

Pre-analysis plan:  
Resilience in the midst of a pandemic:  
A study of a Heifer program in rural Nepal

Sarah Janzen<sup>1</sup> and Nicholas Magnan<sup>2</sup>

<sup>1</sup>University of Illinois

<sup>2</sup>University of Georgia

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**Abstract**

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 supported by the USAID BASIS Assets and Market Access Innovation Lab (BASIS study, hereafter). 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.

# 1 Introduction

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 concept note builds on a six year research partnership with Heifer International in Nepal supported by the USAID BASIS Assets and Market Access Innovation Lab (BASIS study, hereafter). In the proposed 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.

Prior studies of Heifer programs have used a variety of methodological approaches and data sets to show Heifer programs have positively impacted poor households in Rwanda, Zambia and Nepal. These studies have varied in the methodological approach and outcomes studied. Two studies consider resilience to shocks. Phadera et al. (2019) leverage the panel nature of the Zambia data and finds Heifer beneficiaries are more resilient to shocks than comparison households. Thompson (2018) uses matching methods to show Heifer households in Nepal coped with the 2015 Gorkha earthquake more effectively than non-Heifer households, especially to address food insecurity. In addition, households eligible for loans made through Heifer were less likely to acquire new, undesirable debt from informal sources. The proposed study would be the most rigorous study to date of a Heifer program focused on resilience and coping strategies.

## 2 Intervention and Overview of Methods

For this study, we will leverage the existing BASIS study which looked at the welfare impacts of a multifaceted livestock transfer and training program. 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 1,030 targeted direct beneficiaries and 759 potential beneficiaries (who could have been brought into the program via Heifer’s “Pass the Gift” mechanism. Baseline data was collected in 2014, with follow-up data collected in 2016, 2017 and 2018. For the most part, the original treatment statuses of study households is still intact – and the pure control is still there. Thus, using the original experimental design, we have a unique opportunity to evaluate the impact of the original Heifer program on resilience, and other outcomes, in the midst of the COVID-19 global pandemic, 5.5 years after joining a Heifer self-help group.

In about half of the treatment areas, since the last interview in 2018, Heifer has started mobilizing households into livestock marketing cooperatives in an effort to expand the program reach and further increase impact through market development. To unpack the effectiveness of the co-ops in achieving these aims we can use quasi-experimental methods such as difference-in-differences (DD) and/or matching methods to analyze the impact of participation in a cooperative on our outcomes of interest. The hypothesis is that market connections might be very important, especially during a national lockdown.

We propose to follow up with two of the original three treatments plus the pure control. We will not include the treatment group that did not receive Heifer’s Cornerstone training (the social capital training central to Heifer, which includes the “Pass the Gift” mechanism). Our rationale for omitting this group is that this group was intentionally deprived of the most central part of Heifer’s program, and our 2.5 and 3.5 year results reveal much smaller impacts than for the other two treatment groups. For this impact evaluation, we will conduct phone surveys with approximately 1400 households whom were assigned to one of these arms of the original RCT: full treatment, treatment without goat transfers, and control. Phone surveys are expected to last approximately 30 minutes.

### **3 Data**

This section describes the data to be collected during the phone survey. Survey question numbers are in parentheses. All data being collected will be used in one of three ways: (1) descriptive analysis to better understand the ways in which the pandemic is affecting the lives and livelihoods of rural Nepali households, (2) impact analysis using panel data methods, and (3) impact analysis using cross-sectional data methods. The latter category makes a distinction between outcomes for which we will not have pre-COVID data (neither true baseline data nor post-Heifer intervention/pre-COVID data). In rural Nepal, a national lockdown began on March 24, 2020 and ended four months later on July 21, 2020, so in some cases we will ask retrospective questions referring to the following periods: the months prior to the national lockdown, the months during the national lockdown, and the months since the national lockdown. This section is organized according to these classifications.

## 3.1 Descriptive data related to the pandemic

### 3.1.1 Shocks

This data will be collected for descriptive analysis to better understand the ways in which households have been affected by shocks in the past year. Many of these shocks were included in previous rounds of data collection, accommodating comparisons across time. In the COVID survey, for each shock the household was affected by they were asked what period( $t$ ) they experienced it: in the past year, in the three months prior to the nation-wide lockdown, during the nation-wide lockdown, and following the nation-wide lockdown. (*SHK1* specifies whether a strategy was employed in the past year, while *SHK2* specifies the precise period the coping mechanism was used)

1. Over the past year, has the household been adversely affected by any of the following (binary indicator) in period  $t$ :
  - (a) natural disaster (*SHK1a* and *SHK2a*)
  - (b) serious illness (*SHK1b* and *SHK2b*)
    - i. what illness (*SHK3a*)
  - (c) death of a household member (*SHK1c*)
    - i. cause of death (*SHK3c*)
  - (d) falling agricultural prices (*SHK1d* and *SHK2d*)
  - (e) decrease in earned income (not including remittances) (*SHK1e* and *SHK2e*)<sup>1</sup>
  - (f) loss of employment (*SHK1f* and *SHK2f*)
  - (g) increasing food prices (*SHK1g* and *SHK2g*, no pre-COVID)
  - (h) increasing prices of non-food necessities (*SHK1h* and *SHK2h*, no pre-COVID)
  - (i) reduction in remittances (*SHK1i* and *SHK2i*, no pre-COVID)
  - (j) reduced workload due to child care needs (*SHK1j* and *SHK2j*, no pre-COVID)
  - (k) other with option to specify (*SHK1k* and *SHK2k*, no pre-COVID)
2. Which of these shocks (above) would you say was the greatest challenge? (*SHK4*, no pre-COVID)

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<sup>1</sup>earlier questionnaires used “decrease in income”

## 3.2 Panel data outcomes

This section considers outcomes for which we have panel data. For some outcomes we will have multiple pre-COVID observations at our disposal: retrospective data collected during the phone survey and data from the main BASIS project collected in 2014 (true baseline), 2016, 2017, or 2018. For many outcomes, we will also collect a retrospective panel for both pre-COVID and post-COVID data.

### 3.2.1 Savings

Pre-COVID variables:

1. Household savings one year ago (January 2020) (*SAV<sub>4</sub> in COVID survey*)
2. Household savings at endline 2018 (July 2018) (*CSV<sub>4a</sub> in Endline 2 survey*)
3. Household savings at endline 2017 (July 2017) (*CSV<sub>4a</sub> in Endline 1 survey*)
4. Amount household put into savings last month at midline (July 2016) (*CSV<sub>4</sub> in midline survey*)
5. Amount household put into savings last month at baseline (July 2014) (*CSV<sub>4</sub> in baseline survey*)

Post-COVID variables (*all in COVID survey*):

1. Household savings on March 24, 2020 (beginning of nation-wide lockdown) (*SAV<sub>5</sub>*)
2. Household savings on July 21, 2020 (end of nation-wide lockdown) (*SAV<sub>6</sub>*)
3. Current household savings (*SAV<sub>3</sub>*)
  - (a) Any savings deposits made in past month (*SAV<sub>1</sub>*)
  - (b) Amount household put into savings last month (*SAV<sub>2</sub>*)

### 3.2.2 Credit

Pre-COVID variables:

1. Household total debt one year ago (*CRED<sub>2</sub> in COVID survey*)
2. Household total debt at endline 2018 (July 2018) (*CSV<sub>8a</sub> in Endline 2 survey*)

3. Household total debt at endline 2017 (July 2017) (*CSV8a in Endline 1 survey*)
4. Household total debt at midline (July 2016) (*CSV8a in midline survey*)
5. Household total debt at baseline (July 2014) (*CSV8a in baseline survey*)

Post-COVID variables (*all in COVID survey*):

1. Household total debt on March 24, 2020 (beginning of nation-wide lockdown) (*CRED3*)
2. Household total debt on July 21, 2020 (end of nation-wide lockdown) (*CRED4*)
3. Does the respondent or the household currently owe anyone money (*CRED1 (binary outcome and value)*)
4. Original amounts of all current loans (*Sum of CRED9a*)
5. Current Household total outstanding debt (*Sum of CRED9b*)
  - (a) Proportion of current debt with formal lenders (*CSV9c*)<sup>2</sup>
  - (b) Proportion of current debt related to agricultural, livestock, or business investment (*CSV9d*)<sup>3</sup>
6. Interest rate of current loans (*CRED9e*)
7. When were current loans taken out (*CRED9f*)
8. If you wanted another loan today, do you think you would be able to get one? (*CRED8*)

### 3.2.3 Mental Health

Our mental health indicators are based on seven questions from an abbreviated version of the CES-D scale (Radloff, 1977), a measure commonly used as an assessment of depression. A summary mental health index will be calculated as a standardized inverse covariance weighted (ICW) average of subindicators following Anderson (2008).

Pre-COVID variables:

1. I felt depressed (*HNU12b on Baseline, Midline, Endline 1, and Endline 2*)

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<sup>2</sup>Formal lenders are considered to be banks, credit and savings groups, cooperatives and micro-finance organizations.

<sup>3</sup>Answer choices for purpose of the loan include agricultural inputs, livestock inputs, and business investments

2. I felt hopeful about the future (*HNU12c on Baseline, Midline, Endline 1, and Endline 2*)
3. I felt that I was just as good as other people (*HNU19c on Baseline and Midline (approximately), HNU12g on Endline 1 and Endline 2*)
4. I felt that everything I did was an effort (*HNU12a on Baseline and Midline, HNU12h on Endline 1 and Endline 2*)
5. I was happy (*HNU15 on Baseline and Midline (approximately) and HNU12l on Endline 1 and Endline 2*)
6. I felt lonely (*Not on Baseline or Midline, HNU12n on Endline 1 and Endline 2*)
7. I enjoyed life (*Not on Baseline or Midline, HNU12p on Endline 1 and Endline 2*)

Post-COVID variables (*all in COVID survey*):

1. I felt depressed (*MH1*)
2. I felt hopeful about the future (*MH2*)
3. I felt that I was just as good as other people (*MH3*)
4. I felt that everything I did was an effort (*MH4*)
5. I was happy (*MH5*)
6. I felt lonely (*MH6*)
7. I enjoyed life (*MH7*)

### **3.3 Cross-sectional data outcomes (no baseline)**

The cross-sectional data outcomes are those we intend to analyze using cross-sectional data methods.

#### **3.3.1 Coping strategies**

The outcomes in this section reflect answers to the question, “to cope with these events (referring to any of the shocks described above), did your HH do any of the following?” For each outcome we will collect a retrospective panel in order to unpack how coping strategies

changed over the past year. Each coping strategy can be analyzed over the following periods ( $t$ ): in the past year, in the three months prior to the nation-wide lockdown, during the nation-wide lockdown, and following the nation-wide lockdown. (*COPE1*<sup>4</sup> specifies whether a strategy was employed in the past year, while *COPE2* specifies the precise period the coping mechanism was used). Many of these coping strategies were collected in previous rounds of data, but since coping is by definition a response to a particular shock, it is not clear that we will want to analyze these outcomes using panel data methods.

WE WILL NEED AN AGGREGATE INDEX FOR EACH CATEGORY. IT COULD BE JUST A BINARY INDICATOR, OR IT COULD BE A SUM, SWINDEX, OTHER... LET'S TALK ABOUT IT.

1. asset sales

(a) livestock<sup>5</sup>

i. binary indicator if sold livestock in period  $t$  (*COPE1a* and *COPE2a*)

- any livestock (*COPE1a* (binary outcome and value))
- goats (*LS1a*, *LS4a*, *LS7a*)
- cattle(*LS1b*, *LS4b*, *LS7b*)
- water buffalo (*LS1c*, *LS4c*, *LS7c*)
- pigs (*LS1d*, *LS4d*, *LS7d*)
- chickens (*LS1e*, *LS4e*, *LS7e*)

ii. number of livestock sold in period  $t$ .

- goats (*LS2a*, *LS5a*, *LS8a*)
- cattle(*LS2b*, *LS5b*, *LS8b*)
- water buffalo (*LS2c*, *LS5c*, *LS8c*)
- pigs (*LS2d*, *LS5d*, *LS8d*)
- chickens (*LS2e*, *LS5e*, *LS8e*)

iii. value of livestock sold in period  $t$ .

- goats (*LS3a*, *LS6a*, *LS9a*)
- cattle(*LS3b*, *LS6b*, *LS9b*)
- water buffalo (*LS3c*, *LS6c*, *LS9c*)
- pigs (*LS3d*, *LS6d*, *LS9d*)
- chickens (*LS3e*, *LS6e*, *LS9e*)

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<sup>4</sup>SHK7 on endline questionnaire or CS1-3 on midline questionnaire

<sup>5</sup>Earlier questionnaire does not distinguish livestock type

- (b) assets
- i. binary indicator if sold any asset in period  $t$  (*COPE1b and COPE2b*)
  - ii. productive assets <sup>6</sup>
    - A. binary indicator if sold any productive assets (*AST1a-u (binary outcome and value if any of the variables equal 1)*)(*AST1, AST4, AST7*)
    - B. amount the productive asset was sold for (*AST3, AST6, AST9 sum of value of all where sold =1*)
  - iii. sold non-productive assets<sup>7</sup> (*AST1v-dd (binary outcome and value)*) (*AST1, AST4, AST7*)
    - A. binary indicator if sold any non-productive assets (*AST1v-dd (binary outcome and value if any of the variables equal 1)*)(*AST1, AST4, AST7*)
    - B. amount the non-productive asset was sold for (*AST3, AST6, AST9 sum of value of all where sold =1*)
- (c) food security
- i. cut back on number of meals (*COPE1c*)
  - ii. serve smaller portions (*COPE1d*)
  - iii. change the kinds of foods eaten (*COPE1e*)
    - increase consumption of food type<sup>8</sup> (*COPE5a1, COPE5b1, COPE5c1 for each period respectively*)
    - reduce consumption of food type<sup>9</sup> (*COPE5a2, COPE5b2, COPE5c2 for each period respectively*)
  - iv. get enough to eat every day (*SHK5a-c for each period around lockdown, SHK6 for in the past week*)
- (d) rely on assistance from others<sup>10</sup>
- i. acquired food stockpiles from family, friends, or neighbors<sup>11</sup> (*COPE1g (binary outcome and value)*)
    - A. value of acquired food (*COPE6a, COPE6b, COPE6c*)

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<sup>6</sup>Value not collected for earlier surveys

<sup>7</sup>Proposed questionnaire collects detailed asset list, earlier questionnaire only distinguishes productive from non-productive

<sup>8</sup>Earlier questionnaire does not distinguish food type. Food type categories include: grains, pulses, meat/fish/eggs, dairy, fruits, vegetables, sugar/sweets, oil, spices, non-alcoholic drinks, alcohol/tobacco, snacks or meals out.

<sup>9</sup>earlier questionnaire does not distinguish food category

<sup>10</sup>Value not collected on earlier surveys

<sup>11</sup>Earlier questionnaire used “shared food stockpiles with friends or neighbors.”

- B. number of people who you would expect to share food with household (*COPE9a*)
  - ii. received assistance from a government agency or NGO (*COPE1h (binary outcome and value)*)
    - A. value of assistance (*COPE7a, COPE7b, COPE7c*)
  - iii. received financial assistance (with no expectation of return) from family, friends, or neighbors (*COPE1i (binary outcome and value)*)
    - A. value of financial assistance (*COPE8a, COPE8b, COPE8c*)
    - B. number of people who you would expect to give you money (*COPE9b*)
  - iv. received financial assistance from a household member migrating within Nepal (*COPE1j*)
  - v. received financial assistance from a household member migrating within Nepal (*COPE1k*)
  - vi. received practical assistance from family, friends, or neighbors giving childcare or educating children (*COPE1l*)
    - A. number of people who you would expect to provide you practical assistance (*COPE9c*)
- (e) utilize credit
  - i. took out a loan to cope with the shock (*COPE1n (binary outcome and value)*)
  - ii. took out a loan to meet basic consumption needs (including food, medical, education or other basic necessity) (*CRED5, CRED6, CRED7 for each time period*)
  - iii. took out a loan with an interest rate exceeding the median interest rate in the sample (*sum of CRED9e over median amount*)
  - iv. bought food on account or on credit (*COPE1f (binary outcome and value)*)
- (f) utilize savings
  - i. used savings to cope with the shock (*COPE1o (binary outcome and value)*)
  - ii. used savings to meet basic consumption needs (including food, medical, education or other basic necessity) (*SAV7, SAV8, SAV9 for each time period*)
- (g) household member migrated to find work elsewhere (*COPE1m (binary outcome and value)*)
- (h) other with option to specify (*COPE1p (binary outcome and value)*) (no baseline option to specify)
- (i) which coping mechanism was relied on most (*COPE10*)

### 3.3.2 IPV

1. Change in general quality of relationship since the start of the national lockdown (*IPV1*)<sup>12</sup>

2. Inter-partner violence

Instances of IPV before the pandemic:

In the three months before the pandemic began, did your husband...

- (a) yell at you to intentionally scare or intimidate you? (verbal aggression) (*IPV2a*)
  - How often: more than once per week, weekly, 2-3 times per month, monthly, less than once per month
- (b) threatened to harm physically harm you? (threatening) (*IPV2b*)
- (c) threw something at you, pushed you, dragged you, hit you, kicked you, or otherwise struck you? (assault) (*IPV2c*)
- (d) prevented you from seeing family members or friends within the community? (controlling behavior) (*IPV2d*)
- (e) insulted or humiliated you in front of other people? (controlling behavior) (*IPV2e*)

Instances of IPV during the pandemic:

During the lockdown did your husband...

- (a) yell at you to intentionally scare or intimidate you? (verbal aggression) (*IPV4a*)
- (b) threatened to harm physically harm you? (threatening) (*IPV4b*)
- (c) threw something at you, pushed you, dragged you, hit you, kicked you, or otherwise struck you? (assault) (*IPV4c*)
- (d) prevented you from seeing family members or friends within the community? (controlling behavior) (*IPV2d*)
- (e) insulted or humiliated you in front of other people, including people in the household? (controlling behavior) (*IPV4e*)

After the end of the lockdown lockdown did your husband...

1. yell at you to intentionally scare or intimidate you? (verbal aggression) (*IPV6a*)
2. threatened to harm physically harm you? (threatening) (*IPV6b*)

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<sup>12</sup>Answer choices: improved, stayed the same, deteriorated

3. threw something at you, pushed you, dragged you, hit you, kicked you, or otherwise struck you? (assault) (*IPV6c*)
4. prevented you from seeing family members or friends within the community? (controlling behavior) (*IPV6d*)
5. insulted or humiliated you in front of other people, including people in the household? (controlling behavior) (*IPV6e*)

### 3.3.3 Social Capital

Create an aggregate Anderson index of 5 subindices (in the case of trust a single indicator will be used in lieu of an index).

1. Personal relationships and advisory support (aggregate index of 4 subindicators)
  - (a) With how many people inside your community have you discussed family matters within the past month? (*NET1 in Baseline, SOC1a in Covid*)
  - (b) With how many people inside your community have you discussed agriculture or livestock rearing within the past month? (*Baseline NET1, SOC1b in COVID*)
  - (c) With how many people inside your community have you discussed money matters within the past month? (*Baseline NET1, SOC1c in COVID*)
  - (d) How close do you feel to your community? (*SOC1d in COVID*)
2. Financial support (aggregate index of 4 subindicators)
  - (a) How many people do you know whom would share food with you or your household in time of need? *COPE9a*
  - (b) How many people do you know whom would give you money (with no expectation of return) in time of need? *COPE9b*
  - (c) How many people do you know whom would provide practical assistance (e.g. help with housework, cooking or childcare) in time of need? *COPE9c*
  - (d) How many people do you know whom would lend money in time of need? *COPE9d*
3. Civic engagement (aggregate index of 8 subindicators)
  - (a) Have you attended any meetings for groups associated with development programs undertaken by rural or urban municipalities in the past year? (*SOC2a*)

- (b) Did you make any suggestions or voice your opinion regarding the development program during the meetings you attended? *(SOC2b)*
- (c) Do you feel the meeting representative listened to your suggestions? *(SOC2c)*
- (d) Besides groups associated with development programs undertaken by rural or urban municipalities, how many groups are you a member of? *(SOC2d)*
- (e) Which group are the most important to you? *(SOC2e)*
- (f) Do you have a leadership role in any of these groups? *(SOC2f)*
- (g) Do you make any suggestions or voice your opinion during the meetings you attended for any of these groups? *(SOC2g)*
- (h) Do you feel the group leadership listened to your suggestions? *(SOC2h)*
- (i) Works together with community to achieve common goals. *(SOC2i)*

#### 4. Trust

- (a) Can most people in the community be trusted or do you need to be careful when dealing with people? *(SOC3a)*
- (b) Out of 10 people in your community, how many are honest and trustworthy? *(SOC3b)*

#### 5. Cooperative norms and giving (aggregate index of 4 subindicators)

- (a) In the last year, have you provided practical assistance (e.g. help with housework, cooking or childcare) to someone in your community in a time of need? *(SOC4a)*
- (b) In the last year, have you shared in-kind material support with another household in a time of need? *(SOC4b)*
- (c) In the last year, have you lent money to someone in need? *(SOC4c)*
- (d) In the last year, have you given money (with no expectation of return) in time of need? *(SOC4d)*