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Reimagining Vulnerability in the Light of COVID-19: A Quantitative Study

by

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Acronyms

AIC	Akaike Information Criterion
AL	Advanced Level
BIC	Bayesian Information Criterion
CI	Confidence Interval
DCS	Department of Census and Statistics
FAO	Food and Agricultural Organization
GCE	General Certificate of Education
GDP	Gross Domestic Product
HH	Household
HIES	Household Income and Expenditure Survey
HOH	Head of Household
MFI	Micro Finance Institute
OL	Ordinary Level
OLS	Ordinary Least Squares
PCR	Polymerase Chain Reaction
PFR	Principal Female Respondent
PPP	Purchasing Power Parity
PWD	Person with disabilities
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USD	United States Dollar
VEP	Vulnerability to expected poverty
VER	Vulnerability as uninsured exposure to risk
VEU	Vulnerability as expected low utility
WFP	World Food Programme
WHO	World Health Organization

Executive summary

Introduction

The COVID-19 pandemic has thrown into sharp relief the pre-existing fault lines and deep-rooted disparities within and across global economies. On a positive note, however, the adverse socioeconomic ramifications of the pandemic have rekindled interest in a much-needed global dialogue on the issue of vulnerability and what it means to be vulnerable. Our study was designed in line with this shared aspiration to reimagine vulnerability and establish a new normal in a post-COVID era. In this quantitative study, we use data collected from a random sample of 4,000 households across nine districts to examine determinants of household vulnerability to income and food insecurity.

Methods

Household vulnerability is our primary outcome variable of interest. However, it is an unobserved construct with no definitive definition and many dimensions. Broadly speaking, vulnerability is the risk of falling into adverse circumstances or experiences; in social science literature, vulnerability is discussed mostly in relation to the risk of falling into poverty. For our analysis, we configured several variables to proxy two dimensions of vulnerability, namely income insecurity and food insecurity. Our independent variables were informed by extant literature on the topic and cover variables related to the characteristics of the head of the household, household demographics, labour market outcomes of the household, household's asset endowment, debt characteristics, access to social capital, and geographic characteristics. We implemented logistic, ordered logistics and ordinary least squared econometric procedures for our analysis. We also outline a few key limitations of the study: (i) our sample is not nationally representative; (ii) our sampling frame may have led to biases in sample selection; (iii) our focus on vulnerability is limited to implications on income and food security and (iv) our analysis does not establish causal directions, only associational linkages.

Results and discussion:

Descriptive statistics analysis

Only a fewer than a fifth of the households had contracted COVID-19, while the share of households with virus-related hospitalisations and deaths was even less. Most deserving households have received financial assistance from the government at least once, while relatively fewer households have received benefits-in-kind from the government. While the share of households that have received financial or in-kind support from non-governmental organisations or relatives is significantly less, this share is still higher among Samurdhi-recipient households. Most respondents believed that the pandemic increased women's workload. While many respondents also acknowledged that, while the pandemic brought about opportunities for women to work from home, it did not necessarily create economic opportunities for women.

Most households have experienced declining or stagnant incomes compared to two years prior, while almost all households in the sample experienced an increase in expenses over the same period. The share of households that have seen a decline in income is highest among those who rely on agricultural and non-agricultural own production. Rising expenses and declining or stagnant incomes have posed challenges for households in meeting their basic needs, with many households reporting difficulties in getting to the end of the month with their current income. Although most households can afford to eat three meals a day, the quality of meals appears to be compromised for many households, especially those with pre-existing vulnerability characteristics. Proportionately more households with persons with disabilities seem to struggle to pay for medicine and healthcare than other households. Most households can afford to spend on small housing repairs but not large ones. However, much fewer households with pre-existing vulnerability traits are able to spend on either types of repairs when compared to others. Most households with children believe that the quality of education has dropped from 2020 to 2022 and find online education to be a challenging experience. In addition to an increase in educational expenses, shortages of required infrastructure, especially among vulnerable households, have contributed to this challenge.

Most households have adopted coping strategies to smooth consumption amidst a decline in income and an increase in expenses. Many of them have cut down on non-essential expenses, pawned jewellery and withdrawn savings. More detrimental coping measures, adopted by a smaller share of households, include cutting down on food, education and health expenses. However, more households with pre-existing vulnerability traits, as compared to other households, have taken up such negative coping strategies. The economic challenges posed by the external shocks have had a negative impact on respondents' well-being. Many of them were worried about securing day-to-day essentials as well as the future.

Econometric analysis: household vulnerability to income insecurity

Household labour market outcomes stand out among our predictors of vulnerability to income insecurity. An increase in the share of household members in casual or temporary jobs, or informal jobs (such as self-employment, own account work and unpaid family work) compared to permanent jobs, among working age (17-64) adults, increases the risk of a household's vulnerability to income insecurity. Furthermore, an increase in the share of unemployed, as well as experiences of job losses in 2020-22 also tend to push households into income vulnerability.

Results from regression analyses show that most of the characteristics of the HOH, including many educational variables, do not bear a statistically significant correlation to outcome variables. However, high educational outcomes of the HOH make worrying about possible future job and income losses much less likely. Households headed by women, compared to those headed by men, are more likely to be constantly worried about future income losses. The presence of PWDs who need extra financial assistance increases the real and perceived probability of becoming vulnerable to income insecurity, while the receipt of passive income and ownership of liquid and quasi-liquid assets reduces such risk. However, owning fixed deposits helps respondents worry much less frequently about future income and job losses. Debt obligations by and large increase a household's risk of vulnerability to income insecurity. Spatial characteristics suggest that most households living outside the Colombo District are more vulnerable to income insecurity, than those living in Colombo.

As income is a crucial determinant of household vulnerability to income and food insecurity, we also looked at determinants of household income in our sample. Our results further affirm current evidence on the positive relationship between human capital endowment and income. Income rises with age and educational outcomes of the head of the household. Households headed by women are likely to earn less than those headed by men. Among labour market characteristics, we find that temporary and casual jobs, compared to permanent jobs, bring home less income. Households that have their own enterprises (who probably have family members who are employers and family workers) earn more income than those who are self-employed. Asset ownership, receipt of passive income and the ability to seek assistance from relatives help increase household income. So do productive borrowings, except if they are distress loans. The different directions we observe in the relationship between district variables and household income could be indicative of the divergent regional economic prospects.

Econometric analysis: household vulnerability to food insecurity

Household income is a significant predictor of vulnerability to food insecurity; an increase in income, while holding other things constant, significantly reduces a household's risk of falling into food insecurity. Asset ownership also seems to strengthen resilience to vulnerability to food insecurity. Among the different assets we have looked at, jewellery contributes the most strongly to insulating households from falling into food insecurity. Of the characteristics of the head of the household, we observe that a household headed by a woman, compared to one headed by a man, is at a higher risk of vulnerability to food insecurity. Higher educational outcomes of the head of the household make it less likely that a household will become food insecure, possibly both due to their better economic status as well as greater awareness about nutrition among such individuals. Among household characteristics, an increase in the number of children and the presence of PWDs who need extra financial and medical assistance exacerbate household vulnerability to food insecurity. Access to social capital seems to reduce household vulnerability to food insecurity, which was not the case in relation to income. Households living outside the Colombo District are at a higher risk of becoming vulnerable to food insecurity, compared to those living in Colombo.

Analysis

The patterns emerging from our descriptive statistics analysis shows that the direct health effects of the pandemic by way of positive cases were relatively mild; hospitalisations and deaths were much less. We also posit that, by and large, state and non-state social protection programmes were fairly successful in targeting the most vulnerable households, rather than benefitting less vulnerable households. Respondents' perceptions also suggest that the pandemic was a gendered experience that exacerbated challenges for women.

The findings from our econometric analysis on household vulnerability to income insecurity echo observations from other empirical studies investigating this issue. A sizeable literature has documented the relevance of the age, gender and educational outcomes of the head of the household in relation to household vulnerability. However, our overall analysis suggests that, while human capital is an influential determinant of household income, its role in strengthening households' economic resilience to external shocks is associated with how such human capital endowments translate into labour market gains. Our findings also extend the evidence that much of the impact of the pandemic in Sri Lanka was transmitted to households through labour market shocks, and this adds to the evidence on the disproportionately large burden external shocks place on informal sector workers. The correlation of the financial, physical and social capital endowments of households to household income and their vulnerability to income insecurity, underscores that assets are an important buffer for cushioning households from exogeneous shocks. Characteristics relating to dependents corroborate existing evidence on how the presence of members who need extra care influences a household's ability to withstand external shocks. Finally, these findings in many ways reiterate what has been observed in the aftermath of shocks both locally and elsewhere; households with less income, higher unemployment rates, a less educated head, drawing income from informal employment, with more children, elderly and persons with disabilities, without liquid assets and exposure to debt, compared to households without such vulnerability traits, consistently demonstrate vulnerability to income insecurity in the aftermath of both natural and man-made shocks.

Our econometric analysis on household vulnerability to food insecurity underscores the significance of household income and having access to financial resources, particularly liquid and quasi-liquid assets, as a means to mitigate consumption disruptions in response to external shocks. Our findings also corroborate evidence from Sri Lanka and elsewhere on how the disproportionately adverse effects of external shocks that households face in relation to food vulnerability are shaped by pre-existing inequalities such as differences in human capital endowment of households, incomes and access to assets, the presence of children, elderly and persons with disabilities, as well as the labour market impacts of shocks.

Reimagining vulnerability

Our analysis confirms and extends existing evidence on the types of households that are at a heightened risk of vulnerability in the face of external shocks. However, the magnitude of the impacts of the pandemic and the subsequent economic crisis on household income and non-income poverty in Sri Lanka have illuminated the urgent need to tackle pre-existing economic disparities. These shocks have presented Sri Lanka with a brief window of opportunity to build back better, an opportunity that was missed twice in the recent history, namely, in the aftermath of the 2004 tsunami disaster, and following the end of the war in 2009. The stipulations outlined in the IMF bailout package, complemented by support from international development agencies, along with government initiatives to strengthen its fiscal, monetary, and development policies in recent months, have created a favourable environment to meaningfully reimagine vulnerability as the country navigates its recovery from multiple external shocks.

The global discourse on reimagining vulnerability in the light of COVID-19 underscores tenets of equity, inclusion, rights and justice as economies strive to recover and expand in a post-COVID world. The pandemic experience has clearly demonstrated that economic growth must be both equitable and inclusive to withstand the economic impacts of external shocks. Therefore, the focus on reimagining vulnerability should extend beyond revamping social protection programmes and safety nets and extend to reimagining economic growth and development that can empower the poorest and most disadvantaged groups.

The focus of reimagining vulnerability should go beyond the strengthening of social protection programmes and safety nets to become part of a broader initiative that reimagines economic growth and development. Our analysis, as well as observations from elsewhere, shows that much of the household impacts of external shocks can be traced back to their pre-existing conditions. Households with access to human capital, social networks, assets and financial wherewithal are much more likely to withstand or navigate negative impacts than those without such endowments. These unfavourable pre-existing conditions play a deterministic role in the experiences of and recovery from external stressors. Social protection programmes cannot help close disparities and gaps in access to resources, and require the commitment of the broader development agenda. Poverty reduction initiatives must expand their focus to also address drivers of economic (and other forms of) vulnerability to strengthen household resilience to shocks. Importantly, vulnerability reduction should feature as a cross-cutting priority across key development sectors and themes. An intersectionality approach is critical as experiences of vulnerability are influenced by a complex interplay of factors such as age, gender, occupation, geographic location and different types of social identities.

Social protection policies and programmes should shift towards proactive and anticipatory measures against potential shocks. Emergency responses should be a collective and cohesive effort among different agencies and stakeholders, and should be sensitive to socioeconomic, cultural, psychosocial and other intangible vulnerabilities that mitigative measures might unleash. Generous and well-targeted safety nets are integral to supporting the poorest and the most vulnerable, but such programmes should also be designed to meaningfully empower them out of poverty. Overall, adopting a rights-based approach to economic development is central to reimagining vulnerability in a post-COVID world.

Policy reflections

Sri Lanka's macroeconomic policies should be revised in a manner that can meaningfully contribute to reducing household poverty and vulnerability. The data clearly shows that economic growth is the primary condition for reducing poverty and vulnerability, as it leads to a decline in poverty levels. But it is important to create the kind of economic growth that can expand regional labour markets, spur regional economic activity (especially in the historically poorest and disadvantaged

districts), and generate more and better jobs and income-earning opportunities that can benefit poor and vulnerable groups. Identifying and investing in growth sectors, along with leveraging Sri Lanka's strategic location in the Indian Ocean for regional economic connectivity are essential strategies for long-term sustainable economic growth.

A conducive and enabling environment is imperative for promoting inclusive economic growth. This requires a strong interconnection between rural, urban and international markets with robust and reliable infrastructure, while an enabling business and investment climate is essential to support local business activities. Consistent long-term policy direction is critical for strengthening investor confidence and promoting business activities which can support economic growth and employment generation. Simultaneously, it is important to strengthen measures to absorb the informal sector into the formal economy to drive inclusive economic growth and reduce vulnerabilities. Revisions to Sri Lanka's labour laws in the light of the evolving labour market landscape and business models are also a timely necessity.

The importance of strengthening policies on human capital development in the light of the experiences of the pandemic must be highlighted. While the shift to online education during the pandemic has showcased the possible opportunities to benefit from hybrid education, such a change must be accompanied by the availability of reliable and affordable internet services, devices, equipment and infrastructure. Strengthening digital literacy and IT skills, closing the regional and sectoral digital divide, enhancing the affordability of devices and promoting cyber security are some key areas that need attention if Sri Lanka is to benefit from hybrid modalities of education. We also stress the importance of reforming the national education system both in terms of quality and relevance of its pedagogy, as well as structurally to keep abreast with rapidly changing labour market requirements. Furthermore, traditional milestone examinations such as GCE OL or AL must not be terminatory exams, but pathways for alternative skills development programmes.

We also point out the importance of expanding the focus on the poor more comprehensively, and adopting a more realistic classification system of poor and non-poor with robust data that can better inform social protection programmes and interventions. While we recognise the stronger configuration of the proposed

new Aswesuma welfare scheme, compared to its predecessor *Samurdhi*, in pulling people out of poverty in a more sustainable manner, we also suggest that these welfare measures incorporate a mechanism to protect the incomes and livelihoods of individuals of those enrolled in these programmes in times of economic crisis. We also point out the importance of using newly available multidimensional vulnerability index data (OPHI and UNDP, 2023) by both state and non-state actors when designing interventions to address regional and sector-specific vulnerabilities.

Policies that increase financial literacy and financial management skills are important for children and adults alike. In addition, creating a more pro-poor financial sector, both in terms of loan requirements and capacity-building among financial professionals, is also fundamental for strengthening household incomes and asset-building and preventing people from seeking distress loans which would push them further into poverty and destitution, as such informal loans often involve debilitating terms and unorthodox recovery methods. This would also be useful for the growth and expansion of micro, small and medium enterprises. Empowering professional bodies and other organisations to build the capacity of entrepreneurs and the self-employed is also important for sustainable livelihoods.

Another key area that requires strengthening is Sri Lanka's climate change agenda, including the increased use of climate smart technology, a sustainable shift to renewable energy sources and an increased uptake of environmental-friendly agrochemicals. The emergency-response policy framework also needs to be further strengthened in the light of the experiences of the pandemic and economic crisis. We conclude by highlighting the importance of using this window of opportunity effectively to create an empowered nation.

1. Introduction

1.1 Background

Fighting the COVID-19 pandemic came at a profound economic cost to the world and has held up a mirror to the strengths and weaknesses of global policies, structures, systems, and institutions. On the one hand, the pandemic experience has showcased the strength and resilience of healthcare systems and essential services, advances in science and technology, and the ability of existing systems to adapt, innovate and thrive amidst hitherto unexperienced challenges. On the other hand, it also shone a bright light on the inequalities of the world, which influenced how intensely the pandemic, as well as its socioeconomic ramifications, affected different groups of people. But the pandemic has been far from the 'great leveller' it was anticipated to be.

This study emerged out of the collective interest that the pandemic reignited in the discourse surrounding poverty and vulnerability globally. The primary objective of the research study is to unpack how the pandemic has impacted household vulnerability. To accomplish this overarching goal, the study employs a comprehensive approach to data collection and analysis that combines both quantitative and qualitative research methods. In this study, we take advantage of the lack of consensus on a definition of vulnerability for the purposes of our quantitative analysis. In other words, we employ a deconstructed version of vulnerability in this study and focus only on two dimensions for the purposes of our analysis, namely a household's vulnerability to income and food insecurity. More specifically, using quantitative research methods, we attempt to explore the associations between various characteristics of a household and its vulnerability to income and food insecurity. We use both descriptive analyses and regression analytical tools to answer the following research questions:

1. What were the changes in household income and expenditure amidst the COVID-19 pandemic and the economic crisis? How have the patterns of expenditure of essentials such as food, medicine and healthcare, and children's education changed?

2. What are the coping strategies households have adopted to manage the stress of external shocks? What are the implications of the external shocks on respondents' subjective well-being?
3. What are the characteristics of households that have become vulnerable to income insecurity due to external stressors?
4. What are the characteristics of households that have become vulnerable to food insecurity due to external stressors?

1.2 Context

It did not take long for the pandemic to metamorphosize into a much larger global economic crisis with grave implications for the poor and vulnerable populations. The aggressive and efficient transmission of the virus[1] , which called for measures in kind to control its spread by way of lockdowns and mobility restrictions, not only aggravated household poverty, but also exacerbated pre-existing inequalities both across and within countries. In 2020, the pandemic triggered an economic contraction in 90 percent of the countries, which led to a global Gross Domestic Product (GDP) contraction of 3.2 percent and induced a rise in global poverty for the first time in a generation (World Bank, 2022b), pulling about 97m additional people into poverty in 2020 (Mahler et al., 2021). Estimates suggest that the number of people living in extreme poverty could be around 588m in 2030, about 50m more than pre-COVID projections (Kharas and Dooley, 2021), several years after it has ceased to be a public health emergency[2], underscoring the long-term economic impacts of the pandemic on global poverty.

The pandemic resulted in a 4.6 percent contraction of Sri Lanka's economy amidst contractions in construction, fisheries, transportation, and tourism and related sectors which suffered the most from the mobility restrictions imposed to control the spread of the pandemic. The poverty headcount ratio (USD 3.65 per capita, based on 2017 purchasing power parity) rose to 12.7 percent in 2020 from 11.3 percent in 2019, increasing the number of people living in poverty by about 300,000 (World Bank, 2023b). Furthermore, the poverty gap, which measures the

[1] Of the six global virus outbreaks, COVID-19 is characterised by the most efficient and aggressive transmission (Elrashdy et al., 2020).

[2] In May 2023, the World Health Organization (WHO) declared that the COVID-19 pandemic will no longer be considered a public health emergency.

distance to the poverty line, is estimated to have widened from 17.9 percent in 2019 to 20 percent in 2020. Thus, not only did the number of people living in poverty increase in 2020, but those already in poverty found themselves in deeper poverty in 2020 compared to 2019 (World Bank, 2021).

As elsewhere, Sri Lanka's economy rebounded in the first half of 2021, expanding 4.5 percent and 13.8 percent over the first and second quarters respectively, following a successful containment of the first wave of the virus and amidst the rollout of a strong vaccination drive. However, this recovery was short-lived as the largest economic crisis in the country's post-independence history started unfolding in the second half of the year. This, coupled with the aggressive spread of the virus during the second and third waves of the pandemic, created a humanitarian crisis in the country which led to an outbreak of civil unrest, *Aragalaya*, which lasted from April to July, 2022 culminating in the ousting of the then president Gotabaya Rajapaksa, and the election of an interim president and cabinet.

The economy declined 7.8 percent in 2022, underpinned by contractions in industry (16.1 percent), agriculture (4.6 percent) and services (2.0 percent) sectors. Poverty and inequality worsened in 2022 due to the economic crisis. The poverty headcount ratio, which rose rather modestly from 12.7 percent in 2020 to 13.1 percent in 2021, nearly doubled to 25.0 percent by 2022 (USD 3.65 per capita at 2017 PPP), shoving 2.5m more people into poverty (World Bank, 2023b). The World Bank estimates that about 500,000 jobs in industry and service sectors were lost in 2021-22, while those who were still employed in these sectors were likely to have experienced a 15 percent reduction in real income (Hadad-Zervos, 2022). Overall, inequality increased from 37.7 percent in 2019 to 39.8 percent in 2022. Urban and rural poverty are estimated to have tripled and doubled to 15 percent and 26 percent respectively between 2021 and 2022, while the majority of the estate sector population continued to live below the USD 3.65 poverty line (Raiser, 2023; World Bank, 2023b). At the same time children's malnutrition and stunting increased from 7.4 percent to 9.2 percent over the same time period, reflecting the impact of household food insecurity.

1.3 Motivation for the study

Several factors inspired the uptake of this study. Most importantly, the pandemic experience has illustrated the grim reality that the world is one shock away from seeing much of its efforts to close poverty gaps come undone. The pandemic's global poverty impact is estimated to be around four times that of the Asian Financial Crisis of 1997/98, the only other shock to have aggravated global poverty in the last three decades (Yonzan et al., 2022). Alkire et al. (2021) estimate that the pandemic may have set back the progress of global multidimensional poverty reduction by between four and nine years. Worse, the pandemic-induced income inequalities could increase in the long-run, as observed in the recent past in the aftermath of similar shocks, despite government efforts to transfer incomes from the rich to the poor to mitigate the adverse effects of the pandemic (Furceri et al., 2020). Thus, the pandemic has not only reversed much of the recent success in global poverty reduction, but may also jeopardise the possibility of achieving most of the Sustainable Development Goals, especially to eradicate global poverty, by 2030 (Gurara et al., 2020; Tateno and Zoundi, 2021).

The policy responses to control the pandemic thrust into poverty a sizable number of individuals worldwide who would not have been poor under normal circumstances. The characteristics of this 'new poor' segment are different from those of the chronically poor or the population at large. The pandemic-induced 'new poor' are predominantly from urban areas, have higher educational outcomes, and work paid jobs in industry and services sectors, unlike the 'old poor' (i.e., those already living below the poverty line before the pandemic) who typically reside in rural areas, have low education levels and tend to work as own account workers or unpaid family workers (Sánchez-Páramo, 2020). They also have more access to infrastructure and own a few more assets than the 'old poor' (Nguyen et al., 2020; Sánchez-Páramo, 2020).

Curiously though, the socioeconomic profile of the 'new poor' is closer to that of the 'old poor' than the non-poor (Atanda and Cojocaru, 2021; Nguyen et al., 2020). In effect, these are likely to be persons who have just come out of poverty or have been hovering just above the poverty line prior to the outbreak of the pandemic. Importantly, the majority of the pandemic's new poor are from South Asia and Sub-

Saharan Africa (Lakner et al., 2020), where about 85 percent of the pre-pandemic world's poor were already concentrated (Katayama and Wadhwa, 2019). These statistics not only highlight weaknesses in existing poverty reduction strategies in addressing root causes of poverty, but also challenge the conventional dichotomy between the poor and non-poor. Clearly, a significant number of individuals who were theoretically considered non-poor have fallen into poverty during the pandemic.

Although it is not uncommon for external shocks to increase transient poverty (Bayudan-Dacuycuy and Lim, 2013; Kapur, 2003), a prolonged or acute crisis runs the risk of aggravating such poverty into chronic conditions (M. H. Khan, 2000; Valensisi, 2020). The long duration of the pandemic, its massive impact on the global demand-supply conditions, the erosion of fiscal spaces amidst increased pandemic-related expenditure, and the onset of new exogeneous shocks (mainly the Russia-Ukraine war) which has further slowed economic recovery across many countries, may have created pathways from transient into persistent poverty for many who were made poor and poorer by the pandemic.

In both advanced and developing economies, the brunt of the pandemic's economic burden was borne by vulnerable and disadvantaged groups. The incidence of job and income losses was higher among workers with low-educational outcomes, temporary and casual workers, women, the youth and self-employed (Adams-Prassl et al., 2020; Petersen et al., 2022; World Bank, 2022b). Adverse non-income effects of the pandemic on women [due to, for example the increased domestic care burden (Power, 2020), heightened exposure to domestic violence (Roesch et al., 2020)], limited access to reproductive healthcare (Connor et al., 2020)], the elderly (Oliveira et al., 2022; Pant and Subedi, 2020), persons with disabilities (Hasan et al., 2021; Wang et al., 2022), ethno-religious minorities (Bentley, 2020; Tai et al., 2021) and other marginalised groups are likely to have worsened their multidimension poverty.

Furthermore, pandemic-induced income shocks have pushed poor households to resort to detrimental coping strategies such as cutting down on food, health and educational expenses, selling productive assets or withdrawing savings (Foundation for International Community Assistance [FINCA], 2022; Islam and Mostafa, 2021; Kang et al., 2023). Such coping mechanisms not only jeopardise the growth of

human capital and productivity of households in the long-run (Nikoloski, 2020; Valensisi, 2020), but also compromise their resilience to further shocks that might arise during the recovery phase (World Bank, 2022b).

The path to recovery is further complicated given the fragile immediate macroeconomic outlook and inequities in post-pandemic economic rebound. Although the global economy expanded 5.9 percent in 2021 as the pandemic was gradually brought under control, the recovery has been conspicuously unequal, with poorer economies experiencing much less growth compared to high-income economies (World Bank, 2023a)[3]. The immediate macroeconomic outlook continues to remain lacklustre, as the global GDP is estimated to expand only a meagre 3.1 percent in 2024 and 3.2 percent in 2025 (International Monetary Fund [IMF], 2024). Although fiscal easing beyond what is required may spur short-term growth, there is a risk of subsequent sharp downward corrections in this temporary economic growth (Ibid). Thus, the sluggish global recovery may prolong the post-pandemic recovery of poorer economies, further exacerbating the gap between the richest and poorest countries (Gill and Nishio, 2021). More alarmingly, the impact of poverty due to the COVID-19 pandemic on the poorest economies is expected to worsen, and faster than forecast pre-pandemic levels (Mahler et al., 2021).

Reimagining vulnerability

The silver lining to the chaos the pandemic has unleashed upon the world is the window of opportunity it had cracked open to rethink assumptions (Rapanta et al., 2021) and overhaul weak social and economic systems, and the renewed interest among state and non-state actors to change the pre-pandemic growth trajectory (Zakaria, 2022) and to reimagine a new normal. Most importantly, the sobering impacts of the pandemic on global poverty has given us a strong impetus to question our traditional definitions of vulnerability. The Lancet (2020) writes:

> "Vulnerable groups of people are those that are disproportionally exposed to risk, but who is included in these groups can change dynamically. A person not considered vulnerable at the outset of a

[3] For example, compared to about 40 percent of the advanced economies that managed to surpass their 2019 per capita income levels in 2021, only 27 percent of middle-income countries and 21 percent of low-income countries managed to do so (World Bank, 2022b).

> pandemic can become vulnerable depending on the policy response." (para. 1)

The idea of a post-pandemic 'new normal' has spurred a sizeable literature that explores how it could be in a number of areas such as medicine and healthcare, education, digital technology, information technology, business resilience, employment and livelihoods, skills development and training, tourism, agriculture, food security and development planning. More importantly, the pandemic experience illuminates the importance of strengthening preventive mechanisms against future shocks and calls for more robust and dynamic diagnostic measures to monitor changes in poverty-vulnerability risks (Ramos and Lara, 2022).

We expect this research study to contribute to the growing global literature on household socioeconomic vulnerability in the face of shocks. We also hope our study would add to evidence on drivers of income and multidimensional deprivations from the Global South. In addition, we believe the findings of this study would be relevant in the context of Sri Lanka's own polycrisis. As both state and non-state actors take on a more expanded and comprehensive approach to poverty and vulnerability, we anticipate our findings will provide timely and useful insights for the government's social protection policy formulation and programs. We also expect that the findings emerging from our study will inform the design and implementation of development projects and social protection and inclusion programmes by international development agencies.

1.4 Survey design, questionnaire and sample

For the quantitative study, we developed a household survey questionnaire to collect primary data from a total of 4,000 households. The questionnaire included several schedules of questions about household characteristics, characteristics of the members of the household, experiences in relation to the pandemic, income and expenditure data and any changes in income and consumption patterns, assets and debt, coping methods and their perceptions of and concerns about the future.

As the economic circumstances deteriorated rapidly between when this study was originally conceptualised and when the questionnaire was designed, the scope was

expanded to cover the impacts of the economic crisis in addition to the shock of the pandemic. The questionnaire went through several rounds of revisions and benefited from constructive feedback from the qualitative research team of the broader study. Prior to being finalised, the questionnaire was also vetted for ethical implications by a panel of experts in the ethical review committee appointed for the purposes of the project.

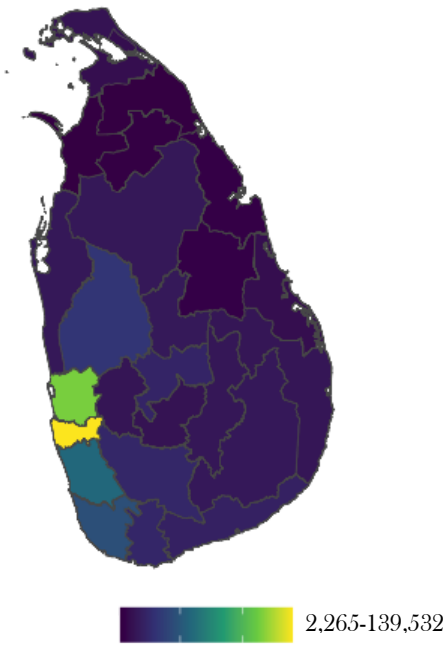
A total of 17 enumerators and two data entry operators underwent a two-day training on administering the questionnaire and also piloted the questionnaire before the rollout of the survey. The final survey instruments were translated into local languages after a few minor revisions were incorporated into the questionnaire following the piloting exercise. The data collection took place over three months from early August, 2022. The finalised clean dataset was submitted in mid-December, 2022.

Time and resource availability, as well as logistical challenges at the time, were key considerations in determining the geographic coverage of the survey and the sample size. The nine districts that were selected for the survey, namely Colombo, Kandy, Galle, Jaffna, Ampara, Kurunegala, Anuradhapura, Badulla and Ratnapura, were the districts with the highest number of confirmed COVID-19 cases in each province as of June, 2022 (Figure 1). We weighted the share of households to be surveyed from each district proportionate to the weights assigned to these nine districts in the 2019 Household Income and Expenditure Survey (HIES) (Table 1). Although our initial plan was to obtain lists of households from the Divisional Secretariats in the nine districts for random sampling, the strains of the economic crisis on the government administration led us to alter our strategy. Instead, we opted to randomly select stretches of road from the lists of roads made available online by the Road Development Authority (RDA).

In each district, we allocated 50 percent of our sample to main roads (categories A and B), while the remaining 50 percent was allocated to secondary and minor roads (categories C and D). We then conducted our survey by traveling along these selected roads, covering distances between 1 and 1.5 kilometers along each road. The starting point on each road was a random household about a kilometer from where the road begins. During this process, we selected households located alongside these roads as well as those situated on private roads branching off from

the four road categories. From the starting point, every other household meeting our criteria for the respondent[4] was interviewed.[5] This approach allowed us to capture a diverse range of households while adapting to the constraints imposed by the economic crisis on our original sampling plan. The questionnaire was administered to the principal female respondent (PFR) of the household. A final sample of 3,914 households, excluding those with missing and inaccurate data, was submitted for analysis, the results of which are discussed in the ensuing chapters.

Figure 1: Prevalence of COVID infections



Source: Epidemiology Unit, 2022; DCS, 2022

[4] The respondent is the principal female of the household. She is either the head of the household or the wife or primary female relative of the head of the household. Age limit 18-70.

[5] Due to COVID and challenges of the economic crisis, we were unable to use approaches that would have strengthened the randomization of the sample such as applying a longer sample interval and cover stretches longer than 1.5 km, or following the right-hand rule for sample selection.

Table 1: Sampling frame

	Covid hosp.	HIES weight	Reassigned weights
Colombo	139,532	9%	21%
Kandy	22,199	6%	13%
Galle	45,686	6%	13%
Jaffna	12,329	3%	8%
Ampara	14,073	4%	8%
Kurunegala	31,504	6%	14%
Anuradhapura	15,057	3%	7%
Badulla	14,633	4%	8%
Ratnapura	23,702	4%	9%

Source: Epidemiology Unit, 2022; DCS, 2022; Authors

1.5 Limitations of the study

In this section we outline a few limitations of the study that the reader should keep in mind. First, this study was initially conceptualised at the height of the COVID-19 pandemic which encouraged us to look at the COVID infection patterns as a guide for selecting research sites. The subsequent economic crisis might have been worse than in the districts we have selected for the study. Moreover, we recognise that household vulnerability may have worsened even further in the second half of 2022 and in 2023, after the data collection was completed. Next, our findings are not nationally representative, although our sample selection focused on at least one district in each province. Furthermore, pre-existing socioeconomic weaknesses were not part of our research-site selection criteria, given our original focus on the impact of the pandemic. The scope of vulnerability examined in this research study is by and large limited to the possible impacts of the pandemic (and with some consideration given to the economic crisis). Our analysis has not looked at other potential external stressors such as climate change, government policy changes (such as the ban on chemical fertiliser), natural disasters or external geopolitical tensions, although they may also have played a role in influencing household vulnerability to income and food insecurity.

A few conceptual and methodological limitations should also be discussed before proceeding. As will be discussed in more detail in Chapter 3, vulnerability is a vast, dynamic, and complex phenomenon that eludes a universal definition. It is a latent concept, which in quantitative analysis is often inferred through a set of proxy variables. In this research study, we confine the scope of vulnerability to the dimensions of income and food insecurity. As such, the variables we have constructed to represent household income and food insecurity with available data may not fully capture the depth and extent of household vulnerability experience. Next, our econometric analysis examines vulnerability to income and food security only from an ex-post perspective. Typically, vulnerability is a forward-looking concept which assesses the future risk of facing a negative outcome [see details in Chapter 3], and is therefore inherently predictive, unlike poverty which is a retrospective concept. However, we do not attempt to forecast the types of households that are vulnerable to income or food insecurity in the future. Instead, we only attempt to understand the characteristics of households that have been vulnerable to income and food insecurity, based on our definitions of what these variables constitute. We also do not make causal linkages between household characteristics and their vulnerability to income and food insecurity. Finally, in this particular research study, we have not looked at other essential expenses related to health and education which may also provide useful insights about household vulnerability.

1.6 Organisation of the study

The remainder of this research study is organised as follows. In the next chapter, we provide a brief overview of the pandemic experience both globally and in Sri Lanka. We also discuss the economic crisis of Sri Lanka that unfolded on the heels of the pandemic and the impacts of these crises on household economic conditions. Chapter 3 presents the theoretical framework that underpins the empirical strategy for data analysis along with the definitions of both outcome variables of interest and possible independent variables. Chapter 4 uses primary data to describe the challenges households faced in meeting basic household expenditures, the impact of economic stressors on their subjective well-being, and their impressions about the future economic outlook. In Chapters 5 and 6, we present and discuss the results of our econometric analyses. Chapter 7 concludes with some policy reflections.

2. Pandemic experience: A brief overview

2.1 Introduction

The first confirmed case of COVID-19 was reported in Wuhan, China in December, 2019. Within a span of a few months, the isolated incident metamorphosised into a global pandemic, and a state of health emergency was issued by the World Health Organization (WHO) in January, 2020. As of February, 2024, the number of confirmed cases stood at over 774m, of which about 7m (1 percent) were confirmed deaths[6]. Vaccines developed against the virus were approved in August, 2021. According to the latest available data, about 67 percent have obtained the recommended doses of the primary COVID-19 vaccine, while about 32 percent have received at least one booster dose globally[7].

2.2 Sri Lanka's pandemic experience

Wave one

Sri Lanka experienced three distinct waves of the COVID-19 pandemic over the 2020-2021 period. The first wave was characterised by both proactive and stringent strategies undertaken by the then government to contain the spread of the COVID-19 pandemic (Amaratunga et al., 2020). Since the first confirmed COVID-19 case, a Chinese national, was reported on January 27, 2020, the government moved swiftly to suspend visas for Chinese travellers, impose a 14-day quarantine period for travellers who had come from or through China, Iran, Italy or South Korea, where the pandemic was spreading swiftly, and to promote the use of face masks and other precautionary behaviours among the general public. However, mobility restrictions were not imposed until mid-March, when the number of confirmed COVID-19 cases increased to close to 20 in a span of about five days[8]. An island-wide curfew was imposed on March 20, 2020, restricting mobility to essential purposes; non-essential activities were discontinued with a work from home option, schools

[6] Data as of February 11, 2024 on WHO COVID-19 dashboard, available at https://data.who.int/dashboards/covid19/cases?n=c

[7] See more details on the WHO COVID-10 dashboard available at https://data.who.int/dashboards/covid19/vaccines?n=c

[8] For a detailed timeline of the COVID-19 outbreak in Sri Lanka see: https://disease.lk/covid-sl-timeline/

and universities were closed, public gatherings were banned, and the airport was closed for commercial passenger flights.

The military played a central role in Sri Lanka's pandemic prevention strategy carrying out a range of activities, from operating a total of 54 quarantine centres, implementing contact tracing, imposing border management and enforcing quarantine regulations, to rolling out the vaccination programme. Although the prominent role the military played in the pandemic prevention strategies has been criticised as invasive militarisation of public spaces and suppressive towards ethno-religious minorities (Hettiarachchi et al., 2021; Jang, 2020; Peiris, 2021), the use of available resources for pandemic mitigation was a pragmatic measure in a resource-tight situation (Hettiarachchi et al., 2021). The military was also seen as a key support system for crisis assistance (Jayasena and Chinthaka, 2020). However, despite these ethical concerns, the World Health Organization (WHO) endorsed the government's efforts to control the spread of the virus (Wickramasinghe and Fernando, 2022). Towards the second half of 2020, the strict mobility restrictions put in place were gradually eased and the country returned to a new normal of functioning.

Despite having limited fiscal space, the government increased its spending to support low-income and vulnerable households affected by the pandemic during the first wave. These included regular cash transfer programmes with an increased coverage, and new cash transfers and/or benefits in kind targeting households in quarantine. Poor households benefited from these initiatives, although a better-targeted approach would have been more effective in supporting the most vulnerable (World Bank, 2021). The government also arranged debt moratoriums for business activities in affected sectors, and concessionary working capital loans to protect livelihoods and employment. In addition, the government also launched training and employment programmes targeting unemployed graduates and low-income families (World Bank, 2021).

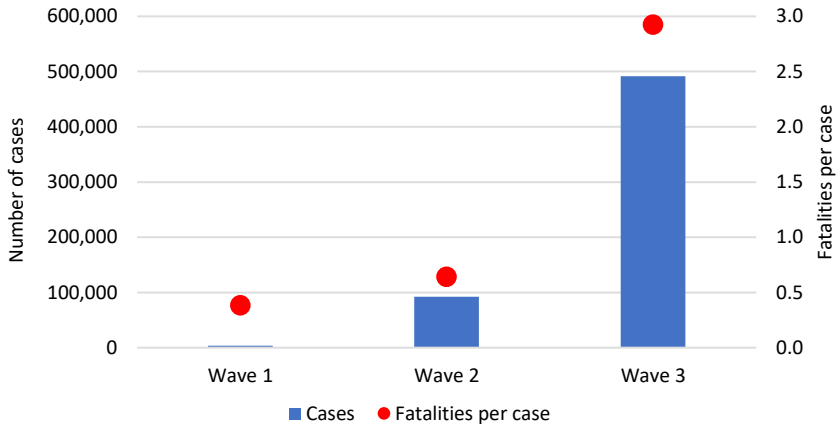
Wave two and wave three

The second and third waves of the COVID-19 pandemic, which lasted from October, 2020 to March, 2021 and April to December, 2021 respectively, saw a sharp increase in the number of cases, hospitalisations and deaths (Figure 2),

as feared by Jayasena and Chinthaka (2020) who pondered if Sri Lanka, with aggressive measures taken to control the pandemic at the outset, "has … increased its chances of a second wave of COVID-19 by acting too fast, too soon?" (p.464). At the same time, however, the new variants of the virus were also much more aggressive in both contagion and severity compared to the Alpha variant which was dominant during the first wave. The Delta variant of the virus, which was dominant in the second wave, was an estimated 80-90 percent more contagious and roughly doubled the hospitalisation risk of unvaccinated infected persons, compared to its predecessor, Alpha (Katella, 2023). The Omicron variant, prevalent in Botswana and South Africa in late 2021, was found to be even more transmissible than Delta, both inside and outside home (Mallapaty, 2022), albeit being less severe than its predecessor (Hyams et al., 2023). Nevertheless, the severity of the contagion was seen to increase the hospitalisation and fatality rates among those who contracted the virus (Katella, 2023).

The sharp surge in the number of patients rendered the existing healthcare facilities and resources inadequate. As the hospital beds and isolation centres were not sufficient to treat the sick and the infected, some patients had to be treated at home (Fowsar et al., 2022). The shortages in essential supplies such as ICU beds, ventilators and oxygen also had adverse effects, especially on patients with severe respiratory problems (Jayawardena, 2021). Managing the situation was also made complicated by the delays in releasing PCR results, malfunctioning of PCR machines and differential pricing of PCR tests (EconomyNext, 2021; Fowsar et al., 2022; Jayawardena, 2021). Structural problems such as the lack of adequate IT infrastructure in the healthcare system, subpar databases, and the absence of facilities for systematic surveillance of the pandemic also contributed to difficulties in controlling the spread of the pandemic during its second and third waves (Jayawardena, 2021).

Figure 2: COVID cases and fatalities



Source: Epidemiology Unit, Ministry of Health (2021)

Despite the rapid increase in the number of cases, the economy was kept open for the most part of the second and third waves, due to both real and perceived economic costs of enforcing pandemic control protocols (Marso, 2022; Rannan-Eliya et al., n.d.). The extreme measures undertaken at the outset to control the spread of the virus, as well as the weakened global demand due to the pandemic, had taken a heavy toll on the economy in the first half of 2020, as reflected in its sharp contraction of 17.1 percent in the second quarter of 2020. The benevolent fiscal measures implemented during the first wave for health and safety, cash transfers and suspended tax payments, which accounted for about 0.7 percent of GDP, worsened the fiscal deficit and increased public debt to about 110 percent of GDP in 2020. Quite apart from these real challenges, concerns about perceived economic and political costs of national lockdowns, especially among low-income households, also dissuaded the government from once again resorting to such drastic measures (Rannan-Eliya et al., n.d.). Although two lockdown periods were imposed during May-June, 2021 and August-October, 2021 they were quite lenient which undermined their effectiveness in restricting mobility (Ibid). By and large, during these waves, the mobility restrictions were limited to high-risk areas, while country-wide quarantine curfews were only imposed during the night. As of July, 2023, two months after the global emergency status of the COVID-19 pandemic was ended, the confirmed cases from Sri Lanka stood at a little below 680,000, and the pandemic-related fatalities, close to 17,000 (Epidemiology Unit of the Ministry of Health, 2023).

2.3 Post-COVID economic crisis in Sri Lanka

The pandemic broke out in Sri Lanka when the economy was in an extremely fragile state. The economy, which had failed to register high, single digit growth since 2012, was further weakened by the Easter Attacks in April, 2019. The strains imposed on the economy from the stringent measures adopted to control the spread of the virus during its first wave shrank the economy further, registering a negative growth of 4.6 percent in 2020, having contracted 0.2 percent in 2019 (Central Bank of Sri Lanka [CBSL], 2023). Tourism, construction, manufacturing and transport sectors were the hardest hit, while tea, textiles and other industrial exports declined sharply amidst a cooling in global demand (World Bank, 2021). On the external front, a slowdown in the inflows to the financial account, coupled with substantial external debt service payments, depleted foreign reserves by a quarter to USD 5.7b (CBSL, 2021). Sri Lanka's sovereign credit rating was downgraded in April, 2020 on account of the widened fiscal deficit due to a sharp reduction in government revenues after the 2019 tax reduction. The downgrade increased the cost of borrowing for the government and further tightened the external liquidation position of the country (World Bank, 2021).

The economy rebounded in the first half of 2021, expanding 4.5 percent and 13.8 percent over the first and second quarters respectively, owing to a successful vaccination drive. However, this growth was short-lived as the largest economic crisis in local history started unfolding in the second half of the year. While the pandemic and the Easter Attacks of 2019 had a debilitating effect on the domestic economy and the external sector, it was the compounding effects of fiscal mismanagement, imprudent macroeconomic decisions, misuse of monetary policy, and delays in policy responses that exacerbated the 2020 economic contraction to a crisis of unprecedented magnitude. A rash decision made in April, 2021 to ban the import of agrochemicals put further strains on the economy amidst a sharp decline in yields and pushed the government to declare an economic emergency in August, 2021 following a sharp increase in food inflation and food insecurity (Drechsel et al., 2023). The overlapping effects of sovereign credit downgrading, depleting foreign reserves, an overvalued exchange rate, the negative impact on agricultural production, weak investor confidence and an overall global economic downturn brought the local economy to a standstill by early 2022, having expanded 3.5 percent in 2021 from a low base in 2020. (For a detailed discussion of Sri

Lanka's recent economic crisis see George et al., 2022; Ramakumar, 2022; World Bank, 2022a)

The sharp uptick in inflation compounded the challenges of the economic crisis. A decision in March, 2022 to free float the rupee led to a depreciation of the currency by close to 80 percent between March and May, 2022, which resulted in a sharp increase in the cost of imports. Drastic measures to cut imports led to a shortage of goods, pushing up the prices of existing inventory. The prices of fuel, gas and kerosene oil underwent several upward revisions in 2022. Furthermore, water and electricity tariffs, which had remained unchanged for about 10 and 8 years respectively, were substantially increased in late 2022. These price revisions, coupled with the decline in the rupee value, inventory shortages and the excessive money supply in the economy, caused inflation to soar, peaking at around 70 percent in September, 2022, and eroding the real value of income. The exogenous shocks from Russia's invasion of Ukraine also contributed to the crisis through price rallies and shortages of food, medicine, LP gas, fuel and raw material required for the agricultural and industry sectors (Wijesinghe, 2022). By April, 2022, daily power cuts as long as 13+ hours were implemented due to insufficient fuel stocks to generate electricity. In April, 2022 Sri Lanka also defaulted on its external debt repayments. By June, 2022, the gross reserves had depleted to less than USD 400m from USD 7.6b in 2019.

The crippling effects of the increased cost of living, coupled with difficulties in securing household essentials, economic uncertainty, and loss of confidence in the government, spurred a series of protests, which lasted from April to July, 2022 and culminated in the ousting of the then-president Gotabaya Rajapaksa and the election of an interim president and cabinet. The economy declined 7.8 percent in 2022, marking its second year of consecutive contraction.

2.4 Impact of COVID-19 and economic crisis on household poverty in Sri Lanka

As discussed earlier, the pandemic and the economic crisis led to a sharp increase in poverty levels in Sri Lanka. Between 2019 and 2022, the proportion of people living in poverty (USD 3.65 per capita based on 2017 purchasing power parity) increased from 11.3 percent to 25 percent (World Bank, 2023b). The poverty rate is expected

to have risen further, albeit slower, in 2023 (R. A. Walker et al., 2023). LIRNEasia (2023) estimates that about 4m more individuals have fallen into poverty between 2019 and 2023. Urban and rural poverty are estimated to have tripled and doubled to 15 percent and 26 percent between 2021 and 2022, while the majority of the estate sector population continue live below the USD 3.65 poverty line (Raiser, 2023; World Bank, 2023b). Furthermore, the poverty gap, which measures the distance to the poverty line, is estimated to have widened from 17.9 percent in 2019 to 20 percent in 2020 (World Bank, 2021). Thus, not only did the number of people living in poverty increase in 2020, those already in poverty found themselves in deeper poverty in 2020 compared to 2019 (Ibid). Moreover, overall inequalities also worsened from 37.7 percent in 2019 to 39.8 percent in 2022. In addition, with an increase in the number of individuals hovering marginally above the poverty line between 2020 and 2022, vulnerability to income shocks had also increased (R. A. Walker et al., 2023).

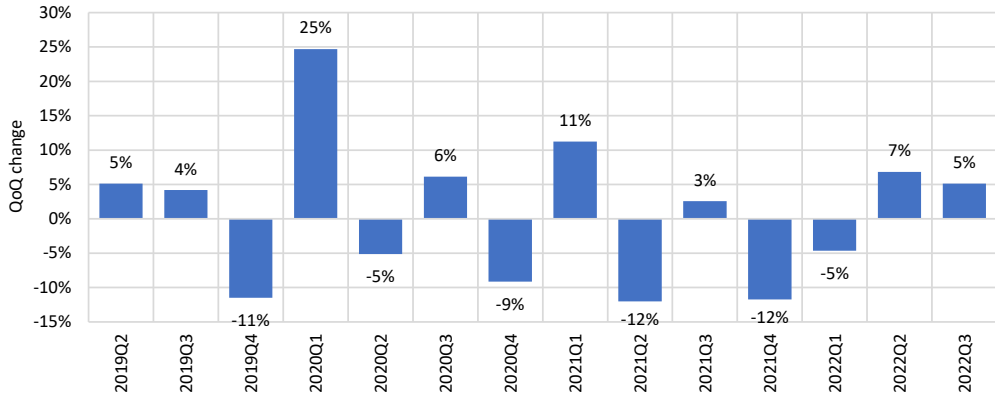
There has been a sharp increase in household food vulnerability and malnutrition, too. In 2022, according to estimates of a survey conducted by the Food and Agriculture Organization (FAO) and the World Food Programme (WFP) (2022), about 6.2m or 28 percent of the population in Sri Lanka were moderately acute food insecure, and about 66,000 persons were severely acute food secure[9]. The survey also observed that about 61 percent of the households employed food-based coping strategies because they did not have enough money to buy food. This share was as high as 80 percent in the estate sector, underscoring how pre-existing socioeconomic vulnerabilities are reinforced and exacerbated in crisis situations.

Furthermore, the latest data from the Family Health Bureau shows a decline in children and maternal health indicators, both nationally and district-wise. For example, 16.2 percent of children under five years of age were underweight as of June 2023, up from 14 percent in June 2022, and the share of pregnant women with anaemia increased from 14.3 percent to 16.0 percent during the same period (Family Health Bureau, 2024). There has also been an increase in the number of births with low weight and wasting and stunting among children across almost all districts, alluding to the impact of household food insecurity.

[9] However, the share of population in moderately acute food insecurity is estimated to have declined to 3.2m (17 percent) from 6.2m (28 percent) from May 2022 to April/May 2023 (WFP, 2023)

The regressive effects of the pandemic on the labour market was the main driver of poverty among local households in 2020 (Gunatilaka and Chandrasiri, 2022). Statistics from the 2020 labour force survey shows that close to 100,000 persons were unemployed in the first quarter of 2020, up about 25 percent from the previous quarter. For the full year, the number of unemployed persons increased 14 percent year-on-year to a little over 56,000. The World Bank estimates that about 500,000 jobs in industry and service sectors were lost in 2021-22, while those who were still employed in these sectors were likely to have experienced a 15 percent reduction in real income (Hadad-Zervos, 2022).

Figure 3: Quarterly change in the number of persons unemployed (2019-2022)



Source: Quarterly Labour Force Surveys (LFS) (2019-2022)

The distribution of informal and formal sector employment suggests that most job and income losses must have taken place in the informal sector. The majority of the jobs in the hardest hit construction and tourism sectors are in the informal sector (76 percent and 61 percent respectively, according to the 2021 LFS), many of which may have been wiped out amidst a sharp deceleration in activity in these sectors. Secondly, in any sector, it would have been much easier for employers attempting to scale down costs and capacity to lay off informal workers who were not protected by formal labour laws (Dunusinghe, 2021; Hellwig et al., 2022).

Livelihood impacts during the first wave of the pandemic were most severe among the self-employed in the non-agricultural (i.e., industry and services) sector. According to a national survey conducted by the Department of Census and

Statistics (2022), about 1.1m individuals (59 percent) who were self-employed in non-agricultural activities had to stop working temporarily due to the pandemic, while a little over a quarter million (14 percent) respondents had to give up their livelihood permanently. The impact on waged employees was relatively less, but still more than for self-employed individuals working in agriculture. Among waged employees, about 560,000 (12.3 percent) individuals stopped working temporarily, while a little over 300,000 (7 percent) permanently lost their jobs in the first wave of the pandemic. In contrast, of about 1.4m engaged in agricultural self-employment, the large majority was involved in usual activity (64.3 percent) during the pandemic.

Formal sector employees also faced layoffs and temporary loss of employment, as the pandemic threatened the solvency of many firms. In a survey conducted in early 2020, the Department of Labour found that about 38 percent of 2,746 formal private sector firms in the sample were unable to pay salaries to their employees (Wimalaweera, 2020). Moreover, a little over 50 percent of the firms, of which the majority were small firms with only 1-15 employees, were fully closed at the time of the survey. Of the total employees that worked in these firms in February, 2020, 64 percent were no longer there by May, 2020. The lowest share of employee reductions was reported from IT and communication (20.2 percent), and agriculture, forestry and fishing (13.3 percent) sectors. Thus, individuals employed in work that could not be performed offsite, and/or smaller firms with low staff strength (15 or less) were more likely to lose jobs, than those who could make alternative work arrangements, or were employed in larger private firms.

The economic crisis resulted in a sharp increase in income losses and household expenses. A survey conducted by UNICEF and Verité Research (2023) found that 77 percent of the sampled households had experienced income losses between March and October/November, 2022. However, this proportion was higher among estate sector households (91 percent) compared to rural (78 percent) and urban (76 percent) households; and among households living on daily (93 percent) and weekly-wage incomes (90 percent) compared to households earning monthly incomes (51 percent). These income losses corresponded to the higher proportion of job losses in the estate sector (43 percent) compared to urban (38 percent) and rural (36 percent) sectors; and among daily- and weekly-paid jobs (55 percent), compared to monthly-paid jobs (21 percent). The survey data also showed that,

regardless of whether a household experienced a contraction in income, all households experienced a sharp increase in expenses. Thus, even households that were insulated from labour market shocks faced economic distress transmitted through domestic inflation and the depreciation of the rupee.

In summary, this chapter provides an overview of the shocks that unfolded since 2020 which led to an increase in the depth and breadth of poverty in Sri Lanka. The consecutive shocks from the Easter Attacks, the pandemic and the economic crisis led to a sharp deterioration of an already fragile economy and left many households in disarray as they grappled with a variety of economic and multidimensional deprivations. While the pandemic primarily disseminated its shocks through labour market impacts, the economic crisis had more far-reaching negative implications on households. These included continued job and income losses, hyperinflation, shortages of essential goods and services, and other significant challenges to the daily lives of citizens. Ultimately, these factors contributed to civil unrest, culminating in the ousting of the then government.

3. Data and methodology

3.1 Measuring vulnerability

The idea of 'vulnerability' is elusive. Very simply, it is a state of risk of being exposed to harm. In more elaborate terms, "vulnerability represents the physical, economic, political or social susceptibility or predisposition of a community to damage in the case a destabilising phenomenon of natural or anthropogenic origin" (Cardona, 2004, p. 37). Vulnerability to such destabilising conditions among social groups is shaped by their ability to adapt to or adjust to the effects of such shockers (Ibid). Thus, it is not possible to look at vulnerability without also understanding the ability of the at-risk groups to withstand the effects of external stressors and overcome their vulnerabilities (Birkmann, 2006; Bogardi, 2006)[10].

In social sciences, vulnerability is quite often discussed in relation to poverty (Chaudhuri, 2003), a topic which gained renewed focus worldwide with the outbreak of the pandemic. World Bank defines vulnerability to poverty as the likelihood that an individual or a household might fall below the poverty line in the event of a shock (Gao et al., 2020). Thus, unlike poverty, which measures whether an individual or a household is poor in the current circumstances, vulnerability is the probability of being poor in an altered set of circumstances. Accordingly, poverty is determined by one's income or consumption at a given point in time, but vulnerability is measured by looking at average consumption and the variability of consumption at different points in time (Ibid). Thus, vulnerability takes on a forward-looking assessment of poverty (Celidoni, 2013; Mahanta and Das, 2015).

The three most-widely used approaches to (conceptualising and) measuring vulnerability to poverty include vulnerability as expected poverty (VEP), vulnerability as expected low utility (VEU) and vulnerability as uninsured exposure risk (VER). Unlike VEP and VEU approaches which are usually applied to panel or pseudo panel data, VER can be implemented with cross-sectional data, which is the type of data that is mostly available for developing countries. This methodology, first developed by Chaudhari et al. (2002; see also Chaudhuri, 2003), has been expanded and improved upon by Christiaensen and Subbarao (2004), Günther

[10] See Birkmann (2006) for a detailed discussion about the different definitions of vulnerability.

and Harttgen (2009), Jadotte (2010) and Gao et al. (2020) and is employed in a nascent body of empirical literature on the topic from developing countries (See for example, Skoufias et al., 2021; Atamanov et al., 2022; Khosla and Jena, 2022; Rude and Robayo, 2023; Solomon and Kumar De, 2023).

However, in this study, we do not attempt to measure households' vulnerability to poverty as such, which is anyway a difficult task as vulnerability is not easily determinable in an objective manner in the absence of a concrete, universal definition (H. Zhang et al., 2020). Instead, what we attempt is to examine the types of characteristics of a household that have compromised its resilience to the impact of the pandemic and economic crisis. Thus, in our analysis, we take somewhat of a counterintuitive ex-post viewpoint on household vulnerability, taking advantage of the lack of consensus on its definition. For the purposes of our econometric analysis, we use income and food insecurity as proxy variables to reveal household income and non-income vulnerability respectively.

3.2 Outcome variables

Vulnerability to income insecurity

Our first outcome variable of interest is vulnerability to income insecurity. We rely on the International Labour Organization's (ILO) definition of income security[11] to construct several outcome variables that represent what it is not. In other words, as income security is about actual, perceived and expected income, we construct and employ several outcome variables that are indicative of income insecurity along its different aspects. As the shocks of the pandemic and the economic crisis were transmitted to households predominantly through their impact on incomes, we consider vulnerability to poverty, which is an unobserved latent variable, to be revealed by income insecurity.

We consider five dichotomous outcome variables which take a value of 1 if yes and 0 if otherwise: (i) income is lower now compared to two years ago; (ii) income is not enough to get to the end of the month; (iii) cannot manage with current

[11] See the full definition at https://www.ilo.org/sesame/SESHELP.NoteISI#:~:text=About%20the%20ILO,old%20age%20or%20disability%20retirement.

income; (iv) the respondent is worried about job losses; and (v) the respondent is worried about income loss in the future. We collected responses for (iii), (iv) and (v) above on a Likert scale, where we enumerated how often a respondent worries about each issue on a daily basis. We assigned a value of 1 if the enumerator was worried all the time or often, and zero otherwise. We also use the log of per capita household income as an outcome variable of interest in our econometric model to understand the drivers of household income, an analysis we undertake for the sake of completeness in our inquiry.

Vulnerability to food insecurity

While there is a plethora of ways in which food insecurity is defined, the broad idea all of them encapsulate is a reduced food intake in terms of quality and quantity, such that it adversely affects a person's nourishment. Thus, availability, access and stability (Pingali et al., 2005) are important dimensions to explore in an inquiry into food insecurity. Vulnerability to food insecurity can be thought of as the risk of falling into food insecurity, although food insecurity and food vulnerability have been used interchangeably in literature (Hart, 2009).

The fluidity of the food insecurity definition makes it more malleable in terms of how proxy indicators are constructed, operationalised and measured. For example, from a rapid review of relevant literature, we found that food insecurity (and vulnerability thereto) was revealed through a range of observed variables including caloric intake (Azeem et al., 2016; Bashir et al., 2018; Christiaensen and Boisvert, 2000), uncertainty about future food supply, insufficient food intake, lack of quality and variety of food, experiences of hunger, sources of food, affordability of food (Brown et al., 2022; Kimani-Murage et al., 2014), food-based coping strategies such as eating less preferred foods, consuming less than usual or skipping meals (Babatunde et al., 2008), and standard food insecurity scales developed by various organisations (Ndobo and Sekhampu, 2013; Pakravan-Charvadeh et al., 2021). These variables are either used individually as dichotomous variables, categorised ordinally to reflect varying degrees of risk intensity, or incorporated as constituents of an index with one or more thresholds for different levels of vulnerability to food insecurity.

The survey questionnaire collected information on the frequency of meals consumed as well as their quality through questions about protein consumption, portion sizes, skipped meals and perceptions about the quality of food households consumed. It also inquired about food-based coping strategies. From this wide range of information on food consumption, we chose four variables as outcome variables. The first is whether households could not afford to eat a protein at least once a day. The second and third outcome variables capture if households have had to cut portion sizes and skip meals regularly because of financial constraints, respectively. The fourth and final outcome variable is whether respondents believed their households could not afford to eat a balanced meal regularly in the past six months. As all these variables are binary, they were ascribed a value of 1 if yes, and 0 otherwise.

In constructing both outcome variables for our econometric analysis, we decided against creating an index given the subjective judgement involved in defining cut-off points and weights of the index constituents (Bowman et al., 2017). Instead, we constructed individual variables that reveal different aspects of vulnerability to income and food insecurity (Vithanagama and Gunatilaka, 2023). This is because individual indicators, as opposed to their aggregation, tend to be more amenable to measurement (Greene and South, 2006).

3.3 Methodology

We employ logistic regression for our empirical strategy as it is suitable for regression analyses involving dichotomous outcome variables. The econometric model is specified as follows:

$$Prob(Y_i|X_i) = F(\alpha + \beta X_i) + \varepsilon_i \qquad (1)$$

where Y_i are the dichotomous outcome variables of interest discussed in the preceding section, and X_i is a vector of non-random independent variables. The error term ε_i is assumed to represent the unobserved component of the latent variable and has a logistic distribution with a mean of zero and a variance of $\Omega^2/3$. The logistic function is:

$$F(Z) = \frac{1}{1+e^{-z}} = \frac{e^{z}}{e^{z}+1} \qquad (2)$$

The regression coefficients β are estimated using maximum likelihood.

As three outcome variables on income insecurity (namely, the household cannot manage with current income, the respondent is worried about job losses, and the respondent is worried about income loss in the future) have a range of responses following a meaningful sequential order, we submit these outcome variables to an ordered logistic regression analysis. In the ordered logistic model Y_i in (1) above is the observed ordinal variable, which in turn is a function of another variable Y_i^*, the continuous unobserved variable. Y_i^* is bound to the observed Y_i through the unknown threshold μ_j (μ_o= -∞ and μ_j= ∞) which delineates different levels of Y_i^*. As Y_i^* has five categories, Y_i^* in this analysis will have four threshold points (5-1).

Next, we submit the log of per capita income, which is a continuous variable, to an Ordinary Least Squares (OLS) regression, specified as follows:

$$Y_i = \alpha + \beta X_i + \varepsilon_i \qquad (3)$$

where Y_i is the log of per capital income, X_i is a vector of non-random explanatory variables for the ith household, and β is the corresponding vector of regression coefficients to be estimated. The error term ε_i is assumed to be an unobserved normally distributed random variable with a mean of zero and a variance of σ^2. The coefficient parameters β, and ε are estimated with the OLS method. All econometric procedures establish associational relationships and do not attempt to make causal linkages. The independent variables used in the regression models are presented next.

3.4 Independent variables

Vulnerability to income insecurity

The selection of our independent variables for the empirical analysis is informed by a brief review of extant literature on the topic, observations from the descriptive statistics analysis presented in Chapter 4 below, as well as the large body of reports,

policy briefs, blog posts and articles we perused to explore potential drivers of household vulnerability to the economic impacts of the pandemic both locally and globally. We group our independent variables into four broad categories, namely, the characteristics of the head of the household, household demographics, asset ownership and debt obligations of the household, and household pandemic experiences. We control for district fixed effects to absorb any unobserved heterogeneities at the district level.

A household's resilience to external shocks is inherently linked to its human, physical, financial and social capital endowment (Béné et al., 2017). In many empirical studies, the human capital characteristics of the head of the household make up a critical component in assessing the socioeconomic vulnerability of a household. For example, age, gender and education of the head of the household (HOH) are important demographic predictors of households' socioeconomic vulnerability (See for example, Bidisha et al., 2021; Bruce et al., 2022; Khan et al., 2022). Accordingly, we include two continuous variables for the HOH's age and its square. We construct binary variables to capture the HOH's gender which takes on a value of 1 if the HOH is female and 0 otherwise and whether they were employed or not at the time of the data collection. We generate five binary variables for HOH's education, no schooling or primary only, 5-9 years of schooling, 10-11 years of schooling, 12-13 years of schooling, and higher education. We use the first of these five educational variables as our reference category in our analyses.

Next, given the pandemic's negative impact on labour market outcomes (Lee et al., 2020; Khamis et al., 2021; Gunatilaka and Chandrasiri, 2022), we include several variables to capture the labour force participation characteristics of working age (17-64) household members. Specifically, we construct variables for the share of employees by job tenure (permanent, temporary or casual), the share of persons by job type (government or private employee, employer or family worker), and the share of unemployed individuals as a percentage of the number of working age adults in the household.

A large body of literature has documented the disproportionately higher negative impacts of the pandemic on persons with disabilities. In addition to the negative effects of the pandemic on the mental health of persons with disabilities, income losses have made their situation within households particularly vulnerable

(Shakespeare et al., 2021; Friedman, 2022; Streuli et al., 2023). Moreover, many empirical studies have established that there is often a non-trivial extra cost of disability that a household bears in the presence of persons with disabilities, even in the absence of external stressors (Zaidi and Burchardt, 2005; Mont and Cuong, 2011; Minh et al., 2015; Asuman et al., 2020). Therefore, we constructed a binary variable to capture whether a household has persons with disabilities that needs extra financial or medical assistance due to their health conditions. We also include a variable to account for the number of children in the household, because the presence of children (and other dependents) tends to influence a household's earning capacity (Rahman, 2013; Aikaeli et al., 2021).

We construct several binary variables to capture the financial resilience of households. As earned incomes are adversely impacted by the pandemic, access to sources of income that are unaffected by the pandemic can be beneficial for many households to cover their basic expenses (Midões & Seré, 2022). Therefore, we include two variables on transfer payments, namely pension income and overseas remittance inflows, which several studies from elsewhere have confirmed improve material well-being of households (Shimizutani and Yamada, 2021; Moniruzzaman, 2022; Tapsoba, 2022; L. Zhang et al., 2022; Nanziri and Mwale, 2023). Next, we incorporate a few variables to reflect the ownership of illiquid (land and fixed deposits) and liquid (jewellery, savings deposits and seettu) assets (Arun et al., 2013; Senadjki et al., 2017; Noerhidajati et al., 2021; H. Zhang et al., 2020). We capture their social capital through a binary variable on whether or not they have friends and relatives they can rely on for financial or in-kind support, in the event of a difficulty (Vo, 2018; Malherbe et al., 2020; H. Zhang et al., 2020; Y. Zhang and Zhao, 2024). The next set of variables capture whether or not households have debt obligations (Brickell et al., 2020; Koomson et al., 2020; Sun et al., 2020; Aikaeli et al., 2021). Specifically, we look at whether households have bank loans, leases, microfinance loans or instalment payments. We did not include variables capturing borrowings from informal sources due to concerns of endogeneity.

Next, we look at potential idiosyncratic shocks that households have experienced due to the pandemic and the economic crisis. More specifically, we include binary variables to capture COVID-related hospitalisations and deaths, and job losses in the 2020-2022 period. While we do not definitively know whether these job losses were induced by the external shocks in question, we assume that they are more

likely to be shock-related than not. Finally, we control for spatial characteristics by incorporating a series of dummy variables capturing the different districts.

Vulnerability to food insecurity

We retain the majority of the independent variables discussed above in our inquiry into factors associated with household vulnerability to food security. Of the characteristics of the HOH, we retain all but the variable capturing if the HOH is employed or not. We also drop the group of variables on household labour market characteristics in this regression analysis. Instead, we use the log of household income as an independent variable, which we assume encapsulates the underlying labour market successes of the household. We retain the variable on children and persons with disabilities, and add another binary variable that captures whether a household has elders or not. Together, they capture information about dependents who might increase household vulnerability to food insecurity (Eshetu and Guye, 2021; Tadesse Tantu et al., 2017).

We retain the two binary variables denoting passive incomes of the household, namely receipt of pension and remittances from abroad (Abadi et al., 2018; Mora-Rivera and van Gameren, 2021). We add a new variable to assets to capture whether respondents live in their own house or not, and retain variables denoting ownership of fixed deposits, savings deposits, jewellery and participation in *seettu* schemes. We also bring in two additional variables about the ownership of farm animals and agricultural equipment to explore the relationship between ownership of agricultural assets and vulnerability to food insecurity (Eshetu and Guye, 2021; Awoke et al., 2022). We retain the binary variable denoting whether or not households have relatives and friends they can ask for help from in difficult times (Clay and Ross, 2020). All variables denoting household debt are excluded on concerns of endogeneity. We capture pandemic experiences through a binary variable on whether or not households have experienced COVID infections. As before, we control for unobserved heterogeneities between districts by adding dummy variables for each district, with Colombo as the reference district. The results from the regression analyses are presented and discussed in the next chapter, with the focus principally on statistically significant results.

4. Post-COVID household vulnerability: a descriptive analysis

Our questionnaire gathered data on a number of questions related to household experiences of the pandemic and the economic crisis and their impacts on household incomes, overall expenditure and expenditure on necessities, coping strategies adopted by households, and the effects of the external stressors on respondents' own subjective well-being. This section presents a brief descriptive analysis using this information and puts in place the backdrop for the econometric analyses that follow.

4.1 Sample overview

The survey sample comprised a total 3,210 (82 percent) households headed by men and 704 (18 percent) households headed by women. The district-wise distribution of the households headed by women broadly mimics the patterns of the 2019 Household Income and Expenditure Survey (HIES) (DCS, 2022). The average age of the PFR, which ranges between 19 and 70, is about 44.5 years. The heads of households in about 40 percent of the sample have studied up to GCE Ordinary Level. About a fifth of households have heads with an education of only up to Grade 9. About 80 percent of the heads of households (HOH) were gainfully employed at the time of the data collection. The educational attainments of the HOH in our sample are broadly similar to what is reported in the 2019 HIES (DCS, 2022).

The average household in our sample has about three members. Slightly over half of our sample of households has at least one member with chronic and non-communicable diseases. The large majority of households (85 percent) owns the house they live in and this share is marginally below the national average of 89 percent as seen in the 2019 HIES (DCS, 2022). About 93 percent of households have had access to adequate amounts of safe drinking water and water for washing and bathing in the past 12 months, higher than the national average of about 89 percent reported in the 2019 HIES (DCS, 2022). About two thirds of households use firewood as the main cooking fuel. Only about 30 percent use gas as the main cooking fuel. The higher proportion of households relying on firewood for cooking

thus very likely reflects both the acute shortages of domestic gas cylinders as well as their unaffordability amidst sharp price hikes[12].

Wages are the most common source of income among households. Wage income is the only income source among 33 percent of the households, and this aligns broadly with the 2019 HIES estimates that 37.6 percent of households primarily relied on wages as their income source (DCS, 2022). However, wages are one of the sources of income among 80 percent of the households in our sample. Only less than 2 percent of the households rely solely on agricultural income, compared to 6.7% of the households whose primary income is agriculture in the 2019 HIES (DCS, 2022). Agricultural production is part of the income among approximately a quarter of the households in our sample. Only about 3.4 percent of the households in our sample earn an income exclusively from non-agricultural production. Nationally, this proportion is about 18 percent. However, among about 16 percent of the households in our sample, income from non-agricultural production is part of their household income. Slightly less than a tenth and about 6 percent of the households receive remittances from abroad and from within the country respectively. About 8 percent of the households receive a pension income, while only about 7 percent earn passive incomes from assets by way of rent, interests, dividend etc. About 22 percent of the households earn an income from allowances and benefits from the government.

About a third of the sample owns land. A little over 80 percent of the households own jewellery. More households have savings deposits (64 percent) than fixed deposits (18 percent). Compared to about 61 percent of households that own motor bicycles or trishaws, a much smaller proportion of households (14 percent) own cars or vans. Nationally, these proportions are 57 percent and 11 percent respectively (DCS, 2022) A little over three fourths of the households have a gas cooker, although this share is much lower in Jaffna (45 percent) compared to the other districts.

A little less than two thirds of the households have debt. About 30 percent have bank loans, while a little over a fifth owe money to retail shops. A little over a

[12] About two months prior to the survey rollout, the price of a 12.5kg gas cylinder was increased by about 45 percent to an all-time-high of LKR 4,860 (Hamza, 2022).

tenth have also borrowed money from individual lenders, while a little less than a tenth have Samurdhi loans. Of those who have debt obligations, a little below half have no problem meeting their debt obligations, while slightly more than 40 percent are a month or two in arrears. About a tenth of the households are several months behind in loan repayment, while about 3 percent are unable to repay debt. Of households that have debt, about 36 percent have seen an increase in their debts over the past 18 months, but a similar share has also experienced a drop in their debts over this period.

About two thirds of the households in the sample do not participate in any of the social protection programmes. A little over a fifth of the households get the *Samurdhi* subsidy, while close to 5 percent receive the elder's pay. A little less than 4 percent of the households benefit from the school meals programme. Of the sub-sample of households that participate in social protection programmes, close to 80 percent find that the benefits of the programmes they are in are inadequate to help them manage household expenses.

4.2 Pandemic-related experiences

Most of the households in our sample have not contracted the COVID-19 virus. Only about 18 percent of the households have at least one member who was infected with the virus. The COVID-related hospitalisation is even lower, at 6 percent. Only about 1 percent of the households have experienced the death of a household member due to the virus. A little below 40 percent of the households have managed to undergo PCR tests administered free-of-charge by the government or other organisations, while a little below a tenth have paid for their PCR tests. About 5 percent of the households have not undertaken PCR tests, even though they had suspected a family member had contracted the virus. A little over a quarter of the households have undergone quarantine due to COVID-19. Close to a quarter of the households have quarantined at home, while only about 8 percent have been quarantined in a government facility. Only about 1 percent of the households have been quarantined in private facilities.

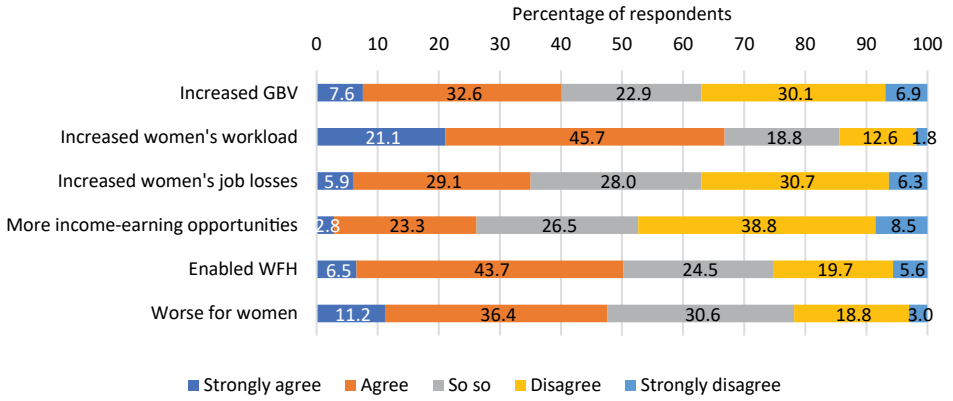
A large majority of the households that are eligible have received lockdown financial relief payments from the government. About 32 percent and 59 percent of

the households have received such relief once and several times respectively. Thus, a little over 90 percent of the sample have received financial relief. Only about 10 percent of the eligible households have not received any financial support from the government. Of the *Samurdhi* recipients, a little less than a quarter have received financial assistance from private organisations at least once, while a little more than a quarter of them have received financial assistance from relatives at least one. Financial support from other organisations or relatives has not been available to over 80 percent of the entire sample.

Comparatively fewer households have received dry rations or other in-kind support from the government or other organisations during lockdowns. A little below a quarter of all households have received dry rations from the government once, while about 14 percent have received such benefits more than once. Thus, about 37 percent of the households have received dry rations from the government at least once. About 52 percent and 42 percent of the *Samurdhi* recipient households have received dry rations at least once from the government and private organisations. While 41 percent of the *Samurdhi* recipients have received dry rations at least once from relatives during the lockdowns, this share was about 30 percent among non-*Samurdhi* recipients. All in all, poorer households, as revealed through their enrollment in the *Samurdhi* programme, have received more financial and in-kind benefits from the government, other organisations and familial sources, compared to the sample as a whole. A little over half of the sample, to whom the question was relevant, found their respective *Grama Niladhari* officers to be helpful during the lockdown.

Many respondents perceive the pandemic and lockdown had detrimental gendered impacts. Most of the respondents are of the view that the pandemic and lockdown resulted in an increase in women's workload. A little less than half of them also agree that the pandemic and lockdown experience was worse for women than for men (Figure 4). About 40 percent of women also believe that the lockdown led to an increase in gender-based violence. Although about half of the respondents agree that the lockdown enabled women to work from home, relatively fewer of them believe the lockdown opened up income-earning opportunities for women. In fact, about a third of the respondents believe that the pandemic brought about more job losses for women than men.

Figure 4: Gendered experiences of the pandemic and lockdown



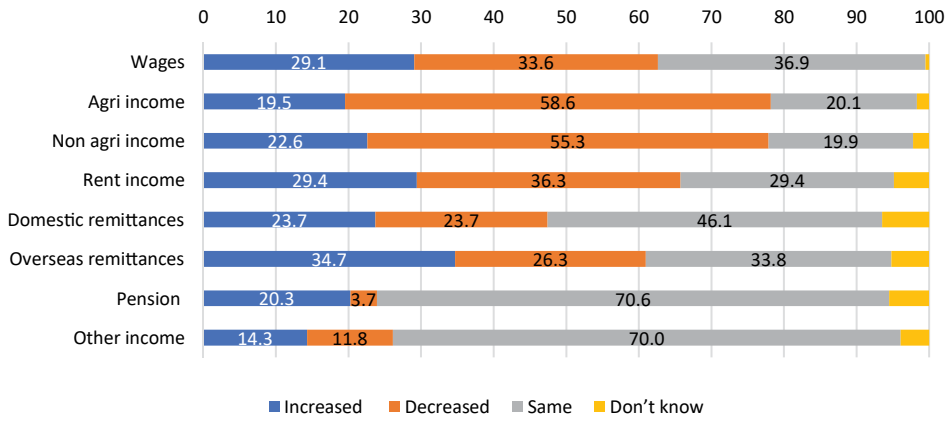
Source: KLIE vulnerability survey data (2022)

4.3 Income and employment

About 3 percent of the households in our sample have experienced job losses during 2020-2022, while about 12 percent of the households have experienced job losses prior to 2020. Most of the households in our sample (47 percent) have experienced a decline in household income compared to two years prior. A little less than a quarter of the households have seen no change in their household income from two years prior. About 31 percent of the households saw a rise in their income.

A disaggregation of household income by different sources provides some insights into changes in overall household income. It is clear that most households earn less than or the same amount of income from their various income sources now compared to two years ago (Figure 5). The majority of households who earn from their own forms of agricultural and non-agricultural production have experienced a decline in their income, while most of the households who receive a pension and other incomes have not seen a change in these incomes. Wage income has either remained stagnant or declined for most households. Between a fifth and a little over a third of the households that earn from the various enumerated income sources have experienced an increase in such incomes. The increase in income from the overseas remittances experienced by about 35 percent of the households that receive this type of income could be attributable in part to the depreciation of the Sri Lankan Rupee (LKR).

Figure 5: Change in income sources from two years ago



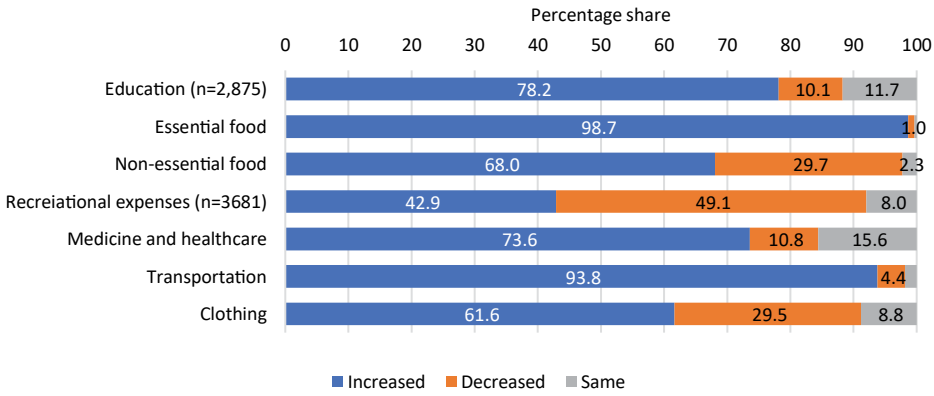
Source: KLIE vulnerability survey data (2022)

4.4 Expenditure

Nearly all households in the sample (99 percent) have experienced an increase in their household expenses. Only about 45 percent of the households are able to get to the end of the month with their current monthly income levels. The spatial differences are quite sharp, where only about 15 to 16 percent of the households from Jaffna and Ampara are able to manage monthly expenses with their current income, compared to over 50 percent of the households in Colombo and Kurunegala.

The changes in expenditure across the various enumerated categories suggest that households might be reallocating expenses from luxuries and non-essentials to the purchasing of essentials (Figure 6). For example, while nearly all households have experienced an increase in spending on essential food items, about 30 percent have seen their expenses on non-essential food items come down. Similarly, while transportation and medical expenses have increased for the large majority of the households, clothing and recreational expenses have declined or remained the same for a relatively sizeable share of households.

Figure 6: Change in selected expenditures



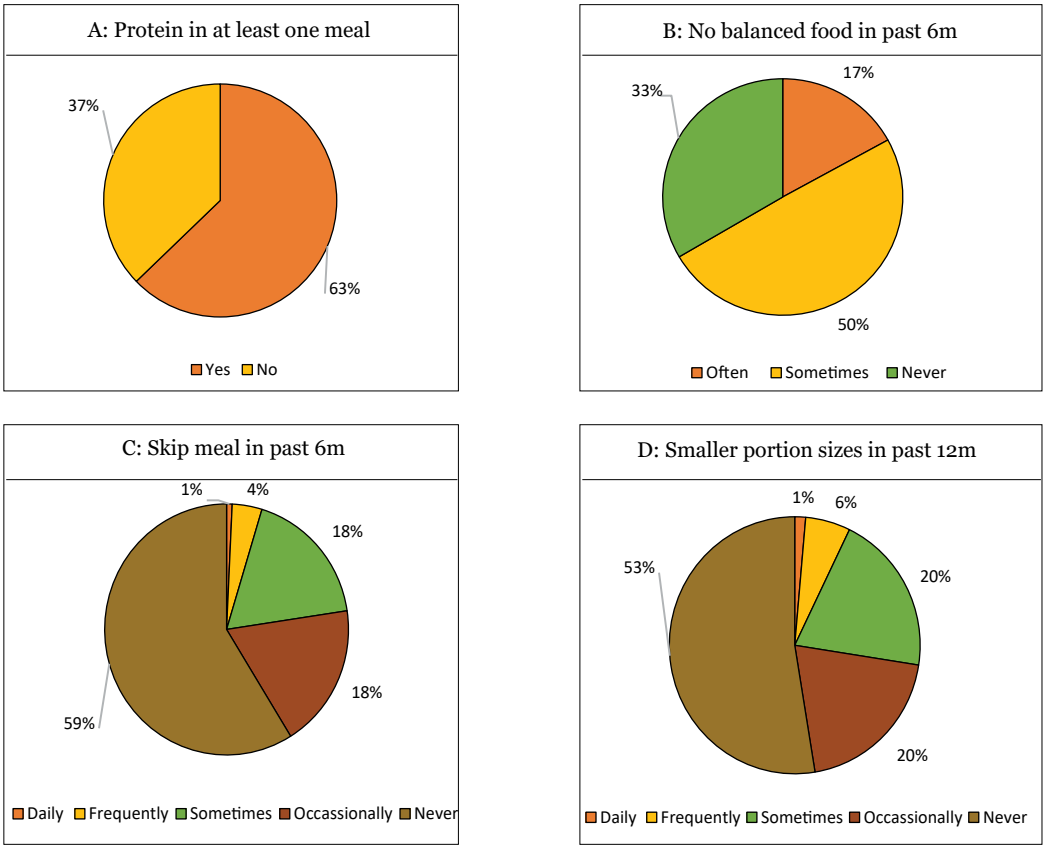
Source: KLIE vulnerability survey data (2022)

Next, we take a closer look at the possible challenges households grapple with in accessing basic needs. More specifically, we parse changes in the expenditure of and challenges encountered in households' access to food, medicine, housing and education.

Access to food

Most households (90 percent or more) are able to eat three meals a day, but seem to make compromises on the quality of the meals consumed (Figure 7). Only about 37 percent of the households are able to eat protein in at least one meal a day. About two thirds of the households could not afford to eat balanced meals regularly or once in a way in the past six months. A little over a fifth of households have had to skip a meal in the past six months because they could not afford to buy food. In the past 12 months, a little less than half of the households have had to reduce their portion sizes at least occasionally because of financial constraints. In fact, close to 30 percent of the households have done so daily, frequently or sometimes, because they did not have enough money for food. About 42 percent of the surveyed PFRs have themselves started eating less than they felt they should, because of financial constraints.

Figure 7: Frequency and quality of meals

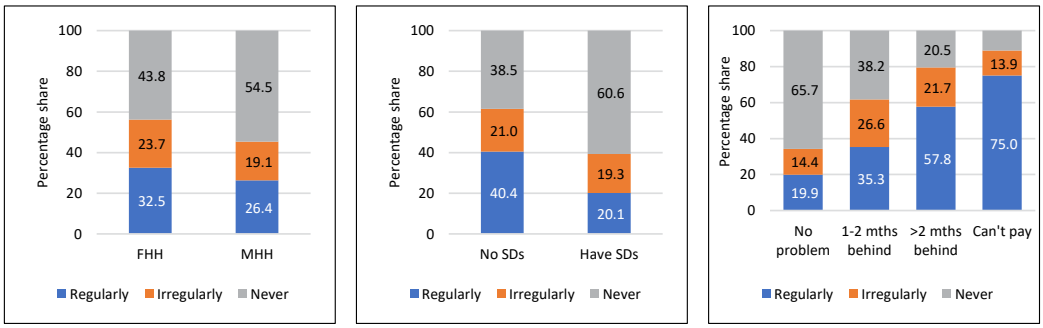


Source: KLIE vulnerability survey data (2022)

We observe that these overall patterns become worse when parsed by potential predictors of household vulnerability. For example, comparatively fewer households headed by women (88.1 percent) than men (92.8 percent) consume three meals or more a day. Similarly, relatively fewer households headed by women (57 percent) than men (64 percent) eat protein at least once a day. We also find that proportionately more households with assets such as land, motorised transport and household white goods, jewellery and saving deposits consume three meals or more a day compared to households that do not own these assets. In Figure 8, we present the proportion of households that have reduced meal portion sizes due to financial constraints. More households headed by women than those headed by men are likely to both regularly or once in a way cut down on portion sizes due to economic hardships. Similarly, households that do not have savings

deposits, and households struggling to pay existing debt obligations also seem to resort to cutting down portion sizes. Note how in Figure 8: C the proportion of households cutting down portion sizes increase monotonically as the difficulty of debt repayment increases.

Figure 8: Reduction of meal portion sizes due to financial constraints



Source: KLIE vulnerability survey data (2022)

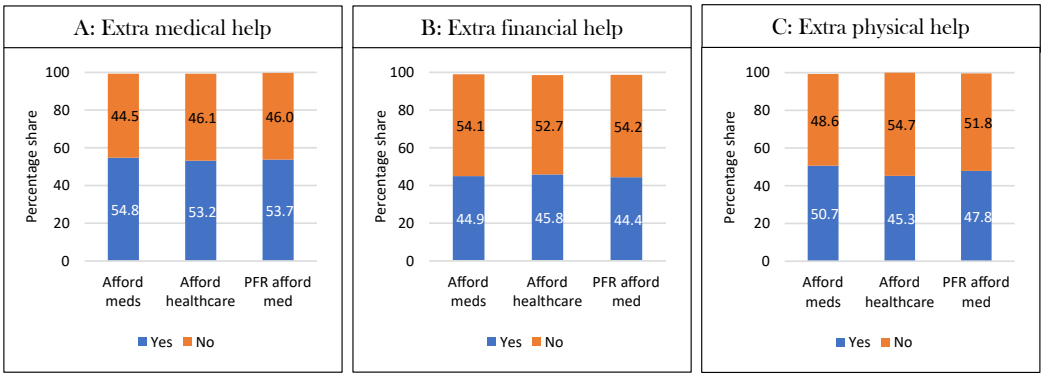
Most households (80 percent) find it difficult to purchase the same food basket that they consumed a year ago and many expect food prices to rise further. On average, households estimate that they need about LKR 7,000 more now to purchase the same basket of food the household usually consumes in a week as they did a year ago. Moreover, close to two thirds of the respondents expect food prices to increase in the next six months. A little less than a tenth expects food prices to remain the same. Moreover, these overarching patterns do not exhibit substantial divergences among different subgroups when disaggregated by characteristics that may contribute to household vulnerability, indicating the widespread negative impact of food inflation across the entire sample.

Access to medicine and healthcare

About three fourths of the sub-sample of households that have to spend on medicine and healthcare are able to do so. About 80 percent of them have also not avoided buying medicine or seeing a doctor in the last two years due to financial constraints. However, there is a sharp deterioration in the overall patterns of affordability in the presence of household members that need extra assistance due to their health conditions (Figure 9). Over 50 percent of the households with persons who need

extra financial assistance cannot afford to purchase medicine or pay for healthcare expenses for household members or for the PFR herself. Furthermore, a larger proportion of households with persons who need extra medical, financial or physical assistance, compared to the overall sub-sample (that have to spend on medicine and healthcare), have avoided purchasing medicine or seeing a doctor in the past two years because they could not afford to do so.

Figure 9: Affordability of medicine and healthcare in households with persons who need extra help

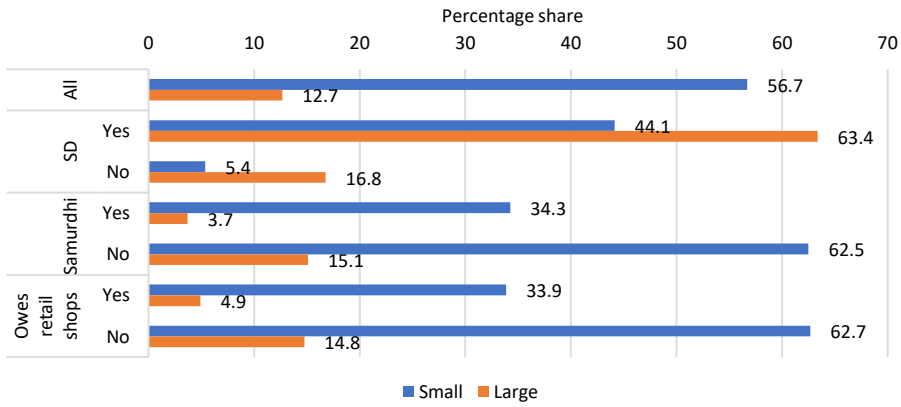


Source: KLIE vulnerability survey data (2022)

Access to housing

As mentioned earlier, most households live in their own houses. The majority of respondents also feel safe and secure about their housing conditions (85 percent and 82 percent respectively). About 40 percent of those who do not own the house they live in feel insecure and unstable about their housing conditions, as opposed to less than a tenth of those who own where they live and have similar concerns. Only about 2 percent of the sample has had to move house in the previous 12 months due to financial reasons.

Figure 10: Proportion of households that can and cannot carry out house repairs



Source: KLIE vulnerability survey data (2022)

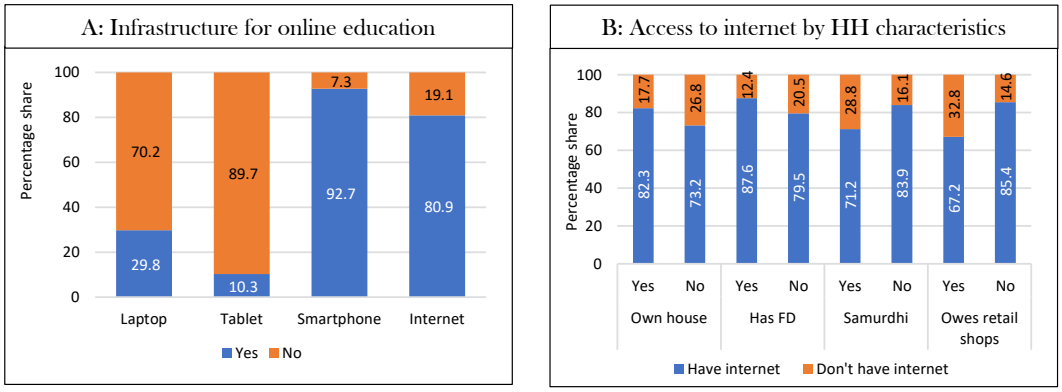
The majority of the households can afford to spend on small repairs in their houses, but only a little more than a tenth is able to undertake big repairs around the house. These high-level proportions vary drastically when disaggregated by potential drivers of vulnerability. For example, considerably fewer households that owe money to retail shops for purchases of daily essentials, compared to those who do not, are unable to afford to spend on either type of repair.

Access to education

Most households with children have experienced disruptions to their children's education during the pandemic. Children in about half of the sub-sample of households with children were unable to make it to school or online classes every day. In fact, most households do not seem to have adequate infrastructure to support children's online education (Figure 11: A). The picture is even grimmer when the data is disaggregated by potential predictors of socioeconomic vulnerability. We have considered four potential predictors – whether or not a household owns the house they live in, whether a household has fixed deposits, whether the household is a *Samurdhi* recipient, and whether a household owes money to retail shops for the household necessities they purchase. We observe a distinct pattern where the proportion of households with access to online education-related infrastructure remains consistently lower among households facing these potential predictors of

vulnerability, compared to those that do not (Figure 11: B). For example, about 27 percent of the households that do not own the house they live in do not have internet, compared to only 18 percent of the households that live in their own house. On the other hand, about a third of the households that owe money to retail shops have no internet access compared to only about 15 percent of households that do not owe money.

Figure 11: Infrastructure to support online education



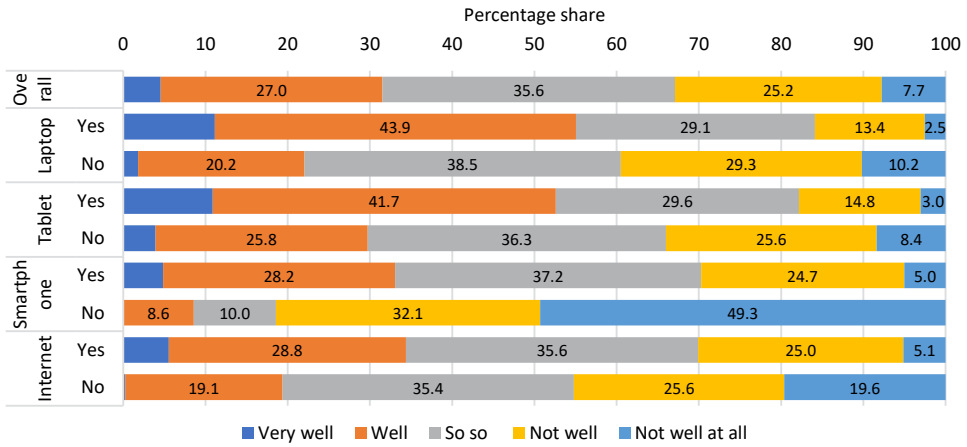
Source: KLIE vulnerability survey data (2022)

Overall, most households do not seem to be managing well with the online education system (Figure 12). In fact, less than a third of the households believes that the online education system works well for their children. The situation is worse in the absence of access to devices and internet. Households without smartphones and internet access appear to be the most challenged in managing online education. However, even with the required devices, most households, are, at best, just about managing children's online education.

Most households also find it difficult to spend on children's tuition classes. Only about 30 percent are able to spend on all children's tuition without a problem. Close to 40 percent manage tuition fees, but with some difficulty. A little less than a quarter can barely manage such extra expenses, while about 7 percent cannot afford to pay such fees at all. A little over a fifth of the households are also unable to buy books and other school supplies for their children. While about 86 percent of the households spend more on children's education compared to two years ago,

many of them (53 percent) believe that the quality of education has declined over the same period.

Figure 12: Managing online education



Source: KLIE vulnerability survey data (2022)

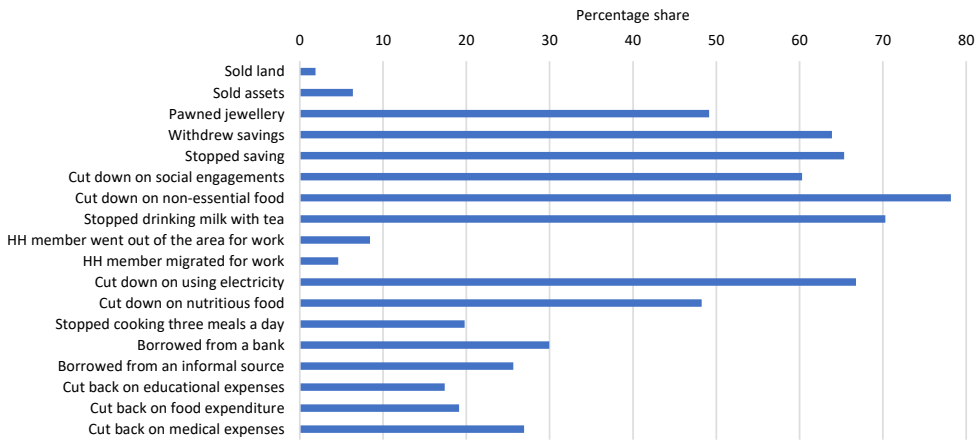
4.5 Coping strategies

The combined challenges of stagnant or declining incomes and increased household expenditure are bound to push households to resort to coping mechanisms to smooth consumption. We enumerated a range of asset-, income-, and expenditure-based strategies to explore what coping mechanisms were most commonly adopted. We find that many households have used obvious strategies (Figure 13). For example, about 78 percent of the households have cut down on consuming non-essential food (such as biscuits and chocolates), and about 70 percent of the households have stopped drinking tea with milk. Close to two thirds of the households have stopped saving, while a little less than that have withdrawn savings to make up for the income deficit. This proportion is slightly higher than what was observed in a nationally representative household survey conducted by LIRNEasia (2023), which found that about 50 percent of households have spent savings to meet day-to-day spending. About 63 percent of the households have reduced the use of electricity. A slightly smaller proportion of households has cut back on going to social and religious engagements. A little less than half of the

households have pawned jewellery, but the share of households that have sold land or other assets is negligible. Similarly, only a small proportion of households have resorted to outmigration (within or outside the country). A little less than half of the households have reduced eating nutritious food.

A comparatively smaller proportion of households have resorted to other detrimental coping strategies such as not cooking three meals a day, or cutting down on food, medical and educational expenses altogether. Overall, comparatively more households appear to resort to cutting health expenditure than reducing education or food expenses, although we observed earlier that the majority of households were able to pay for medicine and healthcare needs of household members. Thus, a reduction in medical expenses could reflect foregone non-urgent and preventive medical and healthcare needs.

Figure 13: Proportion of households adopting coping strategies

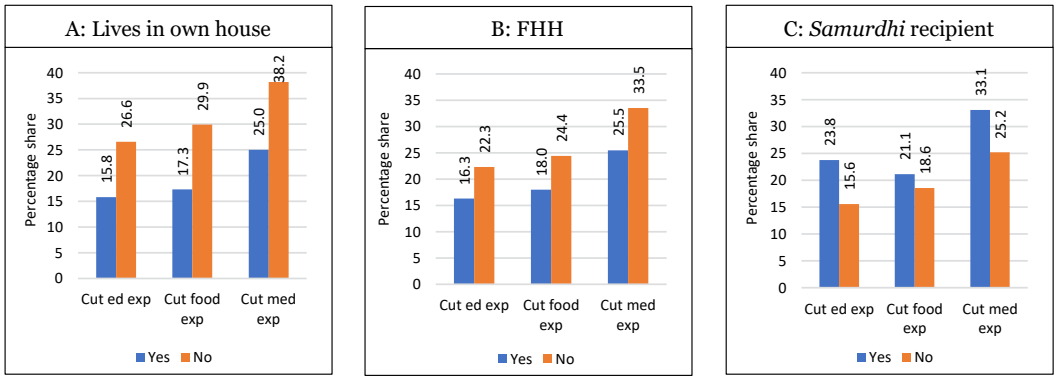


Source: KLIE vulnerability survey data (2022)

However, further disaggregation of three selected potentially detrimental coping strategies by possible predictors of vulnerability uncovers worrisome patterns (Figure 14). Proportionately more households that do not own the house they live in have resorted to cutting expenditure on education, food and medicine, compared to households that own their place of residence. More households headed by women

than those headed by men also seem to be reducing expenses on basic necessities, as do Samurdhi recipients compared to non-recipients.

Figure 14: Proportion of households using coping strategies, by headship



Source: KLIE vulnerability survey data (2022)

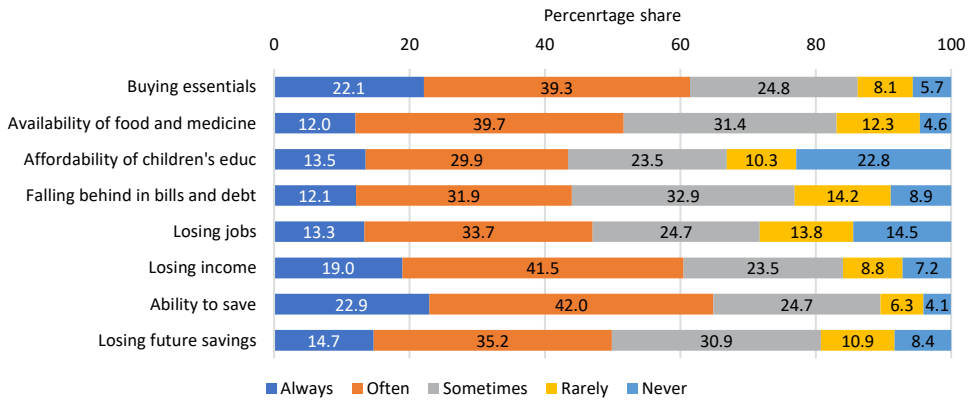
4.6 Respondents' subjective well-being

Our questionnaire gathered data on the potential impacts of the chaos of the pandemic and the economic crisis on the subjective well-being of the respondents. We probed into their current worries and concerns, as well as sentiments about the future, using questions that elicit graded responses. We find that, although the four years from 2019 to 2022 presented different and consecutive external shocks to the economy, for most of the respondents 2022 was the most difficult year. Compared to over two thirds of the respondents who considered 2022 to be the most challenging year, only about 16 percent and 11 percent of the respondents considered 2021 and 2020, respectively, as the worst years.

The majority (56 percent) of the respondents do not feel happy about their lives at present while about 16 percent are not sure how they feel. Only about 28 percent of the respondents are happy about their lives at present. Most respondents worry, at least periodically, about possible challenges to securing essential foods and medicine, the availability of essential foods and medicine, ability to spend on children's education, capacity to pay bills and loans, as well as their household financial fragility due to possible job and income losses and the difficulty to save

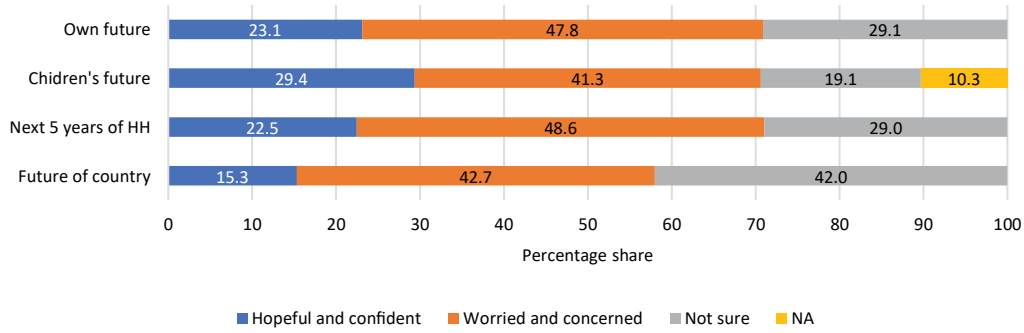
for the future (Figure 15). For between about 40 percent and 65 percent this is a constant or regular worry, while between about a quarter and a third of the respondents seem to worry about these challenges every once in a while. Most respondents are also either worried, concerned or unsure about the future of the country, of the household, their children and their own future (Figure 16).

Figure 15: Frequency of worrying about household challenges



Source: KLIE vulnerability survey data (2022)

Figure 16: Perceptions about the future



Source: KLIE vulnerability survey data (2022)

4.7 Summary

As this chapter covered a lot of ground, we quickly recapitulate the salient takeaways here. Thankfully, only less than a fifth of the households have had COVID positive cases, and even less have experienced COVID-induced hospitalisations and deaths. Most deserving households have received financial assistance from the government at least once, while relatively fewer households have received benefits-in-kind from the government. While the share of households that have received financial or in-kind support from non-governmental organisations or relatives is significantly less, this share is still higher among Samurdhi-recipient households. These patterns suggest that, by and large, state and non-state social protection interventions and assistance have been relatively successful in prioritising and reaching deserving and vulnerable households, rather than benefitting more financially stable households. Women's perceptions suggest that the pandemic exacerbated gendered challenges, and although the pandemic afforded opportunities for them to work from home, it did not necessarily create positive economic outcomes for women.

A sizeable share of households have experienced job losses between 2020 and 2022, while many households have seen a decline in their incomes over this period. Nearly all households have seen an increase in their expenses since 2020, and many households struggle to get to the end of the month with their current income. Although most households are able to eat three meals a day, the quality of meals in terms of eating protein and eating balanced meals appears to be comprised for many households, but more so for households with vulnerability characteristics. Most of the households who need medicine and healthcare are able to spend on them. But within the sub-sample of households who have members that need extra financial, medical and physical assistance, a sizeable proportion of households struggle to spend on medicine and healthcare. Most households can afford to spend on small housing repairs but not large ones. However, much fewer households with vulnerability characteristics are able to spend on either compared to others.

Education-related expenses uncover many perturbing patterns. First, there is clearly an acute shortage of infrastructure required to engage meaningfully in an online classroom, and this is particularly true for households with vulnerability characteristics. Most households struggle to spend on children's tuition classes, and

the majority of households have experienced an increase in children's education expenses. Overall, most households are struggling with children's online education and believe that the quality of education has declined over 2020-2022.

Most households have adopted coping strategies to smooth consumption amidst a decline in income and an increase in expenses. Many of them have cut down on non-essential expenses such as luxury food, participation in social events, and milk in their tea. Liquidating assets such as savings deposits and jewellery were also common. Although, only a smaller proportion of households in the sample have resorted to negative coping strategies, such as cutting down on food, education and health expenses, when disaggregated by markers of vulnerability, the proportions show that more households with vulnerability traits than other households have taken them up.

The difficult economic situation clearly affected respondents' well-being. Most of them consider 2022 to be the worst year for their households. The majority of them worry at least sometimes about household challenges such as buying essentials or future income and job losses. More concerning, the majority of the respondents are worried or concerned or unsure about the future of the country, of their households, their children and their own futures. In the next two chapters we attempt to formally model some of these patterns using econometric procedures.

5. Factors associated with vulnerability to income insecurity

The analysis of descriptive statistics in the preceding chapter has provided compelling evidence of how underlying household characteristics shaped the impact of the pandemic and the economic crisis on household income and expenses, as well as what strategies were adopted to counter these impacts. We observed that household characteristics indicative of higher wealth and socioeconomic status were associated with fewer implications of the external shocks, compared to characteristics that alluded to a lower socioeconomic status. In this and the next chapter, we apply econometric procedures to systematically model the associations between household characteristics and their vulnerability to economic insecurities. This chapter specifically looks at the factors associated with household vulnerability to income insecurity.

The outcome variables we submit to our regression analysis, as discussed in detail in Chapter 3, are (i) income less now compared to two years ago (1=yes; 0 otherwise), (ii) cannot get to the end of the month with current income (1=yes; 0 otherwise), (iii) cannot manage household expenses with current income (1=yes; 0, otherwise), (iv) worry always or often about income loss (1=yes; 0 otherwise), and (v) worry always or often about job loss (1=yes; 0 otherwise). Since (iii) – (v) of the outcome variables elicited responses that can be meaningfully ordered, we submit them to an ordered logistic regression. For completeness, we run an OLS regression on factors associated with household income, using the log of household income as the outcome variables. The summary statistics of the outcome variables are presented in Table 2 below, while Appendix Table 8 provides the means and proportions of all independent variables submitted to the regression model. The regression output is presented in Table 3 below, and, in the interest of brevity, the discussion is largely limited to statistically significant results.

Table 2: Means and proportions of outcome variables proxying household vulnerability to income insecurity

	Proportion	Robust Std. Err.	[95% Conf. Interval]	
Income down	0.467	0.022	0.423	0.510
Income insufficient to get to month end	0.551	0.030	0.492	0.611
Can't manage with current income	0.436	0.024	0.389	0.483
Worry about income loss	0.603	0.024	0.556	0.651
Worry about job loss	0.473	0.026	0.421	0.525
Worry about income loss				
Always	0.190	0.019	0.154	0.231
Often	0.415	0.020	0.377	0.455
Sometimes	0.235	0.018	0.200	0.274
Rarely	0.088	0.008	0.073	0.106
Never	0.072	0.013	0.050	0.102
Worry about job loss	0.190	0.019	0.154	0.231
Always	0.133	0.015	0.106	0.166
Often	0.337	0.020	0.298	0.379
Sometimes	0.247	0.019	0.211	0.287
Rarely	0.138	0.011	0.118	0.160
Never	0.145	0.019	0.112	0.186

Source: KLIE vulnerability survey data (2022)

The marginal effects from the logistic regression (Table 3) show that age, its square or the gender of the head of the household are not statistically significant predictors of household vulnerability to income insecurity. These results are in line with observations made in the UNDP's first-ever report on multidimensional vulnerability in Sri Lanka (Oxford Poverty & Human Development Initiaitve [OPHI] and UNDP, 2023). Its findings show that multidimensional vulnerability is marginally lower in households headed by women compared to households headed by men. The observations from our analysis also furthers similar findings from earlier (Glewwe and Hall, 1998).

A few educational variables of the HOH are significant in relation to respondents' perceptions about income and job losses. In households with heads who have higher levels of education, compared to households with heads with primary education only or no schooling, the respondents are less likely to worry about future income losses or job losses. The marginal effects become larger as the educational level increased. For example, respondents from households where the HOH has studied up to General Certificate of Education (GCE) Advanced Level (AL) are 14 percent less likely to worry about future job losses compared to respondents from households where the HOH has had no schooling or primary education only. The probability of frequent worry is 19 percent less if the respondent is from a household where the HOH has even higher educational qualifications. These findings corroborate similar observations from other studies, which also indicate an inverse relationship between the education level of the HOH and the household's financial vulnerability (Anderloni et al., 2012; Ali et al., 2020; Aikaeli et al., 2021; Shah and Debnath, 2022, 2022; Muir et al., 2023).

Household labour market characteristics confirm Gunatilaka and Chandrasiri's (2022) observations that much of the shocks of the pandemic and economic crisis were transmitted to households through their impact on the labour market. An increase in the share of household members with temporary jobs, compared to permanent jobs, makes households more vulnerable to income insecurity. For example, an increase in the number of temporary employees as a proportion of the total working age individuals in a household, makes it about 11.5 percent more likely that a household has experienced a reduction in income at present from two years ago. We observe a similar pattern for casual work. An increase in the proportion of casual employees, compared to permanent employees, among the working age individuals makes it about 13 percent more likely that a household has experienced a reduction in income. Respondents from such households are about 23 percent and 14.5 percent more likely to constantly worry about income and job losses respectively. These results also confirm the unequal labour market impacts of the pandemic experienced elsewhere (See for example, Guven et al., 2020; International Labour Organization [ILO] and Organisation for Economic Co-operation and Development [OECD], 2020; Abraham et al., 2022; Q. Zhang et al., 2022)

How the marginal effects have turned out in relation to the type of jobs suggest that self-employment activities were the most vulnerable to income insecurity, closely echoing the findings of Wimalaweera (2020) and the DCS (2022). An increase in the share of government employees, compared to the self-employed, among the working age household members makes it about 27 percent less likely that a household has experienced a reduction in income over the past two years. An increase in the share of private sector employees in a household also makes it about 17 percent less likely that a household goes through an income drop. The marginal effects for both variables are significant at the stringent 5 percent cut-off in all model specifications, which underscores the importance of formal sector employment for income security in volatile times. An increase in the share of employers among a household's working age members makes it about 34 percent and 23 percent less likely that a household is unable to get to the end of the month with current income and that a respondent believes she cannot manage household expenses with the current income levels respectively. Unpaid family work appears to generate more income insecurity over self-employment, although the marginal effects are by and large insignificant. Those engaged in unpaid family work are about 29 percent more likely than the self-employed to worry constantly about job losses.

Unemployment and job losses experienced over 2020-22 seem to considerably increase household vulnerability to income insecurity. An increase in the share of the unemployed among the working age household members makes it about 7 percent more likely that a household finds it difficult to get to the end of the month with their existing income. Job losses in 2020-22, which are most likely to have been pandemic-induced, makes it about 15 percent more likely that a household has experienced a reduction in income, 14 percent more likely that a household cannot get to the end of the month with existing income and 12 percent more likely that a respondent finds it difficult to manage household expenses with their existing income. Such households are also 18 percent more likely to worry about future job losses, compared to households that have not faced job losses over 2020-22.

The presence of children and PWDs who need extra help appear to worsen household income insecurity. An increase in the number of children makes it about 3 percent less likely that households can make it to the end of the month with their existing income, and that the respondent is able to manage household expenses with their current income. The presence of PWDs who need extra medical attention because of their health also make households more vulnerable to income insecurity than households without such individuals. For example, the presence of PWDs who need extra medical attention makes it about 7 percent more likely that the PFR feels she cannot manage household expenses with the current income.

Passive income appears to strengthen the resilience of households against vulnerability to income insecurity. The receipt of income from assets, pension income and overseas remittances make it less likely that households are vulnerable to income insecurities, and this is especially true in the case of pension income and overseas remittances. Households that receive overseas remittances are about 13 percent less likely to have experienced a reduction in income. They are about 10 percent less likely to struggle to get to the end of the month with their current income, and respondents from such households are roughly 12 percent less likely to feel that they cannot manage household expenses with their current income levels. The fear of job and income losses is approximately 13 percent and 10 percent less respectively among households that benefit from overseas remittances.

The ownership of financial and liquid assets seems to help households smooth incomes, while external debt obligations exacerbate household vulnerability to income insecurities. Households that own fixed deposits, jewellery and savings deposits are less likely to face income insecurities compared to households that do not own such assets. More illiquid assets, such as land, by and large does not have a significant association with indicators of income insecurity (Noerhidajati et al., 2021). The marginal effects in relation to support from relatives and friends, for the most part, are statistically insignificant although the direction of association is as expected in three out of the five models.

The health impacts of the pandemic do not bear a statistically significant correlation with any of the outcome variables considered. This is to be expected given that the vast majority of households have not faced significant adverse health impacts of the pandemic. This observation also corroborates most respondents' perception that it was 2022, and not 2020 or 2021, which was the worst year for them. It also alludes to, at least in part, a possible easing of the impact of the pandemic on households' vulnerability through increased government expenditure on social protection measures during lockdown periods (World Bank, 2021).

The marginal effects of districts on the outcome variables appear to be mixed. Living in other districts, compared to living in Colombo, is associated with a reduction in income compared to two years ago. Living outside Colombo, compared to living in Colombo, makes it more likely that households will find it difficult to get to the end of the month with their current income, and makes it more likely that respondents struggle to make ends meet with the current income. Respondents from Jaffna and Anuradhapura districts are much less likely to worry constantly about income and job losses, compared to those from the Colombo District.

Table 3: Factors associated with the probability of household vulnerability to income insecurity – marginal effects of logistic regression

			Income down now	Cannot get to month end with income	Cannot manage with current income	Worry about income loss	Worry about job loss
			m1	m2	m3	m4	m5
			b/se	*b/se*	*b/se*	*b/se*	*b/se*
HOH's characteristics		Age	-0.0036	-0.0010	-0.0018	-0.0016	-0.0067
			(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
		Age squared	0.0001	0.0000	0.0000	0.0000	0.0001
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
		Gender	-0.0506	0.0045	0.0136	0.0319	0.0220
			(0.034)	(0.017)	(0.028)	(0.023)	(0.024)
	Education: base category - primary or no schooling	HOH - year 5-9	0.0638	0.0458	0.0692	-0.0075	-0.0490
			(0.045)	(0.038)	(0.043)	(0.044)	(0.045)
		HOH 10-11	0.0466	0.0128	0.0504	-0.0788*	-0.1027**
			(0.048)	(0.040)	(0.044)	(0.048)	(0.043)
		HOH 12-13	0.0271	-0.0368	0.0161	-0.1007*	-0.1394**
			(0.054)	(0.042)	(0.049)	(0.052)	(0.055)
		HOH 13+	-0.0398	-0.0219	-0.0037	-0.1591***	-0.1888***
			(0.066)	(0.046)	(0.055)	(0.054)	(0.064)
		Gainfully employed	0.0419	0.0277	0.0345	0.0328	0.0566*
			(0.029)	(0.024)	(0.026)	(0.031)	(0.032)
Household labour market characteristics	Job tenure (share of working age members)	Temporary†	0.1147***	0.0764***	0.0754***	0.0113	0.0590**
			(0.024)	(0.018)	(0.017)	(0.029)	(0.027)
		Casual†	0.1278***	0.0559	0.0411	0.2297***	0.1449***
			(0.045)	(0.034)	(0.039)	(0.071)	(0.042)
	Job type: (Share of working age members)	Government‡	-0.2697***	-0.1407***	-0.1193***	-0.0872***	-0.1089***
			(0.025)	(0.019)	(0.022)	(0.019)	(0.024)
		Pvt sector‡	-0.1700***	-0.0623***	-0.0648***	-0.1014***	-0.0784***
			(0.024)	(0.019)	(0.020)	(0.026)	(0.027)
		Employer‡	-0.0558	-0.3361***	-0.2258***	-0.1748*	-0.1269
			(0.131)	(0.099)	(0.086)	(0.100)	(0.108)
		Unpaid family‡ worker	0.0246	0.0298	-0.0109	-0.0176	-0.2891**

			Income down now	Cannot get to month end with income	Cannot manage with current income	Worry about income loss	Worry about job loss
			m1	m2	m3	m4	m5
			b/se	*b/se*	*b/se*	*b/se*	*b/se*
			(0.095)	(0.087)	(0.082)	(0.090)	(0.122)
		Unemployed sh. of working age members	0.0205	0.0711***	0.0276	0.0429**	0.0257
			(0.020)	(0.017)	(0.018)	(0.020)	(0.018)
		HH member lost job in 2020-22	0.1475***	0.1421***	0.1191***	0.0462	0.1837***
			(0.048)	(0.055)	(0.040)	(0.061)	(0.058)
Household demographics		No of children	0.0093	0.0325***	0.0258***	-0.0021	-0.0090
			(0.008)	(0.006)	(0.007)	(0.007)	(0.007)
		PWD need financial assistance	0.0000	0.0302	0.0507	-0.0018	0.0057
			(0.035)	(0.033)	(0.034)	(0.031)	(0.034)
		PWD need medical assistance	0.0468	0.0411*	0.0672**	0.0572**	0.0420
			(0.029)	(0.024)	(0.027)	(0.027)	(0.026)
Passive income		From assets	-0.0295	-0.0653**	-0.0793**	-0.0026	-0.0728
			(0.038)	(0.029)	(0.038)	(0.038)	(0.047)
		Pension	-0.1278***	-0.1110***	-0.0860***	-0.0620	-0.0974***
			(0.039)	(0.035)	(0.033)	(0.039)	(0.036)
		Foreign remittances	-0.1261***	-0.0972***	-0.1214***	-0.1333***	-0.0973***
			(0.029)	(0.031)	(0.031)	(0.032)	(0.036)
Asset ownership		FD	-0.0687*	-0.1052***	-0.1173***	-0.1386***	-0.1216***
			(0.036)	(0.022)	(0.029)	(0.030)	(0.032)
		Land	0.0291	-0.0767***	-0.0394	0.0391	0.0121
			(0.026)	(0.024)	(0.026)	(0.035)	(0.032)
		Jewellery	-0.0714***	-0.1927***	-0.1579***	-0.0600*	-0.0508
			(0.021)	(0.023)	(0.030)	(0.035)	(0.036)
		Savings deposits	-0.0708***	-0.1793***	-0.1674***	0.0071	-0.0266

			Income down now	Cannot get to month end with income	Cannot manage with current income	Worry about income loss	Worry about job loss
			m1	m2	m3	m4	m5
			b/se	*b/se*	*b/se*	*b/se*	*b/se*
			(0.024)	(0.023)	(0.025)	(0.033)	(0.032)
		Seettu	-0.0522*	-0.0034	-0.0261	-0.0427	-0.0289
			(0.028)	(0.023)	(0.024)	(0.027)	(0.027)
Social capital		Relatives there to help	0.0092	0.0084	-0.0256**	-0.0011	-0.0166
			(0.011)	(0.010)	(0.012)	(0.012)	(0.012)
Borrowings		Loans from banks	0.0335	0.1382***	0.0875***	0.0124	-0.0228
			(0.027)	(0.021)	(0.024)	(0.026)	(0.028)
		Leases	0.0133	0.0221	-0.0514**	0.0849***	0.0838***
			(0.025)	(0.025)	(0.025)	(0.031)	(0.030)
		MFI	-0.0258	0.0862*	0.0574	0.0833*	0.0729
			(0.053)	(0.045)	(0.042)	(0.049)	(0.055)
		Installments	0.0221	0.1405***	0.0939	-0.0051	0.0153
			(0.044)	(0.041)	(0.065)	(0.050)	(0.055)
Pandemic experience		COVID infected	-0.0179	-0.0138	-0.0193	-0.0005	0.0367
			(0.021)	(0.021)	(0.022)	(0.033)	(0.039)
		COVID death	-0.0918	-0.0407	-0.0562	-0.1466*	-0.1062
			(0.071)	(0.054)	(0.074)	(0.077)	(0.073)
Spatial variables[$]		Ampara	-0.0020	0.4786***	0.4757***	0.0631	0.1577*
			(0.092)	(0.069)	(0.043)	(0.090)	(0.094)
		Anuradhapura	-0.0945	0.1709**	0.2418***	-0.2210**	-0.2367***
			(0.103)	(0.070)	(0.071)	(0.111)	(0.079)
		Badulla	-0.0270	0.2234***	0.3405***	-0.0898	-0.0501
			(0.065)	(0.067)	(0.064)	(0.084)	(0.092)
		Galle	-0.0706	0.1595***	0.2635***	0.0354	0.0160
			(0.077)	(0.059)	(0.068)	(0.083)	(0.097)
		Jaffna	-0.0312	0.3738***	0.2511***	-0.1949***	-0.1849***
			(0.044)	(0.051)	(0.031)	(0.053)	(0.055)
		Kandy	-0.0985***	0.1969***	0.2498***	0.0527	-0.0741*

			Income down now	Cannot get to month end with income	Cannot manage with current income	Worry about income loss	Worry about job loss
			m1	m2	m3	m4	m5
			b/se	*b/se*	*b/se*	*b/se*	*b/se*
			(0.033)	(0.061)	(0.062)	(0.059)	(0.038)
		Kurunegala	-0.0478	0.0713	0.1763***	-0.0961	-0.0583
			(0.040)	(0.059)	(0.047)	(0.071)	(0.067)
		Ratnapura	-0.0046	0.0950	0.2466***	0.0053	0.0339
			(0.068)	(0.082)	(0.092)	(0.092)	(0.096)
		p	0.0000	0.0000	0.0000	0.0000	0.0000
		AIC	4489.9160	3806.3060	4137.0920	4575.5390	4612.9060
		BIC	4750.77	4067.15	4397.94	4836.39	4873.75
		N	3680	3680	3680	3680	3680

Source: KLIE vulnerability survey data (2022)

Notes: Reference categories are † - permanent; ‡ - self-employed; and§- Colombo; Models are clustered at the Divisional Secretariat's division level for robust standard errors, given in parentheses; Significance level denoted by * p<0.10, ** p<0.05, *** p<0.01 at ten percent, five percent and one percent, respectively. See Appendix Table 8 for the means and proportions of the independent variables.

Table 4: Marginal effects from the generalised ordered logistic regression

	Income loss					Job loss				
	Always	Often	Sometimes	Rarely	Never	Always	Often	Sometimes	Rarely	Never
	b/se	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*
HOH characteristics										
HOH age	-0.0005	-0.0011	0.0010	0.0013	-0.0007	-0.0091***	0.0038	0.0025	0.0056	-0.0028
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)	(0.005)	(0.003)	(0.004)
Hoh age[2]	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001**	0.0000	0.0000	-0.0001*	0.0000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FHH	0.0544***	-0.0353*	0.0200	-0.0370***	-0.0021	0.0067	0.0070	-0.0028	-0.0040	-0.0069
	(0.017)	(0.020)	(0.020)	(0.011)	(0.013)	(0.009)	(0.010)	(0.004)	(0.005)	(0.009)
HOH - year 5-9	-0.0151	-0.0090	0.0103	0.0069	0.0069	-0.0213	-0.0224	0.0089	0.0128	0.0220
	(0.022)	(0.013)	(0.015)	(0.010)	(0.010)	(0.022)	(0.023)	(0.010)	(0.013)	(0.022)
HOH 10-11	-0.0170	-0.0753***	0.0165	0.0510***	0.0248	-0.0413*	-0.0436*	0.0172*	0.0248*	0.0428*
	(0.026)	(0.024)	(0.026)	(0.014)	(0.019)	(0.023)	(0.023)	(0.010)	(0.013)	(0.022)
HOH 12-13	-0.0082	-0.1038***	0.0299	0.0581***	0.0240	-0.0600**	-0.0632**	0.0250*	0.0360**	0.0622**
	(0.033)	(0.032)	(0.028)	(0.016)	(0.021)	(0.028)	(0.029)	(0.013)	(0.017)	(0.028)
HOH 13+	-0.0392	-0.1155***	0.0332	0.0773***	0.0442*	-0.0741**	-0.0781**	0.0309**	0.0445**	0.0768**
	(0.036)	(0.037)	(0.033)	(0.019)	(0.024)	(0.034)	(0.036)	(0.015)	(0.020)	(0.035)
HOH employed	0.0132	0.0078	-0.0090	-0.0060	-0.0060	0.0219*	0.0231*	-0.0091	-0.0132*	-0.0227*
	(0.017)	(0.010)	(0.012)	(0.008)	(0.007)	(0.013)	(0.013)	(0.006)	(0.008)	(0.013)
HH labour market characteristics										
Temporary share[†]	0.0491***	-0.0340*	-0.0246*	-0.0005	0.0100	0.0315**	0.0332**	-0.0131*	-0.0189*	-0.0326**
	(0.017)	(0.021)	(0.015)	(0.015)	(0.013)	(0.016)	(0.017)	(0.007)	(0.010)	(0.015)
Casual share[†]	0.1268***	0.0755***	-0.0868***	-0.0576***	-0.0579***	0.0765***	0.0807***	-0.0319***	-0.0460***	-0.0793***
	(0.028)	(0.022)	(0.021)	(0.014)	(0.014)	(0.018)	(0.022)	(0.009)	(0.012)	(0.021)
Government employee share[‡]	-0.0412**	-0.0438*	-0.0033	0.0291***	0.0592***	-0.0494**	-0.0657***	-0.0239	0.0614***	0.0776***
	(0.017)	(0.024)	(0.017)	(0.010)	(0.011)	(0.019)	(0.020)	(0.015)	(0.013)	(0.014)
Private employee share[‡]	-0.0578***	-0.0344***	0.0395***	0.0263***	0.0264***	-0.0362***	-0.0381***	0.0151***	0.0217***	0.0375***
	(0.015)	(0.010)	(0.010)	(0.007)	(0.008)	(0.012)	(0.013)	(0.005)	(0.007)	(0.014)
Employer share[‡]	-0.0695	-0.0413	0.0475	0.0316	0.0317	-0.0630	-0.0664	0.0263	0.0379	0.0653

	Income loss					Job loss				
	Always	Often	Sometimes	Rarely	Never	Always	Often	Sometimes	Rarely	Never
	b/se	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*
	(0.062)	(0.038)	(0.042)	(0.029)	(0.029)	(0.045)	(0.046)	(0.019)	(0.026)	(0.047)
Family work share‡	0.0002	0.0001	-0.0001	-0.0001	-0.0001	-0.1314***	-0.1385***	0.0548**	0.0789**	0.1362***
	(0.039)	(0.023)	(0.027)	(0.018)	(0.018)	(0.050)	(0.050)	(0.023)	(0.031)	(0.048)
Unemployed share	0.0276*	0.0133	-0.0426***	0.0203*	-0.0186*	0.0360***	-0.0165	-0.0368***	0.0317***	-0.0144
	(0.015)	(0.019)	(0.015)	(0.011)	(0.010)	(0.012)	(0.017)	(0.012)	(0.012)	(0.016)
Lost job 2020-22	0.0337	0.0200	-0.0230	-0.0153	-0.0154	0.0701***	0.0739***	-0.0292***	-0.0421***	-0.0726***
	(0.030)	(0.019)	(0.021)	(0.014)	(0.014)	(0.023)	(0.026)	(0.011)	(0.014)	(0.025)
HH demographics										
No of children	0.0010	0.0006	-0.0007	-0.0004	-0.0004	-0.0029	-0.0031	0.0012	0.0018	0.0030
	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)	(0.004)	(0.002)	(0.002)	(0.004)
PWD needs extra financial help	0.0078	0.0046	-0.0053	-0.0035	-0.0035	0.0181	0.0191	-0.0076	-0.0109	-0.0188
	(0.022)	(0.013)	(0.015)	(0.010)	(0.010)	(0.016)	(0.016)	(0.007)	(0.010)	(0.017)
PWD needs extra medical help	0.0300**	0.0178*	-0.0205**	-0.0136**	-0.0137**	0.0124	0.0130	-0.0052	-0.0074	-0.0128
	(0.014)	(0.010)	(0.010)	(0.007)	(0.007)	(0.011)	(0.013)	(0.005)	(0.007)	(0.012)
Passive income										
Rent income	0.0230	0.0137	-0.0157	-0.0104	-0.0105	0.0362*	-0.1087***	0.0844**	-0.0153	0.0034
	(0.023)	(0.014)	(0.015)	(0.010)	(0.011)	(0.022)	(0.041)	(0.033)	(0.024)	(0.026)
Pension	-0.0493**	-0.0294**	0.0337***	0.0224***	0.0225**	-0.1120***	0.0071	-0.0251	0.0345*	0.0955***
	(0.019)	(0.012)	(0.013)	(0.008)	(0.010)	(0.032)	(0.034)	(0.025)	(0.020)	(0.019)
Overseas remittances	-0.0781***	-0.0465***	0.0534***	0.0355***	0.0357***	-0.0421**	-0.0444***	0.0176**	0.0253***	0.0437***
	(0.019)	(0.011)	(0.012)	(0.008)	(0.008)	(0.017)	(0.014)	(0.007)	(0.009)	(0.015)
Asset ownership										
Fixed deposits	-0.0859***	-0.0511***	0.0587***	0.0390***	0.0392***	-0.0430***	-0.0453***	0.0179**	0.0258***	0.0446***
	(0.019)	(0.012)	(0.012)	(0.008)	(0.010)	(0.017)	(0.016)	(0.008)	(0.010)	(0.016)
Land	-0.0464**	0.0823***	0.0115	-0.0071	-0.0403***	-0.0194	0.0250	0.0177	0.0216	-0.0450**
	(0.021)	(0.027)	(0.022)	(0.014)	(0.014)	(0.018)	(0.029)	(0.020)	(0.016)	(0.020)
Jewellery	-0.0671***	0.0076	-0.0225	0.0271	0.0548**	-0.0360**	-0.0380**	0.0150**	0.0216**	0.0373**
	(0.025)	(0.031)	(0.028)	(0.017)	(0.025)	(0.018)	(0.017)	(0.007)	(0.010)	(0.019)

	Income loss					Job loss				
	Always	Often	Sometimes	Rarely	Never	Always	Often	Sometimes	Rarely	Never
	b/se	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*
Savings	0.0005	0.0003	-0.0003	-0.0002	-0.0002	-0.0101	-0.0106	0.0042	0.0060	0.0104
	(0.019)	(0.011)	(0.013)	(0.008)	(0.009)	(0.015)	(0.017)	(0.006)	(0.009)	(0.016)
Seettu	-0.0230	-0.0137	0.0157	0.0104	0.0105	-0.0199	-0.0209	0.0083	0.0119	0.0206
	(0.017)	(0.010)	(0.011)	(0.008)	(0.008)	(0.014)	(0.014)	(0.006)	(0.008)	(0.014)
Social capital										
Relatives help	-0.0006	-0.0003	0.0004	0.0003	0.0003	-0.0125*	-0.0025	0.0011	0.0168**	-0.0029
	(0.007)	(0.004)	(0.005)	(0.003)	(0.003)	(0.007)	(0.013)	(0.008)	(0.007)	(0.007)
Debt obligations										
Bank loan	0.0278	-0.0127	0.0214	0.0101	-0.0467***	0.0017	0.0018	-0.0007	-0.0010	-0.0018
	(0.017)	(0.019)	(0.020)	(0.012)	(0.015)	(0.012)	(0.013)	(0.005)	(0.007)	(0.013)
Lease	0.0544***	0.0324***	-0.0372***	-0.0247***	-0.0249***	0.0432***	0.0455***	-0.0180***	-0.0259***	-0.0447***
	(0.017)	(0.010)	(0.011)	(0.008)	(0.008)	(0.014)	(0.013)	(0.005)	(0.007)	(0.014)
MFI loan	0.0540**	0.0322**	-0.0370**	-0.0245**	-0.0247**	0.0442	0.0466*	-0.0184*	-0.0265*	-0.0458*
	(0.026)	(0.015)	(0.017)	(0.012)	(0.012)	(0.027)	(0.026)	(0.011)	(0.015)	(0.028)
Instalments	-0.0033	-0.0020	0.0023	0.0015	0.0015	-0.0021	-0.0022	0.0009	0.0013	0.0022
	(0.020)	(0.012)	(0.014)	(0.009)	(0.009)	(0.020)	(0.021)	(0.008)	(0.012)	(0.021)
Pandemic experiences										
COVID infected	0.0414	-0.0468*	-0.0127	0.0102	0.0079	0.0048	0.0051	-0.0020	-0.0029	-0.0050
	(0.026)	(0.026)	(0.021)	(0.011)	(0.011)	(0.019)	(0.019)	(0.008)	(0.011)	(0.019)
Spatial characteristics										
Ampara[$]	0.1760***	-0.1178*	-0.0590	0.0043	-0.0035	0.0796	0.0839	-0.0332	-0.0478	-0.0825
	(0.058)	(0.065)	(0.037)	(0.036)	(0.037)	(0.053)	(0.054)	(0.022)	(0.031)	(0.054)
Anuradhapura[$]	0.0316	-0.2503***	0.2203**	0.0241	-0.0258	-0.0328	-0.2148***	0.2861***	0.0258	-0.0643
	(0.069)	(0.058)	(0.105)	(0.032)	(0.033)	(0.043)	(0.050)	(0.088)	(0.036)	(0.051)
Badulla[$]	-0.0453	-0.0270	0.0310	0.0206	0.0207	-0.0233	-0.0245	0.0097	0.0140	0.0241
	(0.050)	(0.030)	(0.034)	(0.023)	(0.023)	(0.053)	(0.056)	(0.022)	(0.032)	(0.055)
Galle[$]	0.0153	0.0227	0.1171*	-0.0411	-0.1139***	0.0188	0.0063	0.1497**	-0.0448	-0.1301***
	(0.071)	(0.047)	(0.071)	(0.030)	(0.041)	(0.066)	(0.049)	(0.067)	(0.035)	(0.049)
Jaffna[$]	-0.0448	-0.1600***	0.1590***	0.0581**	-0.0122	-0.0672**	-0.0709**	0.0280**	0.0404**	0.0697**
	(0.054)	(0.062)	(0.036)	(0.024)	(0.026)	(0.032)	(0.035)	(0.014)	(0.020)	(0.034)
Kandy[$]	0.1421***	-0.0910**	-0.0048	-0.0185	-0.0278	0.0494*	-0.1259***	0.0097	0.0303*	0.0365

	Income loss					Job loss				
	Always	Often	Sometimes	Rarely	Never	Always	Often	Sometimes	Rarely	Never
	b/se	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*	*b/se*
	(0.037)	(0.042)	(0.033)	(0.021)	(0.028)	(0.027)	(0.030)	(0.030)	(0.017)	(0.029)
Kurunegala§	0.0718	-0.1688***	0.0972***	0.0477*	-0.0479	0.0202	-0.0775**	0.0646	0.0740***	-0.0814*
	(0.064)	(0.041)	(0.036)	(0.026)	(0.032)	(0.050)	(0.039)	(0.042)	(0.025)	(0.045)
Ratnapura§	-0.0217	-0.0129	0.0148	0.0098	0.0099	-0.0044	-0.0046	0.0018	0.0026	0.0046
	(0.042)	(0.025)	(0.029)	(0.019)	(0.019)	(0.036)	(0.038)	(0.015)	(0.022)	(0.037)
p	0.0000					0.0000				
aic	9663.358					10410.340				
bic	10272.000					10907.190				
N	3680					3680				

Source: KLIE vulnerability survey data (2022)

Notes: Reference categories are † - permanent; ‡ - self-employed; and§- Colombo; Models are clustered at the Divisional Secretariat's division level for robust standard errors, given in parentheses; Significance level denoted by * p<0.10, ** p<0.05, *** p<0.01 at ten percent, five percent and one percent, respectively. See Appendix Table 8 for the means and proportions of independent variables.

Next, we briefly discuss the results from the generalised ordered logistic regression (Table 4)[13]. As earlier, we limit the discussion predominantly to statistically significant results. Overall, the expanded set of outcomes furthers and brings additional insight into the findings of the preceding logistic regression. The results make it abundantly clear that the level of HOH's education strongly influences the perceived income insecurities of households. Households where the HOH has more education than those whose HOH has studied up to Grade 5 or less are less likely to worry often about income losses. Households where HOHs have the highest of the enumerated educational attainments (GCE AL or above) are about 7 percent more likely to rarely worry about income losses compared to households where the HOH has only primary education or none. Perceived income insecurities revealed through worries of job losses also make it obvious that respondents from households where the HOH has an education level that is greater than a primary education is less likely to worry constantly about such risks. Note also how the marginal effect increases monotonically as the educational attainments become higher. There is some evidence that households headed by women compared to households headed by men tend to worry more often about potential income losses, but we find no strong relationship between the two variables in relation to concerns about job losses.

The characteristics capturing the household's labour market participation bring out the inherent risks and vulnerabilities associated with employment in informal jobs in the peripheral economy. Worries about income losses appear to be more frequent among households with a higher share of employed members whose job tenure is temporary or casual, compared to when the job tenure is permanent. An increase in the share of temporary employees, compared to government employees, makes it 5 percent more likely that the respondents will be always worried about income losses. However, this probability is more than double - at 13 percent - for an increase in the share of casual workers compared to government employees.

Although income losses appear to be more of a concern when job tenure is casual, fears of job losses are common among both casual and temporary employment, as

[13] Our ordered logistic regression model implemented using – ologit – command on STATA was in violation of the parallel-lines assumption. As such, we implemented a generalised ordered logistic regression model (-gologit2-) which helps with the parallel lines assumption (See Williams, 2006 for details on implementing this procedure).

reflected in the statistically strong relationships of both variables with perceptions of job insecurities. But, a comparison of the size of the marginal effects suggests that job insecurity is higher for casual labour. For example, respondents are about 3 percent more likely to always worry about possible job losses when the share of household members with temporary job tenures, compared to the share with permanent tenures, increases. This probability is more than double (about 8 percent) for an increase in the share of casual employees in the household.

The greater propensity of vulnerability to income insecurity among households earning from jobs with temporary or casual tenures could be for two reasons. First, such work often offers less income than permanent positions. Secondly, most temporary and casual jobs are in the informal sector which falls outside the purview of formal labour laws and regulations and the protection they offer against job and income losses. Even in the formal sector, employers may recruit temporary or contractual workers, whose work arrangements are not covered by formal labour laws and who can be easily dismissed as and when required (Arunatilake, 2013; Dunusinghe, 2021). Moreover, the conditions under which temporary and casual workers work tend to result in adverse health outcomes for them (Arunatilake, 2013). Together, these factors not only exacerbate their income insecurity amidst external shocks, but might also further put their health at risk if economic destitution pushes them to work under precarious conditions.

Results by the type of job further reiterates that formal sector employment makes households more resistant to labour market shocks. An increase in the share of government sector employees among the working aged in a household, compared to an increase in the share of self-employed, makes it more likely that income loss is not a fear they think about much. This is also the case for private sector employment, but differences in the size of the marginal effects is symptomatic of the greater job security that government sector jobs tend to offer. An increase in the share of unpaid family workers also makes respondents worry less about job losses, compared to self-employment, is self-explanatory, but we know from the preceding analysis that this type of employment does not bode well for making ends meet amidst a sharp increase in the cost of living. Households that have lost jobs during 2020-22 appear to tend to worry more frequently about job losses than those that have not.

Household characteristics do not particularly stand out except in relation to concerns about income losses in the presence of PWDs who need extra medical assistance. Even then, the marginal effects are fairly small. Passive income, especially pensions and overseas remittances, seem to ameliorate insecurities about income and job losses. Households that receive pensions and foreign remittances are about 10 percent and 4 percent more likely to never worry about potential job losses respectively, compared to households that do not receive such income.

Among household assets, the ownership of fixed deposits and jewellery seems to have more influence on perceived income insecurity compared to the ownership of land, savings deposits or participation in *Seettu* groups. Although debt obligations seem to make households more susceptible to feeling worried about income and job losses, we observe statistically significant associations mainly in relation to leases and loans from MFIs. A household that has taken a lease or a microfinance loan are about 5 percent more likely to be always worried about income losses than a household that has no such debt. Among the pandemic experiences, the virus infection itself does not seem to have impacted PFRs' perceived income and job insecurities. The district-level marginal effects are mixed; not many of them are statistically significant.

In the third and final analysis on vulnerability to income insecurity, we look at the associations between the log of household income and a slightly modified vector of independent variables employed in the previous regression models to generate evidence on determinants of household income (Table 5)[14]. This analysis helps provide further insight into where income vulnerabilities observed in the above two analyses are stemming from, thereby providing a more complete picture on household vulnerability to income insecurity. For brevity, our discussion focuses only on statistically significant results.

[14] We removed variables denoting ownership of jewellery, fixed deposits and savings deposits from the OLS as these are outcomes of enjoying a certain level of household income and therefore result in reverse causality. We also removed variables capturing the presence of children and PWDs as they may influence a household's labour market choices rather than income itself. We retained the dichotomous variable capturing land ownership and add ownership of farm animals, as it is another income-generating asset. Of the debt variables, we only retained variables denoting whether a household has liabilities with a bank or leasing company. The other debt variables were removed as they might reflect endogeneity. We added a continuous variable on distance to the nearest bus stand to spatial characteristics to proxy how close households are to economic centres of their localities.

The results (Table 5), by and large, confirm and extend the existing evidence on catalysts and barriers for improving household incomes. The log of income increases with the age of the HOH, but at a decreasing rate, as revealed in the coefficient of the square of age. Having a female HOH tends to reduce household income. The associations between educational outcomes of the HOH and the log of household income is in line with the human capital theory and furthers evidence that the local labour market rewards academic credentials (Himaz and Aturupane, 2012; Gunatilaka, 2013). The strength of association between education variables grows as the educational outcomes become greater compared to when the HOH has only primary education or none at all.

Table 5: OLS regression output for determinants of the log of household income

Log of household income			**M1** (b/se)
HOH's characteristics		Age	0.0286***
			(0.007)
		Age sq	-0.0003***
			0.000
		Gender	-0.0635**
			(0.026)
	Reference: Primary or no education	HOH - year 5-9	0.0560
			(0.044)
		HOH 10-11	0.2265***
			(0.041)
		HOH 12-13	0.3615***
			(0.049)
		HOH 13+	0.5315***
			(0.057)
		Gainfully employed	-0.0416
			(0.035)
HH labour market characteristics	Reference: Share of permanent workers (of HH members aged 17-64)	Share of temp workers	-0.0801***
			(0.028)
		Share of casual workers	-0.1749***
			(0.045)

	Reference: Share of self-employed (of HH members aged 17-64)	Share of gov employees	0.2437***
			(0.026)
		Share of pvt employees	0.1597***
			(0.028)
		Share of employers	0.2407***
			(0.087)
		Share of family workers	0.2808***
			(0.078)
		Unemployed share	-0.0137
			(0.020)
		Lost job in 2020-22	-0.0417
			(0.054)
Passive income		Income from assets	0.1582***
			(0.041)
		Receives pension	0.0771*
			(0.046)
		Overseas remittance	0.2041***
			(0.039)
Asset ownership		Has land	0.1666***
			(0.031)
		Farm animal	-0.0148
			(0.038)
Social capital		Relatives there to help	0.0370***
			(0.013)
Debt		Loans from banks	0.1017***
			(0.022)
		Leases	0.1250***
			(0.031)
Pandemic experiences		COVID infected	0.0502*
			(0.026)
		Hospitalised due to COVID	0.0613
			(0.045)

Spatial characteristics		Distance to bus stands (mins)	-0.0010
			(0.001)
	Reference: Colombo District	Ampara	-0.2955***
			(0.065)
		Anuradhapura	-0.0382
			(0.077)
		Badulla	-0.2562***
			(0.068)
		Galle	-0.0654
			(0.055)
		Jaffna	-0.2414***
			(0.066)
		Kandy	-0.0407
			(0.067)
		Kurunegala	-0.0278
			(0.052)
		Ratnapura	-0.1886**
			(0.086)
		Constant	9.7614***
			(0.172)
		r2	0.3000
		F	42.175
		p	0.0000
		AIC	5584.967
		BIC	5808.532
		N	3678

Source: KLIE vulnerability survey data (2022)

Note: Model clustered at the Divisional Secretariat's division level for robust standard errors, given in parentheses; Significance level denoted by * p<0.10, ** p<0.05, *** p<0.01 at ten percent, five percent and one percent, respectively. See Appendix Table 9 for the means and proportions of independent variables.

While an increase in the share of household members with temporary and casual job tenures are negatively correlated with household income, compared to an increase in the share of household members with permanent jobs, the negative correlation is more pronounced with casual jobs. The group of variables capturing the share

of household members by type of job suggests that waged jobs, own account work and unpaid family work, compared to self-employment activities, have a strong positive correlation to household income.

Earning passive income bodes well for household income, as does land ownership. Note that ownership of farm animals is associated with a decline in household income, although the correlation is insignificant. Having relatives and friends that a household can ask for material or financial help from is positively correlated to household income. Borrowings from banks and leasing companies have a positive and significant correlation to household income, plausibly indicating that such borrowings are for productive purposes or long-term consumption (such as housing, vehicles etc).

The effects of the pandemic experience on household income are counterintuitive, and we reason that it could be because the virus infections themselves did not likely affect incomes for most households in the long-term as much as the pandemic control measures did. The district-level coefficients show that, by and large, households placed outside Colombo earn lower incomes than households living in the Colombo District. These results underscore how locality plays a deterministic role in the ability of individuals to secure permanent employment in the formal labour market, to build assets and to access the formal financial system. The difficulty of more households living outside Colombo District, compared to those living in Colombo, to get to the end of the month with the existing income could very well be symptomatic of the fewer income-earning opportunities in smaller regional economies due to long-term spatial inequalities in economic growth.

The findings from the above statistical procedures echo existing evidence, both from Sri Lanka and elsewhere, about the underlying drivers of households' vulnerability to income insecurity. Several studies that have explored determinants of poverty in Sri Lanka have found that the age, gender and educational outcomes of the HOH tend to play an influential role in creating household poverty. For example, De Silva (2008), Gunatilaka et al. (2010), Deepawansa et al. (2011), Jayathilaka et al. (2016) and more recently Deyshappriya (2020) confirm that the educational level of the HOH is an important correlate of household poverty. However, our overall analysis suggests that, while human capital is an influential determinant of household income, its role in strengthening households' economic resilience to

external shocks is associated with how such human capital endowments translate into labour market gains. We also find that human capital makes households less vulnerable to perceived income insecurities, broadly resonating with Berntson et al. (2006). In a study using nationally representative data from Sweden, they found that education had a positive influence on perceived employability among respondents, even during an economic recession.

The findings extend the empirical evidence that much of the impact of the pandemic in Sri Lanka was transmitted to households through labour market shocks. Additionally, the labour market characteristics of households that are more vulnerable to income insecurity contribute to the growing body of evidence on the disproportionately large burden of external shocks placed on informal sector workers.

Characteristics relating to dependents corroborate existing evidence on how the presence of members who need extra care influences a household's ability to withstand external shocks. Poorer households are usually characterised by a disproportionately higher share of young children. The positive correlation between poverty and disability is also well documented in the development literature. In Sri Lanka, households with persons with disabilities tend to be poorer than those without, even under regular economic conditions (Kumara and Gunewardena, 2017). The presence of children also appears to exacerbate household poverty in Sri Lanka (I. De Silva, 2008; Jayathilaka et al., 2016). Many studies from elsewhere have also observed that economic downturns exacerbate the vulnerabilities of households with such dependents who need extra care. For example, parents might resort to pulling children out of school or deprioritising medical and healthcare needs of members with disabilities in efforts to sustain household consumption (De Janvry et al., 2006).

The correlation of the financial, physical and social capital endowments of households to household income and their vulnerability to income insecurity, underscores that assets are an important buffer for cushioning households from exogeneous shocks. Liquid assets, as expected, are more useful to help households smooth consumption fast, but the ownership of long-term financial assets such as fixed deposits not only protect households from actual but also perceived income vulnerabilities. In fact, access to such resources might play a deterministic role in

whether a household recovers quickly from a shock experience or is thrust into long-term poverty (Walsh and Hallegatte, 2019).

Finally, these findings in many ways reiterate what has been observed in the aftermath of shocks both locally and elsewhere. Households with less income, higher unemployment rates, a less educated head, drawing income from informal or semi-formal employment, more children, elderly and persons with disabilities, without liquid assets and exposure to debt have been more vulnerable than other households to income insecurity in the wake of natural and man-made shocks, time and time again (De Silva and Kawasaki, 2018; Franklin et al., 2021; Glewwe and Hall, 1998; Inchauste et al., 2003; Sánchez-Martínez et al., 2016; Suryahadi and Sumarto, 2003).

In summary, our econometric results on household vulnerability to income insecurity looks at five outcome variables – namely, a decline in household income, inability to get to the end of the month with their current income, perceived difficulty managing household expenses with their current income, perceived future income and job losses. We also submitted the latter two outcome variables to an ordered logistic regression analysis as the outcomes are a categorical variable following a meaningful sequential order. Finally, for the completeness of the analysis, we undertook an OLS regression with outcome variable defined as the log of household income.

Results from the logistic and ordered logistic regressions show that most of the characteristics of the HOH, including many educational variables, do not bear a statistically significant correlation to outcome variables. However, high educational outcomes of the HOH make worrying about possible future job and income losses much less likely. Households headed by women, compared to those headed by men, are more likely to be constantly worried about future income losses. We observe strong correlations between household labour market characteristics and the outcome variables in both logistic and ordered logistic regressions. Temporary and casual jobs and jobs in the informal sector (employers, family workers and self-employed) appear to push households into income insecurity and increase their worries about future income and job losses. An increase in the share of unemployed as well as experiences of job losses in 2020-22 also tend to push households into income vulnerability.

The presence of PWDs who need extra financial assistance increases the real and perceived probability of becoming vulnerable to income insecurity, while the receipt of passive income, and ownership of liquid and quasi-liquid assets reduces such risk. However, owning fixed deposits helps respondents worry much less frequently about future income and job losses. Debt obligations by and large increase a household's risk of vulnerability to income insecurity. Spatial characteristics suggest that most households living outside Colombo District are vulnerable to income insecurity.

OLS results are in concurrence with existing evidence from here and elsewhere about the importance of the human capital characteristics in earning a higher income. While income grows with increasing age of the HOH, it does so at a declining rate. A household headed by a woman is likely to earn comparatively less than a household headed by a man. The tenure and sector of jobs matter too. Compared to permanent jobs, temporary and casual jobs bring home less income. Households that have their own enterprises (who probably have family members who are employers and family workers) earn more income than those who are self-employed. Asset ownership, receipt of passive income and having relatives to support, if necessary, all bode well for household income. So do borrowings, except those which are more likely to be distress loans than productive ones. Differences in the strength and direction of district level associations with household income likely reveal differences in regional labour market opportunities. In the next chapter, we turn our focus to vulnerability to food insecurity among households.

6. Factors associated with vulnerability to food insecurity

As discussed earlier, the negative impacts of the pandemic on employment and incomes have been accompanied by multidimensional deprivations globally. In Sri Lanka, a 2022 survey by the Food and Agriculture Organization (FAO) and the World Food Programme (WFP) (2022) estimates about 6.2m or 28 percent of the population in Sri Lanka to be moderately acute food insecure and about 66,000 persons to be severely acute food secure, at the time[15]. The survey data also shows that, while about 61 percent of the households employed food-based coping strategies because they did not have enough money to buy food, this share is about 80 percent in the estate sector, underscoring how pre-existing socioeconomic vulnerabilities are reinforced and exacerbated in crisis situations.

Our descriptive statistics analysis also paints a poignant picture of the struggles of households in managing spending on essentials such as food, medicine, healthcare and clothing, due to reduced household income and/or increased expenses. Most household have had to make drastic changes to their lifestyles, as reflected in the high proportion of households that have resorted to cutting down on recreational expenses, reducing the use of electricity, and giving up non-essential food including milk in their tea. However, as we discussed in Section 4, a breakdown of the coping strategies adopted by households indicated that households already grappling with potential drivers of vulnerability (such as, for example, households that are in social protection programmes, those that owe money to retail shops for their daily essential purchases, or households that do not own the house they live in) have been compelled to take up more extreme and detrimental coping strategies such as cutting down expenses on essentials such as food, medicine and clothing altogether. In this section, we examine the drivers of food insecurity among households.

The outcome variables we consider include the following: (i) households could not afford to eat protein at least once a day (1=yes; 0 otherwise), (ii) households cut portion sizes regularly due to financial constraints (1=yes; 0 otherwise), (iii) households skipped meals regularly due to financial constraints (1=yes; 0

[15] However, the share of population in moderately acute food insecurity is estimated to have declined to 3.2m (17 percent) from 6.2m (28 percent) from May 2022 to April/May 2023 (WFP, 2023)

otherwise), and (iv) households perceived they could not afford to eat a balanced meal in the past 6 months (1=yes; 0 otherwise). The summary statistics of the outcome variables are presented in Table 6 below, while those of the independent variables are produced in Appendix Table 10. Table 7 below presents the results of the logistic regression analysis, and the discussion, as earlier, focuses primarily on statistically significant results.

Table 6: Summary statistics of outcome variables denoting vulnerability to food insecurity

	Mean	Robust Std. Err.	[95% Conf. Interval]	
Could not eat protein at least once	0.372	0.026	0.321	0.423
Cut portion sizes regularly	0.275	0.025	0.226	0.324
Skipped meals regularly	0.226	0.024	0.179	0.274
No balanced meal in past 6 months	0.666	0.036	0.595	0.736

Source: KLIE vulnerability survey data (2022)
Note: Means clustered at the Divisional Secretariat level for Robust SEs

Among the marginal effects pertaining to the characteristics of the HOH (Table 7), the gender and educational variables have turned out to be statistically significant across some specifications. Unlike in the previous analysis, we notice that the gender of the HOH has statistically significant implications on household food security. All four models suggest that female headed households are more likely to be vulnerable to food insecurity and the marginal effects are significant at the 5 percent cut-off in three of them. This confirms our fears that households with pre-existing vulnerabilities tend to be pushed to extreme measures to manage household expenses in the face of shocks.

The HOH's education level plays a significant role in households' vulnerability to food insecurity. As the education levels of the HOH increases, compared to the reference category of primary education or less, the probability of falling into vulnerability to food insecurity declines (Álvares and Amaral, 2014). For example, a household where the HOH has studied up to GCE AL is about 11 percent less likely to skip meals regularly, while this probability grows to 17 percent when the HOH has an education of over GCE AL. We posit that these marginal effects not

only encompass the better labour market outcomes that households where HOHs have higher educational outcomes tend to enjoy, as we observed in the preceding analysis, but also the positive correlation between education and nutritional quality (Azizi Fard et al., 2021; McKay et al., 2006).

An increase in the number of children in the household and the presence of persons who need extra medical or financial assistance due to their health conditions tend to make households vulnerable to food insecurity. Missing out on the free school meal programme due to school closures may likely have aggravated the food vulnerability conditions among the poorer households (Jayawardena, 2020). However, the marginal effect in relation to children, although significant at some level across all four models, is rather small in magnitude. In contrast, however, the marginal effects in relation to PWDs are relatively larger. For example, a household with PWDs who needs extra financial assistance is about 5 percent more likely to have cut portion sizes regularly, compared to households without such members. These associations are in line with findings in favour of the greater prevalence of food vulnerability among households with children, elderly and the infirm not only in developing countries (Gaitán-Rossi et al., 2021; Giacoman et al., 2021; Mandal et al., 2021; Mthethwa and Wale, 2021), but also in advanced economies (Katagiri et al., 2022; Loopstra, 2020; Parekh et al., 2021).

Of the household income variables, the log of income appears to be the most influential determinant of household vulnerability to food insecurity (Clay and Ross, 2020; Tadesse Tantu et al., 2017). As income increases, a household is between 9 percent and 15 percent less likely to become vulnerable to food insecurity, as revealed by our four outcome variables, and all marginal effects are significant at the stringent 1 percent cut-off. Receiving a pension income and remittances from abroad also seem to reduce the risk of a household becoming vulnerable to food insecurity, as reflected in their statistically significant inverse correlations to three of the four outcome variables (Mora-Rivera and van Gameren, 2021; Jayaweera and Verma, 2024). Thus, the amount of income and the receipt of passive income appear to be strong predictors of food vulnerability among households.

Among assets, the ownership of jewellery stands out as a particularly strong buffer against food vulnerability. Households that own jewellery are between 8 percent and 17 percent less likely to become vulnerable to food insecurity as revealed by

the four outcome variables. All marginal effects are not only sizeable, but also significant at the critical 1 percent cut-off. Living in one's own house also makes households less vulnerable to food insecurity. This stands to reason as they have more disposable income to spend on food compared to households that have to spend on rent (or any other housing-related costs). These findings also echo observations from elsewhere and even under normal economic conditions (Fafard St-Germain and Tarasuk, 2020; Kirkpatrick and Tarasuk, 2011). Illiquid assets such as fixed deposits and land, while for the most part reduces household vulnerability to food insecurity, does not seem to be doing so as strongly or as significantly as jewellery (Noerhidajati et al., 2021).

The ownership of farm animals and agricultural equipment yields mixed and largely statistically insignificant results, suggesting that agricultural households are not particularly resilient to food insecurity (Acheampong et al., 2022). However, households that own farm animals are about 12 percent less likely to perceive that they could not eat a balanced meal. This could be because households owning farm animals might have readily available access to food items like eggs and milk within their own homes, contributing to their capacity to maintain dietary diversity (Kariuki et al., 2013; Smith et al., 2013; Wong et al., 2017).

Having savings deposits or participating in Seettu schemes bodes well for protecting households against vulnerability to food insecurity, but the marginal effects are by and large insignificant. The ability to seek help from relatives makes it less likely that a household would forego protein or skip meals regularly (Clay and Ross, 2020), but the size of the marginal effect is relatively small. Households that have experienced COVID infections are about 8 percent more likely to perceive that they could not eat a balanced meal in the last six months.

The district variables show that, except for those living in Jaffna, households living in most other districts compared to those in Colombo are likely to be vulnerable to food insecurity. The marginal effects in relation to three of the four outcome variables are significant at the most parsimonious 1 percent threshold for Ampara District. The highest number of statistically significant marginal effects are reported in relation to the consumption of protein. Most households living outside Colombo are less likely to have consumed protein than those living in Colombo.

Overall, we note that the log of household income is the single most influential determinant of household vulnerability to food security. A close second and third are the ownership of jewellery and receipt of passive income. These findings underscore the role of resources, especially liquid and quasi-liquid assets in enabling households to smooth consumption in the wake of an external shock (Hoddinott, 2006). The findings also echo evidence from other countries such as Kenya (Onyango et al., 2021), the UK (Loopstra, 2020), Bangladesh (Bidisha et al., 2021b), Ethiopia (Muir et al., 2023) and India (Kesar et al., 2021) on the characteristics of households that have become vulnerable to food insecurity during the pandemic. Our findings also broadly confirm the observations of Sri Lanka's recent multidimensional vulnerability study (OPHI and UNDP, 2023).

More importantly, as we noted in the preceding chapter, here too we note that our findings extend similar observations following other types of natural and man-made shocks, both in Sri Lanka and elsewhere. For example, literature investigating the household impact of natural disasters shows that, not only do such natural shocks exacerbate household vulnerability to food insecurity, but also that the disproportionately adverse effects on one group of households over the other can be traced along pre-shock inequalities such as differences in education outcomes of the HOH, income level, area of residence, the presence of children, elderly and persons with disabilities, and the labour market impact of the shocks (Edwards, 2015; Hutson et al., 2014; Kianersi et al., 2021).

Table 7: Factors associated with the probability of household vulnerability to food insecurity – marginal effects of logistic regression

		No protein	Reduce portions	Skip meals	No bal. meal
		m1	m2	m3	m4
		b/se	*b/se*	*b/se*	*b/se*
Characteristics of the HOH					
	Age	0.0005	0.002	-0.0017	0.0135***
		(0.005)	(0.005)	(0.004)	(0.005)
	Age squared	0.0000	0.0000	0.0000	-0.0001**
		0.000	0.000	0.000	0.000
	Female	0.0462**	0.0392**	0.0486**	0.0169
		(0.019)	(0.016)	(0.019)	(0.021)
Reference: Primary or no education	Grade 6-9	0.0082	-0.0028	-0.0342	-0.0687
		(0.030)	(0.027)	(0.023)	(0.043)
	Grade 10-11	-0.0326	-0.0496	-0.0432	-0.1461***
		(0.033)	(0.031)	(0.030)	(0.052)
	Grade 12-13	-0.0767**	-0.0890**	-0.1050***	-0.0956
		(0.034)	(0.037)	(0.037)	(0.060)
	Grade 13+	-0.0749*	-0.1481***	-0.1669***	-0.1568***
		(0.041)	(0.043)	(0.039)	(0.060)
Household characteristics					
	No of children	0.0130**	0.0183***	0.0165***	0.0153**
		(0.006)	(0.006)	(0.005)	(0.006)
	Have PWDs extra fin assistance	0.0503	0.0518*	0.0510**	0.0526
		(0.037)	(0.028)	(0.023)	(0.039)
	Have PWDs extra med assistance	0.0086	0.0663**	0.0321	0.048
		(0.038)	(0.029)	(0.024)	(0.043)
	Have seniors	-0.0027	-0.0101	0.0088	-0.0209
		(0.021)	(0.017)	(0.017)	(0.021)
Household income and assets					
	Log of HH income	-0.1827***	-0.1247***	-0.1142***	-0.1403***
		(0.022)	(0.015)	(0.017)	(0.025)
	Gets pension	-0.0849***	-0.0711**	-0.0916***	-0.0189
		(0.033)	(0.034)	(0.030)	(0.025)
	Gets foreign remittances	-0.0624**	-0.0619**	-0.0872***	-0.0200
		(0.028)	(0.025)	(0.031)	(0.025)

	Lives in own house	-0.1078***	-0.1121***	-0.1154***	-0.0568
		(0.031)	(0.028)	(0.030)	(0.037)
	Has fixed deposits	-0.0382	-0.0721**	-0.0647**	-0.023
		(0.035)	(0.029)	(0.029)	(0.033)
	Has land	-0.0284	-0.0451**	-0.0518**	-0.0123
		(0.025)	(0.022)	(0.021)	(0.031)
	Has farm animals	0.0018	-0.0247	-0.0207	-0.1162***
		(0.035)	(0.028)	(0.023)	(0.036)
	Has agricultural equipment	-0.0426	0.0821**	0.0314	0.0689
		(0.039)	(0.035)	(0.036)	(0.063)
	Has jewellery	-0.1660***	-0.1187***	-0.0812***	-0.1834***
		(0.033)	(0.020)	(0.019)	(0.033)
	Has savings	-0.0015	-0.0590***	-0.026	-0.0082
		(0.025)	(0.021)	(0.021)	(0.035)
	In Seettu scheme	0.0166	0.0090	-0.0102	0.0060
		(0.029)	(0.022)	(0.021)	(0.025)
Social capital					
	Relatives there to help	-0.0283**	-0.0133	-0.0192**	0.0040
		(0.011)	(0.009)	(0.008)	(0.011)
COVID experiences					
	COVID infected	-0.0038	0.0088	-0.0051	0.0784***
		(0.029)	(0.021)	(0.020)	(0.029)
District					
reference: Colombo District	Ampara	0.2390***	0.2044***	0.2158***	0.088
		(0.053)	(0.065)	(0.054)	(0.093)
	Anuradhapura	0.1291**	0.0102	0.043	0.1433
		(0.056)	(0.083)	(0.078)	(0.132)
	Badulla	0.4033***	0.0184	0.0084	0.0007
		(0.053)	(0.060)	(0.060)	(0.099)
	Galle	0.1104	0.0980**	0.0844	0.4331***
		(0.081)	(0.047)	(0.069)	(0.086)
	Jaffna	0.0198	-0.0188	0.0221	-0.1513*
		(0.052)	(0.067)	(0.064)	(0.088)
	Kandy	0.0905	-0.0036	-0.013	-0.0625
		(0.062)	(0.060)	(0.054)	(0.094)
	Kurunegala	0.1548**	0.0374	0.0353	-0.0239
		(0.067)	(0.053)	(0.058)	(0.078)

	Ratnapura	0.2371***	0.0819	0.053	0.0004
		(0.082)	(0.066)	(0.062)	(0.100)
	p	0.0000	0.0000	0.0000	0.0000
	AIC	4182.952	3733.395	3406.273	4132.672
	BIC	4383.642	3934.084	3606.962	4333.361
	N	3911	3911	3911	3911

Source: KLIE vulnerability survey data (2022)

Notes: Models are clustered at the Divisional Secretariat's division level for robust standard errors, given in parentheses; Significance level denoted by * p<0.10, ** p<0.05, *** p<0.01 at 10 percent, 5 percent and 1 percent, respectively. See Appendix Table 10 for the means and proportions of independent variables.

In summary, our econometric model on household vulnerability to food insecurity comprised four dichotomous variables – namely, inability to consume protein at least once daily, cutting portion sizes, skipping meals regularly, and inability to consume a balanced meal because households could not afford to do so.

The results suggest that households headed by women, compared to those headed by men, are at a greater risk of vulnerability to food insecurity. High educational outcomes of the HOH reduce the risk of a household falling into food insecurity, which might be both due to their better economic status as well as the positive correlation between education and awareness about nutrition. An increase in the number of children and the presence of PWDs who need extra financial and medical assistance also exacerbate household vulnerability to food insecurity. Income and assets bode well for households' food situation. However, among the different enumerated assets, it is jewellery that considerably reduces the probability of a household becoming vulnerable to food insecurity. A similar effect is observed when income increases. Access to social capital seems to make a difference to households in reducing their vulnerability to food insecurity, which was not the case in relation to income. Households resident outside Colombo District are at a higher risk of becoming vulnerable to food insecurity. In the next chapter, we conclude our study with a brief synthesis of the findings from Chapters 4 to 6 and some reflections on policy and practice.

7. Conclusions

COVID-19, which first emerged as a health crisis, soon metamorphosized into a much larger humanitarian crisis with far reaching and long-term implications on the global economy. The poverty impact of the pandemic has been astounding, pushing far more people far too rapidly into poverty than any other external shock in recent history. Efforts to control the pandemic have not only reversed years of success in global poverty reduction, but have also significantly undermined the prospect of achieving most Sustainable Development Goals by 2030.

Despite Sri Lanka's success in containing the spread of the pandemic in the first wave, the second and third waves were characterised by a sharp increase in confirmed cases, hospitalisations and deaths, both because the successive mutations of the virus were more potent and infectious, but also because the escalating economic crisis left little to no fiscal space to spend on COVID-related expenses. The household economic impact of the pandemic was further aggravated by Sri Lanka's deepening economic crisis, resulting in a large cohort of 'new poor', and a number of monetary and multidimensional deprivations among households.

Against this backdrop, we undertook this study which explores the determinants of household vulnerability to food and income insecurity. We surveyed a random sample of 4,000 households from nine districts, one in each province. We chose the nine districts based on the highest number of confirmed COVID cases as of June, 2022. Our inquiry into the survey data comprised a comprehensive descriptive statistics analysis and regression analyses. We applied logistic, ordered logistic and OLS regression methods to the data to model the determinants of outcome variables. We constructed different constituents of perceived and actual vulnerability to uncover a holistic picture of what factors push households into income and food insecurity.

We believe our study is a timely and relevant contribution to the nascent body of literature on household vulnerability, especially in low- and middle-income countries that have borne the brunt of the shocks of the pandemic. In Sri Lanka, we expect this study to add to and extend the existing evidence on household vulnerability in the face of exogenous shocks, and to provide timely evidence to

inform relevant policy and practice, at a time when the country is at an important economic juncture.

7.1 Summary of findings

Not many households in our sample had contracted the virus. Even fewer households experienced COVID-related hospitalisations; the proportion of households that experienced COVID-related fatalities is negligible. Proportionately more of the eligible households received financial assistance from the government. Overall, these households have received more financial and in-kind assistance from the government than from other organisations or relatives and family. These findings speak to the merits of the coverage of the pre-emptive social protection measures that the government undertook during the first wave. The lockdown experience has been a gendered one, which increased the workload of women. Not many women believe it created better economic opportunities for them, although they could work from home during the lockdowns.

While most households have either experienced a decline or stagnation in their household incomes, nearly all households have seen an increase in their household expenses. The share of households that have seen a decline in income is highest among those who rely on agricultural and non-agricultural own production. The increase in expenses, along with declining or stagnant income, has resulted in challenges for households in meeting their basic needs. Although most households manage to eat three meals a day, a sizeable proportion of them have had to compromise on the quality of food. Most households are also unable to purchase the same basket of goods now, compared to two years ago. While most households that need medicine and healthcare are able to spend on them, the affordability levels are particularly low if households have members who need extra physical, medical or financial assistance due to impairments. Most households are able to spend on minor repairs in their houses, but not major repairs. The majority of households with children have seen disruptions to their children's physical and online education. The education-related expenses have increased as well, while a considerable share of households does not have the required infrastructure to provide children with a quality online education experience. These overall patterns

tend to worsen when disaggregated by markers of vulnerability. We observe that households with pre-existing vulnerability characteristics, such as asset poverty, participation in social protection programmes, debt obligations and struggles to manage debt, persons with disabilities, and female heads of households, are by and large disproportionately represented in households struggling to make ends meet.

Results from our logistic and ordered logistic regressions on household vulnerability to income insecurity show that the HOH's characteristics, including many educational variables, do not have a significant relationship to the probability of a household becoming vulnerable to income insecurity. However, perceptions of vulnerability to income insecurity tend to decrease at higher levels of education of the HOH. Furthermore, perceived income insecurity is higher among households headed by women, compared to those headed by men.

We observe a strong relationship between household labour market characteristics and household vulnerability to income insecurity. An increase in the share of household members in temporary and casual employment and employment in the informal sector (compared to permanent and formal sector jobs), as a proportion of the working age household members, raises the probability of a household experiencing income insecurity. Such households are also more likely to worry about future income and job losses. As expected, an increase in the proportion of unemployed members from among the working age members in the households makes it more likely that a household is vulnerable to income insecurity. Job losses during 2020-22 also raise the probability of a household experiencing vulnerability to income insecurity.

Households with PWDs who need extra financial assistance are likely to experience both real and perceived vulnerability to income insecurity. Passive income, liquid and quasi-liquid assets relieve some of this risk. Fears about future income and job losses are less among households that own fixed deposits. On the other hand, households that have debt are more likely to face vulnerability to income insecurity. Living outside the Colombo District increases household vulnerability to income insecurity.

The results from our OLS regression confirm existing evidence from here and elsewhere that human capital is an important requirement for earning higher

income. We also observe that households headed by women earn less than those headed by men. Among labour market characteristics, the job tenure and sector are significant determinants of household income. Compared to permanent jobs, temporary and casual jobs bring home less income. Households that have their own enterprises (who probably have family members who are employers and family workers) earn more income than those who are self-employed. Assets, passive income and access to social capital increase household income. Productive loans also support incomes, but distress loans are associated with reduced household income. The district level characteristics allude to possible inequities in regional labour market opportunities.

The comparison of the results from these analytical procedures brings out some useful insights. Although better education seems to matter for earning more income, household resilience to external shocks appears to be achieved through labour market successes. Although a household headed by a woman earns less than a household headed by a man, the former is not necessarily blatantly more vulnerable to income insecurity. Yet, women-headed households seem to worry more often about future income losses, which could be because they typically earn less than male-headed households. Having relatives to support is beneficial for household income, but not so much for a household's resilience to vulnerability in the face of external shocks. Although productive loans might bode well for improving income, debt of any type increases household vulnerability to income insecurity.

The results of our regression analysis on household vulnerability to food insecurity show that households headed by women are more likely to be food vulnerable than those headed by men. An increase in the HOH's educational outcomes reduces a household's vulnerability to food insecurity, possibly due to their better economic situation proxied by higher educational outcomes as well as better awareness about nutrition among HOHs with high levels of education. The presence of dependents, children and PWDs, raises a household's risk of falling into food insecurity. An increase in income and ownership of assets, especially jewellery, is particularly useful in alleviating a household's vulnerability to food insecurity. Having relatives and friends to support lowers the risk of a household becoming food insecure, while residence outside the Colombo District tends to increase this risk.

7.2 Reimagining vulnerability in the light of COVID-19

Our findings by and large confirm and reiterate conclusions drawn in previous empirical studies that have examined the socioeconomic ramifications of exogeneous covariate stressors. Clearly, irrespective of whether the external shock is a natural disaster or an economic crisis, we find that the characteristics of households that are left worse off in the aftermath are quite similar. Even though the pandemic and the economic crisis were shocks of a considerably larger magnitude than what we have experienced in Sri Lanka in recent history, the factors contributing to household vulnerability to income and food insecurity are a vector of characteristics that have consistently emerged in the context of similar events. Importantly, the sharp increase in income and non-income poverty levels due to the pandemic and the economic crisis has illuminated the pre-existing fault lines of the country's socio-economic fabric.

At the same time, however, the pandemic and the economic crisis have afforded the country another brief window of opportunity to build back better, an opportunity that was missed twice in the recent history, namely, in the aftermath of the Tsunami disaster in 2004, and then following the end of the 29-year war in 2009. The IMF bailout package of USD 3b approved in March, 2023 has a number of conditions for strengthening Sri Lanka's fiscal space, improving efficiency of state-owned enterprises, expanding social protection and tackling corruption. Other international development agencies such as the World Bank, Asian Development Bank and the UN agencies[16] also appear to have intensified their focus on inclusive economic growth, social inclusion and equity in the recent months. The government's own policy initiatives in the recent months to improve fiscal

[16] For example, the World Bank's Sri Lanka Country Partnership Strategy (2024-2027) focuses heavily on inclusive economic growth, supporting socially vulnerable groups and promoting resilience to climate and external shocks (World Bank, 2023c). The UNDP launched Sri Lanka's first multidimensional vulnerability study in 2023 UNDP, 2023). Similarly, the Food Security and Livelihood Recovery Emergency Assistance Project, funded by the World Bank and the Asian Development Bank, aims to strengthen Sri Lanka's social protection system and empower vulnerable groups (See further details at https://www.adb.org/projects/56175-001/main).

discipline[17], enhance the monetary policy efficiency[18], strengthen gender equality and women's empowerment[19], education[20], external trade[21] and the financial sector[22] are also valuable for addressing many structural and systemic weaknesses that have held back the economy.

Globally, the discourse on reimagining vulnerability in the light of COVID emphasises on the critical importance of equity, inclusion, rights and justice. Although decades of economic growth have pulled people out of extreme poverty for the most part, the pandemic has highlighted a costly lesson: economic growth driven by widening inequalities is akin to building a house of cards. Economic growth is a positive-sum game, but the winnings are unsustainable if its distribution persists to be inequitable. Yet, closing inequality alone cannot reduce or eradicate global poverty in the absence of economic growth (Roser, 2021; Min and Rao 2023). As Roser (2021) explains, economic growth needs both a rate and a direction that can pave the way for a sustainable, equitable and inclusive future.

Thus, the focus of reimagining vulnerability extends beyond strengthening social protection and safety nets to become part of a broader initiative that reimagines economic growth and development. As observed in our analysis, much of the impacts of the pandemic and the economic crisis were transmitted to households through their pre-existing conditions. Households with some level of economic, material and social endowments as captured in our predictor variables, have proven to be more resilient in the face of pandemic-induced shocks than those

[17] In September, 2023, the government launched the National Evaluation Policy, roughly seven years after its inception. The policy calls for assessing and publishing the expenditure of the 10 highest-spending ministries, in a bid to strengthen discipline in government expenditure (See further details at https://www.presidentsoffice.gov.lk/index.php/2023/09/08/sri-lankas-long-awaited-national-evaluation-policy-finally-commences-after-seven-years/)

[18] In early 2024, CBSL announced a possible overhaul of the monetary policy to enhance its effectiveness, a key component of which is a proposed shift to a single policy rate mechanism from the existing dual policy rate (CBSL, 2024)

[19] Sri Lanka's National Action Plan for the Implementation of the UN Security Council's Resolutions on Women, Peace and Security 2023–2027 and National Policy on Gender Equality and Women's Empowerment were launched in 2023. An important development in these policy documents is the commitment to safeguard the rights of individuals with diverse sexual orientations and gender identities, a group of individuals that are persistently marginalised in Sri Lanka.

[20] New educational reforms are to be piloted in 2024.

[21] For example, a long-term programme "Visit Sri Lanka" is planned to be launched in 2024 to promote tourism and modernise state-owned resorts and tourism bungalows (See details at: https://www.presidentsoffice.gov.lk/index.php/2023/07/24/government-to-launch-visit-sri-lanka-new-tourism-plan/

[22] See Footnote 16

lacking such resources. Importantly, these resources are not mutually exclusive; success in one domain influences access to the others. Such households not only begin from a stronger position when a shock unfolds, but are also more likely remain stable for longer without falling into poverty or resorting to negative coping strategies with long-term detrimental effects. While our analysis has not delved into it, a household's recovery in the aftermath of the shock is also influenced by factors similar to what influences its resilience, or lack thereof, to shocks (Tran, 2015; H. Zhang et al., 2020; R. Islam and Walkerden, 2022). Thus, households that were poor or vulnerable at the outset of a shock are either likely to remain for longer in transient poverty conditions or to be thrust into chronic poverty in its aftermath, amidst a complex interplay of negative outcomes of suboptimal coping mechanisms, exacerbated pre-existing socioeconomic conditions, and persistent systemic and structural weaknesses and inequalities.

Thus, household vulnerability is a continuous spectrum of experiences that becomes particularly amplified when confronted by a sudden shock. It lingers closely behind poverty, but unlike poverty, vulnerability is forward-looking, elusive, unobserved, and therefore tricky to measure. As such, while we have reliable and comparable data to estimate the proportions of individuals and households who are poor, similar data on vulnerability are more difficult to come by. As the old adage goes, what gets measured gets done, as reflected in the success in global poverty reduction over the recent decades. Yet, the way in which the pandemic has swiftly undone a significant amount of poverty reduction efforts highlights the critical error of overlooking household vulnerabilities. Not all households above a poverty cut-off are equally non-poor, nor have they been in that state for similar durations. Thus, reducing poverty without addressing drivers of economic (and other forms of) vulnerability makes it more difficult to keep households and individuals from sliding back into poverty when a shock disrupts the normal social order.

Therefore, what would reimagining vulnerability in a post-COVID environment look like? We posit this would involve adopting a more holistic and dynamic approach to poverty elimination, with a greater emphasis on the role of vulnerability within the development agenda. Such an approach must prioritise initiatives that promote inclusive and sustainable economic growth and diversity, address pre-existing inequalities and systemic barriers hindering a fair distribution of income gains, invest in human capital and protect natural resource endowments, and strengthen

existing social safeguards and safety nets available to the most vulnerable and marginalised individuals and groups in society.

Most importantly, policies aimed at reducing vulnerability should not operate in isolation. Instead, these policies should be seamlessly integrated into the broader macroeconomic development agenda and feature comprehensively as cross-cutting priorities within the realms of economic growth, human capital development, external trade, infrastructure development, social protection, and environmental sustainability. An intersectionality lens is crucial as vulnerabilities are often shaped by an interplay of a number of overlapping factors such as age, gender, ethnoreligious identity, sexual orientation and gender identity, geographic location etc.

Furthermore, as the cornerstone of vulnerability mitigation, social protection policies should shift towards proactive and pre-emptive measures in anticipation of potential shocks. This entails moving beyond reactive responses, and investing in long-term strategies that empower communities to mitigate risks and cope with adverse shocks. Emergency responses should be an inter-agency dialogue, and not be centralised into one entity that might not have a full grasp of the many socioeconomic, cultural, psychosocial and other intangible vulnerabilities that mitigative measures might unleash. While governments' safety nets should be generous enough to make a meaningful difference in the lives of the most vulnerable, they should not become long-term crutches. Such programmes should encompass characteristics that empower the poorest and most vulnerable households to permanently move out of these programmes and poverty over a specific period of time.

Finally, embracing a rights-based approach to economic development is paramount to reimagining vulnerability in a post-COVID world. The adverse socioeconomic effects of the pandemic, in fact, are a culmination of decades of inequitable and lopsided economic growth, discriminations in access to resources, and systemic disparities in access to and the quality of healthcare, education, infrastructure, and social services. Thus, addressing these deeply entrenched injustices requires a human rights framework within the macroeconomic development agenda.

7.3 Policy implications

Reflecting on our findings, and in the light of our thoughts on reimagining vulnerability, we discuss some policy implications in this final section. We begin with conditions that are absolutely necessary to reimagine vulnerability. The first is economic growth itself which forms the bedrock of combating poverty and vulnerability.

As Roser (2021) explains:

> "…people live in poverty not because of who they are, but because of where [emphasis added] they are. A person's knowledge, skills, and how hard they work all matter for whether they are poor or not – but all these personal factors together matter less than the one factor that is entirely outside of a person's control: whether they happen to be born into a large, productive economy or not."

Thus, economic growth is imperative to reducing poverty and vulnerability, as economic growth is almost always accompanied by a reduction in poverty.

However, the impact of economic growth on poverty reduction depends on how growth is distributed and the sectoral composition of the growth (Ames et al., 2001). In Sri Lanka, poverty reduction has been achieved almost only on the back of economic growth because income inequalities have worsened over recent years (Gunatilaka, 2008). Divergent inter-district, multi-dimensional vulnerabilities further showcase inequities in the gains of economic development (OPHI and UNDP, 2023). Thus, although Sri Lanka's pre-pandemic poverty reduction efforts were commendable at the high level, such achievements have proven to be fragile when confronted by external shocks (Walker, 2018; Walsh and Hallegatte, 2019). On sectoral characteristics, agriculture contributes only about 8 percent to the national economy, but accounts for over 25 percent of total employment. To put this into perspective, the industry sector, which contributes about 30 percent to the GDP, also employs about 25 percent of the labour force. Thus, not only has Sri Lanka's economic growth itself been inequitable, but the sectoral composition of growth has also contributed to this disparity by failing to generate sufficient jobs in burgeoning sectors.

Thus, Sri Lanka's macroeconomic policies should be revised in a manner that can meaningfully contribute to reducing household poverty and vulnerability. This requires driving the sort of economic growth that can expand regional labour markets, spur regional economic activity especially in the historically poorest and disadvantaged districts, and generate more and better jobs and income-earning opportunities. Invariably, this requires investing in the expansion of growth sectors such as tourism, information and communication technology, logistics and transportation, and construction, as well as promoting a diversification of export products and services. Reviving the plans to set Sri Lanka up as a regional hub, leveraging its strategic location to become an integral part of broader regional economic activities would be particularly advantageous in this regard.

To drive inclusive and sustainable economic growth, it is imperative that the country is connected to markets and that there is strong integration among rural, urban and international markets. Strengthening access to robust infrastructure, both physical and digital, is fundamental for catalysing such interconnectivity. Local businesses, including micro, small and medium enterprises require better financial inclusion, access to markets, information technology, and supportive government policies to thrive and contribute effectively to economic growth and employment generation. Simultaneously, consistent long-term policy direction and political stability are fundamental to fostering investor confidence, both locally and internationally.

Measures to absorb the informal sector into the formal economy is also integral for promoting inclusive development and strengthening access to decent work. In fact, we observed in our analysis that households with incomes from permanent formal sector jobs were more resilient to shock-induced vulnerabilities than those drawing income from more informal employment or livelihood strategies. Thus, as critical as economic growth and sectoral expansions discussed above are, it is equally important that the jobs they create are predominantly in the formal sector. A formal economy strengthens access to financial services, better job security, legal protection and benefits for employees, more tax income for the government, and increased transparency and accountability in business operations. Incentives such as supportive policies, simplified regulations, inclusive finance, and capacity building are some of the key strategies to help informal entities transition into the formal economy.

Simultaneously, Sri Lanka's labour laws need to be reviewed in the light of the evolving labour market and business landscape. We recognise that local labour laws are well-meaning and biased in favour of employees, sometimes to their detriment. The protective features of Sri Lanka's legal framework towards employees make it quite costly to hire permanent workers. This creates an incentive for employers to hire workers on temporary or casual contracts, thereby bypassing the stringent laws applicable to permanent contracts. Labour laws that are overly protective of women and deny them equal employment opportunities in factories and/or in jobs that involve night shifts also need careful review and revision. Overall, it would be advantageous to both employers and employees, especially women who would benefit from flexible, part-time, and remote work arrangements, if Sri Lanka's labour laws were to be updated to reasonably safeguard all types of waged employment rather than remain excessively protective of only certain types of employment.

Next, we point out several lessons from the experiences of the pandemic and economic crisis to strengthen policies on human capital development. In our analysis, we found out that the shift to online education during the pandemic has been by and large unsuccessful both in terms of quality and access, exacerbating existing inequalities in the country's education sector. While the shift has showcased opportunities that can come out of a hybrid of virtual and physical education, such a system cannot work in the absence of high-quality, reliable and affordable digital infrastructure, devices, electricity, and physical spaces that are conducive to learning activities. Measures to close the digital divide, enhance computer literacy and IT skills among educators and parents, strengthen cyber security, equip schools, universities and vocational training centres with smart classrooms and other infrastructure, finance the purchase of devices to support students and educators, are some actions required at a minimum level if the country is to benefit from a shift to hybrid education. Importantly, traditional milestone examinations such as GCE OL or AL must not be designed to exclude students from further education, but should be made connecting nodes for alternative educational or skills development pathways (OPHI and UNDP, 2023).

We also observed in our analysis that higher educational outcomes are by and large associated with greater resilience to income shocks. This is either because these educational opportunities lead to employment opportunities that are insulated

from shocks (permanent, formal sector jobs) or types of employment that can easily adapt to changing underlying conditions. Thus, we posit that creating flexible educational systems that can quickly adapt to evolving skills and jobs that are required of potential employees is imperative to keep abreast with global technological advancements, economic shifts, and industry developments. Globally, there is a rising demand for short courses, certifications, and micro-credentials, a trend that has gained momentum during and after COVID when online pedagogy improved significantly (van der Hijden and Martin, 2023). The rapid changes in technology, business modalities and demand-supply conditions have necessitated continuous upgrading of skills, which traditional educational institutes are not built to cater to. This means that Sri Lanka's education system has to be reformed not just to strengthen the quality and relevance of its existing pedagogy, but to also proactively address the emerging educational requirements of the youth and future generations. In particular, the vocational education sector should be empowered to keep abreast with the evolving landscape of business, technology and market dynamics to help produce a skilful labour force. We also highlight the importance of expanding the regional outreach of vocational and technical training, especially in rural and estate sectors. Building soft skills, such as English language and digital skills, among the youth in these sectors would also strengthen their employability in decent jobs. In addition, universities must be capacitated to introduce timely and relevant short courses, certifications and credentials, in addition to traditional long-drawn degree and diploma programmes.

Next, we reiterate the naïveté of the broad categorisation of poor and non-poor (Deyshappriya, 2021, 2023). The characteristics of the 'new poor' who were thrust into poverty by the pandemic and the economic crisis further corroborates this point. Therefore, it is important to recognise that individuals and households living just above the poverty lines are, in reality, not non-poor in the same way as those living significantly above it. Adopting a more realistic classification system of the poor and non-poor would not only better inform social protection policies and interventions, but also help such initiatives be more effective in pulling people out of and keeping them away from poverty (OPHI and UNDP, 2023). The new Social Registry[23] has expanded poverty classification into severely poor, poor, non-poor and transient, but the definitions or thresholds for these categories are not available

[23] Available online at https://iwms.wbb.gov.lk/household/list

on the registry. This information is critical not only to ensure the reliability of data, but also to make comparisons across time and between regions for policy decisions on poverty reduction. We also highlight the importance of making use of the newly available multidimensional vulnerability index data (OPHI and UNDP, 2023) by both state and non-state actors when designing interventions to address regional and sector-specific vulnerabilities.

Sri Lanka's social protection policy programmes, despite their wide range and coverage, have only made a meagre contribution to poverty alleviation over the years. The shortcomings of how many of these programmes have been designed and are managed allow recipients to remain within the social protection system for years, leading to inclusion and exclusion errors. The proposed new Aswesuma welfare scheme, with a broader beneficiary base, stronger selection criteria, more generous monthly payments but within limited time frames, graduation systems with a more comprehensive package for skills development, has all the appealing characteristics of a mechanism that should help reduce Sri Lanka's poverty rates more effectively than its predecessors. Moreover, these features should help households come out of and stay out of poverty in the long-run. Therefore, social protection programmes must also include a mechanism to protect the incomes and livelihoods of individuals of those enrolled in these programmes, perhaps by way of a contingency budget hypothecated to support households at times of economic crisis (OPHI and UNDP, 2023).

The importance of liquidity and quasi-liquidity in strengthening household resilience to vulnerability emerged strongly in our analysis. Thus, we underscore the importance of asset-building among households, which requires some level of financial literacy. A recent survey of the Central Bank of Sri Lanka (2022) found that Sri Lanka's overall financial literacy is around 58 percent with considerable age, gender, educational and spatial disparities. Thus, plausibly, a large majority of the vulnerable population earns income without much of an idea of how to manage money, spend on a budget, save and build assets. This is a lacuna that is best filled at the school level. However, adult financial literacy programmes also need to be developed and conducted through the comprehensive government networks operating at the grassroots level. Such a programme as part of the *Aswesuma* welfare mechanism will be particularly helpful for vulnerable households to build a financial buffer for a rainy day.

Changes to the formal financial system to make it more amenable to individuals from all income brackets and without assets will also be particularly useful to this end. This would also allow households to borrow formally, instead of taking distress loans which would push them further into poverty and destitution, as such informal loans often involve debilitating terms and unorthodox recovery methods. The empathy of the formal financial system expressed through grace periods, moratoriums and options to restructure debt is conspicuously lacking where it is not regulated by the CBSL.

Structural challenges that limit the growth and expansion of micro, small and medium enterprises (MSME) must be addressed. At the same time, it is important to take measures to safeguard self-employment and home-based livelihood activities. On the one hand, inclusive finance must be promoted at the policy and regulatory level, by revisiting exclusionary lending requirements such as collateral, historical audited financial statements, tax returns, management accounts and guarantor certifications etc. On the other hand, it is also important to build capacity among bank and non-banking finance professionals at different levels to appraise borrowers who cannot meet traditional stringent lending criteria using alternative measures (Verité Research, 2020). Furthermore, entrepreneurs must also be given opportunities to learn business skills such as marketing, inventory management, building supply chain and buyer networks, preparing financial statements, budgeting and forecasting. Curricular for such programmes can be developed and rolled out through private-public collaborative partnerships. Professional business and educational bodies, chambers of commerce and other relevant organisations can also be incentivised to build capacity among entrepreneurs and the self-employed. A less expensive alternative is to create and disseminate learning material in local languages and using audio-visual mediums.

The pandemic experience also highlights the importance of strengthening Sri Lanka's climate change agenda. Although the country has committed to shifting completely to renewable energy sources by 2030, whether this will be achieved remains a question. Concerted efforts to explore sustainable energy sources and leverage international expertise as well as private-public partnerships to invest in alternative energy sources are important. Similarly, we also point out the importance of promoting the use of climate-smart technology, as well as a gradual and paced shift towards environmentally-friendly agrochemicals in agriculture.

The overall emergency-response policy framework needs further strengthening too. The lessons from the pandemic and the economic crisis can be used to further strengthen existing policies and action plans on disaster-preparedness and emergency health responses. The experiences of vulnerabilities faced by people from different walks of life provide rich evidence to enhance the social inclusion dimensions of these guiding documents.

In conclusion, we reemphasise the importance of strong, sustainable and inclusive economic growth and development in creating more permanent pathways towards reducing household vulnerabilities to economic insecurities. The social protection environment is nested within the broader development agenda and only is as strong as the commitment of policymakers, the effectiveness of implementation mechanisms, the robustness of enforceability and the level of inclusivity and accessibility afforded to all members of society. While social protection measures are central to safeguarding the incomes and socioeconomic well-being of the poorest and the most vulnerable, sustainable reductions in poverty require carefully designed long-term economic growth and development initiatives. We note once more that, at this painful but defining and critical juncture, Sri Lanka has been given one more opportunity to rethink and reimagine not just not falling into vulnerability, but becoming empowered as a nation.

Appendix

Appendix Table 8: Means and proportions of variables submitted to logistic regression of household vulnerability to income insecurity

	Mean	Robust Std. Err.	[95% Conf. Interval]	
HOH age	47.085	0.464	46.165	48.005
HOH age sq.	2346.104	43.801	2259.334	2432.874
FHH	0.150	0.010	0.130	0.170
HOH Grade 5 or less	0.061	0.008	0.045	0.078
HOH Grade 6-9	0.201	0.016	0.169	0.233
HOH Grade 10-11	0.400	0.015	0.371	0.428
HOH Grade 12-13	0.230	0.018	0.194	0.265
HOH higher educ.	0.108	0.010	0.087	0.129
HOH employed	0.804	0.010	0.785	0.823
Permanent share HH	0.601	0.032	0.537	0.665
Temporary share HH	0.376	0.029	0.319	0.432
Casual share HH	0.071	0.010	0.050	0.091
Self-emp share HH	0.330	0.021	0.289	0.371
Gov emp share HH	0.265	0.024	0.217	0.314
Pvt emp share HH	0.434	0.031	0.372	0.495
Employer share HH	0.011	0.002	0.006	0.016
Family work share HH	0.007	0.002	0.004	0.010
Unemp. share HH	0.230	0.010	0.211	0.250
Lost jobs 2020-22	0.030	0.004	0.022	0.037
No of children	1.153	0.034	1.085	1.220
Has PWD (extra fin attention)	0.142	0.013	0.117	0.168
Has PWD (extra med attention)	0.166	0.014	0.138	0.194
Gets income from assets	0.073	0.012	0.049	0.096
Gets pension	0.081	0.009	0.063	0.098
Gets overseas remittances	0.079	0.008	0.063	0.094
Has FD	0.184	0.018	0.148	0.219
Has land	0.331	0.034	0.265	0.398
Has jewellery	0.817	0.027	0.763	0.871
Has savings deposits	0.637	0.034	0.570	0.704
Is in a Seettu scheme	0.241	0.021	0.201	0.282
Relatives help	0.445	0.029	0.387	0.503

Has bank loans	0.313	0.027	0.260	0.366
Has lease	0.132	0.012	0.109	0.155
Has MFI loan	0.054	0.011	0.033	0.076
Owes to informal lender	0.114	0.021	0.073	0.156
Has instalment dues	0.086	0.018	0.051	0.121
Owes retail shops	0.221	0.027	0.166	0.275
COVID infected	0.188	0.020	0.148	0.228
COVID death	0.011	0.003	0.006	0.017
Colombo	0.221	0.070	0.081	0.360
Ampara	0.068	0.025	0.018	0.119
Anuradhapura	0.073	0.030	0.014	0.133
Badulla	0.077	0.027	0.023	0.131
Galle	0.121	0.050	0.023	0.219
Jaffna	0.076	0.032	0.012	0.139
Kandy	0.130	0.045	0.040	0.220
Kurunegala	0.135	0.041	0.054	0.217
Ratnapura	0.098	0.040	0.019	0.176

Source: KLIE vulnerability survey data (2022)

Appendix Table 9: Means and proportions of variables submitted to OLS regression of the log of household income

	Mean	Robust Std. Err.	[95% Conf. Interval]	
Log of HH income	10.921	0.030	10.862	10.980
HOH age	47.085	0.464	46.165	48.005
HOH age sq.	2346.104	43.801	2259.334	2432.874
FHH	0.150	0.010	0.130	0.170
HOH Grade 5 or less	0.061	0.008	0.045	0.078
HOH Grade 6-9	0.201	0.016	0.169	0.233
HOH Grade 10-11	0.400	0.015	0.371	0.428
HOH Grade 12-13	0.230	0.018	0.194	0.265
HOH higher educ.	0.108	0.010	0.087	0.129
HOH employed	0.804	0.010	0.785	0.823
Permanent share HH	0.601	0.032	0.537	0.665
Temporary share HH	0.376	0.029	0.319	0.432
Casual share HH	0.071	0.010	0.050	0.091
Self-emp share HH	0.330	0.021	0.289	0.371
Gov emp share HH	0.265	0.024	0.217	0.314
Pvt emp share HH	0.434	0.031	0.372	0.495
Employer share HH	0.011	0.002	0.006	0.016
Family work share HH	0.007	0.002	0.004	0.010
Unemp. share HH	0.230	0.010	0.211	0.250
Lost jobs 2020-22	0.030	0.004	0.022	0.037
No of children	1.153	0.034	1.085	1.220
Has PWD (extra fin attention)	0.142	0.013	0.117	0.168
Has PWD (extra med attention)	0.166	0.014	0.138	0.194
Gets income from assets	0.073	0.012	0.049	0.096
Gets pension	0.081	0.009	0.063	0.098
Gets overseas remittances	0.079	0.008	0.063	0.094
Has land	0.331	0.034	0.265	0.398
Has farm animals	0.088	0.019	0.050	0.125
Relatives help	0.445	0.029	0.387	0.503
Has bank loans	0.313	0.027	0.260	0.366
Has lease	0.132	0.012	0.109	0.155
Has MFI loan	0.054	0.011	0.033	0.076
Owes to informal lender	0.114	0.021	0.073	0.156

Has instalment dues	0.086	0.018	0.051	0.121
Owes retail shops	0.221	0.027	0.166	0.275
COVID infected	0.188	0.020	0.148	0.228
COVID hospitalised	0.064	0.010	0.044	0.083
Mins to bus stand	14.390	0.940	12.529	16.252
Colombo	0.221	0.070	0.081	0.360
Ampara	0.068	0.025	0.018	0.119
Anuradhapura	0.073	0.030	0.014	0.133
Badulla	0.077	0.027	0.023	0.131
Galle	0.121	0.050	0.023	0.219
Jaffna	0.076	0.032	0.012	0.139
Kandy	0.130	0.045	0.040	0.220
Kurunegala	0.135	0.041	0.054	0.217
Ratnapura	0.098	0.040	0.019	0.176

Source: KLIE vulnerability survey data (2022)

Appendix Table 10: Means and proportions of variables submitted to logistic regression of household vulnerability to food insecurity

	Mean	Robust Std. Err.	[95% Conf. Interval]	
HOH age	0.180	0.012	0.156	0.204
HOH age sq.	2373.347	44.006	2286.180	2460.514
FHH	47.288	0.462	46.373	48.203
HOH Grade 5 or less	0.063	0.008	0.046	0.080
HOH Grade 6-9	0.204	0.016	0.173	0.235
HOH Grade 10-11	0.393	0.014	0.365	0.421
HOH Grade 12-13	0.229	0.017	0.194	0.263
HOH higher educ.	0.110	0.011	0.090	0.131
No of children	1.161	0.036	1.090	1.232
Has PWD (extra fin attention)	0.151	0.013	0.126	0.176
Has PWD (extra med attention)	0.174	0.014	0.146	0.202
Log of HH income	10.892	0.030	10.832	10.951
Gets pension	0.083	0.009	0.066	0.100
Gets overseas remittances	0.088	0.009	0.071	0.106
Owns house	0.855	0.026	0.804	0.905
Has FD	0.184	0.018	0.148	0.220
Has land	0.328	0.032	0.263	0.392
Has farm animals	0.088	0.019	0.050	0.125
Has agri. equipment	0.128	0.026	0.076	0.179
Has jewellery	0.814	0.027	0.761	0.867
Has savings deposit	0.637	0.034	0.569	0.704
Is in a Seettu scheme	0.238	0.020	0.199	0.277
Relatives help	0.445	0.029	0.387	0.503
COVID infected	0.184	0.020	0.145	0.223
Colombo	0.212	0.069	0.076	0.349
Ampara	0.075	0.028	0.020	0.131
Anuradhapura	0.074	0.030	0.015	0.133
Badulla	0.076	0.027	0.023	0.129
Galle	0.123	0.050	0.024	0.222
Jaffna	0.076	0.032	0.013	0.140
Kandy	0.128	0.045	0.040	0.217
Kurunegala	0.141	0.042	0.057	0.225
Ratnapura	0.094	0.038	0.018	0.170

Source: KLIE vulnerability survey data (2022)

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Reimagining Vulnerability in the Light of COVID-19: A Quantitative Study

Ranmini Vithanagama
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We analysed data collected from a random sample of 4,000 households from nine districts to examine the factors associated with household vulnerability to income and food insecurity due to the pandemic and the economic crisis. We find that, while many households experienced declining or stagnant incomes, nearly all of them faced increasing expenses, resulting in challenges to finance basic household needs. Such challenges were higher among households with pre-existing vulnerability characteristics. Our regression analysis by and large confirms extant literature on the issue of vulnerability to income and food insecurity. Household resilience to income shocks depends significantly on job tenure; those with casual and permanent jobs are more likely to experience vulnerability to income insecurity. Higher income lowers the risk of falling into food insecurity. High educational outcomes of the household head are associated with more income and reduced risk of vulnerability to food insecurity. Households with children and persons with disabilities are more likely to experience vulnerability to both income and food insecurities than households without. Ownership of assets, especially quasi-liquid assets, and receipt of passive income are useful to alleviate vulnerability to both food and income insecurities. Living outside Colombo District increases household vulnerability to both income and food insecurity. Based on our findings, we emphasise the need to perceive vulnerability as a persistent condition, rather than a fleeting event, that requires long-term interventions over short-term remedies. We highlight the importance of promoting inclusive economic growth that can create decent jobs and promote regional development. Creating an enabling environment for the development of businesses, including micro, small and medium scale enterprises and foreign investments is critical for such development. We also call for more comprehensive and benevolent but time-bound social protection measures to empower the poor and vulnerable.

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