending)	0.0854	0.188
	(0.223)	(0.559)
Shoe shinning and service	0.207	-0.0927
	(0.268)	(0.649)
Other vending	0.168	-0.812
	(0.238)	(0.681)
Income_SV *	-1.49e-05	6.10e-05
	(8.70e-06)	(2.05e-05)
Co-residents	0.0231	0.0963

	(0.0542)	(0.141)
Experience **	-0.0144	0.176
	(0.0252)	(0.0518)
Hours per Day *	0.0335	-0.312
	(0.0351)	(0.0917)
With whom	0.114	0.435
	(0.121)	(0.329)
Alpha ***		-0.457
		(0.123)
Constant ***	3.458	0.657
	(0.655)	(1.745)

4.3.3. Key Predictors of Dietary Diversity and Food Consumption Patterns

The analysis of the Dietary Diversity Score (DDS) among street vendors in Addis Ababa's Kolfe Keraniyo sub-city provides insights into the factors influencing dietary diversity within this population. Marital status shows some influence, particularly in the other marital status category, which has a significant negative coefficient of -0.199 ($p < 0.05$). This suggests that individuals who are divorced or widowed tend to have lower dietary diversity compared to singles and married vendors, potentially due to economic or social factors associated with their marital situation. Days worked per week and food expenditure both show positive but non-significant associations with DDS (0.0409 and 1.09×10^{-5} , respectively), suggesting that these factors do not play a major role in determining dietary diversity in this context. Overall, the analysis reveals that while some factors like marital status and working hours have modest effects on dietary diversity, most of the variables examined do not significantly influence DDS among street vendors in this area. This suggests that dietary diversity is likely influenced by a complex interplay of factors not fully captured in this model, highlighting the need for more research to be

conducted and aiming for more targeted interventions to improve food diversity in this population.

Table 5: The regression analysis of dietary diversity score with other independent variables

Variables	DDST (p-value)
Gender (female)	0.54
Age	0.87
Education	0.78
Marital Status (married)	0.93
Other	0.12
Birthplace (Amhara)	0.67
SNNPR	0.84
Oromia	0.92
Other	0.81
With whom (better opportunity)	0.78
Came with family or relatives	0.91
Others	0.55
Type (food and drink vending)	0.65
Shoe shining and service	0.83
Others	0.85
Income _SV	0.51
Co-resident	0.82
Experience	0.29
Hours per Day	0.13
Housing	0.97
Rent Price	0.75
Days per Week	0.28
Food Expenditure	0.32
Time (Afternoon)	0.66
UnfairT (occasionally)	0.99
Frequently	0.31
Lnalpha	-55.63
Constant ***	1.783

In the regression analysis of the food consumption score (FCS) and its determinants, several factors emerged as significant predictors, while others did not have a statistically notable impact. Regarding the gender of the street vendor being female is associated with a decrease significantly in the FCS score as indicated by the negative coefficient (-3.904) and a standard error of 2.298, suggesting that women are more likely to have lower food consumption scores. Age is positively

correlated with FCS, with a coefficient of 0.526 and a standard error of 0.305, suggesting that older individuals tend to have higher food consumption scores. This relationship is also statistically significant. In terms of the educational status of street vendors, the results show that the coefficient is negative but not statistically significant, meaning that education level does not significantly impact the FCS in this context. Interestingly, marital status, particularly being married, shows a substantial negative effect on FCS (-18.16, standard error of 3.018), though it lacks statistical significance. Other marital categories also exhibit a negative relationship, with "Others" that is divorced and widowed showing a coefficient of -5.568 and a standard error of 5.323, but this is not statistically significant either.

The birthplace of the vendors indicates individuals from the Amhara region experience a substantial reduction in FCS (-8.608), but this effect is not statistically significant due to the high standard error (5.542). Similarly, respondents from SNNPR and Oromia show negative coefficients of -1.682 and -5.223, respectively, but these values are not statistically significant. On the other hand, the living arrangement shows that street vendors living with family or relatives have a positive association with FCS, though the effect (3.576) is not statistically significant.

The Income earned by street vending plays a critical role in improving food consumption, with a coefficient of 0.000476 and statistical significance. In contrast, the rent price street vendors pay does not significantly impact FCS, and experience in street vending shows a negative but statistically significant effect (-1.039), suggesting that greater experience might be associated with lower FCS, potentially due to longer exposure to hardship or due to the coping mechanisms they use.

The number of days worked per week positively affects FCS, although it is not statistically significant, while hours worked per day negatively impact FCS (-1.378, standard error 0.796), indicating that longer work hours may contribute to worse food consumption patterns.

Different types of vending also play a role, with food and drink vending, shoe shining, and other services showing positive but not statistically significant coefficients. The reason for the choice of vending - motivated by low start-up costs is positively correlated with FCS (8.885, *), suggesting that those who choose the type of street vending for low start-up reasons tend to have better food consumption scores, while food expenditure is negatively associated with FCS (-0.00106, **), indicating that higher food expenditure may not always lead to better food security outcomes, potentially reflecting inefficiencies in spending on variety of food rather focus on the staple foods, especially among low-income households. According to (Coates et al., 2007b) Households facing severe food insecurity often prioritize quantity over quality, which may explain the negative association between food expenditure and FCS. This suggests that simply increasing food expenditure is insufficient; households need better access to affordable, nutritious food options.

Lastly, the time street vendors begin their work (afternoon) negatively impacts FCS (-6.426), and experiences of unfair treatment, experiencing it occasionally show a negative effect (-2.721), though neither is statistically significant.

Table 4.8: The regression analysis of the Food consumption score with independent variables

Variables	FCS Score	Standard Error
Gender (female) *	-3.904	2.298
Age *	0.526	0.305
Education	-0.110	0.437

Marital Status (married)	-18.16	3.018
Others	-5.568	5.323
Birthplace (Amhara)	-8.608	5.542
SNNPR	-1.682	3.346
Oromia	-5.223	4.356
Co-residents	1.751	1.482
With whom (better opportunities)	-0.987	3.052
Came with family or relatives	3.576	4.089
Others	14.88	3.018
Income_SV **	0.000476	0.000238
Rent Price	-0.000137	0.000542
Experience *	-1.039	0.538
Days per Week	2.435	1.577
Hours per Day *	-1.378	0.796
Type (food and drink vending)	5.137	3.806
Shoe shining and service	5.880	3.865
Others	4.268	3.238
Choice of V (low start-up cost) *	8.885	5.137
Lack of formal employment	-2.755	2.871
Others	-1.753	3.585
Initial Capital *	0.00102	0.000612
Food Expenditure **	-0.00106	0.000483
Time (afternoon)	-6.426	4.014
UnfairT (occasionally)	-2.721	2.194
Frequently	2.585	2.391
Constant	-6.061	10.92

4.4. Discussion of Major Findings

4.4.1. Socio-demographic and Economic Characterization

The socio-demographic and economic characteristics of street vendors in this study reveal important patterns that shape their food security status. The descriptive findings highlighted variations across gender, age, education, marital status, region of origin, and migration reasons,

as well as differences in income levels, living arrangements, and work experience. These initial results suggest that individual and household factors are deeply intertwined with vendors' economic activities and their ability to access food consistently. To further understand how these characteristics interact with food security outcomes, it is essential to examine existing literature that has explored similar dynamics of street vendors and other informal sector workers. Reviewing previous studies will help contextualize these findings and provide deeper insight into the social and economic determinants influencing food security among vulnerable urban populations.

4.4.2. Integrated Narrative of the Regression Analysis of Food Security Indicators

In the comprehensive regression analysis of the four primary food security indicators Household Food Insecurity Access Scale (HFIAS), Food Consumption Score (FCS), Coping Strategies Index (CSI), and Dietary Diversity Score (DDS) offers valuable insights into the complex factors shaping food security among street vendors in Kolfe Keraniyo, Addis Ababa. These findings reveal a nuanced understanding: food insecurity is not simply a matter of income or demographics rather the mix of results from an interplay of socio-economic, behavioral, and structural factors.

Foremost, income stability significantly influences food security outcomes almost in all of the food security indicators. Vendors with higher and more reliable income are less likely to experience food insecurity, as they can afford diverse foods and avoid coping strategies such as meal skipping. This aligns with broader research by (Jain and Zong, 2015), who note that “income security remains a crucial factor in ensuring food access among urban informal workers” (Jain & Zong, 2015). For instance, in this study, vendors who have a low earning compared to the other vendors were observed to resort frequently to reducing meal portions,

which reflects in their higher HFIAS scores. These vulnerabilities highlight the importance of economic empowerment initiatives, including support for micro-enterprises and access to credit, to improve food security. Similarly, among from this group of vendors women were shown to have lower food consumption scores. This finding is consistent with (Guha et al, 2021) suggesting women in developing countries, especially in informal sectors like street vending, often face greater vulnerability to food insecurity due to unequal access to resources, lower income levels, and gender-specific social constraints. This aligns with the negative coefficient observed for female street vendors and is statistically significant at this level, highlighting the gender disparity in food consumption.

Marital status emerges as another critical determinant for vendors' food security, vendors who are married or living with family tend to report better food security, potentially due to pooled resources and shared responsibilities. Conversely, single vendors or those categorized as 'others' tend to be more food insecure, echoing findings from (Falco & Visser, 2020), who observed that “household co-residence and social support networks significantly buffer food insecurity in urban informal settings” (Falco & Visser, 2020). This underscores the need for social safety nets targeted at vulnerable household structures. Interestingly, Age of the vendors shows a positively correlation in food consumption score with suggesting that older individuals tend to have higher food consumption scores. Although it is often assumed that younger street vendors might earn more due to their energy, mobility, or longer working capacity, which will results in higher food security the results of this study suggest otherwise. This finding can be linked to research suggesting that older individuals often have more experience, social capital, and established networks, which can improve their economic resilience (FAO, 2013). Older street vendors may have more stable customer bases and better strategies for managing food insecurity, aligning

with your findings. A study by (Raimundo et al., 2016) found that older informal workers often have more established livelihoods, leading to relatively better food security outcomes compared to younger workers.

The analysis also indicates that longer working hours have a dual effect. While extended hours can increase income, they may also lead to fatigue and less time allocated for food procurement, thereby exacerbating food insecurity or prompting reliance on cheap, less nutritious coping foods. This nuanced dynamic emphasizes that interventions should aim for balanced work schedules and support services, aligning with recommendations by (Crush and Frayne , 2011) that “work-life balance is essential for improving household food security among informal workers” (Crush & Frayne, 2011).

Regarding dietary diversity (FCS and DDS), the findings suggest that although many vendors maintain moderate diversity, still disparities exist. Some continue to consume a limited range of staple foods, risking micro-nutrient deficiencies. As (FAO, 2013) stresses, “dietary diversity is a critical component for tackling hidden hunger and ensuring adequate micro-nutrient intake” (FAO, 2013). The weak correlation between income and diet diversity in your study underpins the need for targeted nutrition interventions such as nutrition education and improved access to diverse foods to promote healthier diets regardless of income levels.

The analysis of the coping strategies (CSI) reveals that food-insecure vendors often adopt behavioral adaptations, which might have long-term health implications. For example, vendors often reduce meal size or frequency when resources are scarce, leading to weakened immune responses over time. This dynamic aligns with findings by (Maxwell et al., 2014), who state that

“coping mechanisms, while immediate remedies, can perpetuate a cycle of poor health and nutrition” (Maxwell et al., 2014). Addressing these coping behaviors requires social protection programs that alleviate immediate food insecurity, reducing the reliance on such detrimental mechanisms.

Furthermore, the complex interplay of these indicators signifies that improvements in one aspect of food security do not automatically translate into others. For instance, a vendor with adequate food consumption might still experience high food insecurity due to irregular access or frequent coping, indicating that multilevel interventions are necessary. This multidimensional perspective echoes the findings of (Faber et al., 2009), who emphasized that “comprehensive assessments capturing multiple indicators are essential for accurate diagnosis and effective intervention planning” (Faber et al., 2009).

While economic indicators such as income and expenditure are often foregrounded in discussions of food security among street vendors, the data suggest that underlying social and contextual factors may play vital roles, warranting deeper exploration. For instance, the motivation or reason for type of street vending whether driven by economic necessity or strategic choice emerges as influential; vendors motivated by low start-up costs or lack of alternatives may be more vulnerable, as indicated by the association between vending motives and dietary diversity scores. This highlights that resilience is not merely about income levels but also about business strategy and personal agency.

Furthermore, the years of experience in street vending reveals a paradox: vendors with more years in the trade tend to have lower food consumption scores, possibly reflecting cumulative

stress, market saturation, or burnout that diminishes their capacity to secure adequate food, even as familiarity with the trade grows which as discussed earlier shows high level of coping strategy used, this illustrates how long-term engagement may deepen vulnerabilities rather than mitigate them.

The social dimension also warrants attention. Vendors experiencing unfair treatment or discrimination by authorities, though statistically insignificant in this research results with food insecurity, it often receive less emphasis in policy discussions. Social marginalization can erode psychological resilience and limit access to support or protective resources, intensifying food insecurity (Takyi *et al.*,2023) emphasizing how social treatment influences livelihood stability.

Additionally, household dynamics such as residing with relatives may serve as informal safety nets. Vendors cohabiting with family members often share resources, which can buffer against shocks, yet this variable has not been fully explored in relation to food security outcomes.

Lastly, timing of vending activities appears to have practical implications. Vendors operating mainly in the afternoon face higher risks of food insecurity, possibly due to fluctuating customer patterns that influence daily earnings. This underscores the importance of understanding market dynamics and customer behavior factors that are often overlooked but profoundly affect income stability and food security.

Chapter Five: Conclusion

This study aimed to evaluate the food security situation of street vendors through a comprehensive analysis using four key indicators, the Household Food Insecurity Access Scale (HFIAS), Food Consumption Score (FCS), Coping Strategies Index (CSI), and Dietary Diversity Score (DDS). Together, these measures provided a multifaceted understanding of food security, consumption habits, and the socio-economic factors influencing street vendors' vulnerability to food insecurity.

The House Food Insecurity Access Scale results revealed that a significant proportion of street vendors face varying degrees of food insecurity. Many reported experiencing food access problems such as worrying about food shortages, reducing meal portions, and even going a full day without eating. This highlights the persistent vulnerability of street vendors to food insecurity, which is influenced by unstable income and limited access to resources.

The food Consumption pattern of the street vendor showed that most vendors consumed an adequate number of food groups, with the majority falling into the moderate consumption category. However, those in the low-consumption category remain at risk of poor nutrition, highlighting disparities in access to diverse food groups among different types of street vendor subgroups.

The Coping Strategy Index of the street vendors revealed that vendors regularly employ coping strategies to manage food shortages, such as reducing the quality or quantity of food consumed. Marital status (especially among those categorized as "other"), unfair treatment, and food expenditure were the only significant predictors, suggesting that these factors may exacerbate or mitigate the need to resort to coping mechanisms. However, most other socio-demographic

variables did not show significant effects, suggesting that while socio-economic factors do play a role, the relationship between vendor characteristics and food security outcomes is complex.

The Dietary Diversity Score provided insight into the dietary diversity of the vendors. While the majority managed to maintain moderate dietary diversity, those with lower scores are at a higher risk of nutrient deficiencies, which can further affect their overall health and productivity.

Across all the indices revealed in the regression analysis, only a few statistically significant predictors of food insecurity were found, particularly marital status (others), unfair treatment, and food expenditure. This suggests that while most individual characteristics, such as gender, age, or education, did not have a direct, significant impact, socio-economic conditions and experiences of discrimination or unfair treatment play critical roles in determining food security outcomes.

In conclusion, street vendors face substantial challenges in maintaining food security. While many show resilience through moderate food diversity and consumption. Improving vendor income, the social structures, and working conditions may help enhance food security in this population which needs for a targeted intervention that address the root causes of their food insecurity.

The findings of this study reinforce the critical role of street vending in the livelihoods of urban poor populations while underscoring the persistent challenges related to food security. Despite providing diverse food consumption options, the irregular income from street vending renders vendors vulnerable to food insecurity. The study contributes to ongoing discussions on informal economies and food security, offering insights into how this sector can be better supported through policy initiatives to improve the well-being of street vendors.

Implications and Policy Recommendations

Based on the findings of the analysis, several implications and policy recommendations can be drawn to address the food security challenges faced by street vendors:

Economic Support and Livelihood Improvement

Street vendors' vulnerability to food insecurity is strongly influenced by their unstable income and limited access to economic resources that could further help advance their work and livelihood. The results show that vendors often have to employ coping strategies to deal with food shortages, indicating the economic stress they face. Government and NGOs should create programs that provide financial assistance or micro-credit schemes targeted at street vendors. These could include low-interest loans, savings schemes, or insurance programs to mitigate economic risks. Additionally, Policymakers need to develop inclusive urban policies that formally recognize and integrate street vendors into city planning, and establish protective measures to ensure vendors' rights and minimize unfair treatment in public spaces.

The Ministry of Labor and Skills of the Federal Democratic Republic of Ethiopia should consider offering vocational training and resources in the sub-city of Kolfe Keraniyo Sub-city to enhance vendors' business skills, enabling them to diversify income sources and increase economic resilience and encourage collective action, such as forming vendor associations, to strengthen bargaining power and access to resources.

Governmental and non-governmental organizations around that area and beyond could organize health campaigns and nutrition education programs tailored to the needs of informal workers and overall, promoting access to affordable and nutritious food for street vendors, particularly for those experiencing dietary diversity challenges.

To further understand the dynamics of street vending and the informal sector linked with food security researchers and scholars should conduct longitudinal studies to explore the long-term impacts of street vending on food security and Investigate the intersectionality of gender, migration, and other socio-demographic factors to better understand the specific needs of vulnerable subgroups.

Addressing Inequality and Social Discrimination

Unfair treatment and discrimination were found to be slightly statistically insignificant predictors of food insecurity, except in coping strategy outcomes. Vendors who reported frequent discrimination were more likely to experience food insecurity. Policymakers should focus on promoting equality and fair treatment through legal protection and enforcement mechanisms. This could include the implementation of anti-discrimination laws for street vendors and providing legal assistance to ensure they can operate without harassment and provide a sidewalk dedicated for street vending like those found around Torhayloch in front of the Ethiopian Defense force. Public awareness campaigns could also be launched to reduce stigma and improve the social acceptance of street vending as a legitimate livelihood.

Nutrition and Food Security Programs

Implication: While most vendors had moderate food consumption and dietary diversity, there are still significant portions of the population at risk of malnutrition and poor dietary outcomes, as highlighted by the DDS and FCS results. Public health interventions should focus on improving access to diverse and nutritious food for street vendors. This can be done by creating food subsidy programs or providing direct food assistance. Additionally, nutrition education

campaigns targeting street vendors could be designed to raise awareness about the importance of consuming a balanced diet, even in economically constrained situations.

Targeted Support for Vulnerable Groups

Marital status and certain social conditions (such as being categorized as "other" in marital status) were linked to increased food insecurity risks, suggesting that specific subgroups of street vendors are more vulnerable than others. Policies should specifically target vulnerable groups, such as single mothers, widows, or divorced individuals who might face additional economic burdens. Social protection programs such as childcare support, food vouchers, or income supplementation could be developed to assist these subgroups.

Community-Based Initiatives and Local Partnerships

The study reveals a need for sustainable, community-driven solutions to food insecurity among street vendors. Governments and civil society organizations should foster partnerships with local businesses, farmers, and community groups to create food-sharing initiatives or urban gardens. These initiatives can help supply street vendors with affordable, fresh, and diverse foods, thus enhancing their food security.

References

- Abagissa, J. (2020). Street Businesses in Addis Ababa: Causes, Consequences and Administrative Interventions. In *Journal of Governance and Development* (Vol. 16).
- Adeosun, K. P., Greene, M., & Oosterveer, P. (2022). Informal ready-to-eat food vending: a social practice perspective on urban food provisioning in Nigeria. *Food Security*, 14(3), 763–780. <https://doi.org/10.1007/s12571-022-01257-0>
- Amare, M., Abay, K. A., Arndt, C., & Shiferaw, B. (2021). Youth Migration Decisions in Sub-Saharan Africa: Satellite-Based Empirical Evidence from Nigeria. *Population and Development Review*, 47(1), 151–179. <https://doi.org/10.1111/padr.12383>
- Assefa, T., Abebe, G., Lamoot, I., & Minten, B. (2016). Urban food retailing and food prices in Africa: the case of Addis Ababa, Ethiopia. *Journal of Agribusiness in Developing and Emerging Economies*, 6(2), 90–109. <https://doi.org/10.1108/JADEE-02-2015-0009>
- Ayerakwa, H. M. (2017). Urban households' engagement in agriculture: implications for household food security in Ghana's medium sized cities. *Geographical Research*, 55(2), 217–230. <https://doi.org/10.1111/1745-5871.12205>
- Bahru, B. A., Jebena, M. G., Birner, R., & Zeller, M. (2020). Impact of Ethiopia's productive safety net program on household food security and child nutrition: A marginal structural modeling approach. *SSM - Population Health*, 12. <https://doi.org/10.1016/j.ssmph.2020.100660>
- Béné, C., Steel, E., Luadia, B. K., & Gordon, A. (2009). Fish as the “bank in the water” - Evidence from chronic-poor communities in Congo. *Food Policy*, 34(1), 108 – 118. <https://doi.org/10.1016/j.foodpol.2008.07.001>
- Berhanu, E. (n.d.-a). STREET VENDING: MEANS OF LIVELIHOOD FOR THE URBAN POOR AND CHALLENGE FOR THE CITY ADMINISTRATION IN ETHIOPIA. In *Journal of Public Administration* (Vol. 19).
- Berhanu, E. (n.d.-b). STREET VENDING: MEANS OF LIVELIHOOD FOR THE URBAN POOR AND CHALLENGE FOR THE CITY ADMINISTRATION IN ETHIOPIA. In *Journal of Public Administration* (Vol. 19).
- Blekking, J., Waldman, K., & Evans, T. (2019). *Formal/Informal Employment and Urban Food Security in Sub-Saharan Africa*.
- Bikis, A., & Pandey, D. (2023). Squatter settlement and informal urbanization: causes and consequences. *Environmental Science and Pollution Research*, 30(9), 23276–23294. <https://doi.org/10.1007/s11356-022-23778-z>
- Birhane, T., Shiferaw, S., Hagos, S., & Mohindra, K. S. (2014a). Urban food insecurity in the context of high food prices: A community based cross sectional study in Addis Ababa, Ethiopia. *BMC Public Health*, 14(1). <https://doi.org/10.1186/1471-2458-14-680>

- Birhane, T., Shiferaw, S., Hagos, S., & Mohindra, K. S. (2014b). Urban food insecurity in the context of high food prices: A community based cross sectional study in Addis Ababa, Ethiopia. *BMC Public Health*, 14(1). <https://doi.org/10.1186/1471-2458-14-680>
- Blanck, M., Mirulla, R., & Rosales, M. (2014). The way forward for better food safety and nutrition: An online discussion. In *Street Food: Culture, Economy, Health and Governance*. Taylor and Francis. <https://doi.org/10.4324/9781315776255>
- Bromley, R., & Wilson, T. D. (2018). Introduction: The Urban Informal Economy Revisited. In *Latin American Perspectives* (Vol. 45, Issue 1, pp. 4–23). SAGE Publications Ltd. <https://doi.org/10.1177/0094582X17736043>
- Chen, M. A., & Alter, M. (2012). *The Informal Economy: Definitions, Theories and Policies WIEGO Working Papers*. www.wiego.org
- Coates, J., Swindale, A., & Bilinsky, P. (2007a). *Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide: Version 3*. www.fantaproject.org
- Coates, J., Swindale, A., & Bilinsky, P. (2007b). *Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide: Version 3*. www.fantaproject.org
- Coletto, D., Jaber, L., & Vanhellemont, L. (2021). Street vendors in Lima in the time of COVID-19: Guilty or oppressed? *Canadian Geographer*, 65(4), 435–447. <https://doi.org/10.1111/cag.12712>
- Craven, L. K., & Gartaula, H. N. (2015). Conceptualising the Migration–Food Security Nexus: Lessons from Nepal and Vanuatu. *Australian Geographer*, 46(4), 455–471. <https://doi.org/10.1080/00049182.2015.1058797>
- Crush, J. S., & Frayne, G. B. (2011). Urban food insecurity and the new international food security agenda. *Development Southern Africa*, 28(4), 527–544. <https://doi.org/10.1080/0376835X.2011.605571>
- CSA. (2021). *THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA ETHIOPIA STATISTICS SERVICES REPORT ON URBAN INFORMAL SECTOR SAMPLE SURVEY*.
- Dell’Anno, R. (2022). Theories and definitions of the informal economy: A survey. *Journal of Economic Surveys*, 36(5), 1610–1643. <https://doi.org/10.1111/joes.12487>
- Desta, C. G. (2018). The Urban Informal Economy in Ethiopia: Theory and Empirical Evidence. *Eastern Africa Social Science Research Review*, 34(1), 37–64. <https://doi.org/10.1353/eas.2018.0001>
- Devereux, S. (2001). Sen’s entitlement approach: Critiques and counter-critiques. *Oxford Development Studies*, 29(3), 245–263. <https://doi.org/10.1080/13600810120088859>
- Devereux, S. (2006). *Vulnerable Livelihoods in Somali Region, Ethiopia*. www.ids.ac.uk/ids/bookshop
- Engidaw, A. E., Ning, J., Kead, M. A., Mulaw, S. G., Alamirew, M. T., Wonda, T. A., Abebe, D. M., & Berihun, Z. (2024). Determining the push factors to involve in street vending activities and

- their challenges: in the case of Ethiopia. *Journal of Innovation and Entrepreneurship*, 13(1). <https://doi.org/10.1186/s13731-024-00397-1>
- Ergano, A. (2019.). Department of Geography and Environmental Studies. Informal Sector And Its Contribution To The Livelihood Of The Urban Poor In Hossana Town, Southern Ethiopia: The Case Of Steet Vending .
- Etana, D., & Tolossa, D. (2017a). Unemployment and Food Insecurity in Urban Ethiopia. *African Development Review*, 29(1), 56–68. <https://doi.org/10.1111/1467-8268.12238>
- Etana, D., & Tolossa, D. (2017b). Unemployment and Food Insecurity in Urban Ethiopia. *African Development Review*, 29(1), 56–68. <https://doi.org/10.1111/1467-8268.12238>
- Faber, M., Schwabe, C., & Drimie, S. (2009). Dietary diversity in relation to other household food security indicators. *International Journal of Food Safety, Nutrition and Public Health*, 2(1), 1. <https://doi.org/10.1504/ijfsnph.2009.026915>
- FAO. (2008). *An Introduction to the Basic Concepts of Food Security*. www.foodsec.org
- FAO. (2013). *Guidelines for measuring household and individual dietary diversity*. www.foodsec.org
- Fonchingong, C. C. (2005). Negotiating livelihoods beyond Beijing: The burden of women food vendors in the informal economy of Limbe, Cameroon. *International Social Science Journal*, 184, 243–253. <https://doi.org/10.1111/j.1468-2451.2005.00548.x>
- Frayne, B., Pendleton, W., Crush, J., Acquah, B., & Battersby-Lennard, J. (2010). No. 02: The State of Urban Food Insecurity in Southern Africa. In *Urban Food Security Series* (Issue 2). African Food Security Urban Network. <https://scholars.wlu.ca/afsun>
- Furceri, D., Loungani, P., Simon, J., & Wachter, S. (2015). *Global food prices and domestic inflation: Some cross-country evidence* (IMF Working Paper No. 15/133). International Monetary Fund.
- Gebremariam, G., & Tesfaye, W. (2018). The heterogeneous effect of shocks on agricultural innovations adoption: Microeconomic evidence from rural Ethiopia. *Food Policy*, 74, 154–161. <https://doi.org/10.1016/j.foodpol.2017.12.010>
- Giroux, S., Blekking, J., Waldman, K., Resnick, D., & Fobi, D. (2021). Informal vendors and food systems planning in an emerging African city. *Food Policy*, 103. <https://doi.org/10.1016/j.foodpol.2020.101997>
- Goudet, S., Hlaing, L. M., & Griffiths, P. L. (2020). Exploring food security and nutrition among young women in the formally regulated garment sector of Myanmar. *Annals of the New York Academy of Sciences*, 1468(1), 35–54. <https://doi.org/10.1111/nyas.14370>
- Gupta, V., Khanna, K., & Gupta, R. K. (2018). A study on the street food dimensions and its effects on consumer attitude and behavioural intentions. *Tourism Review*, 73(3), 374–388. <https://doi.org/10.1108/TR-03-2018-0033>
- Igudia, E. O. (2020). Exploring the theories, determinants and policy options of street vending: A demand-side approach. *Urban Studies*, 57(1), 56–74. <https://doi.org/10.1177/0042098019835736>

- International Labour Office. (2021). *wcms_826274 ILO*.
- International Labour Office Geneva. (2018). *Third edition Women and men in the informal economy: a statistical picture*.
- Jones, A. D., Ngure, F. M., Pelto, G., & Young, S. L. (2013). What are we assessing when we measure food security? A compendium and review of current metrics. In *Advances in Nutrition* (Vol. 4, Issue 5, pp. 481–505). American Society for Nutrition. <https://doi.org/10.3945/an.113.004119>
- Kebu, H., Berisso, O., & Mulugeta, M. (2023). Drivers of migration and determinants of wellbeing among internal youth migrants in Ethiopia: Towns along Addis Ababa –adama route in focus. *Heliyon*, 9(3). <https://doi.org/10.1016/j.heliyon.2023.e13780>
- Kefelegn, H. (2020). Determinants of Youths Rural to Urban Migration in Ethiopia (Case of Addis Ababa). *Academic Journal of Research and Scientific Publishing* |, 2, 5–7. www.ajrsp.com
- Kotval-K, Z. (2021). Food networks and urban informality in Mumbai, India. *British Food Journal*, 123(2), 771–788. <https://doi.org/10.1108/BFJ-02-2020-0119>
- Leeson, P. F. (1954). *THE LEWIS MODEL AND DEVELOPMENT THEORY**.
- Lorato, T., Tadesse, T., Abebe Mamo, Y., & Getinet, B. (2023). The urban informal sector as a means of livelihood improvement among youth: Evidence from Hawassa city, Ethiopia. *Cogent Economics and Finance*, 11(1). <https://doi.org/10.1080/23322039.2023.2185346>
- Martinez, L. M., & Estrada, D. (2017). Street vending and informal economy: Survey data from Cali, Colombia. *Data in Brief*, 14, 132–137. <https://doi.org/10.1016/j.dib.2017.06.047>
- Martínez, L., & Short, J. R. (2022). The Informal City: Exploring the Variety of the Street Vending Economy. *Sustainability (Switzerland)*, 14(12). <https://doi.org/10.3390/su14127213>
- Matuschke, I. (2014.). *Rapid urbanization and food security: Using food density maps to identify future food security hotspots*.
- Matz, J. A., Kalkuhl, M., & Abegaz, G. A. (2015). The short-term impact of price shocks on food security-Evidence from urban and rural Ethiopia. *Food Security*, 7(3), 657–679. <https://doi.org/10.1007/s12571-015-0467-4>
- Maxwell, D. G. (2008). *The Coping Strategies Index : Field Methods Manual-Second Edition*. <https://www.researchgate.net/publication/259999318>
- Maxwell Simon, & R. Frankenberger Timothy. (1992). *Maxwell household food security and indicators* . United Nation’s Children’s Fund - International Fund for Agricultural Development.
- Mekonen, D., Bazezew, A., Anteneh, M., & Kassie, T. (2023). Analysis of food security using various indicators for policy implications: Empirical evidence from the two large cities of Bahir Dar and Gondar, the Amhara region, Ethiopia. *Geo: Geography and Environment*, 10(1). <https://doi.org/10.1002/geo2.122>

- Mekonen, D., Berlie, A. B., & Kassie, T. (2023). Determinants of Urban food security status at household level: The case of Bahir Dar and Gondar Cities of the Amhara Region, Ethiopia. *Cogent Food and Agriculture*, 9(1). <https://doi.org/10.1080/23311932.2023.2186209>
- Muzerengi, T., Khalema, E. N., & Zivenge, E. (2021). The synergistic relationship between Amartya Sen entitlement theory and the systems theory in developing a food security implementation model in Matabeleland South Province, Zimbabwe. *Jamba: Journal of Disaster Risk Studies*, 13(1), 1–7. <https://doi.org/10.4102/JAMBA.V13I1.965>
- Nigussie, S., Liu, L., & Yeshitela, K. (2021). Towards improving food security in urban and peri-urban areas in Ethiopia through map analysis for planning. *Urban Forestry & Urban Greening*, 58, 126967. <https://doi.org/https://doi.org/10.1016/j.ufug.2020.126967>
- Patel, K., Guenther, D., Wiebe, K., & Seburn, R. A. (2014). Promoting food security and livelihoods for urban poor through the informal sector: a case study of street food vendors in Madurai, Tamil Nadu, India. *Food Security*, 6(6), 861–878. <https://doi.org/10.1007/s12571-014-0391-z>
- Quisumbing, A. R., Brown, L. R., Sims Feldstein, H., Haddad, L., & Peña, C. (1996). IFPRI food policy statement Women: The key to food security. In *Food and Nutrition Bulletin* (Vol. 17, Issue 1).
- Raimundo, I., Crush, J., & Pendleton, W. (2016). Food insecurity, poverty and informality. In *Rapid Urbanisation, Urban Food Deserts and Food Security in Africa*. Springer International Publishing. https://doi.org/10.1007/978-3-319-43567-1_6
- Recchi, S. (2021a). Informal street vending: a comparative literature review. In *International Journal of Sociology and Social Policy* (Vol. 41, Issues 7–8, pp. 805–825). Emerald Publishing. <https://doi.org/10.1108/IJSSP-07-2020-0285>
- Recchi, S. (2021b). Informal street vending: a comparative literature review. In *International Journal of Sociology and Social Policy* (Vol. 41, Issues 7–8, pp. 805–825). Emerald Publishing. <https://doi.org/10.1108/IJSSP-07-2020-0285>
- Roever, S., & Skinner, C. (2016). Street vendors and cities. *Environment and Urbanization*, 28(2), 359–374. <https://doi.org/10.1177/0956247816653898>
- Sharma, S. (2016). Street Food and Urban Food Security. In *Nutrition, Public Health and Technology* (Vol. 8, Issue 1). <https://www.researchgate.net/publication/349287476>
- Szabo, S. (2016). Urbanisation and Food Insecurity Risks: Assessing the Role of Human Development. *Oxford Development Studies*, 44(1), 28–48. <https://doi.org/10.1080/13600818.2015.1067292>
- Tadesse, G., & Shively, G. (2009). Food Aid, Food Prices, and Producer Disincentives in Ethiopia. *American Journal of Agricultural Economics*, 91(4), 942–955. <https://doi.org/10.1111/j.1467-8276.2009.01324.x>

- Takyi, S. A., Ayoo, W. A., Amponsah, O., Liwur, S. B., & Mensah, H. (2023). Making a living out of illegality: effects of street vending on the livelihoods of street vendors in the central business district of Accra. *SN Social Sciences*, 3(7). <https://doi.org/10.1007/s43545-023-00698-4>
- Tamenu Abera, T. A., & Mogessie Ashenafi, M. A. (2023). Food access vs food safety: The case of street food operation around Mexico Square, Addis Ababa, Ethiopia. *SINET: Ethiopian Journal of Science*, 46(2), 176–187. <https://doi.org/10.4314/sinet.v46i2.6>
- Tamirat, M., & Nega, J. (2015). Street vending as the safety-net for the disadvantaged people: The case of Jimma Town. *International Journal of Sociology and Anthropology*, 7(5), 123–137. <https://doi.org/10.5897/ijsa2015.0601>
- Teng, P., Escaler, M., & Caballero-Anthony, M. (2011). Urban food security: Feeding tomorrow's cities. *Significance*, 8(2), 57–60. <https://doi.org/10.1111/j.1740-9713.2011.00486.x>
- Tolossa, D. (2010). Some realities of the urban poor and their food security situations: A case study of Berta Gibi and Gemechu Safar in the city of Addis Ababa, Ethiopia. *Environment and Urbanization*, 22(1), 179–198. <https://doi.org/10.1177/0956247810363527>
- Tsegay, B., & Mesele, B. T. (2019a). *Street Vending as Strategy for Livelihood of Urban Poor: in Addis Ababa, Ethiopia*. <https://doi.org/10.7176/RHSS>
- Tsegay, B., & Mesele, B. T. (2019b). *Street Vending as Strategy for Livelihood of Urban Poor: in Addis Ababa, Ethiopia*. <https://doi.org/10.7176/RHSS>
- UNICEF. (2020). *Situation Analysis of Children and Women: Addis Ababa*.
- Van Den Bold, M., Kohli, N., Gillespie, S., Zuberi, S., Rajeesh, S., & Chakraborty, B. (2015). Is there an enabling environment for nutrition-sensitive agriculture in South Asia? Stakeholder perspectives from India, Bangladesh, and Pakistan. In *Food and Nutrition Bulletin* (Vol. 36, Issue 2, pp. 231–247). SAGE Publications Inc. <https://doi.org/10.1177/0379572115587494>
- Van Weezel, S. (2016). Food imports, international prices, and violence in Africa. *Oxford Economic Papers*, 68(3), 758–781. <https://doi.org/10.1093/oep/gpw015>
- Yirga, B. (2021). The livelihood of urban poor households: A sustainable livelihood approach in urbanizing Ethiopia. The case of Gondar City, Amhara National State. *Poverty and Public Policy*, 13(2), 155–183. <https://doi.org/10.1002/pop4.306>

Appendix 1

Addis Ababa University
College of Developmental Studies
Center for Food Security Studies

Questionnaire for Street Vendors

Dear respondents; -

Welcome to our survey on street vending in Kolefe Keranio sub-city! I appreciate your interest in participating. This survey aims to assess the role of street vending in the food security status of the vendor, by examining its impact on generating employment, income, and providing access to food for vendors. Your insights will help us understand how different types of street vending activities contribute to food security. Your participation will greatly contribute to the reliability of our research. Thank you in advance for your cooperation.

Instruction

Please circle your choices /supply your answer in the space provided.

I. Background information

1. Gender

A. Male (1) B. Female (2)

2. Age _____

3. Level of education -----

4. Marital status

A. Single (1) B. Married (2) C. Divorced (3) D. Widowed (4)

5. Place of birth

A. Addis Ababa (1) B. Afar (2) C. Amhara (3) D. Benishangul-Gumuz (4) E. Dire Dawa (5)
F. Gambela (6) G. SNNPR (7) H. Oromia (8) I. Sidama (9) J. Somali (10) K. Tigray (11)

6. If your place of birth is outside Addis Ababa, why did you come to Addis Ababa?

A. Work C. Came with family or relatives
B. Better opportunity D. Others

7. With whom do you live?

A. Parent (1) B. Friend (2) C. Relatives (3) D. Alone (4) E. Other (if any specify) (5)

8. Number of Dependents or Household: _____

II. Street vending and socio-economic questions

9. Income earned from street vending (per/monthly) in Birr: _____

10. Housing Situation:

A. Own (1) B. Rent (2) C. Kebele's house (3) D. Others (4)

If yes to Rent how much do you pay: _____

Street vending questions

1. How long have you been involved in street vending? _____

2. What kind of street vendor are you?

A. Stationary (1) B. Non-stationary (2)

3. Working hours do you work? How many days per/week? _____

4. Types of street vending/ items sold

A. Books, Magazine, and Lottery (1) B. Cloth and Shoe Merchandized (2) C. Food vendor (3) D. Service vendors (shoe shining) (4) E. Others (5)

5. Why did you choose your vending type?

A. Income potential C. low start-up cost
B. Flexibility of working hours D. lack of other employment E. others

6. Did you need any training or skill set?

A. No B. YES

7. what is your initial capital investment – in birr _____

8. Daily operational costs (raw materials) – in birr _____

9. Overhead expenses (e.g., rent for vending space) – in birr _____

10. Labor costs (e.g., wages for employees, if applicable) – in birr _____

11. Miscellaneous expenses – in birr _____

12. Food expenses for yourself/ household per week or month – in birr

13. At what time do you start your work?

A. In the morning (1) B. In the afternoon (2) C. In the evening (3)

14. How often do you encounter unfair treatment by law-enforcement officers while vending?

A. Frequently (2) B. Occasionally (1) C. Never (0)

III. Food security assessment questions

Household Food Insecurity Access Scale Questions:

1. In the past month, was there ever no food to eat of any kind in your household because of a lack of resources to get food?

A. Often (3) B. Sometimes (2) C. Rarely (1) D. Never (0)

2. In the past month, did you or any household member go to bed hungry because there was not enough food?

A. Often (1) B. Sometimes (2) C. Rarely (1) D. Never (0)

3. In the past month, did you or any household member have to reduce the size of meals or skip meals because there was not enough food?

A. Often (3) B. Sometimes (2) C. Rarely (1) D. Never (0)

4. In the past month, did you or any household member have to rely on a limited number of foods to feed your household because there was not enough food?

A. Often () B. Sometimes () C. Rarely () D. Never ()

5. In the past month, did you or any household member have to eat food that you did not want to eat because there was not enough food?

A. Often () B. Sometimes () C. Rarely () D. Never ()

6. In the past month, did you or any household member have to eat only a few kinds of foods because there was not enough variety in your household meals?

A. Often () B. Sometimes () C. Rarely () D. Never ()

7. In the past month, did you or any household member have to borrow food or rely on food donations because there was not enough food?

A. Often () B. Sometimes () C. Rarely () D. Never ()

8. In the past month, did you or any household member have to use savings or sell assets to buy food?

A. Often () B. Sometimes () C. Rarely () D. Never ()

9. In the past month, did you or any household member have to limit the portion sizes of meals to make food last longer?

A. Often ()

B. Sometimes ()

C. Rarely ()

D. Never ()

Coping Strategy Index

1. How many days has had to Rely on less preferred and less expensive foods?

2. How many days did you have to Borrow food from a friend or relative?

3. How many days have you purchased food on credit?

4. How many days did you have to send children/ yourself to eat with neighbors?

5. How many days did you have to send household/yourself members to beg?

6. How many days has your household/ yourself had to Limit portion size at mealtimes?

7. How many days had to restrict consumption by adults for small children to eat?

8. How many days did you have to feed working members of the household at the expense of non-working members?

9. How many days have you/ your household had to reduce the number of meals eaten in a day?

10. How many days have you/ your household had to kip entire days without eating?

Food Consumption Score Questions:

1. In the past seven days, how often did you or your household consume the following food groups? (Enter the number of days for each food group in the box).

A. Grains (e.g., Injera, wheat, maize) (0,____)
(0,____)

F. Pulses (e.g., beans, lentils, peas)

B. Tubers and roots (e.g., potatoes, sweet potatoes) (0,___)
cooked) (0,___)

G. Vegetables (fresh or

C. Fruits (fresh) (0,___)
(0,___)

H. Meat, fish, or poultry

D. Dairy products (e.g., milk, yogurt, cheese) (0,___)

I. Eggs (0,___)

E. Oils and fats (0,___)
(0,___)

J. Sugar and sweets

2. In the past seven days, did any household member go without eating any food at all due to lack of resources?

☐ Yes(1) ☐ No (0)

If yes, how many days did this occur? _____

3. In the past seven days, did any household member eat less than what you felt was enough because there was not enough food?

☐ Yes() ☐ No ()

If yes, how many days did this occur? _____

4. How often do you include food from animal sources (meat, fish, poultry, dairy) in your meals?

☐ Often (3) ☐ Sometimes (2) ☐ Rarely (1) ☐ Never (0)

5. How often do you include fruits and vegetables in your meals?

☐ Often () ☐ Sometimes () ☐ Rarely () ☐ Never ()

Dietary Diversity Score Questions

1. Grains and Cereals: In the past 24 hours, did you or your household consume any of the following grains or cereals? Please select all that apply: **Yes (1)** **No (0)**

A. Injera B. Rice C. Wheat (e.g., bread) D. Maize (corn)
E. Others

2. Pulses and Legumes: In the past 24 hours, did you or your household consume any of the following pulses or legumes? Please select all that apply: **Yes ()** **No ()**

A. Lentils (red and brown) B. Chickpeas C. Various types of beans (e.g., kidney beans, black-eyed peas)
D. Others

3. Tubers and Roots: In the past 24 hours, did you or your household consume any of the following tubers or roots? Please select all that apply: **Yes ()** **No ()**

A. Potatoes B. Sweet potatoes C. Other

4. Vegetables: In the past 24 hours, did your household consume any of the following vegetables? Please select all that apply: **Yes (1)** **No (0)**

A. Leafy greens (e.g., gomen, tikil gomen) B. Tomatoes C. Onions D. Peppers E. others

5. Fruits: In the past 24 hours, did your household consume any of the following fruits? Please select all that apply: **Yes ()** **No ()**

A. Bananas B. Apples C. Oranges D. Papayas E. other

6. Meat and Alternatives: In the past 24 hours, did your household consume any of the following meat or alternatives? Please select all that apply: **Yes ()** **No ()**

A. Beef B. Chicken C. Lamb D. Goat

7. Egg: : In the past 24 hours, did your household consume any of the following meat or alternatives? Please select all that apply: **Yes ()** **No ()**

8. Dairy and Dairy Products: In the past 24 hours, did your household consume any of the following dairy or alternatives? Please select all that apply: **Yes ()** **No ()**

A. Milk B. Yogurt C. Cheese

9. Nuts and Seeds: In the past 24 hours, did your household consume any of the following nuts or seeds? Please select all that apply: **Yes ()** **No ()**

A. Peanuts B. Sesame seeds

10. Oils and Fats: In the past 24 hours, did your household consume any of the following oils or fats? Please select all that apply: **Yes ()** **No ()**

A. Butter B. Vegetable oils (e.g., sunflower oil)

11. Sugars and Sweets: In the past 24 hours, did your household consume any of the following sugars or sweets? Please select all that apply: **Yes ()** **No ()**

A. Honey B. Sugarcane C. Traditional sweet snacks (e.g., dabo kolo) D. Sugar

12. Spices, condiments, and beverages: In the past 24 hours, did your household consume any of the following sugars or sweets? Please select all that apply: **Yes ()** **No ()**

A. Tea B. Coffee C. Spices D. Condiment