

Zimbabwe Livelihoods Assessment Committee (ZimLAC)

2024 URBAN LIVELIHOODS ASSESSMENT TECHNICAL REPORT

March 2024



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Foreword

The Zimbabwe Livelihoods Assessment Committee (ZimLAC) continues to undertake annual livelihoods assessments in fulfilment of Commitment 6 of the Food and Nutrition Security Policy. These annual assessments continue to strengthen the national integrated Food and Nutrition Security Information System. Under the leadership of FNC, the Zimbabwe Livelihoods Assessment Committee (ZimLAC) remains committed to providing timely and reliable information on the food and nutrition security situation to inform the development of robust food and nutrition response programmes, policies and strategies. The ZimLAC has since its inception undertaken 11 Urban and 23 Rural Livelihoods Assessments. Through these annual assessments, ZimLAC continues to contribute towards the realisation of Government's desire of leaving no one and no place behind as it provides spatially resolved evidence to guide efficient targeting of interventions. Additionally, the assessments have been pivotal in the identification of food insecure populations and households' livelihoods challenges, enabling Government to respond in a timely manner, with the appropriate social protection interventions to address the identified context-specific challenges.

We are pleased to present to you the 2024 Urban Livelihoods Assessment report which provides updates on pertinent urban household livelihoods issues, among them demographics, housing, education, health, nutrition, WASH, energy, social protection, food consumption patterns, food and income sources, income levels, expenditure patterns, debts, coping strategies, shocks and food security. The methodology used in this assessment is contextual and attempts to capture a social phenomenon within its social, economic and cultural context, whilst acknowledging the complex nature of urban livelihoods.

We are indebted to all our stakeholders who supported this assessment financially and technically. We would like to extend our gratitude to the Government of Zimbabwe, development partners and the sub-national structures (provinces and districts) for their unwavering support and commitments exhibited during the assessment. We would also like to appreciate the urban communities of Zimbabwe as well as the local authorities for cooperating and supporting this assessment.

We submit this report to you for your use and reference as you work towards addressing the multi-dimensional and multi-faceted food and nutrition insecurity challenges faced by urban communities.



George D. Kembo (Dr.)
DIRECTOR GENERAL / ZIMLAC CHAIRPERSON

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List of Acronyms

FCS	Food Consumption Score
FNC	Food and Nutrition Council
HHS	Household Hunger Scale
LCSI	Livelihoods Coping Strategy Index
MDD-W	Dietary Diversity Score for Women
NDS1	National Development Strategy 1
RCSI	Reduced Coping Strategy Index
RCT	Randomized Control Trials (RCTs)
SDGs	Sustainable Development Goals (SDGs)
ULA	Urban Livelihoods Assessment
WASH	Water, Sanitation and Hygiene
ZimLAC	Zimbabwe Livelihoods Assessment Committee

Executive Summary

Introduction

The Zimbabwe Livelihoods Assessment Committee (ZimLAC) successfully carried out the 11th Urban Livelihoods Assessment (ULA) in February 2024 under the overall coordination of the Food and Nutrition Council (FNC). This technical report provides updates on pertinent urban household food systems.

The assessment results will be used to guide the following:

- a) Evidence based planning and programming for targeted interventions.
- b) Development of interventions that address immediate to long term needs as well as building resilient livelihoods.
- c) Early warning for early action.
- d) Monitoring and reporting progress towards commitments within the guiding frameworks of existing national and international food and nutrition policies and strategies such as the National Development Strategy 1, the Food and Nutrition Security Policy, Sustainable Development Goals and the Zero Hunger strategy.

Objectives of the 2024 Urban Livelihoods Assessment

The overall purpose of the assessment was to provide an annual update on livelihoods in Zimbabwe's urban areas, for the purposes of informing policy formulation and programming appropriate interventions. The specific objectives of the assessment were.

1. To estimate the urban population that is likely to be food insecure in 2024, their geographic distribution and the severity of their food insecurity.
2. To assess the nutrition status of the urban population.
3. To describe the socio-economic profiles of urban households in terms of such characteristics as their demographics, access to basic services (education, health services and water, sanitation, and hygiene services), assets, income sources, urban agriculture, incomes and expenditure patterns, food consumption patterns and consumption coping strategies.
4. To characterise urban livelihood options for the urban population and factors impacting on these livelihood options.
5. To provide practical recommendations to inform humanitarian and developmental interventions for enhanced livelihoods.

Context of the 2024 Urban Livelihoods Assessment

Data Generation Process

The 2024 ZimLAC Urban Livelihoods Assessment was informed by the multi-sectoral objectives generated by a multi-stakeholder consultation process. Appropriate survey designs and protocols informed by the survey objectives were developed. The assessment employed

a structured household questionnaire. ZimLAC national supervisors were recruited from Government Ministries/departments, United Nations and Non-Governmental Organizations. The Ministry of Local Government, through the Provincial Development Coordinators' offices coordinated the recruitment of district level enumerators and mobilization of provincial and district enumeration vehicles. Enumerators for the assessment were drawn from an already existing database of those who participated in one or two previous ZimLAC assessments. Three enumerators and one anthropometrist were selected from each district for data collection.

The survey data was collected using android devices and CSPro software. Various secondary data sources and field observations were used to contextualise the analysis and reporting. The data analysis and report writing were based on thematic areas of interest to all stakeholders.

Assessment Context

The 2024 ZimLAC Urban Livelihoods Assessment was conducted in an environment where urban livelihoods were influenced by various complex factors, such as socioeconomic conditions and environmental challenges (shocks). Understanding this context is crucial for effectively addressing the current obstacles that urban populations face in accessing sufficient nutrition and improving their overall well-being. Commendably, the Government of Zimbabwe, through its National Development Strategy 1, has implemented a range of measures to mitigate and reduce the impact of macroeconomic and social challenges on the livelihoods of people in both urban and rural areas.

While the Government of Zimbabwe has successfully implemented several mitigation programmes, climate change-induced challenges, such as long dry spells, droughts, and heatwaves, continue to impact negatively on both rural and urban livelihoods. The country is currently experiencing the El Niño phenomenon, which is associated with below-average rainfall. Its impact is already being felt in both urban and rural areas. The prolonged dry spells and heatwaves have affected urban agriculture and access to water, which in turn affects food access, and water and sanitation conditions. Urban residents, who often rely on informal markets and food imports, are particularly vulnerable to disruptions in the food supply chain, further worsening their food insecurity and nutritional status.

Major Findings

The major findings on the livelihoods of urban households are presented in the box below.

Please note: in this report, food security relates to households whose incomes are above the budget sufficient to acquire the household's minimum energy requirements.

MAJOR FINDINGS

1. 65.5% of the households were food secure when food security is defined as income that is above the budget sufficient to acquire the household's minimum energy requirements.
2. At a descriptive level food insecurity is situated in households that were headed by women, the less educated, the unemployed and those living with disability and moreover the households tended to be large.
3. Salaries/wages, casual labour and vending/petty trade were the most important sources of livelihoods for urban dwellers. These were followed by deals (madhiri/kukiya-kiya/ ukutshaya amadili) and remittances (internal and external).
4. Livelihoods that exhibit stability which are subject to strong contract enforcement either through formal or informal institutions (norms) were associated with statistically significant higher probability that the household was food secure before controlling for observed confounders.
5. Education is the most important socio-economic requisite for the household to enter stable livelihoods that exhibit stability and are enforced through formal sanction. Education however shuns stable livelihoods whose enforcement is through social sanction.
6. Female headed households were engaged in unstable livelihoods that were at potentially cross-purposes with the law (vending) or whose contracts cannot be enforced through law or social norms (casual labour).
7. Before controlling for observed confounding variables, households that practiced agriculture outside their urban area of residence were more likely to be food secure than those that did not.
8. Food secure and food insecure households were affected differentially by economic shocks before controlling for observed confounders.
9. Save for the case of rentals shock, compared to unemployed people, households headed by informally employed people were ceteris paribus less likely to have experienced all the shocks under consideration. Informality in this case can be seen as a cushion from vicissitudes in the formal market system.
10. Food insecure households were however more likely to have received support from development partners than food secure ones before controlling for observed confounders.
11. Reliance on salaries/wages was associated with an improvement in all the food and nutrition security indicators.

12. Reliance on own business with all things being equal was associated in improvements in all food security indicators except for the HDDS and the RCSI which were statistically insignificant.
13. Urban agriculture was associated with improvements in the FCS by 1.551 points at the 1% level of significance, all things being equal.
14. Practising agriculture outside urban areas improved the household hunger score by 0.261 points at the 1% level of significance all things being held constant.
15. Internal migration (either to the rural areas or from the rural areas) was ceteris paribus associated with a deterioration of food and nutrition security outcomes.
16. Knowledge about climate change was ceteris paribus associated with improvements in the women's dietary diversity score by 0.186 points after controlling for selection on observables.
17. Receiving social protection support from the government resulted in a 3.9% increase in the probability that the household was food secure after controlling for self-selection

Expansion of Findings

i. Socio-economic background of urban households

- 65.5% of the households were food secure when food security is defined as income that is above the budget sufficient to acquire the household's minimum energy requirements.
- At a descriptive level food insecurity was situated in households that were headed by women, the less educated, the unemployed and living with disability and moreover they tend to be large.

ii. Major sources of Livelihoods for urban dwellers

- Salaries/wages, casual labour and vending/petty trade were the most important sources of livelihoods for urban dwellers. These were followed by deals (Madhiri, Kukiya-kiya, Ukutshaya amadili) and remittances (internal and external).
- Livelihoods that exhibit stability which are subject to contract enforcement either through formal or informal institutions (norms) were associated with statistically significant higher probability that the household was food secure before controlling for observed confounders.
- Livelihoods which encapsulate contract enforcement such as salaries/wages, remittances (from within and from outside), rentals, own business and pensions were associated with statistically significant higher probability that the households were food secure before controlling for observed confounders.
- Education is the most important socio-economic requisite for the household to enter stable livelihoods that exhibit stability and are enforced through formal sanction. Education however shuns stable livelihoods whose enforcement is through social sanction.

- Female headed households were engaged in unstable livelihoods that are at potentially cross-purposes with the law (vending) or whose contracts cannot be enforced through law or social norms (casual labour).

iii. *Involvement in Agricultural Production*

- There was statistically no significant difference in the food security status of households that practised urban agriculture and those that did not practise.
- Households that practised urban agriculture that received crop support from the government were more likely to be more food secure before controlling for observed confounders.
- Urban agriculture was ceteris paribus a livelihood option for the elderly, less educated, and mono-spousal households and large households that have surplus labour.
- Ceteris paribus, education increased the probability that the household engaged in livestock production.
- Before controlling for observed confounding variables, households that practised agriculture outside the urban areas were more likely to be food secure than those that did not.
- Practice of agriculture outside urban areas was ceteris paribus the preserve for those married and living together with their spouse, less educated and elderly household heads. It was also a preserve for those with surplus labour supply in terms household size.

iv. *Multi-locality and Migration*

- Food secure households had less likelihood of having a person who migrated to the rural areas during the year than food insecure households at the 5% level of significance.
- Households that were food secure had more likelihood of having a member who emigrated out of the country before controlling for observed confounder.
- An increase in the education of the household head reduced the probability that the household received a new member from the rural areas.
- The larger the household size the larger the likelihood that the household experienced inward migration (either internal or external) or outward migration (either internal or external).

v. *Climate change knowledge, shocks, and stressors*

- Whilst households headed by the elderly people had more likelihood of having knowledge of climate change, those that were headed by women and the less educated had less likelihood.
- Food secure and food insecure households were affected differentially by economic shocks before controlling for observed confounders.

- Save for the case of rentals shock, compared to unemployed people, households headed by informally employed people were *ceteris paribus* less likely to have experienced all the shocks under consideration. Informality in this case can be seen as a cushion from vicissitudes in the formal market system.

vi. Social Protection

- The government and its development partners were the major sources of social protection of urban households in Zimbabwe.
- At a descriptive level there was no statistically significant difference between food secure households and insecure households in terms of the probability of receiving government support. Food insecure households were however more likely to have received support from development partners than food secure ones before controlling for observed confounders.
- Receiving support from relatives in rural areas (which may be viewed as an expression of multi-locality) and receiving support from the diaspora was associated with food security before controlling for observed confounders.
- All things being equal government support targeted widows/widowers, the less educated, the disabled and those in high density areas.
- All things being held constant, support from development partners targeted the informally employed people, households living with sight disability, larger households, and those in high density suburbs.

vii. Water, Sanitation and Hygiene

- Before controlling for confounding factors, food-secure households had improved water services, sanitation and handwashing stations.
- Households headed by members with higher education, larger households and those resident in high density areas had access to better WASH facilities after controlling for observed confounders.

viii. Indicators of Food Access

- All the other food access indicators are correlated with the food security indicator that is calculated using income and the budget line before controlling for observed confounders.
- Increase in household head's age was associated with reduced severity in household food insecurity and employed more coping strategies after controlling for observed confounding variables.
- Households with divorced or separated heads had increased likelihood of being food insecure and coping compared to households with household heads married and living together with their spouse after controlling for observed confounding factors.
- Increase in education of household head was associated with increased food security and less coping and improved quality of diets.

- Being formally or informally employed increased the likelihood of household food security, reduced the probability of a household coping, and was associated with improved diets.

ix. Treatment Effects on Food Access Indicators

Major sources of livelihoods

- Reliance on salaries/wages was associated with an improvement in all the food and nutrition security indicators.
- Engagement in casual labour as one of the major sources of livelihood ceteris paribus resulted in the deterioration of the household food security indicators.
- Whilst engagement in vending/petty trade resulted in improvement of both the HDDS and the DDW, it however led to a deterioration in the long-term livelihoods coping strategy which could result in inter-generational food insecurity.
- Reliance on deals (madhiri, kukiya-kiya, ukutshaya amadili) was associated with deteriorations in both short term (FCS and RCSI) and long-term food security indicators.
- Reliance on external remittances led to improvements in the majority of short-term (HHS, FCS and RCSI) food security indicators except of the DDW which statistically deteriorated at the 5% level of significance.
- Reliance on rentals as a major source of livelihood was, all things being equal, associated with improvements of all the food security indicators under consideration except for the RCSI and the DDW, which are not statistically significant.
- Reliance on own business, all things being equal was associated in improvements in all food security indicators except for the HDDS and the RCSI which were statistically insignificant.

Involvement in agricultural production

- Urban agriculture was associated with improvements in the FCS by 1.551 points at the 1% level of significance, all things being equal.
- Practising agriculture outside urban areas improved the household hunger score by 0.261 points at the 1% level of significance all things being held constant.

Migration

- Internal migration (either to the rural areas or from the rural areas) was ceteris paribus associated with a deterioration of food and nutrition security outcomes.
- On the other hand, emigration outside Zimbabwe was associated with an improvement in the probability that the household was food secure.

Climate change

- Knowledge about climate change was ceteris paribus associated with improvements in the women's dietary diversity score by 0.186 points after controlling for selection on observables.

Social protection

- Receiving social protection support from the government resulted in a 3.9% increase in the probability that the household was food secure after controlling for self-selection.

Recommendations

Based on the above highlighted major findings and the detailed results presented in Chapters 4 to 12, the following recommendations are put forward.

Gender

- Closing the gender gap and empowering female farmers traditionally restricted in their access to finance and technologies can create major gains when addressing food insecurity.
- Interventions should ensure equal access of men and women to natural and productive resources, such as land and mechanization, decent employment, advisory and financial services, and markets.

Access to food security enhancing livelihoods

- Make the minimum wage setting process a part of a larger concerted government effort to address food insecurity. To address food insecurity, the government needs to reconcile wages and employment circumstances, social assistance, and other income supports with the cost of living.
- Government efforts to include entrepreneurship programmes in schools and universities to ensure that citizens acquire critical thinking and problem-solving skills.
- Continue implementing policies that promote the ease of doing business.
- Access to finance remains a major challenge to small businesses. Government and financial institutions need to strengthen collaboration to establish dedicated funds and loans tailored to the needs of small businesses.

Involvement in agricultural production

- There is need to ease control measures restricting the private movement of maize grain from rural to urban areas.

Social support

- There is need for the ministry responsible for social welfare and the various organisations that provide social support to target vulnerable groups.

CHAPTER 1 INTRODUCTION

1.1 Zimbabwe Livelihoods Assessment Committee (ZimLAC)

ZimLAC is a consortium of Government, Development Partners, UN, NGOs, Technical Agencies, and the Academia which was established in 2002 and is led and regulated by Government. It is chaired by the Food and Nutrition Council, a Department in the Office of the President and Cabinet whose mandate is to promote a multi-sectoral response to food insecurity and nutrition problems in a manner that ensures that every Zimbabwean is free from hunger and all forms of malnutrition.

ZimLAC supports Government, particularly FNC in: convening and coordinating national food and nutrition security issues in Zimbabwe; charting a practical way forward for fulfilling legal and existing policy commitments in food and nutrition security; advising Government on the strategic direction in food and nutrition security; undertaking a “watchdog role” and supporting and facilitating action to ensure sector commitments in food and nutrition are kept on track through a number of core functions such as (i) undertaking food and nutrition assessments, analysis and research, (ii) promoting multi-sectoral and innovative approaches for addressing food and nutrition insecurity, and (iii) supporting and building national capacity for food and nutrition security including at sub-national levels.

ZimLAC plays a significant role in operationalising Commitment Six, of the Food and Nutrition Security Policy (GoZ, 2012), in which the “Government of Zimbabwe is committed to ensuring a national integrated food and nutrition security information system that provides timely and reliable information on the food and nutrition security situation and the effectiveness of programmes and informs decision-making”. The information system is critical in informing decision making as it provides evidence for timely response by Government.

ZimLAC livelihood assessments’ results continue to be an important tool for informing and guiding policies and programmes that respond to the prevailing food and nutrition security situation with 11 urban and 23 rural livelihoods updates having been produced to date.

1.1.1 *Rationale of the 2024 ZimLAC Urban Livelihoods Assessment*

The assessment results will be used to guide the following:

- a) Evidence based planning and programming for targeted interventions.
- b) Development of interventions that address immediate to long term needs as well as building resilient livelihoods.
- c) Early warning for early action.
- d) Monitoring and reporting progress towards commitments within the guiding frameworks of existing national and international food and nutrition policies and strategies such as the National Development Strategy 1, the Food and Nutrition Security Policy, Sustainable Development Goals and the Zero Hunger strategy.

1.1.2 Purpose

The overall purpose of the assessment was to provide an annual update on livelihoods in Zimbabwe's urban areas, for the purposes of informing policy formulation and programming appropriate interventions.

1.1.3 Specific objectives

The specific objectives of the assessment were:

- a) To estimate the urban population that is likely to be food insecure in 2024, their geographic distribution and the severity of their food insecurity.
- b) To assess the nutritional status of the urban population.
- c) To describe the socio-economic profiles of urban households in terms of such characteristics as their demographics, access to basic services (education, health services and water, sanitation, and hygiene services), assets, income sources, urban agriculture, incomes and expenditure patterns, food consumption patterns and consumption coping strategies.
- d) To characterise urban livelihood options for the urban population and factors impacting on these livelihood options.
- e) To provide practical recommendations to inform humanitarian and developmental interventions for enhanced livelihoods.

1.2 Context

The 2024 ZimLAC Urban Livelihoods Assessment was conducted in an environment where urban livelihoods were influenced by various complex factors, such as socioeconomic conditions and environmental challenges (shocks). Understanding this context is crucial for effectively addressing the ongoing obstacles that urban populations face in accessing sufficient food and improving their overall well-being. The Government of Zimbabwe, through its National Development Strategy 1, has implemented a range of measures to mitigate and reduce the impact of macroeconomic and social challenges on the livelihoods of people in both urban and rural areas.

Some of the interventions that have been implemented to minimize the impact of socioeconomic conditions and environmental challenges (shocks) on urban livelihoods include the provision of safe and potable water in urban areas through borehole drilling and the repair and rehabilitation of roads, especially in high-density suburbs. As of 4 February 2024, the Government of Zimbabwe had drilled 83 boreholes through the Presidential Borehole Drilling Scheme, out of a target of 250 to be drilled by 2025 in Bulawayo City alone, as part of the short to medium-term intervention to alleviate water shortages in urban areas. A total of 50 solar-powered boreholes are being targeted for the Mbare suburbs, which will help control waterborne diseases such as typhoid and cholera.

While the Government of Zimbabwe has implemented several mitigation programmes, climate change-induced challenges, such as long dry spells, droughts, and heatwaves, continue to impact negatively on both rural and urban livelihoods. The country is currently experiencing the El Niño phenomenon, which is associated with below-average rainfall. Its impact is already being felt in both urban and rural areas. The prolonged dry spells and heatwaves have affected urban agriculture and access to water, which in turn affects food access, price volatility, and water and sanitation (WASH) conditions. Urban households, which often rely on informal markets and food imports, are particularly vulnerable to disruptions in the food supply chain, further exacerbating their food insecurity and nutritional status. The impacts of climate change act as a risk multiplier and exacerbate existing vulnerabilities and disadvantages (Lawrance et al., 2022).

Addressing these challenges requires a comprehensive approach that tackles issues of poverty, inequality, governance, and sustainability to ensure that all urban households have access to adequate and nutritious food. Collaboration between government agencies, civil society organizations, and the private sector is essential for implementing policies and programmes that promote food security, improve livelihoods, and enhance the nutritional status of urban households in Zimbabwe.

CHAPTER 2 LITERATURE REVIEW

2.1. Food Systems in Urban Areas

Urbanization is having a significant impact on the food system, leading to a growing dependence on purchased food for a larger portion of the global population (Satterthwaite *et al.*, 2010). This shift is worsened by the high cost of fresh and organic produce in urban areas, which contributes to food insecurity and nutritional deficiencies. Many urban households struggle to afford nutritious foods within their limited budgets and end up choosing cheaper, calorie-dense options that lack essential vitamins, minerals, and other important nutrients for maintaining good health. Moreover, urban populations are constantly bombarded with advertisements and promotions for processed foods, sugary beverages, and fast-food items, which heavily influence their food preferences and consumption habits (Amanzadeh *et al.*, 2015). Without proper nutrition education and guidance, individuals may not be aware of the negative consequences of these unhealthy food choices on their overall health and well-being.

On one hand, it has been acknowledged that the urban poor are particularly vulnerable to macroeconomic shocks that affect their income-generating capacity, subsequently leading to the consumption of less healthy diets. On the other hand, previous studies (Vilar-Compte *et al.*, 2021) suggest that, on average, urban diets are better than rural diets due to their greater diversity and access to products such as animal proteins facilitated by the food distribution systems. However, this supposed urban advantage is not evenly distributed and does not extend to the poorest socioeconomic strata (Siddiqui *et al.*, 2020). Research has shown that geographic disparities in food access, linked to economic barriers, exist. Consequently, individuals with lower incomes do not have access to diets that are rich in healthy foods like fresh fruits and vegetables, tubers, and legumes. Instead, they have relatively more access to and consume higher amounts of sugars, fats, and highly processed or ultra-processed foods. Ultra-processed products are characterized by their high energy density, long shelf life, convenience, and relatively low cost. All these factors make them appealing to urban residents, particularly those with limited resources such as heating and cooking supplies, safe drinking water, and sanitation, among other basic needs (Vilar-Compte *et al.*, 2021).

2.2. Exposure to Shocks

Urban populations, due to their high dependence on markets for food, are particularly vulnerable to fluctuations in the cost of food, both internationally and domestically (Godfray *et al.*, 2010; Maestre *et al.*, 2017). Many urban residents struggle to meet the high cost of living, with housing expenses typically being a major part of their household expenditures. As a result, they may not be able to afford sufficient food to meet their minimum nutritional requirements. Furthermore, vulnerable urban dwellers often rely on unsustainable, non-profitable, and high-risk income sources. The unpredictable nature of income combined with the volatility of prices for essential goods and services can push people in lower social

segments into poverty, indebtedness, food insecurity, and an inability to meet their basic essential needs.

Whilst urban areas present a clear potential for food security, they also come with increased risks. Those who have the means to access diverse food options may find that urban diets are more varied and nutritious compared to rural diets. However, living in cities and towns can be costly as residents often have to pay for goods and services that are not required in rural areas, such as fuel, water, and housing. The high costs of non-food essentials mean that urban dwellers must allocate their incomes to a wider range of goods, including housing, energy, transportation, household items, education, health care, and personal items, in addition to food.

2.2 Urban Food Systems

There is a consensus that food-based approaches can help address undernutrition by transforming food systems and incorporating peri-urban agriculture, as these can make a significant contribution to urban food security (Maestre *et al.*, 2017). Several studies have found that diverse agricultural interventions have increased food production but did not necessarily improve nutrition. Additionally, the impact pathways were not always direct effects on diets but often indirect effects through sales and income.

The transition to urban areas is likely to result in qualitative and quantitative dietary changes. These changes involve a shift in the diet structure towards higher consumption of energy-dense foods (particularly those high in fat and added sugars), processed foods, animal source foods, sugar, and saturated fats. Conversely, there is a lower intake of complex carbohydrates, dietary fibres, fruits, and vegetables (Filippini *et al.*, 2019). Meal patterns are also expected to change, with an increase in the number of meals eaten outside of the home. These dietary changes are driven by urbanisation, economic development, increased access to food markets selling energy-dense processed foods at low prices, and reduced prices of certain foods like vegetable oils. A study conducted in Benin and Morocco (Holdsworth *et al.*, 2019) revealed that individuals who eat out frequently consume fewer vegetables. The study also found that street food is a significant source of energy in urban areas, providing 39% of total daily energy intake for adolescents, but is typically associated with lower fruit and vegetable consumption. Figure 2 illustrates the elements of the food system that impact diet quality.

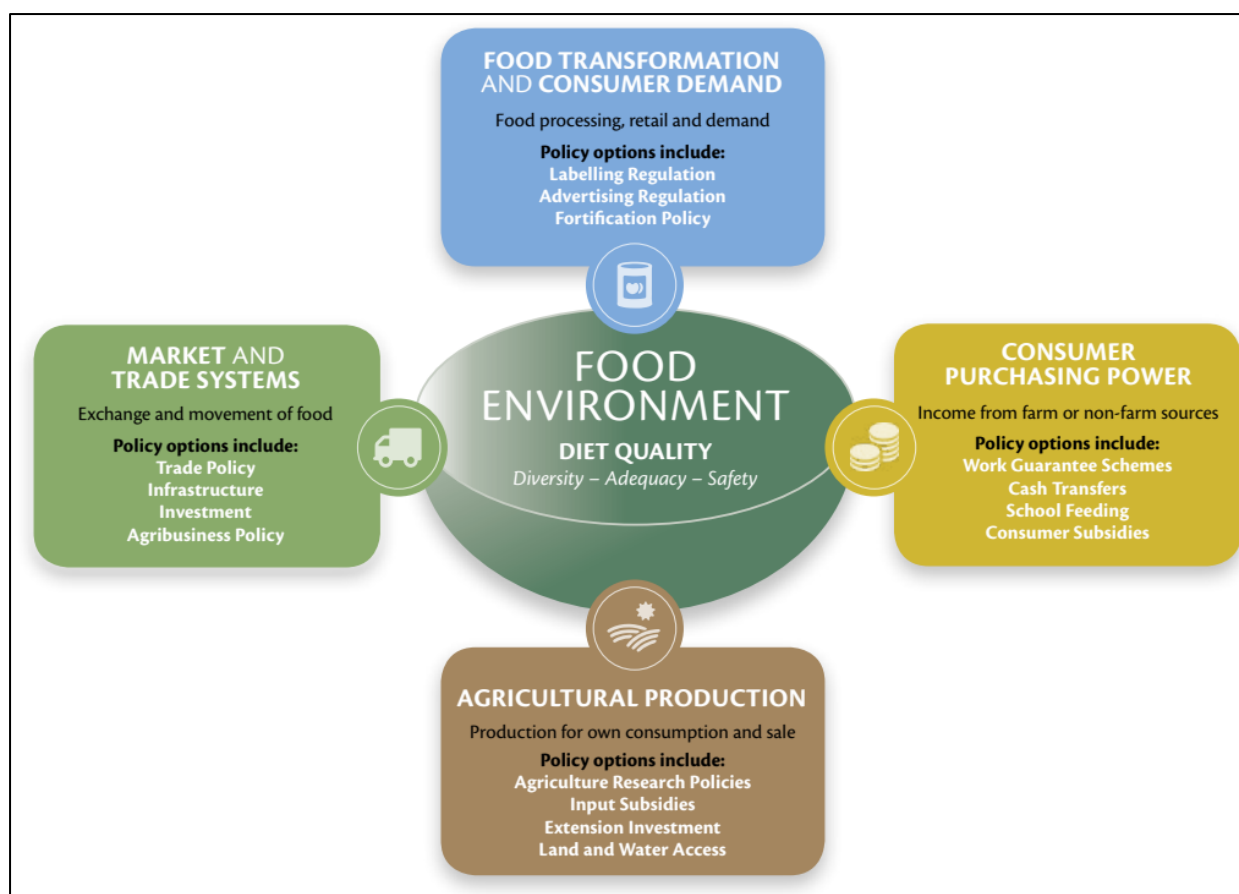


Figure 2. The elements of the food system that affect diet quality (Technical brief No1 of the Global Panel on Agriculture and Food Systems for Nutrition, 2014).

In addition, urbanisation plays a crucial role in changing eating patterns and nutrition trends as follows (de Lanerolle-Dias *et al.*, 2015; Ren *et al.*, 2021; Casari *et al.*, 2022).

- Rural-to-urban migrants tend to shift away from staples and towards sugary and easily accessible purchased foods. The increased consumption of food outside of the home, such as street food, has been identified as a risk factor for higher fat intake and lower levels of micronutrients.
- A positive aspect of urban food systems is the diversity of food available within most cities. However, diverse high-density diets, which differ from traditional diets, along with changing physical activity levels, will later result in a higher occurrence of Non-Communicable Diseases (NCDs) such as obesity and diabetes.
- With the increasing urbanisation and sedentary lifestyles in urban areas, obesity is now becoming a primary health issue in India, China, and other fast-shifting nations across Asia and Africa. For example, in Kenya, Senegal, and Ghana, urban obesity levels are twice the level found in rural areas.

Urbanisation also dramatically changes the structure of urban food markets:

- Supermarkets play a crucial role in urban food provision. With their increasing market share, they have gained significant power in the supply chain and have changed the relationships in the food value chain, which impacts food production.
- The informal food sector continues to be highly important, with vendors purchasing wholesale or sometimes directly from farmers. It serves as a critical source of food and income in urban areas. Food safety training for street food vendors has been shown to improve food safety and quality (e.g., Abidjan, Cote d'Ivoire).

The potential pathways to deliver good quality, nutrient-dense foods to low-income and undernourished people are numerous. Applying a pathways approach to integrating better agriculture and nutrition has proven to be a useful analytical lens. It recognises the need to examine all stages of the chain, from production to consumption, and the connections between agriculture, food systems, and nutrition. It also identifies potential key areas for policymakers to influence (Maestre et al., 2017). One pathway is by enhancing access to and consumption of foods that are naturally rich in micronutrients, thereby increasing overall dietary diversity. These foods include fresh fruits and vegetables, meat, fish, dairy products, and pulses.

2.3. Water Challenges in Urban Areas

Urbanization and climate change have worsened water shortages in cities worldwide (Wu *et al.*, 2023). Climate change is a pressing global issue with various impacts, one of which is the alteration of water availability in urban areas. The impact of climate change on water resources is particularly significant in urban settings, where the intersection of population density, vulnerability of infrastructure, and water management challenges creates complex water-related problems (Heidari *et al.*, 2021). Several case studies reported by the World Bank demonstrate how social, political, and economic dynamics can greatly affect urban water demand. Addressing these water challenges in urban areas requires integrated and sustainable approaches that consider factors such as water conservation, infrastructure upgrades, pollution prevention, and community engagement.

One of the most notable effects of climate change on water availability in urban areas is the alteration of precipitation patterns. Changes in the intensity, frequency, and distribution of precipitation lead to more frequent and severe droughts, floods, and other extreme weather events in many regions. These fluctuations in precipitation patterns disrupt traditional water supply systems, strain water resources, and pose challenges for water management in urban areas.

To mitigate the impact of climate change on water availability in urban areas, it is crucial to implement integrated and adaptive water management strategies. These strategies should include measures to enhance water conservation, improve the resilience of water infrastructure, promote sustainable water use practices, and enhance water governance mechanisms. Water conservation efforts, such as promoting efficient irrigation techniques, reducing leakage in distribution systems, and encouraging water-saving behaviors among residents, can help alleviate water scarcity in urban areas. Investing in climate-resilient water infrastructure, such as green infrastructure projects, decentralized water treatment systems, and water recycling initiatives, can enhance urban water supply reliability and reduce vulnerability to extreme weather events.

The impact of climate change on the availability of water in urban areas is a complex challenge that requires holistic and innovative solutions. By implementing integrated water management strategies that prioritize water conservation, infrastructure resilience, sustainable practices, and effective governance, urban areas can enhance their water security in the face of a changing climate. Collaboration between governments, communities, businesses, and other stakeholders is essential to address the intricate water challenges posed by climate change and ensure a resilient and sustainable water future for urban areas.

2.4. Possible Interventions to Mitigate Urban Challenges

To facilitate the adoption of the options and solutions suggested above, it is important to address existing knowledge gaps through the following recommendations (Kookana *et al.*, 2020).

(i) Role of wastewater and wastewater reuse

- Much more attention needs to be given to the vast areas where untreated or only partially treated, diluted, or even raw wastewater is already used informally for reuse (Silva, 2023).
- Treated wastewater can play a key role in meeting the water needs of people in urban cities. However, better urban planning and novel approaches are needed to realise this potential.

(ii) Community behaviour change

Community behavioural change is as important as institutional reforms and financial incentives. Behavioural intervention should be an integral part of urban design criteria. Additionally, an understanding of health risks and approaches to managing risk through behavioural change, such as the farm-to-fork approach, is required.

(iii) Policies relating to the informal retail sector

A fundamental shift in attitude is needed to better recognize the value of the informal sector.

(iv) Connecting with wider areas of policy

There is a need to connect with wider areas of policy that are often excluded from discussions on urban diets and nutrition. Cross-sector engagement is necessary. There are also opportunities to influence public institutions in towns and cities, such as schools and hospitals to offer enhanced dietary choice, quality, and knowledge about nutrition (Mozaffarian *et al.*, 2018).

Effective action in addressing urban food security challenges needs to be thoroughly measured, rigorously analysed, and promptly disseminated. By reviewing and disseminating empirical data on successful approaches, as well as those that are unsuccessful, policymakers can be better informed and advocate for a range of customized actions.

CHAPTER 3 METHODOLOGY

3.1. Sampling frame

The sample design was such that key livelihood indicators, particularly food insecurity prevalence, could be reported at domain level with at least 95% confidence. The sample was drawn from 44 reporting domains made up of cities, towns, service centres and growth points. It focused on urban households residing in the medium-density, high density, and peri-urban areas of Zimbabwe. It covered Urban Council Areas, Administrative Centers, Growth Points, and other Urban Areas. The 2022 ZimSTAT master sampling frame was used to draw 30 Enumeration Areas (EAs) for each domain using the Probability Proportional to Population Size (PPS) method. A total of 13,479 households were interviewed. The enumerated households were selected using systematic random sampling within the sampled EAs.

3.2. Data collection process

In recognizing the importance of multi-stakeholder participation in multi-faceted assessments, ZimLAC, through multi-stakeholder consultations, developed an appropriate assessment design and data collection tools informed by the assessment objectives. The primary data collection tool used in the assessment was the android-based structured household tool. ZimLAC national supervisors and enumerators were recruited from Government, United Nations, Technical partners, Academia, Non-Governmental Organisations and local authorities.

The Ministry of Local Government and Public Works, through the Provincial Development Coordinators' offices coordinated the recruitment of domain level enumerators and mobilisation of provincial and district enumeration vehicles. Enumerators were drawn from an already existing database of those who participated previous ZimLAC assessments. Three enumerators and one anthropometry specialist were selected from each domain for data collection.

3.3. Assessment of the choice of major livelihood source

The selection equation with observed control variables is estimated as follows.

$$\text{Selection equation: } UA_i = X_i\delta_i + v_i \quad [1]$$

where, X_i includes a vector observed control variables (a set of household head characteristics such as age, education level, gender and marital status, a set of household characteristics such as household size, location, asset value and income). This becomes the first stage which is the calculation of propensity scores that are used in the estimation of the treatment effects of various livelihoods options on food access indicators.

3.4. Assessment of treatment effects

Assessing the treatments effects of various potentially endogenous indicators such as the livelihood option of the household on food security status of the household using the 2024 Urban Livelihoods Assessment data is confounded by incomplete information arising from the self-selection of observations into treatment which is the livelihood option (Austin, 2011; Caliendo & Kopeinig, 2008; Heckman, Ichimura & Todd, 1997). Self-selection arises as certain households that might perceive it welfare enhancing might purposively pursue the livelihood. Propensity Score Matching (PSM) is used to reduce the confounding effects of observational survey data as observational or non-randomized studies suffer from selection bias unlike Randomized Control Trials (RCTs).

We define an indicator variable, T_i , which takes the value of 1 for household i , if the household was treated and 0, otherwise. We also define the outcome variable, food security of the household as Y_i . The counterfactual problem is that for each household we can only observe either Y_{i0} , or Y_{i1} when $T_i = 1$ and $T_i = 0$, respectively.

Propensity Score Matching techniques circumvent the counterfactual problem by matching $T_i = 1$ and $T_i = 0$ households using $\Pr(T_i = 1 | X)$ which is the probability of household i having $T_i = 1$ on the basis of observed covariates, X_i . The nearest neighbour matching technique which chooses an individual from the comparison group for treated individual that is closest in terms of propensity score is applied. We estimate the average treatment effect on the treated (ATT) that provides the impact of treatment on outcome variables as follows:

$$ATT = E(Y_{i1} | T_i = 1) - E\{E(Y_{i0} | T_i = 0, \Pr(T_i = 1 | X)) | T_i = 1\} \quad [3]$$

The validity of the ATT requires the conditional independence assumption that assignment to $T_i = 1$ or $T_i = 0$ is random after controlling for observed covariates X (Austin, 2009; Banerjee & Duflo, 2011; Huang, Oshima & Kim, 2010).

CHAPTER 4 SOCIO-ECONOMIC BACKGROUND OF URBAN HOUSEHOLDS

4.1. Introduction

This section presents the descriptive analysis of sampled urban households by food security status of the household. Whilst there several measures that are used in the study to proxy the food security status of the household, the variable “food secure” is used to portray households whose incomes are above the budget sufficient to acquire the household’s minimum energy requirements.

4.2. Sample observations

Table 1 shows that a total of 13 479 households, which constituted of 52 965 individuals, were surveyed.

Table 1. Sample observations

Province	Samples Household s	Number of people in the sample households			Age categories of the sample population				
		Males	Females	Total	0 - 4	5 - 17	18 - 59	60 and above	Total
Bulawayo	2095	3 783	4 896	8 679	1 035	2 563	4 394	687	8 679
Manicaland	601	1 029	1 229	2 258	277	675	1 167	139	2 258
Mashonaland Central	600	1 066	1 283	2 349	340	682	1 209	118	2 349
Mashonaland East	1218	1 966	2 284	4 250	680	1 164	2 233	173	4 250
Mashonaland West	1194	2 195	2 583	4 778	703	1 360	2 472	243	4 778
Matabeleland North	601	960	1 129	2 089	243	546	1 216	84	2 089
Matabeleland South	899	1 308	1 838	3 146	508	746	1 728	164	3 146
Midlands	2090	3 878	4 707	8 585	1 167	2 485	4 447	486	8 585
Masvingo	1190	1 963	2 417	4 380	611	1 249	2 293	227	4 380
Harare	2991	5 746	6 705	12 451	2 042	3 266	6 431	712	12 451
Total	13 479	23 894	29 071	52 965	7 606	14 736	27 590	3 033	52 965

4.3. Descriptive analysis of socio-economic backgrounds of urban households

Table 2 presents a descriptive analysis of the socio-economic backgrounds of urban households before controlling for confounding factors. 65.5% of the households were found to be food secure. Female-headed households were more likely to be food insecure as compared to male-headed households at a 1% level of significance. This finding is consistent with a plethora of studies that note that women, girls and households headed by women are face disproportionate burden of poverty and food insecurity (FAO et al., 2021; Kairiza, Kembo, Magadzire, & Chigusiwa, 2023; Kairiza, Kembo, Magadzire, & Pallegedara, 2023; Kairiza & Kembo, 2019; Meinzen-Dick et al., 2012; Quisumbing & Maluccio, 2003; Quisumbing & McClafferty, 2006; World Bank et al., 2009). FAO et al. (2021) highlight that a third of women of reproductive age were globally affected by anaemia in 2019. By 2021, 31.9% of women were moderately or severely food insecure, compared to 27.6% of men.

The table further shows that being households headed by members who were married is associated with increase in the probability that the household was food secure than mono-spousal households at the 1% level of significance. When one looks at the widow/widower, 12.6% of the households were food secure versus the 16.9% of those that were food insecure. Furthermore, an increase in the educational level of the household head increased the probability that a household was food secure. The formal and informally employed household heads yielded a higher food security status in comparison to the unemployed household heads at a 1% level of significance.

Households that were headed by people that reported having no difficulty with seeing, hearing, walking, memory, language, and washing were more likely to be food secure relative to households headed by people that had difficulties in those attributes at the 1% level of significance. Larger household sizes were food insecure compared to smaller ones at a 1% level of significance.

Households in high-density suburbs and informal settlements were found to be food insecure at 1% and 5% levels of significance respectively. On the other hand, households located in medium and low-density areas were found to be food secure at 1% and 10% levels of significance respectively. The provincial food security status results show that Bulawayo, Manicaland, Mashonaland Central, Mashonaland East, and Matabeleland South had a higher food security status. On the other hand, Mashonaland West, Matabeleland North, and Midlands were more likely to be food insecure.

Table 2. Socio-economic characteristics by food security status

Background characteristics	Food secure	Food insecure	Total	Test
N	8,829(65.5)	4,650(34.5)	13,479 (100.0%)	
Household head age	44.743 (34.224)	44.875 (21.337)	44.782 (30.985)	0.821
Female household head	0.352 (0.478)	0.413 (0.492)	0.370 (0.483)	<0.001
Household head marital statuses				
Married living together	0.587 (0.492)	0.540 (0.498)	0.573 (0.495)	<0.001
Married living apart	0.099 (0.299)	0.064 (0.245)	0.089 (0.284)	<0.001
Divorced/separated	0.114 (0.318)	0.146 (0.353)	0.123 (0.329)	<0.001
Widow/widower	0.126 (0.332)	0.169 (0.375)	0.139 (0.346)	<0.001
Cohabiting	0.007 (0.082)	0.012 (0.107)	0.008 (0.090)	0.006
Never married	0.067 (0.250)	0.069 (0.253)	0.068 (0.251)	0.706
Household head educational				
None	0.019 (0.137)	0.042 (0.201)	0.026 (0.159)	<0.001
Primary level	0.107 (0.309)	0.170 (0.376)	0.125 (0.331)	<0.001
ZJC level	0.096 (0.295)	0.136 (0.343)	0.108 (0.310)	<0.001
O' level	0.592 (0.492)	0.586 (0.493)	0.590 (0.492)	0.507
A' level	0.059 (0.235)	0.029 (0.168)	0.050 (0.218)	<0.001
Diploma/Certificate after primary	0.020 (0.140)	0.011 (0.102)	0.017 (0.130)	<0.001
Diploma/Certificate after secondary	0.059 (0.235)	0.015 (0.122)	0.046 (0.209)	<0.001

Graduate/Post-Graduate	0.049 (0.216)	0.011 (0.105)	0.038 (0.191)	<0.001
Household head employment status				
Not employed	0.371 (0.483)	0.566 (0.496)	0.429 (0.495)	<0.001
Formally employed	0.265 (0.441)	0.119 (0.324)	0.222 (0.416)	<0.001
Informally employed	0.364 (0.481)	0.314 (0.464)	0.349 (0.477)	<0.001
Household head no difficulty				
Seeing	0.928 (0.258)	0.904 (0.295)	0.921 (0.269)	<0.001
Hearing	0.981 (0.135)	0.969 (0.173)	0.978 (0.148)	<0.001
Walking	0.943 (0.233)	0.902 (0.298)	0.930 (0.254)	<0.001
Memory	0.980 (0.141)	0.965 (0.184)	0.975 (0.155)	<0.001
Language	0.994 (0.079)	0.987 (0.112)	0.992 (0.090)	<0.001
Washing	0.986 (0.116)	0.971 (0.168)	0.982 (0.134)	<0.001
Residence religion				
Roman Catholic	0.098 (0.297)	0.084 (0.277)	0.094 (0.292)	0.008
Protestant	0.165 (0.371)	0.113 (0.316)	0.149 (0.357)	<0.001
Pentecostal	0.298 (0.457)	0.286 (0.452)	0.294 (0.456)	0.163
Apostolic Sect	0.248 (0.432)	0.293 (0.455)	0.261 (0.439)	<0.001
Zion	0.053 (0.224)	0.064 (0.245)	0.056 (0.230)	0.009
Other Christian	0.052 (0.223)	0.065 (0.246)	0.056 (0.230)	0.004
Islam	0.007 (0.081)	0.013 (0.112)	0.008 (0.091)	<0.001
Traditional	0.006 (0.077)	0.006 (0.079)	0.006 (0.077)	0.787
Other religion	0.009 (0.095)	0.007 (0.084)	0.009 (0.092)	0.224
No religion	0.065 (0.246)	0.070 (0.256)	0.066 (0.249)	0.218
Household size	3.879 (1.719)	4.050 (1.808)	3.929 (1.747)	<0.001
Suburb type				
High Density	0.875 (0.330)	0.903 (0.296)	0.884 (0.321)	<0.001
Medium Density	0.077 (0.266)	0.047 (0.211)	0.068 (0.251)	<0.001
Informal Settlement	0.018 (0.133)	0.026 (0.160)	0.021 (0.142)	0.002
Low Density	0.030 (0.170)	0.024 (0.154)	0.028 (0.166)	0.069
Province				
Bulawayo	0.164 (0.370)	0.135 (0.341)	0.155 (0.362)	<0.001
Manicaland	0.048 (0.214)	0.036 (0.187)	0.045 (0.206)	0.002
Mash Central	0.048 (0.214)	0.036 (0.187)	0.045 (0.206)	0.003
Mash East	0.100 (0.300)	0.068 (0.251)	0.090 (0.287)	<0.001
Mash West	0.081 (0.272)	0.108 (0.310)	0.089 (0.284)	<0.001
Mat North	0.040 (0.195)	0.057 (0.231)	0.045 (0.206)	<0.001
Mat South	0.071 (0.256)	0.057 (0.232)	0.067 (0.250)	0.003
Midlands	0.136 (0.343)	0.200 (0.400)	0.155 (0.362)	<0.001
Masvingo	0.088 (0.283)	0.090 (0.286)	0.088 (0.284)	0.718
Harare	0.225 (0.418)	0.215 (0.411)	0.222 (0.416)	0.185

4.4. Summary

- 65.5% of the households were food secure when food security is defined as income that is above the budget sufficient to acquire the household's minimum energy requirements.
- At a descriptive level food insecurity was situated in households that were headed by women, the less educated, the unemployed and household heads living with a disability and moreover the households tend to be large.

CHAPTER 5 MAJOR SOURCES OF LIVELIHOODS FOR URBAN DWELLERS

5.1. Introduction

This chapter considers how urban households secure livelihoods and emphasise the options available to them in their efforts to earn incomes, create liveable environments and develop positive social relationships. It firstly identifies the major sources of livelihoods for the urban households and classifies them by the food security status of the household. It then identifies the characteristics of the households that pursue such livelihoods.

5.2. Descriptive analysis of major livelihood sources of urban dwellers

Table 3 shows the most important sources of livelihoods for urban households in order of their importance. Salaries/wages, casual labour and vending/petty trade were the most important sources of livelihoods for urban dwellers. These were followed by deals (madhiri, kukiya-kiya, ukutshaya amadili) and remittances (internal and external). Of the 10 major sources of livelihoods displayed in the table, salaries/wages, remittances (from within and from outside), rentals, own business and pensions were associated with statistically significant higher probability that the households were food secure before controlling for observed confounders. On the other hand, engagement in casual labour, vending/petty trade, and deals (madhiri, kukiya-kiya, ukutshaya amadili) were associated with an increase in the propensity that the household was food insecure before controlling for observed confounders at the 1% level of significance.

Table 3. Major sources of livelihoods by food security status

	Food secure	Food insecure	Total	Test
N	8,829(65.5)	4,650(34.5)	13,479 (100.0%)	
Salary/wages	0.360 (0.480)	0.246 (0.431)	0.287 (0.452)	<0.001
Casual labour	0.173 (0.378)	0.300 (0.458)	0.254 (0.435)	<0.001
Vending /petty trade	0.176 (0.381)	0.264 (0.441)	0.232 (0.422)	<0.001
Deals (Madhiri,Kukiya-kiya, Ukutshaya amadili)	0.116 (0.320)	0.132 (0.338)	0.126 (0.332)	0.007
Remittances/gifts from within	0.102 (0.302)	0.092 (0.289)	0.095 (0.294)	0.068
Remittances/gifts from outside	0.080 (0.272)	0.053 (0.225)	0.063 (0.243)	<0.001
Rentals	0.069 (0.253)	0.055 (0.228)	0.060 (0.237)	0.001
Own business	0.081 (0.273)	0.047 (0.211)	0.059 (0.236)	<0.001
Skilled trade/artisan	0.053 (0.224)	0.059 (0.236)	0.057 (0.232)	0.121
Pension	0.057 (0.232)	0.043 (0.204)	0.048 (0.214)	<0.001
Small scale mining/ mineral sales	0.042 (0.202)	0.024 (0.153)	0.031 (0.172)	<0.001

The following sub-sections of this chapter explore the characteristics of households that engaged in the livelihoods under examination.

5.3. Characteristics of the households that engaged in the 10 major livelihood sources

5.3.1. Salaries and wages

Table 4 shows that *ceteris paribus*, household age and being in mono-spousal households were negatively correlated with the household mentioning salaries and wages as being the major sources of livelihood for the household. These results are intuitive as one is expected to enter retirement as the age increases and being in mono-spousal households might imply that the household head is expected to be engaged in home production. On the other hand, education and being formally employed were associated with higher probability that the household mentions salary/wages as the major source of livelihood for the household. These findings are consistent with earlier findings that associate education with higher probability of being in formal employment and earnings in various settings (see e.g., Asoni & Sanandaji 2016; Blau & Kahn, 2017; McClough & Benedict, 2017; Hoffmann, Lee & Lemieux, 2020; Walker, Vignoles & Collins,2010)

Table 4. Conditional correlates of probability of engagement in salary/wages socio-economic characteristics of households

VARIABLES	coef	se
Household head age	-0.000**	(0.000)
Female household head	0.025**	(0.010)
Married living apart	0.017	(0.013)
Divorced/separated	-0.054***	(0.012)
Widow/widower	-0.033***	(0.012)
Cohabiting	-0.039	(0.027)
Never married	-0.035**	(0.014)
Primary level	-0.026	(0.018)
ZJC level	-0.015	(0.019)
O' level	-0.011	(0.018)
A' level	0.013	(0.023)
Diploma/Certificate after primary	0.025	(0.030)
Diploma/Certificate after secondary	0.062***	(0.023)
Graduate/Post-Graduate	0.053**	(0.025)
Formally employed	0.682***	(0.009)
Informally employed	0.000	(0.007)
seeing	0.032***	(0.011)
hearing	0.019	(0.021)
walking	0.013	(0.011)
memory	0.008	(0.020)
language	0.073*	(0.038)
washing	-0.006	(0.026)
Protestant	0.005	(0.011)
Pentecostal	0.008	(0.010)
Apostolic Sect	-0.007	(0.011)
Zion	-0.003	(0.014)
Other Christian	-0.008	(0.015)
Islam	-0.058*	(0.030)
Traditional	0.028	(0.037)
Other religion	-0.019	(0.031)

No religion	-0.010	(0.013)
ln (income)	0.077***	(0.004)
Household size	0.001	(0.002)
High Density	-0.025**	(0.010)
Bulawayo	0.008	(0.010)
Manicaland	-0.017	(0.015)
Mash Central	0.007	(0.014)
Mash East	-0.001	(0.012)
Mash West	-0.019*	(0.010)
Mat North	0.031**	(0.015)
Mat South	0.003	(0.013)
Midlands	0.001	(0.009)
Masvingo	-0.012	(0.011)
Constant	-0.384***	(0.049)
Observations	13,439	
R-squared	0.509	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.2. Casual labour

Table 5 shows that ceteris paribus, being female headed, elderly, widowed, location in the high-density suburbs, and formal employment reduced the probability that the household listed casual labour as one of its major sources of livelihood. The latter is self-explanatory as those who are already in formal employment have higher opportunity cost if they engage in casual labour all things being equal. On the other hand, being divorced/separated and large household size were ceteris paribus associated with the probability that the household mentioned casual labour as one of its major sources of livelihood.

Table 5. . Conditional correlates of probability of engagement in casual labour and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	-0.000**	(0.000)
Female household head	-0.048***	(0.012)
Married living apart	-0.005	(0.014)
Divorced/separated	0.047***	(0.016)
Widow/widower	-0.039**	(0.016)
Cohabiting	0.047	(0.045)
Never married	-0.010	(0.017)
Primary level	0.037	(0.025)
ZJC level	0.058**	(0.025)
O' level	0.027	(0.023)
A' level	0.011	(0.027)
Diploma/Certificate after primary	-0.014	(0.030)
Diploma/Certificate after secondary	-0.040	(0.026)
Graduate/Post-Graduate	0.000	(0.027)
Formally employed	-0.154***	(0.010)

Informally employed	-0.001	(0.009)
Seeing	0.009	(0.015)
Hearing	-0.032	(0.029)
Walking	0.070***	(0.017)
Memory	-0.004	(0.029)
Language	-0.047	(0.048)
Washing	0.025	(0.031)
Protestant	0.019	(0.014)
Pentecostal	0.052***	(0.013)
Apostolic Sect	0.066***	(0.013)
Zion	0.050***	(0.019)
Other Christian	0.054***	(0.019)
Islam	0.038	(0.042)
Traditional	-0.016	(0.044)
Other religion	0.048	(0.040)
No religion	0.088***	(0.019)
ln (income)	-0.097***	(0.005)
Household size	0.020***	(0.002)
High Density	-0.044***	(0.012)
Bulawayo	0.044***	(0.013)
Manicaland	0.002	(0.018)
Mash Central	-0.059***	(0.018)
Mash East	-0.044***	(0.014)
Mash West	0.025*	(0.015)
Mat North	0.147***	(0.020)
Mat South	-0.100***	(0.014)
Midlands	-0.006	(0.012)
Masvingo	-0.026*	(0.014)
Constant	0.722***	(0.058)
Observations	13,439	
R-squared	0.102	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.3. Vending/petty trade

Table 6 shows that female headed households were 8.6% more likely to engage in vending/petty trade than male headed households all things being equal at the 1% level of significance. This finding is consistent with the earlier findings of Levin et al. (1999) who find that petty trading and vending is predominately a women's profession in Ghana. Given the association of petty trading and vending in food insecurity noted in the descriptive table of this chapter, this finding lends currency to the gender heterogeneity in food security outcomes previously noted in Kairiza & Kembo (2019) amongst others.

Expectedly, the table further shows that higher levels of education and formal employment reduced the probability that the household listed petty trade or vending as its major source of livelihood. Furthermore, an increase in household size and location in the high-density

suburb was associated with higher probability that the household engaged in vending/petty trade as one of the major sources of livelihood.

Table 6. Conditional correlates of probability of engagement in vending/petty trade and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	-0.000	(0.000)
Female household head	0.086***	(0.011)
Married living apart	-0.049***	(0.013)
Divorced/separated	0.017	(0.015)
Widow/widower	-0.028*	(0.015)
Cohabiting	-0.025	(0.039)
Never married	-0.065***	(0.015)
Primary level	-0.031	(0.025)
ZJC level	-0.021	(0.025)
O' level	-0.013	(0.024)
A' level	-0.021	(0.028)
Diploma/Certificate after primary	-0.049	(0.033)
Diploma/Certificate after secondary	-0.054*	(0.028)
Graduate/Post-Graduate	-0.103***	(0.027)
Formally employed	-0.056***	(0.009)
Informally employed	0.121***	(0.009)
seeing	0.008	(0.015)
hearing	0.017	(0.027)
walking	-0.008	(0.017)
memory	0.026	(0.028)
language	-0.029	(0.045)
washing	-0.025	(0.031)
Protestant	0.017	(0.014)
Pentecostal	0.016	(0.013)
Apostolic Sect	0.007	(0.013)
Zion	0.033*	(0.019)
Other Christian	-0.024	(0.018)
Islam	0.068	(0.041)
Traditional	-0.087**	(0.038)
Other religion	-0.026	(0.037)
No religion	-0.036**	(0.017)
ln (income)	-0.003	(0.005)
Household size	0.017***	(0.002)
High Density	0.053***	(0.011)
Bulawayo	0.010	(0.013)
Manicaland	0.037*	(0.020)
Mash Central	-0.138***	(0.017)
Mash East	-0.076***	(0.014)
Mash West	-0.061***	(0.014)
Mat North	-0.182***	(0.013)
Mat South	-0.005	(0.017)
Midlands	-0.115***	(0.011)
Masvingo	0.017	(0.015)

Constant	0.157***	(0.057)
Observations	13,439	
R-squared	0.076	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.4. Deals (madhiri, kukiya-kiya, ukutshaya amadili)

We find statistically insignificant evidence to support the notion that deals (madhiri, kukiya-kiya, ukutshaya amadili) were a young people's livelihood source (see e.g, Barford, Coombe & Proefke, 2021). Engaging in deals (madhiri, kukiya-kiya, ukutshaya amadili) was determined by gender of the household head amongst other contributory factors, with male headed households 3.6% more likely to engage in deals (madhiri, kukiya-kiya, ukutshaya amadili) at the 1% level of significance than female headed households. Furthermore, probably due to lack of employment opportunities, households with higher levels of education were ceteris paribus more likely to engage in deals (madhiri, kukiya-kiya, ukutshaya amadili), whereas those that hold any form of employment were less likely to engage in deals (madhiri, kukiya-kiya, ukutshaya amadili).

Table 7. Conditional correlates of probability of engagement in deals (madhiri, kukiya-kiya, ukutshaya amadili) and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	-0.000	(0.000)
Female household head	-0.036***	(0.010)
Married living apart	-0.020*	(0.011)
Divorced/separated	-0.007	(0.012)
Widow/widower	-0.039***	(0.011)
Cohabiting	-0.008	(0.034)
Never married	-0.015	(0.013)
Primary level	-0.005	(0.017)
ZIC level	-0.002	(0.017)
O' level	0.051***	(0.017)
A' level	0.059***	(0.021)
Diploma/Certificate after primary	0.009	(0.023)
Diploma/Certificate after secondary	0.029	(0.019)
Graduate/Post-Graduate	0.056***	(0.021)
Formally employed	-0.130***	(0.008)
Informally employed	-0.027***	(0.007)
seeing	-0.002	(0.011)
hearing	0.045***	(0.017)
walking	0.011	(0.012)
memory	0.019	(0.018)
language	-0.010	(0.032)
washing	-0.011	(0.021)
Protestant	0.002	(0.011)
Pentecostal	0.017*	(0.010)
Apostolic Sect	0.017	(0.010)
Zion	0.015	(0.014)

Other Christian	0.010	(0.014)
Islam	0.073**	(0.037)
Traditional	0.088**	(0.043)
Other religion	0.098***	(0.037)
No religion	0.039***	(0.015)
ln (income)	-0.006	(0.004)
Household size	0.006***	(0.002)
High Density	-0.017*	(0.009)
Bulawayo	-0.114***	(0.009)
Manicaland	-0.128***	(0.013)
Mash Central	0.009	(0.018)
Mash East	-0.039***	(0.013)
Mash West	-0.107***	(0.011)
Mat North	-0.131***	(0.011)
Mat South	-0.123***	(0.011)
Midlands	-0.055***	(0.010)
Masvingo	-0.102***	(0.011)
Constant	0.182***	(0.041)
Observations	13,439	
R-squared	0.060	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.5. Remittances/gifts from within the country

Table 8 shows that remittances from within the country as a major source of livelihood followed female headed households, elderly household heads, mono-spousal heads, the less educated, the unemployed and those living with disability, all things being equal. Moreover, an increase in the household size by one member reduced the probability that the household mentioned remittances as the major source of livelihood by 0.5% at the 1% level of remittances. The relationship of remittances with household size may prima facie look counterintuitive but further reflection reveal that the larger the household size, the lesser the probability that the household has a family member living outside the household who could send remittances to them.

Table 8. Conditional correlates of probability of engagement in remittances/gifts from within and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	0.000***	(0.000)
Female household head	0.017**	(0.008)
Married living apart	0.028***	(0.010)
Divorced/separated	0.022**	(0.011)
Widow/widower	0.077***	(0.012)
Cohabiting	-0.014	(0.018)
Never married	0.069***	(0.013)
Primary level	-0.005	(0.022)
ZJC level	-0.023	(0.022)

O' level	-0.050**	(0.021)
A' level	-0.050**	(0.022)
Diploma/Certificate after primary	-0.046*	(0.027)
Diploma/Certificate after secondary	-0.055**	(0.023)
Graduate/Post-Graduate	-0.052**	(0.023)
Formally employed	-0.074***	(0.006)
Informally employed	-0.056***	(0.006)
Seeing	-0.035***	(0.012)
Hearing	-0.003	(0.026)
Walking	-0.073***	(0.016)
Memory	-0.002	(0.027)
Language	0.041	(0.042)
Washing	-0.017	(0.029)
Protestant	0.006	(0.012)
Pentecostal	-0.021**	(0.010)
Apostolic Sect	-0.022**	(0.010)
Zion	-0.042***	(0.013)
Other Christian	-0.022	(0.014)
Islam	0.020	(0.036)
Traditional	-0.006	(0.041)
Other religion	-0.008	(0.030)
No religion	-0.038***	(0.013)
ln (income)	0.005	(0.004)
Household size	-0.005***	(0.002)
High Density	0.007	(0.008)
Bulawayo	0.015*	(0.009)
Manicaland	0.021	(0.013)
Mash Central	-0.004	(0.012)
Mash East	0.102***	(0.012)
Mash West	-0.014	(0.009)
Mat North	-0.033***	(0.010)
Mat South	-0.011	(0.010)
Midlands	-0.020***	(0.007)
Masvingo	-0.006	(0.009)
Constant	0.216***	(0.050)
Observations	13,439	
R-squared	0.083	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.6. Remittances/gifts from outside the country

The results on remittances from outside the country as a major source of livelihood presented in Table 9 are qualitatively similar to those on internal remittances presented in **Table 8**.

Table 9. Conditional correlates of probability of engagement in remittances/gifts from outside and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	0.000***	(0.000)
Female household head	0.014	(0.008)
Married living apart	0.060***	(0.010)
Divorced/separated	0.000	(0.010)
Widow/widower	0.040***	(0.011)
Cohabiting	-0.023**	(0.010)
Never married	0.065***	(0.012)
Primary level	0.034**	(0.015)
ZJC level	0.025	(0.015)
O' level	0.027*	(0.014)
A' level	0.046***	(0.017)
Diploma/Certificate after primary	0.050**	(0.023)
Diploma/Certificate after secondary	0.031*	(0.017)
Graduate/Post-Graduate	0.048**	(0.019)
Formally employed	-0.056***	(0.006)
Informally employed	-0.038***	(0.005)
Seeing	-0.009	(0.010)
Hearing	-0.037*	(0.023)
Walking	-0.029**	(0.012)
Memory	0.004	(0.021)
Language	-0.005	(0.035)
Washing	0.040*	(0.022)
Protestant	0.003	(0.010)
Pentecostal	-0.013	(0.009)
Apostolic Sect	-0.018**	(0.009)
Zion	-0.013	(0.012)
Other Christian	-0.013	(0.012)
Islam	-0.034	(0.022)
Traditional	0.003	(0.036)
Other religion	-0.042*	(0.023)
No religion	-0.025**	(0.011)
ln (income)	0.038***	(0.003)
Household size	-0.005***	(0.001)
High Density	-0.001	(0.006)
Bulawayo	0.061***	(0.008)
Manicaland	-0.041***	(0.008)
Mash Central	-0.025***	(0.008)
Mash East	0.005	(0.008)
Mash West	-0.013*	(0.007)
Mat North	-0.013	(0.009)
Mat South	0.013	(0.010)
Midlands	-0.011*	(0.006)
Masvingo	-0.011	(0.008)
Constant	-0.121***	(0.041)
Observations	13,439	
R-squared	0.060	

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

5.3.7. Rentals

Table 10 shows that the older the household head the more likely they were to mention that they relied on rentals as a major source of livelihood all things being equal. Furthermore, being in a mono-spousal household increased the probability that the household relied on rentals as a major source of livelihood all things being equal. Education and employment were associated with a reduction in the probability that the household relied on rentals as a major source of livelihood all things being equal. As expected, the larger the household size, the less likely that the household relied on rentals a major source of livelihood.

Table 10. Conditional correlates of probability of engagement in rentals and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	0.000***	(0.000)
Female household head	-0.009	(0.007)
Married living apart	-0.007	(0.007)
Divorced/separated	0.024***	(0.009)
Widow/widower	0.100***	(0.011)
Cohabiting	-0.014	(0.009)
Never married	0.020**	(0.009)
Primary level	-0.027	(0.022)
ZJC level	-0.057***	(0.021)
O' level	-0.064***	(0.020)
A' level	-0.056**	(0.022)
Diploma/Certificate after primary	-0.045*	(0.026)
Diploma/Certificate after secondary	-0.072***	(0.022)
Graduate/Post-Graduate	-0.066***	(0.022)
Formally employed	-0.054***	(0.005)
Informally employed	-0.040***	(0.005)
Seeing	0.000	(0.010)
Hearing	0.018	(0.020)
Walking	-0.043***	(0.014)
Memory	0.008	(0.023)
Language	-0.032	(0.042)
Washing	0.003	(0.026)
Protestant	-0.011	(0.010)
Pentecostal	-0.031***	(0.009)
Apostolic Sect	-0.037***	(0.009)
Zion	-0.034***	(0.011)
Other Christian	-0.031***	(0.012)
Islam	-0.001	(0.030)
Traditional	0.001	(0.035)
Other religion	-0.044**	(0.021)
No religion	-0.037***	(0.011)
ln (income)	0.019***	(0.003)

Household size	-0.003**	(0.001)
High Density	0.010	(0.006)
Bulawayo	-0.007	(0.007)
Manicaland	-0.002	(0.010)
Mash Central	0.034***	(0.012)
Mash East	0.003	(0.008)
Mash West	-0.008	(0.008)
Mat North	-0.012	(0.009)
Mat South	0.005	(0.009)
Midlands	-0.009	(0.006)
Masvingo	-0.010	(0.008)
Constant	0.086*	(0.045)
Observations	13,439	
R-squared	0.066	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.8. Own business

Table 11 shows that whilst education was positively associated with reliance on own business as a major source of livelihood, formal employment was not. The results portrayed herein therefore lend credence to the previous result in Section 5.3.4.

Table 11. Conditional correlates of probability of engagement in own business and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	0.000	(0.000)
Female household head	-0.003	(0.006)
Married living apart	0.012	(0.009)
Divorced/separated	0.001	(0.008)
Widow/widower	0.007	(0.008)
Cohabiting	-0.014	(0.015)
Never married	0.004	(0.009)
Primary level	0.008	(0.011)
ZJC level	0.010	(0.011)
O' level	0.023**	(0.011)
A' level	0.029**	(0.015)
Diploma/Certificate after primary	0.005	(0.018)
Diploma/Certificate after secondary	0.022	(0.015)
Graduate/Post-Graduate	0.039**	(0.017)
Formally employed	-0.037***	(0.006)
Informally employed	0.040***	(0.005)
Seeing	0.006	(0.008)
Hearing	-0.009	(0.014)
Walking	-0.007	(0.008)
Memory	-0.030*	(0.016)
Language	0.024	(0.023)

Washing	0.012	(0.014)
Protestant	0.003	(0.008)
Pentecostal	0.010	(0.007)
Apostolic Sect	0.006	(0.008)
Zion	0.002	(0.010)
Other Christian	0.010	(0.011)
Islam	0.021	(0.024)
Traditional	-0.032*	(0.018)
Other religion	0.050*	(0.029)
No religion	0.004	(0.010)
ln (income)	0.062***	(0.004)
Household size	-0.002*	(0.001)
High Density	-0.015**	(0.007)
Bulawayo	-0.008	(0.007)
Manicaland	0.030**	(0.013)
Mash Central	-0.018*	(0.010)
Mash East	-0.018**	(0.008)
Mash West	-0.024***	(0.007)
Mat North	-0.022**	(0.009)
Mat South	-0.010	(0.009)
Midlands	-0.005	(0.007)
Masvingo	-0.013*	(0.008)
Constant	-0.283***	(0.032)
Observations	13,439	
R-squared	0.054	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.9. Skilled trade/artisan

Table 12 shows that as the age of the household head increased, the probability of the household mentioning skilled trade/artisan as the major source of livelihood for the household decreased at the 5% level of significance all things being equal. Furthermore, being female headed reduced the probability that the household engaged in skilled trade as a major source of livelihood. Expectedly, household heads who were graduates of technical tertiary institutions were ceteris paribus more likely to mention skilled trade as major source of livelihood for the household.

Table 12. Conditional correlates of probability of engagement in skilled trade/artisan and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	-0.000**	(0.000)
Female household head	-0.044***	(0.007)
Married living apart	0.007	(0.008)
Divorced/separated	-0.011	(0.008)
Widow/widower	-0.006	(0.008)
Cohabiting	0.021	(0.027)
Never married	-0.014*	(0.008)

Primary level	-0.002	(0.010)
ZJC level	-0.005	(0.010)
O' level	0.001	(0.010)
A' level	0.007	(0.014)
Diploma/Certificate after primary	0.033*	(0.020)
Diploma/Certificate after secondary	0.048***	(0.015)
Graduate/Post-Graduate	0.003	(0.014)
Formally employed	-0.044***	(0.005)
Informally employed	0.057***	(0.005)
Seeing	0.003	(0.007)
Hearing	0.010	(0.010)
Walking	-0.004	(0.008)
Memory	0.011	(0.010)
Language	0.009	(0.016)
Washing	0.009	(0.011)
Protestant	0.006	(0.008)
Pentecostal	-0.002	(0.007)
Apostolic Sect	0.002	(0.008)
Zion	-0.005	(0.010)
Other Christian	-0.015	(0.009)
Islam	-0.028*	(0.017)
Traditional	-0.023	(0.022)
Other religion	0.000	(0.021)
No religion	0.013	(0.010)
ln (income)	0.014***	(0.003)
Household size	0.001	(0.001)
High Density	0.008	(0.007)
Bulawayo	-0.019***	(0.007)
Manicaland	0.013	(0.012)
Mash Central	0.009	(0.012)
Mash East	0.020**	(0.010)
Mash West	-0.027***	(0.008)
Mat North	-0.030***	(0.008)
Mat South	-0.009	(0.009)
Midlands	-0.045***	(0.006)
Masvingo	-0.006	(0.008)
Constant	-0.047**	(0.021)
Observations	13,439	
R-squared	0.050	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.10. Pension

Conceivably, Table 13 shows that as the age of the household head increased, the higher the probability that the households mentioned pension as a major source of livelihood since older people are likely to have retired from formal employment and are therefore eligible for pension. Moreover, being female headed reduced the probability that the household had pension as a major source of livelihood by 4.1% at the 1% level of significance all things being

equal. This result is acceptable when one considers that pension is a product of prior employment which is likely to have excluded women.

The table further shows that the higher the education of the household head the more likely that the household had pension as major source of livelihood and moreover as expected current employment (either formally or informally) was associated with a ceteris paribus decline in the probability that the household relied on pensions as a major source of livelihood.

Table 13. Conditional correlates of probability of engagement in pension and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	0.001***	(0.000)
Female household head	-0.041***	(0.006)
Married living apart	-0.023***	(0.006)
Divorced/separated	-0.009	(0.007)
Widow/widower	0.077***	(0.011)
Cohabiting	-0.008	(0.011)
Never married	-0.017**	(0.007)
Primary level	0.023	(0.017)
ZJC level	0.051***	(0.018)
O' level	0.002	(0.017)
A' level	0.001	(0.017)
Diploma/Certificate after primary	0.070***	(0.025)
Diploma/Certificate after secondary	0.024	(0.019)
Graduate/Post-Graduate	0.019	(0.019)
Formally employed	-0.098***	(0.005)
Informally employed	-0.070***	(0.004)
Seeing	-0.019*	(0.010)
Hearing	-0.009	(0.021)
Walking	-0.024*	(0.013)
Memory	-0.007	(0.022)
Language	-0.012	(0.037)
Washing	0.004	(0.023)
Protestant	-0.027***	(0.010)
Pentecostal	-0.050***	(0.009)
Apostolic Sect	-0.071***	(0.009)
Zion	-0.062***	(0.011)
Other Christian	-0.052***	(0.012)
Islam	-0.072***	(0.022)
Traditional	0.046	(0.040)
Other religion	-0.047**	(0.022)
No religion	-0.067***	(0.010)
ln (income)	0.022***	(0.003)
Household size	-0.004***	(0.001)
High Density	-0.001	(0.005)
Bulawayo	0.044***	(0.007)

Manicaland	0.032***	(0.010)
Mash Central	0.007	(0.007)
Mash East	0.014**	(0.006)
Mash West	0.008	(0.007)
Mat North	0.017**	(0.008)
Mat South	0.022***	(0.007)
Midlands	0.031***	(0.006)
Masvingo	0.023***	(0.007)
Constant	0.052	(0.046)
Observations	13,439	
R-squared	0.114	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.11. Small scale mining/ mineral sales

Table 14 shows that as the age of the household head decreases the probability that the household relies on small scale mining as a major source of livelihood increases. The table further shows that female headed households and those mono-spousal households were less likely to undertake small scale mining as a source of livelihood all things being equal. Being formally and informally employed have opposing and affirming association, respectively the probability that the household engages in small scale mining as a major source of livelihood, all things being equal.

Table 14. Conditional correlates of probability of engagement in small scale mining/ mineral sales and socio-economic characteristics of households

VARIABLES	coef	se
Household head age	-0.000***	(0.000)
Female household head	-0.011**	(0.005)
Married living apart	-0.003	(0.006)
Divorced/separated	-0.029***	(0.005)
Widow/widower	-0.016***	(0.005)
Cohabiting	-0.012	(0.013)
Never married	-0.024***	(0.005)
Primary level	0.020***	(0.007)
ZJC level	0.012	(0.007)
O' level	0.009	(0.007)
A' level	-0.002	(0.009)
Diploma/Certificate after primary	-0.013*	(0.007)
Diploma/Certificate after secondary	-0.008	(0.008)
Graduate/Post-Graduate	-0.003	(0.008)
Formally employed	-0.017***	(0.003)
Informally employed	0.030***	(0.004)
Seeing	0.014***	(0.003)
Hearing	-0.009	(0.008)
Walking	0.008*	(0.004)
Memory	0.002	(0.004)
Language	0.015**	(0.006)

Washing	-0.013	(0.010)
Protestant	0.011**	(0.005)
Pentecostal	0.004	(0.004)
Apostolic Sect	0.009*	(0.005)
Zion	0.016*	(0.008)
Other Christian	-0.012**	(0.006)
Islam	0.032	(0.022)
Traditional	-0.004	(0.012)
Other religion	0.020	(0.019)
No religion	0.017**	(0.007)
ln (income)	0.007***	(0.002)
Household size	0.000	(0.001)
High Density	0.004	(0.005)
Bulawayo	0.006**	(0.003)
Manicaland	0.006	(0.004)
Mash Central	0.097***	(0.012)
Mash East	0.004	(0.004)
Mash West	0.054***	(0.007)
Mat North	0.002	(0.002)
Mat South	0.076***	(0.009)
Midlands	0.075***	(0.006)
Masvingo	0.006**	(0.003)
Constant	-0.056***	(0.016)
Observations	13,439	
R-squared	0.066	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.4. Summary

- Salaries/wages, casual labour and vending/petty trade were the most important sources of livelihoods for urban dwellers. These were followed by deals (Madhiri, Kukiya-kiya, Ukutshaya amadili) and remittances (internal and external).
- Livelihoods that exhibit stability which are subject to contract enforcement either through formal or informal institutions (norms) were associated with statistically significant higher probability that the household was food secure before controlling for observed confounders.
- Livelihoods which encapsulate contract enforcement in our case are salaries/wages, remittances (from within and from outside), rentals, own business and pensions were associated with statistically significant higher probability that the households were food secure before controlling for observed confounders.
- Education is the most important socio-economic requisite for the household to enter stable livelihoods that exhibit stability and are enforced through formal sanction. Education however shuns stable livelihoods whose enforcement is through social sanction.

- Female headed households were engaged in unstable livelihoods that are at potentially cross-purposes with the law (vending) or whose contracts cannot be enforced through law or social norms (casual labour).
- Female headed households and elderly people were ceteris paribus more likely to engage in stable livelihoods whose contracts can be enforced socially.

CHAPTER 6 INVOLVEMENT IN AGRICULTURAL PRODUCTION

6.1. Introduction

Presently in Zimbabwe, both urban and peri-urban agriculture constitutes important parts of urban food systems, because both support livelihood strategies of urban households, not least the poor (Memon & Lee-Smith, 1993; Owuor, 2002; 2006). Urban and peri-urban agriculture involves keeping livestock and cultivating crops in urban areas or at their peripheries (Mougeot, 2000; van Veenhuizen, 2006). Increasing numbers of urban people demand increasing amounts of agricultural products such as poultry, vegetables, and milk (Drechsel et al., 2014). Many of those products in demand are produced in urban and peri-urban areas (Memon & Lee-Smith, 1993).

Of importance is also production by urban households in rural areas. Growing urban as well as rural uncertainties in sub-Saharan Africa have increased the importance of the household and kinship relations as providers of welfare and social security. Households' livelihoods are therefore increasingly stretched across space and bring to fore the production of food in rural areas.

6.2. Urban agriculture

6.2.1. Descriptive analysis of urban agriculture

Table 15 shows that before controlling for observed confounders, there was statistically no significant difference in the food security status of households that practised urban agriculture and those that did not practice. Self-selection which is a result of both observed and unobserved confounding invalidates a direct comparison of outcomes of households that practised urban agriculture and those that did not. The table shows that the proportion of people who were food secure who received government crop inputs constituted 30.6% of the food secure households whereas it constituted 26.6% of the food insecure households. The same trend is replicated when one looks at households that kept livestock.

Table 15. Descriptive analysis of urban agriculture by food security status

	Food secure	Food insecure	Total	Test
N	8,829(65.5)	4,650(34.5)	13,479 (100.0%)	
Households that engage in urban agriculture	0.149(0.357)	0.148(0.355)	0.149(0.356)	0.830
Plot size in square meters	149.048 (487.944)	125.555 (296.372)	134.658 (382.224)	0.185
Households that received Government support	0.306 (0.461)	0.240 (0.427)	0.266 (0.442)	0.001
Households that keep livestock	0.163 (0.370)	0.125 (0.331)	0.140 (0.347)	0.016

6.2.2. Correlates of urban agriculture

Table 16 reveals that holding things constant, an increase in the age of the household head by one year was associated with an increase in the probability that the household engaged in urban agriculture of 1% at the 1% level of significance. Compared to households that were

headed by people who are married and living together with their spouse, being single or divorced reduced the probability that the household engaged in urban agriculture whilst being widowed increased the probability.

The table reveals that any form of education for the household head reduced the probability that the household engaged in urban agriculture. Furthermore, the larger the household in terms of size the more likely it was to engage in urban agriculture. The relationship between size and propensity to engage in urban agriculture was intuitive considering that household size reflects the labour resources available to the household.

Columns (III) and (IV) of the table show that after controlling for observed confounders, education was also the major correlate of plot size with households headed by the less educated engaging urban agriculture on larger plots of land. Save for provincial differences there are few notable correlates of receiving crop support from the government for those practising urban agriculture as reflected in Column (V) and (VI).

Columns (VII) and (VIII) shows that all things being held constant, the higher the education of the household head the higher the probability that the household engaged in livestock production in urban areas. Furthermore, the larger the income of the household the higher the probability that the household engaged in urban livestock production.

Table 16. Correlates of urban agriculture

	Households engages in urban agriculture		Plot size in square metres		Households that received government support		Households that keep livestock	
	coef	se	coef	se	coef	se	coef	se
Household head age	0.001***	(0.000)	0.24	(0.474)	0.001	(0.000)	0	(0.000)
Female household head	0.003	(0.010)	-16.787	(21.952)	0.031	(0.032)	-0.039	(0.025)
Married living apart	-0.001	(0.012)	37.826	(29.074)	-0.017	(0.037)	0.007	(0.031)
Divorced/separated	-0.036***	(0.012)	39.947	(38.356)	-0.004	(0.043)	-0.012	(0.033)
Widow/widower	0.034**	(0.014)	-18.108	(32.936)	-0.004	(0.037)	0.014	(0.028)
Cohabiting	-0.019	(0.027)	20.042	(70.625)	-0.061	(0.110)	0.012	(0.083)
Never married	-0.050***	(0.012)	46.958	(45.033)	-0.002	(0.051)	-0.03	(0.045)
Primary level	-0.047*	(0.025)	-80.826	(100.573)	0.018	(0.047)	0.079***	(0.027)
ZJC level	-0.097***	(0.025)	-166.598*	(99.034)	-0.006	(0.051)	0.102***	(0.033)
O' level	-0.106***	(0.024)	-198.556*	(101.435)	-0.03	(0.043)	0.076***	(0.026)
A' level	-0.133***	(0.027)	-148.62	(109.493)	-0.048	(0.061)	0.110**	(0.056)
Diploma/Certificate after primary	-0.074**	(0.034)	-186.401	(118.532)	0.035	(0.075)	0.147**	(0.075)
Diploma/Certificate after secondary	-0.105***	(0.028)	-191.154*	(104.004)	-0.082	(0.058)	0.141***	(0.054)
Graduate/Post-Graduate	-0.116***	(0.029)	-186.830*	(104.647)	-0.115**	(0.059)	0.213***	(0.064)
Formally employed	0.003	(0.009)	-33.613*	(20.328)	0.008	(0.028)	0.03	(0.026)
Informally employed	-0.002	(0.007)	-5.863	(23.574)	-0.009	(0.023)	-0.012	(0.018)
seeing	-0.009	(0.013)	-43.536	(50.557)	-0.023	(0.034)	0.005	(0.029)
hearing	-0.001	(0.026)	34.203	(51.703)	0.014	(0.057)	0.061*	(0.037)
walking	-0.030*	(0.016)	-40.126	(55.908)	-0.012	(0.039)	-0.055*	(0.033)
memory	-0.019	(0.028)	102.757**	(44.002)	0.065	(0.061)	0.004	(0.042)
language	0.025	(0.042)	43.596	(67.253)	-0.001	(0.106)	-0.037	(0.097)
washing	0.058**	(0.027)	43.659	(50.006)	0.002	(0.079)	0.09	(0.057)
Protestant	-0.012	(0.013)	-9.036	(38.833)	-0.065*	(0.036)	-0.018	(0.030)
Pentecostal	-0.038***	(0.012)	-5.498	(41.718)	-0.022	(0.033)	-0.008	(0.028)

Apostolic Sect	-0.018	(0.012)	-27.296	(39.434)	-0.044	(0.033)	-0.008	(0.028)
Zion	-0.025	(0.017)	-44.425	(38.144)	-0.029	(0.046)	-0.059	(0.039)
Other Christian	-0.032**	(0.016)	-31.033	(45.340)	-0.111**	(0.047)	-0.034	(0.041)
Islam	0.009	(0.036)	-32.668	(64.357)	0.064	(0.086)	-0.063	(0.053)
Traditional	0.006	(0.043)	-37.268	(84.353)	0.098	(0.125)	-0.045	(0.076)
Other religion	-0.083***	(0.025)	-67.274	(77.609)	-0.039	(0.173)	-0.122***	(0.034)
No religion	-0.056***	(0.015)	-31.206	(47.749)	-0.087*	(0.053)	0.015	(0.044)
ln (income)	-0.008*	(0.005)	23.417*	(13.222)	-0.017	(0.014)	0.042***	(0.014)
Household size	0.012***	(0.002)	-4.328	(6.653)	0.006	(0.006)	0	(0.005)
High Density	0.009	(0.011)	-33.723	(21.128)	0.008	(0.030)	-0.061**	(0.027)
Bulawayo	0.027***	(0.009)	-76.065**	(34.016)	0.057*	(0.032)	-0.049*	(0.026)
Manicaland	0.090***	(0.017)	-45.656	(38.667)	0.234***	(0.050)	0.037	(0.042)
Mash Central	0.224***	(0.019)	-25.528	(43.191)	0.493***	(0.040)	-0.003	(0.031)
Mash East	0.198***	(0.014)	-83.557***	(26.993)	0.340***	(0.035)	-0.007	(0.029)
Mash West	0.023**	(0.011)	-8.168	(72.227)	0.175***	(0.043)	-0.018	(0.034)
Mat North	0.012	(0.014)	-172.635***	(30.927)	-0.097***	(0.033)	0.017	(0.053)
Mat South	0.021*	(0.012)	-124.767***	(31.770)	-0.099***	(0.028)	0.096*	(0.051)
Midlands	-0.009	(0.008)	-172.621***	(43.099)	-0.024	(0.033)	0.015	(0.033)
Masvingo	0.155***	(0.014)	-104.434***	(24.580)	0.063**	(0.032)	0.082***	(0.032)
Constant	0.156***	(0.054)	165.263	(123.973)	0.163	(0.132)	-0.169	(0.105)
Observations	13,437		1,960		1,996		1,996	
R-squared	0.068		0.049		0.18		0.058	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6.3. Agricultural production in areas outside of urban residence

6.3.1. Descriptive analysis of agricultural production in rural areas

Table 17 shows that before controlling for observed confounders, households that engaged in agriculture production outside urban areas were more likely to be food secure at the 1% level of significance. The next section characterises the urbanites who engaged in such production whilst Section 12.3.2 provides the treatment effects of such undertaking on food security outcomes.

Table 17. Descriptive analysis of urban households involved in agriculture outside urban areas of residence by food security status

	Food secure	Food insecure	Total	Test
Households involved in Rural agriculture	0.078 (0.268)	0.052 (0.222)	0.062 (0.241)	<0.001

6.3.2. Correlates of agriculture in outside urban areas of residence

Table 18 shows that all things being equal, an increase in the age of the household head by one year increased the probability that the household head engaged in rural agriculture by one year at the 1% level of significance. Furthermore, being divorced or never married was associated with a decline in the probability that the household engaged in rural agriculture after controlling for observed covariates.

The table shows that the higher the education of the household head, the less likely that the household engaged in agriculture in rural areas all things being held constant. Similar to the correlates on practising agriculture in urban areas, the larger the size of the household the higher the likelihood that the household engaged in agriculture outside urban areas.

Table 18. Correlates of households involved in rural agriculture with socio-economic characteristics

VARIABLES	Households involved in Rural agriculture	
	coef	se
Household head age	0.001***	(0.000)
Female household head	0.003	(0.010)
Married living apart	-0.001	(0.012)
Divorced/separated	-0.036***	(0.012)
Widow/widower	0.034**	(0.014)
Cohabiting	-0.019	(0.027)
Never married	-0.050***	(0.012)
Primary level	-0.047*	(0.025)
ZJC level	-0.097***	(0.025)
O' level	-0.106***	(0.024)
A' level	-0.133***	(0.027)

Diploma/Certificate after primary	-0.074**	(0.034)
Diploma/Certificate after secondary	-0.105***	(0.028)
Graduate/Post-Graduate	-0.116***	(0.029)
Formally employed	0.003	(0.009)
Informally employed	-0.002	(0.007)
seeing	-0.009	(0.013)
hearing	-0.001	(0.026)
walking	-0.030*	(0.016)
memory	-0.019	(0.028)
language	0.025	(0.042)
washing	0.058**	(0.027)
Protestant	-0.012	(0.013)
Pentecostal	-0.038***	(0.012)
Apostolic Sect	-0.018	(0.012)
Zion	-0.025	(0.017)
Other Christian	-0.032**	(0.016)
Islam	0.009	(0.036)
Traditional	0.006	(0.043)
Other religion	-0.083***	(0.025)
No religion	-0.056***	(0.015)
ln (income)	-0.008*	(0.005)
Household size	0.012***	(0.002)
High Density	0.009	(0.011)
Bulawayo	0.027***	(0.009)
Manicaland	0.090***	(0.017)
Mash Central	0.224***	(0.019)
Mash East	0.198***	(0.014)
Mash West	0.023**	(0.011)
Mat North	0.012	(0.014)
Mat South	0.021*	(0.012)
Midlands	-0.009	(0.008)
Masvingo	0.155***	(0.014)
Constant	0.156***	(0.054)
Observations	13,437	
R-squared	0.068	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6.4. Summary

- There was statistically no significant difference in the food security status of practitioners of urban agriculture and those that did not practise.
- Households that practised urban agriculture that received crop support from the government were more likely to be more food secure before controlling for observed confounders.
- Urban agriculture was ceteris paribus a livelihood option for the elderly, less educated, and mono-spousal households and large households that have surplus labour.

- Ceteris paribus, education increased the probability that the household engaged in livestock production.
- Before controlling for observed confounding variables, households that practised agriculture outside the urban areas were more likely to be food secure than those that did not.
- Practice of agriculture outside urban areas of residence was ceteris paribus the preserve for those married and living together with their spouse, less educated and older household heads. It was also a preserve for those with surplus labour supply in terms of household size.

CHAPTER 7 MULTI-LOCALITY AND MIGRATION

7.1. Introduction

Diversification of incomes by smallholder households out of agriculture both in situ and through migration has been documented in literature since the 1990s (Bryceson, 1997, 1999, 2002; Ellis, 1998, 2006; Haggblade, Hazell & Reardon, 2007). In spatial terms, this has led to the emergence of what is variously described as multi-spatial (de Haan, 2005; Foeken & Owuor, 2001; Start, 2001, 2004), multilocal (Dick & Schmidt-Kallert, 2011; Tacoli, 2008) and 'stretched' livelihoods (Crush, 2013) in which households operate along a rural–urban continuum tied together by remittances and migration (Bah et al., 2003; Collinson et al., 2006; Crush & Pendleton, 2009; Tacoli, 2006, 2007). This section examines the implications of such migration on food security of urban households. It firstly gives a description of such migration patterns by food security status of the households (Section 7.2) before giving the characteristics of the households exhibiting multi-locality (Section 7.3). Section 12.4 will then give the treatment effects of multi-locality on food security.

7.2. Descriptive analysis

Table 19 shows that before controlling for observed confounders, food secure households had less likelihood of having a person who migrated to the rural areas in the year leading to the survey than food insecure households at the 5% level of significance. This finding potentially points to the role of multi-locality of households in promoting or dissuading food security in Zimbabwe. The table further shows that households that were food secure had more likelihood of having a member who emigrated out of the country before controlling for observed confounders. This points to a potential role for remittances from abroad in promoting food security which will be examined in Section 12.2.

Table 19. Descriptive analysis of Multi-locality and urban migration by food security status

		Food secure	Food insecure	Total	Test
	N	8,829(65.5)	4,650(34.5)	13,479 (100.0%)	
Internal	Migration to rural	0.044 (0.206)	0.053 (0.223)	0.047 (0.211)	0.035
	Migration from rural	0.036 (0.186)	0.037 (0.188)	0.036 (0.187)	0.849
External	Migration to outside Zimbabwe	0.024 (0.153)	0.018 (0.133)	0.022 (0.147)	0.031
	Migration from outside Zimbabwe	0.008 (0.088)	0.008 (0.090)	0.008 (0.089)	0.820

7.3. Correlates of migration

Table 20 shows that households that were headed by people who were married and living apart from their spouses had more likelihood of having a member who migrated to the rural areas (Columns (I) and (II)) or abroad (Columns (V) and (VI)). Columns (II) and (III) show that households that were headed by spouses that were married and living apart from their partners also had more likelihood of having a member who emigrated from the rural areas into the household.

Higher levels of education were negatively associated with having a person who migrated from the household to the rural areas (Columns (I) and (II)) or migrated to the rural areas (Columns (III) and (IV)) all things being equal. Education however does not play a role in emigration (Columns (V) and (VI)) or immigration (Columns (VII) or (VIII)).

Household size and being from high density suburbs were *ceteris paribus*, positively related to all forms of migration after controlling for observed confounders.

Table 20. Correlates of migration with socio-economic characteristics

VARIABLES	Internal				External			
	Migration to rural		Migration from rural		Migration to outside Zimbabwe		Migration from outside Zimbabwe	
	coef	se	coef	se	coef	se	coef	se
Household head age	0.000	(0.000)	-0.000***	(0.000)	0.000*	(0.000)	0.000	(0.000)
Female household head	-0.004	(0.007)	0.002	(0.005)	0.003	(0.005)	-0.000	(0.002)
Married living apart	0.026***	(0.009)	0.016**	(0.007)	0.031***	(0.007)	0.004	(0.003)
Divorced/separated	0.003	(0.008)	0.010	(0.006)	0.000	(0.005)	0.000	(0.003)
Widow/widower	-0.013	(0.008)	0.008	(0.007)	0.002	(0.006)	0.002	(0.004)
Cohabiting	-0.035***	(0.010)	-0.020**	(0.009)	0.006	(0.013)	-0.006***	(0.001)
Never married	0.015*	(0.009)	0.017**	(0.007)	0.020***	(0.007)	0.003	(0.004)
Primary level	-0.006	(0.013)	-0.031**	(0.014)	-0.009	(0.011)	-0.011	(0.008)
ZJC level	0.004	(0.013)	-0.025*	(0.014)	-0.003	(0.011)	-0.012	(0.008)
O' level	-0.004	(0.012)	-0.029**	(0.014)	-0.011	(0.011)	-0.011	(0.008)
A' level	-0.005	(0.015)	-0.026*	(0.016)	-0.004	(0.012)	-0.010	(0.009)
Diploma/Certificate after primary	-0.033**	(0.016)	-0.035*	(0.018)	0.000	(0.016)	0.008	(0.013)
Diploma/Certificate after secondary	-0.021	(0.015)	-0.041***	(0.015)	-0.006	(0.013)	-0.010	(0.009)
Graduate/Post-Graduate	-0.025*	(0.015)	-0.031*	(0.016)	-0.011	(0.013)	-0.011	(0.009)
Formally employed	0.002	(0.006)	0.007	(0.005)	-0.005	(0.004)	0.001	(0.002)
Informally employed	0.005	(0.005)	0.014***	(0.004)	-0.005	(0.003)	-0.002	(0.002)
seeing	-0.019**	(0.009)	-0.024***	(0.008)	-0.007	(0.006)	-0.006	(0.005)
hearing	-0.019	(0.018)	0.011	(0.013)	0.005	(0.011)	0.008	(0.008)
walking	-0.029***	(0.011)	-0.017*	(0.009)	-0.002	(0.007)	-0.006	(0.006)
memory	0.020	(0.016)	-0.018	(0.016)	-0.026*	(0.016)	0.000	(0.011)
language	-0.005	(0.030)	0.002	(0.026)	-0.006	(0.022)	-0.014	(0.021)
washing	0.021	(0.017)	0.003	(0.016)	0.021*	(0.012)	-0.014	(0.013)
Protestant	-0.004	(0.008)	-0.005	(0.007)	-0.004	(0.006)	-0.002	(0.004)
Pentecostal	-0.008	(0.007)	-0.003	(0.006)	-0.007	(0.005)	-0.003	(0.003)
Apostolic Sect	0.003	(0.007)	-0.002	(0.006)	-0.008	(0.005)	-0.002	(0.003)

Zion	-0.006	(0.010)	0.002	(0.009)	-0.000	(0.008)	-0.005	(0.004)
Other Christian	0.008	(0.011)	0.007	(0.010)	-0.003	(0.007)	-0.002	(0.005)
Islam	-0.012	(0.019)	-0.032***	(0.011)	0.015	(0.020)	-0.011***	(0.003)
Traditional	0.013	(0.027)	0.004	(0.022)	0.002	(0.022)	0.026	(0.021)
Other religion	0.022	(0.025)	0.028	(0.023)	-0.024**	(0.010)	-0.012***	(0.003)
No religion	-0.010	(0.009)	-0.006	(0.008)	-0.005	(0.007)	-0.004	(0.004)
ln (income)	0.000	(0.002)	0.007***	(0.002)	0.007***	(0.002)	0.002**	(0.001)
Household size	0.003***	(0.001)	0.012***	(0.001)	0.002*	(0.001)	0.002***	(0.001)
High Density	0.017***	(0.006)	0.008*	(0.005)	-0.001	(0.004)	0.003*	(0.002)
Bulawayo	-0.023***	(0.006)	-0.017***	(0.006)	-0.003	(0.005)	0.004	(0.003)
Manicaland	-0.032***	(0.008)	-0.019***	(0.007)	-0.027***	(0.004)	-0.009***	(0.002)
Mash Central	-0.025***	(0.009)	-0.010	(0.008)	-0.009	(0.006)	-0.002	(0.004)
Mash East	-0.012	(0.008)	-0.008	(0.006)	-0.006	(0.005)	-0.006***	(0.002)
Mash West	-0.027***	(0.007)	0.001	(0.007)	-0.010**	(0.005)	-0.005*	(0.003)
Mat North	-0.009	(0.010)	-0.011	(0.008)	-0.020***	(0.005)	-0.003	(0.003)
Mat South	0.007	(0.010)	-0.006	(0.007)	0.005	(0.007)	0.005	(0.004)
Midlands	-0.012*	(0.007)	-0.015***	(0.005)	-0.008*	(0.004)	-0.003	(0.003)
Masvingo	-0.003	(0.009)	-0.005	(0.007)	-0.019***	(0.004)	-0.007***	(0.003)
Constant	0.056*	(0.032)	0.016	(0.030)	-0.002	(0.028)	0.032	(0.022)
Observations	13,245		13,245		13,245		13,245	
R-squared	0.010		0.021		0.015		0.011	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.4. Summary

- Food secure households had less likelihood of having a person who migrated to the rural areas in the year than food insecure households at the 5% level of significance.
- The table further shows that households that were food secure had more likelihood of having a member who emigrated out of the country before controlling for observed confounders.
- An increase in the education of the household head reduced the probability that the household received a new member from the rural areas.
- The larger the household size the larger the likelihood that the household experienced inward migration (either internal or external) or outward migration (either internal or external).

CHAPTER 8 CLIMATE CHANGE KNOWLEDGE, SHOCKS AND STRESSORS

8.1. Introduction

Urban areas suffer the double burden of climate change and economic shocks due to their high dependency market exchange characterised by purchased and often imported food. COVID-19 and the Russia-Ukraine conflict have caused rising global food prices triggering short-term spikes and increased volatility in developing countries like Zimbabwe (Ahn et al., 2023; Akim et al., 2024; Alsan et al., 2021). On the other hand, climate change amplifies the socio-economic drivers of food insecurity, as its impacts are deeply affected by poverty and inequality. Over time, climate change will affect all four components of food security: availability, access, utilisation, and stability (FAO, 2009; Vermeulen et al., 2012). Currently, attention focuses mainly on availability, that is, on production. However, climate change's impacts on incomes and livelihoods and thus on access is equally important for many people, and for low-income groups in both rural and urban areas, who purchase their food rather than produce it. Most of the food consumed in urban areas comes from rural regions or is imported, and therefore disruptions in production, transport and storage affect urban food supplies and prices (Ziervogel and Frayne, 2011). In other words, in terms of availability, urban food security is affected not only by the local impacts of climate change, but also on impacts that take place in other locations and indeed globally, especially with regards to imported foods

8.2. Knowledge of consequences of climate change

8.2.1. Descriptive analysis of knowledge of consequences of climate change

Table 21 shows that there was no statistically significant difference in the proportion of households that agreed that climate change limits farming outputs between the households that were food secure versus those that were food insecure before controlling for observed confounders.

Table 21. Descriptive analysis of knowledge of consequences of climate change by food security status

	Food secure	Food insecure	Total	Test
N	8,829(65.5)	4,650(34.5)	13,479 (100.0%)	
Climate change limits farming output	0.706 (0.456)	0.683 (0.465)	0.700 (0.458)	0.108

8.2.2. Correlates of Knowledge of consequences of climate change

Table 22 shows that at the 10% level of significance an increase in the age of the household by one year increased the probability that the household respondent had knowledge that climate change limits farming outputs. Households headed by women and less educated people were ceteris paribus less likely to agree that climate change limits the farming outputs.

Table 22. Correlates of knowledge of consequences of climate change with socio-economic characteristics

VARIABLES	Climate change limits farming output	coef	Se

Household head age	0.001*	(0.000)
Female household head	-0.056***	(0.021)
Married living apart	0.019	(0.025)
Divorced/separated	0.011	(0.027)
Widow/widower	0.081***	(0.026)
Cohabiting	0.036	(0.066)
Never married	0.052*	(0.030)
Primary level	-0.060	(0.047)
ZJC level	0.051	(0.048)
O' level	0.020	(0.045)
A' level	0.055	(0.053)
Diploma/Certificate after primary	0.122*	(0.065)
Diploma/Certificate after secondary	0.057	(0.053)
Graduate/Post-Graduate	0.128**	(0.053)
Formally employed	-0.005	(0.018)
Informally employed	0.002	(0.015)
seeing	0.005	(0.027)
hearing	-0.067	(0.048)
walking	0.021	(0.033)
memory	0.001	(0.057)
language	0.109	(0.101)
washing	0.094	(0.064)
Protestant	0.007	(0.025)
Pentecostal	-0.015	(0.023)
Apostolic Sect	-0.021	(0.024)
Zion	-0.036	(0.032)
Other Christian	-0.020	(0.033)
Islam	-0.072	(0.074)
Traditional	0.050	(0.081)
Other religion	-0.161**	(0.067)
No religion	-0.066**	(0.033)
ln (income)	0.004	(0.006)
Household size	-0.007**	(0.004)
High Density	0.036*	(0.020)
Bulawayo	0.059***	(0.021)
Manicaland	0.064**	(0.028)
Mash Central	0.151***	(0.027)
Mash East	-0.055**	(0.024)
Mash West	-0.179***	(0.028)
Mat North	0.083**	(0.037)
Mat South	-0.182***	(0.030)
Midlands	0.002	(0.022)
Masvingo	-0.041	(0.026)
Constant	0.507***	(0.115)
Observations	5,341	
R-squared	0.053	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

8.3 SHOCKS AND STRESSORS

8.3.1. Descriptive analysis of shocks and stressors

Table 23 shows that households that were food insecure had a higher likelihood of having experienced shocks related to price changes of other commodities which are not basic and increase in rentals than households that were food secure. On the other hand, households that were food secure had higher likelihood of experiencing shocks related to high transport costs, being charged more for using mobile money or swipe and loss of employment of key household member than households that were food insecure before controlling for observed confounders.

Table 23. Descriptive analysis of shocks and stressors by food security status

	Food secure	Food insecure	Total	Test
N	8,829 (65.5)	4,650 (34.5)	13,479 (100.0%)	
Price changes-sharp increase of basic commodities	0.855 (0.352)	0.863 (0.343)	0.860 (0.347)	0.158
Price changes-sharp increase of other commodities	0.707 (0.455)	0.720 (0.449)	0.715 (0.451)	0.099
High transport costs	0.398 (0.490)	0.378 (0.485)	0.386 (0.487)	0.019
Increase in rentals	0.371 (0.483)	0.406 (0.491)	0.393 (0.488)	<0.001
Being charged more for using mobile money or swipe	0.215 (0.411)	0.155 (0.362)	0.178 (0.383)	<0.001
Loss of employment by key household member	0.115 (0.319)	0.104 (0.306)	0.108 (0.311)	0.061

8.3.2. Correlates of shocks and stressors

Table 24 shows that save for the case of rentals shock, compared to unemployed people, households headed by informally employed people were ceteris paribus less likely to have experienced all the shocks under consideration. Informality in this case can be seen as a cushion from vicissitudes in the formal market system. Columns (III) and (IV) shows that households headed by educated people were more likely to have experienced price shock of other commodities other than basic commodities. Columns (IV) and (V) shows that an increase in the age of the household head by one year decreased the probability the household was stressed by high transport cost shock. This finding is intuitive given that younger people are more likely to travel than elderly people who are likely to be in retirement.

The table further shows that people in high density (as compared to those in informal settlements, medium and low density) and household size are ceteris paribus a cushion to most shocks after controlling for observed covariates.

Table 24. Correlates of shocks and stressors with socio-economic characteristics

VARIABLES	Price changes-sharp increase of basic commodities		Price changes-sharp increase of other commodities		High transport costs		Increase in rentals		Being charged more for using mobile money or swipe		Loss of employment by key household member	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
Household head age	0.000	(0.000)	-0.000	(0.000)	-0.000***	(0.000)	-0.001***	(0.000)	0.000	(0.000)	-0.000	(0.000)
Female household head	0.004	(0.010)	0.010	(0.013)	0.044***	(0.014)	0.082***	(0.014)	-0.002	(0.011)	0.003	(0.009)
Married living apart	-0.012	(0.013)	0.008	(0.016)	0.018	(0.017)	-0.026	(0.017)	0.013	(0.014)	0.008	(0.012)
Divorced/separated	-0.002	(0.013)	-0.017	(0.016)	-0.044**	(0.018)	-0.060***	(0.018)	0.003	(0.014)	-0.020*	(0.011)
Widow/widower	-0.002	(0.013)	0.008	(0.017)	-0.037**	(0.018)	-0.127***	(0.017)	0.016	(0.014)	-0.022*	(0.012)
Cohabiting	0.006	(0.031)	0.056	(0.040)	-0.198***	(0.037)	-0.091**	(0.045)	-0.057**	(0.029)	-0.061***	(0.021)
Never married	-0.001	(0.014)	-0.035*	(0.019)	-0.075***	(0.019)	-0.105***	(0.020)	-0.007	(0.015)	-0.020	(0.013)
Primary level	-0.022	(0.021)	0.069**	(0.028)	0.007	(0.028)	0.033	(0.028)	-0.040*	(0.021)	-0.033*	(0.019)
ZJC level	-0.018	(0.021)	0.080***	(0.029)	0.046	(0.028)	0.016	(0.028)	-0.010	(0.022)	-0.027	(0.020)
O' level	-0.004	(0.020)	0.092***	(0.027)	0.063**	(0.026)	0.043	(0.026)	-0.018	(0.021)	-0.015	(0.018)
A' level	-0.029	(0.024)	0.091***	(0.032)	0.080**	(0.032)	0.026	(0.032)	-0.018	(0.026)	-0.020	(0.022)
Diploma/Certificate after primary	0.017	(0.028)	0.163***	(0.038)	0.106**	(0.042)	-0.003	(0.041)	0.050	(0.036)	-0.001	(0.029)
Diploma/Certificate after secondary	-0.028	(0.025)	0.116***	(0.033)	0.034	(0.033)	-0.044	(0.033)	-0.040	(0.026)	-0.028	(0.022)
Graduate/Post-Graduate	-0.008	(0.025)	0.133***	(0.034)	0.093***	(0.035)	0.000	(0.034)	0.017	(0.029)	-0.049**	(0.022)
Formally employed	-0.013	(0.009)	-0.041***	(0.012)	-0.039***	(0.013)	-0.002	(0.012)	0.020**	(0.010)	-0.066***	(0.008)
Informally employed	-0.023***	(0.007)	-0.036***	(0.009)	-0.069***	(0.010)	0.030***	(0.010)	-0.025***	(0.007)	-0.032***	(0.007)
seeing	0.011	(0.012)	0.048***	(0.017)	0.060***	(0.017)	0.037**	(0.016)	0.016	(0.013)	0.005	(0.011)
hearing	0.009	(0.023)	0.028	(0.031)	0.051	(0.031)	-0.033	(0.031)	0.028	(0.024)	-0.007	(0.021)
walking	0.009	(0.014)	0.025	(0.019)	0.027	(0.019)	0.066***	(0.018)	-0.001	(0.015)	-0.003	(0.013)
memory	-0.001	(0.024)	0.014	(0.032)	-0.008	(0.033)	-0.004	(0.031)	-0.011	(0.025)	-0.002	(0.021)
language	-0.011	(0.041)	0.011	(0.052)	-0.049	(0.056)	0.035	(0.053)	0.001	(0.042)	0.002	(0.035)
washing	0.071**	(0.030)	0.032	(0.036)	-0.017	(0.037)	-0.039	(0.035)	0.034	(0.026)	0.003	(0.024)
Protestant	-0.039***	(0.012)	0.015	(0.016)	-0.049***	(0.017)	-0.036**	(0.017)	-0.016	(0.014)	-0.002	(0.011)
Pentecostal	-0.034***	(0.010)	-0.001	(0.014)	-0.041***	(0.016)	0.026*	(0.015)	-0.014	(0.013)	-0.002	(0.010)
Apostolic Sect	-0.032***	(0.011)	-0.003	(0.015)	-0.039**	(0.016)	0.030*	(0.016)	-0.027**	(0.013)	-0.001	(0.010)
Zion	-0.024	(0.015)	-0.007	(0.021)	-0.013	(0.023)	0.017	(0.022)	-0.010	(0.018)	0.019	(0.015)
Other Christian	-0.025	(0.015)	-0.035*	(0.021)	0.008	(0.023)	-0.012	(0.022)	-0.038**	(0.017)	0.019	(0.015)

Islam	-0.080**	(0.036)	0.036	(0.042)	0.075	(0.049)	0.018	(0.046)	-0.046	(0.033)	0.033	(0.033)
Traditional	-0.038	(0.040)	-0.078	(0.054)	0.079	(0.056)	0.091	(0.056)	0.078	(0.049)	0.062	(0.042)
Other religion	0.005	(0.031)	-0.000	(0.045)	-0.056	(0.048)	-0.014	(0.046)	0.001	(0.036)	-0.042*	(0.024)
No religion	-0.022	(0.014)	0.012	(0.020)	-0.058***	(0.021)	0.038*	(0.021)	-0.031*	(0.017)	0.021	(0.014)
ln (income)	-0.005	(0.005)	-0.002	(0.006)	0.058***	(0.006)	0.052***	(0.006)	0.056***	(0.005)	0.019***	(0.004)
Household size	-0.003	(0.002)	-0.009***	(0.002)	-0.012***	(0.003)	-0.018***	(0.003)	-0.008***	(0.002)	0.000	(0.002)
High Density	0.001	(0.010)	-0.031**	(0.013)	-0.056***	(0.014)	-0.022	(0.014)	-0.065***	(0.012)	-0.030***	(0.010)
Bulawayo	-0.058***	(0.011)	-0.027**	(0.013)	-0.019	(0.014)	0.045***	(0.014)	0.009	(0.010)	0.017*	(0.009)
Manicaland	-0.041**	(0.016)	-0.020	(0.020)	-0.047**	(0.022)	0.105***	(0.022)	-0.043***	(0.015)	0.054***	(0.016)
Mash Central	-0.114***	(0.018)	-0.126***	(0.022)	-0.033	(0.021)	-0.062***	(0.020)	-0.038***	(0.014)	-0.008	(0.012)
Mash East	-0.027**	(0.013)	-0.003	(0.016)	-0.128***	(0.016)	0.018	(0.017)	0.064***	(0.014)	0.061***	(0.012)
Mash West	0.075***	(0.009)	0.085***	(0.014)	0.053***	(0.017)	0.113***	(0.017)	0.093***	(0.014)	-0.024***	(0.009)
Mat North	0.066***	(0.011)	-0.028	(0.021)	-0.070***	(0.021)	0.251***	(0.022)	0.146***	(0.020)	0.050***	(0.015)
Mat South	0.030**	(0.012)	-0.143***	(0.019)	0.033*	(0.019)	0.086***	(0.019)	-0.037***	(0.013)	-0.003	(0.011)
Midlands	-0.056***	(0.010)	-0.009	(0.013)	0.017	(0.014)	0.144***	(0.014)	0.018*	(0.010)	0.025***	(0.009)
Masvingo	-0.004	(0.011)	0.031**	(0.015)	0.073***	(0.017)	0.210***	(0.017)	0.165***	(0.015)	0.043***	(0.011)
Constant	0.878***	(0.052)	0.586***	(0.065)	0.150**	(0.067)	0.054	(0.066)	-0.091*	(0.050)	0.072*	(0.043)
Observations	13,439		13,439		13,439		13,439		13,439		13,439	
R-squared	0.024		0.022		0.034		0.051		0.047		0.017	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

8.4. Summary

- No statistically significant difference in the proportion of households that agreed that climate change limits farming outputs between the households that were food secure versus those that were food insecure before controlling for observed confounders.
- Whilst households headed by older people had more likelihood of having knowledge of climate change, those that were headed by women and the less educated had less likelihood.
- Food secure and food insecure households were affected differentially by economic shocks before controlling for observed confounders.
- Save for the case of rentals shock, compared to unemployed people, households headed by informally employed people were *ceteris paribus* less likely to have experienced all the shocks under consideration. Informality in this case can be seen as a cushion from the vicissitudes in the formal market system.

CHAPTER 9 SOCIAL PROTECTION

9.1. Introduction

Social protection is defined as *“a set of public policies, actions, and instruments enacted by a state (formal) or in some cases non-state (informal) actors within a country or a territory to help address poverty and vulnerability experienced by citizens”* (UNDP, 2019). Zimbabwe is a signatory to various regional and global legal and policy instruments on social protection, some of which include the Universal Declaration of Human Rights of 1948, the International Covenant on Economic, Social and Cultural Rights of 1966, the UN Convention on the Elimination of all Forms of Discrimination against Women (1979), the UN Convention on the Rights of the Child (1990), the UN Convention on the Rights of Persons with Disabilities (2006), UN Millennium Development Goals (2000), African Charter on Human and People’s Rights (1981) and the African Charter on the Rights and Welfare of the Child (1990) amongst others (NSPPF). In the contemporary set-up, the country is also party to the Sustainable Development Goals (SDGs) framework which is the reigning overarching global development policy framework. According to the International Labour Organisation (ILO), these SDGs are a reaffirmation of the member states’ commitment to social protection as a vehicle for the attainment of the Global Development Goals.

The country has also instituted a social protection policy named the ‘National Social Protection Policy Framework for Zimbabwe.’ The policy blueprint articulates the Government’s commitment to protecting the vulnerable who include children, persons with disabilities and the elderly, amongst others. To this end, for children, Section 75 (1) of the Zimbabwean Constitution guarantees the right to access to basic state funded education to all citizens and in 75 (4) an express obligation is placed on the state to provide an environment that facilitates the realisation of this right. (Act, 2013) To operationalise the realisation, the Education Act was amended in 2019. One of the provisions (Section 68C1) in the amended Act buttresses this right as it makes it illegal to exclude children from school for amongst other things non-payment of fees and levies (Amendment, 2020).

9.2. Descriptive analysis of social protection

Table 25 shows that before controlling for observed confounders, there was no difference between food-secure and food-insecure households regarding government, churches, and urban relatives’ support. On the other hand, before controlling for confounding variables, support from development partners was associated with households being more food insecure than secure. At this stage however this may be dismissed as self-selection bias in which the food insecure households are purposely targeted by development partners (Smith & Todd, 2005). Section 12.6 will implement PSM to mitigate self-selection bias from observed heterogeneity to isolate the treatment effects of social protection on food security outcomes.

Receiving support from rural relatives (which may be viewed as an expression of multi-locality) and receiving support from the diaspora was associated with food security before controlling for observed confounders.

Table 25. Descriptive analysis of social protection by food security status

	Food secure	Food insecure	Total	Test
N	8,829 (65.5)	4,650 (34.5)	13,479 (100.0%)	
Government	0.076 (0.265)	0.069 (0.254)	0.074 (0.262)	0.175
Development partners	0.032 (0.177)	0.052 (0.221)	0.038 (0.191)	<0.001
Churches	0.020 (0.139)	0.021 (0.144)	0.020 (0.141)	0.612
Urban relatives	0.050 (0.217)	0.049 (0.217)	0.050 (0.217)	0.949
Rural relatives	0.051 (0.221)	0.036 (0.187)	0.047 (0.212)	<0.001
Diaspora	0.056 (0.230)	0.024 (0.154)	0.047 (0.211)	<0.001

9.3. Correlates of social protection

Table 26 shows that the elderly people and being widowed increased the probability of receiving support from the government all things being equal. On the other hand, higher education (A' level and Graduate/Post-graduate) reduced the probability of receiving support from the government. Furthermore, government support targeted households with heads living with disability (walking and language) all things being equal. It also targeted larger households and people resident in high density suburbs.

The table further shows that support from development partners targeted the informally employed people and households with seeing disability all things being equal. It was also associated with larger households and those in high density suburbs.

Support from churches targeted people with disabilities (seeing and walking) and large households all things being equal. Support from urban relatives targeted mono-spousal households (divorced and widowed) as opposed to those married and living together and also households living with disabilities (seeing and walking) and those in high density areas as opposed to those in informal settlements, medium and low density all things being equal.

Support from rural relatives targeted female headed households and those households married and living apart from their spouses *ceteris paribus*. Support from the diaspora targeted households that had more educated household heads and it averted the formally and informally employed household heads all things being held constant. It also targeted households in high density areas after controlling for observed confounders.

Section 12.6 of Chapter 12 will evaluate the treatment effects of these modes of social protection on food security outcomes.

9.4. Summary

- The government and its development partners were the major sources of social protection for urban households in Zimbabwe.
- At a descriptive level there was no statistically significant difference between food secure households and food insecure households in terms of the probability of receiving government support. Food insecure households were however more likely to have received support from development partners than food secure ones before controlling for observed confounders.
- Receiving support from relatives in rural areas (which may be viewed as an expression of multi-locality) and receiving support from the diaspora was associated with food security before controlling for observed confounders.
- All things being equal government support targeted widows/widowers, the less educated, the disabled and those in high density areas.
- All things being held constant, support from development partners targeted the informally employed people, households living with sight disability, larger households, and those in high density suburbs

Table 26. Correlates of social protection

VARIABLES	Government		Development partners		Churches		Urban relatives		Rural relatives		Diaspora	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
Household head age	0.000***	(0.000)	-0.000	(0.000)	0.000*	(0.000)	-0.000	(0.000)	-0.000	(0.000)	0.000	(0.000)
Female household head	0.001	(0.007)	-0.004	(0.005)	0.003	(0.004)	0.007	(0.006)	0.015**	(0.006)	-0.007	(0.007)
Married living apart	-0.000	(0.009)	-0.005	(0.006)	0.001	(0.005)	0.007	(0.007)	0.020**	(0.008)	0.040***	(0.009)
Divorced/separated	0.001	(0.009)	0.013*	(0.007)	0.002	(0.005)	0.023***	(0.008)	-0.005	(0.007)	0.012	(0.008)
Widow/widower	0.036***	(0.010)	0.007	(0.007)	0.010	(0.006)	0.023***	(0.009)	0.007	(0.008)	0.029***	(0.009)
Cohabiting	-0.001	(0.019)	0.006	(0.019)	-0.004	(0.009)	0.003	(0.018)	-0.030***	(0.004)	-0.026***	(0.004)
Never married	-0.009	(0.009)	-0.011*	(0.006)	0.006	(0.005)	0.012	(0.009)	0.015	(0.009)	0.048***	(0.010)
Primary level	-0.017	(0.018)	0.012	(0.013)	0.010	(0.011)	-0.009	(0.015)	0.011	(0.012)	0.028**	(0.012)
ZJC level	-0.002	(0.018)	0.008	(0.013)	0.008	(0.011)	-0.016	(0.015)	0.018	(0.012)	0.026**	(0.012)
O' level	-0.028*	(0.017)	-0.006	(0.012)	0.006	(0.010)	-0.014	(0.014)	0.015	(0.011)	0.020*	(0.011)
A' level	-0.052***	(0.018)	-0.020	(0.013)	-0.000	(0.011)	-0.015	(0.016)	0.018	(0.013)	0.025*	(0.014)
Diploma/Certificate after primary	-0.007	(0.024)	-0.022	(0.014)	-0.003	(0.013)	-0.033*	(0.018)	0.039*	(0.020)	0.051**	(0.021)
Diploma/Certificate after secondary	-0.029	(0.019)	-0.014	(0.013)	0.010	(0.012)	-0.016	(0.016)	0.006	(0.013)	0.037**	(0.015)
Graduate/Post-Graduate	-0.041**	(0.019)	-0.019	(0.013)	0.005	(0.012)	-0.014	(0.017)	0.027*	(0.015)	0.039**	(0.016)
Formally employed	-0.001	(0.006)	-0.010**	(0.004)	-0.003	(0.004)	0.000	(0.005)	-0.003	(0.005)	-0.013**	(0.006)
Informally employed	0.002	(0.005)	0.005	(0.004)	-0.003	(0.003)	0.003	(0.004)	0.007	(0.004)	-0.013***	(0.004)
seeing	0.003	(0.009)	-0.021**	(0.009)	-0.025***	(0.008)	-0.024***	(0.009)	-0.021**	(0.009)	-0.013	(0.009)
hearing	-0.022	(0.020)	-0.005	(0.017)	0.008	(0.014)	0.031*	(0.017)	-0.009	(0.018)	-0.003	(0.020)
walking	-0.024**	(0.012)	-0.018*	(0.011)	-0.029***	(0.009)	-0.022**	(0.011)	-0.011	(0.009)	-0.017	(0.011)
memory	0.015	(0.020)	0.001	(0.017)	0.009	(0.015)	-0.018	(0.020)	-0.014	(0.018)	-0.037*	(0.021)
language	-0.100**	(0.041)	0.003	(0.027)	-0.018	(0.029)	-0.025	(0.034)	0.024	(0.029)	-0.032	(0.038)
washing	-0.017	(0.024)	-0.011	(0.018)	-0.030	(0.020)	-0.013	(0.022)	-0.041*	(0.021)	-0.006	(0.023)
Protestant	-0.021**	(0.010)	-0.014**	(0.007)	0.009*	(0.005)	-0.006	(0.009)	-0.014	(0.009)	0.003	(0.009)
Pentecostal	-0.014	(0.009)	-0.011*	(0.007)	0.005	(0.004)	-0.011	(0.008)	-0.019**	(0.008)	-0.017**	(0.008)
Apostolic Sect	-0.011	(0.009)	-0.014**	(0.007)	-0.002	(0.004)	-0.009	(0.008)	-0.017**	(0.008)	-0.029***	(0.008)
Zion	-0.012	(0.011)	-0.002	(0.010)	0.005	(0.006)	-0.016*	(0.010)	-0.024**	(0.010)	-0.022**	(0.010)
Other Christian	-0.009	(0.012)	0.004	(0.010)	0.013*	(0.007)	-0.021**	(0.010)	-0.030***	(0.010)	-0.015	(0.011)
Islam	0.045	(0.032)	0.010	(0.022)	0.157***	(0.036)	0.007	(0.026)	-0.026	(0.020)	-0.005	(0.024)
Traditional	-0.004	(0.033)	-0.016	(0.021)	-0.016***	(0.004)	-0.008	(0.028)	0.030	(0.034)	0.005	(0.032)
Other religion	-0.033	(0.022)	0.000	(0.020)	0.036*	(0.021)	-0.026	(0.018)	-0.047***	(0.014)	-0.043**	(0.018)
No religion	-0.018	(0.011)	-0.020**	(0.008)	-0.008*	(0.005)	-0.031***	(0.009)	-0.026***	(0.010)	-0.028***	(0.009)
ln (income)	-0.001	(0.002)	-0.003*	(0.001)	0.001	(0.001)	-0.001	(0.002)	0.004**	(0.002)	0.016***	(0.002)
Household size	0.008***	(0.001)	0.009***	(0.001)	0.003***	(0.001)	0.000	(0.001)	0.003**	(0.001)	-0.000	(0.001)
High Density	0.014*	(0.008)	0.011***	(0.004)	0.004	(0.004)	0.021***	(0.006)	0.022***	(0.006)	0.006	(0.006)
Bulawayo	0.017**	(0.007)	0.020***	(0.007)	-0.011**	(0.005)	-0.008	(0.006)	-0.000	(0.006)	0.020***	(0.007)
Manicaland	0.115***	(0.015)	-0.005	(0.008)	-0.008	(0.006)	0.047***	(0.012)	0.062***	(0.013)	-0.010	(0.009)
Mash Central	0.271***	(0.019)	-0.035***	(0.005)	-0.005	(0.006)	-0.004	(0.009)	-0.016**	(0.007)	-0.002	(0.009)
Mash East	0.172***	(0.012)	-0.021***	(0.005)	0.001	(0.005)	0.060***	(0.010)	0.068***	(0.010)	-0.003	(0.007)
Mash West	-0.002	(0.007)	-0.028***	(0.005)	-0.005	(0.005)	0.032***	(0.009)	0.026***	(0.008)	-0.013*	(0.007)

Mat North	-0.013*	(0.008)	-0.025***	(0.006)	-0.006	(0.006)	-0.023***	(0.007)	-0.014**	(0.007)	-0.031***	(0.007)
Mat South	-0.018***	(0.006)	0.017**	(0.009)	-0.013***	(0.005)	-0.013*	(0.007)	-0.012*	(0.006)	-0.001	(0.008)
Midlands	-0.016***	(0.005)	-0.027***	(0.005)	-0.016***	(0.004)	-0.021***	(0.005)	-0.009*	(0.005)	-0.031***	(0.005)
Masvingo	0.018**	(0.008)	0.041***	(0.009)	-0.006	(0.005)	-0.013*	(0.007)	0.015**	(0.007)	-0.009	(0.007)
Constant	0.161***	(0.046)	0.073**	(0.031)	0.074**	(0.033)	0.113***	(0.037)	0.046	(0.033)	0.051	(0.040)
Observations	13,438		13,438		13,438		13,438		13,438		13,438	
R-squared	0.093		0.034		0.028		0.022		0.022		0.032	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

CHAPTER 10 WATER SANITATION AND HYGIENE (WASH)

10.1. Introduction

The global commitment to sustainable development is encapsulated in the 2030 Agenda, which delineates 17 Sustainable Development Goals (SDGs) alongside 169 associated targets. Among these, Goal 6 stands out as a pivotal objective, striving to "ensure availability and sustainable management of water and sanitation for all". Its targets encompass universal access to safe drinking water, sanitation, and hygiene, acknowledging their fundamental importance to human health and well-being (WHO/UNICEF, 2021).

Accessible and safe drinking water services, pivotal for various domestic uses including drinking, cooking, and personal hygiene, remain a challenge for a significant portion of the global population. As of recent data, 2.2 billion individuals lack access to safe drinking water, while a staggering 3 billion people lack adequate handwashing facilities with soap. Furthermore, a notable 26% of the world's populace still lack safely managed drinking water services, with approximately 144 million individuals resorting to collecting drinking water directly from surface water sources (UNICEF, 2023).

Zooming into national strategies, the government of Zimbabwe is actively pursuing improvements in water supply as outlined in its National Development Strategy 1. Central to this strategy is the goal of increasing the proportion of the population utilizing secure, potable drinking water sources, with a specific target of achieving at least 90% access by 2025. Concurrently, efforts are directed towards sanitation, with the government aiming to expand access to improved sanitation facilities to 77.32% of the population by the same timeline, encompassing both urban and rural areas (GoZ, 2020).

10.2. Descriptive analysis of water, sanitation, and hygiene

Table 27 shows that before controlling for confounding factors, food-secure households had improved water services, sanitation, and handwashing facilities. There was a significant difference between food secure and food insecure households at a 1% level of significance for all three indicators.

Table 27. Descriptive analysis of water, sanitation, and hygiene by food security status

	Food secure	Food insecure	Total	Test
N	8,829 (65.5)	4,650 (34.5)	13,479 (100.0%)	
Improved water services	0.983 (0.127)	0.972 (0.166)	0.980 (0.140)	<0.001
Improved sanitation	0.951 (0.216)	0.929 (0.256)	0.945 (0.229)	<0.001
SDG Handwashing	1.447 (0.710)	1.344 (0.640)	1.417 (0.692)	<0.001

10.3. Correlates of water, sanitation, and hygiene

Table 28 shows that if a household head had a tertiary qualification, it increased the chances of improved water services and sanitation facilities at a 1% level of significance. Moreover, high-density areas had improved access to water and sanitation facilities at a 1% level of significance. Furthermore, larger households had more access better WASH facilities.

Table 28. Correlates of water, sanitation, and hygiene with socio-economic characteristics

VARIABLES	Improved water services		Improved sanitation		SDG Handwashing	
	coef	se	coef	se	coef	se
Household head age	0.000***	(0.000)	0.000	(0.000)	0.000	(0.000)
Female household head	-0.004	(0.004)	0.005	(0.006)	-0.013	(0.019)
Married living apart	0.002	(0.005)	0.024***	(0.007)	0.009	(0.024)
Divorced/separated	0.004	(0.005)	-0.003	(0.008)	0.002	(0.023)
Widow/widower	0.009*	(0.005)	0.020**	(0.008)	0.066***	(0.025)
Cohabiting	-0.025	(0.021)	0.025	(0.018)	-0.098*	(0.051)
Never married	0.004	(0.005)	0.018**	(0.008)	-0.013	(0.027)
Primary level	0.002	(0.010)	-0.018	(0.014)	-0.082*	(0.046)
ZJC level	0.012	(0.009)	-0.009	(0.014)	-0.097**	(0.047)
O' level	0.008	(0.009)	0.004	(0.013)	-0.077*	(0.045)
A' level	0.007	(0.011)	0.008	(0.015)	-0.048	(0.052)
Diploma/Certificate after primary	0.007	(0.013)	0.035**	(0.014)	0.109	(0.070)
Diploma/Certificate after secondary	0.020**	(0.009)	0.026*	(0.014)	0.074	(0.056)
Graduate/Post-Graduate	0.025***	(0.009)	0.017	(0.015)	0.178***	(0.060)
Formally employed	0.002	(0.003)	0.018***	(0.005)	0.004	(0.018)
Informally employed	0.002	(0.003)	0.002	(0.005)	-0.020	(0.013)
seeing	0.009	(0.006)	0.011	(0.008)	-0.027	(0.024)
hearing	0.026*	(0.013)	0.011	(0.015)	0.056	(0.044)
walking	-0.002	(0.006)	-0.007	(0.009)	-0.043	(0.028)
memory	0.001	(0.011)	-0.016	(0.011)	-0.068	(0.048)
language	0.066**	(0.031)	0.022	(0.023)	0.132*	(0.076)
washing	0.023	(0.015)	-0.010	(0.014)	0.007	(0.051)
Protestant	-0.001	(0.005)	0.013*	(0.007)	-0.030	(0.025)
Pentecostal	0.002	(0.004)	0.005	(0.007)	-0.009	(0.023)
Apostolic Sect	-0.003	(0.005)	-0.017**	(0.007)	-0.079***	(0.023)
Zion	-0.011	(0.007)	-0.014	(0.011)	-0.084***	(0.031)
Other Christian	0.008	(0.005)	0.031***	(0.009)	-0.006	(0.032)
Islam	-0.030	(0.021)	-0.016	(0.025)	-0.101*	(0.055)
Traditional	0.003	(0.013)	0.004	(0.022)	-0.132*	(0.074)
Other religion	0.009	(0.010)	-0.048*	(0.027)	0.048	(0.073)
No religion	0.000	(0.006)	-0.010	(0.010)	-0.024	(0.029)
ln (income)	0.000	(0.001)	0.006***	(0.002)	0.065***	(0.007)
Household size	0.001*	(0.001)	0.003***	(0.001)	0.012***	(0.004)
High Density	0.022***	(0.005)	0.039***	(0.008)	0.005	(0.020)
Bulawayo	0.043***	(0.004)	0.025***	(0.004)	0.152***	(0.020)
Manicaland	0.037***	(0.006)	0.022***	(0.007)	0.363***	(0.038)
Mash Central	0.046***	(0.004)	-0.051***	(0.013)	-0.039	(0.030)
Mash East	0.046***	(0.005)	0.032***	(0.006)	-0.032	(0.023)
Mash West	0.023***	(0.006)	-0.004	(0.007)	-0.220***	(0.019)

Mat North	0.045***	(0.005)	-0.045***	(0.012)	0.590***	(0.038)
Mat South	0.032***	(0.006)	-0.037***	(0.010)	0.045*	(0.027)
Midlands	0.039***	(0.004)	-0.069***	(0.008)	-0.128***	(0.018)
Masvingo	0.039***	(0.005)	-0.020**	(0.008)	-0.075***	(0.022)
Constant	0.793***	(0.036)	0.854***	(0.033)	1.006***	(0.089)
Observations	13,439		13,439		13,439	
R-squared	0.029		0.037		0.098	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

10.4. Summary

- Before controlling for confounding factors, food-secure households had improved water services, sanitation, and SDG handwashing facilities.
- Households headed by educated people, larger households and those resident in high density areas had access to better WASH facilities after controlling for observed confounders.

CHAPTER 11 INDICATORS OF FOOD ACCESS

11.1. Introduction

Food access depends on the household's ability to acquire food through various means, including own production, labour, transfers, and/or through the market. Target 2.1 of the Sustainable Development Goals is aimed at ensuring that all people have universal access to safe, nutritious, and sufficient food by 2030, in particular for, the poor and people in vulnerable situations, including infants. This section presents food access indicators, firstly described by the budget line food security indicator and the correlates of such indicators with socio-economic characteristics of the household.

11.2. Descriptive analysis of food security outcomes

Table 29 shows food access indicators separated by food security status (defined as income that is above the food budget line). The table shows that all the food indicators for those who were food secure were better off than for those who were food insecure before controlling for observed confounders. The import of the table is that all the other food access indicators follow income (which is a function of livelihoods of the household) and the budget line (which is exogeneous from the perspective of the household).

Table 29. Descriptive analyses of food security outcomes by food security

	Food secure	Food insecure	Total	Test
N	8,829 (65.5)	4,650 (34.5)	13,479 (100.0%)	
Household Hunger Score	0.484 (0.991)	0.811 (1.285)	0.685 (1.191)	<0.001
Household Dietary Diversity Score	7.057 (2.403)	5.738 (2.129)	6.248 (2.329)	<0.001
Food Consumption Score	54.442 (20.581)	42.406 (17.123)	47.056 (19.439)	<0.001
Reduced coping strategies index (rCSI)	6.811 (10.672)	12.210 (13.741)	10.124 (12.914)	<0.001
Livelihood Coping Strategy Categories (LCSI)	1.409 (0.775)	1.678 (0.904)	1.574 (0.867)	<0.001
Women Dietary Diversity Score (DDW)	3.980 (1.929)	3.247 (1.557)	3.506 (1.734)	<0.001

11.3. Correlates of food security outcomes

Results Table 30 show that an increase in household head's age was associated with reduced severity in household food insecurity and coping after controlling for observed confounding variables. Households with divorced or separated heads had increased likelihood of being food insecure and engage in coping compared to households headed by members who were married and living together with their spouse, after controlling for observed confounding factors. Increase in the education of the household head was associated with increased food security and less coping and improved quality of diets. Being formally or informally employed increased the likelihood of household food security, reduced the probability of a household coping, and was associated with improved diets. Being a follower of the apostolic or Zion religion increased the household's likelihood to be food insecure and propensity to cope. Furthermore, increase in household income was associated with increased food insecurity, reduced coping, and increased quality of diets for women of childbearing age. Increase in

household size increased the household's probability to be food insecure, increased the household coping and negatively affected the diets of women of childbearing age.

Table 30. Correlates of food security outcomes with socio-economic factors

VARIABLES	Household Hunger Score		Household Dietary Diversity Score		Food Consumption Score		Reduced coping strategies index (rCSI)		Livelihood Coping Strategy Categories		DDW	
	coef	se	coef	se	coef	se	coef	se	coef	se	coef	se
Household head age	-0.001***	(0.000)	-0.001**	(0.001)	0.006	(0.005)	-0.009***	(0.003)	-0.001**	(0.000)	-0.000	(0.001)
Female household head	-0.014	(0.033)	0.007	(0.063)	1.062**	(0.511)	0.224	(0.346)	0.035	(0.024)	-0.047	(0.064)
Married living apart	-0.092**	(0.037)	-0.092	(0.074)	0.100	(0.622)	-0.785*	(0.404)	-0.056**	(0.028)	0.075	(0.071)
Divorced/separated	0.134***	(0.043)	0.062	(0.078)	-1.570**	(0.630)	1.014**	(0.443)	0.093***	(0.031)	0.009	(0.076)
Widow/widower	0.042	(0.044)	0.166**	(0.080)	0.336	(0.652)	0.074	(0.458)	-0.021	(0.032)	0.131	(0.081)
Cohabiting	0.311**	(0.123)	-0.360*	(0.188)	-2.636*	(1.360)	4.269***	(1.368)	0.082	(0.069)	0.174	(0.198)
Never married	0.006	(0.046)	0.089	(0.088)	-0.531	(0.724)	-1.022**	(0.477)	-0.035	(0.034)	0.040	(0.087)
Primary level	-0.185**	(0.083)	-0.717***	(0.143)	0.868	(0.941)	0.980	(0.758)	0.049	(0.059)	-0.436***	(0.130)
ZJC level	-0.204**	(0.085)	-0.619***	(0.148)	1.038	(0.963)	1.382*	(0.774)	0.049	(0.060)	-0.311**	(0.133)
O' level	-0.354***	(0.080)	-0.661***	(0.142)	0.442	(0.899)	0.330	(0.716)	0.024	(0.057)	-0.434***	(0.126)
A' level	-0.521***	(0.087)	-0.237	(0.165)	3.964***	(1.157)	-1.257	(0.815)	-0.107*	(0.063)	-0.116	(0.151)
Diploma/Certificate after primary	-0.419***	(0.106)	-0.080	(0.197)	4.927***	(1.630)	-1.387	(0.990)	-0.113	(0.073)	-0.463***	(0.177)
Diploma/Certificate after secondary	-0.559***	(0.085)	-0.225	(0.165)	7.134***	(1.175)	-1.724**	(0.805)	-0.152**	(0.062)	-0.083	(0.153)
Graduate/Post-Graduate	-0.525***	(0.086)	0.137	(0.173)	9.689***	(1.242)	-2.457***	(0.811)	-0.188***	(0.062)	0.375**	(0.162)
Formally employed	-0.288***	(0.027)	0.441***	(0.056)	5.231***	(0.470)	-3.576***	(0.291)	-0.230***	(0.020)	0.253***	(0.050)
Informally employed	-0.134***	(0.025)	0.255***	(0.044)	3.125***	(0.352)	-1.262***	(0.265)	-0.025	(0.018)	0.240***	(0.038)
seeing	-0.101**	(0.043)	0.025	(0.076)	-0.165	(0.632)	-0.629	(0.428)	-0.063**	(0.031)	0.292***	(0.077)
hearing	-0.104	(0.090)	0.079	(0.155)	-1.052	(1.159)	-0.265	(0.829)	-0.090	(0.067)	0.051	(0.164)
walking	0.006	(0.050)	0.125	(0.090)	0.359	(0.724)	-0.218	(0.531)	0.053	(0.036)	-0.145	(0.093)
memory	-0.091	(0.083)	0.230	(0.153)	0.527	(1.211)	1.048	(0.801)	-0.036	(0.062)	0.281*	(0.159)
language	-0.109	(0.163)	-0.505*	(0.277)	-0.046	(2.136)	-0.801	(1.444)	-0.223*	(0.123)	0.058	(0.328)
washing	-0.227**	(0.112)	-0.173	(0.178)	1.387	(1.386)	-1.190	(1.005)	-0.031	(0.070)	0.368**	(0.174)
Protestant	-0.001	(0.039)	-0.119	(0.076)	-0.706	(0.637)	-0.260	(0.415)	-0.067**	(0.028)	0.132*	(0.075)

Pentecostal	0.058	(0.035)	-0.242***	(0.070)	-2.445***	(0.586)	0.681*	(0.383)	0.023	(0.026)	-0.014	(0.067)
Apostolic Sect	0.087**	(0.037)	-0.253***	(0.071)	-3.172***	(0.592)	1.235***	(0.397)	0.060**	(0.027)	-0.135**	(0.068)
Zion	0.144***	(0.053)	-0.123	(0.097)	-2.548***	(0.848)	0.980*	(0.560)	0.027	(0.039)	-0.014	(0.090)
Other Christian	0.035	(0.050)	-0.064	(0.106)	-2.848***	(0.852)	1.558***	(0.550)	0.126***	(0.041)	0.133	(0.099)
Islam	0.446***	(0.142)	0.454**	(0.196)	-2.679	(1.712)	1.923	(1.256)	0.292***	(0.095)	-0.172	(0.215)
Traditional	0.186	(0.140)	-0.044	(0.230)	-0.050	(2.203)	0.010	(1.329)	0.176	(0.108)	-0.269	(0.225)
Other religion	-0.017	(0.095)	-0.148	(0.208)	-0.165	(1.752)	0.235	(1.048)	0.094	(0.085)	-0.208	(0.212)
No religion	0.122**	(0.052)	-0.236***	(0.090)	-2.260***	(0.759)	1.075**	(0.543)	0.143***	(0.039)	-0.202**	(0.085)
ln (income)	-0.256***	(0.017)	1.195***	(0.029)	9.640***	(0.246)	-3.177***	(0.178)	-0.097***	(0.012)	0.567***	(0.026)
Household size	0.058***	(0.006)	-0.125***	(0.011)	-1.147***	(0.092)	1.048***	(0.070)	0.043***	(0.005)	-0.072***	(0.010)
High Density	-0.016	(0.031)	-0.177***	(0.059)	-0.894*	(0.520)	-1.948***	(0.360)	-0.055**	(0.024)	-0.073	(0.053)
Bulawayo	-0.130***	(0.030)	0.074	(0.063)	-0.749	(0.483)	0.294	(0.340)	-0.184***	(0.023)	0.261***	(0.059)
Manicaland	0.032	(0.049)	0.469***	(0.089)	2.669***	(0.784)	-0.987**	(0.453)	-0.158***	(0.038)	0.607***	(0.078)
Mash Central	-0.200***	(0.039)	-0.154*	(0.083)	1.474**	(0.723)	-4.646***	(0.407)	-0.343***	(0.029)	0.880***	(0.079)
Mash East	-0.239***	(0.034)	0.019	(0.071)	1.450**	(0.644)	-2.800***	(0.392)	-0.265***	(0.027)	0.674***	(0.074)
Mash West	0.147***	(0.039)	-0.661***	(0.071)	-5.205***	(0.530)	3.470***	(0.438)	0.100***	(0.030)	-0.014	(0.061)
Mat North	-0.089**	(0.044)	-1.341***	(0.097)	-7.703***	(0.751)	-0.269	(0.545)	-0.022	(0.043)	-0.334***	(0.080)
Mat South	-0.160***	(0.038)	-0.114	(0.082)	1.217*	(0.718)	-2.772***	(0.405)	-0.277***	(0.030)	-0.145**	(0.069)
Midlands	0.381***	(0.041)	-0.309***	(0.063)	-0.853*	(0.512)	1.808***	(0.403)	0.053**	(0.026)	-0.320***	(0.054)
Masvingo	-0.157***	(0.035)	-0.304***	(0.069)	-1.613***	(0.593)	2.053***	(0.444)	-0.007	(0.030)	-0.329***	(0.056)
Constant	2.854***	(0.197)	1.558***	(0.338)	-0.898	(2.501)	27.041***	(1.804)	2.466***	(0.146)	0.140	(0.354)
Observations	13,439		13,437		13,437		13,437		13,437		10,148	
R-squared	0.109		0.213		0.222		0.117		0.083		0.141	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

11.4. Summary

- All the other food access indicators are correlated with the food security indicator that is calculated using income and the budget line before controlling for observed confounders.
- Increase in household head's age was associated with reduced severity in household food insecurity and coping after controlling for observed confounding variables.
- Households with divorced or separated heads had increased likelihood of being food insecure and coping compared to households headed by members who were married and living together with their spouse after controlling for observed confounding factors.
- Increase in education of household head was associated with increased food security and less coping and improved quality of diets.
- Being formally or informally employed increased the likelihood of household food security, reduced the probability of a household coping, and was associated with improved diets.

CHAPTER 12 PSM ESTIMATES OF TREATMENT EFFECTS

12.1. Introduction

This section investigates the treatment effects of various treatment measures using propensity score matching techniques which accounts for self-selection bias as noted in the methods section.

12.2. Urban livelihoods options

Table 31 shows the PSM estimates of treatment effects of major livelihood options on food security. The table shows that salaries/wages were associated with an improvement in all the food and nutrition security indicators. Specifically, basing livelihood on salary/wages *ceteris paribus* resulted in a decline of the HHS by 2.44 points and improvements in the HDDS and FCS by 0.225 points and 3.296 points, respectively at the 1% level of significance. On the other hand, engagement in casual labour as one of the major sources of livelihood *ceteris paribus* resulted in the deterioration of the household food security indicators.

The table shows that whilst engagement in vending/petty trade resulted in improvement of both the HDDS and the MDD-W, it however led to a deterioration in the long-term livelihoods coping capacity which could result in inter-generational food insecurity. What is however clear from the table is that deals (Madhiri, Kukiya-kiya, Ukutshaya amadili) are associated with deteriorations in both short term (FCS and RCSI) and long-term food security indicators.

The impact of remittances on food security indicators is ambivalent. When one looks at internal remittances, they lead to improvements in the HDDS but deterioration in the RCSI. On the other hand, external remittances lead to improvements in the majority of short-term (HHS, FCS and RCSI) food security indicators except of the MDD-W which statistically deteriorates at the 5% level of significance.

Reliance on rentals as a major source of livelihood was, all things being equal, associated with improvements in all the food security indicators under consideration except for the RCSI and the MDD-W, which were not statistically significant. The positive impact of rentals on food security indicators was probably a result of the stability of rental income. The same trend is replicated when one looks at reliance on own business which all things being equal was associated in improvements in all food security indicators except for the HDDS and the RCSI which were statistically insignificant.

Reliance on skilled artisan/trade as a major source of livelihood was *ceteris paribus* associated with improvements in the FCS and the MDD-W whereas reliance on pensions led to improvements in the RCSI but led to deterioration of the MDD-W.

Table 31. PSM estimates of treatment effects of livelihood option on food security

VARIABLES	HHS	HDDS	FCS	RCSI	LCSI	MDD-W
Salary/wages	-0.244*** (0.0382)	0.225*** (0.0801)	3.296*** (0.624)	-2.046*** (0.465)	-0.163*** (0.0278)	0.142* (0.0773)
Casual labour	0.356*** (0.0319)	-0.0487 (0.0645)	-2.963*** (0.464)	3.697*** (0.347)	0.243*** (0.0269)	-0.0580 (0.0629)
Vending /petty trade	-0.0115 (0.0294)	0.184*** (0.0620)	0.463 (0.489)	0.167 (0.316)	0.0492** (0.0236)	0.218*** (0.0596)
Deals (Madhiri,Kukiya-kiya, Ukutshaya amadili)	0.0407 (0.0393)	-0.233** (0.0937)	-2.509*** (0.668)	1.481*** (0.476)	0.114*** (0.0383)	0.0177 (0.0827)
Remittances/gifts from within	0.108 (0.0699)	0.192* (0.108)	0.349 (0.860)	1.800*** (0.630)	0.0427 (0.0495)	-0.117 (0.102)
Remittances/gifts from outside	-0.194** (0.0799)	0.00744 (0.117)	2.944*** (1.119)	-3.518*** (0.621)	-0.0135 (0.0593)	-0.293** (0.126)
Rentals	-0.275*** (0.0445)	0.303** (0.124)	4.320*** (0.819)	-0.960 (0.805)	-0.134*** (0.0415)	-0.124 (0.127)
Own business	-0.206*** (0.0645)	0.158 (0.120)	4.102*** (0.803)	-1.104 (0.918)	-0.180*** (0.0375)	0.330*** (0.109)
Skilled trade/artisan	-0.0531 (0.0948)	0.190 (0.124)	2.863** (1.316)	0.937 (0.699)	-0.000595 (0.0707)	0.358*** (0.107)
Pension	-0.112 (0.120)	0.0631 (0.211)	-0.853 (1.826)	-1.755* (0.935)	-0.0829 (0.0852)	-0.671** (0.287)
Observations	13,439	13,437	13,437	13,437	13,437	13,439

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

12.3. Involvement in agricultural production

12.3.1. Urban agriculture

Table 32 show that urban agriculture was associated with improvements in the FCS by 1.551 points at the 1% level of significance, all things being equal. Conversely, we however observe no statistically significant treatment effect of receiving government support vis a vis urban agriculture on food security indicators.

Table 32. PSM estimates of treatment effects of urban agriculture on food security

VARIABLES	Engage in urban agriculture		Received Government support	
	coef	se	coef	se
Food secure	0.018	(0.015)	0.039	(0.024)
Household Hunger Scale (HHS)	-0.032	(0.033)	0.036	(0.094)
Household Dietary Diversity Score	0.046	(0.069)	-0.164	(0.129)
Food Consumption Score (FCS)	1.551***	(0.588)	0.942	(1.167)
Livelihoods Based Coping Strategy Index (LCSI)	0.043	(0.029)	0.063	(0.057)
Women Dietary Diversity Score (DDW)	0.002	(0.068)	-0.014	(0.138)
Observations	13,437		13,437	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

12.3.2. Agricultural production outside urban areas of residence

Table 33 shows that practising agriculture outside urban areas of residence improved the household hunger score by 0.261 points at the 1% level of significance all things being held constant. Furthermore, it was ceteris paribus associated with improvements in the FCS, LCSI and the MDD-W. In summary engagement in agriculture outside urban areas of residence by urban dwellers was associated with improvements in food security.

Table 33. PSM estimates of treatment effects of practising agriculture outside urban areas on food security

VARIABLES	coef	se
Food secure	0.025	(0.026)
Household Hunger Scale (HHS)	-0.261***	(0.056)
Household Dietary Diversity Score	0.134	(0.094)
Food Consumption Score (FCS)	3.950***	(0.780)
Livelihoods Based Coping Strategy Index (LCSI)	-0.211***	(0.040)
Women Dietary Diversity Score (DDW)	0.273**	(0.118)
Observations	13,437	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

12.4. Migration and food security

Table 34 shows that internal migration (either to the rural areas or from the rural areas) was ceteris paribus associated with a deterioration of food and nutrition security outcomes. On the other hand, emigration outside Zimbabwe was associated with an improvement in the

probability that the household was food secure. The improvement in the probability of being food secure was probably increased through remittances. Emigration outside the country was however associated with an increase in the usage of livelihoods coping strategies probably to finance travel and substance outside the country.

Table 34. PSM estimates of treatment effects of migration on food security

VARIABLES	Internal migration				Migration to outside Zimbabwe	
	To rural		From rural		coef	se
	coef	se	coef	se		
Food secure	0.001	(0.025)	0.005	(0.028)	0.055**	(0.024)
Household Hunger Scale (HHS)	0.205***	(0.057)	0.190**	(0.089)	0.136	(0.106)
Household Dietary Diversity Score	-0.121	(0.118)	-0.299***	(0.110)	0.092	(0.159)
Food Consumption Score (FCS)	-3.240***	(1.076)	-1.541	(0.939)	1.978	(1.324)
Livelihoods Based Coping Strategy Index	0.251***	(0.042)	0.323***	(0.065)	0.301***	(0.097)
Women Dietary Diversity Score (MDD-W)	0.026	(0.139)	-0.044	(0.118)	-0.078	(0.158)
Observations	13,245		13,244		13,245	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

12.5. Climate knowledge and food security

Table 35 shows that knowledge about climate change was ceteris paribus associated with improvements in the women's dietary diversity score by 0.186 points after controlling for selection on observables.

Table 35. PSM estimates of treatment effects of climate change knowledge on food security

VARIABLES	coef	se
Food secure	-0.007	(0.014)
Household Hunger Scale (HHS)	0.050	(0.040)
Household Dietary Diversity Score	-0.057	(0.084)
Food Consumption Score (FCS)	-0.274	(0.618)
Livelihoods Based Coping Strategy Index (LCSI)	0.013	(0.029)
Women Dietary Diversity Score (MDD-W)	0.186**	(0.078)
Observations	5,341	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

12.6. Social protection

Table 36 shows that all things being equal, receiving social protection support from the government resulted in a 3.9% increase in the probability that the household was food secure after controlling for self-selection.

Table 36. PSM estimates of treatment effects of social protection on food security

VARIABLES	Government		Development partners	
	coef	se	coef	se
Food secure	0.039**	(0.019)	-0.008	(0.033)
Household Hunger Scale (HHS)	0.088	(0.061)	0.310***	(0.094)
Household Dietary Diversity Score	-0.016	(0.111)	-0.754***	(0.191)
Food Consumption Score (FCS)	-0.763	(0.911)	-4.831***	(1.564)
Livelihoods Based Coping Strategy Index (LCSI)	0.094*	(0.049)	0.312***	(0.077)
Women Dietary Diversity Score (DDW)	-0.093	(0.102)	-0.080	(0.163)
Observations	13,438		13,437	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

12.7 Summary

- Major sources of livelihoods
 - ✓ Reliance on salaries/wages was associated with an improvement in all the food and nutrition security indicators.
 - ✓ Engagement in casual labour as one of the major sources of livelihood ceteris paribus resulted in the deterioration of the household food security indicators.
 - ✓ Whilst engagement in vending/petty trade resulted in improvement of both the HDDS and the MDD-W, it however led to a deterioration in the long-term livelihoods coping strategy which could result in inter-generational food insecurity.
 - ✓ Reliance on deals (madhiri, kukiya-kiya, ukutshaya amadili) was associated with deteriorations in both short term (FCS and RCSI) and long-term food security indicators.
 - ✓ Reliance on external remittances led to improvements in the majority of short-term (HHS, FCS and RCSI) food security indicators except of the MDD-W which statistically deteriorated at the 5% level of significance.
 - ✓ Reliance on rentals as a major source of livelihood was, all things being equal, associated with improvements in all the food security indicators under consideration except for the RCSI and the DDW, which were not statistically significant.
 - ✓ Reliance on own business which all things being equal was associated in improvements in all food security indicators except for the HDDS and the RCSI which were statistically insignificant.
- Involvement in agriculture production
 - ✓ Urban agriculture was associated with improvements in the FCS by 1.551 points at the 1% level of significance, all things being equal.
 - ✓ Practising agriculture outside urban areas improved the household hunger score by 0.261 points at the 1% level of significance all things being held constant.
- Migration

- ✓ internal migration (either to the rural areas or from the rural areas) was ceteris paribus associated with a deterioration of food and nutrition security outcomes.
- ✓ On the other hand, emigration outside Zimbabwe was associated with an improvement in the probability that the household was food secure.
- Climate change
 - ✓ Knowledge about climate change was ceteris paribus associated with improvements in the women's dietary diversity score by 0.186 points after controlling for selection on observables.
- Social protection
 - ✓ Receiving social protection support from the government resulted in a 3.9% increase in the probability that the household was food secure after controlling for self-selection.

CHAPTER 13 POLICY RECOMMENDATIONS

Based on the findings represented above, the following recommendations are put forward.

13.1. Gender

The findings reveal that the households that were more likely to be food insecure were likely to be households headed by women and those that were less educated and living with disability. For instance, of the households that were food secure, 35.2% were headed by women whereas 41.3% of food insecure households were headed by women. The difference in proportion between the two groups are statistically valid at the 1% level of significance.

- These results are in resonance with earlier findings from Zimbabwe that find women and girls and households that are headed by women to be at higher risk of food and nutrition insecurity (e.g. Kairiza, Kembo, Magadzire, & Chigusiwa, 2023; Kairiza, Kembo, Magadzire, & Pallegedara, 2023; Kairiza & Kembo, 2019).
- The results are also in concordance with global findings of (FAO et al. (2021) that highlighted that a third of women of reproductive age were globally affected by anaemia in 2019 and go on to state that by 2021, 31.9% of women were moderately or severely food insecure, compared to 27.6% of men.

Interventions

- Closing the gender gap and empowering female farmers traditionally restricted in their access to finance and technologies can create major gains when addressing food insecurity.
- Interventions should ensure equal access of men and women to natural and productive resources, such as land and mechanization, decent employment, advisory and financial services, and markets.

13.2. Access to food security enhancing livelihoods

Salaries/wages were associated with an improvement in all the food and nutrition security indicators. Specifically, basing livelihood on salaries/wages ceteris paribus resulted in a decline of the HHS by 2.44 points and improvements in the HDDS and FCS by 0.225 points and 3.296 points, respectively at the 1% level of significance. Furthermore, the findings show that reliance on own business with all things being equal was associated in improvements in all food security indicators except for the HDDS and the RCSI which were statistically insignificant.

- Giambartolomei, Forno and Sage (2021) concur with our findings by postulating that entrepreneurship holds emancipatory potential to accelerate the transition towards more just and sustainable food systems.

Interventions

- Make the minimum wage setting process a part of a larger concerted government effort to address food insecurity. To address food insecurity, the government needs to reconcile wages and employment circumstances, social assistance, and other income supports with the cost of living.
- Government efforts to include entrepreneurship programmes in schools and universities to ensure that citizens acquire critical thinking and problem-solving skills.
- Implement policies that promote the ease of doing business.
- Access to finance remains a major challenge to small businesses. Government and financial institutions should collaborate to establish dedicated funds and loans tailored to the needs of small businesses.

13.3. Involvement in agricultural production

The findings reveal that the practice of agriculture outside urban areas by urban households was a more potent tool to increase food security of urban dwellers than the practise of urban agriculture. Practicing agriculture outside urban areas of residence improved the household hunger score by 0.261 points at the 1% level of significance all things being held constant. Furthermore, it was *ceteris paribus* associated with improvements in the FCS, LCSi and the DDW.

- Prior studies draw positive conclusions about the actual and potential impact of expanded urban agriculture on household food security. For example, households engaged in food production appeared to achieve greater food security and their nutritional status tended to be better than that of non-farming urban households of the same socio-economic status. In addition, production for consumption and sale could generate revenue and reduce monthly household expenditures on food, leaving more cash available for other basic household needs (such as health, housing, education, and clothing) (Egziabher et al., 1994; Koc et al., 1999; Mougeot, 1999;; Mougeot, 2005; 2006; van Veenhuizen, 2006).

Interventions

- Ease control measures restricting the private movement of maize grain from rural to urban areas.

13.4. Social support

The revealed that, that all things being equal, receiving social protection support from the government resulted in a 3.9% increase in the probability that the household was food secure after controlling for self-selection.

- Our findings are consistent with Abay, Abay, Berhane and Chamberlin (2022) findings which imply that effectively boosting household resilience may require significant transfers over multiple years in Ethiopia. National safety nets programmes that

transfer small amounts to beneficiaries over limited time horizons may not be very effective.

Interventions

- There is need for the ministry responsible for social welfare and the various organisations that provide social support to target vulnerable groups.

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