RESILIENCE IN THE MIDST OF A PANDEMIC: A STUDY OF A LIVELIHOODS PROGRAM IN RURAL NEPAL

BY

KIERSTIN EKSTROM

THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Science in Agricultural and Applied Economics
in the Graduate College of the
University of Illinois Urbana-Champaign, 2022

Urbana, Illinois

Master's Committee:

Assistant Professor Sarah Janzen, Advisor
Associate Professor Hope Michelson
Professor Alex Winter-Nelson

Abstract

The COVID-19 pandemic has affected the vulnerable rural poor through direct shocks to health and disruptions to rural livelihoods. We use household level panel data from Nepal to examine the coping strategies used in the first 18 months of the pandemic, with focus on the four months of government mandated national lockdown. Households were more likely to turn to coping strategies during the national lockdown, most frequently taking on a loan, selling livestock or using savings. Previous randomized implementation of a Heifer International productive asset transfer and training program allows us to examine the long term effect of these types of programs on resilience. Program beneficiaries are more likely to sell livestock and less likely to take on loans during the national lockdown than non-beneficiaries. As beneficiaries are more likely to have any and more savings than non-beneficiaries, the program participation moves households towards sustainable and less onerous coping strategies.

Acknowledgments

This project would not have been possible without the support of many people. First and foremost, my sincerest thanks to my advisor Sarah Janzen, who took a chance by asking a first semester Master's student to assist with the large task of taking an idea from initial survey writing through implementation and all the way to analysis. I am grateful to Nick Magnan for letting me be a part of such a long standing project. Thank you both for your patience and your expertise.

Special thanks to Hope Michelson and Alex Winter-Nelson for the feedback that made this thesis so much better. Thank you for helping this process feel like a true collaboration and discussion.

Many thanks to Gretchen Kuck and Brayden Paur for the all of the support, both friendly and scholarly, that brought us all to this point. Thank you both for ensuring we had some life in our work-life balance.

The USAID Feed the Future Markets, Risk and Resilience Innovation Lab funded this research, while Heifer International funded all programmatic aspects of the study. The initial RCT (Janzen et al., 2018a) and COVID survey round pre-analysis plan (Janzen et al., 2021b) are registered with the American Economic Association. I would like to thank Hiranya Baral, Dnes Dangol, Chandra K.C., Himal Khanal, Pankaj Pokhrel, Rajendra Pradhan, Moovie Sharma, Sudhindra Sharma, Ashika Sharma, Samyam Shrestha, Pranaya Sthapit and William Thompson for their roles in data collection. Also, thanks to Neena Joshi, Kishor Kafle, Rienzzie Kern, Hilary Haddigan, Mahendra Lohani, Shubh Mahato, Dipesh Pokharel, and Ben Wood at Heifer International and Heifer Nepal for their roles in the formulation and execution of this research. All errors are my own.

the greatest miracle of all...
that the world might be reshaped through love and work
–B. L. Mulligan

Table of contents

Chapter 1 Introduction

The COVID-19 global pandemic created massive supply chain disruptions and economic hardship across the world. A study of nine developing countries shows that government mandated national lockdowns and other similar policies limited the spread of the virus, but presented households with drops in income, reduced access to markets and increased difficulties accessing healthcare (Egger et al., 2021). The rural poor are especially vulnerable to negative health and economic shocks, including disruptions caused by COVID-19, because they are often faced with a tradeoff between defending their consumption standard by drawing down assets (consumption smoothing) and destabilizing consumption (asset smoothing). Either strategy is likely to have negative consequences for future welfare. Expanding access to assets and finance can alleviate these impacts. Multi-faceted livelihood improvement programs aim to bolster household income through expanding the household's productive asset base and financial tools (Banerjee et al., 2015). These programs may also provide the vulnerable poor with increased coping options when faced with a shock.

This paper uses data from rural Nepal in the wake of the 2020 national lockdown to answer two questions. First, how did households in rural Nepal cope with disruptions due to COVID-19? Specifically we examine how the national lockdown affected individuals' choices to smooth consumption or assets. Second: are beneficiaries of a rural livelihood program more resilient? To answer this second question, we leverage a seven-year randomized control trial (RCT) to test if randomly assigned targeted beneficiaries used different coping strategies in response to COVID-19 disruptions.

COVID-19 has disrupted life around the globe. Recent evidence from the pandemic suggests that households are more frequently stressed from indirect impacts of government policies and related disruptions to incomes and market access than the more direct shock of illness and mortality (Barrett et al., 2021b; Béné et al., 2021; Egger et al., 2021). The rural poor can be particularly vulnerable to shocks, and depending on their level of assets will either sacrifice current consumption or future income to cope (Alinovi, Mane, and Romano, 2010; Kazianga and Udry, 2006; Morduch, 1994). Wealthier households can offset strain more easily since the sale of assets represents a smaller fraction of their overall wealth and future income (Kazianga and Udry, 2006; Janzen and Carter, 2019). Increased incomes and access to financial instruments can improve households' livelihoods and give them the tools they need to cope with shocks without resorting to potentially damaging coping mechanisms or needing ex-post aid (Bellemare and Novak, 2017; Béné, 2020; Heltberg and Lund, 2009; Janzen and Carter, 2019). Livelihoods program like Heifer International's Smallholders in Livestock

Value Chain Program in rural Nepal work to increase household incomes and productive asset pools (Banerjee et al., 2015, 2020; Banerjee, Duflo, and Sharma, 2021; Bedoya et al., 2019; Bossury et al., 2021; Phadera et al., 2019). While results on the long term impact of these programs are preliminary, they can improve participant's resilience to shocks along with general livelihood improvements (Brune et al., 2022; Phadera et al., 2019).

This paper makes three contributions to the existing literature 1) we develop an understanding about the pattern of shocks that households reported in the first 18 months of the pandemic, 2) we describe household level responses to the COVID-19 pandemic and associated government polices, and 3) we expand the long term impacts of livelihood programs and their place in improving household resilience to shocks. The pandemic affected researchers' abilities to elicit information, and constrained some research to observational data from on the macro-level systems (Barrett et al., 2021b; Béné, 2020; Egger et al., 2021). This paper uses household level survey data from rural Nepal to examine micro-level effects of COVID-19. We are able to document what household's did in and around the Nepali national lockdown. We also exploit the panel nature of the data and randomization of treatment to examine impacts of livelihood program participation on coping choices. We are able to evaluate long-term effects of a livelihoods program on a shock where the program itself was not effected by the shock. Nation wide covariate shocks such as civil unrest disrupted implementation for Brune et al. (2022) and Bedoya et al. (2019) while program specific shocks from animal flu effected Mullally, Rivas, and McArthur (2021). All Heifer activities ended 3.5 years before the first reported case of COVID-19 so we not only speak to long term impacts of livelihood programs but we have the opportunity to examine household level responses to COVID-19.

The next section of this paper discusses the current literature surrounding household vulnerability, coping strategies when faced with various types of shocks and how livelihood programs act as ex-ante aid programs. Section 3 details Heifer's livelihood intervention in the Nepali context and the survey data collected. Section 4 presents the descriptive findings showing the kinds of shocks experienced by households in the first 18 months of the pandemic and how they responded to those shocks. Next, the Section 5 presents the econometric model used to evaluate the impact of Heifer's program and tests assumptions of internal validity by discussing the balance and attrition of the sample. Section 6 presents the results of the econometric analysis of the effect of participation on coping strategies and financial outcomes. The discussion and conclusion section contextualizes the paper's findings and overall implications for policy.

Chapter 2 Literature Review

COVID-19 had affected households through illness and increased morbidity, but shocks to national and global systems like supply chain disruption and lockdowns represent a large portion of the issues facing households. The rural poor are particularly vulnerable to these shocks due to low savings, limited assets and inadequate access to aid or institutions. The effect of the pandemic on the rural poor has the potential to be detrimental to future health and welfare due to their limited savings and assets to draw upon. Increasing household income, diversifying income sources, enabling access to financial services and expanding asset pools increase the options available to households when faced with a shock, all goals that livelihoods programs promote. This paper orients itself around a livelihoods program that has increased incomes and assets to understand the choices that households make when faced with a shock as complex as COVID-19 (Janzen et al., 2021a). The following sections will focus on the existing literature that this paper uses as a foundation for our findings. In Section 2.1 we discuss the different types of shocks and how poor households can be disadvantaged when trying to offset that strain. Section 2.2 mentions the main coping techniques that poor household must resort to and how they can be detrimental for future welfare. Finally, Section 2.3 discusses the effects of livelihood improvement programs and how they can change household's coping decisions.

2.1 Poverty and Vulnerability

The rural poor can be particularly vulnerable to shocks because poverty can diminish expected welfare and reinforce the income processes that lead to poverty (Morduch, 1994). Households that depend on agriculture and livestock livelihoods are reliant on weather and price factors outside of their control for their income and consumption needs (Alinovi, Mane, and Romano, 2010; Kazianga and Udry, 2006; Morduch, 1994). Poorly developed financial and weak social insurance institutions mean that poorer countries and communities that experience income fluctuations do not have the necessary capacity to alleviate those stressors (Morduch, 1994). When households are capable of avoiding poverty when faced with stressors or shocks then they are resilient (Barrett and Constas, 2014). Agro-pastoralists are slightly more resilient to shocks than pastoralists and small-scale farmers because of a greater diversification of production and larger access to services (Alinovi, Mane, and Romano, 2010).

Even though idiosyncratic shocks can be more expensive on a per household basis, covariate shocks can present additional challenges for households (Günther and Harttgen, 2009; Heltberg

and Lund, 2009). The use of consumption smoothing through the sale of durable assets can be more difficult when other community members are experiencing the same stressors. Multiple households selling the same asset can decrease the price, making the asset sale less likely to either cover current consumption needs or offset the loss of future income (Morduch, 1994). Covariate shocks have a relatively higher impact on rural households than urban ones, frequently because of a reliance on agriculture and livestock that can be greatly impacted by weather shocks (Alinovi, Mane, and Romano, 2010; Günther and Harttgen, 2009; Kazianga and Udry, 2006; Morduch, 1994). The exact relationship between these two forces can be difficult to isolate, the relatively higher impact of covariate shocks on rural households could because the shock presents a more severe impact on household income or that households have worse insurance mechanisms against the shock (Günther and Harttgen, 2009).

While illness and death within a household is traditionally considered an idiosyncratic shock, the COVID-19 pandemic is also a covariate shock. The pandemic can act as a shock on households through multiple pathways, not solely constrained to increased morbidity. One finding todate is that the main shocks to households came from government mandated policies like lockdowns rather than the expected increase in morbidity (Barrett et al., 2021b; Béné, 2020; Egger et al., 2021). Governments frequently mandated national lockdowns to limit the spread of the virus (Béné et al., 2021; Egger et al., 2021). Barrett et al. (2021b) reports that the more serious and direct effects of the pandemic–namely severe illness and mortality– affect fewer people than the indirect impacts of behaviors, markets, and policies. The lockdowns lowered the spread of the virus and reduced morbidity, but presented households with drops in income from disrupted labor options, reduced access to markets and difficulties in accessing healthcare (Egger et al., 2021). The decrease in income and market access contribute to researcher concern about the pandemic's impact on food security. In low and middle income countries, the most affected dimension of food security was in accessibility– the disruption of financial and physical access to food (Béné et al., 2021). The impacts of the pandemic are not just in the higher risk of illness, but also in the strain to households to maintain income and consumption levels when faced with policies that can disrupt access to resources and aid.

2.2 Response to shocks

In the wake of a shock households can defend their consumption standard by either drawing down assets (consumption smoothing) or they can preserve assets by destabilizing consumption (asset smoothing) (Kazianga and Udry, 2006). Consumption smoothing is not wholly the sale of available assets and savings– though household holds will sell assets (Alinovi, Mane, and

Romano, 2010; Heltberg and Lund, 2009; Morduch, 1994) and use savings (Brune et al., 2022; Heltberg and Lund, 2009) to cope with shocks. Households will also borrow money (Alinovi, Mane, and Romano, 2010; Heltberg and Lund, 2009; Morduch, 1994) or seek assistance from their social network of neighbors and relatives (Alinovi, Mane, and Romano, 2010; Heltberg and Lund, 2009), seek assistance from formal sources and pull children from school (Heltberg and Lund, 2009) to protect asset levels. Consumption smoothing can be an imperfect due to high transaction costs, low liquidity of assets and low labor markets (Karlan, Ratan, and Zinman, 2014; Kazianga and Udry, 2006)

Households near subsistence levels who experience income shocks may decrease consumption to preserve assets, as individual assets represent a larger fraction of current and future income (Kazianga and Udry, 2006). Asset smoothing is commonly acheived through decreased in food consumption, either through changes in preferred food or reducing the size and frequency of meals, particularly for women (Alinovi, Mane, and Romano, 2010; Barrett et al., 2021b; Bellemare and Novak, 2017; Béné et al., 2021; Heltberg and Lund, 2009). A survey of shocks and household responses in Pakistan found that almost one third of reported shocks led to food insecurity and one third led to indebtedness or sale of major assets (Heltberg and Lund, 2009).

2.3 Changing Responses to Shocks

Bolstering households to prepare them ex-ante for shocks would provide them with the tools necessary to offset potential impacts on current income or consumption without threatening future outcomes. The ability to save and to access those savings would loosen the liquidity constraint and discourage the sale of assets (Béné, 2020; Brune et al., 2022; Heltberg and Lund, 2009; Morduch, 1994). Access to financial services and increased economic inclusion gives households access to larger labor markets and insurance instruments that can protect household's faced with a shock (Bellemare and Novak, 2017; Béné, 2020; Heltberg and Lund, 2009; Janzen and Carter, 2019). Households with access to financial services including bank accounts are more resilient than those without (Belayeth Hussain et al., 2019). Janzen and Carter (2019) examine the effect of access to microinsurance on Kenyan farmers and find that access to those financial tools make people 61 percentage points less likely to anticipate selling livestock after a drought. Relatively less impoverished households who would tend towards consumption smoothing through asset sales are 96 percentage points less likely to anticipate selling assets while households with lower assets who are more likely to destabilize consumption are 49 percentage points less likely to anticipate consumption smoothing when

there is insurance available (Janzen and Carter, 2019).

Livelihood programs seek to improve beneficiaries' standard of living through diversified income sources and increased asset pools. Livelihood programs can include a wide range of components– group formation, savings and finance, technical trainings, gender trainings, individual coaching, and cash support. While the specific program components can vary, 'Graduation' type programs (see Banerjee et al. (2015)) tend to be the most involved and therefore the most expensive to implement with productive asset transfers, individualized coaching and direct cash support. While the literature has not resolved the true cost- benefits of each possible component of livelihood programs, programs focused on productive asset transfers without coaching or cash consumption support can still be effective at improving livelihood outcomes while generating self-sustaining community improvements (Janzen, Carter, and Ikegami, 2021).

Livelihood programs have been found to improve several financial aspects of people's lives: increased incomes (Banerjee et al., 2015, 2020; Banerjee, Duflo, and Sharma, 2021; Bedoya et al., 2019; Bossury et al., 2021; Phadera et al., 2019), increased savings (Brune et al., 2022) and increased financial inclusion (Banerjee et al., 2015, 2020; Bossury et al., 2021; Bedoya et al., 2019). All livestock focused programs see an increase in livestock as assets, either in number or value (Bedoya et al., 2019; Phadera et al., 2019; Glass et al., 2017), and increase livestock revenues (Bedoya et al., 2019; Phadera et al., 2019). Programs frequently increase consumption (Banerjee et al., 2015, 2020; Bedoya et al., 2019; Phadera et al., 2019) and improve food security or nutrition (Banerjee et al., 2015, 2020; Banerjee, Duflo, and Sharma, 2021; Bossury et al., 2021; Devereux et al., 2019; Edmonds and Theoharides, 2020). As previously discussed many of these indicators are likely to contribute to household's ability to cope with shocks. When focusing on resilience and coping, livelihood programs make participants more resilient or better able to cope with shocks (Brune et al., 2022; Phadera et al., 2019).

Cost- benefit analyses of livelihood programs can complex, requiring assumptions about the longevity of impacts and the estimated monetary amount of those impacts (see Banerjee et al. (2015, 2020); Banerjee, Duflo, and Sharma (2021); Brune et al. (2022); Phadera et al. (2019); Bedoya et al. (2019) for papers with program cost-benefit analyses). Less complex programs can be significantly less costly to implement while still providing positive impacts (see (Brune et al., 2022; Janzen et al., 2021a) for papers with low cost per beneficiary). Livelihood programs, regardless of cost, represent ex-ante aid that may be less expensive and have more long term benefits than ex-post assistance such as cash transfers or food stamps.

Short term ex-post aid does not allow for the protecting, building and rebuilding of the assets necessary for long term social and economic insulation from shocks (Alinovi, Mane, and Romano, 2010; Longley and Wekesa, 2008; Pantuliano and Wekesa, 2008). Strategic livelihood interventions can produce more timely and tailored responses than typical emergency relief assistance (Alinovi, Mane, and Romano, 2010; Janzen, Carter, and Ikegami, 2021). In an empirical study on Pakistani households' responses to shocks, Heltberg and Lund (2009) found that small and infrequent direct governmental aid through direct cash transfers to poor households did not change coping strategies and recipient households had below average recovery despite the fact their shocks were less severe than average.

While this paper does not have the rich data necessary to construct resilience indices (such as (Phadera et al., 2019)), we do have a larger sample size than most quantitative resilience papers and operate in a lesser studied region and country with panel data over a relatively long time period. In a review of development resilience literature through November 2020, Barrett et al. (2021a) found a relatively small number of studies on resilience to shock or stressor responses of individuals or households in low or middle income countries. Of the 230 studies that met those criteria, 90 percent examined rural populations (Barrett et al., 2021a). There are more than twice as many studies of resilience in sub-Saharan Africa as South Asia, and only five specific to Nepal (Barrett et al., 2021a). The vast majority of studies, 73 percent, covered time frames of a year or less and 16 percent of all studies had study periods of three years or longer (Barrett et al., 2021a). Only 16 percent of the quantitative papers used panel data for repeated observations of the same individuals or households (Barrett et al., 2021a).

Chapter 3 Intervention and Data

This paper evaluates long term impacts of Heifer International's Smallholders in Livestock Value Chain Program in rural Nepal. The program targets rural communities with high poverty rates and some previous experience with basic livestock rearing. First, the organization facilitates the formation of women's self help groups (SHG). Importantly, group members are encouraged to contribute to group savings accounts, which can offer protection in the event of an unanticipated economic shock. All beneficiaries participate in a series of technical trainings to support a new livelihood based on goat rearing. In addition, all beneficiaries are provided a small amount of cash support for home gardens, fodder and forage production, and goat shed improvement (totaling 55 USD each). Some beneficiaries receive livestock transfers of one or two female goats along with a shared breeding buck for the SHG. The program also encourages spillover effects throughout the community through a program component encouraging the sharing of knowledge and transfer of the first goat offspring to others in the community. This latter component is the main subject of Janzen et al. (2021) and will not be evaluated in this paper.

Treatment was randomly assigned among eligible village development committees (VDCs), a geographic subdivision of a larger district that is split into nine wards of approximately 150 households. Each ward contains multiple *toles* or neighborhoods that contains between 20 to 30 households. VDCs were stratified by geography and caste/ ethnic composition pulled from administrative data. Treatment was randomly assigned within strata bins to specific treatment arms and control. In 2017, Nepal restructured its municipal organization and VDCs were turned into wards of a new or existing municipality, with minor splitting and merging of VDCs. We continue using the original VDC designations in this analysis.

Nepal-base Heifer organizers identified VDCs that the organization had never worked in, and identified a central ward and a *tole* which if assigned to treatment would be likely to enroll in the program. Typically all or most of the households in a given neighborhood (*tole*) are brought into the program. While there is variation in relative wealth between beneficiaries, Heifer considers all households in targeted areas objectively poor. The surrounding and adjacent *toles* are considered potential beneficiaries for Heifer's Pay-It-Forward (PIF) mechanic and could receive training and livestock from households in the central *tole*.

Janzen et al. (2018b) present short-run evidence that the program increased financial inclusion and women's empowerment after 1.5 years. A working paper (Janzen et al., 2021a) evaluates impacts of the program 2.5 years into the program and after the program ended (3.5 years later), and shows impacts on goat enterprises (including larger herds, increases in

goat profit, improved women's decision-making in goat enterprises, and higher adoption of best practices related to goat rearing).[1]

3.1 Poverty and Vulnerability in Nepal

According to a multidimensional poverty index constructed and reported by the government of Nepal, overall incidence of multidimensional poverty fell from 2014 to 2019 (30 percent to 17 percent) and the intensity of poverty decreased with poor households experiencing less indicators of poverty (CBS, 2021). In 2019, 17.4 percent of Nepali's were considered poor by this index and were most frequently considered lacking in the housing material, clean cooking fuel, years of schooling, assets and nutrition needed to be considered non-poor or not at risk of falling further into poverty (CBS, 2021). Over sixty percent of Nepal's population have at least one trait that makes them more vulnerable to COVID-19, namely undernutrition, unsafe drinking water or unclean cooking fuel (CBS, 2021). Nepal's poor are more likely to live in overcrowded homes, as well as lack internet access and hand washing facilities which can exacerbate their situation in the face of COVID-19 (CBS, 2021).

A 2019 report on risk and vulnerability in Nepal found that average consumption per capita for the poorest quintile in 2018 is 192 USD per year (21,010 NPR per year), and the average household assets of the poorest quintile was just under 10,000 USD (1,085,852 NPR) (Walker, Kawasoe, and Shrestha, 2019). In 2018, more than a third of the rural Nepali population were beneficiaries of at least one social assistance program, but no one program serves more than 16 percent of the population (Walker, Kawasoe, and Shrestha, 2019). These social assistance programs are largely cash transfers to specific populations, the most common being old age allowance and a single women's allowance/ pension (Walker, Kawasoe, and Shrestha, 2019). The cash transfers are moderately pro-poor as 40 percent of the poorest asset quintile receive benefits and only 25 percent of the richest do (Walker, Kawasoe, and Shrestha, 2019). The lack of universal or scalable social protection programs means that there is no adaptive safety net (Walker, Kawasoe, and Shrestha, 2019). There has been recommendations that regular cash transfers to all chronically poor households would help build resilience to shocks while scalable measures could efficiently expand coverage after shocks (Walker, Kawasoe, and Shrestha, 2019). The Social Security Act of 2018 which expands social security allowances to include the 'economically poor' has the potential to

[1] Janzen et al. (2018b) and Janzen et al. (2021a) describe multiple treatment arms and conducts spillover analysis of Heifer's Pay-It-Forward mechanic. This analysis pools two treatment arms to simply compare beneficiary and non-beneficiary households.

provide a basis for a more adaptable cash based safety net (Walker, Kawasoe, and Shrestha, 2019).

3.2 Survey Design and Implementation

This paper uses phone survey data collected in March-April 2021, [2] approximately 7 years after the initial baseline data collection from Janzen et al. (2018b) and Janzen et al. (2021a). The COVID survey round sample includes 1,247 women across three regions of Nepal. The original intervention randomly assigned 809 of these respondents to receive any treatment, and 438 were control respondents whom received no program benefits.

Figure 1 shows the timeline of program implementation and relevant survey rounds from Janzen et al. (2021a). Baseline data was collected in mid-2014 before the intervention began, with follow-up surveys conducted periodically throughout the program's course. The intervention began a few months after the baseline survey with initial training and group formation. All Heifer led program activities and monitoring ended in mid-2017. Relevant to this analysis, the second endline survey was administered after the program finished in mid-2018.

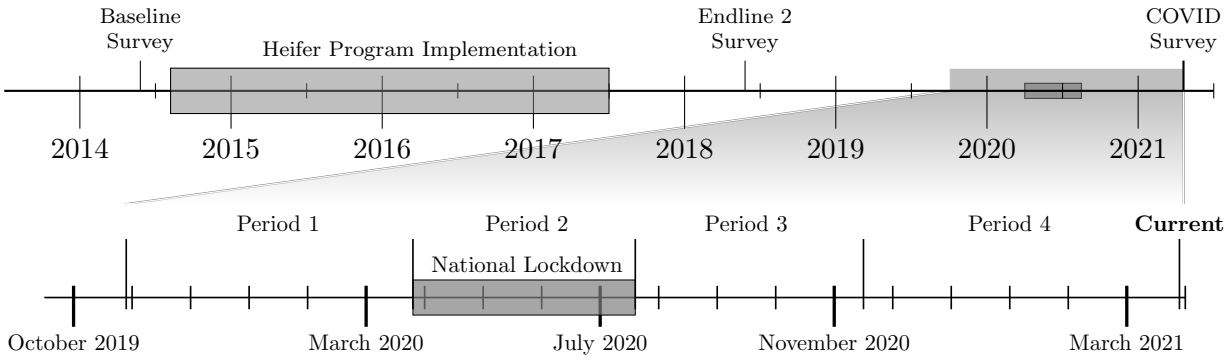
To better understand how coping strategies adjusted over the course of the first year of the pandemic, the COVID round asks respondents to recall information across an 18 month period, with period delineations structured around the four month national lockdown from March 24, 2020 to July 21, 2020. [3] Figure 1 shows the recall periods and salient dates. The study uses four time periods; the five months before the lockdown (Period 1) (approximately the time since the 2019 Tihar festival on October 29th), during the national lockdown (Period 2), from the end of the lockdown to just before the 2020 Tihar festival on November 17th (Period 3) and the five months after the festival through data collection in late March 2021 (Period 4). Tihar is a festival in late October in the middle of the month long festival period in which goat farmers can earn up to half of their yearly income (Knight, 2021).

There are two main limitations of the survey data. The COVID-19 pandemic required the survey to be conducted using mobile phones. Phone communication can hamper responses as enumerators cannot pick up on non-verbal clues if respondents are confused about questions. To ensure high quality phone survey data the survey included prompts for enumerators to

[2] Appendix B contains full IRB approval from UIUC: exempt form, research team with CITI Training completion, exempt determination from University of Georgia, international research disclosure, and certificate of translation.

[3] Appendix C contains english versions of consent letter and questionnaire as approved by UIUC and University of Georgia IRB.

Figure 1: Program Timeline and Recent Survey Recall Periods



ask clarifying questions for information that was not consistent across questions and between modules. Second, recall data can be inaccurate due to the possibility that respondents have miss-remembered when they did each of the actions we ask for. Anchoring the periods between memorable events like the lockdown and festivals should help respondents' recall, but as the national lockdown was such a large event and was very different than normal daily activities there is the possibility of over appropriating events to that period. Additionally, several of the coping strategies are relatively small changes that if they occurred infrequently in a time period a respondent may forget about doing them i.e. changing of portion sizes. Some coping mechanisms are relatively larger decisions which combined with the anchored recall periods should produce less biased information.

Survey questions were worded to elicit actions that were solely the result of an unexpected shock, but there is the possibility that our information on coping strategy choices could be misattributing routine or non-shock related actions. Families who had planned on selling livestock once it reached a certain age could have experienced a shock at a similar time. It is possible that the shock could have moved up the sale timeline. The second half of the national lockdown coincided with the lean season that typically runs from early June to late August so people may already plan on drawing on savings or selling livestock (Rohwerder, 2016). The monsoon season lasts from early June to early October and are when weather related shocks such as floods and landslides are most common (Rohwerder, 2016).

Chapter 4 Coping with disruptions due to COVID-19

In this section we explore the pattern and scale of shocks reported throughout the first 18 months of the pandemic. Section 4.2 details the coping strategies that households employed when adversely affected. Finally Section 4.3 discusses the use of savings and credit during COVID-19.

4.1 Shocks

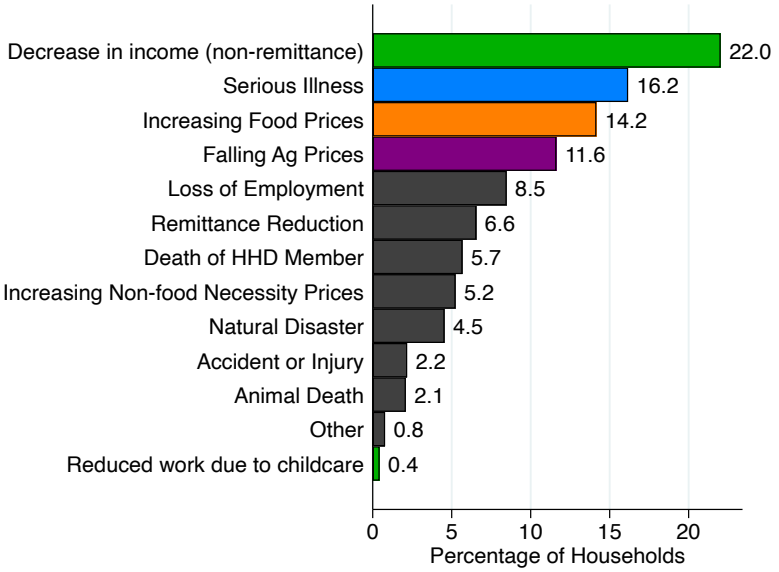
Fifty-six percent of respondents reported experiencing at least one shock in the past 18 months. Figure 2 shows the percentage of households that reported being adversely effected by shocks at any point from October 2019 to March 2021. More than one in five respondents reported a decrease in income from non-remittance sources and 8 percent reported loss of employment. Fourteen percent were negatively effected by increasing food prices and 8 percent reported falling agricultural prices. Attributing the reported serious illness and death shocks to COVID-19 is difficult, as concrete testing and identification were difficult to come by, particularly in rural areas. Sixteen percent of respondents reported their households being effected by serious illness, and 6 percent reported the death of a household member.

The majority of shocks reported stem from disruptions caused by lockdowns and other secondary effects of the pandemic. In keeping with the literature on the effect of the pandemic on households in low income countries, the shocks reported are not directly the effect of increased morbidity from COVID-19, but from decreased incomes and price changes (Barrett et al., 2021b; Béné, 2020; Egger et al., 2021). Figure 3 breaks down reporting of the four most frequent shocks over time. Decreases in income, falling agricultural prices and increased food prices peaked during the lockdown, with much lower rates in other time periods.

The isolated nature of the rural households surveyed is likely the reason that reports of adverse effects of health shocks are limited. The purpose of the national lockdown was to limit the spread of the virus, and was most stringently implemented in urban areas due to their higher population density. Rural villages can be on average 30 minutes on foot from the closest paved road (Walker, Kawasoe, and Shrestha, 2019). Unlike the urban area, police and security forces were not checking and enforcing the lockdown in rural areas, so the small *kirana* (kiosk) shops shops that villagers purchase items from were not closed. Prices and availability were impacted by the lockdown's disruption of transportation but households could do most of their daily routine without interruption. In our survey population, there were only 6 total reports of illness from COVID-19, and only 2 deaths. Nationally, during

the lockdown the number of confirmed cases peaked at an average of 530 a day in late June (Ritchie et al., 2020). When lockdowns lifted on July 21st, Nepal had an average of 130 new confirmed cases a day, which is just under 5 cases per million (Ritchie et al., 2020). The first wave of the pandemic peaked in early October with almost 4,000 daily newly confirmed cases (Ritchie et al., 2020). While these numbers are very likely to be underestimates given early difficulties in reliable testing and tracking, the relatively constant reporting of serious illness in Figure 3, which shows the pattern of shocks reported over time. This is in contrast to other shocks which peaked during the lockdown and points to limited viral spread in rural areas away from dense population centers.

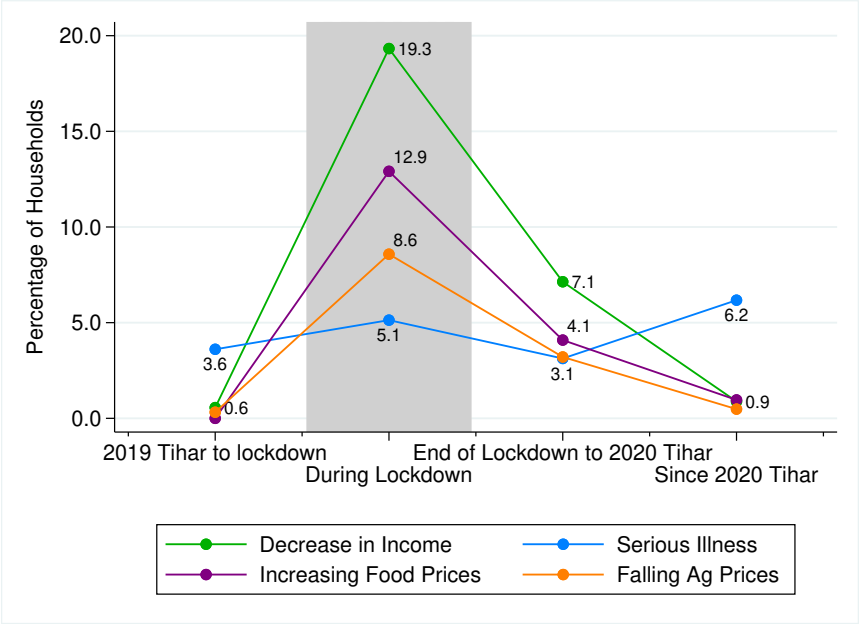
Figure 2: Percentage of Households Reporting Shocks From October 2019 to March 2021



4.2 Coping strategy choices

Households who indicated they had experienced a shock were asked if they had utilized any of a list of 17 strategies to cope with shocks in the past 18 months. Households could select more than one strategy if multiple practices were used. Figure 4 reports the number of respondents who used each coping mechanism at least once in the past 18 months. Twenty-six percent of the total survey population used credit, the most frequently reported. Respondents reported taking out a loan more frequently than the next four most common coping strategies combined. Ten percent of households sold livestock in response to a shock, while almost eight percent used their savings.

Figure 3: Percentage of Households Reporting Shocks In Each Time Period



The data allows us to further examine the use of coping strategies over the first year of the pandemic. These findings support a 2019 study of rural Nepali risk and vulnerability who show that the most frequently used coping strategies were using savings and taking on loans (Walker, Kawasoe, and Shrestha, 2019). Figure 5 presents the three most frequently used mechanisms: taking out a loan, selling livestock, and using savings over time. Use of each coping strategy strongly increases during the national lockdown. For each response, the national lockdown accounts for almost half of reports. Figure 5 shows that fourteen percent of households took out a loan during the national lockdown, rising ten percentage points from pre-lockdown levels. The percentage of households using savings rose five percentage points to almost six percent during the lockdown, and then dropped to a quarter of that afterwards. After the lockdown there was a sharp drop in households using credit or savings. Though these levels do not drop to pre-lockdown levels, they are substantially lower in the nine months after the lockdown than they were during it. The sale of livestock similarly rises sharply during lockdown, but afterwards decreases at a slower rate than the financial options. Six percent of households sold livestock during the lockdown, and four percent sold livestock in the months immediately afterwards. The slower decline of livestock sales could indicate that this coping strategy may be from regular goat sales' inclusion in the coping responses. The festival season in October and November is when goat farmers make a large portion of their yearly income and 2020 saw Heifer affiliated farmers selling 120,420 heads of goat, over three times the amount sold in 2019 (Joshi, 2020). Much of Nepal's livestock are imported

from India, but the lockdown disrupted the cross-border trade which decreased aggregate supply. Shrinking supply increases the price that people can receive for selling their livestock, creating a possible incentive to sell livestock during the most restricted and following period when prices would be inflated.

Households reported only minimal disruptions to food security. Only five percent reported receiving food assistance from non-governmental organizations (NGOs) or the government. The use of food aid was clustered in two villages in which over half of the respondents reported using this food aid compared to the seven other villages that received the remaining food aid. Supporting the idea that this aid was targeted is that 96 percent of food aid in these two targeted villages was offered during the national lockdown.

The minimal disruptions to food security is consistent with very low levels of food insecurity from previous results when monitoring this specific population (Janzen et al., 2021a). The larger survey population that this group was drawn from has less than five percent of respondents classified as food insecure using a summary index of whether all household members get enough to eat every day and if the households cut back on meals following a shock (Janzen et al., 2021a). Changes in food habits are a common response to shocks as a form of asset smoothing (Gash and Gray, 2016) and reported in other populations in Nepal as a response to COVID-19 (Egger et al., 2021). The low level of reported incidents of sacrificing consumption indicates the possibility of consumption smoothing.[4] Combined with the fact that these reports are a response to being 'adversely affected' by a shock, then the lack of consumption changes with the higher levels of taking on loans, selling livestock and using savings indicates that households may be sacrificing assets (productive or liquid) to smooth their current consumption.

The second most used indications of possible household food insecurity is buying food on credit but this is only used by three percent of households. We look at the use of credit more generally in Section 4.3. A negligible number of households report serving smaller portions, relying on food stockpiles of family, friends or neighbors, cutting meals or changing food to a less preferred option. This suggests households were able to smooth consumption effectively.

While we cannot pinpoint the precise reason this aid was extended or these two villages chosen, we can examine the shocks that food aid recipients were responding to. Table 1 tests whether there is a statistical difference in the shocks reported depending on whether a respondent reports using NGO or government food aid. There is a statistical difference in

[4]There is the possibility of some recall bias due to the long time frame of the survey, but reports of coping strategies related to food are low in power. Additionally, there is no evidence to support treatment status effected respondent's propensity to report using a food related coping strategy.

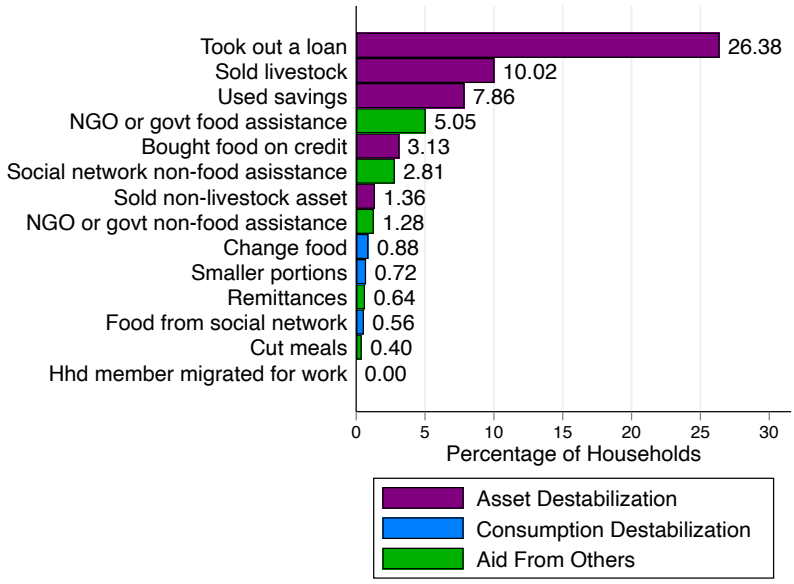
Table 1: Balance of Shocks Reported by Reported Receipt of Food Aid From an NGO or the Government

	(1)	(2)	(3)	(4)
Variable	Sample Mean	No food aid	Food aid	Difference
Decrease in non-remittance income	0.202	0.193	0.381	0.188***
	(0.402)	(0.394)	(0.490)	(0.052)
Serious illness	0.148	0.144	0.222	0.078*
	(0.356)	(0.352)	(0.419)	(0.046)
Increasing food prices	0.130	0.115	0.413	0.298***
	(0.336)	(0.319)	(0.496)	(0.043)
Falling agricultural prices	0.107	0.103	0.175	0.072*
	(0.309)	(0.304)	(0.383)	(0.040)
Loss of employment	0.078	0.065	0.317	0.252***
	(0.268)	(0.247)	(0.469)	(0.034)
Reduction in remittances	0.060	0.058	0.095	0.037
	(0.238)	(0.234)	(0.296)	(0.031)
Death of a household member	0.052	0.051	0.079	0.029
	(0.222)	(0.219)	(0.272)	(0.029)
Increasing non-food necessity prices	0.048	0.035	0.302	0.267***
	(0.214)	(0.183)	(0.463)	(0.027)
Natural Disaster	0.042	0.042	0.032	-0.010
	(0.200)	(0.201)	(0.177)	(0.026)
Accident or Injury	0.020	0.020	0.016	-0.004
	(0.140)	(0.141)	(0.126)	(0.018)
Animal Death	0.019	0.017	0.063	0.047***
	(0.137)	(0.129)	(0.246)	(0.018)
Other	0.007	0.008	0.000	-0.008
	(0.085)	(0.087)	(0.000)	(0.011)
Reduced workload due to child care needs	0.004	0.003	0.032	0.029***
	(0.063)	(0.050)	(0.177)	(0.008)
Observations	1,247	1,184	63	1,247

Notes: Sample means between respondents who reported using food aid from an NGO or the government as a coping strategy. Indices of non-productive assets, productive assets and housing characteristics created with Swindex. Significance denoted by *** p<0.01, ** p<0.05, * p<0.10.

food aid beneficiaries' reported covariate shocks. A larger percent of food aid respondents reported decreases in non-remittance income, increasing food prices, loss of employment and increasing non-food necessity prices.

Figure 4: Percentage of Households using Coping Strategies from October 2019 to March 2021



4.3 Using savings and credit during COVID-19

The previous section showed how important savings and credit were when coping with a shock, so in this section we provide more details on levels of savings and debt. Respondents were asked their level of savings and debt at four points in time, five months before lockdown, the start of lockdown, the end of lockdown, and nine months after lockdown. Unlike information on household's coping strategies, we do not have information on or around the four months post lockdown date used to delineate Period 3 and 4 previously. The data differentiates between personal and household finances, but for this analysis we focus on personal savings and debt.[5]

[5]Household finances were only requested from female respondents who considered themselves 'well informed about their household member's savings/ credit decisions'. Fifty- four percent do not consider themselves well informed so we lack data on the majority of the respondents. Moreover, the sample of household financial data is not balanced between treated and control respondents. Analysis has demonstrated that treatment increases a women's chances of considering themselves well informed meaning the available household financial data is different between the two groups and should not be used.

Figure 5: Percentage of Households Using Coping Mechanisms In Each Time Period

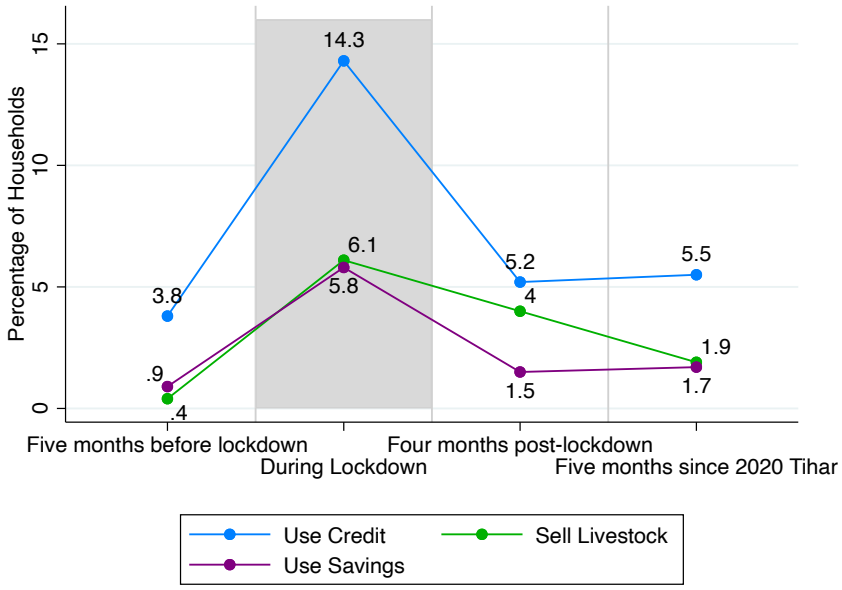


Figure 6 presents the percentage of respondents with any savings or debt, while Figure 7 presents average levels of savings and debt. Roughly four out of every five people in the sample have any personal savings at any point in time. Figure 6 demonstrates that the percentage of respondents who have any savings remains constantly high over time. There were not a large number of respondents whose savings status changed over time, 75 percent of respondents had a non-zero amount of savings in every period. Respondents were not using all of their savings in one period, and maintained some level of savings throughout the lockdown. Figure 7 demonstrates average level of saving and debt over time, with the shaded area indicating the lockdown. Average personal savings decreased faintly before and during lockdown, but increased slightly in the nine months afterwards. The range of savings over time is 5,290 rupees (44 USD). Overall the savings profile of the sample population remains consistent over time.

The average respondent has more debt than savings and Figures 6 and 7 combined show that more respondents have a non-zero amount of savings than a non-zero amount of debt, but average savings is lower than average debt. Five months before lockdown only 24 percent of respondents had any personal debt and only 27 percent had any debt at the beginning of lockdown. At the end of lockdown 41 percent had any debt, and nine months after lockdown the number increased even more to 53 percent of the survey population. At the time of surveying 660 respondents held a cumulative 1,001 loans, with 60 percent of indebted respondents holding only one loan. Only 19 percent of households had debt in every period

Figure 6: Percentage of Respondents with Any Savings or Debt

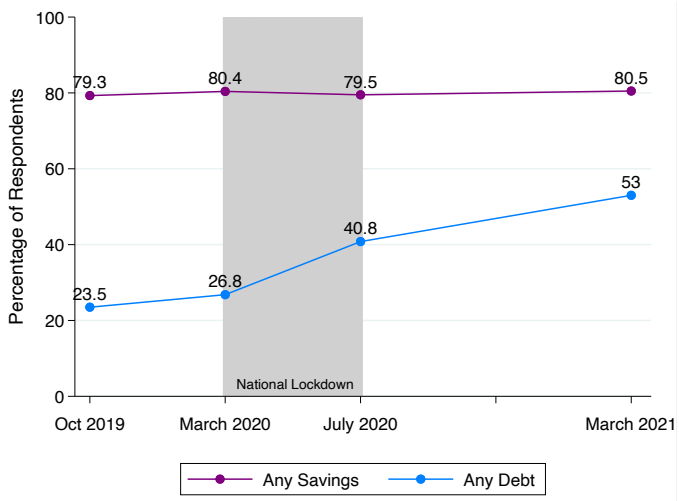
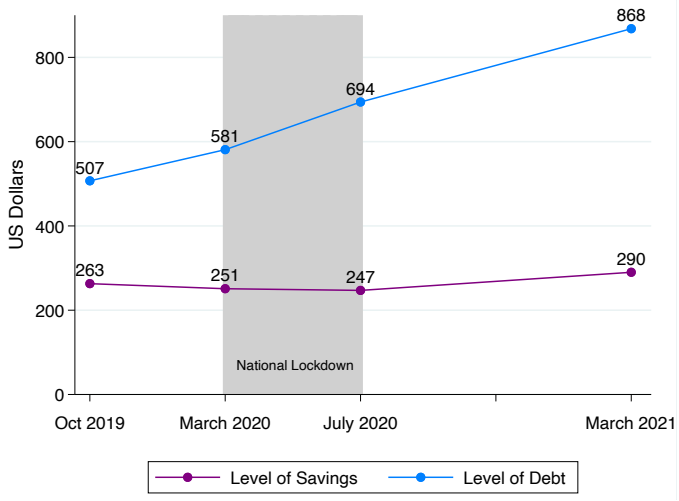


Figure 7: Average Savings and Debt Levels Around The National Lockdown



and 44 percent never had any debt. In Walker et al.'s 2019 report on rural vulnerability, the authors found that 62 percent of rural Nepali's had outstanding loans (Walker, Kawasoe, and Shrestha, 2019).

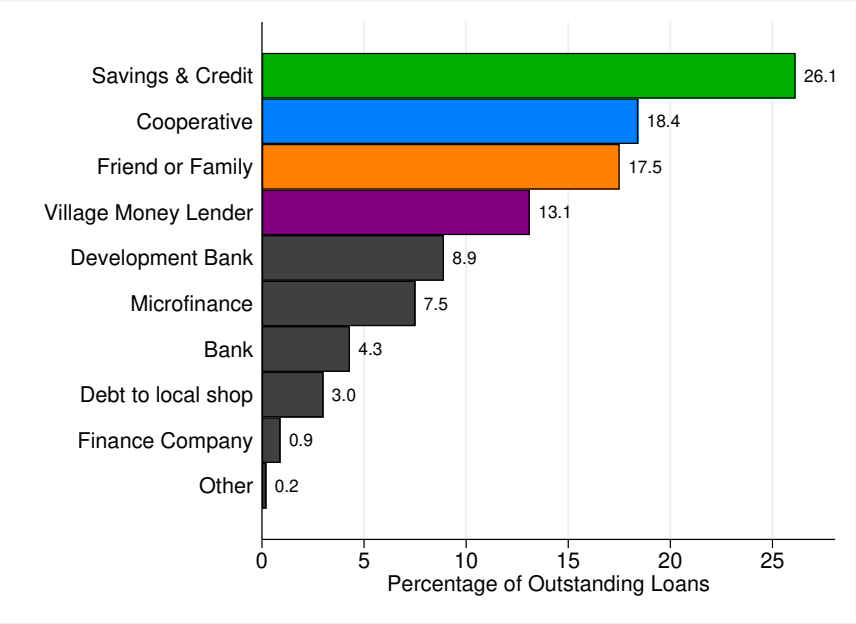
From Figure 7, the average amount of debt increased overtime, with the largest marginal increase occurring during the lockdown. Over the 18 month recall period, average debt rose 43,666 rupees (361 USD). Average debt in March 2021 was 868 USD, while average debt of indebted respondents was 1,204 USD. In 2019, average rural household debt was approximately 644 USD (Walker, Kawasoe, and Shrestha, 2019). The lockdown effected the average amount of savings and debt, and increased debt more than decreased savings. It is possible that respondents are hesitant to draw down savings because they will be necessary in

the future, and taking on debt allows them to spread out the cost of coping. Debt frequently must be repaid with interest, but repayment in installments can diffuse the cost over time. Using savings would mean a larger immediate decrease in available resources while taking on debt means that the cost to savings can be spread out over time. Considering the long and uncertain time horizon of COVID-19's effects, households may be more prone to taking on debt in the thought that overall level of resources should be kept as high as possible in case more shocks befall the household.

Figure 8 reports the sources of the 1001 outstanding loans in the sample population. Just over a quarter came from Rotating Savings & Credit groups, lending groups run by villagers. Twenty percent of the loans came from cooperatives and a total of seventeen percent from either family or friends. This varies slightly from borrowing trends recorded from 2015-2018 in a nationally representative survey of rural households. In pre-pandemic years, an average of 40 percent of loans were from family, friends, or neighbors, 25 percent from Grameen banks, cooperatives and ROSCAs (Rotating Savings and Credit Agencies) (Walker, Kawasoe, and Shrestha, 2019). Figure 9 shows that the number of loans taken from Savings & Credit organizations and village money lenders increased during lockdown, while loans from cooperatives and family or friends decreased during lockdown. The only loan source providing a constantly increasing percentage of loans for each time period is Rotating Savings & Credit groups. The difference in pre-pandemic loans than reported in Figure 8 and 9 can likely be attributed to differing sample populations (rural vs rural poor). As the pandemic progressed, friends and family were less likely to give loans as they are in similar economic situations and trying to maintain their own households.

All respondents regardless of financial situation were asked what they used their savings or credit for in each time period, with the opportunity to specify multiple uses. Figure 10 shows the purpose of savings and loans used in each time period for the average percentage of households who used any savings or credit. The most frequent use of both savings and credit was the purchase of food. During all non-lockdown periods, an average of 11 percent of households used their savings to purchase food, but during lockdown this increases to 17 percent of households. Similarly, an average of 8 percent of households reported non-lockdown use of credit to purchase food, but this increases to almost 13 percent during lockdown. The increases during lockdown are consistent with the trends previously discussed concerning the increase of households using coping strategies during the lockdown. More importantly, of the households that used saving during lockdown 83 percent of them purchased food and 61 percent of household that used credit purchased food. That people are choosing to draw

Figure 8: Sources of Outstanding Loans by Indebted Households



N= 1001 outstanding loans held by 660 respondents.

down assets and borrow against future income in the time period with the highest reports of shocks and coping strategies to purchase food shows that households are consumption smoothing.

Figure 9: Common Sources of Outstanding Loans Taken Out In Each Period

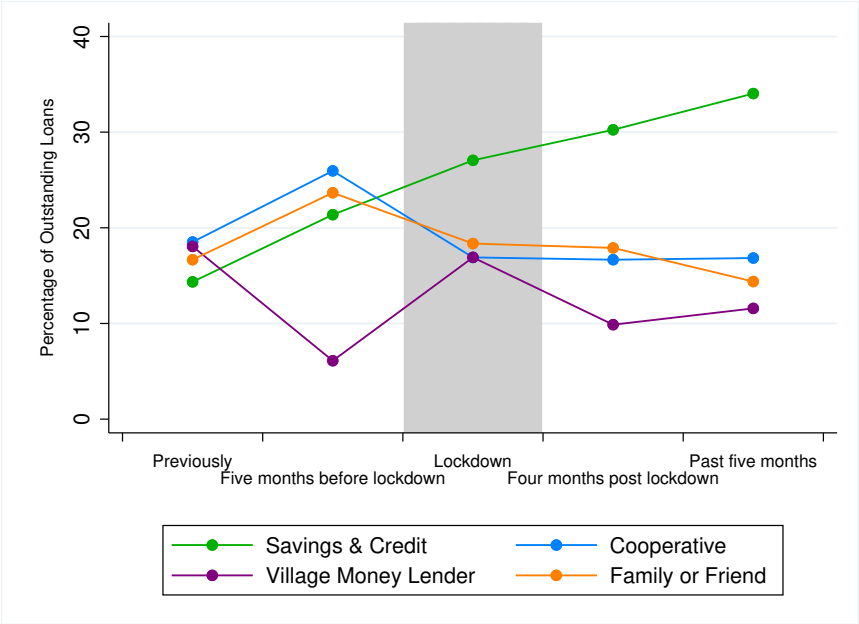
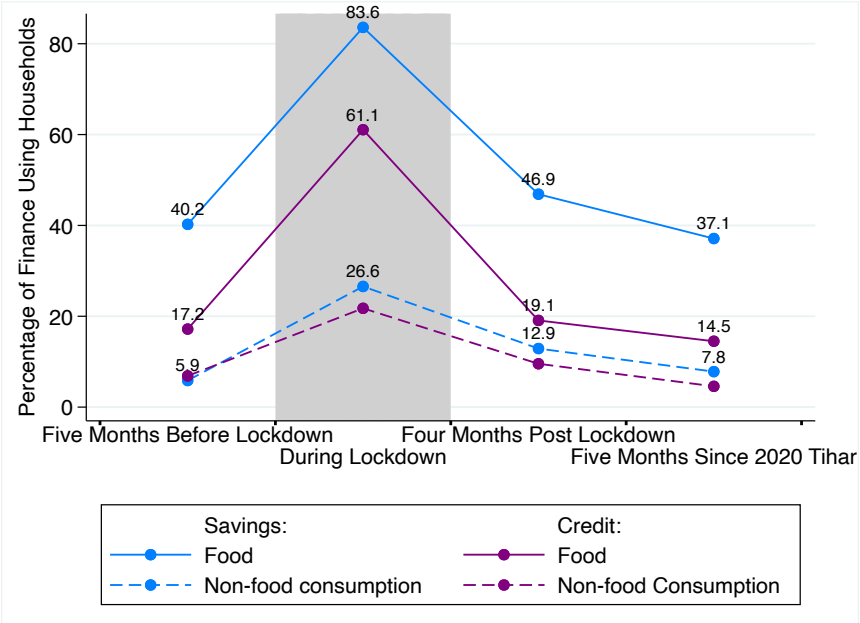


Figure 10: Purpose of Savings and Loans Used in Each Time Period



Chapter 5 Methods

We use a long-term RCT to evaluate the effects of a rural livelihood program on household resilience in the face of possible health-related, social and economic disruptions caused by COVID-19.

5.1 Balance

Table 2 presents summary data and tests whether the average baseline characteristics of the treatment and control groups are statistically different. The average respondent is a mid-caste Hindu who at baseline in 2014 was a married 41 years old and literate woman with no previous livestock training and a non-zero amount of debt. In general, treated and control respondents are very similar and have only slight variations in means across groups where statistically significant. On average the treated respondents have less people who identify as Buddhist, slightly smaller household sizes and a lower accumulation of non-productive assets. The control group has more people who had received some form of livestock training before the intervention began. The salient unbalanced characteristic is likely the previous livestock training as they could influence the outcomes of interest through similar mechanisms as treatment. As the Heifer program provides livestock training and productive assets, if these baseline characteristics do effect our outcomes of interest then our results would be underestimations.

Differences between treatment and control groups can impact the internal validity of a RCT if they stem from systematic biases that cannot be controlled for in the selection of groups, sample attrition, and spillover contamination (Khandker, Koolwal, and Samad, 2010). The survey sample available for this study has decent balance between treatment and control characteristics due to early stratification and randomization on geography and demographic characteristics such as caste.

5.2 Attrition

This survey round draws on a subset of the total potential respondents of Janzen et al. (2021a), which included expanded treatment arms and spillover analysis. A total of 1460 respondents were eligible for inclusion in the most recent survey round based on (1) being assigned to our treatment of interest or the control arm, (2) surveyed at baseline and (3) not residents of a VDC that was dropped from monitoring. The baseline data requirement

Table 2: Balance of Baseline Characteristics by Treatment Status

Variable	(1) Sample Mean	(2) Control	(3) Treatment	(4) Difference
Higher Caste	0.302	0.292	0.307	0.014
	(0.459)	(0.455)	(0.461)	(0.027)
Lower Caste	0.183	0.192	0.178	-0.014
	(0.387)	(0.394)	(0.383)	(0.023)
Hindu	0.871	0.854	0.880	0.026
	(0.335)	(0.354)	(0.325)	(0.020)
Buddhist	0.087	0.110	0.075	-0.034**
	(0.283)	(0.313)	(0.264)	(0.017)
Non Hindu or Buddhist	0.042	0.037	0.044	0.008
	(0.200)	(0.188)	(0.206)	(0.012)
Index of non-productive assets	0.000	0.075	-0.040	-0.115*
	(1.000)	(1.260)	(0.824)	(0.059)
Index of Housing Characteristics	0.000	0.190	-0.103	-0.292***
	(1.000)	(0.996)	(0.988)	(0.059)
Index of Productive Assets	-0.000	-0.013	0.007	0.020
	(1.000)	(1.117)	(0.931)	(0.059)
Any debt	0.616	0.639	0.603	-0.036
	(0.487)	(0.481)	(0.490)	(0.029)
Average Age	41.013	41.235	40.892	-0.343
	(13.491)	(12.680)	(13.916)	(0.801)
Married	0.909	0.911	0.909	-0.002
	(0.287)	(0.285)	(0.288)	(0.017)
Literate	0.528	0.523	0.532	0.009
	(0.499)	(0.500)	(0.499)	(0.030)
Years of schooling	2.747	2.820	2.707	-0.113
	(3.928)	(3.992)	(3.895)	(0.233)
Had previous livestock training	0.063	0.103	0.042	-0.061***
	(0.244)	(0.304)	(0.201)	(0.014)
Observations	1,247	438	809	1,247

Notes: Sample means between treatment and control groups. Indices of non-productive assets, productive assets and housing characteristics created with Swindex. Significance denoted by *** p<0.01, ** p<0.05, * p<0.10.

excludes respondents who were added in later survey rounds to evaluate spillover effects. All VDCs in the Middle Hills region were dropped from evaluation because of the 2015 Gorkha earthquake so Heifer's emergency relief would not effect analysis.[6] Due to the geographic stratification, the dropped VDCs were balanced between treatment and control arms and their exclusion did not unbalance the remaining sample. We examine attrition in two stages, those that attrited at any point in the years between the baseline survey and the current round of data collection and those that attrited later– after the Endline 2 survey in mid-2018. When pulling together the potential survey respondents, we only reached out to those who were found and surveyed at the second endline survey. Of those 1,332 potential respondents, 1,247 were found and consented to interviews. The rate of total attrition since baseline is 14.5 percent while the post Endline 2 attrition is 6.4 percent.

Selective attrition has the potential to bias observed Intent-To-Treat (ITT) effects so we analyze the effect of baseline characteristics and treatment assignment on a respondent's propensity to attrit with a series of models. Results are reported in Table 3 of this section and Appendix A, each table follows the same formatting, which each column 1-4 reports the results to the corresponding equation.

$$A_i = \vec{\beta_1} \vec{X_{i0}} + \epsilon_i \tag{1}$$

$$A_i = \beta_2 T_i + \epsilon_i \tag{2}$$

$$A_i = \vec{\beta_1} \vec{X_{i0}} + \beta_2 T_i + \epsilon_i \tag{3}$$

$$A_i = \vec{\beta_1} \vec{X_{i0}} + \beta_2 T_i + \vec{\beta_3} \vec{X_{i0}} \cdot T_i + \epsilon_i \tag{4}$$

We estimate an individual's propensity to attrit A_i for attrited since baseline and attrited post endline. These equations estimate several models with combinations of $\vec{X_{i0}}$, the vector of baseline characteristics and treatment status T_i. The four models are: 1) baseline controls only, 2) treatment status only, 3) treatment status and baseline controls, and 4) treatment status, baseline controls, and treatment interacted with each baseline control. Baseline characteristics include caste, religion, household size, asset and housing indices, whether the individual has a non-zero amount of debt, age, marital status, literacy status, years of schooling and whether they had received any form of livestock training prior to the Heifer intervention. Similar to the asset indices constructed for Eq 5 in Section 5.3, the indices for the attrition models are constructed using Swindex. Indices are recalculated for each level of

[6] Thompson (2018) evaluates the effect of the earthquake and intervention on the effected VDCs.

attrition as they normalize along the sample mean. The vector of coefficients $\vec{\beta_3}$ estimates the effect of the interaction terms between the vector of baseline controls, $\vec{X_{i0}}$, and treatment status.

Table 3 displays the results of these models on a respondent's likelihood to attrit at any point since baseline. We find no impact of treatment on an individual's chance of attriting after baseline. There is some non-random attrition from baseline characteristics. Effects of having debt is robust across specifications, people with a non-zero amount of debt at baseline are between 20 an 23 percentage points more likely to ever attrit. Respondents are only slightly more likely to ever attrit with more years of schooling and age (0.7 percent for an additional year of schooling, 0.2 percentage for a year of age). Respondents with livestock training previous to the Heifer program are 8 percentage points less likely to attrit, but this is not robust across specifications. Table A.1 in Appendix A shows that the only incident of treatment contributing to non-random attrition is that non-Hindu or Buddhist treated respondents are 18 percentage points more likely to attrit since baseline than Hindu control respondents.

Table A.2 and Table A.3 in Appendix A show the effect of baseline characteristics and treatment assignment on a respondent's attrition after the Endline 2 survey in mid-2018, with the same model specifications as Table 3. We find no evidence that treatment effected attrition since Endline 2. From Table A.2, those with any debt at baseline are 10 percentage points more likely to attrit later while those with previous livestock training are almost 6 percentage points less likely to attrit later. When treatment interactions are included in the model specification (Equation 4), then non-Hindu or Buddhist respondents are 10 percentage points less likely to attrit than Hindu respondents though this result is not robust across specifications. A non-Hindu or Buddhist treated respondent are 17 percentage points more likely to attrit post 2018 than a treated Hindu respondent; this is the only statistically significant non-random late attrition connected to treatment.

Despite the long timeframe, the RCT has built in spillover and contamination protections by choosing central wards in each VDC when administering the intervention and encouraging choosing geographically close households when beneficiaries pass on their first goat offspring in accordance with Heifer's Pay-It-Forward teachings. The long timeframe between baseline data collection and the most recent survey round means that attrition is likely, but for our sample is not very large, with 14 percent attrition in total since baseline, and 6 percent attrition since program completion and the Endline 2 survey. Some groups were more likely to attrit, but the only differences in attrition when considering treatment status is religion,

Table 3: Interaction Terms of OLS Regression of Baseline Characteristics on Attrition Since Baseline

	(1) Attrited	(2) Attrited	(3) Attrited	(4) Attrited
Treated		0.00983	0.0115	-0.103
		(0.0519)	(0.0498)	(0.168)
Lower caste	0.0290		0.0291	-0.0252
	(0.0310)		(0.0312)	(0.0518)
Higher caste	0.0161		0.0153	-0.0269
	(0.0337)		(0.0324)	(0.0668)
Buddhist	0.0508		0.0517	0.0125
	(0.0666)		(0.0671)	(0.101)
Non Hindu or Buddhist	0.0420		0.0407	-0.0796
	(0.0425)		(0.0417)	(0.0740)
Household Size	-0.00664		-0.00652	-0.00630
	(0.00427)		(0.00429)	(0.00696)
Index of non-productive assets	0.0126		0.0127	0.00305
	(0.0129)		(0.0127)	(0.0153)
Index of housing characteristics	-0.00865		-0.00799	-0.0375
	(0.0176)		(0.0181)	(0.0314)
Index of productive assets	-0.0240*		-0.0243*	-0.0261
	(0.0130)		(0.0129)	(0.0203)
Non-zero amount of debt	0.228***		0.229***	0.192***
	(0.0455)		(0.0454)	(0.0636)
Age	0.00273**		0.00273**	0.00153
	(0.00110)		(0.00110)	(0.00173)
Married	-0.0455		-0.0453	-0.0109
	(0.0377)		(0.0377)	(0.0502)
Literate	-0.000220		-0.000771	0.00397
	(0.0280)		(0.0280)	(0.0412)
Years of schooling	0.00765**		0.00769**	0.00759
	(0.00326)		(0.00318)	(0.00656)
Has had previous livestock training	-0.0872**		-0.0844*	-0.0526
	(0.0427)		(0.0420)	(0.0465)
Treatment Interaction Terms	No	No	No	Yes
Observations	1456	1460	1456	1456

Notes: Regression results based on OLS with clustered (VDC) errors on attrition at any point after baseline. Column 4 includes interaction terms of treatment for each control variable, printed in Table A.1. Baseline characteristics of dummy variables include; control group, middle caste, Hindu, no debt, non-married, illiterate, and no previous livestock training. Indices of non-productive assets, productive assets and housing characteristics created with Swindex. Significance denoted by *** p<0.01, ** p<0.05, * p<0.10.

with non-Hindu or Buddhist treated respondents more likely to attrit than Hindu control respondents. We expect some amount of non-random attrition.

5.3 Empirical Strategy

To analyze the effects of the program we estimate the following equation:

$$Y_{it} = \beta_0 + \beta_1 T_i + \sum_{t=2}^{4} \delta_t + \sum_{t=2}^{4} \alpha_t (\vec{T_i} \times \vec{\tau_t}) + \gamma_1 Y_{i0} + \vec{\gamma_2} \vec{X_{i0}} + \epsilon_{it} \tag{5}$$

We use this equation to estimate a respondent's propensity to use each of the most commonly used responses to shocks (sell livestock, use savings, take out a loan) and financial outcomes (savings and credit). Additionally, we estimate the likelihood of reporting any shock, and reporting each individual shock. Of particular interest is the second time period $t = 2$, which represents the national lockdown, during which we observe the largest changes (see Section 4.1). The dependent variable, Y_{it}, is the outcome of interest pertaining to individual i at time t. Treatment T_i is a binary variable for whether the respondent was randomly encouraged to participate in the program so β_1 represents the treatment effect before the lockdown. The effects of binary time indicators is captured in δ_t with the omitted time period being $t = 1$. Treatment is interacted with $\vec{\tau_t}$, a vector of dummy variables indicating each time period, $\beta_1 + \alpha_t$ is the treatment effect at time t. We are especially interested in the treatment at $t = 2$. The vector of control variables, $\vec{X_{i0}}$, include demographic information taken at baseline such as age, marital status, education and asset indices for productive, non-productive and housing characteristics, as well as dummy variables for vdc stratification which account for geographic and ethnic/ caste variation. The indices of accumulated productive assets, non-productive assets and housing characteristics are constructed in Stata using the swindex command which constructs a standardized inverse-covariance index from multiple indicator variables that standardizes at mean=0 and standard deviation=1 (Schwab et al., 2020). Both $\vec{\gamma_1}$ and $\vec{\gamma_2}$ represent the effect of a vector of baseline controls on the outcome of interest. Where available, Y_{i0} is the outcome variable at baseline, making this an ANCOVA specification (Rubin and van der Laan, 2011).

Lockdown Specific Regressions

We also estimate a variation of Equation 5 that focuses on changes to outcomes of interest during the national lockdown.

$$Y_{il} = \beta_0 + \beta_1 T_i + \delta_1 \tau_{il} + \alpha_{t=l} T_i \times \tau_l + \gamma_1 Y_{i0} + \vec{\gamma}_2 \vec{X_{i0}} + \epsilon_{it} \tag{6}$$

We use this equation to estimate a respondent's propensity to use the common coping strategies (sell livestock, use savings, use credit) and financial outcomes (savings and credit). Treatment, T_i, remains a binary indicator on a respondents randomized assignment to a treatment arm of the intervention. The control variables captured in Y_{i0} and $\vec{X_i}0$ remain the the same as Equation 5.

The dependent variable Y_{il} represents the outcome of interest for individual i during the national lockdown l. The binary variable τ_{il} represents whether respondent i used the indicated coping strategy during the national lockdown. The baseline category captured in $\tau_{il} = 0$ represents coping strategy choices made in all non-lockdown periods. The coefficient α_l captures the effect of treatment on coping strategy choice during lockdown.

As savings and credit outcomes are measured at specific points in time, we generalize the effect of the lockdown by estimating Equation 6 for before and after the lockdown, so $l = t_3 \cup t_4$.

Chapter 6 Results

6.1 The effect of treatment on shocks

Figure 11 shows the treated effects estimating Equation 5 on a respondent's reporting of shocks and demonstrates that there is no detectible effect of treatment on a respondent's likelihood of reporting a shock, bar one, accident or injury. Treated respondents are almost 2 percentage points more likely to report experiencing an accident or injury than control respondents. There are additional distinctions between experiencing the shock and reporting the shock. Information on shocks was elicited by asking if respondents had been 'adversely effected' by each of the nine different shocks, then the period they experienced that shock. The 'accident or injury' shock category was generated from the write in option for 'other'. It is unlikely that treatment has a causal effect on household's experiencing accidents or injuries, as accidents are by definition random. As this shock response was unprompted, there is a greater chance of recall bias and respondent forgetfulness. Overall, treatment does not impact respondent's reporting of shocks.

Figure 11: OLS Regressions of Treatment Effect on Shock Reporting

6.2 The effects of treatment on coping choices

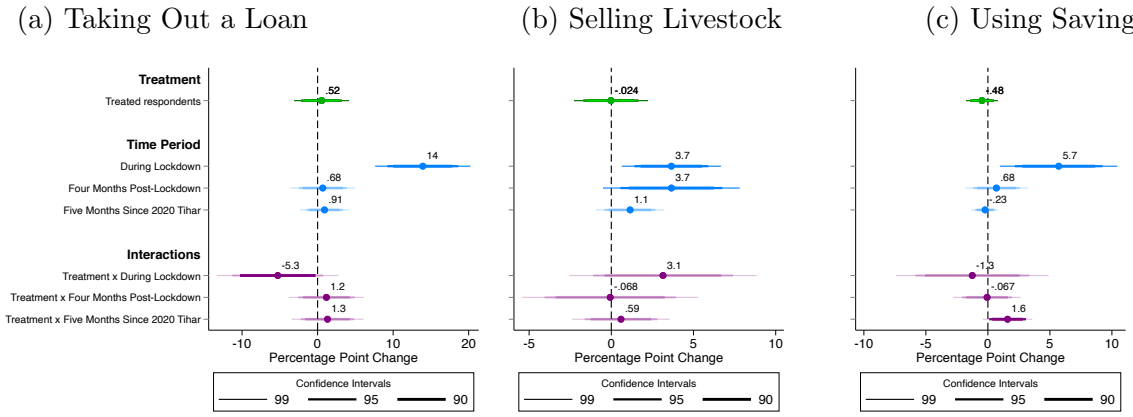
Figure 12 shows the results of estimating Equation 5. Figure 13a estimates the effect of treatment and time on the likelihood of taking out a loan to cope. We do not find robust evidence that the Heifer program had a significant effect on a respondent's likelihood to take out a loan before the lockdown, but do find a significant negative effect of treatment during the lockdown, where treated respondents are 5 percentage points less likely to take out a loan than control respondents. We see a significant positive effect on likelihood of taking out a loan during the national lockdown for control respondents. On average, control households are 14 percentage points more likely to take out a loan during the national lockdown than before it. Figure 13 indicates that these results are robust when comparing lockdown to all other time periods.

We see a positive significant effect of time on likelihood of selling livestock. Control households are almost 4 percentage points more likely to sell livestock during the lockdown and in the period directly afterwards than before the lockdown. There is insufficient evidence that treatment effects the use of livestock sales as a coping strategy, even during the national lockdown, when all time periods are considered independently. From Table **??**, when all non-lockdown time periods are pooled we see positive significant effects. Treated households are almost three percentage points more likely to sell livestock than control households. The finding that control respondents are more likely to sell livestock during the lockdown is robust, who are only two percentage points more likely to sell livestock during the lockdown.

We find significant robust evidence that control respondents are more likely to use savings during the lockdown, but do not find a differential effect of treatment during any time period that is robust across models. Control respondents are almost 6 percentage points more likely to use savings during the lockdown than before it (p=0.002). Figure 12 shows a significant marginal positive effect of treatment in the most recent time period where treated household are less than two percentage points more likely to use savings than in the months before the lockdown.

The use of coping strategies increased during the national lockdown in accordance with our findings discussed in Section 4.2, and treated households were less likely to take out a loan and more likely to sell livestock than control households. Treated respondents have a larger productive asset pool, and specifically have larger goat herds (Janzen et al., 2021a). With a larger herd, the sale of livestock represents less of a household's overall wealth, which can alleviate the concerns traditionally associated with consumption smoothing via the sale of productive assets. The shift away from loans towards selling livestock demonstrates a possible

Figure 12: OLS Regression of Treatment Status on Coping Strategy Use with Time Interactions



Notes: Results based on OLS regression of Equation 5 with clustered (VDC) standard errors. Outcome variables are binary indicators of whether a respondent used that coping strategy. Baseline categories of dummy variables include; control group, P1- the five months before lockdown. Control variables include baseline age, marital status, literacy, previous livestock training, dummy variables for stratification bins and indices constructed with Swindex valuing productive assets, non-productive assets and housing characteristics.

shift from having to rely on loans and having the resources to alternatively sell assets without harming future income to the extent a similar sale would entail for a poorer household.

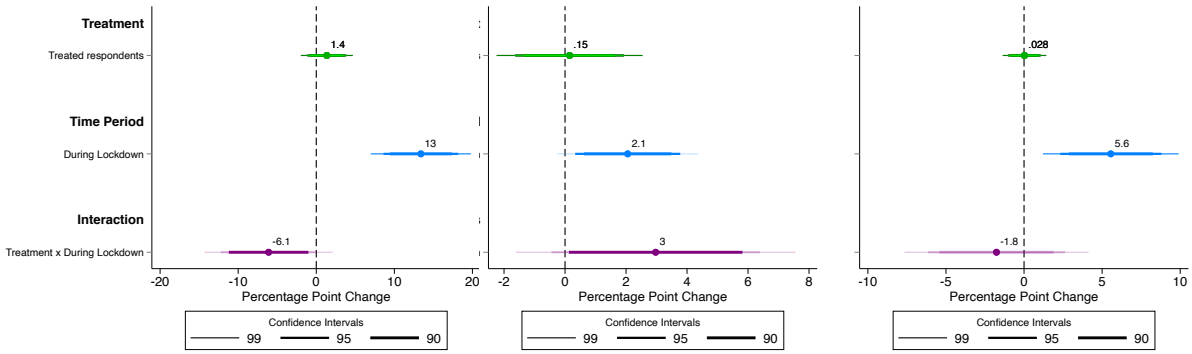
6.3 The effects of treatment on savings and credit

Figures 14 and 15 show the results of estimating Equations 5 and 6 again, where Figure 14 shows the likelihood of having any savings or debt and Figure 15 details effects on levels of savings and debt. From Figure 14, we find a significant positive effect that treated respondents are 11 percentage points more likely to have any savings before the lockdown than control households. We do not find significant evidence of treatment effects over time. We find a significant positive effect of the post lockdown periods on control respondent's likelihood of having debt but do not find evidence that treatment changes a respondent's likelihood of having any debt. Over time, households are more likely to have any debt, similar to the trend seen in Figure 6.

From Figure 15, program beneficiaries have on average almost 100 USD more in savings than non-beneficiaries before the lockdown. Consistent with the findings of Figure 7, level of savings does not significantly vary over time and there is no detectible effect of treatment in the later time periods. Beneficiaries hold a significant negative level of debt compared to non-beneficiaries before the lockdown, approximately 235 USD, which is robust across models. Level of debt increases over time, with control respondents holding an average of 143 USD

Figure 13: OLS Regression of Treatment Status on Lockdown Specific Coping Strategy Use

(a) Taking Out a Loan (b) Selling Livestock (c) Using Savings

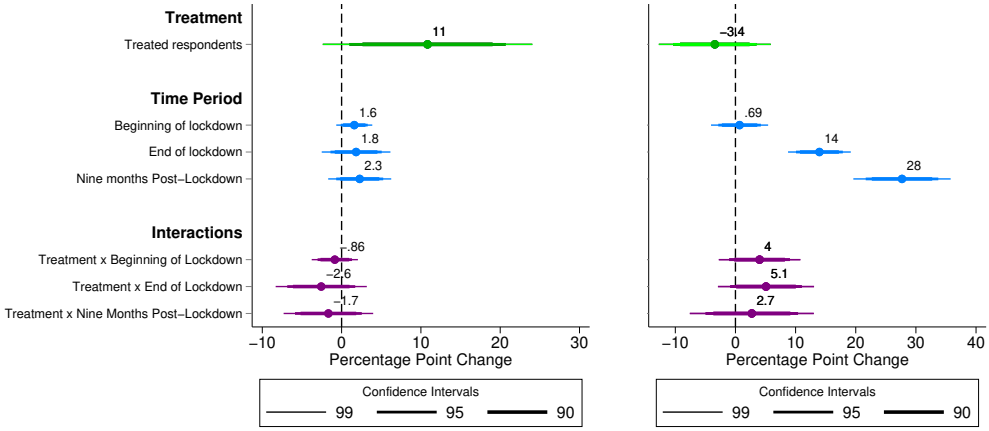


Notes: Results based on OLS regression of Equation 6 with clustered (VDC) standard errors. Outcome variables are binary indicators of whether a respondent used that coping strategy. Baseline categories of dummy variables include; control group, P1- the five months before lockdown. Control variables include baseline age, marital status, literacy, previous livestock training, dummy variables for stratification bins and indices constructed with Swindex valuing productive assets, non-productive assets and housing characteristics.

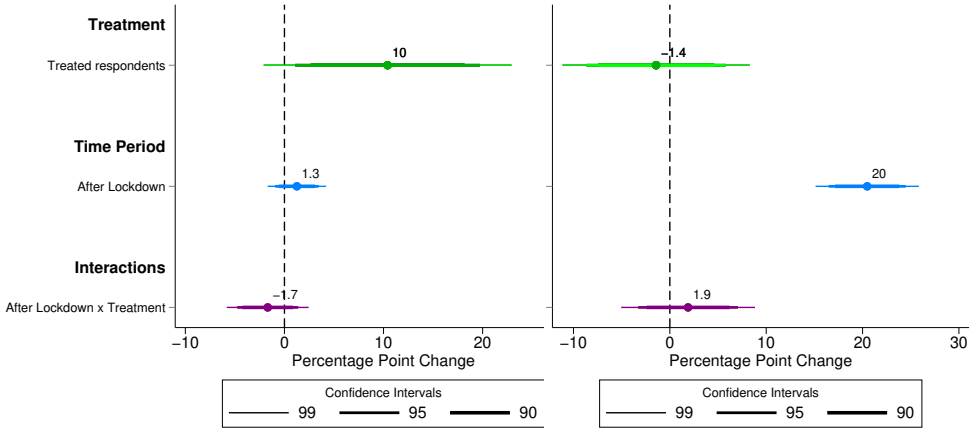
more debt at the the end of lockdown and 429 USD nine months after lockdown than five months before. We do not detect an effect of treatment over time, when we consider separate time periods or just after the lockdown. Overall our analysis shows that beneficiaries are not taking on a statistically significantly different amount of debt than control households over time, and have larger savings to draw upon.

Figure 14: OLS Regression of Treatment Status on Having Any Savings and Any Debt

(a) Likelihood of Having Any Savings (b) Likelihood of Having Any Debt



(c) Likelihood of Having Any Savings Post-Post-Lockdown (d) Likelihood of Having Any Debt Post-Lockdown

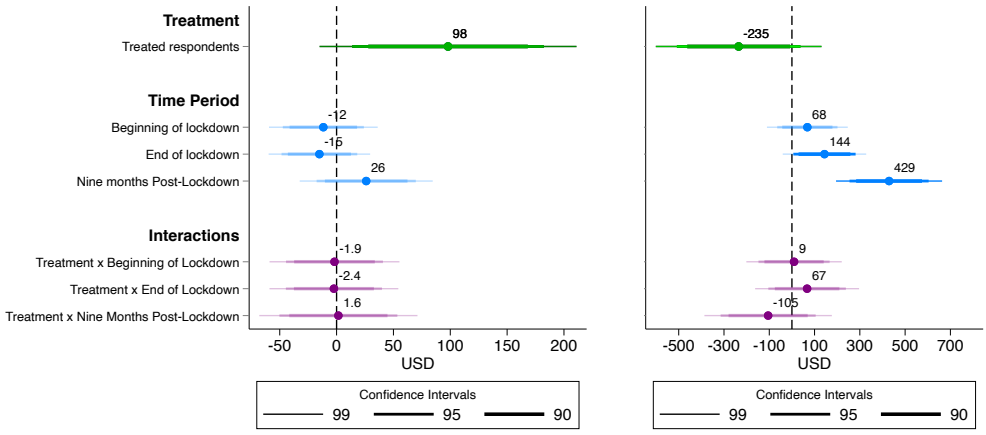


Notes: Results based on OLS regression of Equation 5 for subfigures 1 and 2 and Equation 6 for subfigures 3 and 4 with clustered (VDC) standard errors. Outcome variables are binary indicators of whether a respondent has a non-zero amount of savings or debt. Baseline categories of dummy variables include; control group, P1- the five months before lockdown. Indices of non-productive assets, productive assets and housing characteristics created with Swindex.

Figure 15: OLS Regression of Treatment Status on Levels of Savings and Credit

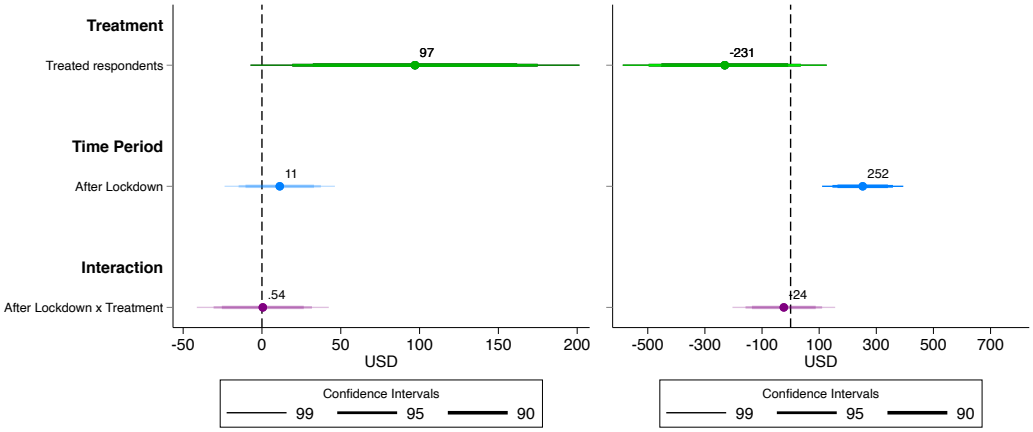
(a) Level of Savings

(b) Level of Debt



(c) Level of Savings

(d) Level of Debt



Notes: Results based on OLS regression of Equation 5 for subfigures 1 and 2 and Equation 6 for subfigures 3 and 4 with clustered (VDC) standard errors. Outcome variables are levels of respondent savings and debt topcoded at the 99th percentile. Baseline categories of dummy variables include; control group, P1- the five months before lockdown. Control variables include baseline age, marital status, literacy, previous livestock training, dummy variables for stratification bins and indices constructed with Swindex valuing productive assets, non-productive assets and housing characteristics.

Chapter 7 Discussion and Conclusion

COVID-19 is a global covariate shock that has strained households, particularly the vulnerable rural poor, through more than just illness, namely decreases in income and increasing food prices. The rural Nepali poor resorted to coping strategies conventionally associated with consumption smoothing when faced with the national lockdown by taking out loans, selling livestock and using their savings. Importantly, households maintained their pre-pandemic food security status and are largely not changing their dietary consumption to cope for the first 18 months of the pandemic. The highest incidence of food related coping strategy is the five percent of the sample who received food aid from an NGO, with even lower incidence of food consumption changes as a coping strategy.

Instead, households relied on debt, savings and asset sales. The number of households reporting any debt increases over time, more than doubling between October 2019 and March 2021 from 24 percent to 53 percent of households. Those with any savings remains fairly constant over that time with an average of 80 percent of respondents holding a non-zero amount of savings in every period. Similarly, the average level of savings remains fairly consistent over time, with slight decreases over the lockdown and some increase in the nine months post lockdown. Average level of debt is much higher than level of savings and increases over time, rising more quickly during the national lockdown. Households may be protecting their level of savings in case they are needed later due to the uncertainty that comes with the COVID-19 state of the world and taking on debt instead to use repayment times as means of spreading the strain of coping over a more manageable timeframe. Households are most frequently using their savings and credit to purchase food, even more so during the national lockdown. The high incidence of coping strategies that draw down assets (productive or liquid) or borrow against future income, the use of those assets to purchase food and the much less frequent reports of decreasing consumption indicates that rural Nepali households are choosing to consumption smooth in the face of shocks.

We mostly see the effects of treatment on coping choices during the national lockdown, during which beneficiaries are less likely to take out loans and more likely to sell livestock than the control group. Post intervention findings show that beneficiaries have larger herds (Janzen et al., 2021a). Beneficiaries are comfortable selling some of their productive assets as they represent a smaller proportion of their total wealth. Beneficiaries have a higher level of savings, and level of savings increases over time relative to the months before the lockdown.

Beneficiaries have more savings and a greater chance of having any savings than the control group. This difference means that during the lockdown when all respondents were

more likely to use savings to cope, beneficiaries had more savings to draw upon and did not need to take out loans as much as control respondents. Beneficiaries are more likely to sell livestock during the lockdown, but because of the program they have more livestock to sell (Janzen et al., 2021a). While this is consumption smoothing by drawing down assets, both liquid and livestock, the program participation expanded access and accumulation of those assets.

The impact of the livelihoods program is in the increase in participant's access to and accumulation of assets. Heifer's livelihoods program increased the likelihood of having savings and increased the level of savings. Beneficiaries are almost 11 percentage points more likely to have any savings, and have more savings than control respondents. While everyone was more likely to take out loans, sell livestock and use savings during the national lockdown, treated respondents are less likely to take on debt and more likely to sell livestock to cope. The larger herd sizes and increased profit from livestock that beneficiaries have not only provides the household's with means to generate higher incomes and improve quality of life, but gives them recourse when faced with stressors and disruptions. The higher overall savings means that beneficiaries have a cushion of liquid assets, so while everyone is more prone to using savings during the lockdown, doing so represents less of their overall wealth. These are households who can provide their own post-shock assistance and do not need additional aid from traditional ex-post systems.

Nepali's current social assistance programs do not reach all poor households and may not bolster household resilience (Walker, Kawasoe, and Shrestha, 2019) . Bolstering household's assets and savings through livelihood programs can represent a more tailored and less expensive response to shocks (Alinovi, Mane, and Romano, 2010; Longley and Wekesa, 2008; Janzen, Carter, and Ikegami, 2021). Building household's ability to mitigate the negative effects of shocks without requiring ex-post aid capitalizes on program's primary poverty reduction goal by allowing households to maintain their level of welfare. Ex-post assistance is commonly one-dimensional and short term by necessity: direct cash support when incomes are low, direct food aid when experiencing acute hunger. Targeting this aid to populations that need it most can be difficult and produced muddled or ineffective results when implemented poorly (Heltberg and Lund, 2009). Ex-ante improvements to resilience and coping capacity serve as a long-term approach that targets underlying factors related to vulnerability by improving household income and food security. Livelihood programs have the potential to help households resist the negative impacts of shocks while moving them out of poverty.

Bibliography

Alinovi, L., E. Mane, and D. Romano. 2010. "Livelihoods Strategies and Household Resilience to Food Insecurity: An Empirical Analysis to Kenya."

Banerjee, A., E. Duflo, N. Goldberg, D. Karlan, R. Osei, W. Parienté, J. Shapiro, B. Thuysbaert, and C. Udry. 2015. "A multifaceted program causes lasting progress for the very poor: Evidence from six countries." *Science* 348, Publisher: American Association for the Advancement of Science Section: Research Article.

Banerjee, A., E. Duflo, and G. Sharma. 2021. "Long-term Effects of the Targeting the Ultra Poor Program." *NBER Working Paper Series*, pp. 23.

Banerjee, A., D. Karlan, R. Osei, H. Trachtman, and C. Udry. 2020. "Unpacking a Multi-Faceted Program to Build Sustainable Income for the Very Poor." *Working Paper*, pp. 39.

Barrett, C.B., and M.A. Constas. 2014. "Toward a theory of resilience for international development applications." *Proceedings of the National Academy of Sciences* 111:14625–14630.

Barrett, C.B., K. Ghezzi-Kopel, J. Hoddinott, N. Homami, E. Tennant, J. Upton, and T. Wu. 2021a. "A scoping review of the development resilience literature: Theory, methods and evidence." *World Development* 146:105612.

Barrett, C.B., J. Upton, E. Tennant, and K. Florella. 2021b. "Household Resilience, and Rural Food Systems: Evidence from Southern and Eastern Africa." *SSRN Electronic Journal*, pp. .

Bedoya, G., A. Coville, J. Haushofer, M. Isaqzadeh, and J.P. Shapiro. 2019. "No Household Left Behind: Afghanistan Targeting The Ultra Poor Impact Evaluation." *NBER Working Paper Series*, pp. .

Belayeth Hussain, A., N. Endut, S. Das, M.T.A. Chowdhury, N. Haque, S. Sultana, and K.J. Ahmed. 2019. "Does financial inclusion increase financial resilience? Evidence from Bangladesh." *Development in Practice* 29:798–807, Publisher: Routledge _eprint: https://doi.org/10.1080/09614524.2019.1607256.

Bellemare, M.F., and L. Novak. 2017. "Contract Farming and Food Security." *American Journal of Agricultural Economics* 99:357–378, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1093/ajae/aaw053.

Bossury, T., M. Goldstein, D. Karlan, H. Kazianga, W. Pariente, P. Premand, C. Thomas, C. Urdy, J. Vaillant, and K. Wright. 2021. "Pathways out of Extreme Poverty: Tackling Psychosocial and Capital Constraints with a Multi-Faceted Social Protection Program in Niger." *Policy Research Working Papers*, pp. .

Brune, L., D. Karlan, S. Kurdi, and C. Udry. 2022. "Social protection amidst social upheaval: Examining the impact of a multi-faceted program for ultra-poor households in Yemen." *Journal of Development Economics* 155:102780.

Béné, C. 2020. "Resilience of local food systems and links to food security – A review of some important concepts in the context of COVID-19 and other shocks." *Food Security* 12:805–822.

Béné, C., B. Deborah, R. Chavarro, Monica, E. Brice, M. Jenny, and S. Anne. 2021. *Impacts of COVID-19 on people's food security: Foundations for a more resilient food system*. Intl Food Policy Res Inst, Google-Books-ID: gYMfEAAAQBAJ.

CBS, C.B.o.S. 2021. "Nepal Multidimensional Poverty Index: Analysis Toward Action." Working paper, National Planning Commission, Nepal.

Devereux, S., K. Roelen, R. Sabates, R. Sabates-Wheeler, D. Stoelinga, and A. Dyevre. 2019. "Graduating from food insecurity: evidence from graduation projects in Burundi and Rwanda." *Food Security* 11:219–232.

Edmonds, E., and C. Theoharides. 2020. "The short term impact of a productive asset transfer in families with child labor: Experimental evidence from the Philippines." *Journal of Development Economics* 146:102486.

Egger, D., E. Miguel, S.S. Warren, A. Shenoy, E. Collins, D. Karlan, D. Parkerson, A.M. Mobarak, G. Fink, C. Udry, M. Walker, J. Haushofer, M. Larreboure, S. Athey, P. Lopez-Pena, S. Benhachmi, M. Humphreys, L. Lowe, N.F. Meriggi, A. Wabwire, C.A. Davis, U.J. Pape, T. Graff, M. Voors, C. Nekesa, and C. Vernot. 2021. "Falling living standards during the COVID-19 crisis: Quantitative evidence from nine developing countries." *Science Advances* 7:eabe0997.

Gash, M., and B. Gray. 2016. "The Role of Financial Services in Building Household Resilience in Burkina Faso.", pp. 46.

Glass, N., N.A. Perrim, A. Kohli, J. Campbell, and M.M. Remy. 2017. "Randomised controlled trial of a livestock productive asset transfer programme to improve economic and health outcomes and reduce intimate partner violence in a postconflict setting." *BMJ Global Health*, pp. 11.

Günther, I., and K. Harttgen. 2009. "Estimating Households Vulnerability to Idiosyncratic and Covariate Shocks: A Novel Method Applied in Madagascar." *World Development* 37:1222–1234.

Heltberg, R., and N. Lund. 2009. "Shocks, Coping, and Outcomes for Pakistan's Poor: Health Risks Predominate." *The Journal of Development Studies* 45:889–910.

Janzen, S., N.P. Magnan, S. Sharma, and W. Thompson. 2018a. "Evaluation of the Welfare Impacts of a Livestock Transfer Program in Nepal." *AEA RCT Registry*, Oct., pp. .

Janzen, S.A., and M.R. Carter. 2019. "After the Drought: The Impact of Microinsurance on Consumption Smoothing and Asset Protection." *American Journal of Agricultural Economics* 101:651–671, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1093/ajae/aay061.

Janzen, S.A., M.R. Carter, and M. Ikegami. 2021. "Can insurance alter poverty dynamics and reduce the cost of social protection in developing countries?" *Journal of Risk and Insurance* 88:293–324, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/jori.12322.

Janzen, S.A., N.P. Magnan, S. Sharma, and W.M. Thompson. 2021a. "Pay it Forward: a mechanism for achieving scale in anti-povery programs." *Working Paper*, pp. 55.

—. 2018b. "Short-Term Impacts of a Pay-it-Forward Livestock Transfer and Training Program in Nepal." *AEA Papers and Proceedings* 108:422–425.

Janzen, S.A., N.P. Magnan, Thompson, William, S. Sharma, and K. Ekstrom. 2021b. "Evaluation of the Welfare Impacts of a Livestock Transfer Program in Nepal." Working paper, American Economic Association, Apr.

Joshi, N. 2020. "Goat Farmers Find Success in Festival Sales in Spite of COVID-19 Complications."

Karlan, D., A.L. Ratan, and J. Zinman. 2014. "Savings by and for the Poor: A Research Review and Agenda." *Review of Income and Wealth* 60:36–78, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/roiw.12101.

Kazianga, H., and C. Udry. 2006. "Consumption smoothing? Livestock, insurance and drought in rural Burkina Faso." *Journal of Development Economics* 79:413–446.

Khandker, S.R., G.B. Koolwal, and H.A. Samad. 2010. *Handbook on Impact Evaluation: Quantitiative Methods and Practices*. The World Bank.

Knight, A. 2021. "Tihar Festival in Nepal: Days of Dogs, Deities and Income."

Longley, C., and M. Wekesa. 2008. "Improving Drought Response In Pastoral Areas Of Kenya: Lessons And Recommendations.", pp. 10.

Morduch, J. 1994. "Poverty and Vulnerability." *The American Economic Review* 84:6.

Mullally, C., M. Rivas, and T. McArthur. 2021. "Using Machine Learning to Estimate the Heterogeneous Effects of Livestock Transfers." *American Journal of Agricultural Economics* 103:1058–1081.

Pantuliano, S., and M. Wekesa. 2008. "Improving drought response in pastoral regions of Ethiopia." Working paper, Overseas Development Institute.

Phadera, L., H. Michelson, A. Winter-Nelson, and P. Goldsmith. 2019. "Do asset transfers build household resilience?" *Journal of Development Economics* 138:205–227.

Ritchie, H., E. Mathieu, L. Rodés-Guirao, C. Appel, C. Giattino, E. Ortiz-Ospina, J. Hasell, B. Macdonald, D. Beltekian, and M. Roser. 2020. "Coronavirus Pandemic (COVID-19)." *Our World in Data*, pp. , https://ourworldindata.org/coronavirus.

Rohwerder, B. 2016. "Seasonal vulnerability and risk calendar in Nepal." *GSDRC Applied Knowledge Services*, pp. 15.

Rubin, D.B., and M.J. van der Laan. 2011. "Targeted ANCOVA Estimator in RCTs." In *Targeted Learning*. New York, NY: Springer New York, pp. 201–215, Series Title: Springer Series in Statistics.

Schwab, B., S. Janzen, N.P. Magnan, and W.M. Thompson. 2020. "Constructing a summary index using the standardized inverse-covariance weighted average of indicators." *The Stata Journal* 20:952–964, Publisher: SAGE Publications.

Thompson, W. 2018. "Three Essays on Development and Resilience in Nepal." PhD dissertation, Univeristy of Georgia, Athens, Georgia.

Walker, T., Y. Kawasoe, and J. Shrestha. 2019. "Risk and Vulnerability: Findings from the Household Risk and Vulnerability Survey." *World Bank Group*, Nov., pp. .

Appendix A Expanded Attrition Tables

Table A.1: Interaction Terms of OLS Regression of Baseline Characteristics on Attrition Since Baseline

	(1) Attrited	(2) Attrited	(3) Attrited	(4) Attrited
Treated		0.00983	0.0115	-0.103
		(0.0519)	(0.0498)	(0.168)
Lower caste × Treated				0.0791
				(0.0731)
Higher caste × Treated				0.0597
				(0.0729)
Buddhist × Treated				0.0581
				(0.134)
Non Hindu or Buddhist × Treated				0.170*
				(0.0850)
Treated × Household Size				0.000642
				(0.00873)
Treated × Index of non-productive assets				0.0219
				(0.0268)
Treated × Index of housing characteristics				0.0398
				(0.0355)
Treated × Index of productive assets				0.000705
				(0.0230)
Non-zero amount of debt × Treated				0.0538
				(0.0742)
Treated × Age				0.00196
				(0.00231)
Married × Treated				-0.0523
				(0.0671)
Literate × Treated				-0.00657
				(0.0468)
Treated × Years of schooling				0.000393
				(0.00800)
Has had previous livestock training × Treated				-0.0591
				(0.0756)
Constant	-0.0739	0.139***	-0.0824	-0.0108
	(0.0770)	(0.0492)	(0.0836)	(0.125)
Baseline Controls	Yes	No	Yes	Yes
Treatment Interaction Terms	No	No	No	Yes
Observations	1456	1460	1456	1456

Notes: Regression results based on OLS with clustered (VDC) errors on attrition at any point after baseline. Column 1, 3 and 4 include control variables of baseline characteristics without treatment interaction, printed in Table 3. Baseline characteristics of dummy variables include; control group, middle caste, Hindu, no debt, non-married, illiterate, and no previous livestock training. Indices of non-productive assets, productive assets and housing characteristics created with Swindex. Significance denoted by *** p<0.01, ** p<0.05, * p<0.10.

Table A.2: OLS Regression of Baseline Characteristics on Attrition Since Endline 2, mid 2018

	(1) Attrited	(2) Attrited	(3) Attrited	(4) Attrited
Treated		-0.000445	0.00150	0.134
		(0.0284)	(0.0287)	(0.123)
Lower caste	0.0211		0.0212	0.0383
	(0.0247)		(0.0245)	(0.0473)
Higher caste	0.000751		0.000658	-0.00543
	(0.0215)		(0.0216)	(0.0419)
Buddhist	0.0202		0.0204	0.00919
	(0.0326)		(0.0329)	(0.0429)
Non Hindu or Buddhist	0.0181		0.0179	-0.102**
	(0.0533)		(0.0524)	(0.0464)
Household Size	-0.00285		-0.00283	0.00117
	(0.00267)		(0.00261)	(0.00388)
Index of non-productive assets	0.0177		0.0177	0.00177
	(0.0111)		(0.0111)	(0.00858)
Index of housing characteristics	0.00276		0.00288	0.00156
	(0.0159)		(0.0160)	(0.0257)
Index of productive assets	-0.00793		-0.00798	-0.0119
	(0.00710)		(0.00697)	(0.0116)
Non-zero amount of debt	0.108***		0.108***	0.102**
	(0.0283)		(0.0282)	(0.0402)
Age	0.00137*		0.00137*	0.00150
	(0.000705)		(0.000705)	(0.00129)
Married	-0.000224		-0.000186	0.0561*
	(0.0212)		(0.0211)	(0.0313)
Literate	0.00479		0.00472	0.0256
	(0.0224)		(0.0226)	(0.0333)
Years of schooling	-0.000442		-0.000436	0.00164
	(0.00209)		(0.00206)	(0.00378)
Has had previous livestock training	-0.0582**		-0.0579**	-0.0562
	(0.0244)		(0.0259)	(0.0365)
Treatment Interaction Terms	No	No	No	Yes
Observations	1329	1332	1329	1329

Notes: Regression results based on OLS with clustered (VDC) errors on attrition at any point after Endline 2 survey in mid- 2018. Column 4 includes control variables of baseline characteristics interacted with treatment, printed in Table A.3. Baseline characteristics of dummy variables include; control group, middle caste, Hindu, no debt, non-married, illiterate, and no previous livestock training. Indices of non-productive assets, productive assets and housing characteristics created with Swindex. Significance denoted by *** p<0.01, ** p<0.05, * p<0.10.

Table A.3: Interaction Terms of OLS Regression of Baseline Characteristics on Attrition Since Endline 2, mid 2018

	(1) Attrited	(2) Attrited	(3) Attrited	(4) Attrited
Treated		-0.000445	0.00150	0.134
		(0.0284)	(0.0287)	(0.123)
Lower caste × Treated				-0.0247
				(0.0573)
Higher caste × Treated				0.00736
				(0.0452)
Buddhist × Treated				0.00667
				(0.0685)
Non Hindu or Buddhist × Treated				0.170**
				(0.0740)
Treated × Household Size				-0.00577
				(0.00541)
Treated × Index of non-productive assets				0.0329*
				(0.0191)
Treated × Index of housing characteristics				-0.000994
				(0.0324)
Treated × Index of productive assets				0.00695
				(0.0131)
Non-zero amount of debt × Treated				0.0111
				(0.0472)
Treated × Age				-0.000157
				(0.00169)
Married × Treated				-0.0870*
				(0.0478)
Literate × Treated				-0.0333
				(0.0398)
Treated × Years of schooling				-0.00298
				(0.00493)
Has had previous livestock training × Treated				0.00437
				(0.0496)
Constant	-0.0504	0.0641**	-0.0516	-0.140
	(0.0488)	(0.0263)	(0.0492)	(0.0837)
Baseline Controls	Yes	No	Yes	Yes
Treatment Interaction Terms	No	No	No	Yes
Observations	1329	1332	1329	1329

Notes: Regression results based on OLS with clustered (VDC) errors on attrition at any point after Endline 2 survey in mid- 2018. Column 1, 3 and 4 include control variables of baseline characteristics without treatment interaction, printed in Table A.2. Baseline characteristics of dummy variables include; control group, middle caste, Hindu, no debt, non-married, illiterate, and no previous livestock training. Indices of non-productive assets, productive assets and housing characteristics created with Swindex. Significance denoted by *** p<0.01, ** p<0.05, * p<0.10.

Appendix B IRB Letter

ILLINOIS

OFFICE OF THE VICE CHANCELLOR
FOR RESEARCH & INNOVATION

Office for the Protection of Research Subjects
805 W. Pennsylvania Ave., MC-095
Urbana, IL 61801-4822

Notice of Exempt Determination

March 2, 2021

Principal Investigator	Sarah Janzen
Protocol Title	*Resilience in the midst of a pandemic: a study of a Heifer program in rural Nepal*
Protocol Number	21643
Funding Source	USAID Markets, Risk and Resilience Innovation Lab
Review Category	Exempt 2 (i)
Determination Date	March 2, 2021
Closure Date	March 1, 2026

This letter authorizes the use of human subjects in the above protocol. The University of Illinois at Urbana-Champaign Office for the Protection of Research Subjects (OPRS) has reviewed your application and determined the criteria for exemption have been met.

The Principal Investigator of this study is responsible for:

- Conducting research in a manner consistent with the requirements of the University and federal regulations found at 45 CFR 46.
- Requesting approval from the IRB prior to implementing major modifications.
- Notifying OPRS of any problems involving human subjects, including unanticipated events, participant complaints, or protocol deviations.
- Notifying OPRS of the completion of the study.

Changes to an **exempt** protocol are only required if substantive modifications are requested and/or the changes requested may affect the exempt status.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
IORG0000014 • FWA #00008584
217.333.2670 • irb@illinois.edu • oprs.research.illinois.edu

ILLINOIS
Office for the Protection of Research Subjects

Exempt Form

IRB Number: 21643

Human Subjects Research – Exempt Form

Guidelines for completing this research protocol:

- Please submit typed applications via email. Handwritten forms and hard copy forms will not be accepted.
- For items and questions that do not apply to the research, indicate as "not applicable."
- Provide information for all other items clearly and avoid using discipline-specific jargon.
- Please only include text in the provided boxes. The text boxes will expand as they are typed in to accommodate large amounts of text.
- Ensure that your research qualifies as exempt. Exempt categories of research can be viewed here. If the proposed research does not qualify in any of these categories, please complete and submit the Protocol Form.

Before submitting this application, ensure that the following have been completed.

- Exempt Form is complete.
- Relevant CITI modules have been completed for all members of the research team at www.citiprogram.org.
- Informed consent/assent/parental permission document(s) are provided.
- Recruitment materials are provided.
- Research materials (e.g. surveys, interview guides, etc.) are provided.
- Any relevant letters of support are provided.

Instructions on the exempt review process and guidance to submitting applications, can be found on the OPRS website. You may also contact OPRS by email at irb@illinois.edu or phone at 217-333-2670.

Submit completed applications via email to: irb@illinois.edu.

ILLINOIS
Office for the Protection of Research Subjects

Exempt Form

Section 1: PRINCIPAL INVESTIGATOR (PI)

The Illinois Campus Administrative Manual allows assistant, associate, and full professors to act as PI. Other individuals may serve as PI after obtaining approval from the necessary party.			
Last Name: Janzen	First Name: Sarah	Degree(s): PhD	
Dept. or Unit: ACE	Office Address: 425 Mumford		
Street Address: 1301 W Gregory Dr.	City: Urbana	State: IL	Zip Code: 61801
Phone: 530-848-5259	E-mail: sjanzen@illinois.edu		
Urbana-Champaign Campus Status: Non-visiting member of (Mark One) ☒ Faculty ☐ Academic Professional/Staff (*Student Investigators cannot serve as PI*)			
Training ☒ Required CITI Training, Date of Completion (valid within the last 3 years), 1/2020 ☐ Additional training, Date of Completion,			

Section 2. RESEARCH TEAM

2A. Are there other investigators engaged in the research? ☒ Yes (include a Research Team Form) ☐ No
2B. If yes, are any of the researchers not affiliated with Illinois? ☒ Yes ☐ No

Section 3. PROTOCOL TITLE

Resilience in the midst of a pandemic: a study of a Heifer program in rural Nepal

Section 4. FUNDING INFORMATION

4A. Is your research funded? ☒ Yes ☐ No If no, is there a pending funding decision? ☐ Yes ☐ No
4B. If either of the above were answered yes, please indicate the funding agency: USAID Markets, Risk and Resilience Innovation Lab. *Note: No funding at UIUC for this proposal. All funding goes directly to research partner in Nepal for data collection.*
4C. A copy of the funding proposal is included: ☒ Yes

Section 5. CONFLICTS OF INTEREST

Please indicate below whether any investigators or members of their immediate families have any of the following. If the answer to any of the following items is yes, please submit the University of Illinois approved conflict management plan. If you have any questions about conflicts of interest, contact coi@illinois.edu.

5A. Financial interest or fiduciary relationship with the research sponsor (e.g. investigator is a consultant for the research sponsor). ☐ Yes ☒ No
5B. Financial interest or fiduciary relationship that is related to the research (e.g. investigator owns a startup company, and the intellectual property developed in this protocol may be useful to the company). ☐ Yes ☒ No
5C. Two or more members of the same family are acting as research team members on this protocol. ☐ Yes ☒ No

Section 6. RESEARCH SUMMARY

6A. In lay language, summarize the objective and significance of the research. The Covid-19 pandemic has interrupted daily life in every corner of the world. Whether through direct impacts on health, indirect effects of social distancing policies, or disruptions in local and global food market systems, the rural poor are especially vulnerable. This research plan builds on a six year research partnership with Heifer International in Nepal. In this study we will a) examine the coping strategies of rural Nepali households and b) analyze whether and how an existing Heifer program affects the ability of households to cope with the shock and c) analyze constraints and potential development opportunities to improve household resilience in the midst of a global crisis.
6B. Indicate if your research includes any of the following: ☐ Secondary data (use of data collected for purposes other than the current research project) ☒ Data collected internationally (include International Research Form) ☒ Translated documents (include Certificate of Translation and translated documents) ☐ Research activities will take place at Carle
6C. Letters of support from outside institutions or entities that are allowing recruitment, research, or record access at their site(s) are attached. ☒ Yes ☐ Not Applicable

Section 7. PARTICIPANTS AND RECRUITMENT

7A. What is the estimated total number of participants? 1400
7B. Select all participant populations that will be recruited, either intentionally or unintentionally. **Age:** ☒ Adults (18+ years old) ☐ Minors (≤17 years old) ☐ Specific age range, *please specify*: **Gender:** ☐ No targeted gender (both men and women will be recruited/included) ☒ Targeted gender, *please indicate*: ☐ Men/boys ☒ Women/girls ☐ Other, *please specify*: **Race/Ethnicity:** ☒ No targeted race or ethnicity (all races and ethnicities will be recruited/included) ☐ Targeted race or ethnicity, *please specify*: **College Students:** ☒ No targeted college population ☐ UIUC general student body

☐ Targeted UIUC student population, *provide the instructor or course information, name of the departmental subject pool, or other specific characteristics*:
☐ Students at institution(s) other than UIUC, *please specify*:
Any research with students on UIUC's campus needs to be registered with the Office of the Dean of Students.
Other:
☐ People who are illiterate or educational disadvantaged
☒ People who are low-income or economically disadvantaged
☐ People who are non-English speaking
☐ Other, *please specify*:

7C. Select all recruitment procedures that will be used.
☐ Student subject pool, *please specify*:
☐ Email distribution
☐ MTurk, Qualtrics Panel, or similar online population
☐ US Mail
☐ Flyers
☐ Website ad, online announcement (e.g. eWeek), or other online recruitment
☐ Newspaper ad
☐ Verbal announcement
☒ Other, *please specify*: Phone call
☐ Not applicable (secondary data only)
Drafts or final copies of all recruitment materials are attached. ☐ Yes

7D. For each group of participants, describe the details of the recruitment process.
For this study, we will leverage a prior study which looked at the welfare impacts of a multifaceted livestock transfer and training program in this context. Target beneficiaries of the program (and hence the study) were females living in poor, economically disadvantaged rural areas. This dataset was collected as part of a cluster RCT with three treatment groups plus a pure control group. The main panel dataset has a sample size of 1,800 female beneficiaries. Baseline data was collected in 2014, with follow-up data collected in 2016, 2017 and 2018. We will attempt to recruit respondents from two of the original three treatments plus the pure control. These individuals will be called to identify interest in participating in the research and to schedule a time for a telephone interview.

7E. Will subjects receive compensation or rewards before, during, or after participation?
☒ Yes ☐ No
If yes, provide a brief description of compensation or rewards. Participants will be provided approximately $1 in phone credit.

Section 8. RESEARCH PROCEDURES

8A. Select all research methods and/or data sources that apply.
☒ Surveys or questionnaires, *select all that apply*: ☐ Paper ☒ Telephone ☐ Online
☐ Interviews
☐ Focus groups

☐ Field work or ethnography
☐ Standardized written, oral, or visual tests
☐ Taste or smell testing
☐ Intervention or experimental manipulation
☐ Recording audio and/or video and/or taking photographs
☐ Materials that have already been collected or already exist, *specify source of data*:
☐ HIPAA-protected data
☐ FERPA-protected data
☐ GDPR-protected data
☐ Other, *please specify*:

8B. List all testing instruments, surveys, interview guides, etc. that will be used in this research.
questionnaire
Drafts or final copies of all research materials are attached. ☒ Yes

8C. List all locations where research will take place.
Rural Nepal

8D. List approximate study dates. February-March 2020

9E. What is the duration of participants' involvement? 1 hour

8F. How many times will participants engage in research activities? One time

8G. Narratively describe the research procedures in the order in which they will be conducted.
Individuals who have previously participated in related research will be called to identify interest in participating in the research and to schedule a time for a telephone interview. Those who choose to participate will then be called at the scheduled time, informed consent will be administered, and participants will respond to an approximately one hour long survey. At the end of the survey, respondents will be provided cell credit as compensation.

Section 9. CONFIDENTIALITY AND PRIVACY

9A. How are participant data, records, or specimens identified when received or collected by researchers? Identifiers include, but are not limited to, name, date of birth, email address, street address, phone number, audio or video recordings, and SSN.
☐ No identifiers are collected or received
☒ Direct identifiers
☐ Indirect identifiers (e.g. a code or pseudonym used to track participants);
Does the research team have access to the identity key? ☐ Yes ☐ No

9B. Select all methods used to safeguard research records during storage:
☐ Written consent, assent, or parental permission forms are stored separately from the data
☐ Data is collected or given to research team without identifiers
☐ Data is recorded by research team without identifiers
☒ Direct identifiers are removed from collected data as soon as possible
☐ Direct identifiers are deleted and no identity key exists as soon as possible
☐ Participant codes or pseudonyms are used on all data and the existing identity key is stored separately from the data

☐ Electronic data is stored in a secure, UIUC-approved location, *please specify* ☐ Hard-copy data is stored in a secure location On UIUC's campus, *please specify* ☐ Other, *please specify*:
9C. How long will identifiable data be kept? 5 years
9D. Describe provisions to protect the privacy interests of subjects. The direct identifiers will be retained in a secure Dropbox folder accessible only to research team members. Any shared or publicly available data will stripped of direct identifiers.
9E. Describe the training and experience of all persons who will collect or have access to the data. Sarah Janzen, PhD, is assistant professor of agricultural and consumer economics at UIUC with over 10 years of experience in data collection, impact evaluation, and international development. Nicholas Magnan, PhD, is associate professor of agricultural economics at University of Georgia, with over 10 years of experience in data collection, impact evaluation, and international development. Data collection is being implemented by Interdisciplinary Analysts (IDA), based in Nepal. IDA is led by research team member, Sudhindra Sharma, PhD sociology. IDA has been conducting similar surveys in Nepal for more than 5 years, including implementation of 4 in-person surveys related to an earlier phase of this research. IDA subscribe to the highest professional and ethical standards called for by our foreign partners as well as Nepali laws. Current master's student, Kierstin Ekstrom, will also have access to the data and has taken courses in econometrics, impact evaluation and international development. All research team members have completed the required Citi Training modules.

Section 10. CONSENT PROCESS

10A. Indicate all that apply for the consent process. ☐ Written informed consent ☒ Waiver of Documentation (signature) of Informed Consent ☐ Online consent ☒ Oral consent ☐ Unsigned Information Sheet Provided **Explain why a Waiver of Documentation is necessary:** Survey will take place over the phone, so it is not possible to collect a signature. ☐ Waiver of Informed Consent **Explain why a Waiver of Informed Consent is necessary:**
10B. List all researchers who will obtain consent from participants. Sudhindra Sharma
10C. Describe the informed consent process. The consent form will be read over the phone and respondents will acknowledge consent verbally.
10D. Where will consent be obtained? On the phone
10E. Will participants receive a copy of the consent form for their records? ☐ Yes ☒ No, *if no, explain*: Waiver of documentation requested
10F. Indicate factors that may interfere or influence the collection of voluntary informed consent. ☒ No known factors ☐ Research will involve students enrolled in a course or program taught by a member of the research team ☐ Research will involve employees whose supervisor(s) is/are recruiting participants

☐ Participants have a close relationship to the research team ☐ Other, *specify any relationship that exists between the research team and participants*: **If applicable, describe the procedures to mitigate the above factors.**
10G. Copies of the consent form(s) are attached. ☒ Yes ☐ Not applicable

Section 11. DISSEMINATION OF RESULTS

11A. List proposed forms of dissemination (e.g. journal articles, thesis, academic paper, conference presentation, sharing within industry, etc.). Journal articles, master's thesis, conference presentation, policy brief, report to non-governmental organization
11B. Will any identifiers be published, shared, or otherwise disseminated? ☐ Yes ☒ No **If yes, does the consent form explicitly ask consent for such dissemination, or otherwise inform participants that it is required in order to participate in the study?** ☐ Yes
11C. Do you intend to put de-identified data in a data repository? ☒ Yes ☐ No **If yes, explain how data will be de-identified.** All direct identifiers (name, location, phone number) will be removed prior to making data publicly available.

Section 12. EXPECTED COMPLETION DATE

12A. What is the expected completion date of this research? January 2022
12B. *Please note:* Exempt protocols are given a closure date 5 years after their initial approval date, although researchers can request that the study remain open as the closure date approaches.

Section 13 INVESTIGATOR ASSURANCES

☒ I certify that the project described above, to the best of my knowledge, qualifies as an exempt study. I agree that any changes to the project will be submitted to the Office for the Protection of Research Subjects for review prior to implementation. I realize that some changes may alter the exempt status of this project.
The original signature of the PI is required before this application may be processed (electronic signatures are acceptable). Sarah Ann Janzen — 2/1/2021 Principal Investigator — Date

Section 14. DEPARTMENTAL ASSURANCE (OPTIONAL)

If the PI is not eligible to serve as PI under the Campus Administrative Manual, the applicable academic dean, institute director, or campus administrative officer indicates their approval of the researcher to act as Principal Investigator.

Exempt Form

Applicable Authorizing Officer	Date

ILLINOIS
Office for the Protection of Research Subjects

Research Team

For Listing Additional Researchers who are Involved in the Project
All forms must be typewritten and submitted via email to irb@illinois.edu.

When to use this form: If there are collaborating researchers participating in a research study, including those from other institutions, complete this form by listing all collaborating researchers. Include all persons who will be: 1) directly responsible for project oversight and implementation, 2) recruitment, 3) obtaining informed consent, or 4) involved in data collection, analysis of identifiable data, and/or follow-up. **Please copy and paste text fields to add additional research team members.**
Note:

- Changes made to the Principal Investigator require a revised Protocol Form and an Amendment Form.
- A complete Research Team form with all research team members included needs to be submitted every time the research team is updated.

Section 1. PROTOCOL INFORMATION

1A. Principal Investigator: Sarah Janzen
1B. Protocol Number:
1C. Project Title: Resilience in the midst of a pandemic: a study of a Heifer program in rural Nepal

Section 2. ADDITIONAL INVESTIGATORS

Full Name: Nicholas Magnan	**Degree:** PhD	**Dept. or Unit:**
Professional Email: nmagnan@uga.edu	**Phone:** 706-542-0731	
Campus Affiliation: ☐ University of Illinois at Urbana-Champaign ☒ Other, *please specify*: University of Georgia **Campus Status:** ☒ Faculty ☐ Academic Professional/Staff ☐ Graduate Student ☐ Undergraduate Student ☐ Visiting Scholar ☐ Other, *please specify*:		
Training: ☒ Required CITI Training, **Date of Completion** (valid within last 3 years): ☐ Additional training, **Date of Completion:**		
Role on Research Team (check all that apply): ☐ Recruiting ☐ Consenting ☐ Administering study procedures ☒ Handling identifiable data ☐ Other, *please specify*:		
☐ **This researcher should be copied on OPRS and IRB correspondence.**		
☐ **This researcher is no longer an active research team member.**		
Date added to research team: 2/1/2021	**Date removed from research team:**	

ILLINOIS
Office for the Protection of Research Subjects

Research Team

Full Name: Sudhindra Sharma	**Degree:** PhD	**Dept. or Unit:**
Professional Email: sudhindrarajsharma@gmail.com	**Phone:** Nepal-based	
Campus Affiliation: ☐ University of Illinois at Urbana-Champaign ☒ Other, *please specify*: Interdisciplinary Analysts **Campus Status:** ☐ Faculty ☐ Academic Professional/Staff ☐ Graduate Student ☐ Undergraduate Student ☐ Visiting Scholar ☒ Other, *please specify*: Director, Interdisciplinary Analysts		
Training: ☒ Required CITI Training, **Date of Completion** (valid within last 3 years): 6/2020 ☐ Additional training, **Date of Completion:**		
Role on Research Team (check all that apply): ☒ Recruiting ☒ Consenting ☒ Administering study procedures ☒ Handling identifiable data ☐ Other, *please specify*:		
☐ **This researcher should be copied on OPRS and IRB correspondence.**		
☐ **This researcher is no longer an active research team member.**		
Date added to research team: 2/1/2021	**Date removed from research team:**	

Full Name: Kierstin Ekstrom	**Degree:** B.A.	**Dept. or Unit:** ACE
Professional Email: ekstrom4@illinois.edu	**Phone:**	
Campus Affiliation: ☒ University of Illinois at Urbana-Champaign ☐ Other, *please specify*: **Campus Status:** ☐ Faculty ☐ Academic Professional/Staff ☒ Graduate Student ☐ Undergraduate Student ☐ Visiting Scholar ☐ Other, *please specify*:		
Training: ☒ Required CITI Training, **Date of Completion** (valid within last 3 years): 1/2020 ☐ Additional training, **Date of Completion:**		
Role on Research Team (check all that apply): ☐ Recruiting ☐ Consenting ☐ Administering study procedures ☒ Handling identifiable data ☐ Other, *please specify*:		
☐ **This researcher should be copied on OPRS and IRB correspondence.**		
☐ **This researcher is no longer an active research team member.**		
Date added to research team: 2/1/2021	**Date removed from research team:**	

UNIVERSITY OF GEORGIA

Tucker Hall, Room 212
310 E. Campus Rd.
Athens, Georgia 30602
TEL 706-542-3199 | FAX 706-542-5638
IRB@uga.edu
http://research.uga.edu/hso/irb/

Human Research Protection Program

EXEMPT DETERMINATION

June 8, 2020

Dear Nicholas Magnan:

On 6/8/2020, the Human Subjects Office reviewed the following submission:

Title of Study:	Rapid assessment of COVID-19 impacts and coping mechanisms in rural Nepal
Investigator:	Nicholas Magnan
IRB ID:	PROJECT00002407
Review Category:	Exempt 2i

We have determined that the proposed research is Exempt. The research activities may begin 6/8/2020.

Since this study was determined to be exempt, please be aware that not all future modifications will require review by the IRB. For more information please see Appendix C of the Exempt Research Policy (https://research.uga.edu/docs/policies/compliance/hso/IRB-Exempt-Review.pdf). As noted in Section C.2., you can simply notify us of modifications that will not require review via the "Add Public Comment" activity.

A progress report will be requested prior to 6/8/2025. Before or within 30 days of the progress report due date, please submit a progress report or study closure request. Submit a progress report by navigating to the active study and selecting Progress Report. The study may be closed by selecting Create Version and choosing Close Study as the submission purpose.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103).

Sincerely,

Jennifer Freeman, IRB Analyst
Human Subjects Office, University of Georgia

Inter disciplinary Analysts
E-mail: info@ida.com.np/ Website: www.ida.com.np

June 3, 2020

To,

Human Research Protection Program

University of Georgia

The research protocol for the proposed MRR-funded project (erstwhile BASIS-USAID) *Resilience in the Midst of a Pandemic: A Study of a Heifer Program in Rural Nepal* has been read by the review body of Inter Disciplinary Analysts (IDA), which has also examined all the relevant documents pertaining to the project, including informed consent documents and survey materials.

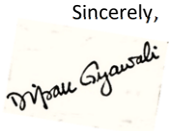
IDA has been conducting similar surveys in Nepal for over the years. For all the surveys we implement in the field and analyze, we subscribe to the highest professional and ethical standards called for by our foreign partners as well as Nepali laws.

I would like to draw your attention to the fact that there is no entity mandated to provide ethical review of social science related research in Nepal. There is, however, one related to medical and health research, Nepal Health Research Council (NHRC), which does not look at matters outside of specific and narrow health issues. IDA has in the past obtained ethical clearance and approval from NHRC for research related to health; but NHRC is not an appropriate ethics board for this proposed research.

In circumstances where there is no government-mandated entity for providing ethical clearance and approval for social science related subjects, IDA has within the organization, a body to oversee local ethics oversight. The body providing local ethics oversight is separate from the body participating in the research. As Chairman of the Board and the review panel evaluating the research protocol, I am not a member of the research team, will not participate in the research, and do not personally benefit from the research.

The institutional body has given its approval as an entity familiar with the research ethics and local requirements and has determined the acceptability of proposed research in terms of institutional commitments and regulations, applicable law, and standards of professional conduct and practice.

Sincerely,



Dipak Gyawali
Chairman, IDA

University of Illinois at Urbana-Champaign
Institutional Review Board

Determination Date: March 2, 2021
Closure Date: March 1, 2026
IRB # 21643

ILLINOIS
Office for the Protection of Research Subjects

International Research

For Describing Research that will be Conducted Internationally

All forms must be typewritten and submitted via email to irb@illinois.edu.

When to use this form: Researchers travelling internationally to collect data are still subject to federal and University regulations and guidelines. These projects should also be reviewed and approved by the local equivalent of an IRB, when possible. When there is not equivalent board or group, researchers are asked to rely on local experts or community leaders to provide approval. The University of Illinois at Urbana-Champaign IRB may request documentation of local approval before granting IRB approval. Note:

- If you are planning to take university-owned equipment (including laptops) out of the country, or planning to travel to Cuba, Iran, North Korea, Sudan, or Syria, you may need to obtain special export or travel licenses. Please contact the University's Export Compliance Office for further information at exportcontrols@illinois.edu or by calling Sponsored Programs at (217) 333-2187.

Section 1. PROTOCOL INFORMATION

1A. Principal Investigator: Sarah Janzen

1B. Protocol Number:

1C. Project Title: Resilience in the midst of a pandemic: a study of a Heifer program in rural Nepal

Section 2. RESEARCH ACTIVITIES

2A. Where is the research being conducted? Nepal

2B. Are there any aspects of the cultural, political, or economic climate in the country where the research will be conducted that might increase the risks for participation? ☐ Yes ☒ No
If yes, describe these risks:
Describe what steps the researchers will take to minimize these risks:

2C. Was the researcher invited into the community? ☒ Yes ☐ No
If no, describe how the researcher will have culturally appropriate access to the community:

2D. Will research subjects be compensated for their participation? ☒ Yes ☐ No
If yes, answer the following:
In what form will the currency be provided? Respondents will be provided cellular phone credit worth approximately USD 1, the credit will be valued in Nepali rupees.
How much is the compensation in relation to the average daily pay or household income in the country where the research will be conducted? Approximately 1 days wage
What is the conversion to USD? $1

2E. Will the researchers consult with the research subjects before study findings are presented or published? ☒ Yes ☐ No
If yes, please describe: The researchers will not be in direct contact with the respondents, but the researchers will coordinate through the local non-governmental organization partner to communicate research findings to participants.

Section 3. INTERNATIONAL IRB EQUIVALENTS

ILLINOIS
Office for the Protection of Research Subjects

International Research

3A. Is there an ethics committee or other IRB equivalent that requires review of research in the country where research is being conducted? ☐ Yes ☒ No (Note: OHRP compiles a list of international human research standards that can be viewed here.) **If yes, attach documentation of approval.** ☐ Documentation Attached
3B. Provide contact information for the local IRB equivalent. NA
3C. Are there any other regulatory agencies or organizations that require review prior to human subjects' research, such as drug companies, community leaders, stakeholders, etc.? ☒ Yes ☐ No **If yes, attach documentation of approval.** ☒ Documentation Attached

Section 4. RESEARCH PERSONNEL

4A. Describe qualifications the researcher has in relevant coursework, past experience, and/or training to justify their international research capabilities: Sarah Janzen, PhD, is assistant professor of agricultural and consumer economics at UIUC with over 10 years of experience in data collection, impact evaluation, and international development. Nicholas Magnan, PhD, is associate professor of agricultural economics at University of Georgia, with over 10 years of experience in data collection, impact evaluation, and international development. Data collection is being implemented by Interdisciplinary Analysts (IDA), based in Nepal. IDA is led by research team member, Sudhindra Sharma, PhD sociology. IDA has been conducting similar surveys in Nepal for more than 5 years, including implementation of 4 in-person surveys related to an earlier phase of this research. IDA subscribe to the highest professional and ethical standards called for by our foreign partners as well as Nepali laws. Current master's student, Kierstin Ekstrom, will also have access to the data and has taken courses in econometrics, impact evaluation and international development. All research team members have completed the required Citi Training modules.
4B. All researchers collecting data outside the US are required to complete the CITI module for international research at www.citiprogram.org. ☒ Module Completed
4C. Describe the PI's ongoing oversight of the research activities conducted internationally: Given the current pandemic, the PI will oversee all research activities from the USA. The PI has partnered with the research team in Nepal for seven years on multiple projects and data collection activities, including the implementation of multiple large in-person household surveys. Through this extensive collaboration, the team has learned how to effectively communicate from afar, including using skype and email.
4D. Describe how the researchers collecting data internationally will communicate with the Illinois IRB in the event the project requires changes or there are reportable events: Any unanticipated changes will be submitted to the IRB as a request for modification if relevant.
4E. Identify a local contact who is fluent in the local language and provide their contact information: Sudhindra Sharma, sudhindrarajsharma@gmail.com, 977 1 4471845 **This information is to also be placed in the informed consent document(s).** ☒ Information Included

ILLINOIS
Office for the Protection of Research Subjects

Certificate of Translation

For Verifying the Translation of Research Documents

All forms must be typewritten, signed, and submitted via email to irb@illinois.edu.

When to use this form: If research is conducted in a language other than English, submit this form with translated materials to indicate the credentials of the translator. The Certificate of Translation is required to verify that the translations are accurate. Those who translate the material are to provide a brief description of their qualifications, skills or experience for serving in this role and sign the certificate of translation form.
Please note the following: • For research conducted in languages other than English, the University of Illinois IRB must have all versions of the research material (e.g. consents, recruitment, instruments, etc.) in both English and the language in which research is being conducted. • It is acceptable for an investigator listed as research personnel to translate the research material if they are qualified. • Researchers may wish to delay the initial translation until after the IRB has reviewed and approved the English versions. Doing so may help researchers avoid multiple translations. • If the non-English documents are submitted to the IRB after initial approval, please submit an Amendment Form along with the translated material and a copy of the certificate of translation.

Section 1. PROTOCOL INFORMATION

1A. Principal Investigator: Sarah Janzen
1B. Protocol Number:
1C. Project Title: Resilience in the midst of a pandemic: a study of a Heifer program in rural Nepal

Section 2. TRANSLATOR

2A. Translator's Name: Sudhindra Sharma
2B. Translator Email Address: sudhindrarajsharma@gmail.com
2C. Translator's Qualifications: PhD
2D. Language of translation: Nepali
2E. List of document(s) translated: Consent form and Survey Questionnaire
2F. Date(s) of translation(s): February 2, 2021; January 24, 2021; December 28-30, 2020
2G. The translator declares that they are fluent in and understand the English language and the language of translation. The non-English documents for this study are a true and accurate translation of the English documents. By signing below, I, the translator, agree with this statement. _____ 2021-02-02 Translator Signature Date

Appendix C Consent Letter and Survey

UNIVERSITY OF GEORGIA
CONSENT LETTER (household sample)

Rapid assessment of COVID-19 impacts and coping mechanisms in rural Nepal

Dear Participant,

My name is _____and I am a researcher with Interdisciplinary Analysts in Kathmandu. We are working with researchers at the University of Georgia and the University of Illinois in the United States funded by the United States Agency for International Development. I would like to learn about the impacts of the COVID-19 pandemic on you and your family and what you are doing to get by. We are not affiliated with the Nepali government in any way.

If you agree, I would like to ask you some questions about these issues over the phone now. The survey should take no longer than 60 minutes, and will probably take closer to 40 minutes. If now is not a good time, I would like to call you back at a time that works for you.

Participation is voluntary. You can refuse to take part or stop at any time without penalty. Your decision to participate will have no impact in your participation in any future programs. If a question makes you uncomfortable for any reason you can decline to answer and skip to the next question with no penalty.

Your responses may help us understand how you and people like you are dealing with the COVID-19 pandemic and associated lockdown.

Your answers will be kept confidential. That is, nobody outside of the study team will be able to connect your name or village name with any of the answers you give as part of this study. Other researchers in the future may use the answers you provide for their own research but they will have no way of knowing who provided the answers.

If you agree to participate you will be credited with NPR 100 in cellular credit. If you begin the survey but chose to stop at any time, you will still receive this cellular credit.

If you have any questions or concerns with this survey please call Dr. Sudhindra Sharma, Executive Director of Interdisciplinary Analysts at 977 1 4471845.

Resilience in the midst of a pandemic: a study of a Heifer program in rural Nepal

Questionnaire Feburary- March 2021

INT0 Interviewer's Name:				
INT1. Respondent's ID				
INT2.Name of Respondent				
INT3. Name of Household Head				
INT4. District				
INT5. VDC				
INT5.1.1 Ward Number				
INT6. OG or Non OG	1.OG	2. Non OG		
INT7. Status	1. Control	2. Treated 1	3. Treated 2	
Respondent's Phone Number				
INT8. Was the contact with respondent successful?	1.Yes	0.No		
INT8.1. Was the contact established through the second phone number? [Ask if INT8=0 and Respondent has two phone numbers]				
INT9. Why was the contact not successful?	1. Wrong details/phone number of the respondent	2. Phone switched off	3. Interview postponed for the later time	
	4. Phone not answered	98. Refused/Rejected	97. Other (specify)	
Consent Note:				
Namaskar,				
My name is _____ and I am a researcher with Interdisciplinary Analysts in Kathmandu. We are working with researchers at the University of Georgia and the University of Illinois in the United States funded by the United States Agency for International Development. I would like to learn about the impacts of the COVID-19 pandemic on you and your family and what you are doing to get by. We are not affiliated with the Nepali government in any way.				
If you agree, I would like to ask you some questions about these issues over the phone now. The survey should take no longer than 60 minutes, and will probably take closer to 40 minutes. If now is not a good time, I would like to call you back at a time that works for you.				
Participation is voluntary. You can refuse to take part or stop at any time without penalty. Your decision to participate will have no impact in your participation in any future programs. If a question makes you uncomfortable for any reason you can decline to answer and skip to the next question with no penalty.				
Your responses may help us understand how you and people like you are dealing with the COVID-19 pandemic and associated lockdown.				
Your answers will be kept confidential. That is, nobody outside of the study team will be able to connect your name or village name with any of the answers you give as part of this study. Other researchers in the future may use the answers you provide for their own research but they will have no way of knowing who provided the answers.				
If you agree to participate you will be credited with NPR 100 in cellular credit. If you begin the survey but chose to stop at any time, you will still receive this cellular credit.				
If you have any questions or concerns with this survey please call Dr. Sudhindra Sharma, Executive Director of Interdisciplinary Analysts at 977 1 4471845.				
INT10. Consent	Are you willing to participate in this interview?			
1. Yes				
2.No				
INT11. What is your current age?				
INT12. What is your marital status?	1. Unmarried	2. Married	3. Separated	
	4. Divorced	5. Partner Deceased		

SHOCKS (IDIOSYNCRATIC) 1/2

Read: Now we will ask a set of questions about unusual events that might have happened to members of your household in the past year. This includes things like serious illnesses, death, and losing a job. If any of these things happened, we will later ask what (if anything) you did in response.

Programming checks	Option to select an answer '98: None' should only appear if all preceeding shock questions are no [SHK1.1=0 and SHK1.2=0 and .... and SHK 97=0]	Ask only if SHK1=97		Ask only if SHK1=2	Ask only if SHK3a= 97	Ask only if SHK1=3	Ask only if SHK3c=97
Question Text	SHK1:Over the past year, have you or the members of your household been adversely affected by following events? (Read aloud)	SHK1kb: Specify other	SHK2: In what period? (select all that apply)	SHK3a: What illness? ? (select all that apply)	SHK3b: Specify other	SHK3c: What was the cause of death? ? (select all that apply)	SHK3d: Specify Other
Instructions for Enumerator	Enter Code	Write answer	Enter all codes that apply	Enter Code	Write answer	Enter Code	Write answer
	1: Natural Disaster (Natural disaster might include floods, fires, landslides, etc.)						
	2: Serious illness						
	3: Death of a household member						
	4: Falling agricultural prices						
	5: Decrease in earned income (not including remittances)						
	6: Loss of employment						
	7: Increasing food prices						
	8: increasing non-food necessity prices						
	9: Reduction in remittances						
	10: Reduced workload due to child care needs						
	97: Other						
	98: None [Don't read this answers]						
	96 Refused [Don't read this answers]		1 Three months prior to lockdown	1 Covid-19		1 Covid-19	
			2 During nation-wide lockdown	2 Chronic Obstructive Pulmonary Disease (chronic lung disease like cancer)		2 Chronic Obstructive Pulmonary Disease (chronic lung disease like cancer)	
			3 After nation-wide lockdown	3 Heart Disease		3 Heart Disease	
				4 Cerebrovascular Disease (stroke, Vascular dementia)		4 Cerebrovascular Disease (stroke, Vascular dementia)	
				5 Lower Respiratory infection (Pneumonia, Bronchitis, Tuberculosis)		5 Lower Respiratory infection (Pneumonia, Bronchitis, Tuberculosis)	
				6 Cirrhosis (Hepatitis, chronic alcholism)		6 Cirrhosis (Hepatitis, chronic alcholism)	
				7 Asthma		7 Asthma	
				8 Diarrheal disease		8 Diarrheal disease	
				9 Cancer		9 Cancer	
				97 Other		97 Other	
				98 Refused		**98 Refused**	
				99 Don't know		**99 Don't know**	

The text of selected shocks should appear in a list in [Answers to SHK1 =1-10 and 97]

members of your household were adversely affected by the following shocks [Answers to SHK1a-SHK1k] in the past year. Which of these shocks would you say was the greatest challenge?	SHK5a: In the three months prior to the lockdown, did all the members of your household get enough to eat every day?	SHK5b: Over the course of the lockdown, did all the members of your household get enough to eat every day?	SHK5c: Since the end of the nation-wide lockdown, did all the members of your household get enough to eat every day?	SHK6: In the past week, did all the members of your household get enough to eat every day?
Enter code.	Enter code.	Enter code.	Enter code.	Enter code.
1: Natural Disaster (Natural disaster might include floods, fires, landslides, etc.)	1 Yes	1 Yes	1 Yes	1 Yes
2: Serious illness	0 No	0 No	0 No	0 No
3: Death of a household member	98 Refused	98 Refused	98 Refused	98 Refused
4: Falling agricultural prices				
5: Decrease in earned income (not including remittances)				
6: Loss of employment				
7: Increasing food prices				
8: increasing non-food necessity prices				
9: Reduction in remittances				
10: Reduced workload due to child care needs				
97: Other				

Read: Now we will ask a set of questions about how you and the members of your household responded to some of the events that happened to members of your household in the past year.

Programming Checks		If SHK1= 98 then skip section	Ask for events selected in the COPE1	Ask only if COPE1=97 and COPE2=1	Ask only if COPE1=97 and COPE2=2	Ask only if COPE1=97 and COPE2=3	IF SHK5a= 1 or [COPE1 = 3 or 4 or 5 or 6 or 7 and COPE2=1]	Ask if COPE1= 5or 6 or 7 and COPE2= 1	IF SHK5b= 1 or [COPE1 = 3 or 4 or 5 or 6 or 7 and COPE2=2]	Ask if COPE1= 5or 6 or 7 and COPE2= 2	IF SHK5c= 1 or [COPE1 = 3 or 4 or 5 or 6 or 7 and COPE2=3]	Ask if COPE1= 5or 6 or 7 and COPE2= 3	Ask if COPE1.7=1 and COPE2.7=1. Should be a number no smaller than 100 and no larger than 100000	Ask if COPE1.7=1 and COPE2.7=2. Should be a number no smaller than 100 and no larger than	Ask if COPE1.7=1 and COPE2.7=3. Should be a number no smaller than 100 and no larger than 100000
Question Text		COPE1: To cope with these events, what did your household do in the past one year ? (Read aloud)	COPE2: In what period?	COPE3a: In the three months before the national lockdown, what was the other coping mechanism that you or the members of your household used?	COPE3a: During the national lockdown, what was the other coping mechanism that you or the members of your household used?	COPE3a: In the months after the national lockdown, what was the other coping mechanism that you or the members of your household used?	the three months before the national lockdown, what foods did you or the members of your household eat less of? *(check all that apply)*	the three months before the national lockdown, what foods did you or the members of your household eat more of? *(check all that apply)*	COPE5b1: During the national lockdown, what foods did you or the members of your household eat less of? *(check all that apply)*	During the national lockdown, what foods did you or the members of your household eat more of? *(check all that apply)*	the months after the national lockdown, what foods did you or the members of your household eat less of? *(check all that apply)*	COPE5c2: In the months after the national lockdown, what foods did you or the members of your household eat more of? *(check all that apply)*	What is the value of food received by you and the members of your households from friends or neighbors in the three months before the lockdown?	What is the value of food received by you and the members of your households from friends or neighbors during the lockdown?	COPE6c: What is the value of food received by you and the members of your households from friends or neighbors in the months after the lockdown?
Instructions for Enumerator		Enter code for each action taken in the last year	Enter all codes that apply	Write answer	Write answer	Write answer	Enter code for all that apply	Enter code for all that apply	Enter code for all that apply	Enter code for all that apply	Enter code for all that apply	Enter code for all that apply	Write answer in rupees	Write answer in rupees	Write answer in rupees

1 Sold livestock	1 Three months prior to lockdown					1 grains (e.g. rice, wheat)	1 grains (e.g. rice, wheat)	1 grains (e.g. rice, wheat)	1 grains (e.g. rice, wheat)	1 grains (e.g. rice, wheat)	1 grains (e.g. rice, wheat)	
2 Sold assets	2 During nation-wide lockdown					2 pulses (e.g. lentils,	2 pulses (e.g. lentils,	2 pulses (e.g. lentils,	2 pulses (e.g. lentils,	2 pulses (e.g. lentils,	2 pulses (e.g. lentils,	
3 Cut back on number of meals	3 After nation-wide lockdown					3 meat, fish, or eggs	3 meat, fish, or eggs	3 meat, fish, or eggs	3 meat, fish, or eggs	3 meat, fish, or eggs	3 meat, fish, or eggs	
4 Serve smaller Portions						4 dairy products (e.g. milk, curd, paneer)	4 dairy products (e.g. milk, curd, paneer)	products (e.g. milk, curd, paneer)	products (e.g. milk, curd, paneer)	products (e.g. milk, curd, paneer)	4 dairy products (e.g. milk, curd, paneer)	
5 Change the kinds of foods eaten (for example, eat less expensive or less preferred foods)						5 fruits	5 fruits	5 fruits	5 fruits	5 fruits	5 fruits	
6 Buy food on account or on credit						6 vegetables	6 vegetables	6 vegetables	6 vegetables	6 vegetables	6 vegetables	
7 Acquired food stockpiles from family, friends or neighbors						7 sugar and/or sweets	7 sugar and/or sweets	7 sugar and/or sweets	7 sugar and/or sweets	7 sugar and/or sweets	7 sugar and/or sweets	
8 Received financial assistance from a government agency or NGO						8 oils	8 oils	8 oils	8 oils	8 oils	8 oils	
16 Received In-kind assistance [Except Food] from a government agency or NGO						9 spices	9 spices	9 spices	9 spices	9 spices	9 spices	
9 Received financial assistance (with no expectation of repaying) from family, friends or neighbors in the village						10 tea, coffee, or other non-alcoholic drinks	10 tea, coffee, or other non-alcoholic drinks	10 tea, coffee, or other non-alcoholic drinks	10 tea, coffee, or other non-alcoholic drinks	10 tea, coffee, or other non-alcoholic drinks	10 tea, coffee, or other non-alcoholic drinks	
10Received finacial assistance (with no expectation of repaying) from household members migrating within Nepal						11 alcoholic drinks	11 alcoholic drinks	11 alcoholic drinks	11 alcoholic drinks	11 alcoholic drinks	11 alcoholic drinks	
11 Received finacial assistance (with no expectation of repaying) from household members migrating internationally						12 tobacco products	12 tobacco products	12 tobacco products	12 tobacco products	12 tobacco products	12 tobacco products	
12 Received practical assistance from a family member, friend or neighbor						13 snacks or meals out	13 snacks or meals out	13 snacks or meals out	13 snacks or meals out	13 snacks or meals out	13 snacks or meals out	
13 Household member migrated to find work elsewhere						97 Other	97 Other	97 Other	97 Other	97 Other	97 Other	
14 Took out a loan						98 Refused	98 Refused	98 Refused	98 Refused	98 Refused	98 Refused	
15 Used savings												
97 Other												

98: None [Don't read this answers]
96 Refused [Don't read this answers]

Coping 2/2

Ask if COPE1.8=1 and COPE2.8=1. Should be a number no smaller than 1000 and no larger than 100000	Ask if COPE1.8=1 and COPE2.8=1. Should be a number no smaller than 1000 and no larger than 100000	Ask if COPE1.8=1 and COPE2.8=3. Should be a number no smaller than 1000 and no larger than 100000	Ask if COPE1.16=1 and COPE2.16=1. Should be a number no smaller than 1000 and no larger than 100000	Ask if COPE1.16=1 and COPE2.16=2. Should be a number no smaller than 1000 and no larger than 100000	Ask if COPE1.16=1 and COPE2.16=3. Should be a number no smaller than 1000 and no larger than 100000	Ask if COPE1.9=1 and COPE2.9=1. Should be a number no smaller than 1000 and no larger than 1000000	Ask if COPE1.9=1 and COPE2.9=2. Should be a number no smaller than 1000 and no larger than 1000000	Ask if COPE1.9=1 and COPE2.9=3. Should be a number no smaller than 1000 and no larger than 1000000	Ask everyone. Not conditional on having used this coping strategy. Should be a number no	Ask everyone. Not conditional on having used this coping strategy. Should be a	Ask everyone. Not conditional on having used this coping strategy Should be a	Ask everyone. Not conditional on having used this coping strategy Should be a
COPE7a:How much financial assistance did you and the members your household receive from a government agency or ngo in the three months before the lockdown?	COPE7b:How much financial assistance did you and the members your household receive from a government agency or ngo during the lockdown?	COPE7c:How much financial assistance did you and the members your household receive from a government agency or ngo in the months after the lockdown?	was the value of In-kind assistance [except food] that you and the members your household receive from a government agency or ngo in the three months before the lockdown?	COPE7bi:What was the value of In-kind assistance [except food] that you and the members your household receive from a government agency or ngo during the lockdown?	was the value of In-kind assistance [except food] that you and the members your household receive from a government agency or ngo in the months after the lockdown?	COPE8a:How much financial assistance did you and the members your household receive from family friends or neighbor in the three months before the national lockdown?	COPE8b:How much financial assistance did you and the members your household receive from family, friends or neighbors during the national lockdown?	COPE8c:How much financial assistance did you and the members your household receive from family friends or neighbors in the months after the national lockdown?	COPE9a:How many people do you know whom would share food with you or your household in time of need?	COPE9b: How many people do you know whom would give you money (with no expectation of return) in time of need?	How many people do you know whom would provide practical assistance (e.g. help with housework, cooking or childcare) in	COPE9d: How many people do you know who would lend you money in time of need ?
Write answer in rupees	Write answer in rupees	Write answer in rupees	Write answer in rupees	Write answer in rupees	Write answer in rupees	Write answer in rupees	Write answer in rupees	Write answer in rupees	Number of people	Number of people	Number of people	Number of people

The selected options should appear in a list in [Answers to COPE1 = 1 to 15 and 97]

COPE10: In the last year, which coping mechanism did you rely on most?
Enter code.
1 Sold livestock
2 Sold assets
3 Cut back on number of meals
4 Serve smaller Portions
5 Change the kinds of foods eaten (for example, eat less expensive or less preferred foods)
6 Buy food on account or on credit
7 Acquired food stockpiles from family, friends or neighbors
8 Received financial assistance from a government agency or NGO
16 Received In-kind assistance [Except Food] from a government agency or NGO
9 Received financial assistance (with no expectation of repaying) from family, friends or neighbors in the village
10Received finacial assistance (with no expectation of repaying) from household members migrating within Nepal
11 Received finacial assistance (with no expectation of repaying) from household members migrating intemationally
12 Received practical assistance from a family member, friend or neighbor
13 Household member migrated to find work elsewhere
14 Took out a loan
15 Used savings
97 Other

Livestock sales

Read: You said you sold livestock to help cope with recent shocks. We'd like to know more about the sales that are direct

			For goats 1 -300 , For cattles 1-100, For water buffaloes 1-100, For pigs 1-300, For chicken 1-2000	For goats 1000 - 1000000, For cattles 10000 - 1000000, For water buffaloes 10000 - 1000000, For pigs 10000 -		For goats 1 -300 , For cattles 1-100, For water buffaloes 1-100, For pigs 1-300, For chicken 1-2000,	For goats 1000 - 1000000, For cattles 10000 - 1000000, For water buffaloes 10000 - 1000000, For pigs 10000 -		For goats 1 -300 , For cattles 1-100, For water buffaloes 1-100, For pigs 1-300, For chicken 1-2000,	For goats 1000 - 1000000, For cattles 10000 - 1000000, For water buffaloes 10000 - 1000000, For pigs 10000 -
Programming Checks		Ask if COPE1=1 and COPE2=1		Flag if value reported < # reported x [livestock type] typical price x 0.5 OR if value reported > # reported x [livestock type] avg price x 2	Ask if COPE1=1 and COPE2=2		Flag if value reported < # reported x [livestock type] typical price x 0.5 OR if value reported > # reported x [livestock type] avg price x 2	Ask if COPE1=1 and COPE2=3		Flag if value reported < # reported x [livestock type] typical price x 0.5 OR if value reported > # reported x [livestock type] avg price x 2
Question Text		LS1: In the three months before the lockdown, what livestock did you or the household sell?	LS2: Of the [livestock type] sold three mondths before the national lockdown, how many did you or the household sell?	LS3: What is the total value of [livestock type] sold in the three months before the national lockdown?	LS4: During the national lockdown, what livestock did you or the household sell?	LS5: Of the [livestock type] sold during the national lockdown, how many did you or the household sell?	LS6: What is the total value of [livestock type] sold during the national lockdown?	LS7: In the months after the lockdown, what livestock did you or the members of the household sell? *(check all that apply)* (Need to ask this for every period)	LS8: Of the [livestock type] sold in the months after the national lockdown, how many did you or the household sell?	LS9: What is the total value of [livestock type] sold after the national lockdown?
Instructions for Enumerator		Enter all codes that apply	Number of animals	[Write answer in rupees]	Enter all code that apply	Number of animals	[Write answer in rupees]	Enter code	Number of animals	[Write answer in rupees]
	a Goats									
	b Cattle									
	c Water Buffalo									
	d Pigs									
	e Chickens									
	97 Others									

Asset Sales

Read: You said you sold assets to help cope with recent shocks. We'd like to know more about the sales that are direct responses to the shocks you experienced, excluding the assets you would have sold regardless of the circumstance.

				Should be a number no smaller than 500 and no larger than 2000000			Should be a number no smaller than 500 and no larger than 2000000			Should be a number no smaller than 500 and no larger than 2000000
Programming Checks		Ask if COPE1=2 and COPE2=1		Flag if value reported < # reported x [asset type] typical price x 0.5 OR if value reported > # reported x [asset type] avg price x 2	Ask if COPE1=2 and COPE2=2		Flag if value reported < # reported x [asset type] typical price x 0.5 OR if value reported > # reported x [asset type] avg price x 2	Ask if COPE1=2 and COPE2=3		Flag if value reported < # reported x [asset type] typical price x 0.5 OR if value reported > # reported x [asset type] avg price x 2
Question Text		AST1: In the three months before lockdown, what asset did you sell? [Do not read the entire list, just select the respondents answer]	AST2: Specify other	AST3: Of the [asset] sold in the three months before lockdown, how much did you sell the [asset] for?	AST4: During the national lockdown, what asset did you sell? [Do not read the entire list, just select the respondents answer]	AST5: Specify other	AST6: Of the [asset] sold during the lockdown, how much did you sell the [asset] for?	AST7: In the months after the lockdown, what asset did you sell? [Do not read the entire list, just select the respondents answer]	AST8: Specify other	AST9: Of the [asset] sold in the months after lockdown, how much did you sell the [asset] for?
Instructions for Enumerator	Do not need to ask specificallyabout every asset, just tick the answer if they bring it up	Enter code for all that apply		Write answer in rupees	Enter code for all that apply		Write answer in rupees	Enter code for all that apply		Write answer in rupees

Asset list
a Radio, cassette recorder, or DVD player
b Televisions
c satellite dishes
d Computer/Printer
e simple mobile phone
f Android mobile phones
g Camera, camcorder
h Bicycle
i Motorcycle/ scooter
j Solar panels
k Batteries and/or inverters
l Electric fans
m Heaters
n Refrigerators/freezers
o Gas stoves
p Cupboards
q Jewelry including watches
r Tables
s Chairs
t Sofas
u Mattresses
v Plows
w Tractor
x Motor car or other such vehicle
y Grinder
z Thresher
aa Loom
bb Sewing inventories
cc Mechanical tools
dd Hand tools
ee Other productive asset (Productive assets can be used to help generate income)
ff Other non-productive asset (Non-Productive assets are those that do not help generate income)

SAVINGS

Read: Now we want to ask you some questions about your personal and household financial matters. This includes things like you and your household savings habits. We would like to collect information on any savings; not just those related to

Programming Checks		Skip if SAV1=0. Should be a number no smaller than 100 and no larger than 2000000	should be equal to or more than SAV2 and no larger than 2000000	Should be a number either zero if there is no savings and no smaller than 100 and no larger than 2000000 if there is saving	Should be a number either zero if there is no savings and no smaller than 100 and no larger than 2000000 if there is saving	Should be a number either zero if there is no savings and no smaller than 100 and no larger than 2000000 if there is saving			
Question Text	SAV1: Have you or your household put any money into savings in the past 1 month?	SAV2: How much money did your household deposit into savings last month?	SAV3: What amount do you and your household currently have saved in total?	SAV4: How much savings did you and your household have one year ago at this time?	SAV5: How much savings did you and your household have on March 24, at the start of the nation-wide lockdown?	SAV6: How much savings did you and your household have on July 21, at the end of the nation-wide lockdown?	SAV7: In the three months prior to the lockdown, what did you and your household use savings to purchase?	SAV8: Over the course of the lockdown, what did you and your household use savings to purchase?	SAV9: Since the end of the nation-wide lockdown, what did you and your household use savings to purchase?
Instructions for the Enumerator	Enter code	Write number in rupees	Write number in rupees	Write number in rupees	Write number in rupees	Write number in rupees	Enter all codes that apply	Enter all codes that apply	Enter all codes that apply
	1 Yes						1 Food	1 Food	1 Food
	0 No						2 Basic non-food consumption (e.g. clothing)	2 Basic non-food consumption (e.g. clothing)	2 Basic non-food consumption (e.g. clothing)
	98 Refused						3 Agricultural inputs	3 Agricultural inputs	3 Agricultural inputs
	99 Don't know/can't say						4 Livestock inputs	4 Livestock inputs	4 Livestock inputs
							5 Business investment	5 Business investment	5 Business investment
							6 Housing/home improvement	6 Housing/home improvement	6 Housing/home improvement
							7 Medical expenses	7 Medical expenses	7 Medical expenses
							8 Education expenses	8 Education expenses	8 Education expenses
							9 Special occasion	9 Special occasion	9 Special occasion
							98 None (did not use any savings)	98 None (did not use any savings)	10 None (did not use any savings)
							97 Other	97 Other	97 Other
							99 Not applicable (did not have any saving at that time)	99 Not applicable (did not have any saving at that time)	99 Not applicable (did not have any saving at that time)

BORROWING 1/2

Read: Now we want to ask you some questions about your personal and household financial matters. This includes things loans you and the members of your household have taken out or money you and your household have borrowed. We would like to collect information on any loans used or taken out not just those related to coping strategies.

Programming Checks		Should be a number no smaller than zero and no larger than 2000000	Should be a number no smaller than zero and no larger than 2000000	Should be a number no smaller than zero and no larger than 2000000				
Question Text	CRED1: Do you or your household owe anyone money currently?	CRED2: How much debt did you or your household have one year ago at this time?	CRED3: How much debt did you or your household have on March 24, at the start of the nation-wide lockdown?	CRED4: How much debt did you or your household have on July 21, at the end of the nation-wide lockdown?	CRED5: In the three months prior to the lockdown, what did you or your household use credit to purchase?	CRED6: Over the course of the lockdown, what did you or your household use credit to purchase?	CRED7: Since the end of the nation-wide lockdown, what did you or your household use credit to purchase?	CRED8: If you wanted another loan today, do you think you would be able to get one?
Instructions for the Enumerator	Enter code	Write number in rupees	Write number in rupees	Write number in rupees	Enter all codes that apply	Enter all codes that apply	Enter all codes that apply	Enter Code
	1 Yes				1 Food	1 Food	1 Food	1 Yes
	0 No				2 Basic non-food consumption (e.g. clothing)	2 Basic non-food consumption (e.g. clothing)	2 Basic non-food consumption (e.g. clothing)	0 No
	98 Refused				3 Agricultural inputs	3 Agricultural inputs	3 Agricultural inputs	98 Refused
	99 Don't know/can't say				4 Livestock inputs	4 Livestock inputs	4 Livestock inputs	99 Don't know/can't say
					5 Business investment	5 Business investment	5 Business investment	
					6 Housing/home improvement	6 Housing/home improvement	6 Housing/home improvement	
					7 Medical expenses	7 Medical expenses	7 Medical expenses	
					8 Education expenses	8 Education expenses	8 Education expenses	
					9 Special occasion	9 Special occasion	9 Special occasion	
					98 None (did not use the credit)	98 None (did not use the credit)	98 None (did not use the credit)	
					97 Other	97 Other	97 Other	
					99 Not applicable (did not have any Credit at that time)	99 Not applicable (did not have any Credit at that time)	99 Not applicable (did not have any Credit at that time)	

Programming	Ask CRED9a-f only if CRED1=1	Should be a number no smaller than 500 and no larger than 2000000			Should be a number no smaller than 0 and no larger than	
Question	Now we want to ask you about specific loans for which your household owes money.					
Instruction for Enumerator	Enter the first/next loan here. If this list of loans is complete, enter a zero ("0"). Be sure to include as debts food bought on account from local merchants/grocers, and ask about them specifically. Write answer in number of rupees	Write answer in number of rupees	Enter code	*Enter code, select as many as 3.*		Enter code
	CRED9a: What was the original amount of this loan?	CRED9b: How much money is	CRED9c: Who is the lender	CRED9d: What was the purpose	CRED9e: What is the	CRED9f: When did you take this
Loan #						

1 Bank
2 Development Bank
3 Cooperative
4 Finance Company
5 Microfinance
6 Savings & Credit
7 Family Member
8 Friend
9 Debt to a local shop
10 Village money lender
97 Other
98 Refused
99 Don't know

1 Food
food consumption
3 Agricultural inputs
4 Livestock inputs
5 Business investment
Housing/home improvement
7 Medical expenses
8 Education expenses
9 Special occasion
97 Other
98 Refused
99 Don't know/can't say

three months prior to the months prior to the lockdown
3 During the lockdown
after lockdown ended

MENTAL HEALTH

Read: I will read out a list of some ways that you may feel or behave. Please indicate how often you have felt this way during the past week, using the scale below.

Programming comments							
Question Text	MH1: I felt depressed	MH2:I felt hopeful about the future	MH3: I felt that I was just as good as other people	MH4: I felt that everthing I did was an effort	MH5: I was happy	MH6: I felt lonely.	MH7: I enjoyed life.
Instructions for Enumerator	Enter code	Enter code	Enter code	Enter code	Enter code	Enter code	Enter code
	1 Rarely or none of the time	1 Rarely or none of the time	1 Rarely or none of the time	1 Rarely or none of the time	1 Rarely or none of the time	1 Rarely or none of the time	1 Rarely or none of the time
	2 Some or a little of the time	2 Some or a little of the time	2 Some or a little of the time	2 Some or a little of the time	2 Some or a little of the time	2 Some or a little of the time	2 Some or a little of the time
	3 Occasionally or a moderate amount of the time	3 Occasionally or a moderate amount of the time	3 Occasionally or a moderate amount of the time	3 Occasionally or a moderate amount of the time	3 Occasionally or a moderate amount of the time	3 Occasionally or a moderate amount of the time	3 Occasionally or a moderate amount of the time
	4 All of the time	4 All of the time	4 All of the time	4 All of the time	4 All of the time	4 All of the time	4 All of the time
	98 Refused	98 Refused	98 Refused	98 Refused	98 Refused	98 Refused	98 Refused
	99 Don't know/can't say	99 Don't know/can't say	99 Don't know/can't say	99 Don't know/can't say	99 Don't know/can't say	99 Don't know/can't say	99 Don't know/can't say

Social capital

Read: Now I would like to ask you some questions about your relationships and activities in your community.

Programming Checks	Should be a number between 0 and 500	Should be a number between 0 and 500	Should be a number between 0 and 500			Ask only if SOC2a=1 if not skip to SOC2d	SOC2c should only be asked if SOC2b=1	Should be a number between 0 and 50	ask only if SOC2d>0	Ask only if SOC2d>0	Ask only if SOC2d>0	SOC2h should only be asked if SOC2g=1	Ask only if SOC2d>0		Should be a number between 0 and 10				
Question Text	SOC1a: With how many people inside your community have you discussed family matters within the past month?	SOC1b: With how many people inside your community have you discussed agriculture or livestock rearing within the past month?	SOC1c: With how many people inside your community have you discussed money matters within the past month?	SOC1d:How close do you feel to your community?	SOC2a: Have you attended any meetings for groups associated with development programs undertaken by rural (gaon palika) or urban municipalities (nagar palika) in the past year?	SOC2b: Did you make any suggestions or voice your opinion regarding the development program during the meetings you attended?	SOC2c: Do you agree or disagree with the following statement? A meeting representative listened to your suggestions.	SOC2d: Besides groups associated with development programs undertaken by rural (gaon palika) or urban municipalities (nagar palika), how many groups are you a member of?	SOC2e: Of these groups, which group is most important to you? (Heifer, other) [Write answer]	SOC2f: Do you have a leadership role in any of these groups?	SOC2g: Do you make any suggestions or voice your opinion during the meetings you attended for any of these groups?	SOC2h: Do you agree or disagree with the following statement? The group leadership listened to your suggestions.	SOC2i: Do you agree or disagree with the following statement? The group works together with the community to achieve common goals.	SOC3a: Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?	SOC3b: Out of 10 people in your community, how many are honest and trustworthy ?	SOC4a: In the last year, have you provided practical assistance (e.g. help with housework, cooking or childcare) to someone in your community in need?	SOC4b: In the last year, have you shared in-kind material support with another household in need?	SOC4c: In the last year, have you lent money to someone in need?	SOC4d: In the last year, have you given money (with no expectation of return) in need?	
Instructions for Enumerator	Enter numbe	Enter numbe	Enter numbe	Enter code	Enter code	Enter code	Enter code	Enter numbe	Write answe	Enter code	Enter code	Enter code	Enter Code	Enter Code	Enter numbe	Enter Code	Enter code	Enter code	Enter code	
				1 extremely i	1 Yes	1 Yes	1 Strongly Agree			1 Yes	1 Yes	1 Strongly Agree	1 Strongly Agree	1 most people can be trusted		1 Yes	1 Yes	1 Yes	1 Yes	
				2 not well co	0 No	0 No	2 Agree			0 No	0 No	2 Agree	2 Agree	2 you need to be very careful		0 No	0 No	0 No	0 No	
				3 moderatly integrated			3 Disagree					3 Disagree	3 Disagree	98 Refused						
				4 highly integrated			4 Strongly Disagree					4 Strongly Disagree	4 Strongly Disagree	99 Don't know/can't say						
				98 Refused																
				99 Don't know/can't say																

Inter-Partner Violence

Read: Now I would like to ask you some questions about your relationship with your husband before and the pandemic began.

Programming Comments		Ask only if INT12=2 for the entire module	Programming Comments											
							Only ask IPV3 if IPV2= 1			Only ask IPV5 if IPV4= 1			Only ask IPV7 if IPV6= 1	
			Question Text			IPV2: In the three months prior to the lockdown, has your husband [act]?	IPV3: In the three months prior to the lockdown, how often would you say that happened?	IPV4: Over the course of the lockdown, has your husband [act]?	IPV5: Over the course of the lockdown, how often would you say that happened?	IPV6: Since the end of the nation-wide lockdown, has your husband [act]?	IPV7: Since the end of the nation-wide lockdown, how often would you say that happened?
Question Text		IPV 1: Would you say your relationship with your	Instructions for Enumerator		All questions IPV 2 through IPV 7 are asked for each act before moving onto the next act. Insert each act option into the [act] part of the question						
for		Enter code	Act Options	a	yell at you to intentionally scare or intimidate you						
		1 Improved		b	threatened to harm or physically harm you						
		2 Stayed the same		c	threw something at you, pushed you, dragged you, hit you, kicked you, or otherwise struck you						
		Deterioriated		d	prevented you from seeing family members or friends within the community						
		98 Refused		e	insulted or humiliated you in front of other people, including people in your household	1.Yes	1. More than once per week	1.Yes	1. More than once per week	1.Yes	1. More than once per week
		99 Don't know/can't say				0.No	2. Weekly	0.No	2. Weekly	0.No	2. Weekly
						98 Refused	3. 2-3 times per month	98 Refused	3. 2-3 times per month	98 Refused	3. 2-3 times per month
							4. Monthly		4. Monthly		4. Monthly
							5. Less than once per month		5. Less than once per month		5. Less than once per month