

Usman, Muhammed Abdella et al.

**Working Paper**

## The effect of COVID-19 and associated lockdown measures on household consumption, income, and employment: Evidence from sub-Saharan African countries

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# Working Paper 218

MUHAMMED ABDELLA USMAN, ANNET ADONG, EMILY INJETE, MAKAFUI DZUDZOR, TIGABU DEGU GETAHUN, JEMBERU LULIE AND LUKAS KORNHER

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# **The Effect of COVID-19 and Associated Lockdown Measures on Household Consumption, Income, and Employment: Evidence from sub-Saharan African Countries**

Muhammed Abdella Usman, Annet Adong, Emily Injete, Makafui Dzudzor, Tigabu Degu Getahun, Jemberu Lulie, and Lukas Kornher

## Executive summary

The COVID-19 pandemic has caused huge economic disruptions that affect food and nutrition security in many low- and middle-income countries (LMICs). At the onset of the pandemic, many governments put in place various containment measures such as restricting free movement of people both within and between countries, closing non-essential businesses and schools, among others. These measures disrupted the food supply chain (increasing transaction costs and availability of certain foods) and limited employment opportunities. As a result, people in LMICs have been negatively affected because many of these countries have poor social safety net programs to mitigate the adverse effects of the pandemic on job and income loss. In this paper, we investigate the effects of the COVID-19 pandemic and associated lockdown measures on household consumption and jobs as well as income losses in selected African countries (Ethiopia, Ghana, and Uganda) using household survey data.

Generally, the pandemic significantly increased job losses and decreased household income, especially in the early days of the pandemic. The effects of COVID-19 restrictions on food security and labor outcomes vary depending on the industry and the degree of the lockdowns. However, perhaps surprisingly, household food availability and consumption appeared largely steady during the pandemic in the countries studied. Although average food consumption expenditure per capita has slightly declined, households' dietary diversity largely remained stable across the studied countries. This might be because many households employed various coping strategies including the use of savings, taking loans, and buying food on credit.

In Ethiopia, the study was based on three rounds of telephone interviews between May 2020 and April 2021. The descriptive analysis of the survey suggests that the pandemic significantly increased job losses and decreased household income, particularly in the first two rounds of surveys, however its impact on household consumption is uncertain. Although many households reported an increase in the price of major food items, food availability was not significantly affected throughout the survey period. Average monthly food consumption expenditure per capita slightly declined and household consumption diversity largely remained the same across survey rounds and food groups during the period after the Covid-19 pandemic.

In Ghana, the study presented a descriptive analysis of two rounds of data collected immediately after COVID-19 movement restrictions were lifted (July 2020) and a year after (July 2021), and the survey was conducted in Accra, Kumasi and Tamale region of Ghana. The results show improvements in food security indicators, although results varied across cities, one year after the first lockdown. For example, households in Accra saw a statistically significant household dietary diversity score (HDDS) increase (especially consumption of vegetables, meat, offal and poultry), while households in Tamale saw statistically significant increases in food expenditure per capita. This result may be explained by the initial dramatic increases in the prices of products and then as society normalized, prices were relatively more stable. Furthermore, expanding cash transfer social protection programs and increasing the transfer amounts helped many households to safeguard themselves against food and nutrition insecurity during the pandemic.

In Uganda, we used high-frequency data collected every two to three months in the rural areas in the districts of Lira, Kileleshwa, Kisoro and Kamwenge, Moroto, Kotido, Bududa, and Sironko. The baseline data was administered in June 2020, immediately after the lifting of restrictions of the first lock down. The last (seventh) round was conducted in August 2021 just after the lifting of the second lockdown, instituted to curb the spread of COVID-19. Our results show that more than 60% of households that indicate that they were affected by the COVID-19 lockdown measures suggest that they responded to limited access to food by eating less expensive food and consuming limited portions. There is also a marked difference in weekly consumption expenditure between affected and unaffected households two months after removing the COVID-19 restrictions. The differences are more pronounced amongst families engaged in trading and commerce sectors. Moreover, households that were not affected by COVID-19 restrictions only have slightly higher dietary diversity in the first, second, and third rounds

of the survey. In the subsequent waves, dietary diversity is the same across groups. Lockdown measures also adversely affected wage labor, especially among households employed in the trading and commerce industries. Affected households had lower median wage income across waves and reported a reduction in working hours and temporary layoffs. Consequently, some affected households relied on assistance from the government or NGOs and other safety-net programs to compensate for shortfalls in their earned wage income.

In conclusion, while the COVID-19 pandemic and associated lockdown measures had little measurable impact on household consumption and food availability in the countries studied, the longer-term impacts are yet to be seen. Households relied on innovated coping strategies and government safety-net programs to mitigate the adverse effects of the pandemic. However, a contraction of employment opportunities and wages has placed some households in a vulnerable position – particularly those which relied on the use of savings, taking on loans and buying food on credit. In this way, the pandemic has significantly affected household food security prospects moving forward.

Keywords: COVID-19, food security, dietary diversity, employment, income, sub-Saharan Africa

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The data collection in Ghana was funded under the Partnerships for Healthy Diets and Nutrition in Urban African Food Systems – Evidence and Strategies (NOURICITY) project. Relatedly, the data used for the Uganda case study was because of a collaboration between the Department of Agribusiness and Natural Resource Economics, Makerere University and the Center for Development Research, University of Bonn (ZEF). Data collection in Ethiopia was conducted in collaboration between the Policy Studies Institute (PSI) and ZEF under supervision of Tigabu Degu Getahun. Additional funding was received through the Innovative Methods and Metrics for Agriculture and Nutrition Action (IMMANA) program, led by the London School of Hygiene & Tropical Medicine (LSHTM) for which Annet Adong is a Research fellow. The authors would like to thank all the data collectors involved in the respective projects. Finally, the authors are very grateful to Professor Joachim von Braun (ZEF) for a review and constructive comments.

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# 1 General introduction

The COVID-19 pandemic has caused huge economic disruption that affects food and nutrition security in many low- and middle-income countries (LMICs). At the onset of the pandemic, many governments put in place several measures to contain the spread of the pandemic, including lockdowns, restricting free movements of people both within and between countries, and the closure of non-essential business and schools. Such unprecedented policy measures have changed the day-to-day activities of billions of people across the globe. While such stringent movement restriction measures are important to reduce the spread of the virus, they disrupt the agri-food supply chain by limiting the movement of food items from surplus to deficient areas or from producers to consumers.

Despite the various containment measures, the societal and economic consequences of the pandemic have greatly differed across countries. COVID-19 related illness or death affects all societies, albeit to a different extent. On the other hand, mobility restriction and lockdown, and safety or sanitary decrees or regulations are likely to have diverse consequences on economic systems and well-being across different societies. For example, the food supply chain disruption affects urban households more than rural households as urban dwellers largely rely on food purchases (Adjognon et al., 2020; Egger et al., 2021). Furthermore, unskilled workers engaging in the informal sector are heavily affected by the pandemic due to low employment opportunities and short-term contractual agreements (Amare et al., 2021). Generally, the adverse impacts of the pandemic are more pronounced in LMICs because many of these countries have significantly weaker social safety net programs to mitigate the consequence of job and income loss than industrialized countries.

The risks of food security can be manifested through high food prices and lower incomes, particularly among poor households. For instance, increasing retail food prices and lowering incomes (due to loss of jobs) means more and more households must reduce both the quality and quantity of their consumption (Picchioni et al., 2021). According to a recent report on the state of food security and nutrition in the world, it is estimated that between 720 and 811 million people went hungry globally in 2020 (FAO, IFAD, UNICEF, WFP and WHO, 2021), suggesting that at least 118 million more people suffered hunger in 2020 compared to in 2019. Another estimate by the World Food Programme (WFP) indicates that in countries where it operates, over 270 million people are acute food-insecure.<sup>1</sup> Although food insecurity was trending upward even before the COVID-19 pandemic because of extreme climate events, conflict, and other economic shocks, the recent estimates generally indicate that the COVID-19 pandemic has drastically increased the number of food-insecure people in 2020-2021. Although crop production largely remains unaffected by the pandemic, the rapid rise in food insecurity (people's inability to access food both financially and physically) is mainly due to government measures to contain the pandemic. The World Bank defines acute food insecurity as a condition when a person's life or livelihood is in immediate danger due to lack of food.

The COVID-19 pandemic gave rise to a myriad of new research projects that aimed at estimating the consequences of the pandemic on several indicators of well-being. Among these projects were quickly developed and administered phone surveys such as the rapid phone surveys done by the World Bank in 48 countries as well as several other independent projects (Egger et al., 2021) that made use of existing samples of previous data collections to increase the representation of their samples.

Although empirical studies related to the pandemic have grown quickly across a wide range of disciplines, the discussion on the best-possible responses is ongoing and controversial (e.g., van Bergeijk, 2021). Sound economic, social, and health policies require a better understanding of the wider impacts of the pandemic on human lives and livelihoods across countries of the various population groups and appropriate data as the basis for the targeting. However, generating the required data to help policymakers to design robust social and economic policies has been constrained by the nature of the pandemic. For example, the pandemic makes it difficult to collect primary data

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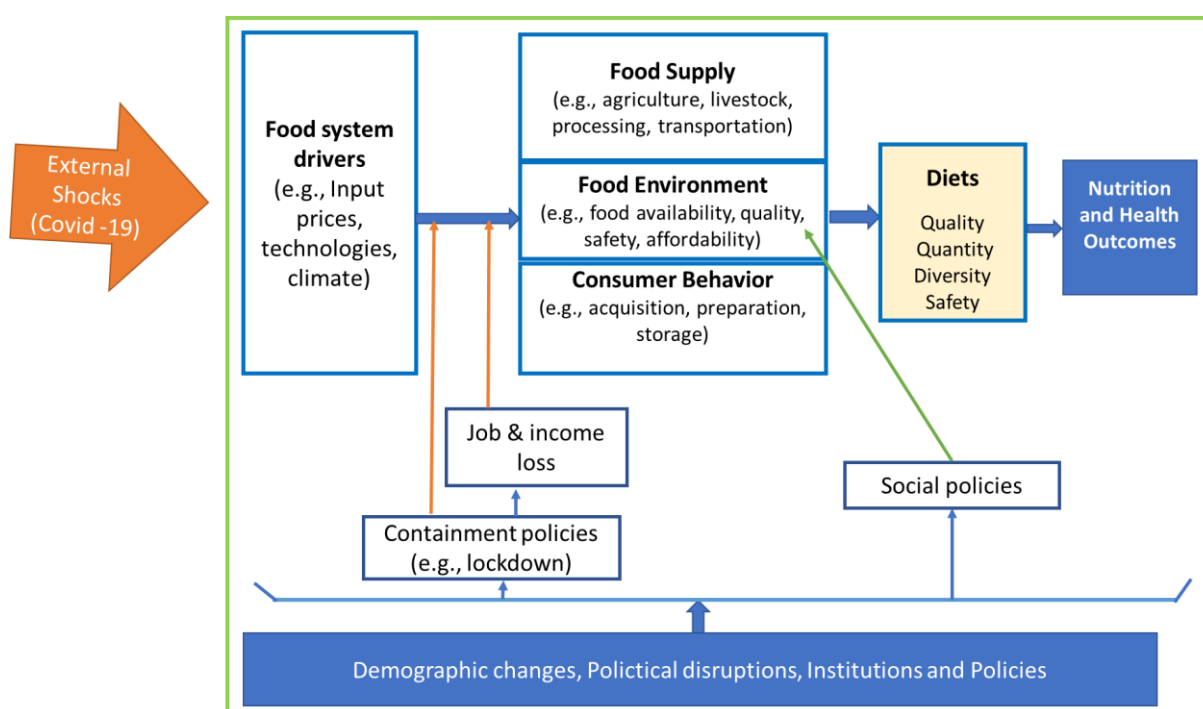
<sup>1</sup> <https://www.wfp.org/stories/wfp-glance>

face-to-face because of mobility restriction and social distancing. The pandemic has also caused dramatic changes in economic behavior (e.g., panic buying) that requires rapid assessments to understand the change in supply and demand behavior using timely indicators (Swinnen and Vos, 2021). The adverse effect of the pandemic is not yet over, and its effects will be felt for many years to come.

In this paper, we investigate the effects of the COVID-19 pandemic and its lockdown measures on household consumption and job and income losses in selected African countries (Ethiopia, Ghana, and Uganda) using household survey data. The paper is structured in the following way: Section 2 introduces the conceptual framework how the pandemic affects household food consumption, income as well as employment opportunities and reviews literature on the topic. Section 3 presents an overview of the case studies, while the subsequent sections present the specific studies in detail.

## 2 Conceptual framework and related literature review

The COVID-19 pandemic and containment measures, put in place by governments around the world, have had serious consequences on national and local food systems. A modified food systems framework depicted in Figure 1, presents the COVID-19 impacts on different parts of the food system. First and foremost, the COVID-19 pandemic represents an external shock to the food system. Direct health-related effects through casualties and illness are accompanied by indirect effects of containment policies abroad and at the national or local level. The disruptions of national food systems and international trade were caused by internal as well as external movement and travel controls and restrictions imposed by national and local authorities in response to the COVID-19 pandemic. In consequence, food systems have been hit internally and externally by limiting international food supply and affecting export earnings; first, only through disruptions of international supply chains, and later, also through economic slowdowns and the reduction in international export demand.



**Figure 1: COVID-19 impacts on food systems and diets**

Source: Adapted from Fanzo et al. (2017).

It is important to note that the direct and indirect effects on people's well-being varied significantly across countries. For instance, the impacts were depended on the timeliness and implementation of containment measures (Fan et al., 2021; Ma et al., 2021) (and later health policies) as well as the duration and stringency of the containment measures (Cross et al., 2020). Moreover, – and probably foremost –, they were driven by the inequalities and structural differences between high and low-income countries (von Braun et al., 2020). These inequalities are manifested in differential capabilities to adapt (e.g., social distancing and the availability of face masks and hand-washing practices), limited access to technologies for the poor as well as weak institutional frameworks and a lack of social security policies in LMICs. In addition, labor-intensive food value chains are more affected by social distancing requirements than modern capital-intensive value chains (Van Hoyweghen et al., 2021).

The interconnections in the food system (i.e., between food supply chains, the food environment, and the individual consumer behavior) triggered by the characteristics, such as demographic change, described by the food system drivers have led to ripple effects of negative shocks on food and nutrition

security. The inability of food systems in LMICs to respond to shocks and stress is reinforced by structural deficiencies in production and distribution caused by inadequate infrastructure, high transaction costs, and imperfect credit and insurance markets (Bené, 2020). In consequence, some local food systems have proven to be more resilient against the pandemic than others. In some countries, (urban) food systems were able to quickly adjust by establishing and expanding e-delivery platforms and food delivery to resolve logistical challenges (Fan et al., 2021).

The sequence of containment and closure policy actions and the narrative of the pandemic is unique to each country; selected cases are discussed in detail as part of our case studies. However, as presented in Figure 2, the restrictiveness of government policies was highest during the early stages of the pandemic. The restrictiveness of a country's containment policies is measured by the stringency index of the Oxford COVID-19 Government Response Tracker (OxCGRT), which allows the comparison of policy measures across countries and time. Governments around the world have also implemented social protection measures to mitigate the impacts of the direct and ripple effects of the pandemic. In normal times, governments of LMICs make use of a range of different social protection policies, which include cash transfers and in-kind distribution, school meal programs, and public works programs as shown by Sakketa and von Braun (2019). Yet, school meal programs do not work if schools are closed and asking inhabitants to stay home makes it impossible to continue public works programs. Therefore, governments were asked to consider a wide range of new or adjusted social protection policies avoiding (or minimizing) human interactions but also considering the livelihoods that depend on markets for income generation (Sakketa and Kornher, 2020).

The World Bank has tracked social protection and jobs responses of governments since the beginning of the pandemic and has recorded that by May 2021, 222 countries or territories have implemented social protection measures at some point in time – primarily social assistance programs – at a level that is 4.5 times the investments made during the global economic crisis in 2008/2009 (Gentilini et al., 2021). In the early stages of the pandemic, a quick approach adopted by countries was the expansion of existing social protection programs in terms of their coverage, adjusting the conditionalities of the existing programs, and improving their targeting (Sakketa and Kornher, 2020). During the pandemic, coverage, duration, and per capita spending have varied greatly across countries. For example, Gentilini et al. (2021) estimate that high-income countries spend on average 847 USD, while LMICs have spent only 30 USD per capita. The average program duration was four months and coverage varied between on average 4.5% in low-income countries and 26.7% in high-income countries. So far, there is little to no evidence of how these programs worked to mitigate the effects of COVID-19 in the short or medium term.

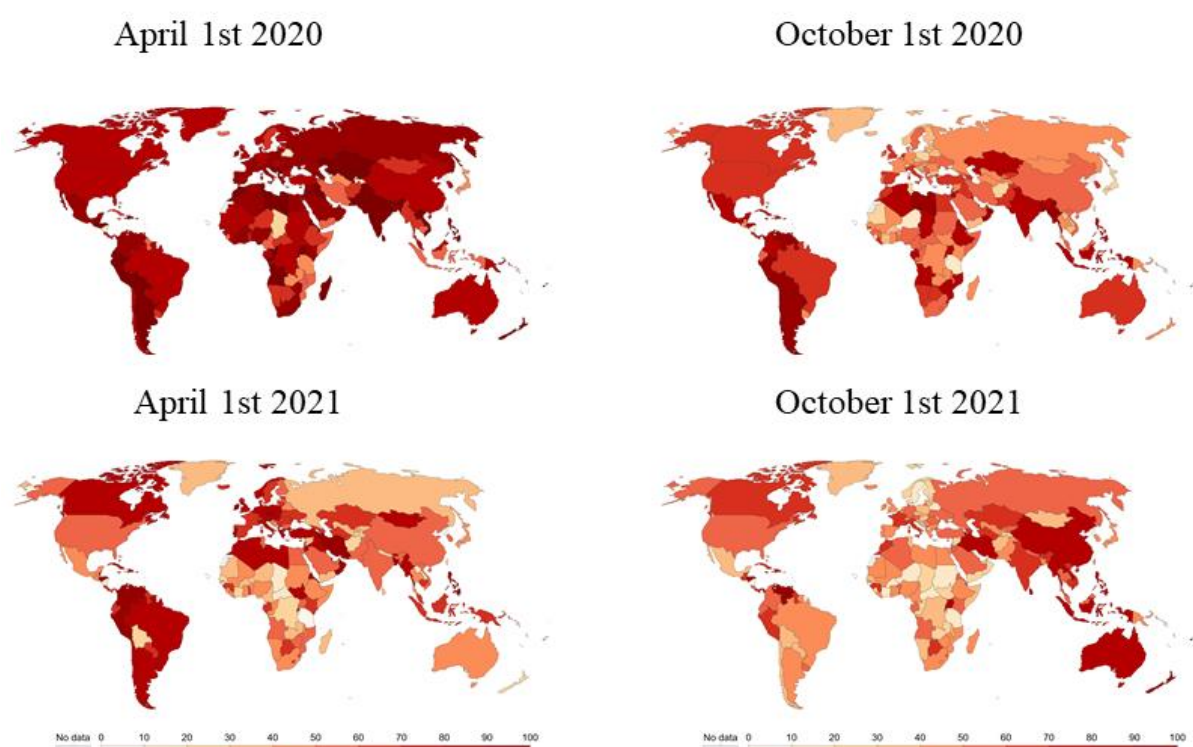


Figure 2: Stringency Index of the OxCGRT at different dates

Source: Hale et al. 2021 and visualizations by Our World in Data<sup>2</sup>.

Note: "OxCGRT measures the variation in governments' responses using its 'COVID-19 Government Response Stringency Index (Stringency Index)'. This composite measure is a simple additive score of nine indicators measured on an ordinal scale, rescaled to vary from 0 to 100. Please note that this measure is for comparative purposes only and should not necessarily be interpreted as a rating of the appropriateness or effectiveness of a country's response" (OxCGRT).

In Table 1, we summarize COVID-19 related food security, direct and ripple effects on the different actors of the food system in LMICs. Reported effects are not observed in all food systems and may not happen simultaneously. That is, COVID-19 health-related impacts and death has happened all along since the beginning of the pandemic, while some supply chain disruptions were only temporary, general equilibrium effects through economic slowdowns are long-run effects. Without a detailed discussion of all cases, we note that in all cases, the expected direct COVID-19 effect on the respective actor is the reduction in purchasing power because of income loss and higher prices. Value chain disruptions, such as limited accessibility of production inputs and labor as well as higher transaction costs, also have secondary effects on food availability both in the short and long run (Hirvonen et al., 2020; Hobbs, 2020; Torero, 2020). Market closures had severe adverse effects on several actors. Producers were often unable to market harvested food without the means of on-farm storage – particularly important for perishable products (FAO) – many small food retailers lost their complete livelihoods, and consumers were forced to travel long distances to purchase food. In the following part, we present existing empirical evidence on the most important COVID-19 impacts in LMICs focusing on the indicators in the last column of Table 1.

<sup>2</sup> See <https://ourworldindata.org/policy-responses-covid>



Table 1: Expected food security impacts of COVID-19 on local food systems' actors

Actors	Impacts reported	Expected direct effect	Expected system effect (indirect) on food system	Indicators to consider
All actors	Unexpected expenditures and income loss from COVID-19 related illness or death	Reduced food accessibility	Labor productivity loss	Income/expenditure, out of pocket health expenditures
	Higher probability of job loss and less social protection because of overall economic slowdown and less fiscal space for social spending	Reduced food accessibility	Ripple effects on the whole food system	Government spending
Producers	Reduced access to inputs (incl. labor)	Reduced food accessibility	Reduced food availability	Food production (next season)
	Reduction in food demand from traders and difficulties to market produce	Reduced food accessibility	Reduced food availability	Marketing margins, income/expenditure, dietary indicators
Traders Retailers/vendors	Higher transaction (incl. costs due to hygiene protocols and testing)		Reduced food availability and accessibility	Retail price level  Spatial price differentials
	Reduced profitability and incomes	Reduced food accessibility	Reduced food availability and accessibility	Retail price level
Consumers	Loss in purchasing power because of job/income loss, higher (food) prices, and higher costs to purchase food	Reduced food accessibility and stability	Ripple effects on the whole food system	Income/expenditure, dietary indicators

Source: Adapted from Béné (2020).

## 2.1 Loss of income and jobs

Food accessibility largely depends on disposable income. The immediate consequences of the early closure policies (i.e., the lockdown) were income and job losses at a time when hardly any LMICs had social mitigation policies in place. Egger et al. (2020) report short-term effects based on a resurvey of 30,000 households in nine LMICs, mostly done by personal and computer-assisted telephone interviews (CATI). The empirical findings, addressing potential seasonal effects, provide robust evidence for significant income drops in the first three months after the beginning of the pandemic;

albeit mean effects vary around a median of 68%. The harmonized World Bank high frequency phone surveys, conducted in 40 countries representing a fifth of the world's population, provide a similar picture. Specifically, 36% of all respondents working before the lockdowns stopped between April and July 2020 and 62% of all households reported income losses (Sanchez-Paramo and Narayan, 2020)<sup>3</sup>. Josephson et al. (2021) estimate that 256 million (77% of the population) individuals in Ethiopia, Nigeria, Malawi, and Uganda have lost income during the pandemic. Using the World Bank high frequency phone surveys between May and August 2020, Mejia-Mantilla et al. (2021) estimate that 48% of the workers in Latin American and the Caribbean temporarily stopped working and 16% permanently lost their jobs. The overview study by Bené et al. (2021) presents similar estimates and ascertains that the employment effects were stronger for urban than for rural households and more severe for women. Simulations by Laborde et al. (2021) project that 150 million people could fall into extreme poverty because of the pandemic.

Migrant workers and their families, mainly in South Asia, are particularly strongly hit by job and income losses and the associated nutrition-related consequences. In this case, employment losses induce significant return migration flows and ripple effects (e.g., drop in remittances). Gupta et al. (2021) used weekly financial transaction data between March and April 2020 and found that remittances income, which usually accounts on average for 16% of household income, in rural India dropped by 68% during this period. For instance, Abella and Sasikumar (2020) estimate that Indian migrant families could face a loss of 2 billion USD from job losses and return migration from Saudi Arabia alone. Migrant incomes in Bangladesh and Nepal fell by 36% between spring 2019 and May 2020 and losses were 25% higher than for non-migrant families (Barker et al., 2020).

## 2.2 Effect on food consumption and nutrition

While purchasing power and food price are the main ingredients to food accessibility, movement restrictions have also reduced physical access to markets (Egger et al., 2021). On the other hand, households coping strategies and social mitigation policies could have reduced the consequences on food consumption and nutrition outcomes. Given that much of the income of the poor households is spent on food consumption, increasing food prices can have huge welfare implications. When food prices rise, as a coping strategy, poor households tend to not only reduce the quantity of consumption but also shift to cheaper and less diverse diets. Lack of healthy foods (low dietary diversity and quality) increases maternal and child undernutrition (Osendarp et al., 2021) – a higher risk factor for child morbidity and mortality. Increasing food prices lead to lowering the demand for healthy and nutrient-rich foods (Laborde et al., 2021). For instance, a cross-country study suggests that higher food prices during the pandemic were associated with reduced dietary diversity and quality in Burkina Faso, Ethiopia, and Nigeria (Madzorera et al., 2021).

There are already several studies examining the COVID-19 impacts on a range of food and nutrition security outcomes. Most of these studies used pre-COVID-19 baseline data collected for different purposes and re-surveyed households by phone. For instance, Hirvonen et al. (2021) did not ascertain significant changes in dietary diversity among households in Addis Ababa, comparing the end line data of their randomized controlled trial with a survey during August 2020. Kansime et al. (2021) sent questionnaires to random respondents in Kenya and Uganda through social media channels and reported that food insecurity increased by 38% and 44% in Kenya and Uganda respectively. The disadvantage of these approaches is that samples are biased and not representative of the population.

Among the few studies that base their conclusions on more representative data in low-income settings are Egger et al. (2021), Josephson et al. (2021), and Amare et al. (2021), and Barrett et al. (2021). Egger et al. (2021) found that between 9 and 87% (with 45% median) of respondents reported to being forced

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<sup>3</sup> The recent development can be found on the COVID-19 Household Monitoring Dashboard <https://www.worldbank.org/en/data/interactive/2020/11/11/covid-19-high-frequency-monitoring-dashboard>

to miss or reduce meals. The effects on food insecurity were slightly smaller in the three Asian countries (Bangladesh, Nepal, and the Philippines) than for Colombia and the five countries in Africa. Generally, the food security impact was more severe for households with lower socioeconomic status. For Nigeria, Josephson et al. (2021) and Amare et al. (2021) also re-surveyed households, that were interviewed face-to-face before the pandemic, through telephone interviews. Josephson et al. (2021) estimate that moderate and severe food insecurity increased by roughly 25 and 20 percentage points, respectively, between fall 2019 and May to August 2020. Amare et al. (2021) report an association between lockdown measures and food insecurity. Specifically, the share of households that experienced food insecurity increased by 6–15 percentage points since the pandemic.

### **3 Cases studies: Effect of the COVID-19 pandemic on household consumption, income, and employment**

Given the objective of this paper, we attempt to combine the analysis of three countries in Africa to study the effects of the COVID-19 pandemic and its lockdown measures on job and income losses and household food security. This micro-level analysis is based in three countries (Ethiopia, Ghana, and Uganda) using high-frequency panel household surveys. The surveys were conducted during the COVID-19 pandemic, before and after the lockdown measures implemented by governments in the study countries. These case study countries provide the necessary platform for a general discussion on the effects of the COVID-19 pandemic and subsequent lockdown measures on households' food security, job, and income losses.

The settings and the COVID-19 lockdown measures varied greatly across the study countries where the data was collected. For example, the government of Ethiopia did not impose strict lockdown measures, while in Uganda, the government enforced several longer strict lockdowns. In Ghana, a first strict lockdown was quickly adjusted by allowing market opening with rotating market days. Therefore, the lockdown measures taken by the Ghanaian government can be considered less stringent than in Uganda. The selection of the three study sites was based on the identification of local partners to carry out the data collection, and the difference in COVID-19 lockdown measures put in place by the respective governments. The Ethiopian survey covers three rounds between May 2020 and April 2021; Ghana, three rounds between December 2019 and August 2021; and Uganda datasets cover six rounds between June 2020 and August 2021. The case study in Ethiopia and Ghana focuses on urban households while in Uganda, the case study villages were selected to reflect both urban and rural households. In the following, we present the case studies in detail separately.

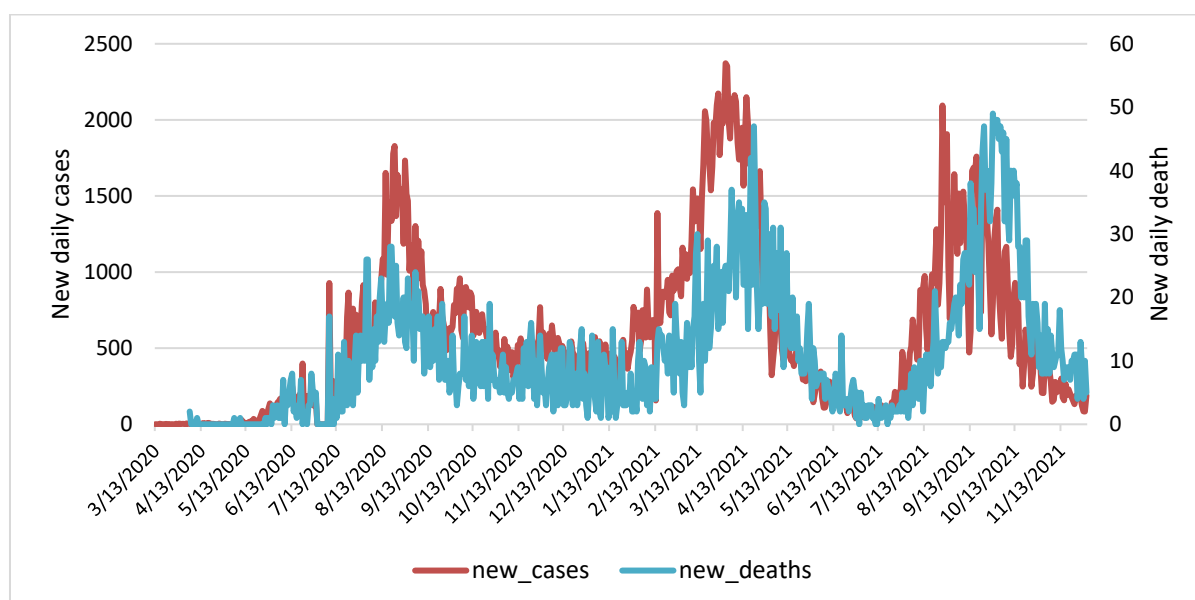
## 4 The COVID-19 pandemic in Ethiopia

In Ethiopia, the first coronavirus was reported on March 13, 2020, and the victim was a Japanese citizen. Following the first registered COVID-19 case in the country, the Ministry of Health promoted frequent hand washing with soap and water, social distancing as well as contact tracing. Like many other countries, the Ethiopian government took a series of measures to contain the spread of the COVID-19 pandemic, including school closing, discouraging public gatherings, and reducing the capacity of public transportation, among others. At the expense of other essential healthcare services, including maternal and child health, most of the available health facilities allocated most of their resources in preparation for COVID-19 prevention and treatment.

The Ethiopian government refrained from imposing strict lockdown measures, rather the government stressed the importance of public health measures to curtail the spread of the virus due to the country's limited financial and human resources. Furthermore, the federal government declared a five-month state of emergency on April 8, 2020 to help curb the spread of the coronavirus pandemic while normal economic activities continued during the public health crisis (Oqubay, 2020). The COVID-19 outbreak was also one of the primary reasons for the general elections, which were set to be held on August 29, 2020, to be postponed by the National Electoral Board of Ethiopia.

The COVID-19 outbreak, and the subsequent lockdown measures and restrictions affected the employment and income of many households. For example, the United Nations Economic Commission for Africa estimated that the pandemic reduced the country's overall economic growth by 2.9 percentage points for the fiscal year 2020 (UNICEF, 2020). Experts feared that African countries could face a huge task to contain the rapidly spreading virus because of its fragile health care system, inadequate infrastructure as well as poor sanitation facilities and hygiene practices.

Figure 3 presents the daily new cases and deaths since the onset of the COVID-19 pandemic. According to the WHO figures, as of December 31, 2021, Ethiopia has recorded over 415,443 confirmed cases of COVID-19 with over 6926 deaths. These numbers however do not show the correct figures of the pandemic because the number of cases depends on the testing ability of the country in which the country has limited capacity.



**Figure 3: COVID-19 daily caseloads and deaths between March 2020 and November 2021 in Ethiopia.**

Source: The data is available <https://www.worldometers.info/coronavirus/> (accessed on 02 December 2021).

#### 4.1. Sampling and data collection method

In Ethiopia, sample households were selected from three regions: Addis Ababa, Tigray (Mekelle), and Oromia (Adama). We used the urban household list that the Ethiopian Development Research Institute (EDRI) impact evaluation and survey team generated in 2017. The EDRI survey team listed about 28,393 households in Addis Ababa and 4007 households outside Addis Ababa. The list of the 32,400 households, therefore, served as a sampling frame for this study. From this sampling frame, we randomly selected 1650 households from Addis Ababa and 275 households from the list in Mekelle and Adama.

Using all the tracking information in the sampling frame, we were able to track and interview about 96% of the selected sample households. The attrition was caused by refusals, wrong or non-functional phone numbers and some households could not be contacted during the duration of the survey. Experienced enumerators were used to survey sampled households using CATI technique. Enumerators were provided a tracking list of respondents containing IDs of the sampled households, address and contact numbers of the household head and his/her close contacts. Enumerators secured verbal consent for all responders, and they successfully collected phone-based baseline data from 1588 households in Addis Ababa, 270 households in Adama (capital city of the Oromia regional state), and 257 households in Mekelle (capital city of the Tigray regional state) (Table 2). We interviewed these households three times between May 2020 and April 2021.

#### 4.2 Results and discussion

##### 4.2.1 Sample distribution

This study is based on three rounds of phone surveys collected between May 2020 and April 2021. Table 2 shows the total number of households followed in each round of the survey by region. About 90% of the households have been re-interviewed in each survey round, and the analysis is based on those sample households (balanced panel) to analyze and compare changes in households' employment, income, consumption, and coping strategies following the outbreak of the COVID-19 pandemic.

**Table 2: Sample distribution by regions and survey rounds**

Regions	Samples by survey rounds			
	Round 1	Round 2	Round 3	Balanced sample size
Addis Ababa	1,588	1,499	1,375	1,375
Oromia (Adama)	270	253	225	225
Tigray (Mekelle)	257	245	191	191
Total	2,115	1,997	1,791	1,791
Total unbalanced number of observations			5,903	
Total balanced number of observations			5,373	
Survey period of round 1			May 2020 to June 2020	
Survey period of round 2			August 2020 to September 2020	
Survey period of round 3			March 2021 to April 2021	

##### 4.2.2 Households' employment and income

To understand the COVID-19 effects on employment outcomes, we compared the distribution of primary occupations of respondents before the outbreak of COVID-19 (before March 2020) and after the outbreak of the pandemic in three rounds of surveys. The aim was to understand employment type changes following the pandemic.

Our findings indicate that private sector/NGO salaried employment, self-employment, and public employment program through UPSNP were the primary occupations before the pandemic for many of the respondents (Table 3). These employment types comprise over 62% of the total employment of the respondents. Before the outbreak of the pandemic, a significant proportion of respondents (15%) reported not having a job. After the pandemic, changes in employment types had been observed. In almost all types of employment, the percentage of employment share had declined. The highest fall in employment happened in self-employment, followed by private sector/NGO salaried employment. Private sector/NGO salaried employment share declined from 24% pre-pandemic to 20% in the first and second rounds of surveys and 17% in the third round of the survey. Similarly, self-employment share declined from 28% pre-pandemic to 22%, 24%, and 23% in the first, second, and third rounds of surveys, respectively. The decline in employment is reflected by a rise of respondents reporting “No job”. During the first survey, the share of jobless increased from 15% pre-pandemic to 25%, reflecting a 67% rise. Studies have already shown that the COVID-19 lockdown seriously affects employment. For example, a national Social Accounting Matrix (SAM)-based simulation result predicted that employment in Ethiopia could be reduced by 8.6% to 16%, (Beyene et al., 2020). The World Bank’s survey between April 22 and May 13, 2020, also indicated that 18% of respondents from urban areas of Ethiopia lost their job (mostly from the private sector and self-employment) because of the outbreak of the pandemic (Wieser et al., 2020a). Furthermore, the successive survey rounds of the World Bank showed that employment levels did not rebound to pre-COVID-19 levels (Wieser et al., 2020c, 2020d). A phone survey result between May and June 2020 for female workers in Ethiopia’s ready-made garment industry indicated that the pandemic led to a significant change in employment (Meyer et al., 2021).

**Table 3: Primary occupation before and after the outbreak of COVID-19**

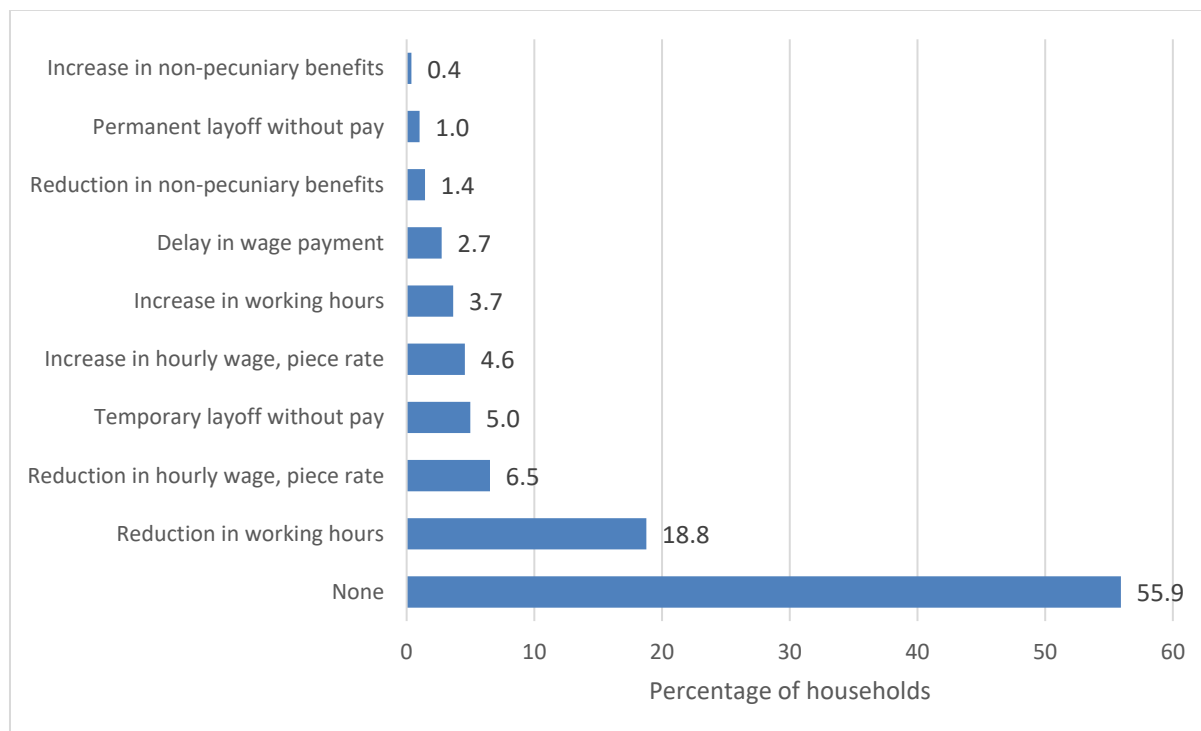
Employment Types	Percent responses			
	Before COVID-19	Round 1	Round 2	Round 3
Agricultural wage labor	0.10	0.06	0.26	0.16
Salaried worker (Private/NGO)	23.67	21.24	19.8	16.89
Government employee	8.66	8.92	7.87	9.64
Farmer	1.11	1.09	0.83	0.93
Self-employed (Non-agriculture)	27.64	22.80	23.92	23.21
Daily labor casual worker	8.66	8.08	7.45	13.06
Public Employment Program (UPSNP)	10.83	10.10	9.95	6.22
Trader (selling agricultural produce)	1.1	0.88	0.73	1.46
Other	3.47	4.13	3.91	4.92
No Job	14.75	25.47	25.27	23.52

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

The rise in joblessness means that households had experienced various forms of layoffs and job loss. Even those who were still employed during the survey periods may have experienced other forms of employment and income challenges. We surveyed the experience of only salaried workers (private sector/NGO/government employee), agricultural wage or daily wage laborers about layoffs, payment, working hours cuts, and other forms of challenges after the outbreak of COVID-19. According to Figure 4, about 56% of the respondents in all rounds of surveys did not face any forms of employment challenges. However, a significant percentage of households reported a reduction in working hours (19%), lower hourly wages, piece rate or salary (7%) and temporary layoff without pay (5%) during the study period.

During the first round of surveys, 28% and 17% of respondents reported a reduction in working hours and hourly wages/piece rate/salary, respectively. These forms of challenges dominated in the remaining rounds of surveys as well. The result also shows that temporary layoff was not the major contributor to employment challenges. This may be linked to the state of emergency declared during

the time, which prohibited laying off employees. An interesting aspect of the finding is that the number of salaried workers responding that they had no employment challenge was higher during round 2 than rounds 1 and 3 of the surveys. This may be related to the nervous reactions of employers and overall business during the first periods of the pandemic. On the other hand, during the last round of the survey, other problems such as political instability may have played a significant role in employment.

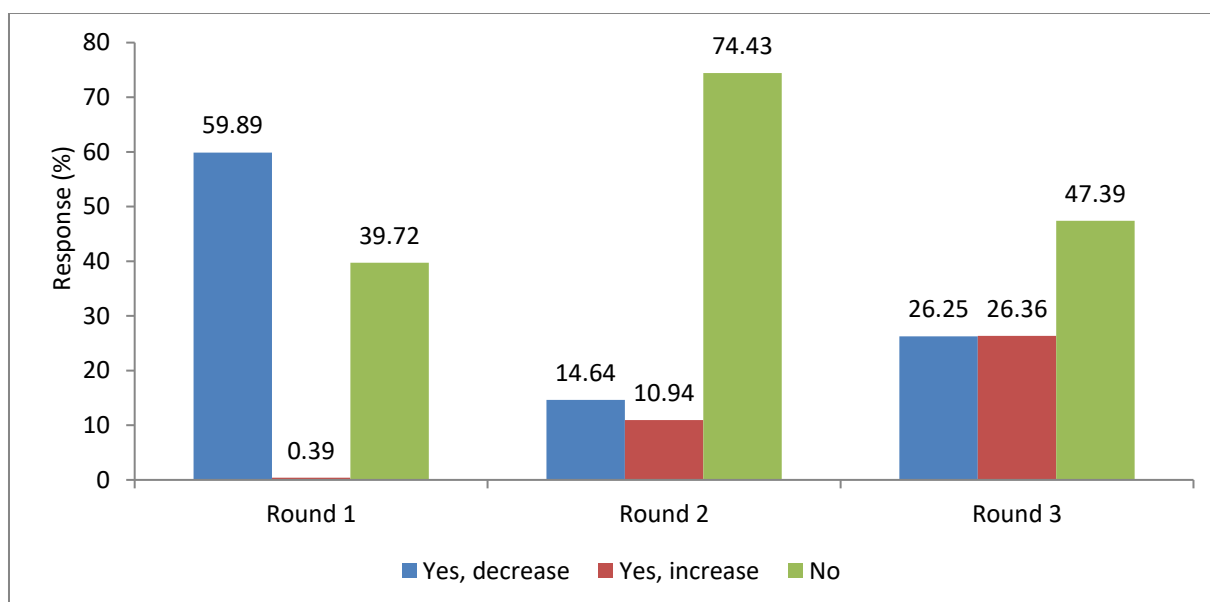


**Figure 4: Employment challenges experience after the outbreak of COVID-19 (N = 2,083)**

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

A decline in employment, and other forms of employment challenges, can affect a household's income or wages. We assessed the impact of the pandemic on household income or wage compared to the pre-pandemic level with the last round of interviews. According to Figure 5, the income or wage change of the household shows a marked difference across the survey rounds. In round 1, the percentage of households reporting a decrease in income/wage compared to March (when the first COVID-19 case was confirmed) was higher (60%) than in the remaining rounds of surveys. About 60% of respondents reported a decrease in income/wage during round 1 while it was just 15% and 26% during round 2 and 3, respectively. In the early period of the pandemic, other studies also found a high fall in households' income. According to a World Bank study, surveyed between April 22 and May 13, 2020, in Ethiopia, 55% of surveyed households reported that incomes were either reduced or had disappeared (Wieser et al., 2020a). A phone-based survey between May and June 2020 in Addis Ababa by Abate et al. (2020) shows that the greatest impact of the pandemic on households was unemployment or income loss. According to the result, "in the early May survey round, 58% of respondents said that the incomes in the past month (i.e., in April) were lower or much lower than usual income". Therefore, it can be said that the immediate effect of the pandemic on income was high. This may be related to the high uncertainties of the pandemic's effects in the earlier periods. Quantitatively, Yimer et al., (2020) using a SAM-based simulation technique estimated that Ethiopian households, assuming no government policy response, could suffer an income loss of USD 233 million per month following the pandemic.





**Figure 5: Change in total income or wages of households after the first case of COVID-19 confirmed.**

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

Table 4 presents the change in income/wage by employment type. The result reveals that self-employees, salaried workers, daily laborers, and jobless households reported a large fall in income. During the early period of the pandemic (during the first and second interviews), self-employed households reported the highest frequency of decreased income (31% and 27%, respectively). In the third round of the survey, jobless households' share of fall in income was the highest.

**Table 4: Decreased income or wage by employment types (%)**

Employment type	Round 1	Round 2	Round 3
Agricultural wage labor	0.09	0	0.2
Salaried worker (Private/NGO)	13.92	13.33	11.22
Government employee	4.24	3.51	4.29
Farmer	0.61	1.05	1.63
Self-employed (Non-agriculture)	30.68	26.67	24.08
Daily labor Casual worker	11.06	15.44	14.49
Public employment program (UPSNP)	10.54	12.63	6.94
Trader (selling agricultural produce)	1.12	1.4	2.25
Other	2.94	1.75	2.86
No Job	24.81	24.21	32.04

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

### 4.3 Food availability and prices; Households' food consumption and security

#### 4.3.1 Food availability and prices

Given the containment measures applied to tackle COVID-19, one could question the availability of food and hence food prices during the pandemic. We assessed the availability of major staple foods and food prices in the study regions. Table 5 shows how often staple foods (like teff/rice/maize), fruits and vegetables, and hygiene products were available in stores in the past seven days, before the date of interviews. The percentage of households that responded to the availability of staple foods; fruits and vegetables; and hygiene products as "always available" in each round show an important

difference. In round 1, the percentage of households that responded that the availability of the food items and hygiene products were “always available” was lower than in the round 2 survey. In round 3, the availability of food items and hygiene products was reported to be lower than in the round 1 and 2 surveys. For example, the percentage of the households that responded to the availability of staple foods as “always available” was 88% in round 1; 92% in round 2, and 77% in round 3. This generally indicates that food availability was not a major problem, and this finding is in line with Martin et al. (2021).

During the early periods of the pandemic, food availability was threatened as people rushed to purchase food items in bulk amounts, leaving stores out of stock. Additionally, transport and movement restrictions played a significant role in influencing the availability of food items from suppliers. Gradually, however, government response measures and a diminishing panic contributed to the maximization of food availability during the second round of the survey. In the third round, the “always available” rating declined for all considered food items. This may be attributed to the ongoing political instability in the country besides the pandemic. This implies that the food security status of households could potentially be eroded unless the recent reduction in the availability of food items is improved.

**Table 5: The availability of staple foods; fruits and vegetables; and hygiene products in stores of the local market in the past seven days before the survey**

	Round 1	Round 2	Round 3
<b>Availability of staple foods like teff/rice/maize</b>			
Always available	88.24	91.75	77.09
Partially/sometimes available	4.85	2.23	17.56
Not available	0.56	0.72	0.78
Don't know	6.35	5	4.57
<b>Availability of fresh fruits and vegetables</b>			
Always available	90.36	94.37	83.50
Partially/sometimes available	6.80	3.57	14.49
Not available	1.34	0.95	1.00
Don't know	1.51	1.11	1.00
<b>Availability of hygiene products</b>			
Always available	95.15	97.55	91.86
Partially/sometimes available	2.79	1.28	6.69
Not available	0.39	0.17	0.22
Don't know	1.67	1.00	1.23

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

Food availability is linked to food prices. For example, prices may be rising due to hoarding and supply chain disruptions following the pandemic. Table 6 presents households' perceptions of price changes for major staples (teff and maize) and vegetables (onion and tomato) in the past seven days before the date of the interview. Although prices of major items were perceived to have increased during round 1, results indicate that vegetables (onions and tomatoes) were perceived to have increased more than cereals (teff and maize). Over 90% of respondents believed that the price of onions and tomatoes increased during the last week before the date of the first interview. These products are perishable and may be immediately affected by movement restrictions during the early periods of the pandemic. Moreover, the price of vegetables showed significant fluctuation throughout the surveys. For example, 94% of the respondents believed that the price of tomatoes increased in the first interview, while only 74% and 45% thought that it had increased during the second and third rounds of interviews. The price of teff is perceived to have increased consistently in all rounds of surveys. Compared to teff,

households perceived that the increase in the price of maize was lower (Table 6). Overall, in each round of surveys, the percentage of households that think that the prices have increased is too high. This trend may challenge affordability and threaten the food security status of households. The World Bank survey conducted between July 27 and August 14, 2020, and between August 24 and September 17, 2020, indicates that affordability of food or medicine was a concern for over 90% of households (Wieser et al., 2020d; 2020e).

**Table 6: Perception of households on the price of major food items in the past seven days before the survey**

	Round 1	Round 2	Round 3
<b>Price of teff</b>			
Increased	85.06	71.29	87.68
Decreased	0.56	0.89	2.12
No change	4.91	14.21	4.24
Don't know	9.48	13.60	5.96
<b>Price of maize</b>			
Increased	63.49	48.61	74.25
Decreased	0.78	1.34	2.17
No change	7.53	17.17	5.02
Do not know	28.21	32.89	18.56
<b>Price of onion</b>			
Increased	95.93	56.08	44.82
Decreased	1.90	31.27	36.34
No change	1.06	9.64	14.33
Do not know	1.11	3.01	4.52
<b>Price of tomato</b>			
Increased	93.98	73.69	45.60
Decreased	1.34	9.20	35.95
No change	2.45	10.14	13.66
Do not know	2.23	6.97	4.79

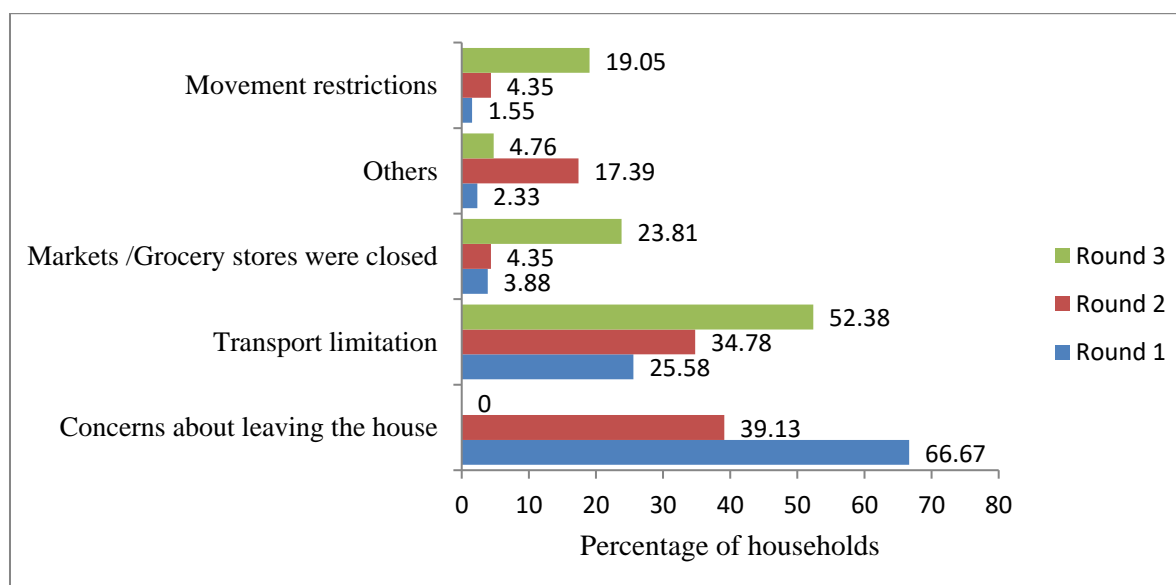
Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

Although households perceived that the price of major food items had increased, they did not experience a time where they could not access grocery stores or markets in the last seven days before the time of the interview. Table 7 shows that only less than 2% of households had difficulty reaching out to stores or markets during the second and third rounds of the survey. In the first round of the survey, about 7% of households reported they were not able to visit stores or markets during the last 7 days before the interview. One of the main reasons for the inaccessibility of grocery stores or markets was concerns about leaving the house due to the outbreak (Figure 6). In the last round of the survey, movement restrictions were found to be the main source of grocery stores or markets inaccessibility. Despite price rises, market access by households has generally improved since the first round of the survey.

**Table 7: Household experience of not accessing grocery stores or markets in the last seven days before the survey**

Inaccessibility of grocery stores/markets	Round 1	Round 2	Round 3
Yes	7.19	1.28	1.17
No	92.14	98.49	98.66
Don't know	0.67	0.22	0.17

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020 and Round 3: March 2021 to April 2021.



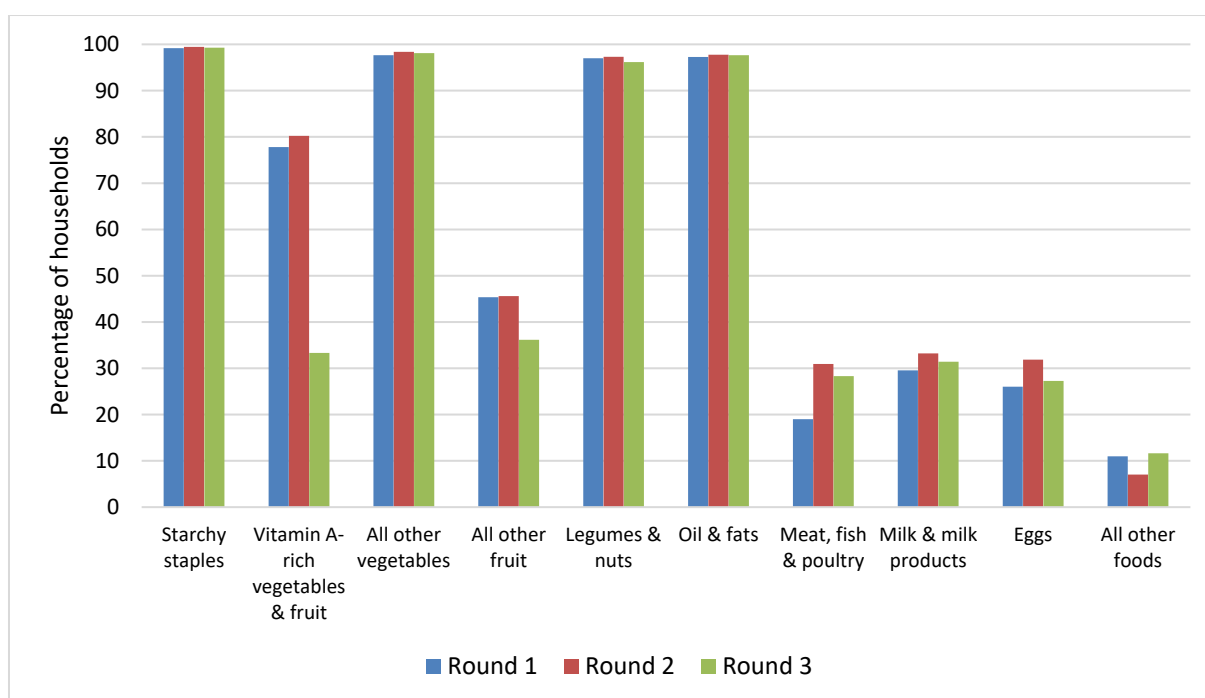
**Figure 6: Reasons for not accessing markets by rounds of surveys**

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

#### 4.3.2 Food consumption and security

Ethiopia is a developing country and has been experiencing food insecurity problems. Following recent economic growth, food security improved significantly. However, countries like Ethiopia may lose hard-earned gains if a strong shock hits the economy. The COVID-19 pandemic is a global shock that has challenged food security and beyond for most countries of the world.

To understand food consumption diversity and security of households, we asked households whether they have consumed certain food groups in the past seven days before the date of the interview. The selected food groups include starchy staples, vitamin A-rich vegetables and fruit, all other vegetables, all other fruits, legumes and nuts, oils and fats, meat/fish/poultry, milk and milk products, eggs, and other foods. Figure 7 indicates that almost all households consumed starchy food, oil and fats, other vegetables and legumes and nuts in the last seven days before the survey. The consumption of vitamin A-rich vegetables and other fruit declined in the last survey round, whereas the proportion of households that consumed meat, fish, and poultry increased in rounds 2 and 3. Overall, although consumption diversity is relatively stable across survey rounds and food groups, the results do not have any quantitative information to show the variation in the amounts of consumption. Abate et al. (2020) found similar results for Addis Ababa, that household consumption diversity was not affected during the pandemic.



**Figure 7: Consumption of major food groups in the last seven days before the survey by rounds**

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021. The Figure reports the percentage of households that have replied yes for the consumption of the food groups.

Table 8 presents the per capita weekly real food consumption expenditures in the past seven days and the per capita monthly real food consumption expenditures in the last 30 days before the date of interviews. As shown in the table, the per capita weekly expenditure decreased from about 119 Birr in round 1 to 113 Birr in round 2. During round 3, we observe a moderate rise in per capita weekly food expenditures. However, the monthly food consumption expenditure shows a persistent fall in rounds of surveys. It has declined from 647 Birrs during round 1 to 564 birr and 544 Birrs during rounds 2 and 3, respectively. The per capita monthly food consumption expenditure declined by more than 16% from round 1 to round 3. In real terms, this can be considered a significant fall in food consumption expenditure over the course of the pandemic period.

**Table 8: Real food consumption expenditure in Ethiopian Birr (ETB) (34 ETB=1 US\$ (R1), 36.5 ETB=1 US\$ (R2), 41 ETB=1 US\$ (R3),**

Survey round	Weekly food expenditure	Monthly food expenditure	N
Round 1	119 (3.5 USD)	647 (19 USD)	1786 (52.5 USD)
Round 2	113 (3 USD)	564 (15.4 UDS)	1782 (48.8 USD)
Round 3	118 (2.8 USD)	544 (13 USD)	1761 (42.4 USD)

Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021. National food and non-alcoholic beverage CPI of relevant months were used. CPI Source: Central Statistics Agency, Country, and Regional Level Consumer Price Indices (CPI) Various Month Issues (<https://www.statsethiopia.gov.et/our-survey-reports/>). CPI (May 2020 =100).

Table 9 shows whether anyone in a household borrowed food or bought it on credit; stopped eating certain kinds of food; limited portion size or reduced meals; or consumed less expensive food of the same type since March 2020 (after the first COVID-19 case was confirmed). According to the results, during the first month (after the first COVID-19 case was confirmed), 65% of households stopped eating certain kinds of food; 67% consumed less expensive food of the same type; 53% limited portion size or reduced meals and 38% borrowed food or bought it on credit. In round 2, about 39% of households stopped eating certain kinds of food; 63% consumed less expensive food of the same type; 39% limited portion size or reduced meals and 38% borrowed food or bought it on credit. Similarly, 67% of

households have stopped eating certain kinds of food; 67% consumed less expensive food of the same type; 54% limited portion size or reduced meals, and 41% borrowed food or bought it on credit in round 3. Generally, food insecurity experiences in round 2 seem to be lower than in rounds 1 and 3. Other studies in the country also found comparable levels of food insecurity experienced during the pandemic. For example, between survey periods of April 22 and May 13, 2020, The World Bank found that about 23% of households had run out of food; 21% of adults went hungry but did not eat and 14% of adults went without eating for a whole day in the last month before the date of the interview (Wieser et al., 2020a). The problem of food insecurity persisted in the latter rounds of the Bank's survey (Wieser et al., 2020c; 2020e). Similarly, Harris et al. (2020) studied the effect of COVID-19 on poor urban households between April 2, 2020, and March 13, 2021 (using four rounds of surveys) for 10 cities in Ethiopia. Their results show that, compared to the pre-pandemic level, the proportion of households consuming three meals a day significantly declined, and households practiced "eating less preferred foods; reducing the number of meals per day; avoiding or stopping buying expensive foods" to cope with food insecurity or unaffordability. In a general context, a national SAM-based simulation indicated that real consumption expenditure could be between 4.6 and 12% lower and vulnerable households are likely to be affected (Beyene et al., 2020).

**Table 9: Food insecurity experience since the COVID-19 outbreak by rounds of survey**

Food insecurity experience	Percent response for "Yes"		
	Round 1	Round 2	Round 3
Borrowed food or bought it on credit	38.38	38.82	41.37
Stopped eating certain kinds of food	64.84	39.07	66.72
Limited portion size or reduced meals	52.63	39.03	53.85
Consumed less expensive food of the same type	67.26	63.25	67.23

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

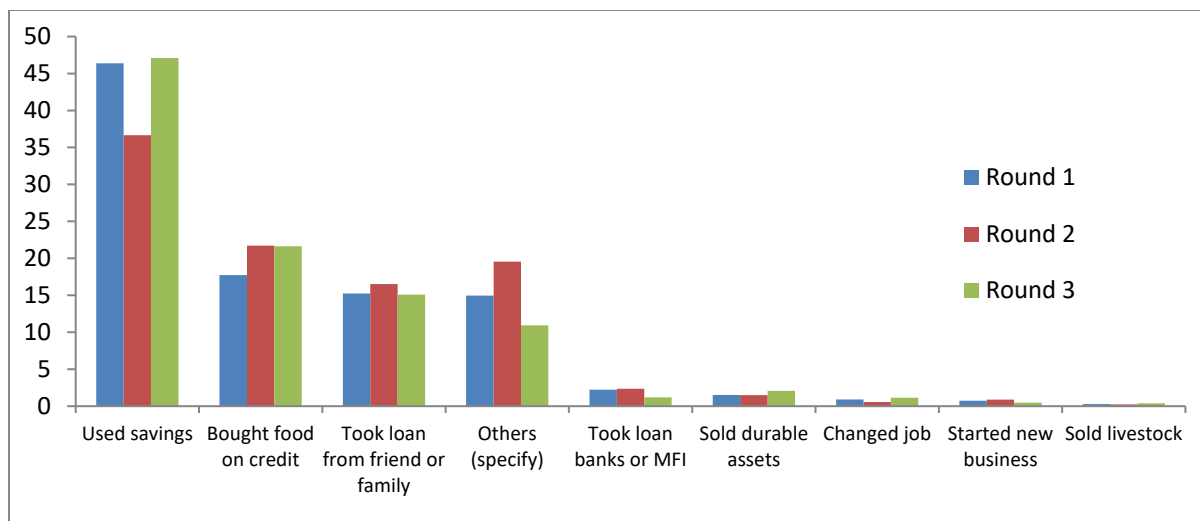
#### 4.4 Households' coping strategies and policy responses

The prevalence of the pandemic and related containment measures challenged sustaining employment and securing income sources. This entails the need for some form of coping strategies to be followed by the households, and the government to look for policy responses to mitigate the adverse effects of the pandemic, particularly for the vulnerable households.

##### 4.4.1 Households' coping strategies

We have considered some coping strategies that could be followed by the households to mitigate the effects of the pandemic. These include the household's own coping strategies, use of social support systems, and other coping strategies.

Figure 8 reports the use of various strategies by households to cope with the effects of COVID-19. The figure reveals that across rounds of surveys, the use of savings, taking loans, and buying food on credit were the main forms of household coping strategies. The use of savings was found to be the main form of coping strategy. About 46%, 37%, and 47% of households reported that they had used savings to cope with the adverse effects of COVID-19 in each round of surveys, respectively. A similar survey report by The World Bank shows that relying on savings was the most common coping strategy (Wieser et al., 2020a; 2020b). Abate et al., (2020) also showed that, for survey periods of May and June 2020, "more than 75% of households reported to have used their savings" in Addis Ababa.



**Figure 8: Coping strategies followed by households to reduce adverse effects of COVID-19.**

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

In addition, we asked about the use of other social support systems (other than social safety nets programs provided by the government) in each round of surveys. According to Table 10, many households reported that they were not using a social support system. For households using social support systems, support from family or relatives and neighborhood groups (Edir/Equb) were the main forms of the support system. Edir is an association established among neighbors to raise funds that will be used during emergencies while Equb is a traditional saving established by a group of people to provide substantial rotating funding for members. The highest use of support systems was during the first round of interviews, where 32% of the households were using one form of support system. The use of a social support system declined to 20% and 26% during the second and the third interviews, respectively. In general, assistance from the government, NGOs, or religious institutions was reported to be one form of coping mechanism for the adverse effects of the pandemic in Ethiopia (Wieser et al., 2020a; Harris et al., 2020).

**Table 10: Use of social support systems in each round of surveys**

Social support system	Round 1	Round 2	Round 3
Family/relatives	16.22	11.74	21.04
Neighborhood groups (e.g., Edir, Equb)	7.52	4.15	1.47
Faith-based organizations/church	3.17	1.64	1.03
Employer	1.02	0.16	0
NGOs	3.33	1.97	2.28
Others	0.32	0.05	0.27
None	68.42	80.29	73.9

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020, and Round 3: March 2021 to April 2021.

In times of shocks such as COVID-19, social support systems may be jeopardized, as most households could be affected in one or another way. This means that the help a household could receive from another household or individual could be threatened. We considered this possibility and asked households the number of individuals they could ask for financial help in each round of surveys. As shown in Table 11, the number of people a household could ask for financial help is predominantly 0 in all rounds of surveys. In the first interview, about 49% of the households replied that they have no people they could ask for financial help. This figure rose to 57% and 53% in the second and third rounds

of surveys. The result may be an indicator of how the pandemic and other problems (such as political instability and inflation) are challenging every household.

**Table 11: Number of people a household could ask for financial help by round of surveys**

Number of people	Round 1	Round 2	Round 3
0	48.72	57.3	53.07
1	21.01	18.45	21.74
2	18.55	14.27	16.05
3	6.7	5.13	5.35
4	2.4	1.9	1.67
5 or more	2.63	2.80	3.14

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020 and Round 3: March 2021 to April 2021.

#### 4.4.2 Policy responses

Government can help vulnerable households to cope with the effects of the pandemic in various ways. Government support systems are common forms to ensure food security in Ethiopia – in both urban and rural areas. We considered the types of government support/social safety net programs a household could receive in each round of surveys. Table 12 reveals that most respondents did not receive any form of support from the government in all rounds of surveys. However, the percentage of responses was lower in round 1 than in rounds 2 and 3, indicating that during the early periods of the pandemic a high percentage of households received some form of support from the government. Some studies found that assistance from the government, NGOs, or religious institutions were common forms of coping mechanisms for the adverse effects of the pandemic in Ethiopia (Abate et al., 2020; Harris et al., 2020; Wieser et al., 2020a).

**Table 12: Support from the government/social safety net after the pandemic**

Types of support	Round 1	Round 2	Round 3
Yes, cash	22.23	13.40	18.84
Yes, in-kind food	10.52	5.26	9.37
Yes, in-kind items	6.01	3.08	0.96
No	61.24	78.26	70.82

Note: Round 1: May 2020 to June 2020; Round 2: August 2020 to September 2020 and Round 3: March 2021 to April 2021.

Further, we have assessed the possible interaction between the use of social and government support systems. One may argue that, for example, both forms of support systems may be directed towards the same most vulnerable households or each of the support systems may target households that may be overlooked by the other support system. Table 13 shows the interaction between government and social support systems that have been adopted to mitigate the effects of the pandemic. According to Table 13, it indicates that government support seems to be high when social support systems are low/absent. For example, during round 1, 41% of the households received both government and social support; 59% of the households received only government support, and 23% received only social support. During rounds 2 and 3, the proportion of the households that have received government support when there is no social support increased to 76% and 70%, respectively.

**Table 13: The interaction and relative importance of government and social support system (% of households supported)**

Government support						
Social support systems	Round 1		Round 2		Round 3	
	Yes	No	Yes	No	Yes	No



Yes	41	23	24	17	30	24
No	59	77	76	83	70	76

#### 4.5 Conclusions

In this chapter, we examined the effect of the pandemic on household income and job loss as well as food security status in urban sample households located in three regions of Ethiopia. This study was based on three rounds of telephone interviews between May 2020 and April 2021. The descriptive analysis of the survey suggests that although the pandemic significantly increases job losses and decreases household income, particularly in the first two rounds of surveys, its impact on household consumption and food availability was not greatly affected.

The percentage of employment share had declined across all types of employment. Overall, 44% of households across the survey rounds reported that they faced some form of employment challenges (e.g., layoffs) although the most precipitous fall in employment happened in self-employment. Consequently, many of the respondents reported a decrease in income/wage during round 1. Additionally, although many households reported a perceived increase in the price of major food items, food availability was not significantly affected throughout the survey period. Average monthly food consumption expenditure per capita has slightly declined since the beginning of the pandemic and a large share of households experienced some form of food insecurity (in terms of stopping eating certain kinds of food, consuming less expensive food of the same type, and limiting portion size or reducing meals). Nevertheless, households' consumption diversity largely remained stable across survey rounds and food groups. We cannot compare these figures to pre-pandemic periods, but they appear reasonable for the Ethiopian context. Following the adverse effects, households employed various coping strategies such as the use of savings, taking loans, and buying food on credit. In addition, about 40% of households in the first-round survey and about a quarter of households in the second and third rounds of surveys received some form of support from the government.

Generally, the effect of the COVID-19 pandemic on urban households of Ethiopia appeared to be less severe. Households' coping strategies and government pandemic policies (e.g., employee layoff prohibition, in cash and in-kind support of government) insulated households from severing the negative impact of the COVID-19 pandemic. Relatively, the negative effects of the pandemic were stronger in the first and third rounds of surveys. In the first round of the survey, there was high uncertainty, transport challenges, movement restrictions, and panicky reactions from firms. Also, the ongoing political instability in the country has significantly affected food and nutrition security, especially in the latest round.

## 5 The COVID-19 pandemic in Ghana

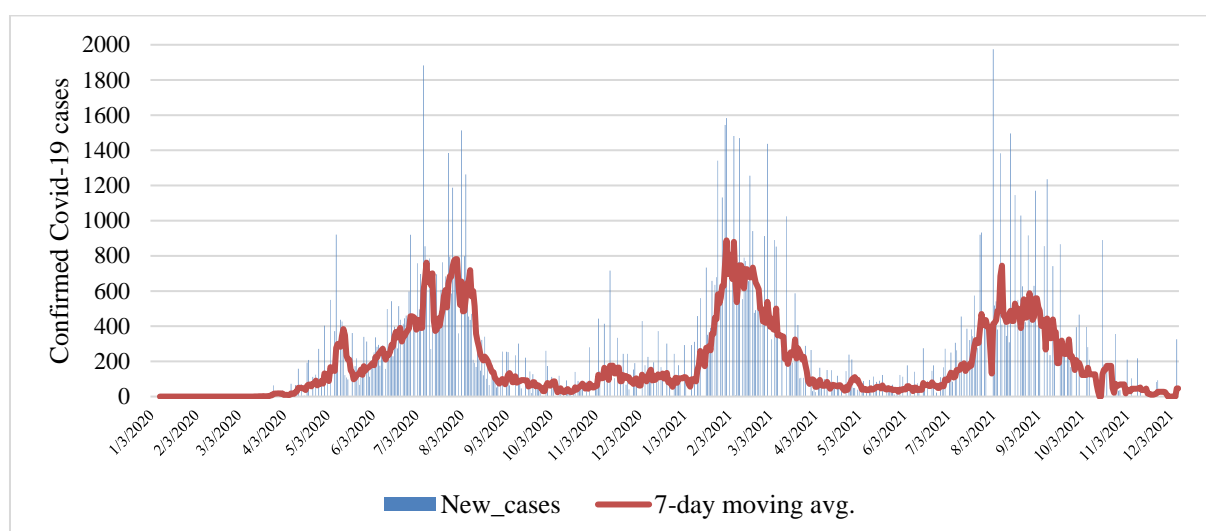
After two years since the outbreak of the COVID-19 pandemic, significant progress has been made on all fronts of human ingenuity and endeavor to curb the impact of the virus. As the world evaluates the impact of the pandemic on different facets of society, what is certain is that the socioeconomic and health impact is dire (Josephson et al., 2021; Muggenthaler et al., 2021; OECD, 2021; Poudel et al., 2021). The full extent of the impact on economic activities at both the micro and macro levels will engage researchers and policymakers for many years to come.

One of the major concerns during the onset of the pandemic was the impact on developing countries, especially the poor and vulnerable (Loayza and Pennings, 2020; UNECA, 2020). The concern for most Sub-Saharan Africa countries, was the lack of institutional and fiscal capacity to manage the pandemic. Poor public health systems, low investment in health infrastructure, low patient-to health worker ratios, high incidence of other infectious diseases, and low income per capita are some of the issues that already affect the continent (WHO, 2018).

Ghana, like other African countries, has its fair share of the constraints in the health system (Ministry of Health, 2020a). After the World Health Organization (WHO) declared the coronavirus as a Public Health Emergency of International Concern on January 30, 2020 (WHO, 2020a), Ghana's Ministry of

Health (MoH) constituted its COVID-19 National Technical Coordinating Committee (NTCC). This committee was established to spearhead and coordinate the implementation of all COVID-19 interventions (MoH, 2020b). The first official cases of COVID-19 were reported in Ghana on March 12, 2020 (MoH, 2020c). These recorded cases kicked into action several interventions and measures by the government of Ghana. The government revised its economic and fiscal policies and programs for the fiscal year 2020 in response to the pandemic. During the year 2020, the Ministry of Finance (MoF) revised its growth rates from 6.8% to 0.9% of GDP, taking cognizance of the anticipated drop in revenues and increases in COVID-19 related expenditure (MoF, 2020a). The ministry ended the year with a 0.4% growth rate for 2020 (MoF, 2021a).

The Government of Ghana implemented several measures. These measures included: the closure of land, sea, and air borders at midnight, March 22, 2020; restrictions on the movement of people, particularly the partial lockdown of many parts of Greater Accra and Greater Kumasi metropolitan areas and neighboring districts on March 30, 2020; an increase in public education and sensitization on good hygiene, and the introduction of public health guidelines. Within this period, the government introduced Executive Instruments (EIs) to regulate the movement of people and the closure of businesses and government institutions (The Presidency, March 2020; The Presidency, April 2020a). At the peak of the pandemic, there was a weekly, national, and presidential broadcast to update citizens on measures put in place to manage the outbreak. As of July 2021, the President of Ghana has delivered 26 COVID-19 update speeches (The Presidency, July 2021). Figure 9 and Table 14 present COVID-19 cases and the government's responses and intervention.



**Figure 9: COVID-19 new case count from January 2020-December 2021 in Ghana.**

Source: Author's construction based on data from the MoH/GHS (2021) and WHO (2021)

**Table 14: Key government interventions and responses during the COVID-19 pandemic**

Date	Intervention/response	Coverage
03/02/2020	Formation of COVID-19 National Technical Coordinating Committee (NTCC)	National
12/03/2020	First COVID-19 cases reported	National
16/03/2020	Social restrictions were imposed. Ban on public gatherings and closure of all schools, universities, and churches but private burials allowed (max. allowed is 25 people)	National
16/03/2020	Social restrictions were imposed but markets were exempted from closure. Allowed to observe social distancing and hygiene protocols	National
21/03/2020	Passage of the Imposition of Restrictions Act, 2020 (Act 1012)	National
23/03/2020	Closure of land, sea and air borders	
23/03/2020	Closure of all markets in the Accra Metropolitan area for fumigation	Accra Metropolitan Assembly (AMA)

03/2020-04/2020	First phase of fumigation and disinfection of markets	National
30/03/2020	Partial lockdowns in Accra and Kumasi and neighboring cities (for 2 weeks)	Greater Accra, Greater Kumasi, and contiguous districts
03/2020	Free water and electricity for April, May June	National
13/04/2020	Extension of partial lockdown in Accra and Kumasi and neighboring cities (one week)	Greater Accra, Greater Kumasi, and contiguous districts
12/04/2020	Social restrictions imposition extended	National
19/05/2020	Launch of Corona Virus Alleviation Programme - Business Support Scheme (CAP-BuSS)-GHS 600 million to be disbursed through the National Board for Small Scale Industries (NBSSI), Business and Trade Associations, and selected Commercial and Rural Banks	National
05/06/2020	Opening of places of worship (churches and mosques) Max 100 people and gathering last for 1 hour	National
15/06/2020	Gradual opening of academic institutions (universities, final year students in senior high school)	National
19/07/2020	Launch of the second phase of fumigation and disinfection of markets	National
23/07/2020	Revision of 2020 budget statement and economic policy	National
07/2020	Extension of free water, and electricity for lifeline customers	National
01/09/2020	Open international airport	National
18/11/2020	Launch of Ghana CARES (Obaatan pa) program-provision of funding for SMEs in the short to long term	National
24/02/2021	COVAX vaccines delivered	National
02/03/2021	Vaccination program starts	National

Source: Author's compilation based on different Presidential COVID-19 speeches and Government of Ghana budget statements for 2020, 2021, and 2022. Speeches - The Presidency, Republic of Ghana

Critical in the discussions surrounding the measures put in place was the availability of essential goods and services, especially access to and availability of food. Initial information about the management of the virus was to improve hygiene and sanitation (WHO, April 2020b; WHO and UNICEF, 2020). Therefore, sanitation and hygiene in marketplaces were among the first issues targeted by government intervention (Asante and Mills, 2020). Markets were closed for fumigation and cleaning nationwide by various local government authorities (Asante and Mills, 2020; The Presidency, March 2020). Also, linked to the cleaning of markets and the partial lockdown of Greater Accra, Kumasi metropolises, and neighboring districts, was the issue of actors in the food system relying on the running of markets for their daily economic activities.

How people, who rely on daily activities in the market, would earn a living (local market economy), was extensively debated in the media. Questions like, "should people die of hunger or COVID-19?" were hotly debated. The second issue of major concern was the sudden hike in food prices due to panic purchases and the restriction on movement of people and goods between cities. This led to high food inflation, especially for fruits and vegetables (GSS, 2020a; 2021a). However, the food sector was soon considered an essential service, and supply chains were reactivated to allow the movement of agricultural produce across the country (Asante and Mills, 2020). The food and nutrition security literature show that as food prices increase and household incomes fall, dietary diversity and diet quality decline, leading to food insecurity (Sibhatu, et al., 2015; Martin-Prevel, et al., 2012). These issues contributed to the lifting of the lockdown in these two big cities after three weeks of imposition on April 20, 2020 (The Presidency, April 2020b).

The subject of securing peoples' livelihoods was not only restricted to those who rely on the local market economy. The broader conversation was on how households coped with the slowdown in economic activities which lead to the loss of many jobs. Although the government ensured that no public sector workers lost their job, many in the private sector were laid off without any meaningful

compensation. Specifically, we examine household dietary diversity score (HDDS), household food expenditure per capita, food expenditure share and employment status of households in low-income urban areas in Ghana amid the COVID-19 pandemic. Furthermore, we compare the outcomes of households in greater Accra and greater Kumasi with households from Tamale, that did not experience any form of lockdown. Ghana was highlighted as one of the success stories on the African continent and took several pragmatic steps to deal with the pandemic (Sibiri et al., 2021; Taylor and Berger, 2020).

### 5.1 Government's intervention and policy response to COVID-19

As households are struck by major covariate shocks like a pandemic, government must come to mitigate the plight of its citizens, especially the poor and vulnerable. The income and health shocks, especially in low-income households that characteristically do not have any form of insurance (Janzen and Carter, 2019; Atake, 2018), have a direct consequence on food and nutrition security. Social protection programs, such as unemployment benefits to cushion households where members have lost their jobs, are common in developed countries (Asenjo and Pignatti, 2019; Vodopivec, 2004). But lack of institutional and financial capacity makes it difficult to support all households in such dire situations in Ghana. Coupled with the lack of adequate data on household members who lost their jobs, targeting the poor and vulnerable was difficult in the country. Therefore, the government resorted to inefficient measures to support the poor and vulnerable citizens. For example, the government absorbed the cost of water and electricity to all households below a certain minimum consumption or usage threshold. From April to June 2020 and then July to September 2020, the government absorbed all the costs of water. Also, from April to June 2020, households that were below the "lifeline threshold" enjoyed free electricity while households above the threshold enjoyed a 50% rebate based on their consumption in March 2020 (MoF, 2020b). The free electricity was extended in July 2020 for 6 months until March 2021, for lifeline customers (MoF, 2020b). This approach was not effective in targeting the poor because most poor areas and households did not have access to public pipe-borne water. Also, poorer households consumed less electricity and thus the government absorbed less cost in absolute terms (Berkouwer et al., 2021).

Notwithstanding the lack of a comprehensive social protection program, Ghana has the Livelihood Empowerment Against Poverty (LEAP) program which is the flagship cash transfer social protection program to provide cash to eligible extremely poor and vulnerable households (MGCSP, n.d.). The LEAP program used different innovative ways to reach beneficiaries amidst the restriction on movement and social distancing. The government increased the transfer amounts and expanded the number of existing LEAP beneficiaries in 2020. The expanded group of beneficiaries included: homeless people, head porters, persons in which camps and persons with disability (UNICEF, 2021). Government in collaboration with UNICEF, World Bank and other partners provided "extraordinary payments" to over 332, 000 households which translates into about 1.45 million people in 2020. This intervention was a major boost to the food and nutrition security status of poor and vulnerable households (UNICEF, 2021).

Government, mindful of the risk of food and nutrition insecurity, implemented measures to directly improve the food availability situation in the country. Government interventions can be classified into immediate or short-term and medium-term. In the short term, government provided both hot meals and dry foods to vulnerable people in Greater Accra, Greater Kumasi, and neighboring towns for three weeks while these cities were under partial lockdown. The government, through the Ministry of Gender, Children and Social Protection (MGCSP), partnered with faith-based organizations (churches, mosques) and community groups to distribute the items, because these organizations were in a better position to identify the needy in their communities (MoF, April 2020c). As captured in the 2021 budget statement and economic policy, about 2.7 million vulnerable persons were provided with cooked meals while about 470,000 families received dry food packages (e.g., rice, gari, tomato paste, cooking oil, beans, sardines, and eggs). The cost to the government for this intervention was about GHS54.3 million (MoF, 2021b; MoF, April 2020c).

In the short to medium term, the government's objective was to ensure food availability. This effort was spearheaded by the Ministry of Food and Agriculture (MoFA). The Ministry developed the Agricultural Plan in Response to COVID-19 (June 2020-December 2021). The Plan was to mitigate the effects of the virus on the agricultural sector, secure jobs and improve food supply chains in the short to medium term (MoFA, 2020). This was to be achieved through the scaling up of the government flagship programs; planting for food and jobs (PFJ), rearing for food and jobs (RFJ) and improving food distribution and marketing systems. Government's priority was to ensure that the farming season was not affected by the shortage of inputs such as fertilizer (MoFA, 2020).

Apart from Greater Accra and Greater Kumasi, where markets were closed for a few days, other parts of the country did not have any such arrangements. After the closure of borders, the partial lockdown in Accra and Kumasi, and the resulting initial panic buying of food, local assemblies devised special arrangements to keep the markets open as a reassuring gesture to citizens to not panic. Environmental and health officers, working closely with market leaders (market queens), ensured COVID-19 protocols such as the wearing of face masks, frequent hand washing, and social distancing were complied with. Also, they drew schedules to alternate the vendors who come to the market at any time to reduce congestion and promote social distancing. Markets, where compliance was weak, were closed (IFPRI, 2020). Further, new satellite markets were opened in communities to ensure that customers did not converge on the major markets (Agbey, 2020; Ansah, 2020). These arrangements in the various markets did not only reassure consumers but also the initial hike in prices of food items began to reduce, although the prices were relatively higher compared to pre-COVID-19 levels. The arrangements facilitated food availability, relatively better accessibility, utilization, and stability at the macro level. How individual households cope in terms of their food and nutrition security under the pandemic will vary among households.

## 5.2 Materials and methods

### 5.2.1 Study area

The study sites for the data collection are Accra (the capital city of Ghana), Kumasi, and Tamale metropolises. According to the 2020 Population and Housing Census, Accra, Kumasi, and Tamale are the biggest cities, based on their population size, in the southern, middle, and northern parts of Ghana respectively. They are also the capitals of the regions they are located in. These cities have some of the biggest food markets in Ghana and serve as food hubs for redistribution to other satellite markets in other parts of the regions. The three different study sites provide a national picture of the food security status of households amidst the COVID-19 pandemic from different geographic and socio-economic perspectives.

### 5.2.2 Research design and sampling

A three-stage sampling technique was applied in sampling the households for the study. The first stage was purposive while the next two were randomizations. In the first stage, the three largest cities in the southern, middle, and northern parts of Ghana, based on the 2010 Population and Housing Census (PHC), were selected. The choice of these study sites was due to the presence of major food markets, the level of development and urbanization, food socialization behavior, socioeconomic and agroecological characteristics. Households were sampled from communities in the same metropolitan areas (sub-metros) where the major food markets were located.

The second stage of sampling was randomization at the level of Enumeration Area (EA). The EAs are the lowest geographical units demarcated by the Ghana Statistical Service (GSS) for national population census purposes. The GSS performed the randomization at the EA level. Based on our budget and geographical representation, the GSS randomly selected the total number of EAs we requested in the various study sites based on the 2010 Population and Housing Census (PHC).

The third and final stage of randomization is at the household level, within each EA sampled. Within each EA, data collectors did random walks to households. They started from the EA base, which is the major landmark within the EA, and moved in four opposite directions to sample households. Where

the houses were densely populated, we sampled after every 10<sup>th</sup> house. In Accra and Tamale, 18 households were sampled from each EA, while in Kumasi, 12 households from each were sampled. A total of 672 households were sampled from 44 EAs. Table 15 presents the distribution of sampled households.

**Table 15: Number of households sampled in round 1**

Region	City	Sub-metro/district	Number of EAs sampled	Number of households sampled
Greater Accra	Accra	Ashiedu-keteke	12	216
Ashanti	Kumasi	Manhyia	10	120
		Subin	10	120
Northern	Tamale	Tamale	12	216
			<b>44</b>	<b>672</b>

Source: Author's computation, 2020

### 5.2.3 Survey data and source

A household survey was conducted in all three cities to explore the issues of dietary diversity and food consumption behavior. Three rounds of data collection were done. An initial total of 672 households were interviewed (Table 15) across the study sites in round 1. COVID-19 occurred between rounds 1 and 2 of the survey. This had implications for food availability, accessibility, stability, and utilization due to the disruptions to the food supply system. For this study, the data used is from rounds 2 and 3 which were collected during the pandemic period. In Ghana, agriculture is still highly rain-fed. Therefore, the data collection was modeled after the agriculture production (planting) seasons (rainy and dry seasons). The first round of data collection was done between November-December 2019 (dry season). This is the harvest period of most staple foods in Ghana. The second round of data collection was conducted between June-July 2020 (rainy season). This is the main cropping season for most crops. The third round of data collection was conducted to see how household food security status and employment status had changed since round 2 (1 year before). Therefore, round 3 data collection occurred between July-August 2021.

The overall attrition level between round 1 and 3 is about 13.5% (Table 16). Less than 1% attrition was recorded in Tamale. The highest attrition level was recorded in Accra of about 24%. The reason for the high attrition level in Accra was because some of the EAs were dominated by migrants from the northern part of Ghana. Therefore, during the outbreak of the COVID-19 pandemic, some households returned to the northern part of Ghana. These households were mostly made-up of young females who migrated to South Ghana to find employment. The migration of people, especially young people, from the north to the south of Ghana in search of better economic opportunities is well documented (Awumbila and Ardayfio-Schandorf, 2008). They mostly settle in places in and around Old Fadama and Korle Dudor, and these places were part of our study areas in Accra. They also did not provide telephone numbers for follow-up telephone calls and therefore could not be traced for the follow-up survey. In this study, we use a balanced panel of only households that were present in rounds 2 and 3.

**Table 16: Household attrition levels between rounds of data collection**

Study sites	Round 1	Round 2	Round 3	Attrition level [round 1-3] (%)
Accra	216	175	164	24.1
Kumasi	240	218	203	15.4
Tamale	216	216	214	0.9
<b>Total</b>	<b>672</b>	<b>609</b>	<b>581</b>	<b>13.5</b>

Source: Author's computation, 2021

### 5.2.4 Variables and data analysis

Four key variables are considered in this study. These are the HDDS, household food expenditure per capita, the share of household expenditure on food and the share of unemployed adult household

members. HDDS is computed on the number of unique food groups consumed by the household over a 24-hour recall period. The score ranges from 0-12 because it is based on a total of 12 unique food groups. These are cereals and cereal products; roots and tubers; vegetables; fruits; meat, poultry and offal; eggs; fish and seafood; pulses, legumes and nuts; milk and milk products; oil and fats; sugar and honey; and miscellaneous (e.g., condiments, coffee, tea). A higher HDDS shows more dietary diversity and is positively correlated with high-quality protein and household income (Swindale and Bilinsky, 2006). Household expenditure on food is another indicator of food security (INDDEX project, 2018; Smith & Subandoro, 2007). The more households spend on food per capita the more likely they are to be food secure. Linked to household food expenditure per capita is the share of household expenditure on food, which is computed as household expenditure on food (actual and imputed) divided by total household expenditure. Households that spend a higher percentage of their household expenditure on food are poor and vulnerable (INDDEX project, 2018). The share of unemployed adult household members (dependency ratio), which increases the risk of food insecurity, is a determinant of household food security (Sisha, 2020; Belachew et al., 2012).

### 5.3 Results

#### 5.3.1 HDDS and food expenditure per capita of households

The results of HDDS, monthly food expenditure per capital and food expenditure share are presented in Table 17. HDDS overall improved for households between round 2 (7.5) and 3 (7.8) of the survey, and thus likely recovered from the pandemic related shock. The mean difference between the two rounds is statistically significant ( $p < 0.05$ ). However, the individual city analysis shows that the mean difference in HDDS for households in Kumasi and Tamale was not statistically significant. Households in Accra saw the highest increase in HDDS and this increase was statistically significant. Furthermore, most households consumed between 7 and 8 food groups (Figure 10), and this has been consistent throughout the survey. In terms of household expenditure, the overall monthly food expenditure per capita showed a statistically significant increase between round 2 and 3. This indicates that on average, each household member spent more on food consumption in round 3 compared to round 2. At the city level, the increase in household monthly food expenditure per capita for Tamale was statistically significant. However, the increase in household food expenditure in Accra and Kumasi was not statistically significant. Food expenditure share of households was about 50% and 44% in rounds 2 and 3 respectively ( $p < 0.05$ ). Households in Tamale had the least decline (4.3%) between rounds. Households who spend less than 50% of their total expenditure on food are considered to have low food insecurity (Smith & Subandoro, 2007). The results of the food expenditure per capita and food expenditure share show that, although food expenditure share declined between rounds, households spent more on food expenditure per capita. This observation can either be attributed to improved household income and/or a reduction in the prices of food products purchased. Furthermore, the combination of the food groups consumed equally varied across households and cities.

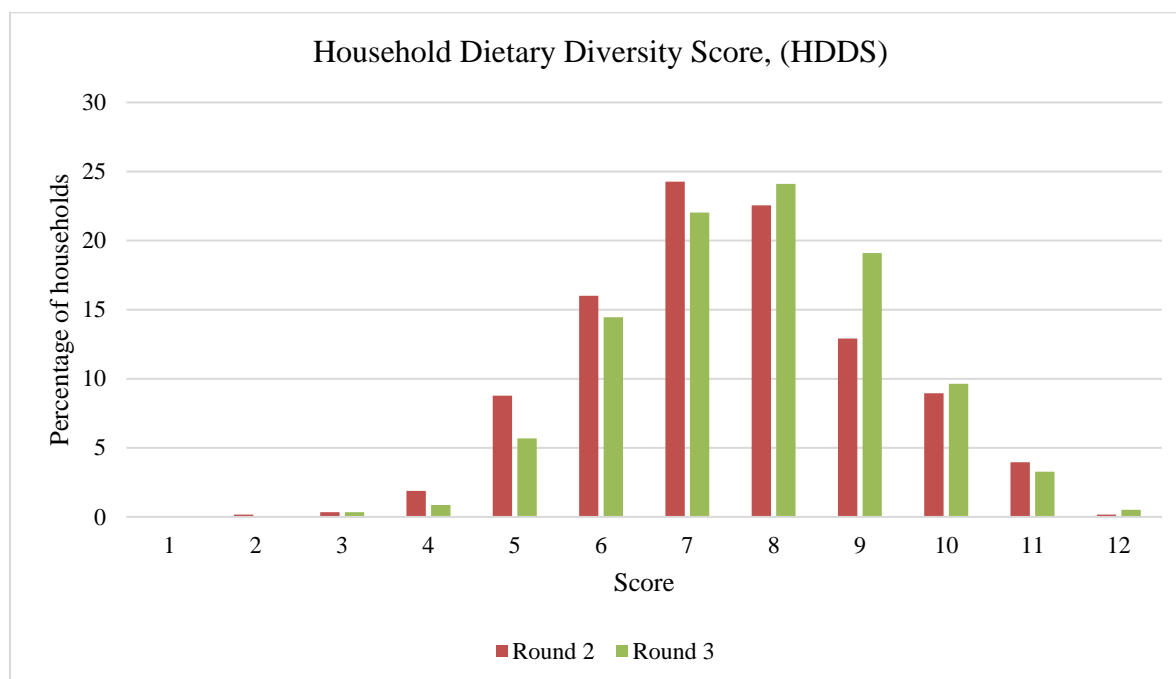
**Table 17: HDDS and food expenditure per capita by rounds and cities**

Cities	Mean scores		
	Round 2 (Jun/Jul 2020)	Round 3 (Jul/Aug 2021)	Mean diff. (3-2)
<b>HDDS</b>			
Accra metropolis	7.558	8.061	0.503**
Kumasi metropolis	7.619	7.856	0.238
Tamale metropolis	7.355	7.467	0.112
Overall (N = 581)	7.504	7.771	0.267**
<b>Monthly food exp./capita (GHS) 1 GHS=0.2USD</b>			
Accra metropolis	141.226	162.321	21.095
Kumasi metropolis	157.734	162.085	4.351
Tamale metropolis	70.298	89.753	19.455***

Overall (N = 574)	120.848	135.564	14.716**
<b>Food exp. share (%)</b>			
Accra metropolis	47.679	42.362	-5.317***
Kumasi metropolis	51.277	43.266	-8.010***
Tamale metropolis	49.304	44.941	-4.364**
Overall (N = 574)	49.517	43.622	-5.900***

<sup>1</sup>One-way ANOVA analysis of the means across rounds; food expenditure (GHS) reported in real values; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author's computation, 2021



**Figure 10: Household Dietary Diversity Score (HDDS) of sampled households.**

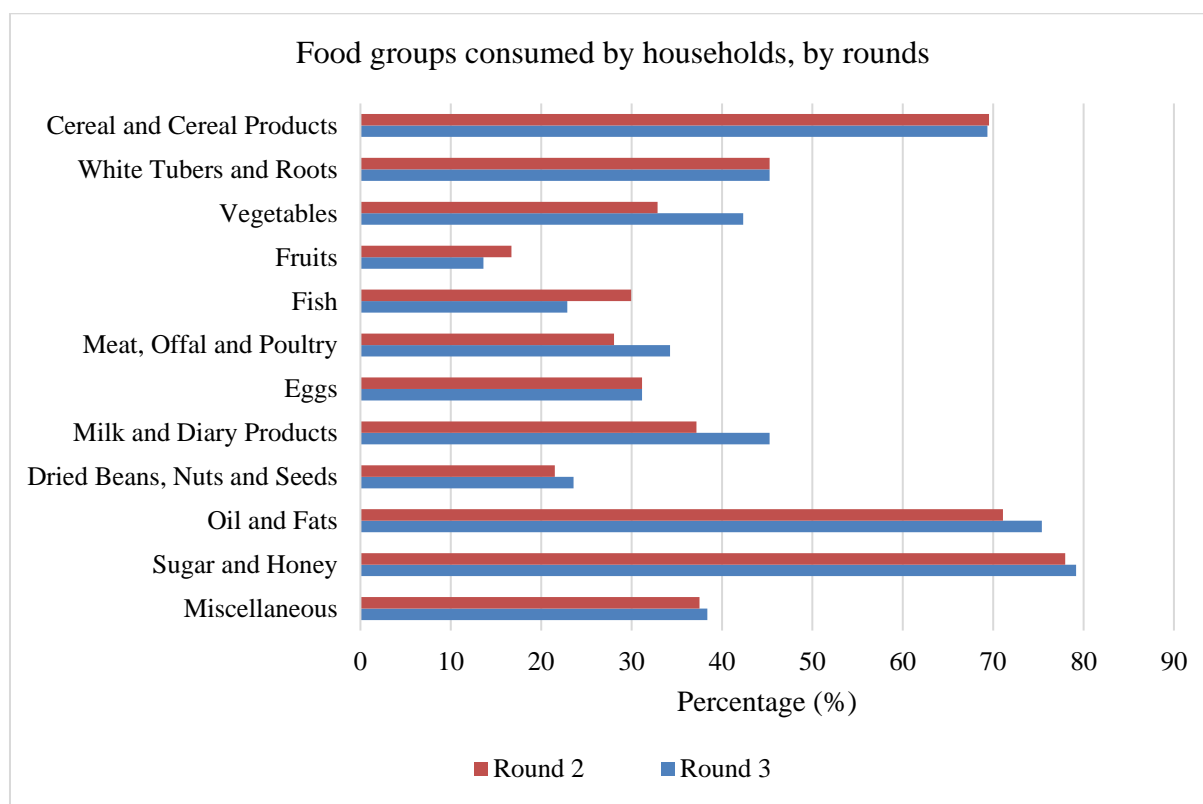
Source: Author's construction, 2021

Figure 11 presents the main food groups that constitute the diet consumed by households. Vegetables, meat, offal and poultry, and milk and dairy products saw significant increases in the diet composition of households in round 3. The food groups of cereal and cereal products, and white tubers and roots, which constitute the most common Ghanaian diets, remained fairly the same. Therefore, besides improved overall household dietary diversity, diet quality also improved between round 2 and 3. The notable increases in vegetables, meat, offal and poultry, and milk and dairy products may be linked to the hike in prices of these products and thus maybe a decline in their consumption by households during the time of the survey in round 2. Vegetable year-on-year inflation in May and June 2020 was 30.9 and 28.8% respectively. This shows the sharp increase in the prices of these products when the lockdown was announced. For instance, the GSS identified vegetable inflation as the main driver of the June 2020 food inflation (GSS, 2020b).

Alternatively, the increase in consumption of vegetables, meat, offal and poultry, and milk and dairy products in round 3 may be explained by the increase in advocacy about the consumption of balanced diets to boost the immune system against the COVID-19 diseases. It was commonplace to see in the media what indigenous green leafy vegetables, fruits, nuts, and pulses, individuals can add to diets to increase their nutritional value. For example, the President in his 9<sup>th</sup> COVID-19 update said "...we are told that the key vitamins that fortify our immune system are vitamins A, B6, C, and E. Fortunately, in Ghana, all of these can be found in many of our foods, such as oranges, kontomire, millet, cashew nuts, crabs, plantain, okro, dawadawa, brown rice and mushrooms..." (The Presidency, May 2020). Another



example is of the Ghana Education Service (GES) whose guidelines for the reopening of schools included for parents to feed their children with healthy food and ensure daily intake of fruits and vegetables rich in vitamin C (GES, 2021).



**Figure 11: Food groups consumed by households over the past 24 hours.**

Source: Author's construction, 2021

In summary, sampled households have relatively high HDDS, which is in line with other studies such as Christian et al., (2019) - [HDDS = 9.1 - 9.8 out of 12 food groups based on 7-day recall period] and Gyimah et al., (2021) - [MDD\_W = 4.4 out of 10 based on 24-hr recall]. Overall HDDS in round 2 is lower than in round 3. This may be partly attributed to the initial hike in food prices and disruption to the food supply chain when the initial government restrictions were started. Consumers bought more staple foods, which are mostly cereals, and roots and tubers, thus reducing their dietary diversity. The price hike of food commodities is evident from the national food inflation figures. Food inflation has been on a steady decline since 2020. For example, in June, July, and August 2020, year-on-year inflation was 13.8, 13.7, and 11.4% respectively, compared to 7.3, 9.5, and 10.9% for the same months in 2021 (GSS, 2021b). Over time, the easing of restrictions and allowing actors in the food system to operate as essential service providers partly reversed the initial apprehension by citizens. Also, households were able to plan better and cope with the changes over time.

### 5.3.2 Employment status of households

The 581 households sampled translates into about 2300 individual members across each round of the survey. From Table 18, household employment status was about 41.5 and 38.6% in round 2 and 3 respectively. Round 3 recorded the lowest proportion of household members employed. At the city level, there was a general decrease in the proportion of household members employed in round 3 compared to round 2. The recorded differences in the proportion of household members employed between rounds are not statistically significant.

**Table 18: Employment status of sampled households**

	Accra	Kumasi	Tamale	Total
Employment status (%)				

	44.04	42.30	39.72	41.52
Round 2	(554)	(688)	(1080)	(2322)
	42.80	39.39	35.90	38.59
Round 3	(542)	(683)	(1050)	(2275)

Note: sample size in parenthesis; no statistically significant difference across rounds

Source: Autor's computation, 2021

Further analysis of the employment status in round 3 shows that about 10% of household members were unemployed (Table 19). However, the majority (46%) of household members were either too young to work or were students. The remaining 5% were either too old, have a disability/health condition, or engaged in an apprenticeship or internship. This shows the high dependency ratio of the households sampled. The demographic dependency ratio (DDR) of sampled households is 0.62. This indicates that 0.6 dependent members [children (<15 years) and aged (65+ years)] depend on each household member within the productive age category (15-64 years). However, only 59% of adults in the productive age group are employed. Thus, the household dependency ratio will even be higher if computed based on working adults of the productive age group. At the city level analysis, Accra and Kumasi have a DDR of about 0.6 each while Tamale has a value of almost 1 (0.96). An indication of the high level of vulnerability of sampled households in Tamale.

Further, out of 224 unemployed adults, only 8.5% attribute their current unemployment status to the COVID-19 pandemic. This observation is unique to the survey areas because these communities within the city are relatively poor. Many household members are engaged in the informal sector. They are mostly self-employed (77.7%) with small businesses, engage in semi-skilled vocational and technical jobs, and have elementary occupations. So, they do not consider themselves as losing their jobs or being unemployed when economic activities slow down.

**Table 19: Employment indicators of sampled households in round 3**

	Accra	Kumasi	Tamale	Total
<i>Employment status of all household members (%)</i>				
Employed	42.80	39.39	35.90	38.59
Unemployed	10.15	6.59	11.81	9.85
Student/too young to work	43.73	48.02	45.81	45.98
Others	3.32	6.00	6.48	5.58
N	542	683	1050	2275
<i>Employment status of productive members (15-64 yrs) (%)</i>				
Employed	65.59	60.78	54.60	59.17
Unemployed	15.59	9.40	16.03	13.87
Student/too young to work	15.00	23.39	23.81	21.55
Others	3.82	6.42	5.56	5.41
N	340	436	630	1406
<i>Type of employment (%)</i>				
Government Sector	3.88	5.58	12.2	7.97
Parastatals	0.00	0.00	0.27	0.11
NGOs (local and International)	0.00	0.74	0.8	0.57
Private Sector (People who do not work for government)	21.12	17.1	6.63	13.67
Self Employed (People who work for themselves)	75	76.58	80.11	77.68
N	232	269	377	878
<i>Job loss of household members</i>				
Job loss due to COVID-19 (%)	9.09	22.22	3.23	8.48
N	55	45	124	224

Source: Autor's computation, 2021

The semi-skilled vocational and technical jobs, engaged in by most employed adults, translate into relatively low-income levels of household members (Table 20). The income levels of employed household members show that the majority (74%) of them earn less than GHS1,001.00 per month. Aside from the low-income generating jobs engaged in by employed household members, only 14.7%

of them have other sources of income. This increases the risk of the effect of a job loss on the household food security status.

**Table 20: Income level of employed household members**

	Accra	Kumasi	Tamale	Total
<i>Income levels per month (%)</i>				
Less than 500	27.59	29	41.91	34.17
501-1000	47.84	42.01	33.42	39.86
1001-1500	13.79	15.99	13.53	14.35
1501-2000	7.33	8.18	7.16	7.52
2001-2500	1.72	2.97	1.59	2.05
2501-3000	1.72	1.12	1.33	1.37
Greater than 3000	0	0.74	1.06	0.68
N	232	269	377	878
<i>Other sources of income (%)</i>				
Have other sources of income	16.38	10.04	16.98	14.69
N	232	269	377	878

Source: Autor's computation, 2021

#### 5.4 Conclusions

This study sought to provide descriptive evidence of the food and nutrition security status of households amidst the COVID-19 pandemic in low-income communities in selected cities in Ghana. We examined how household food consumption indicators have changed since the outbreak of the COVID-19 pandemic in the country. The cities of interest were Accra, Kumasi, and Tamale. The study presented a descriptive analysis of two rounds of data collected immediately after COVID-19 moment restrictions were lifted (round 2-July 2020) and a year after (round 3-July 2021). The surveys were conducted in the same season (rainy season) of the year. The results show an improvement in the food security variables. HDDS and food expenditure per capita increased while food expenditure share decreased in round 3. This indicates an improvement in the food security status and diet quality of households between the immediate period after movement restrictions were lifted and a year after. In sampled households in Accra, increases in HDDS were statistically significant but the increase in monthly food expenditure per capita was not. Although food expenditure increased in Tamale, the increase in HDDS was however not statistically significant. In Kumasi, increases in both HDDS and monthly food expenditure per capita were not statistically significant. The decline in food expenditure share in each city was statistically significant. In terms of food composition, there were increases in the consumption of vegetables, meat, offal, and poultry. This result may be explained by the initial sharp increases in the prices of these products and then as society normalized, prices were relatively more stable. Also, increased public education on the importance of consuming balanced diets, especially vegetables and fruits, to boost the immune system may have played a role.

The proportion of household members employed declined over the different rounds of the survey, but these changes are not statistically significant. Households in Tamale have the lowest proportion of employed household members and have the highest demographic dependency ratio. Thus, increasing the vulnerability of households, especially when only 17% of employed household members in Tamale have multiple sources of income. The non-significant decline in the proportion of employed household members is not surprising because of the high number of self-employed individuals running their own businesses and therefore do not consider themselves as losing their jobs (although business may be slow), and the high number of too young to work/students in the households. The finding of a non-significant decline in the proportion of employed household members is at variance with the findings of Schotte et al. (2021), who found that there was a statistically significant decline in the employment and earnings of households in Ghana due to COVID-19. It is critical to highlight that the findings are based on the three-week lockdown period in Accra and Kumasi. However, the gap in employment

between households sampled in control and treated (lockdown areas) districts had narrowed four months after the lockdown was lifted (Schotte et al., 2021).

The COVID-19 pandemic has affected households in low-income communities in cities in Ghana in multiple ways. The changes in HDDS, food expenditure per capita and food expenditure share among households varied across cities. Households in Accra have seen a statistically significant increase in HDDS while households in Tamale have seen statistically significant increases in food expenditure per capita. The dependency ratio of sampled households is very high. Less than 10% of currently unemployed household members attribute their job losses to the COVID-19 pandemic. The situation where many employed household members are engaged in low-income jobs, coupled with the high percentage of household members who are either too young to work or are students, put a greater strain on the financial and economic position of sampled households.

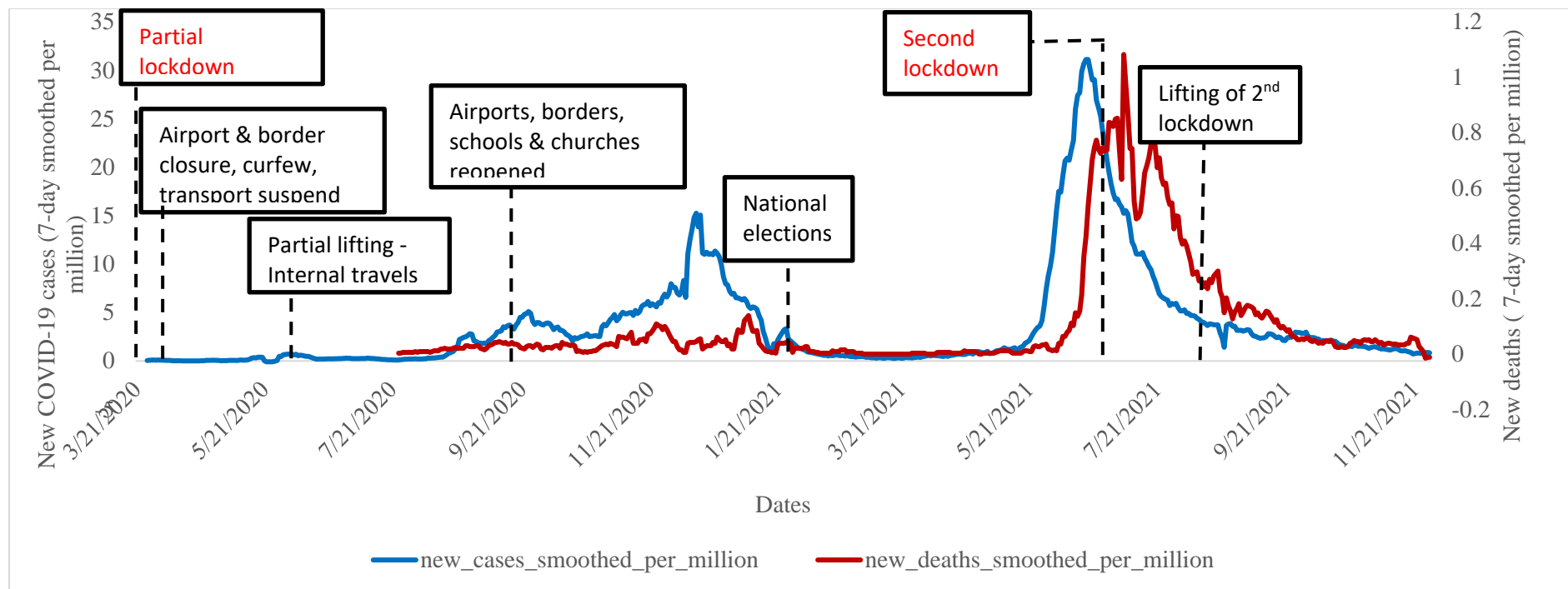
Based on these findings, it is critical for government to effectively stimulate economic growth to create opportunities for small business owners (self-employed), who are most employed household members, to revive their economic activities and livelihoods. Furthermore, the government policy of free hot meals for school pupils and free secondary education should be extended to cover more schools and students in private schools to reduce the economic burden on households during this COVID-19 pandemic period. Notwithstanding the findings of this study, further research is needed to establish the causal relationship between COVID-19, and food and nutrition security of low-income households in cities.

## 6 The COVID-19 pandemic in Uganda

Uganda's first case of the COVID-19 pandemic was reported on March 21, 2020, 10 days after the World Health Organization (WHO) announced the pandemic. The burden of the disease rose steadily in the initial period, with a total number of 44 confirmed cases by the end of March and the first 100 cases reported on May 6, 2020 (John Hopkins University, 2021; Olum and Bongomin, 2020). As of November 28, 2021, a cumulative number of 127,451 people had contracted the infection, translating into 2,705 total cases per million while 3,252 total deaths had been recorded (Johns Hopkins University, 2021).

While the majority of cases at the onset of the pandemic were in the central region (Kampala) and at key border points where testing was concentrated (JICA, 2020), the first death in the country was reported in eastern Uganda on July 23, 2020 by a health worker (Ministry of Health, 2020). Over time, the number of new cases was relatively stable (seven day smoothed average of below one new case per million ) until mid-August 2020, when the virus was rapidly transmitted (Figure 12). The increase in cases from August onwards was mainly due to the active presidential and parliamentary campaign activities, the reopening of schools, and social activities during the festive season. Low cases in the first quarter of 2021 could be partly attributed to weather factors since the hottest months in the country occur between January and April. Studies by Adekunle et al. (2020) and Meo et al. (2020) found an inverse relationship between temperature and COVID-19 cases in Africa.

Despite the roll-out of the vaccine against COVID-19 in March 2021, there was a resurgence in COVID-19 cases in May 2021, especially among young adults aged less than 40 years (Ministry of Health, 2021). The rapid increase in cases and deaths was caused by the highly transmittable Delta variant (Callaway, 2021), which was detected in 97% of the samples in the country (United Nations, 2021). Other reasons for the sharp rise in cases included: low uptake of vaccination in some districts, lack of adherence to preventive measures, and overcrowding, especially in schools (Ministry of Health, 2021), among others. Uganda experienced two severe waves of the pandemic with increased severity in the second wave, specifically between June and July 2021. Genderwise, most cases were registered in males as compared to females, especially those aged 20-49 years, while most deaths occurred in males aged between 40-79 years (the Republic of Uganda, 2021).



**Figure 12: Number of new confirmed COVID-19 cases and deaths (seven day smoothed per million people) in Uganda.**

Source: Adapted from John Hopkins University data.

## 6.1 Notable containment policies (i.e., nature of the lockdown)

The government implemented several containment measures, consisting of both health care and non-pharmaceutical interventions, to minimize the transmission of the virus in the country (JICA, 2021), with two significant lockdowns implemented between the waves. The first lockdown measures were announced on March 18, 2020, even before confirmation of the first case (Sarki et al., 2020). These measures included suspension of public gatherings such as weddings, churches, political rallies, and the closure of educational institutions. Additionally, traveling to and from high-risk countries was restricted, and mandatory quarantine for all travelers entering the country was instituted (Sarki et al., 2020).

After the confirmation of the first case, the Government of Uganda instituted stricter measures such as airport closures, suspension of tourism, and closure of both private and public transport. By the end of March 2020, the country was under home confinement with a dusk to dawn curfew (Matovu et al., 2021; Haider et al., 2020). During this period, other strategies such as risk communication were implemented. Furthermore, contact tracing was done at the community and district levels (Sarki et al., 2020). Massive testing was also conducted, especially for truck drivers at border points, given that truck drivers, food markets, and other essential services were allowed to operate. However, food market vendors were not allowed to travel back home. Residents were encouraged to follow standard operating procedures such as wearing masks in public, sanitation, and social distancing. It is estimated that at least a total of 33 containment measures were announced during the first lockdown period. Implementation of these stringent policies made Uganda to be ranked among countries with the strictest lockdown in the world (Mahmud and Riley, 2021; Haider et al., 2020), with a stringency index of 93.5 for the period between March 30 and May 5, 2020 (John Hopkins University, 2021). In fact, Uganda was ranked by the Lancet COVID-19 Commission as the best country in Africa in suppressing the pandemic (Sachs et al., 2020) and further labeled as a “*Role Model for Pandemic Containment in Africa*” (Sarki et al., 2020).

The second lockdown was implemented on June 18, 2021, after the intensity of COVID-19 cases rose to above 500 new cases per day and a positivity rate of about 17.5% (IMF, 2021). Most of the measures implemented in the second lockdown were similar to the first lockdown measures. However, the tourism industry was among the “fully functioning sectors”, not suspended for registered tourist vehicles (IMF, 2021). Furthermore, both international and local airports were not closed. Sectors categorized as “fully functioning” included medical services, agriculture, goods distribution, cargo transport, utilities, manufacturing, security, and industry (IMF, 2021). As much as the severity of the virus was more intense in the second wave, the second lockdown was less strict (stringency index of 87.04 in July). Upon partial lifting up of restrictions at the end of July, the government embarked on mass vaccination as the most effective strategy for virus prevention (targeting 49.6% of the population), and was on a quest for full reopening of the country and economic recovery (Ministry of Health, 2021).

## 6.2 Government policy measures to mitigate COVID-19 impacts on the food system

Food markets were authorized to continue operations, however, food sellers were to stay within the designated market places with the observance of a distance of two meters between sellers and buyers. Also, factories producing food and non-food items were allowed to continue operations provided that workers camped around factory premises and respected hygiene practices recommended by the Ministry of Health. Notably, there was no official restriction on the regional and domestic transportation of goods, and Ugandan borders remained open for trade (export of commodities and import of agricultural inputs), although the disruptions caused by the COVID-19 containment measures substantially increased transportation costs (FAO, 2020b).

Furthermore, government extension services were used to advise farmers to increase their immunity by diversifying their diets with fruits and vegetables. Additionally, the government encouraged Ugandans to grow and eat bio-fortified nutrient-dense crops such as vitamin A-rich, orange-fleshed, sweet potatoes (OSP) and iron/zinc-rich beans (FAO, 2020b).

Several social protection policy measures were adopted that directly benefited low-income households, although they were inadequate. For example, during the first lockdown, food (in particular maize flour, beans, sugar, and to a lesser extent powdered milk) was distributed to vulnerable groups such as informal workers and casual laborers in and around Kampala district (Isabirye and Musasizi, 2020). Likewise, in the June–July 2021 lockdown, the government opted for cash-for-work transfers of UGX 100,000 to a total of 500,000 vulnerable individuals (FAO, 2021). The government further ensured the population had access to essential utilities by requesting service providers to allow payments to be deferred for consumers who were not able to pay.

Broadly, the government deferred taxes and supported the most affected economic sectors to enable businesses to recover as well as restoring incomes and livelihoods (UNDP-Uganda, 2020). The Uganda Development Bank, Uganda Development Corporation, and Micro Finance Support Centre were all recapitalized to offer affordable credit. The Bank of Uganda alike provided support to the financial sector by reducing interest rates to 8%, decreasing the cost of borrowing while providing liquidity assistance and a moratorium on loan repayments (FAO, 2020b).

### 6.3 Food and nutrition security and employment during the COVID-19 pandemic

With the emergence of COVID-19 and the associated lockdowns, several studies on the effects of the pandemic and containment measures on employment, income, food systems, and poverty outcomes emerged mainly in developing countries (Mahmud and Riley, 2021; Nchanji and Lutomia, 2021; Nchanji et al., 2020; Trotter et al., 2020; Amare et al., 2021; Agamile, 2022; Kansime et al., 2021; Hirvonen et al., 2021). Most of these studies reported increased food insecurity due to COVID-19-related restrictions. However, Hirvonen et al. (2021) found that household dietary diversity and food consumption remained unchanged before and during the COVID-19 period, mainly because of Ethiopia's lack of strict movement restrictions. Similarly, most studies found that the pandemic had adverse effects on labor participation and income, primarily from non-farm employment and business activities (Mahmud and Riley, 2021; Amare et al., 2021; Agamile, 2022) and job loss (Hirvonen et al., 2021). However, its effects on labor outcomes in the agriculture sector, such as participation in wage work, agricultural labor, and production, remain mixed.

In Uganda, like in many other LMICs, the existing COVID-19 research focuses on urban households limited mainly by data availability and access and administrative costs of surveying rural households. As such, many of the studies are based on telephone interviews following previous in-person surveys. Phone surveys have a limitation of survey bias, a tendency to focus on households with access to mobile phones and adequate network coverage, and potentially excluding resource-poor families. Many studies were also conducted in 2020 after the first lockdown and not after the second lockdown in June 2021. Our study adds to the previous literature by utilizing representative high-frequency primary data collected through face-to-face interviews covering lockdowns in 2020 and 2021.

### 6.4 Survey data

We used high-frequency data collected every two to three months, from the same households, from June 2020 to August 2021. The survey gathered information on shocks, income, health, food, and non-food consumption expenditures. Also, it had questions related to household response to the COVID-19 pandemic and the effects of the government lockdowns. The survey was conducted in rural areas in the districts of Lira, Kileleshwa, Kisoro and Kamwenge, Moroto, Kotido, Bududa, and Sironko. The baseline data was conducted in June 2020, immediately after the lifting of the first lockdown restrictions. The second round of data was collected in August 2020, the third was collected in December 2020, the fourth round was collected in March 2021, the fifth was collected in May 2021 and the last round was collected in August 2021. The last round was conducted after the lifting of the second lockdown. In the first and last rounds, households were asked if, since the lockdown, their households had (1) Borrowed food or bought it on credit, (2) Stopped eating certain kinds of food, (3) Had limited portion size or reduced meals, and/or (4) Consumed less expensive food of the same type.



In both rounds one and six, conducted after the lifting of the COVID-19 restrictions, households were also asked if they had experienced any of the following since the lockdown: (1) Temporary layoff/suspension of work (without pay), (2) Permanent layoff/suspension of work (without pay), (3) reduction in the number of working hours, (4) Increase in the number of working hours, (5) Reduction in hourly wage, piece rate, or salary, (6) Increase in hourly wage, piece rate, or salary, (7) Delay in wage payment, and/or (8) Reduction in non-pecuniary benefits. Lastly, households were asked if they faced difficulties to get the following inputs since the national lockdown: (1) Agriculture labor, (2) Fertilizer, (3) Seeds, and/or (4) Animal feed and machines.

## 6.5 Results

### 6.5.1 *Who was affected by the COVID-19 restrictions?*

During the instituted lockdowns, all non-essential activities were suspended, and movement was restricted. Public and private transport was prohibited, and all border entry points were closed, except for cargo transportation and humanitarian flights (UNDP-Uganda, 2020). Additionally, all educational institutions, non-essential offices, shops, restaurants, hotels, sports facilities, entertainment venues, places of worship, and other facilities in which group meetings may occur were closed. Further, a curfew was observed between 7:00 pm to 6:30 am. Notably, agricultural activities were considered among essential services (FAO, 2020).

Our definition of corona-affected households encompasses a household facing either an income loss, difficulty in food access and consumption of diverse foods, or had challenges in accessing agriculture inputs during the lockdown. Specifically, the household faced an income loss if it reported any one of the following: (1) There was a layoff, (2) Permanent loss of a job, (3) Reduced working hours, (4) Effect on wages received, (5) Delayed receipt of wages, and/or (6) Reduced benefits received from main employment. The household had difficulty in accessing and using inputs during lockdown if they reported having faced difficulty in accessing any one of the following agricultural inputs: (1) Agriculture labor, (2) Fertilizer, Seed, (3) Animal feed, and/or (4) Machines. The loss of an income source due to the COVID-19 restrictions had implications on household food expenditure and dietary diversity while the lack of access to agricultural inputs had implications on food productivity, and ultimately the amount of food available for consumption within households. Lastly, borrowing or buying food on credit signals a household's vulnerability to access food for several reasons, including the loss of income. In this regard, 58% of the households were affected in round one compared to 49% in the second round. The high stringency of the measures instituted in the first lockdown compared to the second lockdown explains the differences in the proportion of households affected. In our data, households in the subsequent rounds, second, third, fourth, and fifth rounds, are grouped as affected and unaffected based on their status in the first round.

### 6.5.2 *Effect of COVID-19 restrictions on per capita household food consumption expenditure*

We compare the per capita weekly household food consumption expenditure based on whether one was affected by COVID-19 restrictions or not. Table 21 shows that those who were not affected have a higher weekly per capita consumption expenditure than their counterparts affected in rounds 2 and 3. In the last round, affected households had a higher per capita consumption expenditure.

Further analysis of the weekly per capita consumption expenditures shows a significant difference in consumption expenditure of affected and unaffected households two months after removing COVID-19 restrictions. At this time, households that reported being affected by the lockdown restrictions instituted in May 2020 had less weekly per capita consumption expenditure than their counterparts, who reported not being affected. These differences may be attributed to the after-effects of the lockdown, instituted on household incomes in the subsequent months.

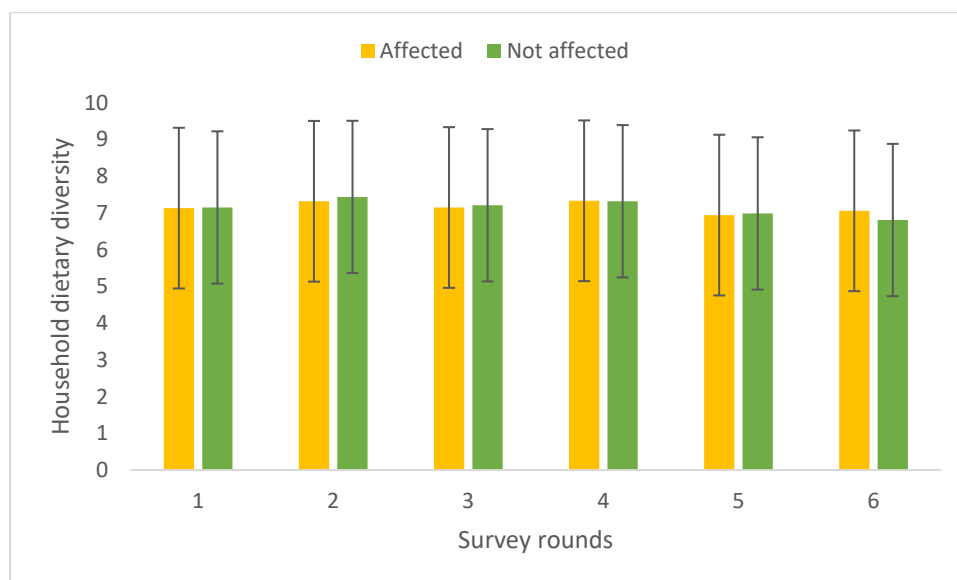
**Table 221: Per capita household weekly consumption expenditure (USD) by whether households were affected by COVID-19 restrictions, by rounds**

Round	Affected	Not affected	t value
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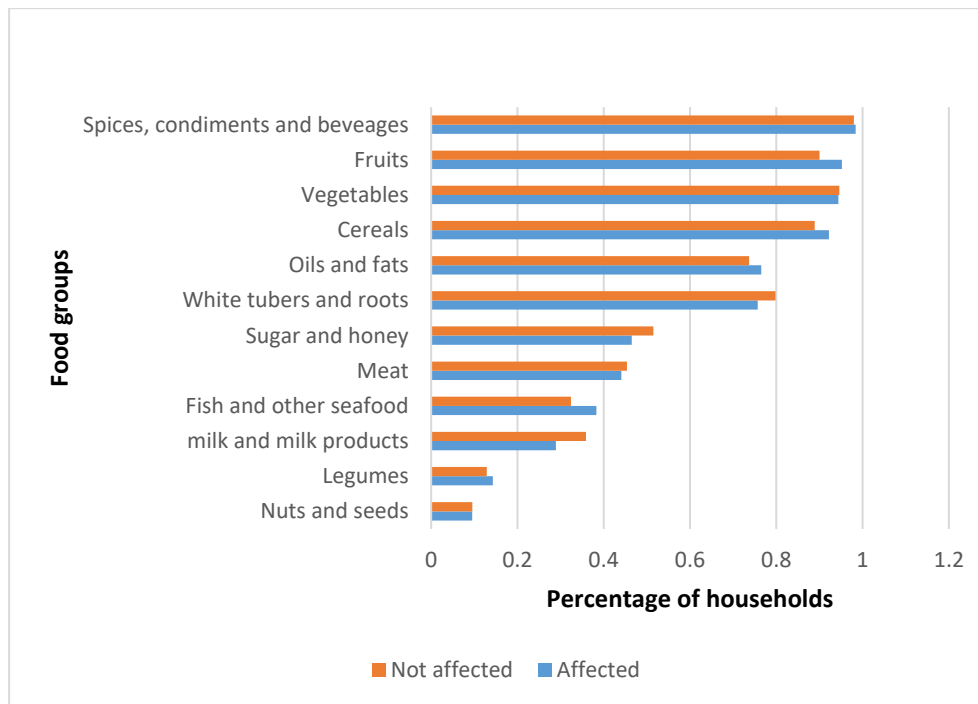
1	3.78 (2.845)	3.78 (2.68)	0.017
2	3.469 (2.752)	4.036 (2.932)	2.466
3	3.432 (2.403)	3.638 (2.370)	1.06
4	3.57 (4.600)	3.566 (2.711)	0.012
5	3.2634 (3.477)	3.206 (2.137)	0.232
6	3.462 (4.0615)	3.078 (2.761)	1.376

### 6.5.3 Effect of COVID-19 restrictions on household dietary diversity

Following Kennedy et al. (2010), household dietary diversity is measured as the sum of food groups consumed out of a total of 12 food groups in the last seven days prior to the survey. The food groups included: cereals, white tubers and roots, vegetables, fruits, meat, fish and other seafood, legumes, nuts and seeds; milk and milk products; oils and fats; sugar and honey and the last group consisting of spices, condiments and beverages. Figure 13 shows differences in the number of food groups consumed by households, based on whether a household was affected by COVID-19 restrictions. Households unaffected by COVID-19 restrictions only have a slightly higher dietary diversity in the first, second and third rounds. In the subsequent rounds, the household dietary diversity is either the same or in some cases, those affected have a slightly higher dietary diversity (round 6). Statistical tests also show no significant differences in dietary diversity between affected and unaffected households.

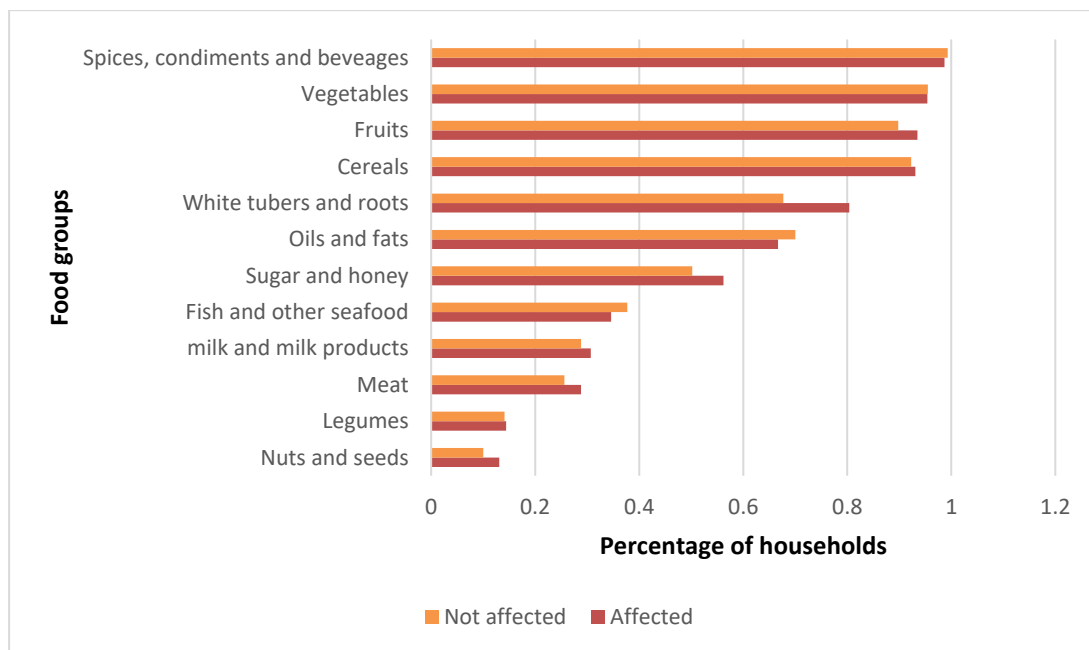


**Figure 13: Household dietary diversity by whether a household was affected by COVID-19 restriction measures.**



**Figure 14: The distribution of household dietary diversity by whether a household was affected after the first lockdown.**

In terms of the types of food pertained; affected households consumed more oil and fats, fruits and cereals, fish and other sea foods while unaffected households consumed more sugar and honey, milk and milk products, meat, and white tubers and roots during the first lockdown (Figure 14). In the second lockdown, households affected by the COVID-19 restriction consumed more sugar and honey, milk and milk products, nuts and seeds fruits, and white tubers. Unaffected households consumed more oils and fats and fish and other sea food (Figure 15). Simple t-tests comparing each food group consumed by whether the household was affected or unaffected by COVID-19 in the first lockdown instituted, revealed that more households unaffected by COVID-19 consumed more milk and milk products than affected households. Nevertheless, more households affected by COVID-19 consumed more fruits than unaffected households. The consumption of fruits (e.g., lemons, oranges, and pineapples) was believed to reduce the health effects of COVID-19. After the second lockdown, households affected by COVID-19 significantly consumed more white tubers and roots and more fruits unlike their counterparts unaffected by COVID-19. The higher consumption of fruits by affected households after the second lockdown follows the same reason as in the second season. Overall, there are no clear indicators that affected households are eating less nutritious foods or less diverse foods than their counterparts in both rounds.



**Figure 15: The distribution of household dietary diversity by whether a household was affected after the second lockdown.**

When we compare per capita weekly consumption expenditure of affected and unaffected households by occupation industry, we find no significant differences in per capita consumption expenditure by industry, except in trading and commerce, where affected households do have a higher weekly per capita consumption expenditure (Table 22). Also, affected households in the trade and commerce industry consume more fish and sea foods, milk and milk products, oils and fats, and sugar and honey. Overall, affected households in the trade and commerce industry are relatively better off compared to their affected counterparts in other sectors.

**Table 22: Per capita consumption expenditure by sector**

Industry	Affected HHs	Unaffected HHs	t-statistics
Agriculture, Livestock, Hunting and Fishing	3.411 (2.431)	3.532 (2.515)	0.775
Manufacturing, Mining and Construction	3.381 (2.402)	3.41 (2.044)	0.093
Trading and Commerce	5.282 (5.997)	3.985 (2.674)	2.524
Others	3.439 (2.128)	3.476 (1.946)	0.144

Note: Sector here refers to whether the household was engaged in the given sector or not.

We also examined coping strategies for food insecurity of both affected and unaffected households from COVID-19 restrictions. We asked families if, since the lockdown, they had: (1) Borrowed food or buying it on credit, (2) Stopped eating certain kinds of food, (3) Started eating limited portion size or reduced meals, and/or (4) Consumed less expensive food of the same type. More than 60% of households indicating they were affected by the COVID-19 lockdown measures suggested that they responded to the limited access to food by eating less expensive food and consuming limited portions, as shown in Table 23. In the first round alone, 38% of households reported that they had borrowed some food or bought on credit, 64% had stopped eating certain kinds of food, while 63% were taking limited food portions and 74% resorted to less foodstuff. In the last round, where the survey took place after the second lockdown, about 47% borrowed food or bought it on credit, 56% had stopped eating certain kinds of food while 54% were taking limited food portions while 63% resorted to less expensive foodstuff. The proportion of households reported that they had been affected in at least one of the above ways is higher in round 2.

**Table 23: Coping strategies to limited food availability following the institution of COVID-19 restrictions (%)**

Coping strategies	After the first lockdown	After second lockdown
Borrowed some food or bought on credit	38	47
Stopped eating certain kinds of food	64	56
Taking limited food portions	63	54
Consuming less expensive food of the same type	74	63

This study is only limited to rural households. Younger et al. (2020) reported that the share of Uganda's population which lost all or part of their income due to lockdowns was 65%. Mahmud and Riley (2021) also found that rural households lost 60% of their non-farm income due to their enterprise profits and labor income being nearly wiped-out in post lockdown. Negative coping strategies were reported by Trotter et al. (2020) among urban slum households that reduced daily meals consumed from 2.4 to 1.3. Mahmud and Riley (2021) reported that, affected rural households resorted to either reducing food expenditure per adult, equivalent to 40%, or using 50% of their savings and borrowing more, with an increased likelihood in both coping strategies of missing a meal. There was also more unaffordability of nutrient adequate diets (Laborde et al., 2021). Disruptions in transport and logistical services due to lockdowns made it difficult for farmers to sell their produce and to access purchased inputs (Nhemachena and Murwisi, 2020). At least 20% of households in the primary data collected, after the first lockdown, indicated that they could not access at least one of the following inputs, namely: fertilizer, seed, and agriculture labor, during the first lockdown in March 2020. About 8% could not access at least one if any of these inputs in the second lockdown in June 2021. Public transport fares increased two-fold post lockdown, and yet Nchanji (2021) observed that most farmers and input dealers rely on public transport to move. Likewise, labor-intensive crop production activities (such as harvesting) were negatively affected, particularly in large agricultural estates such as sugarcane, due to labor scarcities, disruptions in input supply chains, and rising costs due to containment measures (FAO, 2020a).

In the early days of the pandemic, urban areas experienced short-term price increases due to a rise in food demand resulting from panic buying, hoarding, and speculative trading (FAO, 2020b; Global Panel, 2020). There was also an unusually high demand from South Sudan (one of Uganda's main export markets), particularly for cereals, sugar, and salt (FAO, 2020b). However, food prices declined with the length of the lockdown due to a collapse in demand caused by shrinking incomes. For example, FAO (2020) indicated that the price of highly perishable foods, like green bananas (Matooke), declined from around UGX 15,000 – 25,000 (USD 4.00 – 6.00) to about UGX 6,000 – 10,000 (USD 1.60 – 2.50) in Kampala during the March-June 2020 lockdown.

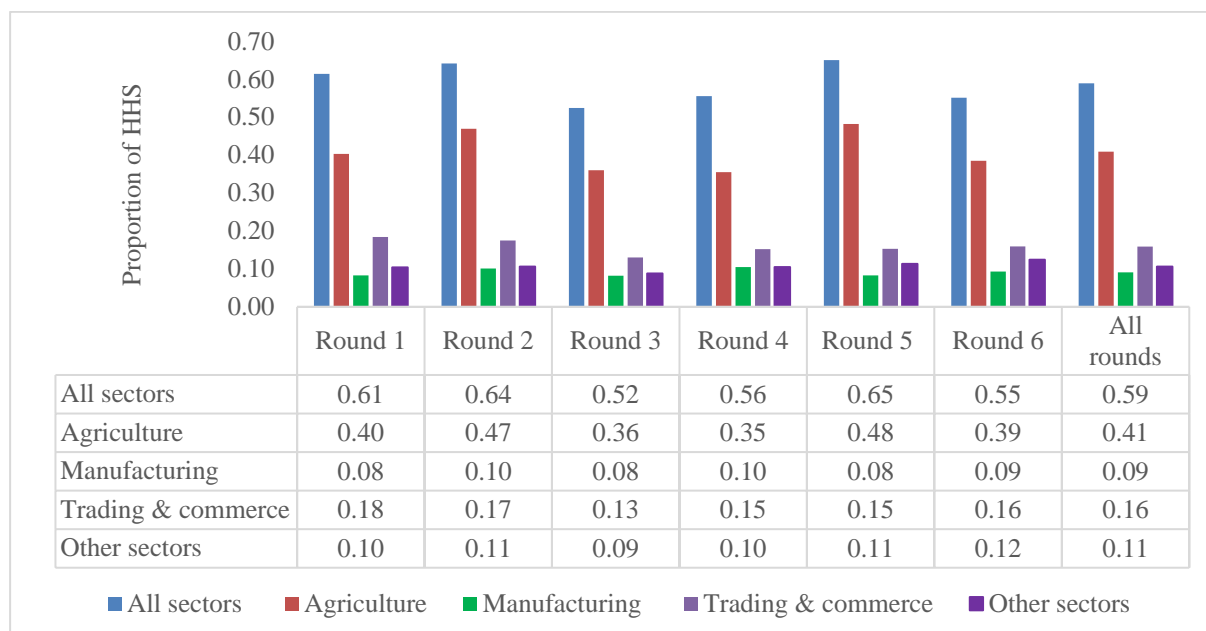
## 6.6 Trends in employment indicators

### 6.6.1 Labor market participation and lockdown effects

Data on participation in different income-generating activities were collected in all rounds of the survey. We only focused on wage or salary-related economic activities from on-farm and off-farm activities, and other selected income sources such as transfers and remittances, where data was consistently collected over the last two months for all rounds. Even though farming (crop harvest) is an important source of income for rural households, we excluded this indicator since data for rounds 1 and 2 were collected for each completed season<sup>4</sup>, hence not comparable across rounds. We define indicators of wage labor market participation if any of the household members aged above 10 participated in any income activities from important industry sectors for the rural economy. Figure 16 shows that on average, more than half of the interviewed households (59%) participated in wage-related activities from any industry. Most of the households participated in wage labor activities from

<sup>4</sup> For example, in the first round, harvest and sales information was collected for the 2019 second season and not for 2020 while in the second round, data was collected for all harvests and sales in the first season 2020.

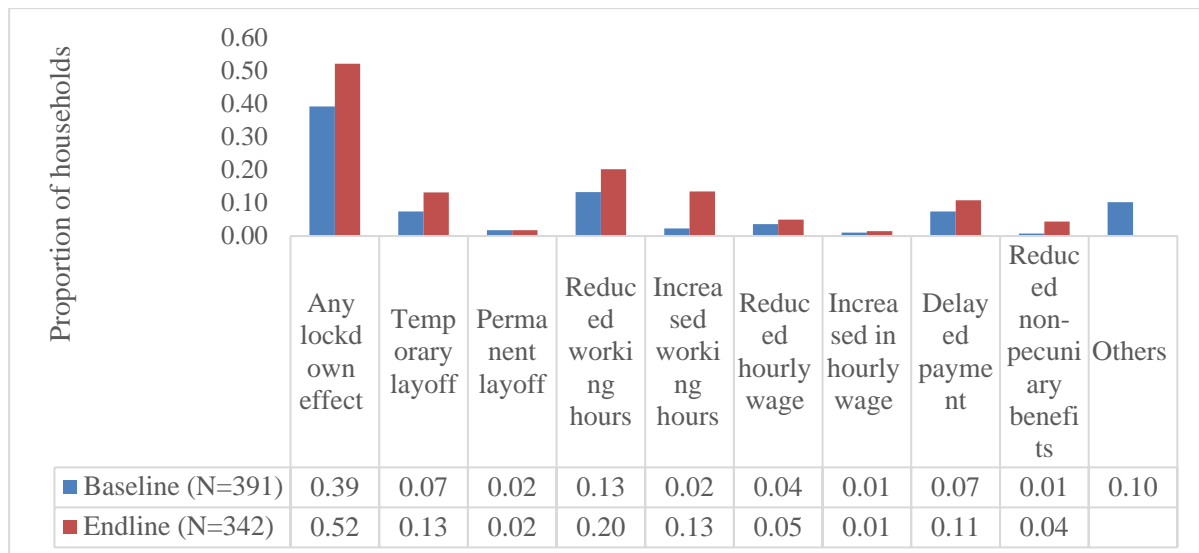
agriculture, livestock, and hunting and fishing, consistently across all rounds, with high participation in rounds 2 and 5. Low participation in rounds 3 and 4 could be attributed to seasonality, given that there are usually lower agricultural activities during the second season until February. At least 16% of the households participated in trading and commerce while only 9% participated in manufacturing, mining, and construction. Differences in participation from the mentioned sectors did not show substantial variations across rounds.



**Figure 16: Proportion of households participating in different wage-related activities from different industries by survey rounds.**

Households participating in different income-generating activities in rounds 1 and 6 were also asked if they experienced any changes in their economic activities following the two national lockdowns, implemented just before the baseline (round 1) which was conducted in June 2020, and the end line survey (round 6) conducted in August 2021. At least half of the households, employed in different sectors, indicated that they were affected by lockdown measures in the end line survey while 39% were affected in the baseline. As shown in Figure 17, the most important changes were the reduction in working hours, delayed payments, and temporary layoff for both rounds. However, an increase in working hours was also reported by 13% of the households in the end line survey.

The most affected industry was trading and commerce, where at least 66% of households employed in that sector were affected during the end line survey, followed by manufacturing, mining and construction and “other industries” where 55% and 57% of households were affected respectively, as shown in Table 23. More households participating in trading and commerce experienced temporary layoffs and a reduction in working hours in the end line as compared to the baseline, with significant differences. These adverse effects could be attributed to government measures such as transportation, where local travel was banned causing difficulties accessing work locations. Kansime et al. (2021) reported that business activities in Uganda were affected by travel restrictions thus limiting the timely payment of wages by business owners. Furthermore, only businesses with essential services were allowed to operate.



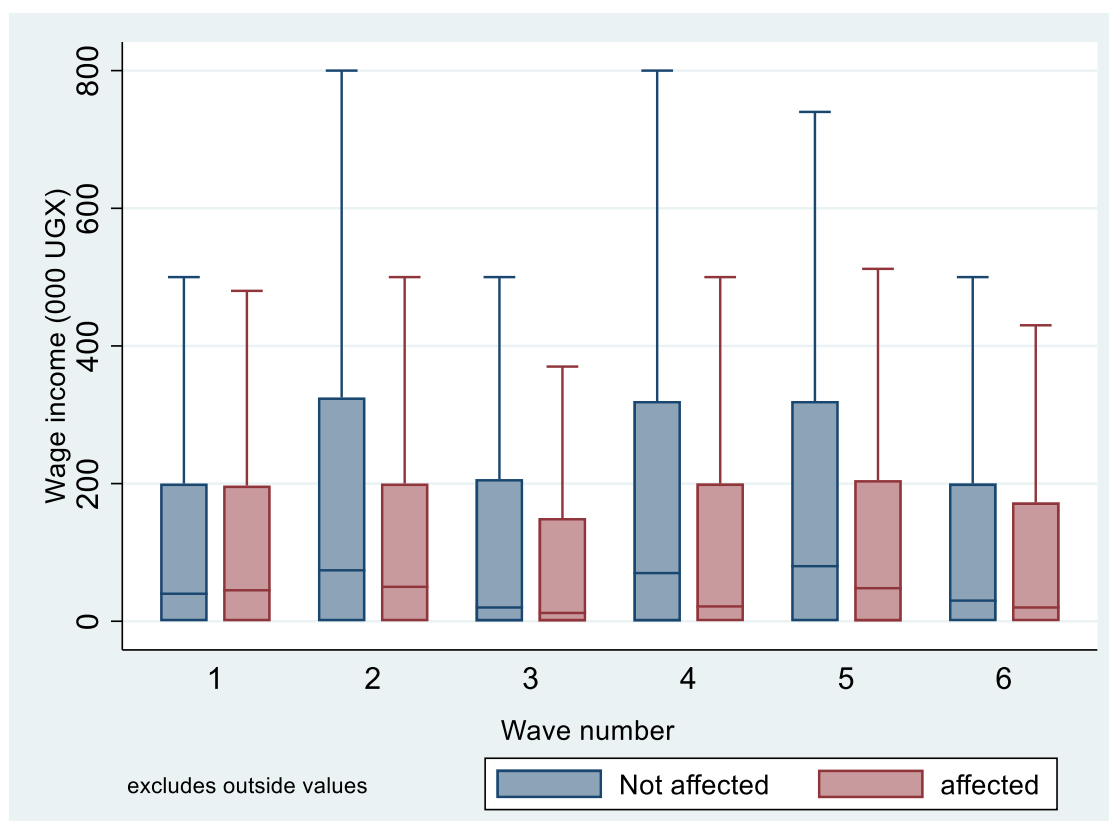
**Figure 17: Proportion of the working households experiencing different employment lockdown effects across industries during the 1st (baseline) and 2nd lockdown (end line).**

For the agriculture sector, only 29% and 35% of households were affected in survey rounds 1 and 6 respectively, with no significant differences, as shown in Table 25. Notably, agriculture and “other industries” recorded a higher proportion of households that increased working hours in the end line. A possible explanation could be that most farms in the rural settings are not far away from the homestead, therefore unaffected by travel restrictions. In fact, since most members could not travel far away from home, they chose to allocate most of their time to agricultural activities. Indeed, the government named agriculture as one of the fully functioning sectors during both lockdown periods.

The amount of income received from wage labor is likely to vary across households, depending on whether households were affected by lockdown measures. We matched households in all rounds with lockdown effect data collected in round 1. Households were categorized as affected based on the earlier defined variables<sup>5</sup> on the impact of COVID-19 restriction on employment, agricultural inputs (e.g., labor, seed, and fertilizers), and if they borrowed or bought food on credit. Figure 18 shows the distribution of wage income across the six survey rounds based on whether a household was affected or not. The median values of the affected households were relatively lower than the values of unaffected households across rounds, except in rounds 1 and 6, where the median values between the two groups were relatively the same. The z-statistics from the Wilcoxon rank-sum (Mann-Whitney)<sup>6</sup> two-sample test were not significant for rounds 1, 3, and 6 indicating that there was no statistical difference between the affected and unaffected households. Due to a substantial proportion of households not engaged in any wage labor income across the rounds, the lowest and the first quartile (25<sup>th</sup> percentile) values are both 0.

<sup>5</sup> Based on earlier definition in the previous sub-section of who was affected by COVID-19 restrictions.

<sup>6</sup> This non-parametric test considers the outliers.



**Figure 18: Box plots on household wage labor income distribution across the survey period.**

## 6.7 Conclusion

Although the COVID-19 response measures were commendable to protect lives as well as avoid overwhelming the health system, they have hurt enterprises and the food system due to production and supply chain disruptions and a drastic drop in demand for goods and services. Often, it was argued that negative effects are only observed in urban areas because containment measures were only moderate in rural areas. This is also related to limited data on rural households during the post- COVID-19 period. Using high-frequency data collected among rural households between June 2020 and August 2021, we show that immediately after the first lockdown in Uganda, there was a divergence in the consumption expenditure of those affected by the lockdown restrictions. Affected households had low consumption expenditure, especially after the first round, but we do not find significant differences in dietary diversity or the types of food consumed, apart from affected households consuming more fruits than unaffected households.

We also do not find a significant difference between food consumption in July 2020 and August 2021, if at all food consumption has declined but no economic recovery was observed. This could imply that at the beginning of the pandemic selected households were directly affected through income loss but during the pandemic, the overall economic downturn affected the whole population equally. So, it is likely that households consumed less expensive foods but continued to eat diverse foods. The associated COVID-19 impediments on economic activity and employment negatively impacted livelihoods as well as food security of most households in Uganda. Lockdown measures had negative effects on wage labor income, especially among households with individuals employed in the trading and commerce industry. Most of the employed households reported a reduction in working hours and temporary layoffs. Affected households had a lower median wage income across rounds and fewer households received remittances as compared to the unaffected households. However, some affected households relied on assistance from the government or NGOs and other safety-net programs to compensate for shortfalls in their earned wage income.



Notable social protection measures undertaken by the Government of Uganda include: (1) the distribution of food items such as maize flour, beans, and sugar to vulnerable households in and around the Kampala (capital city), (2) a cash-for-work transfers of UGX 100,000 (approx. USD 29) to a total of 500,000 vulnerable individuals (FAO, 2021), (3) deferred taxes to support the most affected economic sectors and enable businesses to recover, and (4) reduction in interest rates to 8% to decrease the cost of borrowing (FAO, 2020b). Non Governmental Organisations were also instrumental in extending food relief and other non-food items to affected households. The results showed that affected households received more support from NGOs and the government compared to their counterparts.

While these safety-net programs were instrumental in mitigating the adverse effects of lockdowns for affected households in the first lockdown, there was also increased uptake of loans post-lockdown period among the affected households. This suggests that there was a higher demand for loans and borrowing, as a last resort for household sustenance after the withdrawal of government assistance. Therefore, it could have been ideal for the government and other institutions to continuously support affected households in the post-lockdown period, until recovery. Though loans are effective for income and consumption smoothing in the short run, they might have negative effects on households, especially when associated with high-interest rates (Gupta et al., 2021). Furthermore, it is most likely that the migrants in the affected households returned to their rural homes immediately after the first lockdown, given the low proportion of affected households receiving remittances, especially in round 2. Therefore, households could not rely on this means for hedging against income and food consumption shortfalls. This partly explains the divergence in income and consumption after the first lockdown between the affected and unaffected households.

## **7 General Conclusion**

The global COVID-19 pandemic had a negative impact on employment and household food and nutrition security in many LMICs. The wide variety of government measures and policies employed to slow transmission of the COVID-19 virus disrupted food supply chains and labor markets across the globe. The effects of these containment measures continue to reverberate, especially in LMICs, and will have long term impacts on the food and nutrition security of vulnerable households. In this paper, we used household survey data to examine the ways in which the COVID-19 pandemic and associated lockdown measures affected household consumption, employment, and income loss in three African countries: Ethiopia, Ghana, and Uganda. The degree to which the measures negatively impact food security and labor outcomes vary depending on socioeconomic factors and the degree of the lockdowns. We find that the pandemic significantly increased job losses and decreased household income in the countries studied (especially in the early days of the pandemic). Household food intake and diversity appeared to be rather decent during the Covid period, possibly at the expense of dietary quality. Further research is necessary to unveil detailed effects on the consumption of nutritious foods and long-term effects on child health. However, the research shows that the food security coping strategies employed by households in these countries (e.g., use of savings, taking loans, buying food on credit, etc.) have left many economically vulnerable with few options to safeguard themselves from ongoing pandemic aftershocks.

In Ethiopia, for example, households employed strategies such as abstaining from eating certain kinds of foods, substituting less expensive foods of the same type, and limiting portion sizes or reducing meals. Additionally, government pandemic policies (e.g., employee layoff prohibition, in cash and in-kind support of government) helped to insulate households from negative economic impacts of the pandemic. Results from Ghana show contrasting trends as household dietary diversity and food expenditure per capita increased since the early pandemic period. Thus, it must be noted that while household food security improved in the period after movement restrictions were lifted it was accompanied by an increase in food expenditures and a decrease in employment during the study period.

Lockdown measures in Uganda resulted in similar negative effects on wage labor income, especially among households working in the trading and commerce industry. This downward economic pressure was accompanied by a reduction in consumption expenditures as a result of government or NGOs assistance and other safety-net programs, which compensated for wage losses. Examples of these successful social protection measures include distribution of food items to vulnerable households and cash-for-work transfers.

It is important to note, however, that while COVID-19 and its associated lockdown measures had little dramatic affect food availability and consumption in the countries studied, the full impacts of the pandemic will only be seen after the ripple effects have been realized and the full extent of local and global economic slowdowns have been observed. Simulations based on the known microeconomic relationship between income, food prices, and food consumption suggest that employment contractions will lead to sharp increases in several indicators of undernourishment. Moreover, recent research indicates an upward global trend in food insecurity and undernourishment. In its 2021 edition of the State of Food Security and Nutrition in the World (SOFI), the FAO projected a global increase in the number of undernourished between 120-160 million between 2019 and 2020 – a 1.5 percentage point increase (FAO et al., 2021). Similarly, Laborde et al. (2021) projected that almost 150 million people will fall into extreme poverty and food insecurity. Projected global income shocks will over-proportionally affect already disadvantaged households and, subsequently, increase inequality. Osendarp et al. (2021) estimate that, due to the pandemic, there are an additional 9.3 million and 2.6 million children wasted and stunted, respectively. The increase in children's malnutrition would cause an estimated 168,000 additional child deaths, and maternal malnutrition would cause an additional 2.1 million maternal anemia cases.

Thus, while some LMICs may have avoided a food insecurity crisis during the pandemic, action must be taken to ensure economically vulnerable households are able to maintain this security long term. Many households in this study employed various food security coping strategies, such as the use of savings, borrowing money, and buying food on credit to get by. However, as noted throughout this paper, employment and wages were negatively impacted by the pandemic and the majority of household members sampled are engaged in low-income jobs, which are often poorly paid, unstable, and do not have protected wage incomes. Government safety-net programs played a key role in mitigating the adverse effects of the pandemic, particularly among vulnerable groups, by compensating for shortfalls in earned wage income. Thus, while household consumption and food availability may have been stable in some countries during the pandemic, the financial and economic impacts have associated food and nutrition insecurity outcomes, particularly for poor households. As the world emerges from the global pandemic, governments should consider adjusting the design and strengthening the modalities of social protection programs to protect poor households in the long term. Furthermore, governments must stimulate economic growth to create employment opportunities, especially by supporting small-scale businesses, to hasten recovery and avoid future food insecurity.

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