



Zimbabwe Vulnerability Assessment Committee (ZimVAC) 2020 Rural Livelihoods Assessment Technical Report

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Executive Summary

Introduction

The Zimbabwe Vulnerability Assessment Committee (ZimVAC) under the coordination of the Food and Nutrition Council successfully undertook the 2020 Rural Livelihoods Assessment (RLA) from 11 to 25 July, 2020. Since its inception, the ZimVAC has undertaken twenty (20) Rural Livelihoods Assessments (RLAs); seven (7) Urban Livelihoods Assessments (ULAs) and 2 National Nutrition Surveys. These reports have an important role in guiding resource allocation for the vulnerable population, planning of national programs and have emerged as a guiding document for responding to livelihoods challenges. The livelihoods assessments apply best practices in assessments to collect data and report on important socio-economic aspects of our population, including income, livelihoods options, education, water and sanitation, consumption patterns, gender, food security and nutrition and people's development aspirations. As such, rural and urban livelihoods assessments are part of a comprehensive Food and Nutrition Security Information System (FNSIS) which informs Government and its Development Partners on programming necessary for saving lives and strengthening livelihoods in Zimbabwe.

Objective of the 2020 Rural Livelihoods Assessment

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

- i. To assess impact and severity of both Drought and COVID-19 on rural livelihoods.
- ii. To estimate the population that is likely to be food insecure in the 2020/21 consumption year, their geographic distribution and the severity of their food insecurity
- iii. To assess the nutrition status of children of 6 - 59 months.

- iv. To describe the socio-economic profiles of rural households in terms of such characteristics as their demographics, access to basic services (education, health services, protection services and water and sanitation facilities), assets, income sources, incomes and expenditure patterns, food consumption patterns and consumption coping strategies.
- v. To determine the coverage (accessibility, availability and quality) of humanitarian and developmental interventions in the country.
- vi. To determine the effects of shocks experienced by communities on food and nutrition security.
- vii. To measure resilience at all levels and identify constraints to improving their resilience.
- viii. To identify early recovery needs in order to determine short to long term recovery strategies.
- ix. To assess the medium and long term (future) sources of vulnerability and risks to food and nutrition security.

Context of the 2020 Rural Livelihoods Assessment

The 2020 ZimVAC Rural Livelihoods Assessment (RLA) was conducted during a period in which the Zimbabwe's economic and food security situation were fragile. The environment was and still is characterised by several shocks that include the COVID-19 pandemic, effects of drought and crop failure and economic shocks (high inflation and poverty). These shocks create poverty traps and increase the prevalence of food insecurity, malnutrition and consumption of unsafe food by reducing real income and forcing the poor to sell their valuable assets, decrease their food consumption, reduce their dietary diversity and increase exposure to food-borne diseases. The impact is strongly felt in low-income and food-deficit households that spend a large share of their income on food.

Climate variability and drought - Zimbabwe is among the countries more severely affected, where drought impacts have led to water shortages, declining yields, and periods of food insecurity, accompanied by economic downturns. In particular, the

country's agricultural sector, mostly comprised of smallholder rain-fed systems, is at great risk of drought. Every district has been affected by drought during the past thirty years, with varying levels of severity and frequency. Severe drought episodes have been observed in 1991-1992, 1994-1995, 2002-2003, 2015-2016, and 2018-2019. The 2019/2020 cropping season was characterized by late on-set of rains across the country and false starts in the southern and south-eastern parts of the country. Long dry spells in late December 2019 and January 2020 as well as the early cessation of the season negatively affected the planted crop.

Economic challenges - the current macro-economic challenges and austerity measures further exacerbate the food and nutrition insecurity in the country. Food and nutrition insecurity has become a reality in most rural and urban households. Economic shocks related to rising inflation eroded purchasing power of basic food and non-food items, forcing a significant number of households to resort to negative coping strategies. The continuing inflationary environment reduced affordability of basic food items. In addition, poverty continues to be one of the major underlying causes of vulnerability to food and nutrition insecurity. Year on year inflation for the month of May 2020 was at 785.55% and the Total Consumption Poverty Line (TCPL) for April 2020 was ZWL 7,425.81, which is 703.4% higher compared to the same time the year prior. The macroeconomic environment remains stressed with negative impacts on poor households' livelihoods, incomes, and access to food and other basic needs.

COVID-19 pandemic - the COVID-19 pandemic further escalated the impact of the drought, Cyclone Idai and economic challenges. The outbreak of corona virus disease 2019 (COVID-19) has rapidly spread across the world, affecting thousands of lives and livelihoods. On 27 March 2020, the Zimbabwean government declared the COVID-19 crisis as "national disaster" and introduced a nationwide lockdown with the aim of slowing down the spread of the disease under the Statutory Instrument 83 of Public Health (COVID-19 Prevention, Containment and Treatment) Order 2020. Besides the loss of life, the pandemic destabilised the economy through disruptions in trade, tourism, production, productivity, supply chains and other various integration mechanisms. As

of 17 August 2020, Zimbabwe had 135 deaths due to COVID-19, 1 325 active cases and 3 848 recovered cases. The COVID-19 pandemic severely threatens an already critical and fragile food and nutrition security situation, arising mainly from the prevailing poor macroeconomic conditions and consecutive years of drought. The COVID-19 pandemic risks further escalating the 7 million estimated figure of food insecure people as a considerable proportion of the rural and urban population is envisaged to be food and nutrition insecure as a consequence of the pandemic itself and of some of the containment efforts. Of concern is the potential impact of COVID-19 and related containment efforts on food security and livelihoods in contexts of high vulnerability and where populations are already experiencing food and nutrition insecurity. The COVID-19 pandemic is obscuring economic prospects in ways no one could have anticipated, and the situation may only get worse if we do not act urgently and take unprecedented action. At the global level, preliminary projections based on the latest available global economic outlooks, suggest that the COVID-19 pandemic may add an additional 83 to 132 million people to the ranks of the undernourished in 2020. In addition, the impact of COVID-19 on economies cannot be under estimated; COVID-19 has taken a toll on economies around the world as most businesses came to a halt. For example, Japan's economy, the 3rd world's largest economy, slipped into recession for the first time in 4.5 years due to COVID-19¹.

However, the full impact of the virus on food and nutrition security is not yet known, nor will likely be known, as the spread of the virus continues to evolve differently by continent and by country. What is clear is that it will have significant negative effects on food and nutrition security. Lessons from previous pandemics (e.g. the 2014 West Africa Ebola virus disease outbreak) indicate that food and nutrition security could be rapidly and dramatically affected in both rural and urban areas. These experiences highlight the need to act quickly and anticipate the collateral effects of the COVID-19 pandemic. The major challenge has been the lack of data on the impact of COVID-19 on both livelihoods and food and nutrition security.

¹ <https://www.france24.com/en/20200518-japan-slips-into-recession-due-to-covid-19-crisis-worst-yet-to-come>

Through the 2020 ZimVAC Rural Livelihoods Assessment (RLA) that was conducted from 11 to 25 July 2020, Zimbabwe is one of the first few countries that has managed to gather enough data that will enable analysis of the impact of COVID-19 on rural livelihoods and on food and nutrition security. The data generated from the RLA will enable for evidence-based response, policies and programming to minimise the impact of COVID-19. Decision making in times of crisis relies on accurate and reliable data to effectively support the planning and implementation of actions in a timely and responsive manner, particularly in crisis situations, as has been precipitated by COVID-19. The data generated from the 2020 ZimVAC RLA will be of great use to both the Government of Zimbabwe, Development Partners and the world at large as it provides evidence that will go a long way in helping policy makers monitor, prepare for, and respond to COVID-19 and any similar future crises.

Data generation process

The 2020 ZimVAC rural livelihoods assessment was informed by the multi-sectorial objectives generated by a multi-stakeholder consultation process. Appropriate survey designs and protocols informed by the survey objectives were developed. The assessment employed both a structured household questionnaire and a district key informant focus group discussion questionnaire as the two primary data collection instruments. The household sample is statistically representative at district, provincial and national level, with 200 randomly selected households per district. The field work for the 2020 ZimVAC rural livelihood assessment followed the government regulations on COVID-19, including social distancing and use of personal protection equipment. The survey collected data from 20 randomly selected EAs that were enumerated in the 2019 RLA. A total of 200 households were interviewed per district, bringing the total sampled households to 11 971. Data analysis and report writing were conducted from 27 July to 21 August 2020. Various secondary data sources and field observations were used to contextualise the analysis and reporting.

Major findings

The major findings, especially regarding the impact of COVID-19 and the resilience capacities of the rural households are presented in the box below. The rest of the findings are also presented in this section. **Please note: in this report, food security relates to cereal grain availability as maize is the main staple food in Zimbabwe. Therefore, food insecure households are households that are cereal insecure.**

MAJOR FINDINGS

- At least 56.2% of the rural households are food (cereal) insecure and 43.8% are food secure.
- Food insecure households are 6.6% more likely to be female headed than food secure households.
- The severity of the following shocks was higher in food insecure households as compared in food secure households: COVID-19 (63.9%), cereal price change (84.3%), cash shortages (82.7%), crop pests (64.2%), drought (85.4%) and dry spell (83.1%).
- Food insecure households were 1.9% more susceptible to the COVID-19 shock as compared to food secure households.
- Being affected by COVID-19 was associated by a reduction of 47.6% in household income, *ceteris paribus*.
- Households that were affected by COVID-19 were associated with a 2.94% increase in the propensity to be food insecure, at the 5% level of significance.
- Access to food services was greatly affected by the lockdown for both food secure (67.3%) and food insecure (70.3%) households.
- Access to public transport was also affected greatly by the lockdown for both food secure (73%) and food insecure (74%) households.
- Regarding resilience of sampled households, food secure households were 5.9 points more absorptive as compared to food insecure households.
- More so, female headed households were more likely to be 2.38 points resilient (absorptive capacity) than male headed households.
- At the 10% level of significance, adaptive resilience capacities reduce the household propensity to be food insecure by 5.17% for those affected by COVID-19 at the 1% level of significance.
- Absorptive capacities reduce the propensity of the drought affected households to be food insecure by 4.14%.
- Absorptive resilience capacities reduce the propensity of dry spell affected households to be food insecure by 4.74%.
- For households affected by drought shock, adaptive resilience capacities reduce household propensity to be food insecure by 7.59%.

i. Household Background Characteristics

- The results revealed that 56.2% of the rural households were food (cereal) insecure and 43.8% were food (cereal) secure.
- Food insecure households were 4.4% more likely to be widowed than those that were food secure.
- Food insecure households were 6.6% more likely to be female headed than food secure households.
- Food secure households had higher income than food insecure households of ZWL4,300 at the 1% level of significance before controlling for observed confounding variables.

ii. Food and Nutrition Security

- Food insecure households were 75.2% likely to experience hunger than food secure households (39.2%).
- More so, food insecure households were likely to have a lower Food Consumption Score (FCS) (23.9) as compared to food secure households (FSC = 31.8).
- As expected, the results show that increasing household income is likely to reduce household hunger and increase FCS at the 1% level of significance before controlling for observed confounding variables.
- At 1% level of significance, households located in Mashonaland East were 27.4% were more likely to have less hunger than the base province of Manicaland and those in Matabeleland North (35.81%) and Masvingo (14.26%) were likely to have a low FCS, while those located in Mashonaland Central (48.41%), Mashonaland West (31.16%) and Midlands (42.61%) were likely to have a high FCS.

iii. Women and Children Nutrition

- Women from food insecure households had a lower Women Dietary Diversity Score (WDDS) (2.19) as compared to those from food secure households (2.38).

- Only 26.1% of food insecure households were likely to consume protein rich foods and only 11% were likely to consume iron rich foods in comparison to 35.2% and 18.8% in food secure households, respectively.
- The consequences of a low dietary diversity for women of child bearing age are far reaching as the health and nutrition status of a woman can impact the nutrition status of the child.
- Women situated in households headed by older people were less likely to consume less of protein rich, iron rich and vitamin A rich foods and are more likely to have a lower dietary diversity as compared to those headed by younger heads. For example, at the 1% level of significance, an increase in the age of the household head reduces the WDDS by 0.0279 points, *ceteris paribus*.
- Female headed households were more likely to consume all the recommend foods and were 37.6% more likely to have a higher dietary diversity as compared to male headed households. This result indicates that gender of the household head is a major determinant influencing dietary diversity of the members of a household.
- Households in Mashonaland Central, Matabeleland North, Matabeleland South and Midlands were respectively, 18.1%, 45.1%, 41.1% and 26.1% likely to have a lower WDDS. These results corroborate with the high food insecurity also observed in these provinces.
- Regarding prevalence of child diseases, the results show no significant difference between incidence of child diseases and household food security status. However, inferential analysis revealed that the probability of the incidence of child diseases is reduced as age of household head increases.

iv. Water, Sanitation and Hygiene

- Food insecure households were 1.8% more likely not to have access to improved water sources as compared to food secure households.
- More so, food insecure households were 2.3% more likely not to have a handwashing station and were also more likely to practise open defecation as compared to food secure households.

- The high percentage of both food secure (87.8%) and food insecure (90.1%) households that did not have handwashing stations is worrisome, especially given the increasing infection rates of COVID-19 and the importance of sanitation facilities under such circumstances.
- Households with older household heads were 0.23% more likely to have access to improved water sources.
- Furthermore, households with older household heads were 0.27% more likely to have handwashing stations and 0.6% less likely to practise open defecation as compared to households headed by younger household heads.
- The results also revealed that at the 10% significance level, food insecure households were 3.2% likely to walk longer distances to the water source than food secure households.
- Food insecure households were 6.6% likely to queue longer at a water source as compared to food secure households. The drought situation could have exacerbated the challenges in accessing water as the occurrence of severe and sustained droughts can result in depletion of water reservoirs, wells and small streams causing water scarcity, deteriorated water quality, and even interruptions of supply.
- Households with high income travel less distances and spend less time at water sources than low income households.

v. Household Susceptibility to Systemic and Idiosyncratic Shocks

- Food insecure households were 1.9% more susceptible to the COVID-19 shock as compared to food secure households.
- Food insecure households were likely to be 7.8% more susceptible to cereal price changes and 2.2% more likely to be susceptible to cash shortages as compared to food secure households.
- Similarly, food insecure households were 5.7% more susceptible to drought and 4.7% more likely to be susceptible to dry spell than food secure households.
- The severity of the following shocks was higher in food insecure households as compared to food secure households: COVID-19 (63.9%), cereal price changes

(84.3%), cash shortages (82.7%), crop pests (64.2%), drought (85.4%) and dry spells (83.1%).

- Furthermore, the results revealed that households affected by HIV/AIDS were more vulnerable to cereal price changes and cash shortages as compared to HIV/AIDS unaffected households.
- Except for susceptibility to cash shortages, large size households had a high susceptibility to COVID-19, cereal price changes, crop pests, drought and dry spell.
- As expected, the results show that all provinces were highly susceptible to COVID-19 at the 1% level of significance.

vi. COVID-19 and Containment Measures

Access to Personal Protective Equipment

- At least 87% of the food secure households and 82% of the food insecure households had access to soap. This is commendable as handwashing is a critical preventive measure against contracting COVID-19 infection.
- However, limited access to sanitisers is a cause for concern as only 7.2% of food secure households and 6% of food insecure households had access to sanitizers.
- Food insecure households were 7.3% and 5% less likely to have access to masks and soap as compared to food secure households.
- Increasing household income by 1% increases the probability that the household has access to sanitizers by 0.00329%, *ceteris paribus*.
- Rural households in Masvingo were likely to have a 5.7% reduced access to masks and those in Matabeleland North were likely to have a 7.41% reduced access to soap.

Impact of containment measures (lockdown)

- Access to food services was also greatly affected for both food secure (67.3%) and food insecure (70.3%) households.
- At the 1% level for significance, the results revealed a significant difference in the impact of COVID-19 containment measures on food secure and food insecure households, especially in relation to access to food, medical and hygiene services.

- Food insecure households were likely to have a 3% reduced access to food services, 4.1% reduced access to medical services and 4.8% reduced access to hygiene services as compared to food secure households.
- Access to public transport was affected greatly by the containment measures for both food secure (73%) and food insecure (74%) households. This can be attributed to the ban on public transport as a measure to prevent the spread of COVID-19, with only ZUPCO buses and ZUPCO registered buses and commuter omnibuses allowed to operate.

vii. Household Resilience Capacities

- At the 1% level of significance, food secure households were 5.9 points more absorptive as compared to food insecure households.
- Increasing the age of household head by one year was likely to increase both the household absorptive capacity and adaptive capacity by 0.18% and 0.018 point, respectively.
- More so, female headed households were more likely to be 2.38 points resilient (adsorptive capacity) than male headed households.
- Large size households seemed to have a 0.72 point less adsorptive capacity and an 0.89 point better adaptive capacity as compared to small sized households.
- At province level, rural households in Matabeleland North, Matabeleland South and Midlands and Mashonaland Central were likely to have lower resilience capacities, both absorptive and adaptive capacities, as compared to the base province of Manicaland.

viii. Effects of COVID-19 on food security

- Being affected by COVID-19 was associated by a reduction of 47.6% in household income, *ceteris paribus*.
- Households affected by COVID-19 were associated with an increase in the propensity to be food insecure of 2.94% at the 5% level of significance.

- Households at minimal risk of contracting COVID-19 virus were associated with a decline in the probability of being food insecure of 2.66% at the 1% level of significance all things being equal.
- Furthermore, households at minimal risk of contracting COVID-19 were associated with 0.0487-point decrease in the household hunger scale at the 5% level of significance.
- Absorptive capacity of the sampled households was associated with a decline in the household probability of being food insecure by 4.19%, *ceteris paribus*.
- Absorptive capacities reduced the household hunger scale by 0.157 points at the 1% level of significance *ceteris paribus* and increased the food consumption score by 3.680 points at the 1% level of significance.
- The impact of absorptive capacities on household hunger scale and food consumption score was more favourable for those that were shock affected than those that were not.
- Adaptive resilience capacities reduced the household propensity for the household to be food insecure by 4.22%.
- At the 10% level of significance, adaptive resilience capacities reduced the household propensity to be food insecure by 5.17% for those affected by COVID-19 by 4.52%

ix. Social Protection and support

- At least 55% of the food insecure households received social support from government and 33% of the food insecure households received social support from UN/NGO.
- Inferential analysis results indicated that at the 1% level of significance, increasing the age of household head by one year increases the propensity of the household to receive social support from Government by 0.69% and by 0.11% from UN/NGO.
- Female headed households were 4.57% more likely to receive support from Government than male headed households.
- Large size households were 0.91% more likely to received support from Government and by 2.17% from UN/NGO.

- Households in Mashonaland Central, Matabeleland South, Midlands and Masvingo were more likely to receive social support from Government as compared to households in other provinces. On the other hand, households, located in Mashonaland East, Mashonaland West, Matabeleland South and Masvingo provinces were more likely to receive less social support from UN/NGO.
- *Ceteris paribus*, for households affected by the COVID-19 shock, receiving government support were associated with a 14% decline in the probability the household being in hunger at the 1% level of significance.
- At the 1% level of significance, Government support was likely to increase food consumption score of households affected by the COVID-19 shock by 2.76 points.
- The results revealed that for households affected by the drought shock, receiving government support were associated with a 10.4% decline in the probability of the household being in hunger at the 1% level of significance and all things being constant.
- More so, at the 1% level of significance, Government support was associated with 2.59 points increase in the food consumption score of households affected by a drought shock, *ceteris paribus*.
- At the 1% level of significance, receiving government support by households affected by the dry spell was associated with a 13.4% decline in the probability of the household being in hunger. Government support was likely to increase the food consumption score of households affected by 2.33 points, *ceteris paribus*.

x. Treatment Effects of Drought Shock on Food Security

- Absorptive capacities reduced the propensity of the households affected by drought to be food insecure by 4.14%.
- The sum total of the findings is that absorptive resilience capacities reduced propensity to reduce food insecurity, but it is more efficient when one is confronted by drought shock.
- Absorptive capacities reduced the propensity of households affected by the dry spell to be food insecure by 4.74%. This result proves that absorptive capacities were salubrious to food security when one is confronted by a dry spell.

- Save for the food consumption score, adaptive capacities were more salubrious to improvement in food security status of the households that are affected by dry spell shock *vis-à-vis* those households that were not affected by the shock *ceteris paribus*.

Recommendations

Based on the above highlighted major findings and the detailed results presented in Chapters 3 to 10, the following recommendations are put forward. These recommendations are in view of initiating early recovery and to avert food insecurity in the country.

- i. **Social protection**, especially in the form of food aid or any other form necessary, should continue and even be increased to include all households that were food insecure. The current social support efforts by both the Government and Development Partners are commendable. However, it is recommended that food aid programmes be also nutrition sensitive as the results of this assessment indicated that most rural households are having an unacceptable diet and are employing coping strategies that result in negative consumption patterns. The provision of social protection will help the rural households to respond better to the negative effects of the lockdown.
 - Targeted **nutrition sensitive interventions** should be increased to arrest the high levels of child malnutrition and low dietary diversity for women. For example, the COVID-19 pandemic and the associated containment measures have affected the school feeding programmes. Thousands of school children who were receiving nutritious meals on a daily basis before the COVID-19 pandemic are no longer accessing the food and now vulnerable to malnutrition. Hence, measures should be put in place to continue with the feeding programmes even at ward level.
 - It is recommended that the female headed households, HIV/AIDS affected households and households headed by the elderly be considered among those to be prioritised.

- ii. Considering that the 2020/2021 agricultural season is fast approaching, it is recommended that the Government and Development Partners support early recovery by farmers through:
 - a. **Input support** to the most vulnerable groups. More so, it is recommended that the input support be climate and nutrition sensitive to farmers vis-à-vis the increasing droughts being experienced over the last few years.
 - b. **Input subsidy** to improve access and affordability by all smallholder farmers. Timely availability of these inputs is critical for farmers to plan early.
 - c. **Livestock support** targeting the production provinces. The support should include livestock feed and chemicals. Support towards renovation of community dip-tanks is also encouraged.
- iii. There is need to increase **availability of water** for both humans and animals. For example, drilling of boreholes or building of more water reservoirs in the rural areas is critical as there is an increase in households travelling longer distances and spending longer waiting time at water points.
- iv. Support towards **increased market access** by both farmers and consumers is encouraged. Restricted access to markets can have the following implications, i) derail agricultural input supply chains at critical times in the season; ii) constrain transport of goods to processing facilities and/or markets. Such disruptions of the food supply chain are likely to have significant adverse repercussions, particularly for the most vulnerable population groups, including informal traders, the poor small holder farmers and those relying on markets to meet their food needs.
- v. It is recommended that **monitoring** be done on a quarterly basis as this will generate more real-time data and evidence on the impact of COVID-19 and other shocks. Given the unprecedented nature of the crisis, creating a better understanding of the potential impacts of the COVID-19 pandemic on food security and related vulnerabilities is of paramount importance and urgency. As such, data collection and data sharing modalities should be adapted to ensure continuous monitoring of changes in food security levels, food and agricultural

supply chains, food production and availability, and food and agricultural input prices and identify possible risks that may threaten food systems.

- vi. Lastly, the ZimVAC 2020 Rural Livelihoods Assessment results have provided evidence on the extent of the impact of COVID-19 and drought, it is therefore important for policy makers to consider evidence provided in this report when designing and implementing COVID-19 containment measures.

CHAPTER 1

Introduction

1.1. Background

The Zimbabwe Vulnerability Assessment Committee (ZimVAC) under the coordination of the Food and Nutrition Council successfully undertook the 2020 Rural Livelihoods Assessment (RLA), the 20th since its inception. Primary data collection took place from 11 to 25 July, 2020. The ZimVAC is a government led consortium of Ministries, United Nations (UN) agencies, Non-Governmental Organisations (NGOs), other international organisations and Academia established in 2002 as part of the Southern Africa Development Community (SADC)'s Vulnerability Assessment and Analysis (VAA) system. The ZimVAC regularly contributes towards updating Government and its Development Partners on the food and nutrition security situation through baselines, assessments and monitoring exercises, complementing other information sources such as the Ministry of Agriculture's Crop and Livestock Assessments, ZimSTAT's Zimbabwe Demographic and Health Survey (ZDHS), Poverty Income, Consumption and Expenditure Survey (PICES) and Multiple Indicator Cluster Survey (MICS). ZimVAC was formally brought into Government structures by the Government of Zimbabwe Cabinet Decision of 25 May 2005.

ZimVAC is chaired and administratively run by the Food and Nutrition Council (FNC), a Department in the Office of the President and Cabinet, housed within the Scientific Industrial Research and Development Centre (SIRDC). The Government of Zimbabwe has put mechanisms to ensure the effective institutionalisation of ZimVAC by providing personnel within the FNC to run the operations of ZimVAC. This has been further supported by coming up with the legal structures that govern the work of ZimVAC. The Zimbabwe Food and Nutrition Security Policy² has seven commitments with lead ministries. In the Food and Nutrition Security Policy, ZimVAC has a role to play in

² <http://fnc.org.zw/wp-content/uploads/2019/01/Food-and-Nutrition-Security-Policy.pdf>

fulfilling Commitment Six 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.”* Of most relevance to this strategy is the Government's commitment to a food and nutrition security information system, including assessment, analysis and early warning (Commitment VI). The Policy identifies FNC as the lead agency for this commitment. It also recognizes ZimVAC as a critical mechanism to fulfil this commitment. The Policy also describes the institutional framework within which ZimVAC is situated.

ZimVAC is mandated with the production and dissemination of livelihoods information on the Zimbabwean population for Government and its Development Partners for policy formulation and development planning. Since its inception, the ZimVAC has undertaken twenty (20) Rural Livelihoods Assessments (RLAs); seven (7) Urban Livelihoods Assessments (ULAs) and two (2) National Nutrition Surveys³. These reports have an important role in guiding resource allocation for the vulnerable population, planning of national programs and have emerged as a guiding document for responding to livelihoods challenges. The livelihoods assessments apply best practices in assessments to collect data and report on important socio-economic aspects of our population, including income, livelihoods options, education, water and sanitation, food consumption patterns, food security and nutrition and people's development aspirations. All the analyses in the livelihood assessments include gender aspects. As such, rural and urban livelihoods assessments are part of a comprehensive food and nutrition security information system which informs Government and its Development Partners on programming necessary for saving lives and strengthening livelihoods in Zimbabwe. These surveys have also informed Government budgetary allocations, the declaration of state of drought as well as the development of provincial response strategies. In recognizing the importance of multi-stakeholder mechanisms in the current context of Zimbabwe, the ZimVAC results have become an important tool for

³ <http://fnc.org.zw/documents/>

informing and guiding policies and programmes that respond to the prevailing food security situation. Every year since 2005, the Government of Zimbabwe through FNC allocates funds from the national budget specifically for ZimVAC activities.

1.1 Objective of the 2020 Rural Livelihoods Assessment

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

- i. To assess impact and severity of both Drought and COVID-19 on rural livelihoods.
- ii. To estimate the population that is likely to be food insecure in the 2020/21 consumption year, their geographic distribution and the severity of their food insecurity
- iii. To assess the nutrition status of children of 6 - 59 months.
- iv. To describe the socio-economic profiles of rural households in terms of such characteristics as their demographics, access to basic services (education, health services, protection services and water and sanitation facilities), assets, income sources, incomes and expenditure patterns, food consumption patterns and consumption coping strategies.
- v. To determine the coverage (accessibility, availability and quality) of humanitarian and developmental interventions in the country.
- vi. To determine the effects of shocks experienced by communities on food and nutrition security.
- vii. To measure resilience at all levels and identify constraints to improving their resilience.
- viii. To identify early recovery needs in order to determine short to long term recovery strategies.
- ix. To assess the medium and long term (future) sources of vulnerability and risks to food and nutrition security.

1.2 Context of the 2020 Rural Livelihoods Assessment

Globally, the 2020 State of Food Security and Nutrition in The World Report ⁴ reports that the target of achieving zero hunger and food security for all by the year 2030, as stated in the UN's Sustainable Development Goal number 2 continues to remain elusive. Global hunger continues to rise and one of the main reasons for the rise in global hunger and food insecurity has been identified as climate-driven hazards arising from climate variability and extremes⁵. Natural hazards that arise from increased rainfall and cyclones are predicted to increase as climate changes are individually extremely affecting agriculture, water and food security, human health and shelter. Natural disasters directly and indirectly, affect food security and this means that the food insecurity is increasing by the natural hazards⁶. The 2020 ZimVAC Rural Livelihoods Assessment (RLA) was conducted during a period in which the Zimbabwe's economic and food security situation was fragile. The environment was and still is characterised by several shocks that include the COVID-19 pandemic, effects of drought and crop failure and economic shocks (high inflation and poverty).

Climate variability and drought: Zimbabwe is among the countries more severely affected by drought. The impacts have led to water shortages, declining yields, and periods of food insecurity, accompanied by economic downturns. In particular, the country's agricultural sector, mostly comprised of smallholder rain-fed systems, is at great risk of drought⁷. Every district has been affected by drought during the past thirty years, with varying levels of severity and frequency. Severe drought episodes have been observed in 1991-1992, 1994-1995, 2002-2003, 2015-2016, and 2018-2019. Drought vulnerability and exposure vary substantially in the country, with the south-western provinces of Matabeleland North and South showing particularly high levels³. Climate-

⁴ FAO, IFAD, UNICEF, WFP and WHO. 2020. The State of Food Security and Nutrition in the World 2020.

Transforming food systems for affordable healthy diets. Rome, FAO. <https://doi.org/10.4060/ca9692en>

⁵ Islam and Mamun (2020). Beyond the risks to food availability - linking climatic hazard vulnerability with the food access of delta-dwelling households. *Food Sec.* 12, 37-58 (2020). <https://doi.org/10.1007/s12571-019-00995-y>

⁶ Islam & Ahmed S (2017) Effects of Natural Disaster on Food Availability, Accessibility and Consumption in Household Level of Coastal Villages. *J Geogr Nat Disast* 7: 209. doi: [10.4172/2167-0587.1000209](https://doi.org/10.4172/2167-0587.1000209)

⁷ Frischen et al. (2020). Drought Risk to Agricultural Systems in Zimbabwe: A Spatial Analysis of Hazard, Exposure, and Vulnerability. *Sustainability* 2020, 12, 752. <https://doi.org/10.3390/su12030752>

induced water stress intensifies pre-existing problems including declining agricultural and economic productivity coupled with poverty and insecurity⁸.

Similar to the 2018/2019 season, the 2019/2020 cropping season was characterized by late on-set of rains across the country and false starts in the southern and south-eastern parts of the country. Long dry spells in late December 2019 and January 2020 as well as the early cessation of the season negatively affected the planted crop. The 2019 Rural Livelihoods Assessment report projected that 59% of the rural population would be cereal insecure during the peak hunger period (January to March 2020)⁹. This food insecurity prevalence translated to a population of about 5.5 million rural people.

Figure 1 shows that several parts of the country experienced dry spells longer than 29 days during the 2018/2019 season and the situation was similar in the 2019/2020 season, though not as bad as the season prior.

On the other hand, Zimbabwe is still recovering from the devastating effects of Cyclone Idai that hit Zimbabwe on March 16 and 17, 2019. Cyclone-induced rains caused catastrophic flooding in Chimanimani and Chipinge Districts of Manicaland Province, destroying homes, livelihoods, road networks, schools, and water points. An estimated 600,000 people were affected, and many people lost their lives or loved ones. The devastating effects of Cyclone Idai negatively affected the livelihoods of both rural and urban households. The Cyclone-induced heavy rains caused extensive damage to most of mature crops in upland areas of Chipinge and Chimanimani as well as flooding in Buhera Districts. Access to most basic services was disrupted as well as access to markets for agriculture produce. The districts affected by Cyclone Idai are still in the process of recovering and being rebuilt. The increase in weather-related events are of significant concern to the food and nutrition sector given that the economy of Zimbabwe is agro-based.

⁸ Brown et al. (2020). Climate Change Impacts, Vulnerability and Adaptation in Zimbabwe; IIED Climate Change Working Paper, No. 3; International Institute for Environment and Development: London, UK, 2012.

⁹ <http://fnc.org.zw/wp-content/uploads/2019/07/ZimVAC-2019-Rural-Livelihoods-Assessment-report.pdf>

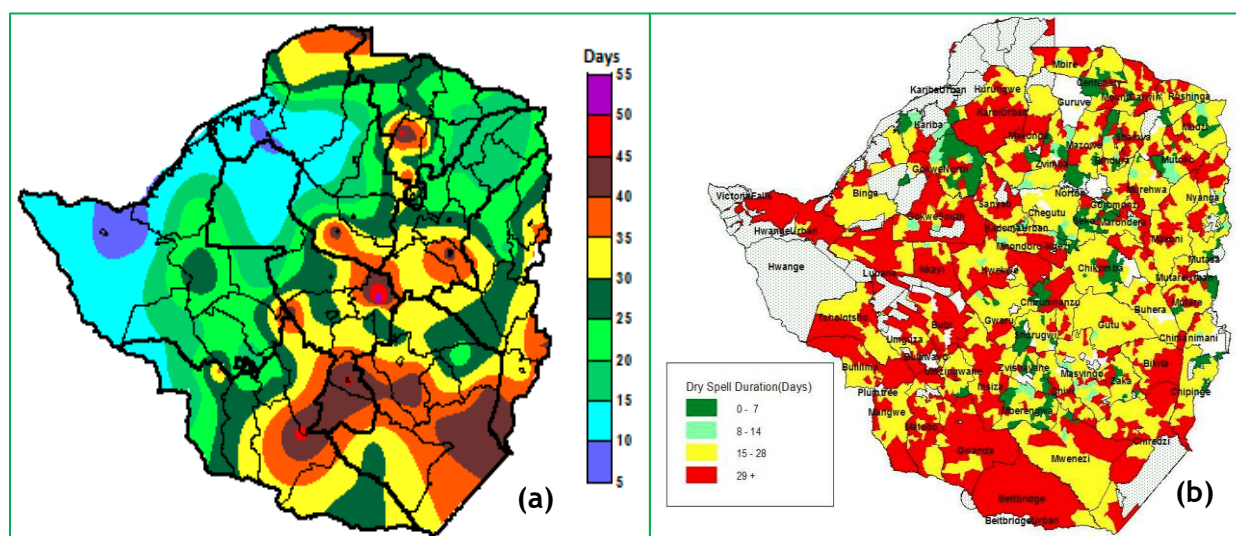


Figure 1. Longest dry spells during the 2020/2019 (a) and 2018/2019 (b) cropping seasons.

Economic challenges: the current macro-economic challenges and austerity measures further exacerbate the food and nutrition insecurity in the country. Food and nutrition insecurity has become a reality in most rural and urban households. Economic shocks related to rising inflation thereby eroding incomes affecting purchasing power of basic food and non-food items, forcing a significant number of households to resort to negative coping strategies. The continuing inflationary environment reduced affordability of basic food prices. In addition, poverty continues to be one of the major underlying causes of vulnerability to food and nutrition insecurity. The ZIMSTAT Poverty, Income, Consumption and Expenditure Survey 2017 Report¹⁰ revealed that 70.5% of the population were poor whilst 29.3% were deemed extremely poor. Year on year inflation for the month of May 2020 was at 785.55% and the Total Consumption Poverty Line (TCPL) for April 2020 was ZWL 7,425.81, which is 703.4% higher compared to the same time last year. To make matters worse, the 2018/2019 and the 2019/2020 agricultural seasons performed poorly and this was exacerbated by the unaffordability of agricultural inputs to most of the communal farmers. The macroeconomic

¹⁰ <http://www.zimstat.co.zw/wp-content/uploads/publications/Income/Finance/PICES-2017-Report.pdf>

environment remains stressed with negative impacts on poor households' livelihoods, incomes, and access to food and other basic needs.

COVID-19 pandemic: The COVID-19 pandemic further escalated the impact of the drought, Cyclone Idai and economic challenges. The outbreak of corona virus disease 2019 (COVID-19) has rapidly spread across the world, affecting thousands of lives and livelihoods. On 27 March 2020, the Zimbabwean government declared COVID-19 crisis as “national disaster” and introduced a nationwide lockdown with the aim of slowing down the spread of the disease under the Statutory Instrument 83 of Public Health (COVID-19 Prevention, Containment and Treatment) Order 2020. The lockdown was further extended two times with the latest extension effected through the Public Health (COVID-19 Prevention, Containment and Treatment) (National Lockdown) (Amendment) Order, 2020 (No. 15).

Besides the loss of life, the pandemic destabilised the economy through disruptions in trade, tourism, production, productivity, supply chains and other various integration mechanisms¹¹. As of 17 August 2020, Zimbabwe had 135 deaths due to COVID-19, 1 325 active cases and 3 848 recovered cases¹². The COVID-19 pandemic severely threatens an already critical and fragile food and nutrition security situation, arising mainly from the prevailing poor macroeconomic conditions and consecutive years of drought. The food and nutrition security situation is set to worsen as the COVID-19 pandemic spreads. The COVID-19 pandemic risks further escalating the 7 million estimated figure of food insecure people as a considerable proportion of the rural and urban population is envisaged to be food and nutrition insecure as a consequence of the pandemic itself and of some of the containment efforts. Of concern is the potential impact of COVID-19 and related containment efforts on food security and livelihoods in contexts of high vulnerability and where populations are already experiencing food and nutrition insecurities. At the global level, preliminary projections based on the latest available

¹¹ The 2020 Mid-Term Budget and Economic Review, 16 July 2020

¹² Ministry of Health and Child Welfare, 12 August 2020.

global economic outlooks, suggest that the COVID-19 pandemic may add an additional 83 to 132 million people to the ranks of the undernourished in 2020¹³.

The shocks discussed above create poverty traps and increase the prevalence of food insecurity, malnutrition and consumption of unsafe food by reducing real income and forcing the poor to sell their valuable assets, decrease their food consumption, reduce their dietary diversity and increase exposure to food-borne diseases. For example, the 2020 Zimbabwe Humanitarian Response Plan (HRP)¹⁴ launched on 2 April 2020 indicated that 7 million people in both urban and rural areas were in urgent need of humanitarian assistance across Zimbabwe. The impact is strongly felt in low-income and food-deficit households that spend a large share of their income on food.

However, this daunting food and nutrition insecurity is not peculiar to Zimbabwe alone. Globally, the incidence of food insecurity, which are caused by severe adverse weather conditions, natural hazards, economic shocks, conflicts, or a combination of these factors, has been rising since the early 1980s. Evidence from the 2020 State of Food Security and Nutrition in The World Report¹⁵ estimates that the global number of undernourished people in 2030 would exceed 840 million. More so, the report reveals that Africa is significantly off track to achieve the Zero Hunger target in 2030 as the prevalence of undernourishment in Africa has increased from 17.6% in 2014 to 19.1% of the population in 2019, i.e. more than 250 million undernourished people. The COVID-19 pandemic is obscuring economic prospects in ways no one could have anticipated, and the situation may only get worse if we do not act urgently and take unprecedented action.

¹³ FAO, IFAD, UNICEF, WFP and WHO. 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO. <https://doi.org/10.4060/ca9692en>

¹⁴ http://www.zw.one.un.org/sites/default/files/Zimbabwe_HumanitarianResponsePlan_2020.pdf

¹⁵ FAO, IFAD, UNICEF, WFP and WHO. 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO. <https://doi.org/10.4060/ca9692en>

CHAPTER 2

Methodology

2.1 Introduction

The 2020 RLA was conducted with the understanding of livelihoods within the context of vulnerability and resilience building. The assessment was a cross-sectional study whose design was guided and informed by the Food and Nutrition Security Conceptual Framework (Figure 2). The Food and Nutrition Security Conceptual framework illustrates and reinforces the multiple causes of food and nutrition insecurity and the interconnectedness of sectors and indicates the need for multi-sector analysis and response to food and nutrition insecurity within a broader livelihoods and economic framework.

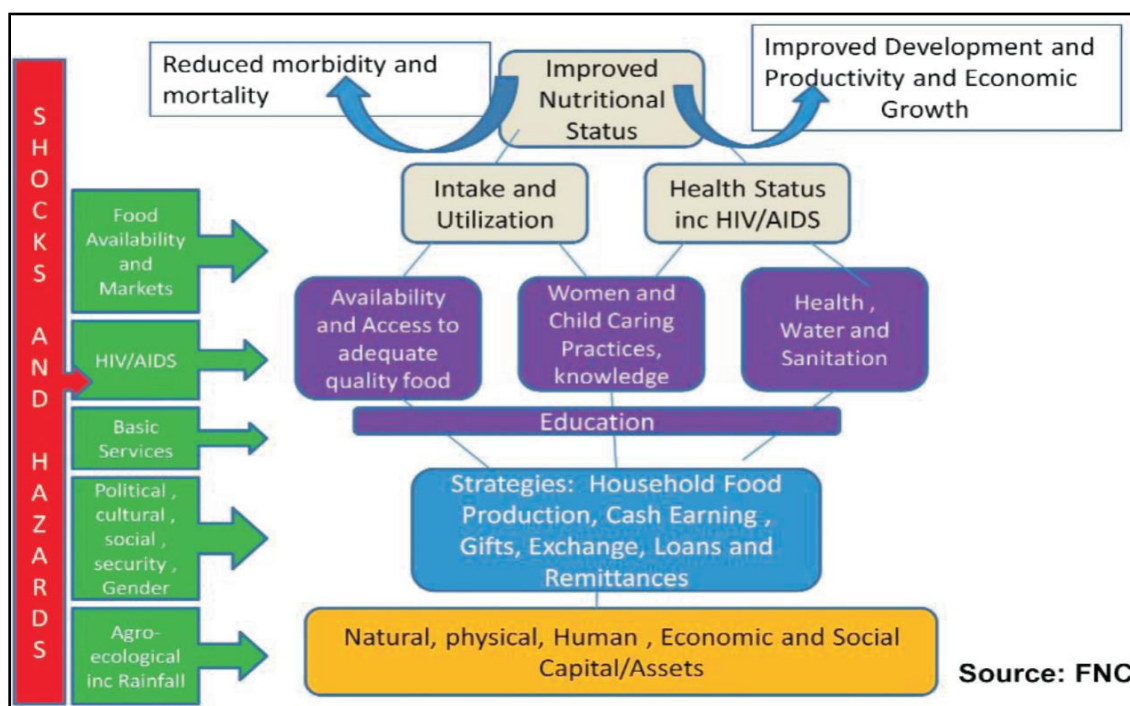


Figure 2. The Food and Nutrition Security Conceptual Framework

The assessment was also guided and informed by the resilience framework (Figure 3) so as to influence the early recovery of households affected by various shocks.

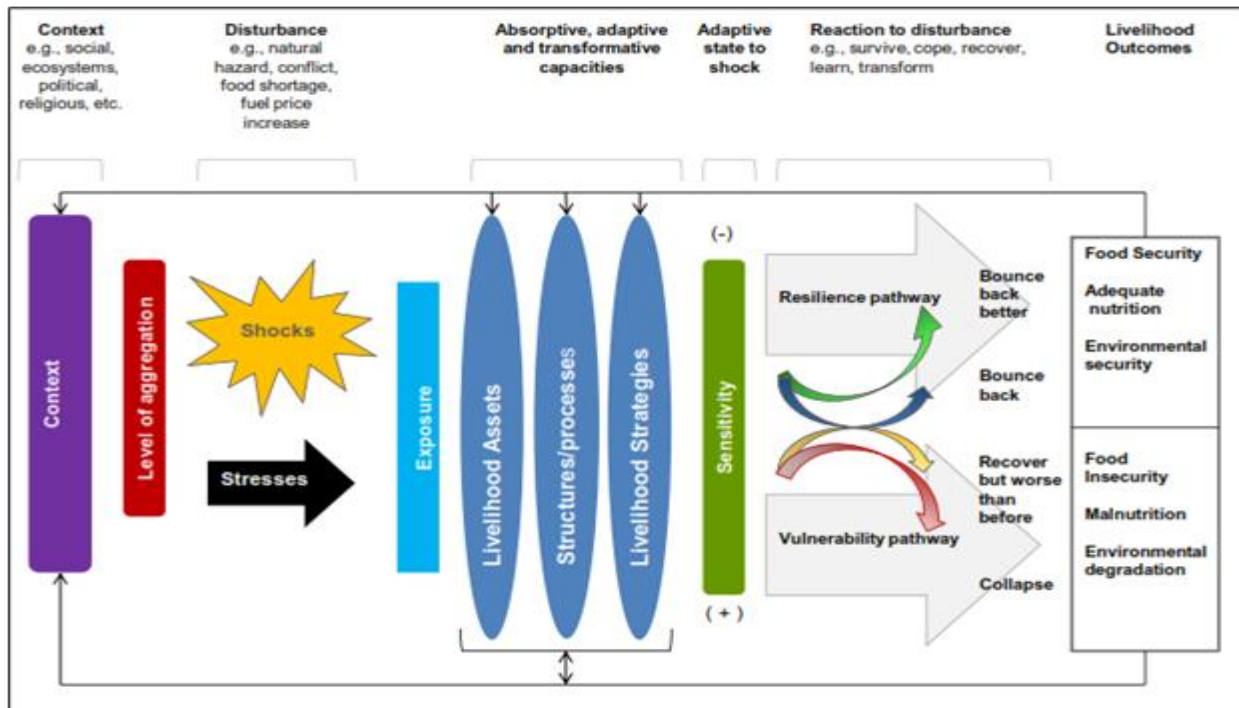


Figure 3. The Resilience Conceptual Framework (Béné et al., 2012)

2.2 Data generation process

The 2020 ZimVAC rural livelihoods assessment was informed by the multi-sectorial objectives generated by a multi-stakeholder consultation process. Appropriate survey designs and protocols informed by the survey objectives were developed. The assessments employed both a structured household questionnaire and a District Key informant tool as the two primary data collection instruments. ZimVAC national supervisors and enumerators were recruited from Government Ministries/departments, United Nations and Non-Governmental Organizations and underwent a 2-day training in all aspects of the assessments organized virtually at national level. The Ministry of Local Government, through the Provincial Development Coordinators' offices coordinated the recruitment of district level enumerators and mobilisation 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 ZimVAC assessments. Four enumerators were selected from each district for data collection. Primary data collection took place from 11 to 25 July, 2020. In recognising the risk of spreading

COVID-19 during data collection, innovative approaches were used to collect vital information without causing any harm. The RLA was guided by global and country specific recommendations and all necessary precautions were taken to avoid potential transmission of COVID-19 between enumerators and community members. In order to reduce exposure to COVID-19 through person to person physical contact, primary caregivers were capacitated to measure their children using Mid-Upper Arm Circumference (MUAC) tapes and assessment of oedema. The Ministry of Health and Child Care was the lead ministry in the development of the Infection, Prevention and Control (IPC) which guided processes from survey planning to data collection.

The survey data was collected by using androids and CSPro software. The data was checked for completeness and quality by the team leader before it was uploaded to the server to ensure timely availability of the data.

Data analysis and report writing were conducted from 27 July to 21 August 2020. 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. The Conceptual Framework presented in Figure 4 was used to structure the data analysis and reporting. The framework is a combination of the Livelihoods Based Vulnerability Analysis Framework and Resilience Conceptual Framework (Figure 2). The red arrows indicate some specific linkages, relationships analysed and presented in this report.

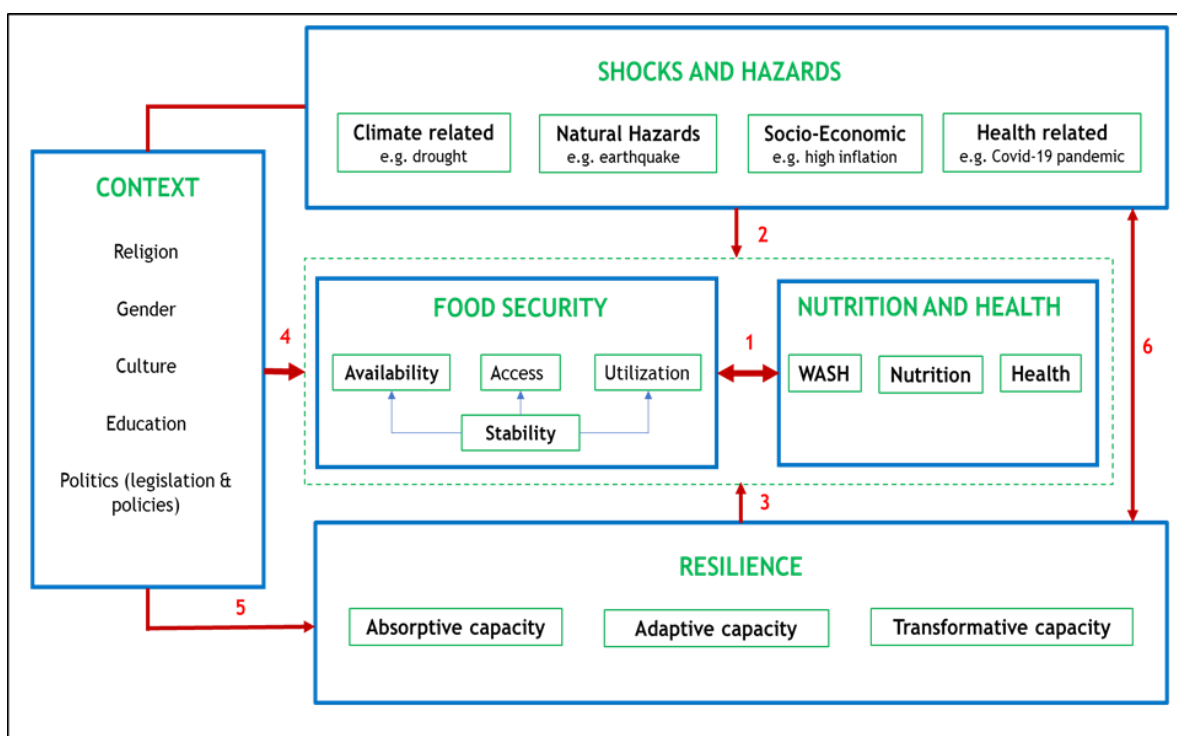


Figure 4. Combined Livelihoods Based Vulnerability Analysis (LBVA) Framework and Resilience Conceptual Framework

2.3 Sample size determination and description

Household food insecurity prevalence was used as the key indicator to determine the sample to ensure 95% confidence level of statistical representativeness at district, provincial and national level. The survey sampling followed two staged cluster sampling at each of the 60 rural district level. First, 20 EAs (village) were randomly selected based on PPS methodology, and all of these EAs were also sampled for the 2019 RLA. At second level, 10 households were selected for interviews in each EA by using systematic random sampling from household lists available at the EA.

Selection of Households for the “Panel” survey: from a selected village, a list of the households that were interviewed during the 2019 survey was created and 5 households selected using systematic random sampling. Household data interviews were conducted in the sampled households.

Selection of Non-Panel Households: from the same randomly selected village a household list of non-panel households from the village head was generated and the remaining number of households (5) from the sample was identified using systematic random sampling. A total of 200 households were interviewed per district, bringing the total sampled households to 11 971 ([Table 1](#)).

Table 1. Number of sampled households per province

Province	Number of Sampled Households
Manicaland	1 415
Mashonaland Central	1 593
Mashonaland East	1 793
Mashonaland West	1 392
Matabeleland North	1 397
Matabeleland South	1 386
Midlands	1 593
Masvingo	1 402
National	11 971

CHAPTER 3

Background Characteristics

3.1 Background characteristics of rural households

Table 2 shows the background characteristics of the sampled households by the food security status of the household. The table shows that food insecure households were more likely to be widowed or divorced/separated than those that are food secure. At the 1% level of significance, food insecure households were 4.4% more likely to be widowed than those that are food secure. Furthermore, the table shows that at the 1% level of significance, food insecure households were 6.6% more likely to be female headed than food secure households. This finding corroborates with findings from several studies in literature^{16,17,18}, which concluded that female-headed households are more susceptible to food and nutrition insecurity than those headed by males.

In terms of the educational level of the household heads, **Table 2** reveals that food insecure households tend to have less educated household heads than those that are food secure before controlling for observed confounding variables. Moreover, households that were food insecure tend to be larger than those that are food secure. Specifically, at the 1% level of statistical significance, food secure households had 0.587 less members on average than food insecure households before controlling for observed confounders. As expected, the table shows that food secure households had higher income than food insecure households of ZWL4,300 at the 1% level of significance before controlling for observed confounding variables.

¹⁶ Kairiza & Kembo (2019). Coping with food and nutrition insecurity in Zimbabwe: does household head gender matter?. *Agric Econ* 7, 24. <https://doi.org/10.1186/s40100-019-0144-6>

¹⁷ Lutomia et al. (2019) Determinants of gender differences in household food security perceptions in the Western and Eastern regions of Kenya, *Cogent Food & Agriculture*, 5:1, DOI: 10.1080/23311932.2019.1694755

¹⁸ Felker-Kantor & Wood (2012). Female-headed households and food insecurity in Brazil. *Food Security*. 4. 10.1007/s12571-012-0215-y.

Table 2. Background characteristics by food security status

	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Observations # (%)	5,243	(43.8%)	6,728	(56.2%)	
Household head age	51.324	16.924	51.499	16.850	-0.175
Married living together	0.647	0.478	0.617	0.486	0.030***
Married living apart	0.081	0.272	0.061	0.240	0.019***
Divorced/separated	0.053	0.224	0.061	0.238	-0.008*
Widow/widower	0.198	0.398	0.242	0.429	-0.044***
Never married	0.021	0.144	0.019	0.136	0.002
Household head is female	0.308	0.462	0.369	0.483	-0.061***
None	0.128	0.334	0.160	0.367	-0.032***
Primary level	0.382	0.486	0.424	0.494	-0.041***
ZJC level	0.142	0.350	0.137	0.343	0.006
O' level	0.311	0.463	0.263	0.440	0.049***
A' level	0.012	0.110	0.008	0.089	0.004**
Diploma/Certificate after primary	0.005	0.069	0.003	0.053	0.002*
Diploma/Certificate after secondary	0.012	0.107	0.005	0.070	0.007***
Graduate/Post-Graduate	0.007	0.083	0.001	0.032	0.006***
Household size	4.644	2.169	5.231	2.252	-0.587***
Household has mentally ill member	0.091	0.317	0.127	0.384	-0.036***
Household has chronically ill member	0.127	0.390	0.154	0.448	-0.027***
Household is HIV/AIDS affected	0.050	0.218	0.063	0.243	-0.013***
Household income	4,965	52,638	665	1,795	4,300***
Manicaland	0.111	0.314	0.126	0.331	-0.014***
Mash central	0.141	0.349	0.124	0.330	0.017***
Mash East	0.145	0.352	0.155	0.362	-0.010
Mash West	0.120	0.325	0.112	0.316	0.008
Mat North	0.105	0.307	0.129	0.335	-0.024***
Mat South	0.129	0.336	0.101	0.302	0.028***
Midlands	0.131	0.338	0.135	0.342	-0.004
Masvingo	0.117	0.321	0.118	0.322	-0.001

Notes: The last column shows the results of two-tailed t-test for the difference in the means. ***, **, and * indicate the 1, 5, and 10 percent levels of significance.

CHAPTER 4

Food and Nutrition Security

4.1 Introduction

Food security refers to the state where a household has access to sufficient, healthy and nutritious food that could sustainably nourish household members always¹⁹. Four dimensions of food security include: availability of food, access to food, the safe and healthy utilization of food and the stability of food availability, access and utilization. Elements of food security can be measured by proxies such as food consumption scores, months of adequate food provision, household food expenditure, among others. Food and nutrition security is increasingly being affected by shocks and hazards. Observed climate change was already affecting food and nutrition security through increasing temperatures, changing precipitation patterns, and greater frequency of some extreme events. On the other hand, the COVID-19 pandemic was a crisis threatening the food security and nutrition of millions of people around the world²⁰. Hundreds of millions of people were already suffering from hunger and malnutrition before the virus hit. As a result of the rapid increase in COVID-19 infection rates globally and other shocks, food availability was affected in both the short and long term; access was compromised; nutrition was likely to be affected as people shifted diets as fresh fruits and vegetables became less available, especially in urban areas.

4.2 Descriptive analysis

Table 3 shows the cereal insecurity of the sampled households by the food security status of the household. The results reveal that at 1% level of significance, food insecure households were likely to be in more hunger than food secure households. More so, food insecure households were likely to have a lower FCS (23.9) as compared to food secure households (FSC) (31.8). The difference in the FCS was statistically significant at the 1% level of significance before controlling for observed confounders. The difference in

¹⁹ Pinstrup-Andersen, P. Food security: definition and measurement. Food Sec. 1, 5-7 (2009). <https://doi.org/10.1007/s12571-008-0002-y>

²⁰ UN (2020) Policy Brief: The Impact of Covid-19 on Food Security and Nutrition. https://ec.europa.eu/knowledge4policy/publication/policy-brief-impact-Covid-19-food-security-nutrition_en

severe acute malnutrition between food secure and food insecure households was statistically insignificant, however there was a significant link with wasting and food insecurity ($p < 0.05$).

Table 3. Food and nutrition by cereal insecurity

	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Household Hunger Scale	0.392	0.891	0.752	1.191	-0.360***
Food Consumption Score	31.847	18.829	23.899	15.580	7.948***
Global Acute Malnutrition	0.048	0.219	0.062	0.251	-0.014**
Severe Acute Malnutrition	0.023	0.153	0.027	0.164	-0.004

Notes: The last column shows the results of two-tailed t-test for the difference in the means. ***, **, and * indicate the 1, 5, and 10 percent levels of significance.

4.3 Inferential analysis

Inferential analysis presented in **Table 4** reveals that at the 1% level of significance, an increase in the age of household head by one year was likely to reduce the propensity of household hunger (Column I) and to increase the likelihood of an increased FCS (Column II). Basically, the results show that increasing age of household head was likely to reduce household food insecurity. Regarding the education level of household head, increasing educational level of household head was likely to reduce household hunger and to increase the likelihood of an increased FCS. For example, at the 1% level of significance, attainment of a graduate or post-graduate qualification by the household head was likely to increase the FCS to 15.98 (Column II) after controlling for observed confounders. **Table 4** also reveals that at 1% level of significance, households located in Mashonaland East were 27.4% more likely to have less hunger than the base province of Manicaland. Results in Column II indicate that at the 1% level of significance, households in Matabeleland North (35.81%) and Masvingo (14.26%) were likely to have a low FCS while those located in Mashonaland Central (48.41%), Mashonaland West (31.16%) and Midlands (42.61%) were likely to have a high FCS. As expected, the results

show that increasing household income was likely to reduce household hunger and increase FCS at the 1% level of significance after controlling for observed confounding variables.

Table 4. Background characteristics and food and nutrition security

VARIABLES	Household Hunger Scale	Food Consumption Score	Global Acute Malnutrition	Severe Acute Malnutrition
	(I)	(II)	(III)	(IV)
Household head age [Years]	-0.00509*** (0.000722)	0.0842*** (0.0121)	-0.000476* (0.000255)	-2.55e-05 (0.000163)
Married living together	0.0669 (0.0793)	-1.037 (1.224)	0.00331 (0.0302)	-0.000996 (0.0222)
Married living apart	-0.0576 (0.0817)	-0.104 (1.323)	-0.00198 (0.0295)	-0.000764 (0.0219)
Divorced/separated	0.115 (0.0864)	-2.955** (1.349)	0.0599* (0.0343)	0.0146 (0.0240)
Widow/widower	0.127 (0.0823)	-3.225** (1.280)	0.0280 (0.0292)	0.00715 (0.0214)
Household head is female	0.0489 (0.0348)	0.673 (0.569)	-0.0219** (0.00963)	-0.00392 (0.00532)
Primary	-0.101*** (0.0335)	1.089** (0.477)	-0.00809 (0.0123)	-0.00438 (0.00776)
ZJC	-0.161*** (0.0411)	2.111*** (0.620)	-0.0110 (0.0139)	-0.000163 (0.00929)
O' level	-0.290*** (0.0368)	3.717*** (0.562)	-0.0132 (0.0131)	-0.00408 (0.00823)
A' level	-0.318*** (0.0928)	7.703*** (1.764)	-0.00796 (0.0305)	0.0316 (0.0290)
Diploma/certificate after primary	-0.557*** (0.0786)	14.07*** (3.721)	-0.0642*** (0.0125)	-0.0288*** (0.00775)
Diploma/certificate after secondary	-0.578*** (0.0575)	10.41*** (2.092)	0.00555 (0.0393)	0.0467 (0.0379)
Graduate/Post-Graduate	-0.562*** (0.0780)	15.98*** (3.002)	0.00339 (0.0752)	-0.0293*** (0.00788)
Household size	0.0297*** (0.00516)	-0.0300 (0.0744)	0.00517*** (0.00190)	0.00172 (0.00131)
Household has mentally ill member	0.0566* (0.0333)	-1.369*** (0.451)	-0.00152 (0.0108)	-0.00792 (0.00598)
Household has chronically ill member	0.120*** (0.0286)	-0.662* (0.398)	0.0206* (0.0107)	0.00708 (0.00784)
Household is HIV/AIDS affected	0.177*** (0.0499)	-1.412** (0.618)	-0.00493 (0.0137)	-0.00377 (0.00887)
ln (Household income)	-0.0169*** (0.00308)	0.903*** (0.0527)	0.00186** (0.000932)	0.000598 (0.000694)
Mash Central	-0.0303	4.841***	-0.0203	-0.0126

	(0.0391)	(0.587)	(0.0133)	(0.00809)
Mash East	-0.274***	0.764	-0.0285**	-0.00874
	(0.0325)	(0.623)	(0.0128)	(0.00821)
Mash West	-0.0257	3.116***	-0.0167	-0.00127
	(0.0401)	(0.684)	(0.0142)	(0.00941)
Mat North	-0.000905	-3.581***	-0.00643	-0.00594
	(0.0405)	(0.656)	(0.0147)	(0.00889)
Mat South	0.0357	1.047	-0.00734	-0.00726
	(0.0410)	(0.641)	(0.0157)	(0.00976)
Midlands	-0.00689	4.261***	-0.00523	0.00387
	(0.0391)	(0.652)	(0.0144)	(0.00968)
Masvingo	0.00594	-1.426**	-0.00505	-8.44e-06
	(0.0396)	(0.700)	(0.0154)	(0.00996)
Constant	0.850***	17.27***	0.0532	0.0199
	(0.0964)	(1.474)	(0.0391)	(0.0283)
Observations	11,828	11,825	5,404	5,404
R-squared	0.036	0.066	0.009	0.005

Robust standard errors in parentheses

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

CHAPTER 5

Women and Children Nutrition

5.1 Introduction

The health and nutrition status of women and children are intimately linked. Improving the health of women and children, therefore, begins with ensuring the health and nutritional status of women throughout all stages of life, and it continues with women being providers for their children and families²¹. Thus, direct multisectoral actions to tackle critical women's nutritional challenges, such as iron deficiency anaemia, need to be rolled out on a larger scale to achieve universal coverage. The Minimum Dietary Diversity for Women (MDD-W) is a population-level indicator of diet diversity validated for women aged 15-49 years old and across different contexts²². Addressing women's malnutrition has a range of positive effects because healthy women can fulfil their multiple roles, e.g. ensuring their families' nutrition, more effectively and thereby help advance countries' socioeconomic development. Women are often responsible for producing and preparing food for the household, so their knowledge or lack thereof about nutrition can affect the health and nutritional status of the entire family²³.

5.2 Descriptive analysis - Women Dietary Diversity Score (WDDS)

Table 5 presents the results for descriptive analysis on nutrition status of women of child bearing age. The results reveal that at the 1% level of significance, women from food insecure households had a lower Women Dietary Diversity Score (WDDS) (2.19) as compared to those from food secure households (2.38) before controlling for observed confounding variables. However, at the 1% level of significance, only 26.1% of food insecure households were likely to consume protein rich foods and only 11% were likely to consume iron rich foods in comparison to 35.2% and 18.8% in food secure households,

²¹ Branca et al. (2015). Nutrition and health in women, children, and adolescent girls BMJ; 351: <https://doi.org/10.1136/bmj.h4173>

²² Adubra et al. (2019). The Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) Indicator Is Related to Household Food Insecurity and Farm Production Diversity: Evidence from Rural Mali, Current Developments in Nutrition, Volume 3, Issue 3, nzz002, <https://doi.org/10.1093/cdn/nzz002>

²³ Smith et al. (2003). The Importance of Women's Status For Child Nutrition In Developing Countries. Food and Nutrition Bulletin. 24. 10.1177/156482650302400308.

respectively. The consequences of a low dietary diversity for women of child bearing age are far reaching as the health and nutrition status of a woman can impact the nutrition status of the child^{24,25}.

Table 5. Descriptive results for women nutrition

	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Protein rich foods	0.352	0.478	0.261	0.439	0.092***
Iron rich foods	0.188	0.391	0.110	0.312	0.079***
Vitamin A rich foods	0.614	0.487	0.607	0.489	0.007
WDDS	2.380	1.806	2.193	1.622	0.187***

5.3 Inferential analysis - Women Dietary Diversity Score (WDDS)

Results from inferential analysis presented in **Table 6** show that women situated in households headed by older people were less likely to consume less of protein rich, iron rich and vitamin A rich foods and also more likely to have a lower dietary diversity as compared to those headed by younger heads. For example, results presented in Column IV show that at the 1% level of significance, an increase in the age of the household head reduced the WDDS by 0.0279 points, *ceteris paribus*. **Table 6** shows that at the 1% level of significance, female headed households were more likely to consume all the recommended foods and also are 37.6% more likely to have a higher dietary diversity as compared to male headed households. This result, female headed households consuming nutritious foods and having a higher dietary diversity than male headed households, corroborates evidence in literature^{26,27}, that gender of the household head is a major determinant influencing dietary diversity of the members of a household.

²⁴ Shafiq et al. (2019). The Effect of "Women's Empowerment" on Child Nutritional Status in Pakistan. International journal of environmental research and public health, 16(22), 4499. <https://doi.org/10.3390/ijerph16224499>

²⁵ Hadley et al. (2011). Household capacities, vulnerabilities and food insecurity: shifts in food insecurity in urban and rural Ethiopia during the 2008 food crisis. Social science & medicine (1982), 73(10), 1534-1542. <https://doi.org/10.1016/j.socscimed.2011.09.004>

²⁶ Ochieng et al. (2017) Determinants of dietary diversity and the potential role of men in improving household nutrition in Tanzania. PLoS ONE 12(12): e0189022. <https://doi.org/10.1371/journal.pone.0189022>

²⁷ UNICEF (2019). The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world. UNICEF, New York.

Regarding the educational level of the household heads, the **Table 6** reveals that households headed by educated household heads were more likely to consume protein rich, iron rich and vitamin A rich foods and also more likely to have a higher WDDS. Disaggregating the results by province, at the 1% level of significance, households in Mashonaland Central, Matabeleland North, Matabeleland South and Midlands were respectively, 18.1%, 45.1%, 41.1% and 26.1% likely to have a lower WDDS. These results corroborate with the high food insecurity also observed in these provinces as indicated in **Table 3**.

Table 6. Household background characteristics and women's nutrition

VARIABLES	Protein rich foods (I)	Iron rich foods (II)	Vitamin A rich foods (III)	WDDS (IV)
Household head age [Years]	-0.00341*** (0.000289)	-0.00153*** (0.000221)	-0.00845*** (0.000299)	-0.0279*** (0.00104)
Married living together	0.204*** (0.0259)	0.135*** (0.0165)	0.338*** (0.0325)	1.332*** (0.101)
Married living apart	0.106*** (0.0290)	0.0773*** (0.0191)	0.228*** (0.0351)	0.936*** (0.111)
Divorced/separated	0.107*** (0.0302)	0.0876*** (0.0203)	0.201*** (0.0363)	0.781*** (0.114)
Widow/widower	0.0974*** (0.0282)	0.0809*** (0.0184)	0.225*** (0.0347)	0.829*** (0.108)
Household head is female	0.0644*** (0.0135)	0.0324*** (0.0107)	0.0918*** (0.0146)	0.376*** (0.0493)
Primary	0.0261** (0.0117)	0.0279*** (0.00802)	0.00943 (0.0135)	0.131*** (0.0445)
ZJC	0.0416*** (0.0157)	0.0362*** (0.0113)	0.0296* (0.0167)	0.210*** (0.0565)
O' level	0.0900*** (0.0146)	0.0741*** (0.0106)	0.0545*** (0.0153)	0.417*** (0.0511)
A' level	0.131*** (0.0458)	0.175*** (0.0421)	0.0477 (0.0416)	0.364** (0.152)
Diploma/certificate after primary	0.110* (0.0668)	0.0548 (0.0531)	0.106* (0.0624)	0.395* (0.216)
Diploma/certificate after secondary	0.214*** (0.0493)	0.150*** (0.0441)	0.0733 (0.0460)	0.554*** (0.164)
Graduate/Post-Graduate	0.324*** (0.0662)	0.196*** (0.0649)	0.0703 (0.0587)	0.887*** (0.296)
Household size	0.0191*** (0.00190)	0.00469*** (0.00142)	0.0480*** (0.00199)	0.179*** (0.00649)
Household has mentally ill member	-0.00788	-0.00632	-0.0132	-0.0407

	(0.0116)	(0.00809)	(0.0129)	(0.0427)
Household has chronically ill member	0.00771	-0.00588	0.0164	0.0121
	(0.0103)	(0.00760)	(0.0104)	(0.0364)
Household is HIV/AIDS affected	-0.0107	-0.0239*	0.0382**	0.0925
	(0.0179)	(0.0127)	(0.0182)	(0.0613)
ln (Household income)	0.0108***	0.00789***	0.00660***	0.0339***
	(0.00129)	(0.00103)	(0.00132)	(0.00455)
Mash Central	-0.0407**	-0.0170	-0.0696***	-0.181***
	(0.0163)	(0.0121)	(0.0167)	(0.0550)
Mash East	0.0553***	0.00953	0.00979	0.0109
	(0.0163)	(0.0123)	(0.0153)	(0.0571)
Mash West	0.0143	0.0630***	0.0576***	-0.0915
	(0.0172)	(0.0139)	(0.0159)	(0.0589)
Mat North	-0.0530***	-0.0209*	-0.0869***	-0.451***
	(0.0165)	(0.0121)	(0.0173)	(0.0582)
Mat South	-0.0299*	0.00824	-0.0902***	-0.411***
	(0.0167)	(0.0128)	(0.0176)	(0.0600)
Midlands	-0.0189	0.0235*	-0.0298*	-0.261***
	(0.0164)	(0.0128)	(0.0164)	(0.0583)
Masvingo	-0.00110	-0.00985	-0.0468***	-0.144**
	(0.0171)	(0.0128)	(0.0169)	(0.0600)
Constant	0.0919***	-0.0196	0.452***	1.329***
	(0.0329)	(0.0224)	(0.0388)	(0.126)
Observations	11,839	11,839	11,839	11,839
R-squared	0.069	0.040	0.175	0.206

Robust standard errors in parentheses

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

5.4 Descriptive analysis - Child Diseases

Table 7 shows incidence of child diseases by food security status of the household. The results show no significant difference between incidence of child diseases and household food security status of the household. However, inferential analysis results presented in

Table 8 reveal that the probability of the incidence of child diseases was reduced as age of household head increases. More so, the results show that all things constant, an increase in the household size by one member was associated with 0.86 more incidences of cough.

Table 7. Children diseases by food security status

Children diseases	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Cough	0.222	0.455	0.221	0.452	0.001
Fever	0.132	0.363	0.135	0.366	-0.003
Diarrhoea	0.121	0.343	0.115	0.330	0.005

Table 8. OLS estimates of the impact of household background characteristics and child diseases

VARIABLES	Cough	Fever	Diarrhoea
	(I)	(II)	(III)
Household head age [Years]	-0.00223*** (0.000484)	-0.000828** (0.000419)	-0.00132*** (0.000366)
Married living together	0.117*** (0.0412)	-0.0207 (0.0542)	0.0168 (0.0433)
Married living apart	0.116*** (0.0424)	0.0411 (0.0537)	0.0407 (0.0427)
Divorced/separated	0.126*** (0.0473)	0.0209 (0.0548)	0.0484 (0.0436)
Widow/widower	0.120*** (0.0407)	0.0248 (0.0515)	0.0449 (0.0410)
Household head is female	-0.0129 (0.0225)	-0.0286 (0.0190)	-0.0319 (0.0206)
Primary	-0.00509 (0.0215)	-0.0209 (0.0190)	-0.0258 (0.0164)
ZJC	-0.0333 (0.0253)	-0.0292 (0.0220)	-0.0176 (0.0199)
O' level	-0.0415* (0.0240)	-0.0476** (0.0206)	-0.0345* (0.0183)
A' level	-0.109** (0.0495)	-0.0538 (0.0426)	-0.0838** (0.0359)
Diploma/certificate after primary	-0.110 (0.0752)	-0.121** (0.0505)	-0.149*** (0.0182)
Diploma/certificate after secondary	-0.0403 (0.0777)	-0.0234 (0.0584)	-0.0112 (0.0589)
Graduate/Post-Graduate	-0.0420 (0.155)	0.140 (0.169)	-0.0846 (0.0768)
Household size	0.00860***	0.00597**	0.00408*

	(0.00332)	(0.00267)	(0.00235)
Household has mentally ill member	0.00294 (0.0193)	-0.00544 (0.0159)	0.0374** (0.0168)
Household has chronically ill member	0.0429** (0.0172)	0.0321** (0.0153)	0.00766 (0.0124)
Household is HIV/AIDS affected	0.00256 (0.0278)	0.0163 (0.0254)	0.00286 (0.0217)
ln (Household income)	0.00415** (0.00188)	0.00273* (0.00148)	0.00302** (0.00142)
Mash Central	0.0548** (0.0277)	0.0423** (0.0205)	-0.00368 (0.0184)
Mash East	-0.106*** (0.0245)	-0.0321* (0.0182)	-0.0396** (0.0172)
Mash West	-0.0350 (0.0273)	0.0197 (0.0210)	-0.00653 (0.0198)
Mat North	-0.113*** (0.0259)	-0.0377* (0.0197)	-0.0296 (0.0193)
Mat South	-0.131*** (0.0262)	-0.0697*** (0.0198)	-0.0395** (0.0192)
Midlands	-0.00125 (0.0271)	0.0452** (0.0215)	0.0207 (0.0197)
Masvingo	-0.0283 (0.0293)	0.0367 (0.0233)	0.0282 (0.0220)
Constant	0.199*** (0.0579)	0.161** (0.0665)	0.155*** (0.0545)
Observations	5,404	5,404	5,404
R-squared	0.029	0.018	0.012

Robust standard errors in parentheses

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

CHAPTER 6

Water, Sanitation and Hygiene (WASH)

6.1 Introduction

WASH affects all aspects of food security, as the lack of it reduces the time women are able to work in the agricultural sector, reduces disposable income of households, contaminates foods, and causes disease²⁸. Water plays an important role in food security and provides the basis for healthy ecosystems and human well-being²⁹. Frequent and proper hand hygiene is one of the most important measures that can be used to prevent infection with the COVID-19 virus. In the face of pandemics such as COVID-19, the provision of safe WASH conditions is essential to protecting human health³⁰. Frequent and proper handwashing with soap is one of the most important measures that can be used to prevent infection with the COVID-19 virus. WASH activities aiming to respond to COVID-19 should work to enable handwashing by improving services and facilities and using proven behaviour change techniques. In addition, reliable availability of clean water in health facilities and households is key to ensuring both sufficient quantities of safe drinking water and the ability to maintain and practise hygiene, e.g., hand hygiene, laundering, cleaning, and disinfection³¹.

6.2 Descriptive analysis - WASH

The results presented in **Table 9** show that at the 5% level of significance, food insecure households were 1.8% more likely not to have access to improved water sources as compared to food secure households. More so, at the 1% level of significance, food insecure households were 2.3% more likely not to have a handwashing station and are also more likely to practise open defecation as compared to food secure households before controlling for observed confounders. The high percentage of both food secure

²⁸ <https://www.fsnnetwork.org/global-food-security-critical-role-water-sanitation-and-hygiene-wash>

²⁹ Vilakazi et al. (2019). Unlocking Water Issues Towards Food Security in Africa, IntechOpen, DOI: 10.5772/intechopen.86788.

³⁰ https://www.who.int/water_sanitation_health/news-events/wash-and-Covid-19/en/

³¹ <https://www.who.int/news-room/fact-sheets/detail/drinking-water>

(87.8%) and food insecure (90.1%) households that do not have handwashing stations is worrisome, especially given the increasing infection rates of COVID-19 and the importance of sanitation facilities under such circumstances.

Table 9. WASH by food security status

WASH indicator	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Improved water source	0.782	0.413	0.765	0.424	0.018**
Absence of handwashing station	0.878	0.327	0.901	0.299	-0.023***
Practices open defecation	0.238	0.426	0.320	0.466	-0.082***

6.3 Inferential analysis WASH

Inferential analysis results presented in **Table 9** show that at 1% level of significance, households with older household heads were 0.23% more likely to have access to improved water sources (Column I) as compared to households headed by younger household heads before controlling for observed confounding variables. In addition, households headed by older household heads were 0.27% more likely to have handwashing stations and 0.6% less likely to practise open defecation as compared to households headed by younger household heads. A similar trend was observed for an increase in education level.

Table 10. Household background characteristics and access to WASH

VARIABLES	Improved water source	Absence of handwashing station	Practices open defecation
	(I)	(II)	(III)
Household head age [Years]	0.00234*** (0.000282)	-0.00274*** (0.000210)	-0.00600*** (0.000284)
Married living together	-0.0460 (0.0289)	0.0133 (0.0233)	0.110*** (0.0318)
Married living apart	-0.0367 (0.0314)	0.0252 (0.0256)	0.0729** (0.0340)
Divorced/separated	-0.0556* (0.0329)	0.0774*** (0.0254)	0.136*** (0.0356)
Widow/widower	-0.0522* (0.0310)	0.0793*** (0.0250)	0.163*** (0.0335)
Household head is female	0.0225 (0.0138)	-0.0335*** (0.00918)	-0.0475*** (0.0138)
Primary	0.0117 (0.0123)	-0.0408*** (0.00867)	-0.0835*** (0.0127)
ZJC	0.0526*** (0.0153)	-0.0646*** (0.0114)	-0.106*** (0.0159)
O' level	0.0777*** (0.0143)	-0.0735*** (0.0101)	-0.174*** (0.0145)
A' level	0.0979** (0.0393)	-0.115*** (0.0322)	-0.223*** (0.0385)
Diploma/certificate after primary	0.0407 (0.0620)	-0.148*** (0.0573)	-0.250*** (0.0538)
Diploma/certificate after secondary	0.155*** (0.0364)	-0.162*** (0.0406)	-0.365*** (0.0234)
Graduate/Post-Graduate	0.144*** (0.0478)	-0.207*** (0.0614)	-0.309*** (0.0429)
Household size	-0.00596*** (0.00183)	0.000954 (0.00133)	-0.00216 (0.00182)
Household has mentally ill member	-0.0130 (0.0114)	0.00998 (0.00832)	0.0245** (0.0120)
Household has chronically ill member	0.0109 (0.00926)	0.00253 (0.00738)	0.000517 (0.00956)
Household is HIV/AIDS affected	0.0467*** (0.0159)	0.00282 (0.0117)	0.00564 (0.0174)
ln (Household income)	0.00415*** (0.00122)	-0.00280*** (0.000910)	-0.00562*** (0.00124)
Mash Central	0.00171 (0.0155)	0.00357 (0.0118)	-0.0759*** (0.0128)

Mash East	0.0328** (0.0144)	0.0707*** (0.0104)	0.00702 (0.0129)
Mash West	-0.0173 (0.0162)	0.0809*** (0.0101)	0.193*** (0.0161)
Mat North	0.0860*** (0.0148)	-0.0429*** (0.0133)	0.368*** (0.0163)
Mat South	-0.0491*** (0.0165)	-0.0683*** (0.0139)	0.207*** (0.0159)
Midlands	-0.0295* (0.0155)	0.0421*** (0.0113)	0.200*** (0.0150)
Masvingo	-0.0515*** (0.0163)	0.0327*** (0.0119)	0.214*** (0.0158)
Constant	0.659*** (0.0355)	1.056*** (0.0272)	0.508*** (0.0376)
Observations	11,839	11,839	11,839
R-squared	0.020	0.046	0.128

Robust standard errors in parentheses

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

6.4 Descriptive analysis - Distance and time at water source

The results presented in **Table 11** reveal that at the 10% significance level, food insecure households were 3.2% likely to walk longer distances to the water source than food secure households. In addition, the results indicate that at the 1% level of significance, food insecure households were 6.6% likely to queue longer at a water source as compared to food secure households. The drought situation could have exacerbated the challenges in accessing water (travelling longer distances and spending more time queuing at water points) as the occurrence of severe and sustained droughts can result in depletion of water reservoirs, wells and small streams causing water scarcity, deteriorated water quality, and even interruptions of supply³².

³² Frischen et al. (2020). Drought Risk to Agricultural Systems in Zimbabwe: A Spatial Analysis of Hazard, Exposure, and Vulnerability. Sustainability, 12, 752.

Table 11. Descriptive analysis of distance and time at water source

Access to water source	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Time walking to water source [ascending ranges]	1.854	0.937	1.887	0.946	-0.032*
Time queuing at water source [ascending ranges]	1.737	0.972	1.803	0.989	-0.066***

6.5 Inferential analysis - Distance and time at water source

Results from inferential analysis presented in **Table 12** reveal that at the 1% level of significance, households headed by older household heads took more time and or travelled longer distances to the water source as comparable to households headed by younger household heads. Furthermore, the results show that households headed by educated household heads travelled less distances and spend less time at water points as compared to households led by lowly educated household heads. The results also show that at the 1% level of significance, large size households were more likely to travel longer distances and spend more time at water sources. As expected, the table shows that households that travelled less distances and spent less time at water sources had a higher income than households that travelled less distances and spent more time at water sources at the 1% level of significance after for observed confounding variables.

Table 12. Distance to water source and waiting time at the water source

VARIABLES	Time walking	Time queuing
	(I)	(II)
Household head age [Years]	-0.00199*** (0.000635)	-0.000704 (0.000655)
Married living together	0.112* (0.0659)	0.0277 (0.0706)
Married living apart	0.0822 (0.0700)	-0.0110 (0.0751)
Divorced/separated	0.0844 (0.0729)	-0.137* (0.0765)

Widow/widower	0.103 (0.0691)	-0.0542 (0.0736)
Household head is female	-0.0347 (0.0297)	0.0552* (0.0302)
Primary	-0.184*** (0.0282)	-0.132*** (0.0296)
ZJC	-0.186*** (0.0351)	-0.123*** (0.0364)
O' level	-0.208*** (0.0327)	-0.129*** (0.0339)
A' level	-0.299*** (0.0928)	-0.260*** (0.0941)
Diploma/certificate after primary	-0.240** (0.120)	-0.239* (0.128)
Diploma/certificate after secondary	-0.413*** (0.0885)	-0.270*** (0.0931)
Graduate/Post-Graduate	-0.430*** (0.117)	-0.104 (0.164)
Household size	0.0190*** (0.00411)	0.0219*** (0.00430)
Household has mentally ill member	0.0631** (0.0270)	0.0535* (0.0281)
Household has chronically ill member	0.0429** (0.0218)	0.0661*** (0.0233)
Household is HIV/AIDS affected	-0.00620 (0.0387)	-0.00717 (0.0384)
ln (Household income)	-0.0129*** (0.00274)	-0.0156*** (0.00289)
Mash Central	0.383*** (0.0325)	0.439*** (0.0332)
Mash East	0.150*** (0.0289)	0.111*** (0.0279)
Mash West	0.285*** (0.0328)	0.329*** (0.0337)
Mat North	0.414*** (0.0330)	0.594*** (0.0348)
Mat South	0.609*** (0.0346)	0.361*** (0.0335)
Midlands	0.385*** (0.0323)	0.477*** (0.0336)
Masvingo	0.416*** (0.0340)	0.343*** (0.0335)
Constant	1.693*** (0.0809)	1.545*** (0.0855)
Observations	11,655	11,652
R-squared	0.046	0.047

Robust standard errors in parentheses

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

CHAPTER 7

Household susceptibility to systemic and idiosyncratic shocks

7.1 Introduction

Households in developing countries are often exposed to and struggle against a number of adverse events that disrupt income and consumption flows and are responsible for welfare losses³³. Unexpected and catastrophic shocks deplete household resources and lead to poverty traps besides deepening poverty among the already poor. Shocks invariably trigger coping measures as responses by the household, but the nature of the shock as well as form of the adopted coping strategies determine welfare consequences of the shocks³⁴. A distinction can be made between idiosyncratic and systematic triggering events. An idiosyncratic shock occurs when the initial shock affects only the health of a single element of a system. On the other hand, a systematic shock simultaneously affects a greater number of players at the same time.

Among many other factors, shocks like unemployment, sickness, death, theft and drought create large income and consumption variation over time. Households in developing countries are frequently hit by severe idiosyncratic and covariate shocks resulting in high consumption volatility³⁵. Due to the several shocks and hazards being experienced by several households in Zimbabwe, many households must cope with droughts, floods, illness and recession. Idiosyncratic shocks affect only the members of an individual household, as opposed to covariate shocks, which involve entire communities or countries. When faced with a severe idiosyncratic shock, households in low-income contexts typically engage in one or more of the following coping strategies: (i) behavioural changes in relation to food consumption (e.g. eating less, reducing meal frequency, collecting bush products); (ii) selling assets; (iii) withdrawing children from

³³ Spiegel et al. (2007) Occurrence and overlap of natural disasters, complex emergencies and epidemics during the past decade (1995-2004). *Conflict and Health* 1: 2.

³⁴ Dercon S (2004) Risk, Insurance and Poverty: A Review, in S. Dercon (ed.) *Insurance Against Poverty*, Oxford University Press: London: 9-37.

³⁵ <https://www.econstor.eu/bitstream/10419/19838/1/guenther.pdf>

school, sending them to stay with relatives or sending them to work; and (iv) reducing expenditures on non-food items, or borrowing food or cash³⁶.

7.2 Descriptive analysis of household susceptibility to selected shocks and severity

Table 12 presents descriptive results of the prevalence and severity of economic shocks. The results show that at the 5% level of significance, food secure households were 1.9% more susceptible to the COVID-19 shock as compared to food insecure households. However, the results reveal that at the 1% level of significance, food insecure households were likely to be 7.8% more susceptible to cereal price change and 2.2% more likely to be susceptible to cash shortages as compared to food secure households. Similarly, food insecure households were 5.7% more susceptible to drought and 4.7% more likely to be susceptible to dry spell than food secure households. Regarding severity of shocks, **Table 12** shows that at 1% level of significance, the severity of all shocks listed in the table was higher in food insecure households as compared to food secure households. For example, food insecure households were 4.2% likely to be affected by price changes and 5.8% more likely to be affected by cash shortages. These results corroborate findings in literature that food insecurity is associated with higher rates of self-reported poor health and chronic health conditions and nutritional vulnerability among adults and greater risk of poor health among children^{37,38}.

Table 12. Prevalence and severity of economic shocks

Type of shock	Susceptibility to shock			Severity of shock		
	Household is food secure?		Difference [Y - N]	Household is food secure?		Difference [Y - N]
	Yes [Y]	No [N]		Yes [Y]	No [N]	
Covid-19	0.253	0.234	0.019**	0.639	0.668	-0.030*
Cereal price change	0.574	0.652	-0.078***	0.843	0.885	-0.042***

³⁶ Béné et al. (2012). Resilience: New utopia or new tyranny? Reflection about the potentials and limits of the concept of resilience in relation to vulnerability reduction Programmes. IDS Working Papers, 2012, 1-61.

³⁷ Loopstra & Tarasuk, Severity of Household Food Insecurity Is Sensitive to Change in Household Income and Employment Status among Low-Income Families, The Journal of Nutrition, Volume 143, Issue 8, August 2013, Pages 1316-1323, <https://doi.org/10.3945/jn.113.175414>

³⁸ Sileshi, M., Kadigi, R., Mutabazi, K. et al. Analysis of households' vulnerability to food insecurity and its influencing factors in East Hararghe, Ethiopia. Economic Structures 8, 41 (2019). <https://doi.org/10.1186/s40008-019-0174-y>

Cash shortages	0.731	0.753	-0.022***	0.827	0.885	-0.058***
Crop pests	0.374	0.391	-0.017*	0.642	0.695	-0.053***
Drought	0.698	0.755	-0.057***	0.854	0.921	-0.067***
Dry spell	0.638	0.685	-0.047***	0.831	0.880	-0.049***

7.3 Inferential analysis of household susceptibility to selected shocks

Table 13 shows results of the inferential analysis. The results indicate that at the 1% level of significance, increasing the age of the household head by one year was likely to reduce household susceptibility to COVID-19 and to cereal price change and at the same time, it increased household susceptibility to crop pests, drought and dry spell. Furthermore, the results reveal that households affected by HIV/AIDS were more vulnerable to cereal price change and cash shortage as compared to HIV/AIDS unaffected households. Except for susceptibility to cash shortages, large size households had a high susceptibility to COVID-19, cereal price change, crop pests, drought and dry spell. As expected, the results show that all provinces were highly susceptible to COVID-19 at the 1% level of significance. These results point to the need for targeted intervention programmes, e.g. HIV/AIDS affected households need to be supported more with regards to cash transfer and grain handout programmes for them to be food secure.

Table 13. Household background characteristics and household susceptibility to shocks

VARIABLES	Covid-19	Cereal price change	Cash shortages	Crop pests	Drought	Dry spell
	(I)	(II)	(III)	(IV)	(V)	(VI)
Household head age [Years]	-0.000614** (0.000282)	-0.000691** (0.000328)	-0.000252 (0.000297)	0.00256*** (0.000312)	0.00196*** (0.000291)	0.00262*** (0.000315)
Married living together	0.0236 (0.0286)	0.141*** (0.0356)	0.162*** (0.0345)	0.0833*** (0.0286)	0.0862*** (0.0330)	0.0929*** (0.0350)
Married living apart	0.0589* (0.0313)	0.0691* (0.0383)	0.110*** (0.0369)	0.0170 (0.0303)	0.0521 (0.0351)	0.0531 (0.0375)
Divorced/separated	0.0294 (0.0323)	0.127*** (0.0395)	0.170*** (0.0375)	-0.00764 (0.0318)	0.0351 (0.0364)	0.00719 (0.0389)
Widow/widower	0.00329 (0.0302)	0.129*** (0.0374)	0.148*** (0.0361)	0.0239 (0.0300)	0.0722** (0.0342)	0.0516 (0.0367)

Household head is female	0.00957 (0.0130)	0.0137 (0.0154)	-0.00196 (0.0141)	0.0322** (0.0144)	0.0216 (0.0143)	0.0406*** (0.0152)
Primary	-0.0243* (0.0125)	0.0247* (0.0142)	0.0501*** (0.0130)	0.0386*** (0.0135)	-0.00879 (0.0120)	0.0400*** (0.0135)
ZJC	-0.0299* (0.0157)	0.0296* (0.0177)	0.0650*** (0.0160)	0.0374** (0.0170)	-0.00368 (0.0156)	0.0409** (0.0171)
O' level	-0.0233 (0.0146)	0.0218 (0.0164)	0.0632*** (0.0149)	0.0475*** (0.0157)	-0.0279* (0.0144)	0.0269* (0.0158)
A' level	0.0171 (0.0441)	0.0303 (0.0466)	0.0953** (0.0392)	0.0182 (0.0456)	-0.0958** (0.0451)	-0.0199 (0.0469)
Diploma/certificate after primary	0.104 (0.0731)	-0.00257 (0.0714)	-0.0553 (0.0700)	0.0213 (0.0715)	-0.00794 (0.0649)	-0.0634 (0.0738)
Diploma/certificate after secondary	0.0432 (0.0467)	0.0232 (0.0488)	0.0345 (0.0469)	-0.0207 (0.0496)	-0.161*** (0.0495)	-0.0712 (0.0518)
Graduate/Post-Graduate	0.0161 (0.0648)	0.0872 (0.0632)	0.00704 (0.0652)	0.00304 (0.0703)	-0.159** (0.0679)	-0.00715 (0.0690)
Household size	0.00466** (0.00181)	0.0107*** (0.00206)	0.00133 (0.00189)	0.0179*** (0.00203)	0.00938*** (0.00179)	0.0120*** (0.00199)
Household has mentally ill member	0.00396 (0.0118)	0.0347*** (0.0126)	0.0298*** (0.0111)	-0.00588 (0.0127)	0.00551 (0.0110)	0.00528 (0.0121)
Household has chronically ill member	0.0110 (0.00992)	0.0151 (0.0108)	0.0194** (0.00936)	0.0195* (0.0107)	0.00930 (0.00954)	-0.00215 (0.0103)
Household is HIV/AIDS affected	0.00443 (0.0170)	0.0552*** (0.0187)	0.0828*** (0.0156)	0.0170 (0.0188)	0.0199 (0.0164)	0.0365** (0.0179)
ln (Household income)	0.00772*** (0.00121)	0.00206 (0.00143)	-0.00318** (0.00129)	-0.00591*** (0.00136)	-0.00161 (0.00128)	-0.00622*** (0.00137)
Mash Central	0.270*** (0.0159)	0.00892 (0.0183)	0.0410*** (0.0145)	0.0385** (0.0182)	0.0957*** (0.0175)	0.169*** (0.0174)
Mash East	0.0287** (0.0134)	0.0542*** (0.0176)	0.00565 (0.0144)	-0.0570*** (0.0174)	0.148*** (0.0165)	0.132*** (0.0171)
Mash West	0.0639*** (0.0149)	-0.00890 (0.0189)	-0.0952*** (0.0166)	-0.00451 (0.0187)	-0.0280 (0.0187)	0.00244 (0.0189)
Mat North	0.0387*** (0.0145)	0.0483** (0.0188)	-0.0321** (0.0161)	-0.237*** (0.0171)	0.153*** (0.0174)	0.0415** (0.0187)
Mat South	0.0923*** (0.0154)	-0.0117 (0.0191)	-0.205*** (0.0174)	-0.305*** (0.0161)	0.230*** (0.0165)	0.143*** (0.0182)
Midlands	0.0816*** (0.0145)	0.179*** (0.0172)	-0.0431*** (0.0155)	0.0825*** (0.0181)	0.262*** (0.0155)	0.195*** (0.0170)
Masvingo	0.0978*** (0.0153)	0.145*** (0.0181)	-0.0487*** (0.0161)	0.116*** (0.0188)	0.155*** (0.0174)	0.108*** (0.0184)
Constant	0.115***	0.376***	0.600***	0.133***	0.396***	0.287***

	(0.0345)	(0.0428)	(0.0402)	(0.0366)	(0.0396)	(0.0418)
Observations	11,839	11,839	11,839	11,839	11,839	11,839
R-squared	0.041	0.029	0.039	0.098	0.066	0.043

Robust standard errors in parentheses

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

Regarding the association of background characteristics and severity of shocks, **Table 14** shows that at the 1% level of significance, large size households were more vulnerable to the severity of the following shocks; cash shortages, drought and dry spell. In addition, households of low-income level were more vulnerable to the severity of the following shocks: cereal price change, cash shortages, crop pests and drought.

Table 14. OLS estimates of the association of background characteristics and severity of shocks

VARIABLES	Covid-19	Cereal price change	Cash shortages	Crop pests	Drought	Dry spell
	(I)	(II)	(III)	(IV)	(V)	(VI)
Household head age [Years]	-0.000520 (0.000661)	-0.000118 (0.000293)	-0.000120 (0.000274)	-0.000205 (0.000509)	-0.000120 (0.000238)	-0.000275 (0.000287)
Married living together	-0.0118 (0.0725)	-0.0148 (0.0341)	0.0284 (0.0376)	0.145* (0.0808)	0.0385 (0.0324)	-0.00582 (0.0334)
Married living apart	0.0378 (0.0759)	-0.0326 (0.0372)	-0.00850 (0.0401)	0.0888 (0.0861)	0.0348 (0.0341)	-0.0230 (0.0352)
Divorced/separated	0.0524 (0.0786)	-0.0138 (0.0375)	0.0680* (0.0393)	0.0490 (0.0886)	0.0666* (0.0340)	-0.0302 (0.0364)
Widow/widower	-0.00574 (0.0762)	-0.00584 (0.0355)	0.0489 (0.0385)	0.118 (0.0843)	0.0472 (0.0330)	-0.0143 (0.0336)
Household head is female	0.0127 (0.0313)	0.000367 (0.0135)	0.00661 (0.0127)	0.0443* (0.0240)	0.0108 (0.0110)	0.0223* (0.0133)
Primary	-0.0703*** (0.0267)	-0.0286** (0.0115)	-0.0371*** (0.0104)	-0.0224 (0.0213)	-0.0264*** (0.00920)	-0.0388*** (0.0111)
ZJC	-0.0309 (0.0336)	-0.0454*** (0.0152)	-0.0609*** (0.0140)	-0.0145 (0.0271)	-0.0314** (0.0122)	-0.0618*** (0.0149)
O' level	-0.0365 (0.0305)	-0.0513*** (0.0139)	-0.0623*** (0.0128)	-0.0434* (0.0248)	-0.0439*** (0.0113)	-0.0723*** (0.0137)
A' level	0.100 (0.0706)	-0.107** (0.0486)	-0.140*** (0.0449)	-0.000982 (0.0702)	-0.0545 (0.0420)	-0.0519 (0.0443)
Diploma/certificate after primary	-0.243** (0.120)	-0.200** (0.0879)	-0.0649 (0.0737)	-0.184 (0.120)	-0.0607 (0.0595)	-0.0949 (0.0766)
Diploma/certificate after secondary	-0.0969 (0.0923)	-0.0651 (0.0458)	-0.144*** (0.0506)	0.00175 (0.0690)	-0.0961* (0.0509)	-0.113** (0.0549)

Graduate/Post-Graduate	0.162 (0.0999)	-0.0576 (0.0633)	-0.0490 (0.0630)	-0.288** (0.120)	-0.198** (0.0848)	-0.214** (0.0855)
Household size	0.00308 (0.00418)	0.00353** (0.00177)	0.00506*** (0.00176)	-0.00355 (0.00329)	0.00445*** (0.00150)	0.00476*** (0.00173)
Household has mentally ill member	0.0231 (0.0247)	-0.00254 (0.0110)	-0.00413 (0.0104)	0.0303 (0.0188)	0.00820 (0.00943)	0.0189* (0.0106)
Household has chronically ill member	0.0231 (0.0214)	-0.00391 (0.00959)	0.00576 (0.00845)	0.0216 (0.0163)	0.00128 (0.00759)	-0.00231 (0.00966)
Household is HIV/AIDS affected	0.0379 (0.0379)	0.0130 (0.0157)	0.0108 (0.0143)	-0.0439 (0.0294)	0.0215* (0.0121)	0.00811 (0.0156)
ln (Household income)	-0.00488* (0.00288)	-0.00445*** (0.00130)	-0.00822*** (0.00119)	-0.0101*** (0.00217)	-0.00408*** (0.00107)	-0.00211* (0.00127)
Mash Central	-0.0236 (0.0389)	-0.0385** (0.0165)	-0.0545*** (0.0136)	-0.154*** (0.0270)	-0.0158 (0.0142)	0.0201 (0.0168)
Mash East	0.0835** (0.0418)	-0.0470*** (0.0159)	-0.0508*** (0.0134)	-0.0551** (0.0272)	-0.0112 (0.0135)	-0.000503 (0.0169)
Mash West	0.0945** (0.0430)	-0.0107 (0.0166)	-0.0319** (0.0145)	0.0810*** (0.0268)	-0.00129 (0.0149)	0.0132 (0.0185)
Mat North	0.119*** (0.0437)	-0.0391** (0.0168)	-0.0672*** (0.0150)	-0.121*** (0.0362)	-0.00626 (0.0140)	0.0105 (0.0181)
Mat South	0.113*** (0.0417)	-0.0405** (0.0175)	-0.0697*** (0.0166)	-0.0110 (0.0412)	-0.0252* (0.0144)	0.0196 (0.0175)
Midlands	0.270*** (0.0380)	0.0552*** (0.0133)	0.0211* (0.0124)	0.140*** (0.0239)	0.0280** (0.0125)	0.0827*** (0.0154)
Masvingo	0.0321 (0.0422)	-0.0316* (0.0162)	-0.00498 (0.0139)	0.0830*** (0.0252)	-0.000664 (0.0141)	0.0297* (0.0175)
Constant	0.650*** (0.0898)	0.950*** (0.0399)	0.931*** (0.0416)	0.625*** (0.0880)	0.889*** (0.0371)	0.888*** (0.0414)
Observations	2,965	7,362	8,795	4,551	8,682	7,898
R-squared	0.046	0.017	0.024	0.059	0.012	0.015

Robust standard errors in parentheses

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

CHAPTER 8

COVID-19 and Containment Measures

8.1 Introduction

The COVID-19 pandemic was already directly affecting food systems through impacts on food supply and demand, and indirectly through decrease in purchasing power, the capacity to produce and distribute food, and the intensification of care tasks, all of which have differentiated impacts and will more strongly affect the most vulnerable populations. Estimating COVID-19's effect on food security comes with a high degree of uncertainty due to lack of data and clarity about what the future of the world economy will look like. Potential scenarios may take different shapes, depending on the kind of policies that will be put in place and the time they will take to start showing their impact³⁹.

However, lessons from previous pandemics or global crises indicate that food security could be rapidly and dramatically affected, particularly in fragile countries and, within them, the most vulnerable (food insecure) populations have a lot to lose. While the COVID-19 pandemic is devastating lives, public health systems, livelihoods and economies all over the world, populations living in food crisis contexts are particularly exposed to its effects. For instance, the 2014 West Africa Ebola Virus Disease (EVD) outbreak and related containment measures shows huge disruption of agricultural market supply chains, hindered crop and livestock activities and caused acute agricultural labour shortages^{40,41}. The economic impact of the EVD outbreak had a strong negative effect on the purchasing power of the most vulnerable households, and

³⁹ <http://www.fao.org/documents/card/en/c/ca8464en/>

⁴⁰ Gatiso et al. (2018) The impact of the Ebola virus disease (EVD) epidemic on agricultural production and livelihoods in Liberia. *PLoS Negl Trop Dis* 12(8): e0006580. <https://doi.org/10.1371/journal.pntd.0006580>

⁴¹ Kodish et al. (2019) A qualitative study to understand how Ebola Virus Disease affected nutrition in Sierra Leone—A food value-chain framework for improving future response strategies. *PLoS Negl Trop Dis* 13(9): e0007645. <https://doi.org/10.1371/journal.pntd.0007645>

consequently on their access to food^{42,43}. These experiences highlight the need to act quickly and anticipate the collateral effects of the COVID-19 pandemic by devising appropriate policy measures, maintaining food security interventions, and protecting the livelihoods and food access of the most vulnerable people, particularly those in the vulnerable category. Although the impact of the COVID-19 pandemic on short- and long-term food and nutrition security is difficult to predict, some risk factors can be identified. In the longer term, the combined effects of COVID-19 itself, as well as corresponding mitigation measures, drought and economic crises, without large-scale coordinated action, disrupt the functioning of food systems. It is against this background that in this chapter, on the basis of the 2020 ZimVAC rural livelihoods assessment data, we analyse and discuss the impact of Covid-19 pandemic on food security for the rural households in Zimbabwe.

8.2 Descriptive analysis of access to OVID-19 Personal Protective Equipment

Table 15 shows that 87% of the food secure households and 82% of the food insecure households had access to soap. This was commendable as handwashing is a critical preventive measure against contracting COVID-19 infection. However, limited access to sanitisers was a cause for concern. Only 7.2% of food secure households and 6% of food insecure households had access to sanitizers. Sanitizers are effective in disinfecting contaminated surfaces and also for using during handwashing. Table 13 further shows that at the 1% level of significance, food insecure households were 7.3% and 5% less likely to have access to masks and soap as compared to food secure households.

⁴² Kelly et al. (2018). Food Insecurity as a Risk Factor for Outcomes Related to Ebola Virus Disease in Kono District, Sierra Leone: A Cross-Sectional Study. *The American journal of tropical medicine and hygiene*, 98(5), 1484-1488. <https://doi.org/10.4269/ajtmh.17-0820>

⁴³ Kodish et al. (2018). Implications of the Ebola virus disease outbreak in Guinea: Qualitative findings to inform future health and nutrition-related responses. *PloS one*, 13(8), e0202468. <https://doi.org/10.1371/journal.pone.0202468>

Table 15. Personal Protective Equipment (PPE) by food security status

Type of PPE	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Sanitizer	0.072	0.258	0.060	0.238	0.012**
Mask	0.665	0.472	0.592	0.491	0.073***
Soap	0.870	0.337	0.820	0.385	0.050***
Other PPE	0.074	0.262	0.077	0.267	-0.003

8.3 Inferential analysis of access to COVID-19 Personal Protective Equipment

Inferential analysis results presented in **Table 16** reveal that age and education level of household head influenced access to PPE. Specifically, results presented in Column I show that at the 1% level of significance, an increase in the age of household head by one year increased the likelihood of the household having access to sanitizers by 0.069% and also increase access to masks by 0.17% (Column II). Similarly, the results show that increasing household income by 1% increases the probability that the household has access to sanitizers by 0.00329%, *ceteris paribus*. On the other hand, the results indicate that rural households in Masvingo were likely to have a 5.7% reduced access to masks (Column II) and those in Matabeleland North were likely to have a 7.41% reduced access to soap (Column III) vis a vis the base province of Manicaland.

Table 16. Background characteristics by access to Personal Protective Equipment (PPE)

VARIABLES	Sanitizers	Masks	Soap	Other PPE
	(I)	(II)	(III)	(IV)
Household head age [Years]	0.000696*** (0.000162)	0.00177*** (0.000328)	0.000611** (0.000250)	0.000760*** (0.000177)
Married living together	0.00392 (0.0174)	0.0358 (0.0347)	-0.00740 (0.0269)	0.0107 (0.0168)

Married living apart	0.0175 (0.0196)	0.0436 (0.0371)	0.0317 (0.0284)	0.0310 (0.0189)
Divorced/separated	-0.0244 (0.0187)	0.0462 (0.0386)	-0.0280 (0.0306)	0.0145 (0.0190)
Widow/widower	-0.00524 (0.0186)	0.00651 (0.0365)	-0.0262 (0.0288)	0.00922 (0.0178)
Household head is female	0.00347 (0.00827)	0.0281* (0.0154)	0.0225* (0.0116)	0.00340 (0.00885)
Primary	0.0121* (0.00615)	0.0987*** (0.0145)	0.0780*** (0.0117)	0.0179** (0.00704)
ZJC	0.0326*** (0.00861)	0.147*** (0.0179)	0.0736*** (0.0143)	0.0380*** (0.00951)
O' level	0.0523*** (0.00804)	0.175*** (0.0165)	0.113*** (0.0128)	0.0483*** (0.00874)
A' level	0.184*** (0.0379)	0.153*** (0.0443)	0.110*** (0.0304)	0.103*** (0.0329)
Diploma/certificate after primary	0.0232 (0.0374)	0.232*** (0.0639)	0.158*** (0.0392)	0.0595 (0.0481)
Diploma/certificate after secondary	0.132*** (0.0382)	0.233*** (0.0457)	0.161*** (0.0273)	0.0678** (0.0337)
Graduate/Post-Graduate	0.280*** (0.0665)	0.386*** (0.0448)	0.156*** (0.0364)	0.231*** (0.0628)
Household size	-0.00301*** (0.00102)	0.00530** (0.00208)	0.00314** (0.00156)	0.000562 (0.00109)
Household has mentally ill member	-0.0109* (0.00581)	-0.0339** (0.0133)	-0.0182* (0.0105)	-0.0180*** (0.00637)
Household has chronically ill member	-0.00142 (0.00578)	-0.0148 (0.0113)	-0.00968 (0.00853)	-0.0163*** (0.00546)
Household is HIV/AIDS affected	0.0147 (0.0107)	0.0948*** (0.0184)	0.0230 (0.0141)	0.00346 (0.0106)
ln (Household income)	0.00329*** (0.000729)	0.0120*** (0.00142)	0.00979*** (0.00112)	0.00126 (0.000774)
Mash Central	0.0227*** (0.00857)	0.105*** (0.0176)	0.108*** (0.0131)	0.0566*** (0.00914)
Mash East	0.0251*** (0.00863)	0.0479*** (0.0172)	0.0703*** (0.0130)	0.0408*** (0.00849)
Mash West	0.00609 (0.00844)	-0.0331* (0.0186)	0.0447*** (0.0143)	0.0190** (0.00821)
Mat North	0.0128 (0.00848)	-0.0185 (0.0188)	-0.0741*** (0.0161)	-0.00321 (0.00737)
Mat South	0.0295*** (0.00946)	0.0751*** (0.0183)	0.0278* (0.0146)	0.0448*** (0.00952)
Midlands	-0.00452 (0.00788)	0.0118 (0.0178)	-0.0225 (0.0147)	-0.00836 (0.00700)

Masvingo	0.0387*** (0.00990)	-0.0570*** (0.0187)	0.0828*** (0.0134)	0.157*** (0.0121)
Constant	-0.0214 (0.0206)	0.263*** (0.0419)	0.634*** (0.0327)	-0.0483** (0.0211)
Observations	11,805	11,803	11,805	11,805
R-squared	0.023	0.034	0.042	0.043

Robust standard errors in parentheses

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

8.4 Containment measures (lockdown) by food security status

Table 17 presents the impact of COVID-19 containment measures by household food security status. The results show that access to public transport was affected greatly by the containment measures for both food secure (73%) and food insecure (74%) households. This can be attributed to the banning of public transport as a measure to prevent the spread of COVID-19, with only ZUPCO buses and ZUPCO registered buses and commuter omnibuses allowed to operate. Access to food services was also greatly affected for both food secure (67.3%) and food insecure (70.3%) households. At the 1% level for significance, the results revealed a significant difference in the impact of COVID-19 containment measures on food secure and insecure households, especially in relation to access to food, medical and hygiene services. Food insecure households were likely to have a 3% reduced access to food services, 4.1% reduced access to medical services and 4.8% reduced access to hygiene services as compared to food secure households. There is a need to implement intervention programmes that target these

vulnerable households as the COVID-19 pandemic has greatly affected the food insecure.

Table 17. Access to services by food security status

Access to services	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Food services	0.673	0.469	0.703	0.457	-0.030***
Medical services	0.463	0.499	0.504	0.500	-0.041***
Hygiene services	0.424	0.494	0.472	0.499	-0.048***
Health services	0.346	0.476	0.361	0.480	-0.014
Water services	0.106	0.308	0.106	0.308	-0.001
Transport services	0.730	0.444	0.740	0.438	-0.010
Social services	0.365	0.482	0.375	0.484	-0.010
Agriculture extension	0.296	0.457	0.303	0.459	-0.007
Security services	0.231	0.421	0.221	0.415	0.010

8.5 Inferential analysis of containment measures (lockdown)

Inferential analysis results presented in **Table 18** reveal that at the 1% level of significance, households headed by older household heads were 0.1% less likely to access hygiene services (Column III). The results further show that at the 1% level of significance, increasing household size was more likely to increase access to food services (Column I), hygiene services (Column III) and transport services. Unexpectedly,

Table 18 reveals that increasing household income by 1% decreased the likelihood of the rural households having access to water, social, agriculture extension and security services, at the 1% level of significance.

Table 18. OLS estimates of the effect of background characteristics on access to services during lockdown

VARIABLES	Food Services (I)	Medical Services (II)	Hygiene Services (III)	Health Services (IV)	Water Services (V)	Transport Services (VI)	Social Services (VII)	Agric extension (VIII)	Security Services (IX)
Household head age [Years]	0.000150 (0.000314)	0.000656* (0.000342)	-0.00105*** (0.000339)	0.000145 (0.000326)	0.000156 (0.000207)	-0.000433 (0.000301)	0.000105 (0.000328)	0.000665** (0.000315)	0.000253 (0.000284)
Married living together	0.0856** (0.0349)	0.112*** (0.0348)	0.147*** (0.0347)	0.0426 (0.0335)	0.0275 (0.0209)	0.0908*** (0.0332)	0.0567* (0.0334)	0.0577* (0.0312)	0.0442 (0.0288)
Married living apart	0.0450 (0.0373)	0.0815** (0.0375)	0.0651* (0.0374)	-0.0254 (0.0359)	0.00480 (0.0227)	0.0677* (0.0354)	-0.00204 (0.0358)	0.0336 (0.0335)	0.0220 (0.0307)
Divorced/separated	0.0511 (0.0385)	0.0839** (0.0393)	0.105*** (0.0393)	-0.0558 (0.0373)	-0.0449* (0.0229)	0.0920** (0.0367)	-0.0190 (0.0373)	-0.0160 (0.0346)	-0.0444 (0.0315)
Widow/widower	0.0709* (0.0364)	0.107*** (0.0368)	0.135*** (0.0369)	-0.00361 (0.0355)	-0.0125 (0.0224)	0.0747** (0.0350)	0.0409 (0.0354)	0.0313 (0.0329)	0.00440 (0.0300)
Household head is female	0.0363** (0.0151)	0.0134 (0.0161)	0.0361** (0.0160)	0.0388** (0.0152)	0.0327*** (0.00948)	0.00903 (0.0140)	0.0247 (0.0154)	0.0198 (0.0146)	0.0245* (0.0131)
Primary	0.0428*** (0.0137)	0.0372** (0.0149)	0.0274* (0.0146)	0.0268* (0.0139)	0.00899 (0.00870)	0.0355*** (0.0133)	0.0381*** (0.0141)	0.0378*** (0.0135)	0.0245** (0.0121)
ZJC	0.0269 (0.0172)	0.0377** (0.0187)	0.0246 (0.0184)	0.0479*** (0.0177)	0.0132 (0.0112)	0.0374** (0.0165)	0.0422** (0.0179)	0.0419** (0.0171)	0.0356** (0.0155)
O' level	0.0350** (0.0158)	0.0523*** (0.0172)	0.0398** (0.0170)	0.0422*** (0.0162)	0.0131 (0.0102)	0.0823*** (0.0151)	0.0480*** (0.0164)	0.0561*** (0.0157)	0.0279** (0.0141)
A' level	0.0513 (0.0444)	0.103** (0.0488)	0.0544 (0.0488)	0.0608 (0.0464)	0.0342 (0.0304)	0.0993** (0.0393)	0.0453 (0.0483)	0.0577 (0.0463)	0.00456 (0.0382)
Diploma/certificate after primary	0.0778 (0.0685)	0.0140 (0.0767)	0.0311 (0.0768)	0.0210 (0.0710)	-0.0217 (0.0375)	0.208*** (0.0454)	0.0488 (0.0746)	0.0499 (0.0677)	-0.0268 (0.0534)
Diploma/certificate after secondary	-0.0510 (0.0502)	0.00552 (0.0524)	-0.0324 (0.0507)	0.000358 (0.0484)	0.0606* (0.0359)	0.131*** (0.0394)	-0.0337 (0.0488)	0.0327 (0.0475)	0.0102 (0.0405)
Graduate/Post-Graduate	-0.0133 (0.0679)	0.0575 (0.0729)	0.0178 (0.0723)	0.0241 (0.0682)	0.0864 (0.0544)	0.164*** (0.0525)	0.0382 (0.0694)	0.0370 (0.0681)	0.0399 (0.0619)

Household size	0.00588*** (0.00198)	0.000256 (0.00218)	0.00893*** (0.00216)	4.23e-05 (0.00206)	-0.000651 (0.00133)	0.00738*** (0.00192)	-0.000171 (0.00208)	0.00455** (0.00200)	-0.00347* (0.00179)
Household has mentally ill member	0.00368 (0.0122)	0.00620 (0.0136)	0.00589 (0.0135)	0.00292 (0.0133)	-0.00831 (0.00803)	-0.0185 (0.0121)	-0.0113 (0.0133)	0.00472 (0.0128)	-0.0116 (0.0116)
Household has chronically ill member	0.0226** (0.0105)	0.00842 (0.0117)	-0.00119 (0.0116)	0.0194* (0.0113)	-0.000154 (0.00718)	0.0173* (0.00953)	0.00820 (0.0113)	0.00264 (0.0109)	0.0148 (0.0101)
Household is HIV/AIDS affected	0.0448** (0.0178)	0.0350* (0.0206)	0.0455** (0.0203)	0.0337* (0.0197)	-1.56e-05 (0.0121)	0.0253 (0.0173)	0.0618*** (0.0201)	0.0163 (0.0189)	0.0273 (0.0173)
ln (Household income)	0.00235* (0.00138)	-0.00156 (0.00148)	-0.00145 (0.00146)	-0.00324** (0.00142)	-0.00512*** (0.000956)	0.000977 (0.00129)	-0.00688*** (0.00143)	-0.00930*** (0.00138)	-0.00692*** (0.00127)
Mash Central	-0.118*** (0.0172)	-0.0517*** (0.0188)	-0.0886*** (0.0186)	0.00898 (0.0178)	0.00951 (0.0110)	0.00168 (0.0148)	0.0159 (0.0182)	-0.00572 (0.0171)	0.0458*** (0.0149)
Mash East	-0.106*** (0.0165)	-0.103*** (0.0180)	-0.0780*** (0.0180)	-0.0478*** (0.0168)	0.000650 (0.0104)	-0.134*** (0.0154)	-0.0700*** (0.0173)	-0.0471*** (0.0164)	-0.00721 (0.0138)
Mash West	-0.0741*** (0.0176)	-0.0617*** (0.0194)	-0.0510*** (0.0192)	0.0587*** (0.0186)	0.00651 (0.0112)	-0.0650*** (0.0161)	-0.0105 (0.0189)	0.0181 (0.0181)	0.0921*** (0.0160)
Mat North	0.0473*** (0.0164)	0.0721*** (0.0192)	0.123*** (0.0192)	0.124*** (0.0188)	0.0629*** (0.0125)	0.0143 (0.0153)	0.0972*** (0.0192)	0.0816*** (0.0184)	0.177*** (0.0169)
Mat South	-0.0997*** (0.0177)	-0.108*** (0.0194)	-0.101*** (0.0192)	-0.0764*** (0.0178)	-0.00441 (0.0110)	-0.249*** (0.0174)	-0.105*** (0.0182)	-0.0488*** (0.0175)	0.0162 (0.0153)
Midlands	0.0305* (0.0160)	-0.0120 (0.0187)	-0.0237 (0.0186)	0.0817*** (0.0180)	0.0635*** (0.0121)	-0.0549*** (0.0153)	0.0222 (0.0182)	0.0245 (0.0173)	0.0861*** (0.0154)
Masvingo	-0.0497*** (0.0173)	-0.0605*** (0.0193)	-0.0437** (0.0192)	0.0170 (0.0183)	-0.0190* (0.0105)	-0.0246 (0.0155)	-0.00709 (0.0187)	-0.0225 (0.0175)	-0.0384*** (0.0141)
Constant	0.564*** (0.0415)	0.353*** (0.0426)	0.331*** (0.0423)	0.276*** (0.0406)	0.0805*** (0.0262)	0.645*** (0.0397)	0.319*** (0.0407)	0.203*** (0.0389)	0.159*** (0.0353)
Observations	11,760	11,550	11,612	11,671	11,748	11,723	11,584	11,519	11,598
R-squared	0.023	0.015	0.024	0.021	0.015	0.044	0.020	0.015	0.029

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

CHAPTER 9

Household Resilience Capacities

9.1 Introduction

In a food security context, resilience is defined as the ability of a household to keep with a certain level of well-being (i.e. being food secure) by withstanding shocks and stresses^{44,45}. This depends on available livelihood options and on how well households are able to handle risks. *Absorptive capacity* is the capacity to take intentional protective action and to cope with known shocks and stress. It is needed as shocks and stress will continue to happen, for example due to extreme weather events caused by climate change, protracted conflict, and disasters⁴⁶. It involves anticipating, planning, coping and recovering from specific, known shocks and short-term stresses⁴⁷. On the other hand, *Adaptive capacity* is the capacity to make intentional incremental adjustments in anticipation of or in response to change, in ways that create more flexibility in the future. Adaptation is about making appropriate changes in order to better manage, or adjust to a changing situation. A key aspect of adaptive capacity is accepting that change is ongoing as well as highly unpredictable.

According to Nyahunda & Tirivangasi (2019), the vulnerability of rural households to shocks may be linked closely to socio-economic conditions, which correlate with the people's adaptive capacity. More so, adaptive capacity among rural people is typically limited by poverty, poor public and environmental health, weak institutions, lack of infrastructure and services, marginalisation from decision-making processes and planning procedures, gender inequality, lack of education and information, natural disasters, environmental degradation, reliance on rain-fed agriculture and climate-sensitive resources, and insecure tenure^{48,49}.

⁴⁴ Romano & Pietrelli (2018). Household resilience to food insecurity: evidence from Tanzania and Uganda. Food Sec. 10, 1033-1054 (2018). <https://doi.org/10.1007/s12571-018-0820-5>

⁴⁵ Alinovi et al. (2010) "Measuring Household Resilience to Food Insecurity: an Application to Palestinian Households", in Agricultural Survey Methods, by Benedetti et al. (eds.), John Wiley & Son

⁴⁶ Oriangi et al. (2020), "Household resilience to climate change hazards in Uganda", International Journal of Climate Change Strategies and Management, Vol. 12 No. 1, pp. 59-73. <https://doi.org/10.1108/IJCCSM-10-2018-0069>

⁴⁷ TANGO International. (2018). Methodological Guide: A Guide for Calculating Resilience Capacity. Produced by TANGO International as part of the Resilience Evaluation, Analysis and Learning (REAL) Associate Award.

⁴⁸ Nyahunda, L., & Tirivangasi, H. M. (2019). Challenges faced by rural people in mitigating the effects of climate change in the Mazungunye communal lands, Zimbabwe. Jamba (Potchefstroom, South Africa), 11(1), 596. <https://doi.org/10.4102/jamba.v11i1.596>

⁴⁹ UNFCCC, 2014, Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November, Decision 2/CP.19, Warsaw, Poland

9.2 Descriptive analysis of household resilience capacities

The results presented in **Table 19** indicate that food secure households had better resilience capacities as compared to food insecure households on a scale of 0 - 100. In particular, **Table 19** reveal that at the 1% level of significance, food secure households were 5.9 points more absorptive as compared to food insecure households. More so, the results indicate that at the 1% level of significance, food secure households were 1.86 points more adaptive as compared to food insecure households.

Table 19. Household resilience capacities

Resilience capacity	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Absorptive	33.236	23.290	27.316	23.741	5.919***
Adaptive	9.714	5.956	7.859	5.563	1.855***

Notes: The last column shows the results of two-tailed t-test for the difference in the means. ***, **, and * indicate the 1, 5, and 10 percent levels of significance.

9.3 Inferential analysis of household resilience capacities

Results of the inferential analysis of resilience capacities presented in **Table 20** show that at the 1% level of significance, increasing the age of household head by one year was likely to increase both the household absorptive capacity and adaptive capacity by 0.18% and 0.018 point, respectively. More so, female headed households were more likely to be 2.38 points resilient (adsorptive capacity) than male headed households. Furthermore, the results reveal that households headed by educated household heads were more resilient than those headed by less educated household heads. Large size households seemed to have a 0.72 point less adsorptive capacity and an 0.89 point better adaptive capacity as compared to small sized households. At province level, rural households in Matabeleland North, Matabeleland South and Midlands and Mashonaland Central were likely to have lower resilience capacities, both absorptive and adaptive capacities, as compared to the base province of Manicaland.

Table 20. OLS estimates of influence of background characteristics on household resilience capacities

VARIABLES	Absorptive capacity	Adaptive capacity
	(I)	(II)
Household head age [Years]	0.184*** (0.0157)	0.0185*** (0.00292)
Married living together	-1.602 (1.632)	0.339 (0.285)
Married living apart	1.098 (1.752)	-0.486 (0.304)
Divorced/separated	-1.237 (1.846)	-0.248 (0.320)
Widow/widower	-1.655 (1.724)	0.312 (0.302)
Household head is female	2.382*** (0.726)	0.142 (0.139)
Primary	2.950*** (0.708)	0.673*** (0.131)
ZJC	5.314*** (0.869)	5.370*** (0.164)
O' level	5.546*** (0.795)	6.102*** (0.151)
A' level	6.430*** (2.236)	6.336*** (0.403)
Diploma/certificate after primary	5.394 (3.355)	7.061*** (0.825)
Diploma/certificate after secondary	4.683** (2.137)	6.926*** (0.424)
Graduate/Post-Graduate	3.378 (2.640)	6.723*** (0.677)
Household size	-0.728*** (0.103)	0.899*** (0.0250)
Household has mentally ill member	0.404 (0.663)	-0.327*** (0.127)
Household has chronically ill member	0.0374 (0.563)	0.331*** (0.113)
Household is HIV/AIDS affected	1.512 (1.013)	0.569*** (0.188)
ln (Household income)	1.810*** (0.0615)	0.528*** (0.0123)
Mash Central	-4.259*** (0.825)	-0.421*** (0.157)
Mash East	3.065*** (0.811)	-0.362** (0.153)
Mash West	1.112 (0.854)	-0.522*** (0.164)
Mat North	-2.306*** (0.874)	-1.288*** (0.163)

Mat South	-3.573*** (0.866)	-1.123*** (0.170)
Midlands	-1.635** (0.824)	-0.384** (0.160)
Masvingo	2.897*** (0.902)	-0.216 (0.169)
Constant	11.87*** (2.000)	-2.193*** (0.356)
Observations	11,703	11,839
R-squared	0.094	0.436

Robust standard errors in parentheses

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

CHAPTER 10

Social Protection and Support

10.1 Introduction

Social protection can be defined as all public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks and enhance the social status and rights of the marginalised; with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginalised groups⁵⁰. Social protection measures such as social safety nets provide direct support either in the form of cash or in-kind goods and services to smooth consumption, compensate for loss of incomes, and prevent falls into poverty. More so, social protection measures can play a decisive role in protecting lives and livelihoods by securing incomes, ensuring access to safe, sufficient and nutritious food, providing support with childcare, cash or other allowances, and facilitating access to health care⁵¹. More so, social protection measures are needed to relieve the immediate deprivation of people living in poverty and to prevent others from falling into poverty when a crisis strikes. In addition, social protection can also help recipients become more productive by enabling them to manage risks, build assets and undertake activities that are more remunerative⁵².

Ensuring that social protection measures reach all vulnerable rural and urban populations will be crucial to avoid further spread of poverty and hunger⁵³. Protecting and supporting livelihoods will require the combination of social protection interventions to protect income and prevent negative coping strategies, and measures to support production throughout the agri-food system (e.g., market access; public purchases from small producers) while ensuring that occupational safety and health

⁵⁰Sabates-Wheeler and Roelen (2011). *Gender and Development*, Vol. 19, No. 2, Social protection, pp. 179-194

⁵¹Nuriddin A, *et al.* *BMJ Glob Health* 2018;3:e000410. doi:10.1136/bmjgh-2017-000410

⁵²Croppenstedt *et al.* (2018). Social protection and agriculture: Introduction to the special issue, *Global Food Security*, Volume 16, 2018, <https://doi.org/10.1016/j.gfs.2017.09.006>.

⁵³FAO (2020). <http://www.fao.org/3/ca8561en/CA8561EN.pdf>

measures are put in place and accessible⁵⁴. For example, during crisis times like the COVID-19 pandemic, there is need to temporarily extend social protection programmes to new households, e.g. to households which were deemed ineligible in social protection programmes implemented before the COVID-19 pandemic⁵⁵. Strengthened and comprehensive social protection systems can lessen the impact of shocks such as COVID-19, drought and macro-economic fundamentals.

10.1.1 Descriptive analysis of social support from government

Table 21 shows that 55.5% of the food secure and 54.9% of the food insecure households received social support from government. The difference between food secure and food insecure households that received support from Government support was not statistically different. Furthermore, the results indicate that 36% of the food insecure households and 27% of the food secure households received social support from UN/NGO. The difference is statistically significant at the 1% level of significance.

Table 21. Social protection support by food security status

	Household is food secure?				Difference [Y - N]
	Yes [Y]		No [N]		
	Mean	S. D	Mean	S. D	
Government	0.555	0.497	0.549	0.498	0.006
UN/NGO	0.270	0.444	0.360	0.480	-0.090***

10.1.2 Inferential analysis of social support from the government

Inferential analysis results presented in **Table 22** indicate that at the 1% level of significance, increasing the age of household head by one year increased the propensity of the household to receive social support from Government by 0.69% and by 0.11% from UN/NGO. Furthermore, the results reveal that female headed households were 4.57%

⁵⁴ FAO (2020), Anticipating the impacts of Covid-19 in humanitarian and food crisis contexts

⁵⁵ Gerard, Imbert and Orkin (2020). Social Protection Response to the Covid-19 Crisis: Options for Developing Countries. Policy Brief. <https://econfp.org/policy-brief/social-protection-response-to-the-Covid-19-crisis-options-for-developing-countries/>

more likely to receive support from Government than male headed households. Large size households were 0.91% more likely to received support from Government and by 2.17% from UN/NGO. Households in Mashonaland Central, Matabeleland South, Midlands and Masvingo were more likely to receive social support from Government as compared to households in other provinces. On the other hand, households, located in Mashonaland East, Mashonaland West, Matabeleland South and Masvingo provinces were less likely to receive less social support from UN/NGO compared to the base province of Manicaland.

Table 22. OLS estimates of determinants of social protection support

VARIABLES	Government	UN/NGO
	(I)	(II)
Household head age [Years]	0.00697*** (0.000315)	0.00118*** (0.000313)
Married living together	-0.0371 (0.0348)	0.0321 (0.0305)
Married living apart	-0.0838** (0.0374)	-0.00372 (0.0327)
Divorced/separated	-0.0660* (0.0387)	0.00537 (0.0343)
Widow/widower	-0.0441 (0.0366)	0.0324 (0.0326)
Household head is female	0.0457*** (0.0151)	0.0277* (0.0145)
Primary	0.00629 (0.0136)	-0.0534*** (0.0141)
ZJC	-0.00233 (0.0174)	-0.0358** (0.0176)
O' level	0.0165 (0.0160)	-0.0542*** (0.0161)
A' level	-0.0606 (0.0465)	-0.0728* (0.0418)
Diploma/certificate after primary	0.0249 (0.0773)	-0.0698 (0.0715)
Diploma/certificate after secondary	-0.128*** (0.0473)	-0.153*** (0.0428)
Graduate/Post-Graduate	-0.160*** (0.0614)	-0.180*** (0.0532)
Household size	0.00916***	0.0217***

	(0.00204)	(0.00204)
Household has mentally ill member	0.0549***	0.0223*
	(0.0124)	(0.0133)
Household has chronically ill member	-0.00419	0.00442
	(0.0111)	(0.0109)
Household is HIV/AIDS affected	-0.00515	0.0179
	(0.0193)	(0.0190)
ln (Household income)	0.00141	-0.00231*
	(0.00140)	(0.00136)
Mash Central	0.153***	-0.0289
	(0.0181)	(0.0176)
Mash East	0.0440**	-0.102***
	(0.0174)	(0.0165)
Mash West	0.0118	-0.106***
	(0.0181)	(0.0176)
Mat North	0.0450**	0.0224
	(0.0183)	(0.0185)
Mat South	0.215***	-0.0934***
	(0.0180)	(0.0180)
Midlands	0.234***	-0.0262
	(0.0173)	(0.0175)
Masvingo	0.0820***	-0.0688***
	(0.0186)	(0.0177)
Constant	0.0582	0.228***
	(0.0414)	(0.0374)
Observations	11,839	11,839
R-squared	0.104	0.031

Robust standard errors in parentheses

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

10.2 Heterogeneous treatment effects of adaptive resilience capacities on food security

10.2.1 COVID-19 shock heterogeneity

The results presented in **Table 23** reveal households affected by the COVID-19 shock. In this document being affected by the COVID-19 shock implies that the household has a member who contracted COVID-19 or that the household was affected by the COVID-19 containment measures.

Ceteris paribus, receiving government support was associated with a 14% decline in the probability of the household being in hunger at the 1% level of significance (Column II). Furthermore, Column (II) shows that at the 1% level of significance, Government support was likely to increase food consumption score of households affected by the COVID-19 shock by 2.76 points and by 1.88 points for households not affected by COVID-19 shock (Column III), *ceteris paribus*. These findings were consistent with findings from literature. Evidence shows that social protection not only had positive welfare impacts, it also stimulated productive activity among beneficiary households and the local economy⁵⁶. A meta-analysis study by Hidrobo et al. (2018)⁵⁷ on impact of social protection on food security found that social protection programs in developing countries can lead to large increases in quantity and quality of food consumed, resulting in reduced hunger and increased household food security.

Table 23. Impact of government support under COVID-19 shock heterogeneity

VARIABLES	Full sample	Household is affected by shock	Household is not affected by shock
	[n = 11,839] (I)	[n = 2,863] (II)	[n = 8,976] (III)
Household is food insecure	-0.00501 (0.0105)	-0.0105 (0.0204)	-0.00769 (0.0119)
Household hunger scale	-0.105*** (0.0250)	-0.140*** (0.0462)	-0.129*** (0.0300)
Food Consumption Score	1.758*** (0.400)	2.762*** (0.800)	1.884*** (0.474)

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

10.2.2 Drought shock heterogeneity

The results presented in Column (I) of **Table 24** reveal that for households affected by the drought shock (Column II), receiving government support was associated with a 10.4% decline in the probability of the household being in hunger at the 1% level of significance, all things being equal. Furthermore, **Table 24** also shows that at the 1%

⁵⁶ Croppenstedt et al. (2018). Social protection and agriculture: Introduction to the special issue, Global Food Security, Volume 16, 2018, <https://doi.org/10.1016/j.gfs.2017.09.006>.

⁵⁷Hidrobo et al. (2018). Social Protection, Food Security, and Asset Formation, World Development, Volume 101, 2018, Pages 88-103, <https://doi.org/10.1016/j.worlddev.2017.08.014>.

level of significance, Government support was associated with 2.59 points increase, *ceteris paribus*, in the food consumption score of households affected by a drought shock.

Table 24. Impact of government support under drought shock heterogeneity

VARIABLES	Full sample	Household is affected by shock	Household is not affected by shock
	[n = 11,839]	[n = 8,703]	[n = 3,136]
	(I)	(II)	(III)
Household is food insecure	-0.00501 (0.0105)	-0.00626 (0.0120)	-0.0359* (0.0206)
Household hunger scale	-0.105*** (0.0250)	-0.104*** (0.0281)	-0.117** (0.0464)
Food Consumption Score	1.758*** (0.400)	2.591*** (0.458)	0.557 (0.868)

Standard errors in parentheses

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

10.2.3 Dry spell shock heterogeneity

Table 25 shows the treatment effect of government support under dry spell shock heterogeneity. The results indicate that at the 1% level of significance, receiving government support was associated with a 13.4% decline in the probability of the household being in hunger (Column II). Furthermore, Column (II) shows that at the 1% level of significance, Government support was likely to increase the food consumption score of households affected by dry spell shock by 2.33 points, *ceteris paribus*.

Table 25. Impact of government support under dry spell shock heterogeneity

VARIABLES	Full sample	Household is affected by shock	Household is not affected by shock
	[n = 11,839] (I)	[n = 7,913] (II)	[n = 3,926] (III)
Household is food insecure	-0.00501 (0.0105)	-0.0132 (0.0126)	-0.0363* (0.0189)
Household hunger scale	-0.105*** (0.0250)	-0.134*** (0.0322)	-0.0961** (0.0405)
Food Consumption Score	1.758*** (0.400)	2.329*** (0.469)	1.768** (0.699)

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

CHAPTER 11

Treatment Effects

11.1 Introduction

This section investigates the treatment effects of various treatment measures using propensity score matching techniques.

11.2 Methodology

Assessing the treatments effects of various measures on outcome variables of interest such as food security status of the household using the 2020 rural livelihood assessment data is confounded by incomplete information arising from the self-selection of observations into treatment.^{58, 59, 60} 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 such as 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 . In this report, we use nearest neighbour matching technique which chooses an individual from the comparison group for treated individual that is closest in terms of propensity score. We estimate

⁵⁸ Austin, P. C. (2011) "An introduction to propensity score methods for reducing the effects of confounding in observational studies", *Multivariate Behavioral Research*, 46(3), 399-424. <https://doi.org/10.1080/00273171.2011.568786>

⁵⁹ Caliendo, M., & Kopeinig, S. (2008) "Some practical guidance for the implementation of propensity score matching," *Journal of Economic Surveys*, 22(1), 31-72. <https://doi.org/10.1111/j.1467-6419.2007.00527.x>

⁶⁰ Heckman, J. J., Ichimura, H., & Todd, P. E. (1997) "Matching as an econometric evaluation estimator: Evidence from evaluating a job training programme," *Review of Economic Studies*, 64(4), 605-654. <https://doi.org/10.2307/2971733>

the average treatment effect on the treated (ATT) that provides the impact of treatment on outcome variables as follows:

$$ATT = E(Y_{i1} | T_i = 1) - E\{E(Y_{i0} | T_i = 0, \Pr(T_i = 1|X)) | T_i = 1\} \quad [2]$$

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 .⁶¹,⁶²,⁶³ To examine treatment heterogeneity in the impact of $T_i = 1$ on the basis of the of a heterogenic factor such as G_i , which could be whether the household was affect by a shock or not, we separately estimate Average Treatment Effects on the Treated (ATT) from Equation 2.

11.3 Treatment effects of corona virus

11.3.1 Treatment effects of Covid-19 on household incomes

Table 26 shows the treatment effects of the household being affected by COVID-19 on household incomes. In this document being affected by the COVID-19 shock implies that the household had a member who contracted COVID-19 or that the household was affected by the COVID-19 containment measures. Column (I) of the table shows that being affected by COVID-19 was associated by a reduction of 47.6% in household income ceteris paribus. The treatment effect on income in levels shown in Column (II) is however statistically invalid.

⁶¹ Austin, P. C. (2009) "Type I error rates, coverage of confidence intervals, and variance estimation in propensity- score matched analyses", *International Journal of Biostatistics*, 5(1), 1557-4679. <https://doi.org/10.2202/1557-4679.1146>

⁶² Banerjee, A. V., & Duflo, E. (2011). *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. New York: Perseus Books.

⁶³ Huang, J., Oshima, K., & Kim, Y. (2010) "Does food insecurity affect parental characteristics and child behavior? Testing mediation effects." *Soc Serv Rev*, 84, 381-401. <https://doi.org/10.1086/655821>

Table 26. Treatment effects of Covid-19 on household incomes

VARIABLES	ln(Household income)	Household income
	(I)	(II)
Covid-19	-0.476*** (0.0798)	-100.1 (1,526)
Observations	11,839	11,839

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

11.3.2 Treatment effects of COVID-19 on food security

Table 27 shows the treatment effects of COVID-19 on food security. Column (I) of the table shows that ceteris paribus, households that were affected by COVID-19 were associated with an increase in the propensity to be food insecure of 2.94% at the 5% level of significance.

Table 27. Treatment effects of COVID-19 on food security

VARIABLES	Household is food insecure
	(I)
Covid 19	0.0294** (0.0117)
Observations	11,839

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

11.3.3 Treatment effects of corona virus risk on income

Table 28 shows that households that are at minimal risk of contracting the COVID-19 virus were associated with a decline in the probability of being food insecure of 2.66% at the 1% level of significance all things being equal. Furthermore, Column (II) of the table shows that the households that were at minimal risk of contracting corona virus were associated with 0.0487-point decrease in the household hunger scale at the 5% level of significance.

Table 28. Impact of minimal corona risk on food security

VARIABLES	Household is food insecure	Household Hunger Scale
	(I)	(II)
Minimal COVID-19 risk	-0.0266*** (0.00995)	-0.0487** (0.0233)
Observations	11,804	11,802

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

11.4 Heterogeneous treatment effects of absorptive resilience capacities on food security

11.4.1 COVID-19 shock heterogeneity

Table 29 shows the COVID-19 heterogenic effects of absorptive resilience capacities on food security. According to Column (I) of the table which shows the homogeneous treatment effects, absorptive capacities of the household was associated with a decline in the household probability of being food insecure by 4.19% (Panel 1), *ceteris paribus*. Panel 2 of Column (I) also shows that absorptive capacities reduced the household hunger scale by 0.157 points at the 1% level of significance *ceteris paribus* and increased the food consumption score by 3.680 points at the 1% level of significance.

Column (II) of shows that absorptive capacities had no statistically significant effect on household food insecurity status for those that are affected by COVID-19 shock *ceteris paribus*. On the other hand, Column (III) of panel 1 shows that when one considers those that were not affected by COVID-19, *ceteris paribus* absorptive capacities decrease the probability that the household was food insecure by 3.93%.

Columns (II) and (III) of Panels 2 and 3, show that *ceteris paribus*, the impact of absorptive capacities on household hunger scale and food consumption score was more favourable for those that were shock affected than those that were not. In both cases, absorptive capacities however promoted the outcome variables.

Table 29. Absorptive capacity impact on food security under COVID-19 shock

VARIABLES	Full sample	Household is affected by shock	Household is not affected by shock
	[n = 11,839] (I)	[n = 2,863] (II)	[n = 8,976] (III)
Household is food insecure	-0.0419*** (0.0116)	-0.0318 (0.0250)	-0.0393*** (0.0136)
Household hunger scale	-0.157*** (0.0258)	-0.157*** (0.0531)	-0.140*** (0.0326)
Food Consumption Score	3.680*** (0.414)	4.585*** (0.846)	4.100*** (0.472)

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

11.4.2 Drought shock heterogeneity

Table 30 shows the drought heterogenic treatment effects of absorptive capacities on food security. Panel 1 of the table shows that absorptive capacities reduced the propensity of the household to be food insecure by 5.01% for the full sample (Column (I)), 4.14% for those affected by the drought shock (Column (II)) and 3.83% for those that were not affected by shock. The sum total of the findings in panel 1 of the table was that absorptive resilience capacities reduced propensity to reduce food insecurity, but it is more efficient when one is confronted by drought shock. The result in Panel 1 was also mirrored in Panels 2 and 3 which look at the drought shock heterogenic treatment effects of absorptive treatment effects on food security.

Table 30. Drought heterogenic treatment effects of absorptive capacities on food security

	Full sample [n = 11,839]	Household is affected by shock [n = 8,703]	Household is not affected by shock [n = 3,136]
VARIABLES	(I)	(II)	(III)
Household is food insecure	-0.0501*** (0.0116)	-0.0414*** (0.0135)	-0.0383* (0.0220)
Household hunger scale	-0.128*** (0.0262)	-0.170*** (0.0322)	-0.0518 (0.0464)
Food Consumption Score	4.100*** (0.417)	4.105*** (0.476)	4.316*** (0.900)

Standard errors in parentheses

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

11.4.3 Dry spell shock heterogeneity

Table 31 shows that absorptive resilience capacities reduced household propensity to be food insecure by 5.01% for the full sample (Column (I)) and 4.74% for those that were affected by the dry spell (Column (II)), but however there was no statistically significant effect for those that were not affected by the shock (Column (III)). The result in panel 1 therefore proves that absorptive capacities were salubrious to food security when one was confronted by dry spell.

The results in Panels 2 and 3 also show that when one considers the household hunger scale as well as the food consumption score, absorptive resilience capacities promoted the betterment of the two variables notwithstanding the shock status of the household.

Table 31. Dry spell heterogenic treatment effects of absorptive capacities on food security

VARIABLES	Full sample [n = 11,839]	Household is affected by shock [n = 8,703]	Household is not affected by shock [n = 3,136]
	(I)	(II)	(III)
Household is food insecure	-0.0501*** (0.0116)	-0.0474*** (0.0143)	-0.0273 (0.0212)
Household hunger scale	-0.128*** (0.0262)	-0.126*** (0.0330)	-0.164*** (0.0486)
Food Consumption Score	4.100*** (0.417)	3.426*** (0.482)	4.741*** (0.817)

Standard errors in parentheses

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

11.5 Heterogeneous treatment effects of adaptive resilience capacities on food security

11.5.1 COVID-19 shock heterogeneity

Table 32 shows that all things being equal, adaptive resilience capacities reduced the propensity for the household to be food insecure for the full sample by 4.22% (Column (I) at the 1% level of significance. Columns (II) and (III) of Panel (I) show that at the 10% level of significance, adaptive resilience capacities reduced the household propensity to be food insecure by 5.17% for those affected by COVID-19 and 4.52% for those that were not affected by the COVID-19 shock at the 1% level of significance. The results in panels 2 and 3 of the table shows that absorptive capacities improved both the household hunger scale and the food consumption score for those that were affected by the COVID-19 shock and those that were not.

Table 32. Adaptive capacity impact on food security under COVID-19 shock

VARIABLES	Full sample [n = 11,924]	Household is affected by shock [n = 2,877]	Household is not affected by shock [n = 9,047]
	(I)	(II)	(III)
Household is food insecure	-0.0422*** (0.0128)	-0.0517* (0.0273)	-0.0452*** (0.0161)
Household hunger scale	-0.153*** (0.0325)	-0.148** (0.0636)	-0.150*** (0.0373)
Food Consumption Score	2.368*** (0.534)	2.038** (0.858)	2.047*** (0.560)

11.5.2 Drought shock heterogeneity

Columns (II) and (III) of **Table 33** show that for those that were affected by shock, adaptive resilience capacities of the household reduced household propensity to be food insecure by 7.59% and 8.29% for those that were not affected by drought. The results on the household hunger scale and the food consumption score however show only statistically significant improvements associated with possession of adaptive capacities only for the drought shock affected households.

Table 33. Adaptive capacity impact on food security under drought shock

VARIABLES	Full sample [n = 11,913]	Household is affected by shock [n = 8,743]	Household is not affected by shock [n = 3,170]
	(I)	(II)	(III)
Household is food insecure	-0.0546*** (0.0207)	-0.0759*** (0.0154)	-0.0829*** (0.0293)
Household hunger scale	-0.161*** (0.0338)	-0.126*** (0.0380)	-0.00268 (0.0494)
Food Consumption Score	2.448*** (0.557)	2.195*** (0.552)	1.485 (1.088)

11.5.3 Dry spell shock heterogeneity

Table 34 shows the dry spell heterogenic impact of adaptive capacity on food security. Columns (II) and (III) of the table show that save for the food consumption score, adaptive capacities were more salubrious to improvement in food security status of the households that are affected by dry spell shock *vis-à-vis* those households that were not affected by the shock *ceteris paribus*.

Table 34. Adaptive capacity impact on food security under dry spell shock

	Full sample [n = 11,913]	Household is affected by shock [n = 7,953]	Household is not affected by shock [n = 3,960]
VARIABLES	(I)	(II)	(III)
Household is food insecure	-0.0546*** (0.0207)	-0.0884*** (0.0173)	-0.0673*** (0.0226)
Household hunger scale	-0.161*** (0.0338)	-0.151*** (0.0409)	-0.102** (0.0478)
Food Consumption Score	2.448*** (0.557)	1.451** (0.578)	3.116*** (0.895)

CHAPTER 12

Policy Mitigation and Intervention Measures Implemented

The results presented in this report indicate the impact of COVID-19 and the related containment measures on food and nutrition security situation in rural areas. In anticipation of the increased number of rural households to be affected by the pandemic and drought, the Government of Zimbabwe (GoZ) and its Development Partners implemented several mitigation and intervention programmes as a proactive approach to lessen the impact of the COVID-19 pandemic on livelihoods. Such mitigation and intervention measures include:

- ***Launch of the Humanitarian Appeal (April 2020-April 2021)*** which aimed at addressing the food insecurity and the impact of inflationary pressures.
- ***Supporting the vulnerable groups*** through distribution of food aid (in-kind) and cash transfers;
- ***Removing restrictions on food importation*** such as removal of import duty on maize and wheat, cooking oil, among other basic commodities, to ensure affordability of essential foodstuffs and to mitigate the effects of the drought.
- ***Food Subsidies*** through continued implementation of social protection measures to improve food access (e.g. maize meal subsidies).
- ***Distribution of farming inputs*** through programmes which included Command Agriculture and Presidential Input Scheme programmes.
- ***Grain importation*** which was facilitated through lifting the ban on private grain sales, allowing individuals and corporates with free funds to import grain.
- ***Allowing importation of GMO maize*** through lifting the ban on importation of genetically modified maize to avert the food insecurity situation.
- ***Access to consumptive water*** through availing resources towards borehole drilling, rehabilitation and construction of Headworks for livestock water troughs.
- ***Employment creation*** through the employment of the vulnerable communities by engaging able bodied Drought Relief Participants under the Capital Development Projects (Water, Roads and Bridges construction and rehabilitation activities).

- ***Strengthening of Multi-Sectoral Structures*** in order to operationalise a cohesive response to the food and nutrition challenges. The structures include the following:
 - Inter-Ministerial Cabinet Committee for Food and Nutrition Security
 - Inter-Ministerial Grain Importation Committee
 - Internal Logistics and Distribution of Grain Committee
 - Working Party of Permanent Secretaries
 - Food Aid Working Group
 - National Food and Nutrition Security Committee
 - District Food and Nutrition Security Committees and District Drought Relief Committees and;
 - Ward Food and Nutrition Security Committees (inclusive of local leadership including local Councilors and Chiefs)
- ***Local distribution of food***
- ***COVID-19 relief pay-outs*** were provided for 3 months to cushion vulnerable households and those in the informal sector whose sources of income were affected by the lockdown.
- Government also opened up space for developing partners to contribute and assist.

CHAPTER 13

Recommendations

The findings presented in this technical report reveal that the more vulnerable and food insecure households were most affected by COVID-19. Other than COVID-19, the food insecure households were also heavily impacted by the following shocks: cereal price change, cash shortages, crop pests, drought and dry spell. Unfortunately, the more vulnerable households were found to have lower absorptive and adaptive capacities. Based on these major findings and the detailed results presented in Chapters 3 to 10, the following recommendations are put forward. These recommendations are put forward in view of initiating early recovery and to avert a devastating food insecurity crisis in the country.

- i. **Social protection**, especially in the form of food aid or any other form necessary, should continue and even be increased to include all households that are food insecure. The current social support efforts by both the Government and Development Partners are commendable. However, it is recommended that food aid programmes be also nutrition sensitive as the results of this assessment indicated that most rural households are having an unacceptable diet and are employing coping strategies that result in negative consumption patterns. The provision of social protection will help the rural households to respond better to the negative effects of the lockdown.
 - Targeted **nutrition sensitive interventions** should be increased to arrest the high level of child malnutrition and low dietary diversity for women. For example, the COVID-19 pandemic and the associated containment measures have affected the school feeding programmes. Thousands of school children who were receiving nutritious meals on a daily basis before the COVID-19 pandemic are no longer accessing the food and now vulnerable to

malnutrition. Hence, measures should be put in place to continue with the feeding programmes even at ward level.

- It is recommended that the female headed households, HIV/AIDS affected households and households headed by the elderly be considered among those to be prioritised.
- ii. Considering that the 2020/2021 agricultural season is fast approaching, it is recommended that the Government and Development Partners support early recovery by farmers through:
- a. **Input support** to the most vulnerable groups. More so, it is recommended that the input support be climate and nutrition sensitive to farmers vis - a vis the increasing droughts being experienced over the last few years.
 - b. **Input subsidy** to improve access and affordability by all smallholder farmers. Timely availability of these inputs is critical for farmers to plan early.
 - c. **Livestock support** targeting the production provinces. The support should include livestock feed and chemicals. Support towards renovation of community dip-tanks is also encouraged.
- iii. There is need to increase **availability of water** for both humans and animals. For example, drilling of boreholes or building of more water reservoirs in the rural areas is critical as there is an increase in households travelling longer distances and spending longer waiting time at water points.
- iv. Support towards **increased market access** by both farmers and consumers is encouraged. Restricted access to markets can have the following implications, i) derail agricultural input supply chains at critical times in the season; ii) constrain transport of goods to processing facilities and/or markets. Such disruptions of the food supply chain are likely to have significant adverse repercussions, particularly for the most vulnerable population groups, including informal traders, the poor small holder farmers and those relying on markets to meet their food needs.
- v. It is recommended that **monitoring** be done on a quarterly basis as this will generate more real-time data and evidence on the impact of COVID-19 and other

shocks. Given the unprecedented nature of the crisis, creating a better understanding of the potential impacts of the COVID-19 pandemic on food security and related vulnerabilities is of paramount importance and urgency. As such, data collection and data sharing modalities should be adapted to ensure continuous monitoring of changes in food security levels, food and agricultural supply chains, food production and availability, and food and agricultural input prices and identify possible risks that may threaten food systems.

- vi. Lastly, to the ZimVAC 2020 Rural Livelihoods Assessment results have provided evidence on the extend of the impact of COVID-19 and drought, it is therefore important for policy makers to consider evidence provided in this report when designing and implementing COVID-19 containment measures.



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