Falling Living Standards during the COVID-19 Crisis: Quantitative Evidence from Nine Developing Countries

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Abstract

Despite numerous journalistic accounts, systematic quantitative evidence on economic conditions during the ongoing COVID-19 pandemic remains scarce for most low and middle income countries, partly due to limitations of official economic statistics in environments with large informal sectors and subsistence agriculture. We assemble evidence from over 30,000 respondents in 16 original household surveys from nine countries in Africa (Burkina Faso, Ghana, Kenya, Rwanda, Sierra Leone), Asia (Bangladesh, Nepal, Philippines), and Latin America (Colombia). We document the extent of declines in employment and income across settings beginning March 2020. The share of households experiencing an income drop ranges from 8 to 87% (median 70%). Household coping strategies and government assistance were insufficient to sustain pre-crisis living standards, resulting in widespread food insecurity and dire economic conditions even three months in. We discuss promising policy responses and speculate about the risk of persistent adverse effects, especially among children and other vulnerable groups.

1. Introduction

As a result of the COVID-19 pandemic, economic activity has contracted around the globe. Fear of the virus and strict social distancing policies have led individuals in virtually all countries to modify their consumption and working habits. Economically vulnerable citizens of low and middle income countries (LMICs), where the majority of the world's population resides, potentially face stark threats to their livelihoods. We use survey data systematically collected from sixteen samples of over 30,000 households (containing more than 100,000 people) in nine countries in Africa, Asia, and Latin America to provide a rich, quantitative description of the economic effects of COVID-19 among various sub-populations in these LMICs.

There is reason to believe that rich and poor countries are experiencing the crisis very differently, which makes systematic documentation of the effects of COVID-19 in distinct settings critical. In industrialized nations, economic losses are often mitigated by government protection programs, employer adjustments to hours or compensation, or household savings. Absent broad social safety nets, declines in economic activity in LMICs can have more adverse welfare consequences, especially for those working in the informal economy. On the other hand, epidemiological models predict that health impacts of the virus may be weaker in LMICs given their relatively youthful populations (1). Poorer countries are also generally less connected to the global economy through trade and travel, and thus were exposed to the pandemic later with valuable time to prepare and learn from the experiences of China, Europe, and North America (although it is unclear whether these opportunities were seized in practice) (2).

Goldberg and Reed (3) cite these factors to argue, using macroeconomic and financial statistics, that the initial economic effects of the pandemic were unexpectedly mild in LMICs. In contrast, international organizations have used similar aggregate data to make dire projections about GDP losses (4), decreases in remittance flows (5), and increases in poverty and hunger (6, 7). Yet aggregate data has recognized deficiencies relative to direct surveying for tracking the well-being of the poor (8, 9). In this study, we therefore rely on original, large-sample, representative household surveys to assemble a systematic and in-depth look at how the pandemic affected people's lives in LMICs in the months following the global outbreak.

Household surveys are necessary because aggregate data can overlook large segments of the population. Over a quarter of economic activity and half of all workers in Africa, Asia, and Latin America are in the informal sector (10, 11), and therefore are not captured in most official statistics. Informality similarly undermines the informativeness of measures of private-sector transactions such as payroll, credit, or smartphone transfers. Hence, the approaches national statistical agencies and researchers (e.g., 12) have employed to document the economic losses from COVID-19 in industrialized nations cannot easily be implemented

in LMICs. Indeed, many LMICs rely on periodic household or labor force surveys to measure economic activity. However, the low frequency of such surveys makes them insufficient for real-time tracking during a crisis.

Our research team rapidly adapted existing data collection protocols to deploy phone surveys starting in early April 2020 to track economic outcomes during the COVID-19 crisis. We use random sampling to generate statistically representative information about 16 populations in nine countries in Africa, Asia, and Latin America. The surveys cover heterogeneous samples constructed in different ways. Seven samples rely on random phone digit dialing (RDD), and skew toward wealthier and more educated mobile phone owners, while the other nine are drawn from earlier studies representative of specific sub-samples, including formal and informal sector workers, agricultural laborers, small business enterprises, refugees, migrants, and their families. While the magnitude of effects varies across settings, the data reveal a consistent picture of heightened economic distress that spans both geography and socioeconomic strata.

The combined dataset documents steep drops in employment and income in our samples that rival or exceed economic losses experienced in the United States and other rich nations (e.g., 13, 14). A full 50–80% of sample populations in Bangladesh, Burkina Faso, Colombia, Ghana, Kenya, Rwanda, and Sierra Leone report income losses during the COVID-19 period. If such effects persist, they risk pushing tens of millions of already vulnerable households into poverty. This economic shock caused by the global pandemic spans socioeconomic strata within each country, and similar proportions of households at different rungs of the socioeconomic ladder report employment and income decreases. While the data shed light on the proportion of population suffering an income decline during the period, it should be noted that we are only able to characterize the magnitude of the decline for specific households in some of the samples.

By April, many households were already unable to meet basic nutritional needs. For example, 48% of rural Kenyan households, 69% of landless agricultural households in Bangladesh, and 87% of rural households in Sierra Leone were forced to miss meals or reduce portion sizes to cope with the crisis. Comparing to preexisting baseline data verifies that these levels greatly exceed the food insecurity normally experienced at this time of year. If anything, COVID-19 fortunately hit during a 'post-harvest' period in South Asia, when many people have grain stocks to draw down (15). High levels of food insecurity may continue to worsen as the crisis persists through the agricultural cycle.

A critical implication of these patterns is that the economic shock and attendant disruptions to livelihoods during the early stages of pandemic appear to be large across a range of populations in Africa, Asia, and Latin America. The global scale of the disruption may even exceed effects that economists have documented in other recent crises, including the 1997 Asian Financial Crisis, the 2008 Great Recession, and the Ebola outbreak of 2014 (16, 17).

As a result, for LMICs the economic crisis precipitated by COVID-19 may become as much a public health and societal disaster as the pandemic itself. The link from severe economic crisis during childhood to subsequent deterioration in adult health, nutrition, education, and earnings capacity has been demonstrated in many contexts. Almond (18) documents notable declines in education and adult earnings among those in utero during the 1918 influenza pandemic, and Maccini and Yang (19) show that children born during periods of weather-related economic hardship in Indonesia experience worse health, educational achievement, and income as adults. A growing body of long-run experimental research specifically links childhood nutrition to standards of living during adulthood (see 20, 21). These channels of long-run transmission indicate that without mitigation, the substantial and widespread economic distress caused by the current pandemic may induce fallout that persists for decades into the future.

2. Data and Methods

2.1 Sample construction

We present results from sixteen samples in nine LMICs, as enumerated in Table 1. These countries—Bangladesh, Burkina Faso, Colombia, Ghana, Kenya, Nepal, Philippines, Rwanda, and Sierra Leone—have a combined population of nearly 500 million. We study several different sub-populations in Bangladesh and Kenya, and half of our study samples are drawn from two countries with a combined population of 200 million. In each sample, we conducted at least one telephone survey sometime during the period April–June 2020, after the outbreak of COVID-19 and the initial implementation of government lockdowns or other social distancing policies. Appendix A provides information on the timing of the spread of COVID-19 and government-imposed mobility restrictions relative to survey implementation dates across all countries in our sample.

Nine of the samples (denoted BGD1–5, KEN1, KEN2, NPL1, SLE1 in Table 1) in four countries were constructed from pre-existing studies and were randomly drawn to be statistically representative of the population of interest for those earlier studies. An advantage of this is that we have additional pre-COVID-19 baseline data on living standards for these nine samples. When possible, survey questions were designed to be comparable to pre-existing baseline data. In two of these samples (BGD5, NPL1), we can compare the time path of outcomes to the typical seasonal pattern observed in prior years. The populations from which these samples are drawn varies, as described in Table 1 and in more detail in Appendix A.

Six other samples (BFA1, COL1, GHA1, PHL1, RWA1, SLE2) are drawn via phone random digit dialing (RDD), making them statistically representative of the set of active mobile phone numbers held by adults. Household surveys of mobile phone usage in various

countries shows that the vast majority of adults in the sample countries and in LMICs more broadly now have access to mobile phones (22). For these samples, baseline data is constructed from respondent recall anchored to the introduction of significant and memorable policy restrictions, typically the closure of schools. The final sample (KEN3) is a hybrid of 4,052 households sampled from those in the 2015/16 Kenya Integrated Household Budget Survey who provided telephone numbers and an additional 767 adults contacted via RDD.

The primary reporting unit varies by sample. In samples constructed from existing study populations, household membership was already known, and the household is the unit of focus. A disadvantage is that this does not allow us to disaggregate all effects by gender, but some surveys collect outcomes specific to women and children (e.g., on domestic violence) which we will report below. In the RDD-based samples, data represents the individual adult associated with the phone number, with some limited questions about that individual's household. Sampling weights for representativeness are described in Appendix A.

[Table 1 about here.]

2.2 Survey methods and timing

All post-COVID-19 data was collected via telephone interviews to minimize in-person contact and comply with government social distancing guidelines. Interviews were conducted by local enumerators in each country, with procedures to match languages, dialects, and accents between respondent and enumerator. Surveying by phone made rapid and large-scale data collection possible over large geographical units. In two samples (KEN1, SLE1), we conduct high-frequency surveys spanning a long enough period to examine the evolution of post-COVID effects over time.

Unfortunately, interviewing by telephone places limits on data collection. Surveys were designed to be short, lasting only 15–30 minutes with relatively coarse measures of income and welfare, and render anthropometric measurements infeasible. Moreover, very poor households, who may not own phones or live in areas with low connectivity, may be underrepresented.

In the more agriculture-dependent nations in our sample, the baseline pre-COVID-19 period falls during a post-harvest season in Bangladesh, Burkina Faso, Ghana, Nepal, and Sierra Leone, when food stocks in the rural population tend to be relatively high, and food prices are typically low. While this timing is fortunate for households' ability to cope, post-harvest is also a low point for agricultural labor demand in these countries, making subsequent declines in income and employment particularly notable. In Kenya, many farm households were already entering their 'lean' season at the start of the crisis in March 2020. Natural seasonal variation in outcomes can complicate empirical inference on the true effects of COVID from these data, an issue we will address in greater depth below.

2.3 Construction of outcome variables

Survey questions were coordinated across samples to the extent possible for data consistency. However, there were necessary adaptations for local context, and some questions were altered to conform to preexisting baseline data. To maximize consistency in reporting outcomes, we present each main result as the fraction of respondents reporting a change in an outcome post-COVID-19 relative to the pre-period. We provide a detailed description of how each variable was constructed for each sample in Appendix C, and discuss the robustness of results to other reasonable ways of defining outcomes in Appendix B.

To examine heterogeneity of effects across socio-economic strata, we further subdivide our analysis by socioeconomic status (SES) within sample. This classification is based on the within-sample median pre-COVID-19 consumption expenditure for six samples (BGD1–4, KEN1, SLE1) and median pre-COVID-19 income for four samples (BGD5, KEN2–3, NPL1). For the remaining six samples, high and low SES are distinguished by respondents' scores on a "Poverty Probability Index" derived from the most recent national household survey, calibrated to either 100% or 200% of the national poverty line.

We calculate a "drop in income" measure at the household level in half of the samples (BGD1, BGD4, BGD5, KEN1–3, NPL1, SLE1), and at the individual level in the remaining half (BGD2, BGD3, BFA1, COL1, GHA1,PHL1, RWA1, SLE2). Four of the surveys (BGD2, BGD3, BGD5, NPL1) compare income reported during pre-COVID-19 baseline surveys to income reported during the post-COVID-19 telephone interview to determine if there has been a drop in income. The other surveys use retrospective reports of baseline income collected during the post-COVID-19 survey to compare with current income. We note that these retrospective reports carry the risk of respondent recall or reporting biases, which we would expect might lead to an overestimate of the extent of declines in income in some cases, a possibility we discuss further in Section 2.4.

We construct a "drop in employment" measure at the individual level in nine surveys (BGD2, BGD3, BFA1, COL1, GHA1, PHL1, RWA1, SLE1, SLE2), with a drop defined as a respondent who reported working during the pre-COVID-19 reference period, but not working at the time of the post-COVID-19 interview. Five surveys (BGD1, BGD4, KEN1–3) measure the change in employment at the household level. In BGD1 and BGD4, a drop in employment is registered if any adult in the household was working during the baseline period, but no adult was working during the post-COVID-19 period. In KEN1, a drop in employment is recorded if any adult in the household reports losing their job since February 2020 and is not currently working. The individual measures of employment declines are more strict than the household measures (with the exception of BGD1 and BGD4).

"Reduced access to markets" is measured at the household level based on respondent reports that they or any household member faced difficulties in purchasing food due to mobility restrictions, closed markets, or food shortages.

Measures of food insecurity which we label "Missed or reduced meals", available for all samples, are based on respondents' reports that they or someone in their households skipped meals or reduced portion size or quality. The reference period is the past seven days unless otherwise noted in the appendix. In five surveys, households were classified as missing or reducing meals only if the respondent reported being unable to buy essential food items because of a lack of resources over the past seven days (for BGD1–4) or fourteen days (for NPL1). In the other surveys there is no restriction on the reason for reducing or skipping meals.

Measures of "receipt of government or NGO support" are based on reports that the respondent (BFA1, COL1, GHA1, PHL1, RWA1, SLE2) or the household (BGD1–5, KEN1–3) have received food, cash or other support from government programs or NGOs over the past month (BFA1, COL1, GHA1, PHL1, RWA1, SLE1) or two weeks (KEN1–3). For BGD1–3, only households who reported being unable to buy essential food items over the past week because they lacked sufficient resources were asked if they received assistance from government or NGOs. Table 2 reports this number as a share of the total sample, so is a lower bound estimate of the share of households that received such assistance in the case of BGD1–3.

Enterprise profit and revenue data in KEN1 is drawn from a parallel survey of a sample of enterprises drawn from a baseline pre-COVID-19 census of all enterprises in the villages where sample households reside. Current profits and revenues of enterprises are asked for the past 14 days; pre-COVID-19 profits and revenues are asked retrospectively for a "typical 2-week period in February 2020." Enterprise profits in SLE1 are based on the household head's self-employment profits over the past seven days (post-COVID-19) or over a typical week in the month before the first lockdown.

Total consumption expenditure in KEN1 is based on the value of total household food consumption over the past 7 days, and non-food expenditure over the past 14 days. Consumption expenditure in SLE1 is based on household expenditure on five main staple food items over the past 7 days. To construct the pre-COVID-19 benchmark, the same expenditure question is asked retrospectively for a period about the same time, but a year prior.

To assess effects on consumer prices, we construct a price index for the KEN1 sample from respondent reports of the prices of 20 common consumer items. In the SLE1 sample, the price index is constructed from respondent reports on the prices of the five staples used to estimate consumption.

We also collected respondent reports of domestic violence in the KEN1 sample, in cases when female enumerators interviewed female respondents. After screening questions concerning privacy, safety, and willingness to discuss sensitive issues, respondents were asked three questions regarding threats of harm, physical abuse, and sexual activity being forced by any of their partners. Domestic violence against children is based on the respondent's

report that she or her husband/partner beat any of the children in the household. The reference period for all four questions is the previous two weeks.

2.4 Cross-Survey Comparability, Representativeness, and Limitations of the Data

The evidence is drawn from surveys of over 30,000 respondents in 9 countries, with some coordination in questionnaire design. Yet the realities and constraints of survey work during the pandemic imply that none of the samples is nationally representative. In the seven RDD-based samples, the analysis is weighted to make the reported statistics representative of the active mobile phone numbers used by adults. While this is an increasingly broad portion of the adult population in these countries, it excludes people without access to mobile phones, and may over-represent people with multiple numbers. As a consequence, we see in a direct comparison of our survey respondents to nationally representative samples presented in Appendix Table S1 that all of the RDD samples, with the exception of Philippines, are much better educated than the populations of the countries from which they are drawn. In Burkina Faso, Philippines, Rwanda, and Sierra Leone the RDD samples are less poor, and in Burkina Faso, Ghana, and Sierra Leone they are more urban than the national population. Household sizes are larger in the RDD samples than in the national population in Ghana, Kenya, Philippines, Rwanda, and Sierra Leone. In the Philippines, RDD respondents are disproportionately female, while in Ghana they are more likely male.

Nine of the samples are based on earlier studies and are representative of specific sub-populations within a country. Pre-COVID-19 data from these studies provide an important baseline for our analysis. These samples are not intended to be representative of the entire country, as highlighted in Appendix Table S1. In Bangladesh, the populations sampled in our studies are very diverse. The Rohingya refugees (BGD2) and landless laborer (BGD5) populations are much poorer than the national average, while the communities living near the refugee camps (BGD3) are relatively better off than the national population. The other Bangladesh samples (BGD1 and BGD4) are both more rural and male than the population as a whole, but have average incomes near the national average. The BGD1 rural sample has much lower education on average than the national population, while the BGD4 sample of applicants for agricultural work permits in Malaysia is better educated.

The Kenya rural household and refugee samples (KEN1, KEN2), like the populations from which they are drawn, are both more rural and poorer than the Kenya national average. The rural KEN1 sample has much lower levels of education than the national average, and while the population of refugees also has lower levels of education, selection into the phone sample is such that the secondary school completion rate of the KEN2 refugee sample is similar to the national average. KEN3 households, in contrast, are more urban and better educated than the national average, but still poorer. Note that our Kenya samples are

mostly located in regions that were unaffected by the 2019–2020 locust plague (23); when we exclude from our analysis the counties that were most affected by this plague, the results remain virtually the same (results available upon request).

The agricultural households surveyed in Nepal (NPL1) are all rural, and much poorer than the national average. However, their secondary school completion rate is at the national average. The Sierra Leone Rural Electrification survey (SLE1) is entirely rural, consists of larger households than the national average and has relatively few female respondents. The diversity of the samples we have gathered together makes comparisons across countries of the results more difficult. However, that same diversity provides some valuable insights into the impact of the COVID-19 pandemic across widely varying contexts.

In Appendix A, we characterize the timing of the first COVID-19 case and post-COVID survey dates in each country relative to the timing of the lean season. The post-COVID-19 reporting period in Burkina Faso, Kenya, Sierra Leone, and to a lesser extent Ghana occurs during the beginning of lean agricultural seasons. Some of the reported declines in employment, income or food security that we observe may therefore reflect expected seasonal changes, rather than the effects of the epidemic. Current estimates of the extent of consumption seasonality in African contexts are that it is relatively modest. For example, (24) estimates a 2–3 percent decline in food consumption between the highest and lowest consumption months in Tanzania. There is, however, evidence that the quality and variety of food consumed varies more dramatically across seasons than does the quantity of food (25). Our measure of food security focuses on quantities consumed (meals skipped or portion sizes reduced) rather than on quality, and should therefore be less affected by seasonal changes.

As described more fully in Appendix B, some of the measures depend upon respondent recall. For example, the "Drop in Income" variable collected in the seven RDD samples compares earnings over the past 7 days to pay in "a typical week" before government closed schools (or other marker of the onset of the COVID-19 crisis). These retrospective reports carry the risk of respondent recall or reporting biases based on their perception of the pandemic as a crisis, which could lead to an overestimate of the extent of declines in income.

In three of our samples (NPL1, BGD4 and BGD5), we can examine the extent of recall bias by comparing pre-COVID-19 outcomes as measured by survey responses elicited before versus after the onset of COVID-19. In Appendix B we report the three outcomes for which we have comparable data—pre-COVID-19 seasonal food security in the NPL1 sample, monthly household earnings in April in the BGD4 sample, and food security in January and February in BGD5—measured in surveys from both before and after the onset of COVID-19. In all three cases, the data about pre-COVID-19 outcomes as reported in our post-COVID-19 phone surveys closely track their counterparts as reported in pre-COVID-19 surveys. This consistency gives us some confidence that the pandemic itself did not have a large influence on recall-based reporting of prior conditions. However, this is still a difficult concern to

address in general for all our data, and the possibility of such biases should be kept in mind.

3. Results

3.1 Livelihoods during the COVID-19 crisis

Results in Table 2 document the widespread nature of economic hardships and the decline in living standards across the nine LMICs in the study. Across the 16 samples, between 8 and 87% of respondents report a drop in income during the crisis period, with a staggering median of 70% (col. 1). The proportions reporting declines in employment are similarly high, ranging from 5 to 49% with a median share of 30% (col. 2). The estimated magnitude of the economic shock remains stable whether comparing to preexisting baseline data or to respondent recall about their pre-COVID status as reported to us in a phone interview conducted after COVID hit. These measures capture the share of individuals or households that experienced a drop in wellbeing during the pandemic period rather than the net changes in income or employment. However, the proportion of respondents reporting declines in income (median 70%) exceeds those reporting rising income during the period by an order of magnitude (median across samples 7%). Appendix B discusses robustness of the estimates in detail.

[Table 2 about here.]

The adverse economic shock experienced by individuals surveyed in these countries has been compounded by impediments to livelihood. In most countries, a large share of respondents report reduced access to markets, with the median share being 31% (range 3 to 77%, col. 3), likely related to the ubiquitous lockdowns and other mobility restriction policies adopted during March through June 2020. Where data are available, meaningful shares of respondents also report delays or other difficulties accessing health care (median 13%, col. 4).

Together, these drops in employment, income, and access to markets and services appear to contribute to higher levels of food insecurity. During the survey period, between 9 and 87% of respondents were forced to miss or reduce meals (median share 45%, col. 5), an issue we examine further in the next subsection. Even in Colombia (sample COL1), the country in our sample with the highest per capita GDP and thus potentially the greatest financial resources to cope with the crisis, the majority of respondents report drops in income (87%) and employment (49%), and an increase in food insecurity (59%).

Social support in response to the economic shock has been mixed in our populations of study. Across samples, the proportion of respondents who report benefiting from government or NGO crisis support runs the gamut from 0% to 49%, with a median of 11%. However, the high rate of missed meals and reduced portion sizes suggests that even when these efforts are

present, they have been insufficient. For instance, Rohingya refugees in Bangladesh (BGD2) report the highest rates of assistance, given the pre-existing international aid infrastructure serving those communities. Even in this sample, 27% of respondents report food insecurity. More detailed data in one sample (KEN1) indicates that households also engage in extensive dis-saving, such as selling assets and spending stored cash, to stabilize consumption.

These adverse effects on employment, income, market access, and food security vary substantially both across countries, and across different subsamples within countries. For example, in the subset of national surveys, the share of households experiencing a drop in income varies across countries from 25% in Kenya to 87% in Colombia. Within the Kenya samples, the share of households experiencing drops in income ranges from 8% to 69%. Thus, the median impacts shroud significant variation across settings. Especially within countries, it is likely that this heterogeneity results, at least in part, from differences across the subgroups surveyed.

At the same time, however, we find little evidence that this variation is systematic, e.g. by socioeconomic or refugee status. In the majority of cases, we cannot reject equality in the share of high and low SES households affected. However, the impact of an equivalent income drop may be greater among low SES households, as evidenced by the generally higher rates of food insecurity reported in these sub-samples. There is similarly no clear pattern across refugee and non-refugee populations. Levels of reported food insecurity are actually slightly lower among refugees than the host communities living near Rohingya camps in Bangladesh (BGD2–3). On the other hand, food insecurity is somewhat higher among refugees in Kenya compared to a national sample (KEN2–3). More detailed data collected in BGD2–3 surveys suggests that the presence of international humanitarian organizations in the Rohingya camp areas may have helped buffer the economic shock for refugees.

3.2 Impact timing, magnitude, and seasonality

We next describe the magnitude and timing of the effects on economic outcomes drawing on a subset of samples that feature more detailed panel or repeated cross-sectional data with richer measures of several key outcomes.

[Figure 1 about here.]

Firm operations, a natural measure of overall local economic activity, appear to have been very adversely affected during the COVID-19 crisis where we have these data. In rural Kenya (KEN1), average firm profits and revenues dried up, falling by 51% and 44% respectively (both with p-values< 0.05 relative to pre-crisis levels, Figure 1 Panel A1). The analogous decline in Sierra Leone rural towns (SLE1) is a massive 50% (p-value< 0.05 relative to pre-crisis levels, Panel A2). This evidence complements numbers on the share of the population experiencing any decline in employment or income in Table 2 by quantifying the depth of the economic decline.

In the rural Kenya sample, there is also a pronounced decline in per capita consumption expenditures during the crisis (Panel B1), with declines in non-food expenditures of 29% (p-value< 0.05 relative to the first observation period) persisting through all of April and May 2020. During the same period, food expenditures in Kenya and Sierra Leone actually rose slightly, by 11% (Panel B1) and 6% (Panel B2), respectively, although in Sierra Leone this appears to have been driven by higher food prices facing these households (19%, p-value< 0.05 relative to the pre-period, Panel C2) rather than greater quantities consumed. In contrast, Kenyan prices were largely stable or even fell slightly during the same period (Panel C1). These data indicate that households appear to be cutting back non-food consumption in an effort to maintain essential food intake.

Examining food insecurity in greater detail, we observe rising rates of missed meals and reduced portions during the crisis in both Kenya (Panel D1) and Sierra Leone (Panel D2), respectively. In Kenya we record a 38% proportional increase in the rate of adults missing meals (0.5 meals per week), and 69% for children (0.5 meals per week). The proportional increase in the share of adults reducing portions in Sierra Leone is 86% (30 percentage points) and for children is 68% (17 percentage points, p-value< 0.05 for all of these effects). The sharp rise in food insecurity among children is particularly alarming given the potentially large negative long-run effects of under-nutrition on later life outcomes (26, 27).

The crisis period has been damaging for other dimensions of child development beyond nutrition. Schools in all sample countries have been closed during most or all of the study period. Non-trivial shares of respondents report reduced access to health facilities, including prenatal clinics and vaccinations (Table 2 col. 4). The combination of a lengthy period of under-nutrition, closed schools, and limited health care may be particularly damaging in the long-run for children from poorer households who do not have alternative resources to make these critical human capital investments.

The rate of dis-saving indicates there may be a range of other foregone household investments, from improved agricultural inputs to new small business opportunities. Lack of investment in both human and physical capital during a time of crisis can transmit the economic fallout of the pandemic far into the future.

[Figure 2 about here.]

The COVID-19 crisis also appears to have contributed to rising rates of domestic violence in the rural Kenya sample for which we have detailed survey reports (Panel E1). Both violence against women and children—groups that are already marginalized in rural Kenyan society—rise by 4% and 12% (0.3 and 2.6 percentage points), respectively, during the crisis period. This increase in violence could generate additional negative and persistent effects on physical and mental health.

A central methodological concern in interpreting the patterns described in Table 2 and Figure 1 is that factors other than the COVID-19 crisis could drive the evolution of outcomes over time. A leading possibility is that month-to-month seasonality, related for instance to the agricultural crop cycle, can also produce large changes over a span of a few months. It is challenging to fully address these concerns given distinct growing cycles for different crops in different countries, and sometimes even divergent harvest timings for different crops across regions within the same country. However, the consistency in outcomes across 16 different samples in nine countries on multiple continents, with a wide range of seasonal harvest and weather (and other) patterns, strongly suggests we are documenting the effects of a crisis that goes beyond natural seasonal variation.

In two specific cases we can directly contrast the excessive food insecurity experienced during the 2020 COVID-19 crisis to the natural seasonal patterns observed during those same months in previous years. In the BGD5 and NPL1 agrarian samples, there is monthly information on food insecurity during the 2016–2019 period that provides an ideal benchmark. Figure 2 clearly shows the pronounced seasonal variation in food insecurity in both Bangladesh (Panel A) and Nepal (Panel B) that spikes during pre-harvest 'lean' or 'hungry' seasons even during "regular" years. It is also apparent that levels of food insecurity are far higher during the 2020 crisis than they were during the same season in previous years: the rate of food insecurity in Bangladesh in April 2020 is roughly twice as high as in previous years, and this season-adjusted difference is statistically significant (p-value< 0.05). In these cases, the leading explanation for the effects we document in 2020 is the COVID-19 crisis rather than seasonal fluctuations. It is notable that in both countries, the COVID crisis occurred during the favorable post-harvest period with its relatively low level of food insecurity during normal years. Baseline levels of deprivation typically rise sharply in the final four months of the calendar year.

4. Conclusions and Implications for Policy

We document pronounced declines in employment, income, and food security since April 2020 across 16 survey samples in nine LMICs, with surveys covering over 30,000 households. This study provides some of the most systematic data to date on how the outbreak of COVID-19 has affected households across multiple LMICs in several major world regions.

While the realities of rapidly deploying a survey over the phone during a pandemic make it difficult to reach a truly nationally representative sample, we study heterogeneous samples spanning three continents. We find that the economic shock in these countries—where most people depend on casual labor to earn enough to feed their families—leads to deprivations which seem likely to generate excess future morbidity, mortality, and other adverse longer-term consequences.

The findings highlight the importance of generating on-the-ground survey data to track well-being during the crisis to gather detail necessary to craft evidence-based policy responses. We demonstrate a path forward for gathering such information using large-scale phone surveys that rely on random sampling and standardized questions for comparability across settings. The methodology and harmonized measurement tools can readily be rolled out in new contexts to cover additional populations during this and future crises.

Following on decades of steadily increasing incomes across major world regions, the sharp rise in global poverty in 2020 that we document is unprecedented. The median proportion of respondents across our sample countries experiencing reduced income is a staggering 67%, and negative effects are experienced by households across the socioeconomic spectrum. The economic distress caused by the COVID-19 pandemic has had an immediate cost in terms of nutrition in LMICs. In addition to direct health consequences, hunger places long-run productivity and growth at risk as households compensate by reducing other investments in productive inputs such as fertilizer, selling productive assets, and lowering investment into long-run child development and education. Evidence abounds that such severe shocks to food security of children can threaten long-term health and wellbeing (19, 20, 21).

Humanitarian relief efforts that aim to address these problems face two added complications during the pandemic, relative to standard relief programs during "regular years. The first is that further viral spread is fundamentally linked to the extent of economic deprivation, and successful disease containment requires the provision of immediate economic relief. Second, the worldwide financing of large-scale relief is constrained by the aggregate nature of the COVID crisis that simultaneously affected donor countries, as well as the large magnitude of the global economic recession.

The findings in our data highlight the first challenge. Households facing acute food shortages may be less willing to adhere to social distancing rules than others, and could instead seek out income-generating opportunities even in crowded and epidemiologically risky markets. For social distancing to succeed, people must feel sufficiently secure from deprivation and hunger.

Relief programs should be carefully designed to avoid unintended adverse public health consequences—such as increased face-to-face market transactions in areas with high likelihood of viral spread. Cash or food transfers that allay this direct need could even double as tools to address disease spread by discouraging such market interactions. For example,

transfers could be explicitly labeled with a 'soft' form of conditionality, such as "this is money for food *to reduce your need to work in crowded markets*" to further promote social distancing. Furthermore, new innovations to quickly and safely identify the poor using mobile phones or satellite data (e.g. 28) and deliver funds remotely through mobile money transfers (29) hold promise in this context, because of the minimal contact required to implement.

Our data also highlight the widespread nature of the global economic shock. Social protection programs in LMICs are under-funded even in good times. During an economic downturn, reduced tax revenue will make financing such programs even harder, and debt markets are not readily available for LMICs. Because the severity of the current crisis makes it important to expand safety net programs, international support—for instance, in the form of grants or concessionary loans—will be needed. Rich countries that are themselves under pressure from this same health and economic crisis may be tempted to focus on addressing problems at home. Yet, since disease transmission does not respect national borders, it is in the self-interest of wealthy countries to help reduce the spread of COVID-19 in LMICs, over and above any humanitarian motivations.

Policymakers in LMICs will also need to craft creative solutions to develop income-generating activities with longer gestation periods in case the risky COVID-19 disease environment or the associated economic slowdown persists for a prolonged period. For instance, 'graduation programs' that combine assets and training can promote a source of livelihood that requires limited external contact, and have been shown to reduce poverty in the past (30, 31). Combining such programs with immediate cash support has even been shown to help build sustainable sources of income during periods of civil unrest (e.g. 32).

On an optimistic note, the innovation and technological adoption that takes place during emergencies can spur long-run economic development. Dealing with the economic fallout from COVID-19 will require the technological infrastructure to reach poor populations in remote areas with minimal face-to-face contact. Such workarounds have accelerated the expansion of new financial technology during past political and economic crises (e.g. 33, 34). Solutions that arise in the current climate thus have the potential to both improve resilience immediately and durably advance the financial ecosystem.

Countries around the world face difficult policy choices along the path to economic recovery from COVID-19. While much public discussion focuses on "lives" and "livelihoods", our data suggest this is a false dichotomy. We provide systematic evidence on how the outbreak has adversely affected households across multiple LMICs in several major world regions. A more appropriate framing of the situation in these countries could be in terms of "lives damaged or lost due to disease" and "lives damaged or lost due to economic deprivation". We emphasize that our data do not speak to the economic consequences of imposing or relaxing specific lockdown policies. However, the evidence does have specific policy implications for how to cope with the economic hardships, in order to protect both lives now and in the

future: fund and implement immediate humanitarian relief as well as long-term safety net programs to ameliorate the damage that we document.

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Table 1: Description of Household Survey Data Samples Used in the Analysis

Country & Covid Events	Projects	Households	Survey dates
Bangladesh First case: March 8 Total cases (July 1): 149,258 Schools closed: March 17–Aug 6 Lockdown: March 26–May 30	*BGD1. Rural Sample*: Rural households in villages participating in a project which aimed to increase access to the justice system	2,229	May 2–12
	BGD2. Rohingya Refugees from Myanmar: Refugee camp households in Cox's Bazar district reported in (35)	367	April 11–17
	BGD3. Communities Living near Refugee Camps: Host community households in Cox's Bazar district	532	April 11–17
	BGD4. Participants in a Lottery for Agricultural Work Permits in Malaysia: Applicants for a temporary work program in 2013 in Chittagong and Dhaka Divisions	2,936	April 16–20
	BGD5. Landless Rural Agricultural Laborers: Landless agricultural households in Northern Bangladesh first reported in (36, 37)	294	May 31–June 2
Burkina Faso First case: March 9 Total cases (July 1): 962 Schools closed: March 26 Lockdown: March 21	*BFA1. National Sample (RECOVR)*: All adults with mobile phone numbers	1,357	June 6–26
Colombia First case: March 6 Total cases (July 1): 95,043 Schools closed: March 24 Lockdown: March 24–Jul 1	*COL1. National Sample (RECOVR)*: All adults with mobile phone numbers	1,507	May 8–15
Ghana First case: March 12 Total cases (July 1): 17,741 Schools closed: March 17–Aug 6 Lockdown: March 16–Jul 31	*GHA1. National Sample (RECOVR)*: All adults with mobile phone numbers	1,633	May 6–22
Kenya First case: March 13 Total cases (July 1): 6,366 Schools closed: March 20 Curfew: March 27	*KEN1. Rural Households in NGO Cash Transfer Study*: Households across 653 rural villages in NGO cash transfer study in Siaya County	8,572	April 11–June 27
	KEN2. UNHCR Refugees: All refugees and Shona stateless population with mobile phone numbers in Kenya	1,332	May 14–July 3
	KEN3. Combined National Sample: Phone numbers from the Kenya Integrated Household Budget Survey 2015/6 & All adults with mobile phone numbers	4,052	May 14–July 3
Nepal First case: January 23 Total cases (July 1): 13,564 Schools closed: March 19 Lockdown: March 24+	*NPL1. Agricultural Households in Western Terai*: Rural households in the bottom half of the wealth in Kailali and Kanchanpur districts	1,945	April 1–29
Philippines First case: January 30 Total cases (July 1): 37,514 Schools closed: Mar 17+ Lockdown: Mar 15+	*PHL1. National Sample (RECOVR)*: All adults with mobile phone numbers	1,389	June 18–July 2
Rwanda First case: March 14 Total cases (July 1): 1,205 Schools closed: March 16 Lockdown: March 21–April 1	*RWA1. National Sample (RECOVR)*: All adults with mobile phone numbers	1,482	June 4–12
Sierra Leone First case: March 31 Total cases (July 1): 1,462 Schools closed: March 31 Lockdown: April 19–21, May 3–5	*SLE1. Candidate Towns for Rural Electrification*: Rural households taking part in an electrification program that installs solar minigrids, described in (38)	2,439	April 30–July 11
	SLE2. National Sample (RECOVR): All adults with mobile phone numbers	1,304	May 27–June 15

Table 2: Change in Living Standards During the COVID-19 Crisis in Nine Developing Countries

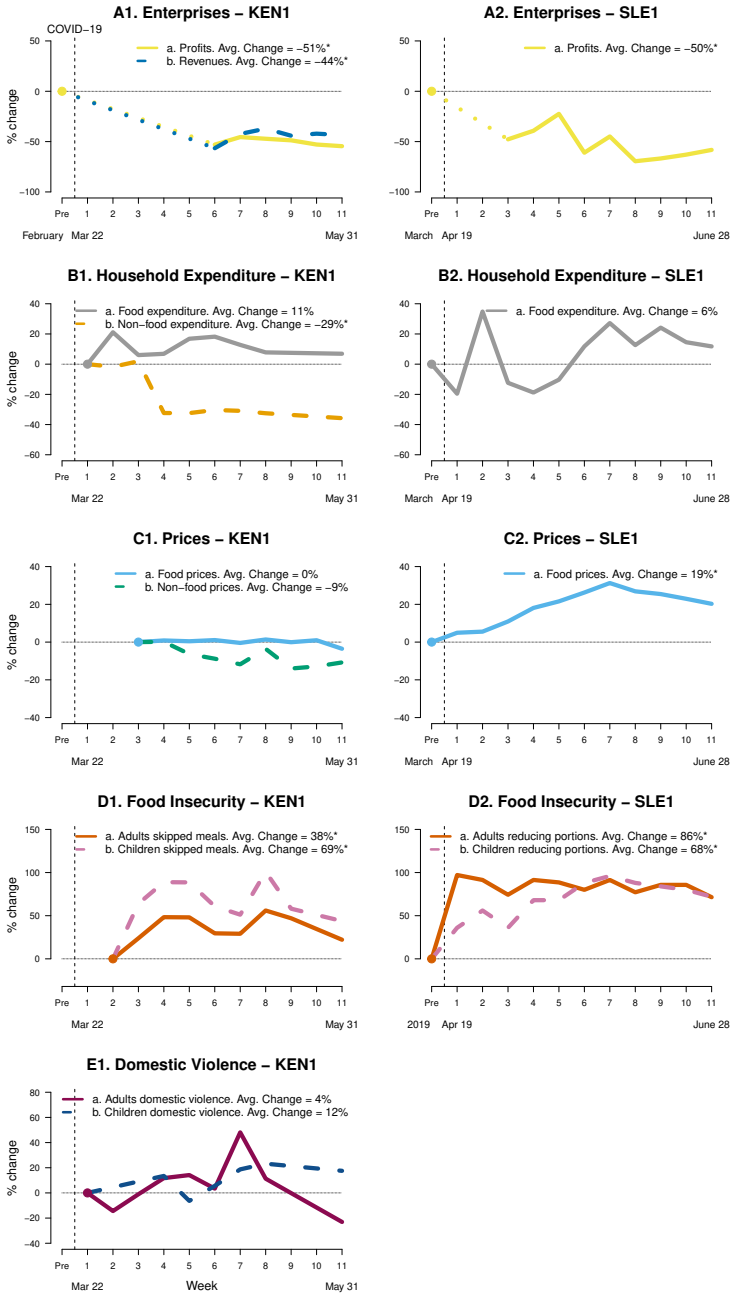
	Share of households experiencing:						
	Drop in income (1)	Drop in employment (2)	Reduced access to markets (3)	Healthcare access delayed (4)	Missed or reduced meals (5)	Received NGO or Govt Support (6)	Number of households (7)
Bangladesh							
BGD1. Rural Sample	**0.81**	**0.25**	**0.04**	–	**0.10**	**0.02**	**2,229**
Lower SES within sample	0.82	0.16	0.04	–	0.11	0.02	1,102
Higher SES within sample	0.80	0.34	0.04	–	0.09	0.02	1,127
BGD2. Rohingya Refugees from Myanmar	**0.44**	**0.31**	**0.31**	–	**0.27**	**0.26**	**367**
Lower SES within sample	0.43	0.28	0.26	–	0.27	0.26	175
Higher SES within sample	0.44	0.35	0.37	–	0.27	0.26	192
BGD3. Communities Living near Refugee Camps	**0.73**	**0.16**	**0.25**	–	**0.23**	**0.02**	**532**
Lower SES within sample	0.82	0.18	0.27	–	0.27	0.03	274
Higher SES within sample	0.64	0.14	0.23	–	0.18	0.01	258
BGD4. Participants in a Lottery for Agricultural Work Permits	**0.71**	**0.29**	**0.10**	–	**0.09**	**0.02**	**2,936**
Lower SES within sample	0.72	0.29	0.10	–	0.10	0.03	1,440
Higher SES within sample	0.70	0.28	0.10	–	0.09	0.02	1,496
BGD5. Landless Rural Agricultural Laborers	**0.79**	–	**0.03**	–	**0.69**	**0.49**	**294**
Lower SES within sample	0.70	–	0.04	–	0.74	0.52	145
Higher SES within sample	0.87	–	0.02	–	0.64	0.46	149
Burkina Faso							
BFA1. National Sample (RECOVR)	**0.63**	**0.29**	**0.49**	**0.11**	**0.28**	**0.25**	**1,357**
Lower SES within sample	0.69	0.32	0.56	0.09	0.35	0.19	631
Higher SES within sample	0.56	0.25	0.42	0.12	0.20	0.31	726
Colombia							
COL1. National Sample (RECOVR)	**0.87**	**0.49**	**0.68**	**0.43**	**0.59**	**0.28**	**1,507**
Lower SES within sample	0.95	0.51	0.71	0.41	0.75	0.43	217
Higher SES within sample	0.86	0.49	0.67	0.44	0.56	0.25	1,290
Ghana							
GHA1. National Sample (RECOVR)	**0.84**	**0.33**	**0.30**	**0.11**	**0.52**	**0.22**	**1,633**
Lower SES within sample	0.86	0.30	0.35	0.11	0.50	0.19	654
Higher SES within sample	0.83	0.35	0.27	0.11	0.54	0.24	979

Table 2 (continued)

	Share of households experiencing:						
	Drop in income (1)	Drop in employment (2)	Reduced access to markets (3)	Healthcare access delayed (4)	Missed or reduced meals (5)	Received NGO or Govt Support (6)	Number of households (7)
Kenya							
KEN1. Rural Households in NGO Cash Transfer Study	**0.69**	**0.13**	**0.67**	–	**0.48**	**0.06**	**8,572**
Lower SES within sample	0.69	0.17	0.66	–	0.52	0.07	3,171
Higher SES within sample	0.68	0.11	0.68	–	0.46	0.06	3,148
KEN2. UNHCR Refugees	**0.08**	**0.30**	–	**0.15**	**0.56**	**0.11**	**1,332**
Lower SES within sample	0.07	1.00	–	0.15	0.56	0.11	1,084
Higher SES within sample	0.12	0.06	–	0.13	0.55	0.08	248
KEN3. National Sample	**0.25**	**0.37**	–	**0.20**	**0.42**	**0.00**	**4,052**
Lower SES within sample	0.13	0.53	–	0.20	0.42	0.00	3,139
Higher SES within sample	0.64	0.14	–	0.28	0.30	0.00	913
Nepal							
NPL1. Agricultural Households in Western Terai	**0.39**	**0.19**	–	–	**0.11**	–	**1,945**
Lower SES within sample	0.34	0.18	–	–	0.13	–	800
Higher SES within sample	0.43	0.19	–	–	0.09	–	1,145
Philippines							
PHL1. National Sample (RECOVR)	**0.52**	**0.42**	**0.77**	–	**0.35**	**0.40**	**1,389**
Lower SES within sample	0.58	0.50	0.81	–	0.41	0.43	364
Higher SES within sample	0.50	0.38	0.75	–	0.32	0.39	1,025
Rwanda							
RWA1. National Sample (RECOVR)	**0.81**	**0.41**	**0.47**	**0.14**	**0.56**	**0.08**	**1,482**
Lower SES within sample	0.85	0.41	0.49	0.15	0.58	0.08	720
Higher SES within sample	0.76	0.43	0.44	0.13	0.53	0.09	762
Sierra Leone							
SLE1. Towns that are Candidates for Rural Electrification	**0.56**	**0.05**	**0.16**	**0.06**	**0.87**	**0.34**	**2,439**
Lower SES within sample	0.57	0.07	0.15	0.06	0.90	0.30	981
Higher SES within sample	0.56	0.05	0.16	0.06	0.85	0.37	1,458
SLE2. National Sample (RECOVR)	**0.82**	**0.45**	**0.64**	**0.06**	**0.56**	**0.10**	**1,304**
Lower SES within sample	0.86	0.47	0.68	0.06	0.60	0.11	806
Higher SES within sample	0.71	0.39	0.54	0.04	0.46	0.07	498
Median share of respondents across samples	**0.70**	**0.30**	**0.31**	**0.13**	**0.45**	**0.11**	

Notes: This table shows statistics from 16 household survey samples in 9 countries. Columns denote the share of households or individuals experiencing a (1) drop in income, (2) drop in employment, (3) reduced access to markets, (4) having healthcare access delayed, (5) having to reduce or miss the amount of meals, and (6) receiving NGO or government support. Column (7) shows the total number of households surveyed in each sample. Column 7 shows the maximum number of observations available for analysis in each study though specific measures are sometimes based on smaller samples. The division of respondents in each sample into "higher" and "lower" socio-economic status is based on that respondent's status within each sample, based on baseline consumption expenditure (BGD1–4, KEN1, SLE1), baseline household income (BGD5, KEN2–3, NPL1), and a Poverty Probability Index (others). Data from KEN1 restricted to the first round of surveys. Blank cells denote that no data was available. These results are reproduced with standard errors in Appendix Figure S1.

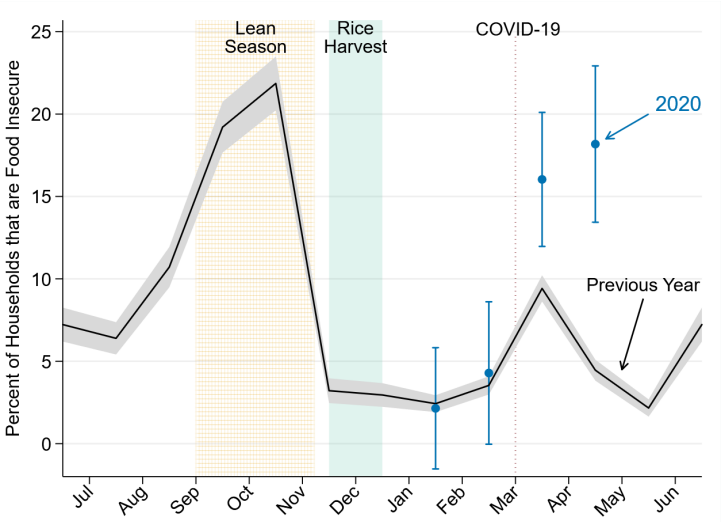
Figure 1: Evolution of Key Indicators Over Time



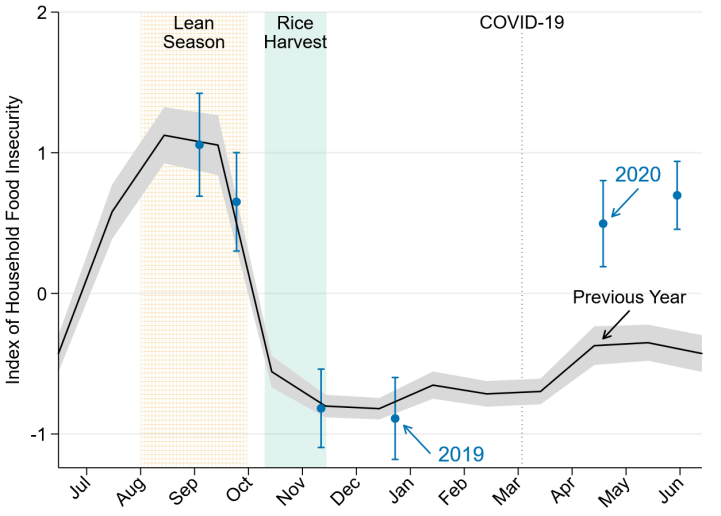
Notes: This figure shows the percentage difference from baseline for several indicators in rural Kenya and Sierra Leone during the COVID-19 global pandemic relative to the pre- or early COVID-19 levels. The Kenya sample is representative of all households and enterprises across 653 rural villages in three subcounties taking part in an unconditional cash transfer program. The Sierra Leone sample is representative of households in 195 rural towns across all 12 districts of Sierra Leone. Surveys in Kenya were conducted in two rounds. During the first round (Weeks 1 through 8), 8,594 households were interviewed. During the second round (Week 11), 1,394 households were surveyed, out of which 1,123 were interviewed for a second time. Surveys in Sierra Leone were conducted across 2,439 households. The pre-COVID-19 levels are from questions that recall data from February (Panel A1) and March (Panels A2–C2) or from a previous survey conducted in November 2019 (Panel D2). The post-COVID-19 levels are from questions that recall data from the prior 7 days (panels A–D2 and C–D1), prior 2 weeks (panels A1 and E1), and a combination (prior 7 days for food and prior 2 weeks for non-food expenditures in panel B1). The weeks on the horizontal axis refer to the start of the recall period for each observation rather than the period during which the data was collected. The dotted lines in panels A1–2 show the linear trend from the pre-COVID baseline to the first observation for each respective time series. Baseline level for D1 is 1.3 days out of seven for adults and 0.72 for children. Baseline level for D2 is 35 percent of adults missing any meals in prior seven days and 25 percent of children. Baseline level for E1 is 8 percent of adults experiencing violence in prior seven days and 20 percent of children. * denotes $p<0.05$.

Figure 2: Food Insecurity in Bangladesh and Nepal

A. Bangladesh – BGD5



B. Nepal – NPL1



Notes: Food insecurity in Bangladesh and Nepal with 95% confidence intervals. Panel A reports monthly rates of food insecurity among landless agricultural households in Northern Bangladesh from sample BGD5. Food insecurity is defined as missing a meal or reducing portions for at least fifteen days in a month. Note this is a more stringent criterion than that reported in Table 2; in this figure we restrict to cases of frequently missed meals. 2020 rates come from an April phone survey, and Previous Year reflects retrospective survey data spanning January 2018 through May 2019 collected in two survey rounds in February and June 2019. Panel B reports data from agricultural households in Western Terai, Nepal from sample NPL1. The index of food insecurity is constructed using two questions on how often households had to worry about not having enough food or had to reduce portion sizes. The data points in late 2019 and early 2020 come from six rounds of contemporaneous phone survey, and Previous Year reflects respondents' recollection about a prior "typical year" reported during the April–May 2020 phone survey round.

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All data needed to evaluate the conclusions in the paper are present in the paper and/or the Supplementary Materials. Data and code for replication are available at `https://doi.org/10.7910/DVN/SBUFNN`.

Supplementary Appendix for
"Falling Living Standards during the COVID-19 Crisis"
For Online Publication Only

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A. Sample Descriptions and COVID-19 Experiences

In this Appendix section we describe the economic context, COVID-19-related developments, and sample construction for each sample in the study. Table S1 reports summary statistics for each sample, and how they compare to national averages that appear in Living Standards Measurement Study (LSMS) surveys. For samples drawn from a specific subpopulation rather than random digit dialing, we also report how the characteristics of those who participated in the phone survey compare to the average within the sampling frame.

[Table S1 about here.]

A.1 Bangladesh

COVID-19 Experience

Case History:

- March 8: First confirmed cases reported by the Institute of Epidemiology, Disease Control, and Research (IEDCR)
- Total cases: 149,258 as of July 2, 2020 (Johns Hopkins University)
- Total deaths: 1,888 as of July 2, 2020 (Johns Hopkins University)

Mobility Restrictions:

- March 14: On-arrival visas suspended for all countries. Ban on flights from all European countries except the United Kingdom
- March 26–May 30: The Government of Bangladesh (GoB) declared a "national holiday", limited the availability of public transport, and ordered all public and private offices to remain closed. Only food markets, pharmacies, hospitals, and emergency services were allowed to remain open.
- April 9: The GoB imposes a "complete lockdown" on Cox's Bazar District. No entry and exit from the district is permitted.
- June 1: The GoB divides the country into zones (high risk, moderate, and low risk), based on the number of COVID-19 cases. Movement across areas was restricted.

Social Distancing:

- May 31: Face masks mandatory when outside the home

School Closures:

- March 17: Closure of all schools and universities. (Extended until August 6.)

Social Protection Responses: Bangladesh launched two major cash transfer programs in response to the pandemic. The assistance program for garment sector workers offered digital payments to 4 million employees at textile factories (Gentilini et al. 2020, Chowdury 2020). Another cash transfer program offered top-up payments to 5 million households who were already receiving government benefits ("PM to launch disbursement of cash aid" 2020). These two programs benefitted approximately 15% of the population (Gentilini et al. 2020).

- March 26: Prime Minister announced an USD 588 million package for export-oriented industries, to be spent on employee salaries
- April 5: Prime Minister announced an USD 8 billion stimulus package for hard-hit industries, small and medium enterprises (SMEs), and emergency incentives for export oriented industries. The GoB announced an expansion of the social safety net programs—including the Vulnerable Group Feeding(VGF) and Vulnerable Group Development (VGD) programs—and reductions in rice prices.

Economic Context

Seasonality and Food security The five Bangladesh surveys were conducted between 11 April and 2 June 2020, during the end of a lean period at the beginning at the main "Boro" paddy rice harvest. Despite an above-average 2019 harvest, prices of rice during all five Bangladesh surveys remained well above their prior year levels, linked to pandemic-related increases in demand and concerns about the upcoming 2020 harvest (Global Information and Early Warning System on Food and Agriculture Country Brief: Bangladesh, *Food and Agricultural Organisation of the United Nations*, 10-June-2020).

Four of the Bangladesh surveys in this article were conducted prior to Tropical Cyclone Amphan, which struck southwestern parts of Bangladesh on 20 May 2020 and caused loss of life and substantial devastation, including livestock and crops. The fifth survey was undertaken in a region in the north of the country unaffected by the cyclone.

Refugees The over 900,000 Rohingya refugees living primarily in Cox's Bazar district since 2017 have experienced food insecurity and required humanitarian assistance to meet daily needs since well prior to the covid-19 pandemic (Global Information and Early Warning System on Food and Agriculture Country Brief: Bangladesh, *Food and Agricultural Organisation of the United Nations*, 10-June-2020).

Social Protection The social protection policy environment in Bangladesh is fragmented, with over 114 separate programs providing cash and food transfers to the vulnerable (ILO 2020).

A.1.1 Bangladesh BGD1, Rural Sample

Project Title: Activating Village Courts in Bangladesh (AVCB)
Target Population: Rural households in villages participating in the UNDP- and Government of Bangladesh-run "Village Court" project, which aimed to increase access to the justice system in rural villages.
Original Study Design: The baseline included 6,815 households from 264 unions, with at least 15 unions drawn from each division of the country. These unions were randomly selected from the low-income rural areas targeted by UNDP and the Government of Bangladesh. In-person interviews with sampled households were completed in 2017 and 2019.
COVID-19 Survey Design:

Sampling Frame: All 6,815 households who completed either of the 2 prior rounds of data collection.

Survey Dates: May 2 and May 12, 2020

Sample size, tracking and attrition: We randomly selected 9 households from each of the 264 unions for a sample size of 2,376. Using replacements from the full original study sample, we reached 2,316 households and obtained consent from 2,288. Of these, 161 households from 55 unions have a very limited set of outcomes; these households completed only a subset of the phone survey because they were assigned to a treatment arm in a subsequent randomized controlled trial.

Median survey time: 28 minutes.

Sampling Weights: None.

IRB Approval: This research was approved via Yale University IRB Protocol 1609018380 and IPA IRB Protocol 13964.

A.1.2 Bangladesh BGD2 & BGD3, Rohingya Refugees from Myanmar & Communities Living near Refugee Camps

Project Title: Cox's Bazar Panel Survey (CBPS)
Target Population: 5,000 households representative of refugee camps and host communities across Cox's Bazar district. The host sample was stratified by distance to camps.
Original Study Design: The baseline survey was collected between April and July 2019. Each household was administered a standard living conditions questionnaire. Two adults aged 15 or older were randomly selected for detailed interviews.
COVID-19 Survey Design: Phone surveys

Sampling Frame: 5,000 households representative of refugee camps, host communities in close proximity to camps (within 15 kilometers or 3 hours walking distance), and host

communities further away.

Survey Dates: April 11 and 17, 2020

Sample size, tracking and attrition: A random subsample of 1,255 households. Of these, we reached 909 and we obtained consent to survey one adult in 899 households. The data used for this article was firstly reported in Lopez et al. (2020).

Median survey time: 31 minutes

Sampling Weights: Surveyed households and individuals are weighted by their geographic strata (camps, host communities close to refugee camps, and host communities far away) and by the size of the population of the primary sampling unit (mauza segments) in order to maintain the representativeness of each of the three target populations.

IRB Approval: This research was approved via IPA IRB Protocol 14742 and George Washington University 071721.

A.1.3 Bangladesh BGD4, Participants in a Lottery for Agricultural Work Permits in Malaysia

Project Title: Government-to-Government (G2G)

Target Population: Individuals who applied for a temporary work program in the palm sector in Malaysia run in 2013 intermediated by the Government of Bangladesh. Of the 1.43 million who applied, about 36,000 were selected to receive work visas. However, a variety of factors contributed to lower realized migration; as of 2018, only about 10,000 lottery winners traveled to Malaysia on lottery-awarded visas.

Original Study Design: The project tracked lottery applicants in 49 upazilas in the two largest Divisions of Bangladesh, Chittagong and Dhaka, in 2018.

COVID-19 Survey Design: Phone-based surveys

Sampling Frame: All 4,606 respondent households from the 2018 in-person baseline.

Survey Dates: April 16 and 20, 2020

Sample size, tracking and attrition: Of the 4,606 households in the sampling frame, we reached 2,942, obtained consent from 2,937, and completed 2,899 surveys.

Median survey time: 20 minutes

Sampling Weights: None

IRB Approval: This research was approved via IPA IRB Protocol 14679.

A.1.4 Bangladesh BGD5, Landless Rural Agricultural Laborers

Project Title: No Lean Season (NLS)

Target Population: Landless agricultural households in Northern Bangladesh who were eligible to receive a short-term low-interest migration loan during the agricultural lean season.

Original Study Design: The first two rounds of study included 1,900 households in 2008 and 3,600 in 2014 (Bryan et al. 2014 and Akram et al. 2017, respectively). In 2017 and 2018, the loan program was expanded to a large scale with 158,014 loans made in 2017 and 143,721 in 2018.

COVID-19 Survey Design: Phone surveys.

Sampling Frame: 3,592 households in rural agricultural villages in Northern Bangladesh. The sample frame was selected from households that owned less than a half acre of land and were served by RDRS microfinance branches participating in the NLS experiment in 2018; they were surveyed as part of the impact evaluation..

Survey Dates: May 31 and June 2, 2020

*Sample size, tracking and attrition:*388 households, out of which 296 were reached and 294 consented to participate and completed the survey.

Median Survey Time: 16 minutes

Sampling Weights: Sample selection was stratified by treatment assignment in the NLS experiment and by prior migration experience. Survey weights are the inverse of likelihood of being sampled.

IRB Approval: Yale University IRB Protocol 1010007571

A.2 Burkina Faso

COVID-19 Experience

Case History:

- March 9: First confirmed case
- Total cases: 962 as of July 1, 2020 (World Health Organization)
- Total deaths: 53 as of July 1, 2020 (World Health Organization)

Mobility Restrictions:

- March 20: Prohibition of exit or entry nationally and no flights entering or leaving the country.
- March 21: Curfew (7 pm–5 am) implemented. On April 17, the curfew schedule changed to 9 pm to 4 am.
- April 1: Closure of Ouagadougou and Bobo Dioulasso airports to commercial flights, land and rail borders, public passenger transport, and places of worship.

School Closures:

- March 26: Closure of all schools. On April 12, school closure extended.

Social Distancing:

- March 21: Ban on public gatherings including gatherings in restaurants and bars, cinemas, nightclubs, sports halls and places of worship, baptism and wedding ceremonies, and funerals.
- April 27: Face masks required in public places.

Social Protection Responses:

- April 2: State support for electricity bills; subsidization of water bills for low income households and free water provision at standpipes; cancellation of penalties on SONABEL invoices; cancellation of penalties on ONEA invoices.
- April 8: Food aid is distributed to vulnerable people.
- May 2: Cash transfer distributed to 20,000 households.

Economic Context

Conflict A humanitarian crisis has been unfolding in Burkina Faso since 2016, with rising insecurity throughout 2019 and an estimated 765,000 Internally Displaced People in March 2020 when covid and related social distancing restrictions began to impact the country.

Seasonality and Food Security The survey was conducted in June 2020, at the start of the sowing season, and followed an above-average harvest for cereal crops outside conflict zones between August and December 2019. Conflict has negatively impacted food security in some parts of Burkina Faso since well prior to the covid-19 pandemic. The FAO primarily attributes this situation to a combination of insecurity and related travel restrictions, local climate shocks and pests, and limited food assistance. In March 2020 the FAO estimated that 2.1 million people would be in need of food aid by July 2020. (Global Information and Early Warning System on Food and Agriculture Country Brief: Burkina Faso, *Food and Agricultural Organisation of the United Nations*, 27-July-2020).

Social Protection Access to social protection in Burkina Faso is limited. While the country has over 100 different programs providing cash transfers or food aid, only 2.6% of the population benefits from them (Vandeninden, Grun & Semlali 2019). During the pandemic, the government declared that it would provide cash transfers to workers in the informal sector, although details of the program's implementation are scarce (Grun, Semlali & Vandeninden 2020).

A.2.1 Burkina Faso BFA1, National Sample (RECOVR)

Project Title: Research for Effective COVID-19 Responses (RECOVR)

Target Population: A random sample of all adults with mobile phone numbers in the country, based on national communications authority number allocation plans.
Original Study Design: N/A
COVID-19 Survey Design: Numbers were called via random digit dialing (RDD), stratified by mobile network operator market share.

Sampling Frame: All mobile phone numbers in Burkina Faso.

Survey Dates: June 6 and 15, 2020

Sample size, tracking and attrition: 1,356 individual surveys contacted through Random Digit Dialing (RDD) from the sampling frame of all mobile phone numbers in Burkina Faso. 2,313 working numbers yielded 1,383 eligible respondents for a completion rate of 98% of eligible respondents.

Median survey time: 27 minutes

Sampling Weights: Surveyed households are weighted by geographic unit and gender of respondent, using the inverse likelihood of being sampled based on the most recent nationally representative household survey, the 2014 Enquête Multisectorielle Continue (EMC) Survey.

IRB Approval: This research was approved via IPA IRB Protocol 15608, and the Burkina Faso Institutional Ethics Committee for Health Sciences Research, approval A13-2020.

A.3 Colombia

COVID-19 Experience

Case History:

- March 6: First confirmed case
- Total cases: 95,043 as of July 1, 2020 (World Health Organization)
- Total deaths: 3,223 as of July 1, 2020 (World Health Organization)

Mobility Restrictions:

- March 17–July 1: Borders closed.
- March 24: Mandatory preventive isolation implemented throughout the country, which allows one member of the family to leave to buy food, medicine and carry out financial transactions. New guidelines for outdoor activities for vulnerable groups to go into effect on June 1. On May 28, mandatory preventive isolation extended to July 1.

School Closures:

- March 24: Schools closed

Social Distancing:

- April 4: The Government mandates the use of face masks in public transit and in areas of high volume such as supermarkets, banks and pharmacies. Face masks are mandatory for people with respiratory symptoms and vulnerable groups such as adults over 70.
- March 24: Mandatory preventive isolation implemented throughout the country. Social events and activities are prohibited including religious services involving crowds or gatherings, group sports, gyms, bars and discos, and cinemas and theaters. Restaurants can only provide take-away orders. Consumption of alcohol in open spaces is banned.

Social Protection Responses:

- March 25: Individuals in strata 1 and 2 can defer payment of energy and gas bills up to 36 months during mandatory preventive isolation. Cash transfers and food aid provided to households, youth and the elderly.
- In March 2020, Colombia rolled out a new unconditional cash transfer program, *Devolución del IVA*, benefitting one million low-income households. The transfer is paid every two months to recipients of *Familias en Acción*, and *Colombia Mayor*. The 75,000 peso (USD 20) additional transfer represents 8% of the monthly minimum wage. Approximately 27% of the population has received this cash transfer program (Gentilini et al. 2020).

Economic Context

Seasonality and Food Security The RECOVR survey took place during the main rice planting season, though the sample contains few households whose livelihoods depend on agriculture. The price of rice reached a record high in April 2020, shortly before the survey. Prices remained 40% above year-earlier values by June 2020.

Conflict The Coordination Platform for Refugees and Migrants for Venezuela estimated that nearly 5 million people have fled from the country as of mid-March 2020. Colombia is the main host country of refugees and migrants from Venezuela (Bolivarian Republic of), with an estimated population of nearly 1.8 million. According to a February 2020 World Food Program survey, more than 20 percent of the migrant population in the four departments that border with Venezuela were severely food insecure. Migrant households have minimal access to employment, increasing food insecurity.

Social Protection Colombia provides several social protection programs, including a conditional cash transfer program, *Familias en Acción*, and *Colombia Mayor*, a non-contributory pension program for low-income senior citizens.

A.3.1 Colombia COL1, National Sample (RECOVR)

Project Title: Research for Effective COVID-19 Responses (RECOVR)
Target Population: A random sample of all numerically possible mobile phone numbers in the country, based on national communications authority number allocation plans.
Original Study Design: N/A
COVID-19 Survey Design:

Sampling Frame: Numbers were called via random digit dialing (RDD), stratified by mobile network operator market share.

Survey Dates: May 8 and 15, 2020

Sample size, tracking and attrition: 1,507 interviews

Median survey time:

Sampling Weights: Surveyed households are weighted by geographic unit and gender of respondent, using the inverse likelihood of being sampled based on the most recent nationally representative household survey, the 2016 Gran Encuesta Integrada de Hogares (GEIH) Survey.

IRB Approval: . This research was approved via IPA IRB Protocol 15582.

A.4 Ghana

COVID-19 Experience

Case History:

- March 12: First confirmed case
- Total cases: 17,741 as of July 1, 2020 (WHO)
- Total deaths: 112 as of July 1, 2020 (WHO)

Mobility Restrictions:

- March 23–June 30: Borders closed. On May 31 this restriction was extended until further notice.
- March 30–April 20 : Lockdown imposed in Greater Accra Metropolitan Area (GAMA) including Awutu Senya East in Central Region, as well as Kumasi Metropolitan area and contiguous districts

School Closures:

- March 16–July 31: Closure of all schools and higher education institutions.
- June 15–29: Final year students in secondary and tertiary institutions begin to return to school to complete exit exams.

Social Distancing:

- March 16–July 31: Suspension of public gatherings larger than 25 people. On May 31, President Akufo-Addo outlined easing of restrictions on some public gatherings. Beginning June 5, religious services may take place at 25 percent attendance,restaurants may reopen with appropriate social distancing precautions, and conferences, workshops, weddings and private burials are permitted with a maximum of 100 attendees.
- April 25: The Ministry of Health released guidance mandating the use of facemasks in public. This directive is still in effect and enforced by the police.

Social Protection Responses:

- March 27: Under the government's Coronavirus Alleviation Program (CAP), food aid will be provided to 400,000 individuals and homes in affected areas.
- April 1: Suspension of water bills. The COVID-19 National Trust Fund Bill 2020 passed into law, which will provide cash transfers to individuals who have been negatively impacted by the disease.
- April 9: Electricity bills fully covered by the Government for the poorest of the poor, i.e. for all lifeline consumers.
- Since March 2020, in response to the pandemic, the Social Protection Department distributed food to some vulnerable populations during the lockdown period (prior to the survey), and Livelihood Empowerment Against Poverty (LEAP) 2nd cycle payments were accelerated. There have also been smaller scale distributions of masks and other PPEs.

Economic Context

Seasonality The survey was conducted in May, the start of the sowing season for most cereal crops, and followed a record harvest for those crops in 2019. In March 2020 the FAO estimated that only 22,000 people would be in need of food aid during the June-August 2020 lean season. (Global Information and Early Warning System on Food and Agriculture Country Brief: Ghana, *Food and Agricultural Organisation of the United Nations*, 15-Apr-2020).

Social Protection The Ghanaian government provides several social protection programs. Livelihood Empowerment Against Poverty (LEAP), a cash transfer program that currently targets older persons, persons with disabilities, orphans and vulnerable children, and pregnant women and infants. Other programs include Labour Intensive Public Works (LIPW) to create employment opportunities for the rural poor through the rehabilitation of community assets, and National Health Insurance Exemptions to promote universal access to

basic healthcare through public, mutual and private health insurance schemes, and a daily school feeding program.

A.4.1 Ghana GHA1, National Sample (RECOVR)

Project Title: Research for Effective COVID-19 Responses (RECOVR)
Target Population: A random sample of all numerically possible mobile phone numbers in the country, based on national communications authority number allocation plans.
Original Study Design: N/A
COVID-19 Survey Design:

Sampling Frame: Numbers were called via random digit dialing (RDD), stratified by mobile network operator market share.

Survey Dates: May 6 and 22, 2020

Sample size, tracking and attrition: 1,579 surveys

Median Survey Time: 32 minutes

Sampling Weights: Surveyed households are weighted by geographic unit and gender of respondent, using the inverse likelihood of being sampled based on the most recent nationally representative household survey, the 2016/17 Living Standards Survey (GLSS7).

*IRB Approval:*This research was approved via IPA IRB Protocol 15542.

A.5 Kenya

COVID-19 Experience

Case History:

- March 13: First confirmed case
- Total cases: 6,366 as of July 1, 2020 (WHO)
- Total deaths: 148 as of July 1, 2020 (WHO)

Mobility Restrictions:

- March 15: Entry restricted to citizens and foreigners with valid residence permits, who must self-quarantine upon arrival. Non-essential government and businesses directed to begin working from home
- March 25: National and international flights halted.
- March 27: Start of dusk to dawn curfew (7pm-5am). On June 7, schedule changed to 9pm-4am. Still in place as of June 30.

- April 6: Partial mobility restrictions begin; movement in and out of Nairobi Metropolitan Area restricted. On April 8, Mombasa, Kilifi and Kwale were was added to this list. Mandera was added on April 22. Restrictions were lifted for Kilifi and Kwale on June 6; they remain in place for Nairobi, Mombasa and Mandera.
- In addition, from May 6–June 6, movement into and out of the Eastleigh in Nairobi and Old Town in Mombasa was restricted.

Social Distancing:

- March 15: Limits on large gatherings, church attendance, closure of courts; Safaricom suspends mobile money transaction fees to encourage cashless transactions
- April 12: Mask wearing in public spaces mandatory

School Closures:

- March 20: Closure of all schools and higher education institutions.

Social Protection Responses:

- March 25: Announcement of tax breaks for households and enterprises, accelerated payments of bills and tax credits, additional appropriations for cash transfers to the elderly, orphans and vulnerable households by the Ministry of Labour and Social Protection.
- May 23: Stimulus package announced, including spending on infrastructure, tourism, education sector and SMEs.
- There are reports that beneficiaries of the old age pension (Inua Jamii) program have received additional payments during the pandemic (Gentilini et al. 2020), but other sources suggest that they only received their standard payments (Chebii & Oyunge 2020).
- A public works program temporarily employed 26,000 young people to clean and sanitize poor urban neighborhoods (Matiang'i 2020).

Economic Context

Seasonality and Food Security The three Kenya surveys were conducted as the country entered the lean season, following a below average cereal crop harvest in 2019. A severe desert locust outbreak, the worst in 70 years, has affected large areas in the north and central pastoral areas of the country, but not Siaya County (Sample KEN1). (Global Information and Early Warning System on Food and Agriculture Country Brief: Kenya, *Food and Agricultural Organisation of the United Nations*, 12-May-2020).

Populations of concern Kenya hosts nearly 500,000 refugees and asylum seekers registered with UNHCR, approximately 200,00 in or near each of two large refugee camps – Dadaab and Kakuma – and the remainder in Nairobi (UNHCR Kenya, July 2020).

Social Protection Kenya has four major cash transfer programs for people who are disabled, elderly, vulnerable children, or at risk of seasonal hunger, coordinated under the National Safety Net Program (National Social Protection Secretariat, n.d.). Approximately 5.7% of the population benefits from these programs (Beegle, Coudousel & Monsalve 2018).

A.5.1 Kenya KEN1, Rural Households in NGO Cash Transfer Study

Project Title: General Equillibrium Effects of Cash Transfers (GE), Siaya County
Target Population: All households across 653 rural villages in three subcounties taking part in an unconditional cash transfer program reported in Egger et al. (2019).
Original Study Design:

Intervention: The NGO *GiveDirectly* (GD) provides unconditional cash transfers to poor households; its cash transfer program was randomly assigned at the village level. In treatment villages, poor households meeting a basic means test (33 percent of households) were eligible for the program. Eligible households in treatment villages that were enrolled in the program received a large, unconditional cash transfer of about USD 1,000 (nominal) in a series of three payments over eight months via the mobile money platform M-Pesa. These transfers were rolled out across study villages, with households beginning to receive transfers in 2014-15. A total of 10,500 households received transfers.

Village Sampling Frame: The NGO identified 653 villages across three subcounties in Siaya County for potential expansion for their unconditional cash transfer program in 2014, covering over 65,000 households and approximately 280,000 individuals. These were all rural villages in the three subcounties that had not previously been a part of GD's program. The study area was selected by the NGO due to its high poverty rates.

Household Sampling Frame: Prior to the intervention, a census of households in all villages was conducted by the research team. This census collected details to determine the eligibility status of all households, and identified 65,385 households between August 2014 and July 2015. Baseline household surveys targeted 8 eligible and 4 ineligible households per village; if a household on our sampling list was not available on the village visit day, we instead surveyed a randomly-selected replacement household with the same eligibility status. We conducted a total of 7,848 baseline household surveys between September 2014 and August 2015. Endline household surveys targeted all households on our initial sampling lists (including those that were missed at baseline), along with replacement households that were surveyed at baseline. We conducted a total of 8,242 endline household surveys between May 2016 and June 2017 out of a target sample of 9,150 households. A longer-term follow-up household census was conducted in late 2019 in order to identify new households in the

study area.

Enterprise Sampling Frame: In conjunction with household data collection, enterprises were censused and surveyed before and after the transfers. These were designed as representative, repeated cross-sections. The endline survey in 2016–17 surveyed a total of 3,141 enterprises. A longer-term follow-up enterprise census was conducted in late 2019 in order to identify enterprises still operating and new enterprises in the study area.

COVID-19 Survey Design:

Household Sampling Frame: Our total household sample for COVID-19 phone surveys includes 11,519 households. This is comprised of the 9,150 households described above as part of the household endline survey for the cash transfer project. In our most recent census activity in late 2019, we tracked a number of households not previously censused. We classify these households into three groups: i) households that moved to the study area since our last census, ii) households that were newly formed from an existing household (most commonly children or siblings moving into their own household), iii) households that report having been in the study area at the time of our baseline census, but were not captured (this combines households that were actually present and missed with household misreporting). We include all households from group (ii) that split off of any of the 9,150 households in our original sample, as well as any split-offs from an additionally-drawn 18% of households not eligible for the cash transfer at baseline. In each village, we draw 24% of households belonging to groups (i) and (iii), but at least 1 household each.

Enterprise Sampling Frame: The enterprise sampling frame consists of the 1,971 enterprises from the 2016–17 endline identified as still operational at the time of the 2019 enterprise census, plus 435 enterprises identified in 2016–17 enterprise census to ensure a target of 20% of existing enterprises per village, plus an additional 20% of new enterprises (but at least one, if it exists) new enterprise per village.

Survey Dates: Household surveys took place between April 7 and June 27, 2020. A first round of surveys took place between April 11–June 16, 2020. A second round began on June 18 and remains in progress; in Figure 1, we use data through June 27.

Enterprises: May 8 – June 26, 2020

Sample size, tracking and attrition: In round 1 of household surveys, 8,594 households were reached, for a weighted tracking rate of 79% and a survey rate of 75%. To date, 1,394 round 2 household surveys have been conducted.

A total of 4,259 enterprise surveys have been conducted, with a weighted tracking rate of 85% and a survey rate of 84%.

Median survey time: 25 minutes for households, 13 minutes for enterprises

Sampling Weights: Surveyed households are weighted by their 2019 census status (original eligible, original ineligible, new arrivals, newly formed, otherwise missed) in order to maintain population representativeness with our 2019 household census. Surveyed enter-

prises are also weighted by their 2019 census status in order to maintain population representativeness.

IRB Approval: UC Berkeley, Maseno University

A.5.2 Kenya KEN2, Refugees (UNHCR)

Project Title: UNHCR Refugee Sample
Target Population: All refugees in Kenya registered with UNHCR and the Shona stateless population
Original Study Design: N/A
COVID-19 Survey Design:

Sampling Frame: The 3,576 respondents of this phone interview were identified using mixed methods. Stratified random sampling of 822 households from the UNHCR database of registered refugees was adopted for households based in 4 strata: Kakuma, Kalobeyei, Dadaab, and refugees residing in urban areas. For 5th stratum, the Shona population, the sample of 286 households corresponds to that drawn for a recent Socioeconomic Assessment Survey. Individuals were sent a text message, stating that they have been randomly selected to participate in a socio-economic impact of COVID-19 survey. Only households where this message was reported as 'delivered' by the implementing telecommunications firm were considered.

Survey Dates: May 14–July 3, 2020

Sample size, tracking and attrition: We consider a household as "tracked" if we reached someone in the target household after at most 10 attempts, with at least two attempts in the morning, afternoon and evening and on the weekend. The so-defined tracking rate was 44%. After removing non-consents, respondents that were under 18 years of age and households that were otherwise unable to complete the survey, phone surveys were administered to 1,455 households for a survey rate of 41%.

Sampling Weights: To make the sample representative of all refugee households with access to a mobile phone number in Kenya, weights reflect the population size of each stratum, and are corrected for non-response within stratum using a propensity-score re-weighting procedure based on key demographic variables including country of origin, household composition, literacy and main source of income.

IRB Approval: Maseno University

A.5.3 Kenya KEN3, National Sample (WB)

Project Title: World Bank Rapid Response National Phone Survey (WB-NRR)
Target Population: All adults with mobile phones
Original Study Design: N/A
COVID-19 Survey Design:

Sampling Frame: The total household sampling frame for COVID-19 phone surveys includes 13,066 households, based on the universe of 9,007 respondents with phone numbers from the 2015/16 Kenya Integrated Household Budget Survey (KIHBS), a nationally-representative survey, and 4,059 phone numbers from Random Digit Dialing. Those 4,059 phone numbers remained after 5000 mobile phone numbers chosen randomly from Kenya Numbering plan were contacted by text message twice (with at least 8 hours between the two messages), and at least one of those messages was reported as 'delivered' by the implementing telecommunications firm.

Survey Dates: May 14–July 3, 2020

Sample size, tracking and attrition: We consider a household as "tracked" if we reached someone in the target household after at most 10 attempts, with at least two attempts in the morning, afternoon and evening and on the weekend. The so-defined tracking rate for the phone numbers from the 2015/16 nationally representative Kenya Integrated Household Budget Survey (KIHBS) was 46%;and 42% for households contacted through Random Digit Dialing (RDD). After removing non-consents, respondents that were under 18 years of age and households that were otherwise unable to complete the survey, phone surveys were administered to 4,059 individuals overall, 3,291 households surveyed as part of the KIHBS sample, and 768 households contacted RDD for survey rates of 37% and 19%, respectively.

Sampling Weights: To make the sample nationally representative of the current population of households with mobile phone access, we create weights as follows: The current population consists of (I) households that existed in 2015/16, and did not change phone numbers, (II) households that existed in 2015/16, but changed phone number, (III) households that did not exist in 2015/16. Abstracting from differential attrition, KIHBS 2015/16 weights (described here) make the KIHBS sample representative of type (I) households. For RDD households, we ask whether they existed in 2015/16, when they had acquired their phone number, and where they lived in 2015/16, allowing us to classify them into type (I), (II) and (III) households and assign them to KIHBS strata. We adjust weights of each RDD household to be inversely proportional to the number of mobile phone numbers used by adult members of the household, and scale them relative to the average number of mobile phone numbers used in the KIHBS within each stratum. RDD therefore gives us a representative sample of type (II) and (III) households. We then combine RDD and KIHBS type (I) households by ex-post adding RDD households into the 2015/16 sampling frame, and adjusting weights accordingly. Last, we combine our representative samples of type (I), type (II) and type (III), using the share of each type within each stratum from RDD (inversely weighted by number of mobile phone numbers).

IRB Approval: Maseno University

A.6 Nepal

COVID-19 Experience

Case History:

- First COVID-19 case confirmed on January 23, 2020
- Second case confirmed on March 23, 2020
- Number of confirmed cases: 13,564 as of July 1, 2020 (WHO)
- Number of deaths: 148 as of July 1, 2020 (WHO)

Mobility Restrictions:

- January 28: Land border with China closed
- March 22: All international flights stopped
- March 23: Land border with India closed
- March 24: National lockdown takes effect. Movement outside the home banned except to purchase necessities or receive medical care. Motorized vehicles without prior permission banned from use. All transport services banned, still in effect July 12, 2020.

Social Distancing:

- March 18: Gatherings of more than 25 people banned, including places of worship.

School Closures:

- March 19: All classes and examinations suspended

Social Protection Responses:

- The government provided food aid packages to an unspecified number of vulnerable households, with one source estimating that 70 - 95% of households in this category had received assistance (Franciscon & Arruda 2020).
- Plans for utility fee waivers and a public works program for individuals in the informal sector were announced, although there is limited data on how many people have benefitted from these schemes (Gentilini et al. 2020).

Economic Context

Seasonality and Food Security In 2019, Nepal produced record-level cereal crops, the latest in a series of four consecutive bumper harvests. The NEP1 survey was conducted

several months before the start of the 2020 lean period. However, the FAO remained concerned about food insecurity for approximately 15% of the Nepalese population. (Global Information and Early Warning System on Food and Agriculture Country Brief: Nepal, *Food and Agricultural Organisation of the United Nations*, 13-May-2020).

Social Protection Nepal has over 80 social protection schemes in operation (Ghimire 2019), with more than half of their spending going towards people who are elderly or disabled, and the rest distributed between a variety of employment and scholarship schemes (Sijapati 2017). While coverage is fairly high, at 28% of the population, the average program provides very low levels of benefits, at only $2 - $5 per month (Sijapati 2017).

A.6.1 Nepal NPL1, Agricultural Households in Western Terai

Project Title: Western Terai Panel Survey (WTPS)
Target Population: Rural households in the districts of Kailali and Kanchanpur.
Original Study Design: Initial baseline data was collected in-person in July of 2019, and 5 rounds of phone survey data were collected between August 12, 2019 and January 4, 2020.

Sampling Frame: The phone survey sample includes 2,636 rural households in the districts of Kailali and Kanchanpur, which represent the set of households that responded to phone surveys from an original sample of 2,935 households. This sample was constructed by randomly sampling 33 wards from 15 of the 20 sub-districts in Kanchanpur and selecting a random 97 villages from within those wards. At the time of baseline data collection in July of 2019, 7 of these 97 villages were dropped from the sample due to flooding. Households belong to the bottom half of the wealth distribution in these villages, as estimated by a participatory wealth ranking exercise with members of the village.
COVID-19 Survey Design: Phone surveys

Sampling Frame: Two phone surveys were fielded in April, 2020. The first included detailed questions on social distancing and more sparse data on other socioeconomic variables. This survey attempted to reach the universe of 1,820 households that had responded to at least one prior phone call in 48 villages, and successfully reached 1,419 households. The second survey included only sparse information on social distancing and more detailed questions on socioeconomic variables. This survey attempted to reach a random sample of 500 households across the remaining 42 villages, and successfully reached 408.

Survey Dates: April 1 to April 29, 2020

Sample size, tracking and attrition: 1,981 households

Median Survey Time: 27 minutes (COVID-19 survey) and 18 minutes (Socioeconomic survey)

Sampling Weights: None

IRB Approval: Yale University IRB Protocol 2000025621

A.6.2 Philippines

COVID-19 Experience

Case History:

- January 30: First confirmed case
- Total cases: 37,514 as of July 1, 2020 (World Health Organization)
- Total deaths: 1,266 as of July 1, 2020 (World Health Organization)

Mobility Restrictions:

- March 15–April 14: Metro Manila placed on lockdown; no domestic land, air or sea travel allowed.
- March 16: President declaration of a state of calamity in place until September 15, 2020. Luzon placed under enhanced community quarantine until April 30.
- May 1: President orders an extension of enhanced community quarantine (all households are to remain home and limit movement to accessing essential goods and services only, further restrictions on those under 21, over age 60 and those with other health risks) in Luzon. Public transportation is suspended.
- May 1: President imposes a general community quarantine (all households are to remain home and limit movement to accessing essential goods and services only, further restrictions on those under 21, over age 60 and those with other health risks) in the rest of the country until May 15. Public transportation operates with reduced capacity and strict social distancing practice.

School Closures:

- March 10: Schools closed for the remainder of the school year with plans to reopen in August. Higher education institutions using full online education can open anytime.
- August 24 (planned): Under general community quarantine, classes for basic education will reopen and run through April 30, 2021. Depending on local COVID-19 Risk Severity Classification, schools will adopt various learning delivery options. No face-to-face or in-person classes can be conducted until August 31.

Social Distancing:

- March 11: Department of Health issues a public advisory to minimize participation and organization of large gatherings.

- April 30: Face masks required by all persons.
- April 30: Enhanced Community Quarantine: Mass gatherings prohibited, supermarkets and restaurants offering take-out and delivery can operate with a skeleton crew.
- April 30: General community quarantine: Mass gatherings prohibited but religious activities with maximum 10 persons can operate. Shopping centers remain open at limited capacity. Leisure establishments remain closed. Outdoor forms of non-contact exercise allowed provided with social distancing protocols. Restaurants can remain open for take-out and delivery services only.

Social Protection Responses:

- March 17: All banks and financial institutions implement a minimum of a thirty-day grace period from due date or until enhanced community quarantine is lifted for the payment of all loans.
- March 17: Micro, small, and medium enterprises have a thirty-day grace period from the date community quarantine is lifted for rent payment without incurring interests, penalties, fees or other charges.
- March 25: The Bayanihan to Heal As One Act is enacted which includes an emergency subsidy – the Social Amelioration Program (SAP), implementation of an expanded and enhanced Pantawid Pamilya Pilipino Program, and provision of an assistance program through the Department of Social Welfare and Development. The Act prioritizes a number of social welfare programs to be enlarged to better address the COVID-19 crisis. The SAP Tranche 1 provided Php 5,000 - 8,000 (USD 100-165) to low income households from April to May 2020, reaching approximately 18 million households shortly before the RECOVR survey was conducted.

Economic Context

Seasonality and Food Security The RECOVR survey was conducted during the main rice planting season, just after the secondary rice harvest. FAO estimates average food harvests for both 2019 and 2020. In mid-May 2020 a Typhoon Vongfong caused crop damage in a few regions. Rice prices had been on a steady decline since 2018, and in April and May 2020 remained lower than one year earlier, despite covid-related price increases. (Global Information and Early Warning System on Food and Agriculture Country Brief: Philippines, *Food and Agricultural Organisation of the United Nations*, 12-June-2020).

Social Protection The Philippines has offered several expansive social protection programs that predate the pandemic. Pantawid Pamilyang Pilipino Program (4Ps) reached

4.25 million poor Filipino households in 2019 and has grown to 4.30 million in 2020 (Department of Social Welfare, Pantawid Report 2019. Other social protection programs include the Sustainable Livelihood Program (SLP), a National Health Insurance scheme, Pension Scheme, a Rice Subsidy programs, the DOLE Integrated Livelihood Program (DILP).

A.6.3 Philippines PHL1, National Sample (RECOVR)

Project Title: Research for Effective COVID-19 Responses (RECOVR)
Target Population: A random sample of all numerically possible mobile phone numbers in the country, based on national communications authority number allocation plans.
Original Study Design: N/A
COVID-19 Survey Design:

Sampling Frame: Numbers were called via random digit dialing (RDD), stratified by mobile network operator market share. All monthly post-paid plans excluded from sample.

Survey Dates: June 17 to July 3, 2020

Sample size, tracking and attrition: 1,389 surveys

Median Survey Time: 32.1 minutes

Sampling Weights: Surveyed households are weighted by geographic unit and gender of respondent, using the inverse likelihood of being sampled based on the most recent nationally representative household survey, 2015 Philippines Family Income and Expenditure Survey (FIES) produced by the Philippine Statistical Agency.

IRB Approval: This research was approved via IPA IRB Protocol 15641.

A.6.4 Rwanda

COVID-19 Experience

Case History:

- First confirmed case: March 14
- Total cases: 1,025 as of July 1, 2020 (World Health Organization)
- Total deaths: 2 as of July 1, 2020 (World Health Organization)

Mobility Restrictions:

- March 18: All commercial passenger flights halted.
- March 21: Travel between different cities and districts prohibited except for medical reasons or essential services. Borders closed except for goods and cargo and returning Rwandan citizens and legal residents. Closures extended on April 30 and remain in place as of June 30. Returning citizens are subject to mandatory 14-day quarantine.

- March 21–April 1: Unnecessary movements and visits outside the home are prohibited. Movement for essential services allowed.
- April 25: People in need of essential services must request clearance online and wait for approval before attempting movement.
- April 30: Curfew instituted between 8 pm to 5 am. Curfew changed to 9 pm to 5 am on May 18 and extended through July.

School Closures:

- March 16: Schools closed for four weeks. On April 30, school closure extended until September.

Social Distancing:

- March 8: Concerts and other public gatherings that bring many people together postponed.
- March 15: Places of worship closed.
- April 19: Face masks required in public and in multi-family compounds.
- April 30: Meetings in public and mass gatherings prohibited.
- June 16 : Domestic tourism and international tourism for visitors traveling with charter flights resumed
- June 30 : Non-contact outdoor sports permitted

Social Protection Responses:

- March 28: Food distributions reaching 20,000 beneficiaries initiated in three districts of Kigali, starting with urban poor who cannot work and have no garden. Government fixed prices for 17 basic food items. (Global Information and Early Warning System on Food and Agriculture Country Brief: Rwanda, *Food and Agricultural Organisation of the United Nations*, 19-June-2020)
- May 4: People able to resume work will no longer receive food.
- Government added 56,000 new families to its existing Vision 2020 Umurenge Program (VUP) social protection scheme (Gentilini et al. 2020)

Economic Context

Seasonality The survey was conducted just before the second, smaller of Rwanda's two primary harvest seasons. The first 2020 harvest produced above-average yields. Flooding

and landslides earlier in 2020 did not impact the first harvest and minimally impacted the anticipated second harvest. After exceptionally high bean and maize prices in December 2019, prices declined through February with the first harvest, increased during early pandemic closures, and then began to decrease again in May 2020 (Global Information and Early Warning System on Food and Agriculture Country Brief: Rwanda, *Food and Agricultural Organisation of the United Nations*, 19-June-2020).

Social Protection Rwanda runs a variety of social protection programs, including public works and cash transfer programs, under the umbrella of its Vision 2020 Umurenge Program (VUP). Over a million people have benefitted from this program (World Bank 2019), approximately 7.5% of the population (Beegle, Coudousel & Monsalve 2018).

A.6.5 Rwanda RWA1, National Sample (RECOVR)

Project Title: Research for Effective COVID-19 Responses (RECOVR)
Target Population: A random sample of all numerically possible mobile phone numbers in the country, based on national communications authority number allocation plans.
Original Study Design: N/A
COVID-19 Survey Design:

Sampling Frame: Numbers were called via random digit dialing (RDD), stratified by mobile network operator market share.

Survey Dates: June 4 to June 12, 2020

Sample size, tracking and attrition: 1,484 surveys

Median Survey Time: 31.5 minutes

Sampling Weights: Surveyed households are weighted by geographic unit and gender of respondent, using the inverse likelihood of being sampled based on the most recent nationally representative household survey, the 2016/17 Integrated Household Living Conditions Survey (EICV5) produced by the National Institute of Statistics Rwanda (NISR) and the Ministry of Finance and Economic Planning.

IRB Approval: This research was approved via IPA IRB Protocol 15591, Rwanda National Institute for Scientific Research permit No.0856/2020/10/NISR; and Rwanda National Ethics Committee approval No.16/RNEC/2020.

A.7 Sierra Leone

COVID-19 Experience

Case History:

- First confirmed case: March 20

- Total cases: 1,462 as of July 1, 2020 (WHO)
- Total deaths: 60 as of July 1, 2020 (WHO)

Mobility Restrictions:

- March 16: Imposed quarantine on all international travelers. Non-essential government and businesses directed to begin working from home.
- March 22: National and international flights halted.
- March 27: Start of dusk to dawn curfew (9pm–6am)
- April 19–21: Lock down 1
- April 11: Partial mobility restrictions begin; inter-District travel banned. Special passes, etc
- May 3–5: Lock down 2
- June 23: inter-District travel restrictions lifted
- June 24: curfew changed to 11pm-6am

Social Distancing:

- April 7: Limits on large gatherings, church attendance, closure of courts; Safaricom suspends mobile money transaction fees to encourage cashless transactions
- June 23: Mask wearing in public spaces mandatory

School Closures:

- March 31: Closure of all schools and higher education institutions.

Social Protection Responses:

- April 19–21: 25 USD Cash transfers and 25 Kgs of rice to Persons with Disabilities during Lockdown 1 (April 2020)
- May 3–5: 25 Kgs of rice to Persons with Disabilities during Lockdown 2 (May 2020)
- Emergency cash transfer for 29,000 petty traders starting in June 2020. They have also increased the value of the cash transfers provided to existing beneficiaries of the safety net program (Gentilini et al. 2020). Estimates of the coverage of these cash transfers varies. Gentilini et al. (2020) suggest that up to 14% of the population should benefit from these programs

- Additional programs implemented during the RECOVR survey period include lower-interest loans and tax deferments for SMEs, and cash transfers to vulnerable female heads of households.

Economic Context

Seasonality The surveys were conducted at the midst of the staple crop sowing season, and followed an average harvest for those crops in 2019. The FAO had estimated that one million people would require food aid between March and May 2020, and in its May 2020 report assessed that 1.3 million could need food aid during the June-August 2020 period absent mitigation efforts. (Global Information and Early Warning System on Food and Agriculture Country Brief: Sierra Leone, *Food and Agricultural Organisation of the United Nations*, 05-May-2020).

Social Protection Sierra Leone launched its Social Safety Net program to support vulnerable households in 2013 (FAO 2019). Coverage of this program has been quite limited, reaching only 2.3% of the population (Beegle, Coudousel & Monsalve 2018).

A.7.1 Sierra Leone SLE1, Towns that are Candidates for Rural Electrification

Project Title: Sierra Leone Rural Electrification (SLRE)
Target Population: Households in 195 rural towns across all 12 districts of Sierra Leone. Of these, 97 villages were selected to benefit from an electrification program.
Original Study Design:

Intervention: The Government of Sierra Leone (GoSL) in collaboration with United Nations Office for Project Services (UNOPS) and international donors is implementing the Rural Renewable Energy Project (RREP). In its first wave, during 2017, the project provided stand-alone solar photovoltaic powered mini-grids to 54 communities across the country. Construction of mini-grids in a further 43 towns is ongoing. In selected communities, engineers construct 6kW–36kW power mini-grids that provide reliable power year-round. Electricity is free for schools and clinics. Residential and commercial users can acquire connections from commercial operators.

Village Sampling Frame: Household data was collected in 195 towns across all 12 districts of Sierra Leone. The GoSL selected 97 towns with (planned) mini-grids. We use Propensity Score Matching to select 98 control communities. Within communities, respondents were randomly selected from a census roster stratified by occupation status of farmers, business owners and a other occupations [47 percent, 47 percent and 7 percent]. In each village, the intended sample was 43 households (20 farmers, 20 business, 3 other). Data was collected during June–July (108 communities) and November–December 2019 (87 communities). If a household on our sampling list was not available on the village visit day, we had a randomly

sampled list of replacement households to survey. The replacement household would be the same occupation as the sampled household would have been so the sample ratio of 20-20-3 still held in each community.

COVID-19 Survey Design:

Sampling Frame: Phone surveys were administered in 195 rural communities. Our total household sample comprised 7047 respondents. Of these, we recorded phone numbers of 4,594. The data was first reported in Meriggi et al. (2020).

Survey Dates: April 29, 2020 – July 7, 2020

Sample size, tracking and attrition: The first round of data collection took place between April 29 and May 15, 2020, and covered 2,411 respondents from 193 towns, for a tracking rate of 44 percent. The second round was conducted between May 15 and June 4, 2020, and covered 1,628 respondents from 179 towns, for a tracking rate of 68 percent from the first round. The third round was conducted between June 5 and June 17, 2020 with 854 of respondents from 161 towns with a tracking rate of 35 percent. The fourth round took place on June 18 to June 30, 2020 which covered 818 respondents in 157 towns, for a tracking rate of 34 percent.

Median survey time: 33 minutes.

Sampling Weights: None

IRB Approval: Sierra Leone Ethics and Scientific Review Committee (SLERC 2904202) and Wageningen University (24062020).

A.7.2 Sierra Leone SLE2, National Sample (RECOVR)

Project Title: Research for Effective COVID-19 Responses (RECOVR)

Target Population: A random sample of all numerically possible mobile phone numbers in the country, based on national communications authority number allocation plans.

Original Study Design: N/A

COVID-19 Survey Design: Numbers were called via random digit dialing (RDD), stratified by mobile network operator market share

Sampling Frame: All active mobile phone numbers in Sierra Leone

Survey Dates: May 27 to June 15, 2020

Sample Size, Tracking and Attrition: 1,304 surveys

Median Survey Time: 35 minutes

Sampling Weights: Surveyed households are weighted by geographic unit and gender of respondent, using the inverse likelihood of being sampled based on the most recent nationally representative household survey, the 2018 Sierra Leone Integrated Household Survey (SLIHS).

IRB Approval: This research was approved via IPA IRB Protocol 15592, and Sierra Leone Ethics and Scientific Review Committee approval (no approval number, letter available upon request).

Table S1: Survey Representativeness with respect to National and Population Demographics

	Survey rate (share surveyed of those targeted) (1)	Sample average (unweighted) (2)	Sample average (weighted) (3)	Survey population average (4)	National average LSMS (5)
Bangladesh					
BGD1. Rural Sample	**0.70**				
Share rural		1.00		1.00	0.73
Household size		4.93		4.79	4.06
Respondent gender (female)		0.41		0.43	0.50
Secondary school completion rate		0.06		0.05	0.20
Average monthly household income (USD, PPP)		628		566	510
BGD2. Rohingya Refugees from Myanmar	**0.60**				
Share rural					
Household size		5.53	5.30	5.52	4.06
Respondent gender (female)		0.41	0.43	0.58	0.50
Secondary school completion rate		0.06	0.05	0.03	0.20
Average monthly household income (USD, PPP)		121	113	121	510
BGD3. Communities Living near Refugee Camps	**0.85**				
Share rural					
Household size		5.36	5.30	5.42	4.06
Respondent gender (female)		0.42	0.42	0.57	0.50
Secondary school completion rate		0.14	0.14	0.16	0.20
Average monthly household income (USD, PPP)		531	539	699	510
BGD4. Participants in a Lottery for Agricultural Work Permits	**0.63**				
Share rural		0.93		0.93	0.73
Household size		4.89		4.86	4.06
Respondent gender (female)		0.23			0.50
Secondary school completion rate		0.24		0.24	0.20
Average monthly household income (USD, PPP)		444		443	510
BGD5. Landless Rural Agricultural Laborers	**0.76**				
Share rural		1.00		1.00	0.73
Household size		4.81		4.74	4.06
Respondent gender (female)		0.29			0.50
Secondary school completion rate		0.10		0.05	0.20
Average monthly household income (USD, PPP)		237		219	510
Burkina Faso					
BFA1. National Sample (RECOVR)	**0.59**				
Share rural		0.52	0.29		0.73
Household size		6.45	6.54		7.38
Respondent gender (female)		0.31	0.54		0.51
Secondary school completion rate		0.40	0.41		0.12
Poverty score / average income		0.11	0.12		0.30
Colombia					
COL1. National Sample (RECOVR)	**0.25**				
Share in Bogota		0.17	0.18		0.18
Household size		4.12	4.09		4.02
Respondent gender (female)		0.63	0.52		0.52
Secondary school completion rate		0.39	0.40		0.31
Poverty score / average income		0.26	0.23		0.28
Ghana					
GHA1. National Sample (RECOVR)	**0.22**				
Share in Greater Accra		0.34	0.33		0.18
Household size		5.30	5.32		4.06
Respondent gender (female)		0.39	0.39		0.54
Secondary school completion rate		0.66	0.68		0.25
Poverty score / average income		0.12	0.12		0.15

Table S1 (continued)

	Survey rate (share surveyed of those targeted) (1)	Sample average (unweighted) (2)	Sample average (weighted) (3)	Survey population average (4)	National average LSMS (5)
Kenya					
KEN1. Rural Households in NGO Cash Transfer Study	**0.75**				
Share rural		1.00	1.00	1.00	0.69
Household size		5.26	5.23	4.20	3.90
Respondent gender (female)		0.67	0.72	0.72	0.51
Secondary school completion rate		0.02	0.02	0.02	0.39
Weekly consumption per household adult (USD, PPP)		27.28	27.57	26.39	39.07
KEN2. UNHCR Refugees	**0.46**				
Share rural		0.60	0.76	0.83	0.69
Household size		5.33	5.45	8.63	3.90
Respondent gender (female)		0.42	0.48	0.54	0.51
Secondary school completion rate		0.47	0.40	0.17	0.39
KEN3. National Sample	**0.29**				
Share rural		0.45	0.64		0.69
Household size		4.65	4.13		3.90
Respondent gender (female)		0.52	0.50		0.51
Secondary school completion rate		0.52	0.56		0.39
Nepal					
NPL1. Agricultural Households in Western Terai	**0.79**				
Share rural		1.00		1.00	0.79
Household size		5.03		5.03	4.80
Respondent gender (female)		0.45		0.42	0.54
Secondary school completion rate		0.30		0.29	0.29
Average monthly household income (USD, PPP)		191		186	457
Philippines					
PHL1. National Sample (RECOVR)	**0.17**				
Share in Capital Region		0.19	0.14		0.13
Household size		4.77	4.82		4.60
Respondent gender (female)		0.69	0.72		0.49
Secondary school completion rate		0.87	0.69		0.67
Poverty score / average income		0.11	0.14		0.22
Rwanda					
RWA1. National Sample (RECOVR)	**0.44**				
Share in Kigali		0.40	0.16		0.15
Household size		4.93	5.10		4.33
Respondent gender (female)		0.37	0.54		0.55
Secondary school completion rate		0.60	0.60		0.38
Poverty score / average income		0.20	0.24		0.32
Sierra Leone					
SLE1. Towns that are Candidates for Rural Electrification	**0.60**				
Share rural		1.00		1.00	0.55
Household size		7.00		6.64	5.81
Respondent gender (female)		0.28		0.39	0.50
SLE2. National Sample (RECOVR)	**0.38**				
Share in Freetown		0.45	0.23		0.19
Household size		6.11	6.49		5.81
Respondent gender (female)		0.35	0.54		0.50
Secondary school completion rate		0.62	0.58		0.14
Poverty score / average income		0.23	0.31		0.47

Notes: This table reports phone survey response rates (1) and compares average characteristics of the sample of phone survey respondents (2), weighted for representativeness when appropriate (3), to average characteristics of the population from which the sample is drawn (4) and average characteristics of the nation based on Living standards Measurement Study (LSMS) surveys.

B. Robustness of Main Results

We present our main findings in terms of the fraction of respondents that report changes in outcomes measure relative to a pre-COVID-19 baseline period for comparability across samples. The main results from Table 2 are reproduced with standard errors in Figure S1. In this section we discuss the robustness of our findings to alternate ways of specifying outcomes.

[Figure S1 about here.]

In Table 2, we report one-sided outcomes that focus on the deterioration of wellbeing. This measure potentially excludes evidence on improvements in wellbeing for other respondents that could balance out on average. To verify this is not the case, we compare reported declines in income to reported increases in income in Table S2. Note that these two quantities do not sum to 1 because respondents may also indicate no change. Across samples, the median proportion of individuals with an increase in income is 7%—compared to 70% for those experiencing a decrease in income. In every sample, the frequency of declines is many multiples greater than the frequency of increases, with the median ratio nearly an order of magnitude greater at 7.4.

We also note that while reported drops in income are comparable across all samples, reported increases are consistently less frequent in surveys administered in RECOVR samples. The income measure is more coarse in the RECOVR survey, meaning respondents are more likely to report small deviations as no change. Therefore, it appears that increases in income, when present, are also smaller in magnitude than drops. This is reinforced by the fact that in the samples where we can directly compute average earnings, we observe a median decrease of 37.5%, with a substantial decrease found in every such sample.

A second threat to validity stems from the fact that in many samples we rely on recall data elicited after the onset of the pandemic to measure pre-COVID-19 outcomes. This data may be biased if respondents have a systematically rosy recollection of the past, social desirability leads them to exaggerate the effect of the pandemic on their personal well-being, or they overstate losses in anticipation of greater financial assistance.

We present three pieces of evidence suggesting the impact of such bias is minimal. First, the time series of outcomes presented in Figure 1 rely on recall periods of only one week, limiting the potential size of mis-measurement due to poor memory. The patterns in these samples are consistent with our broader findings.

Second, in Table S2 we indicate samples that rely on data collected prior to COVID-19 rather than retrospective recollection income with *. Across both methods, we see no substantial differences in the magnitude of the share or respondents experiencing a decrease or increase in income, which indicates that recall bias for the pre-COVID earnings is unlikely to influence our findings.

Finally, our estimates of wellbeing in the pre-COVID-19 period are consistent between recall data collected in post-COVID-19 surveys and contemporaneous data collected before the pandemic when available. Panel A of Figure 2 compares the prior four months of food security, elicited in recall surveys in May 2020, to food security rates in previous years, elicited contemporaneously, in the BGD5 sample. Food security in the months of January and February 2020, prior to the onset of COVID-19, closely track prior years' data despite those values being generated in surveys administered after the onset of COVID-19.

We compare two additional measures of pre-COVID-19 living standards reported before and after the onset of the pandemic in Figure S2. Panel A plots recall data on food security over the prior (pre-COVID-19) year reported by our post-COVID-19 study sample in May 2020 (solid line) and in a pre-COVID-19 survey of a different sample from the same region in March 2019 (dashed line). Both series display closely matching trends in seasonal hunger. Similarly, Panel B plots earnings in the BGD4 sample from April 2018, elicited in late 2018; April 2019, elicited by recall in the 2020 survey; and April 2020. Average earnings in the two pre-COVID-19 years are consistent despite the different elicitation methods.

It should be noted that we do have data from multiple surveys on the same measure in the same year for any outcome. The three comparisons above all test how recall data from our post-COVID-19 phone surveys about pre-COVID-19 outcomes relate to the same outcomes measured contemporaneously in prior years. However, it is notable that recollection of pre-COVID wellbeing is highly consistent with actually measured wellbeing in all three cases. Based on these three comparisons, it does not appear that respondents are uncharacteristically optimistic (or pessimistic) about the past in post-COVID-19 recall surveys.

[Table S2 about here.]

[Figure S2 about here.]

Table S2: Fraction of Respondents Reporting Decrease and Increase in Income

	Share of households experiencing: Drop in income (1)	Increase in income (2)	Ratio (1) / (2) (3)
Median across samples	**0.70**	**0.07**	**7.4**
Bangladesh			
BGD1	0.81	0.10	8.1
*BGD2**	0.42	0.00	–
*BGD3**	0.73	0.11	6.6
BGD4	0.71	0.16	4.4
*BGD5**	0.79	0.21	3.8
Burkina Faso			
BFA1	0.63	0.03	21
Colombia			
COL1	0.87	0.01	87
Ghana			
GHA1	0.84	0.07	12
Kenya			
KEN1	0.69	–	–
KEN2	0.08	0.05	1.6
KEN3	0.25	0.11	2.3
Nepal			
*NPL1**	0.39	0.15	2.6
Philippines			
PHL1	0.52	0.06	8.7
Rwanda			
RWA1	0.81	0.04	20
Sierra Leone			
SLE1	0.56	0.15	3.7
SLE2	0.82	0.03	27

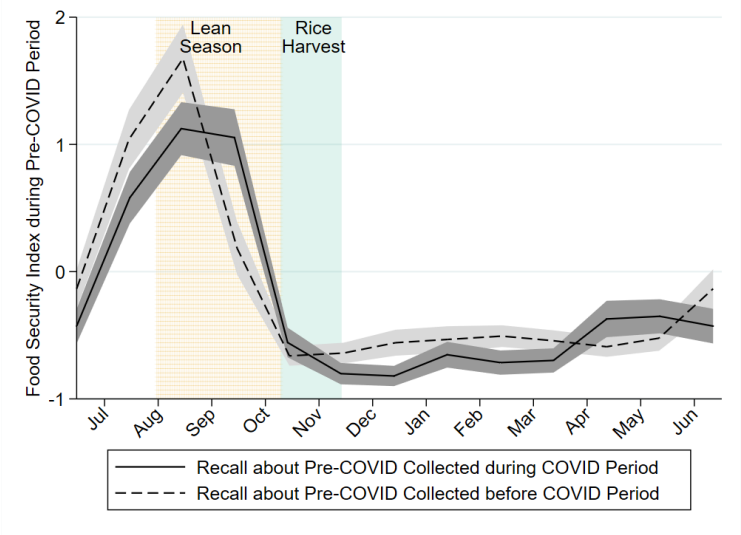
Notes: This table shows statistics from 16 household survey samples in 9 countries. Columns denote the share of households or individuals experiencing a (1) drop in income, (2) increase in income, (3) and the ratio of (1) over (2). Blank cells denote that no data was available or that it could not be defined. * Denotes samples that rely on pre-COVID income measures that were collected as part of pre-COVID data collection efforts rather than recall data.

Figure S1: Results from Table 2 with Standard Errors

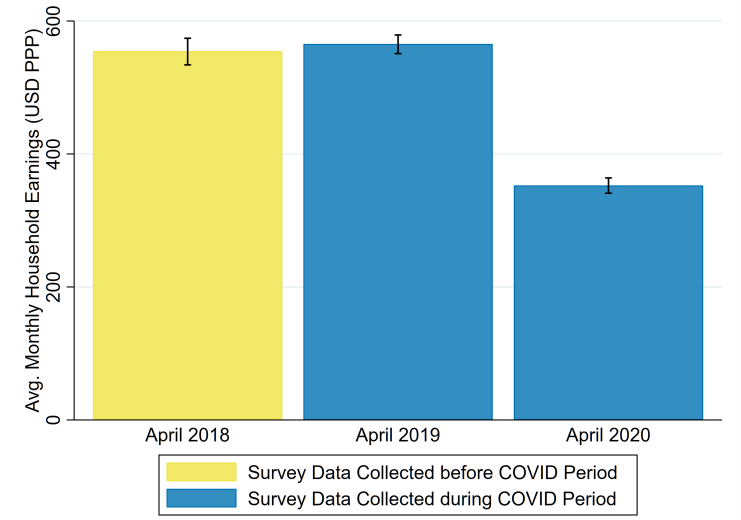
Notes: Reproduction of results from Table 2 with standard errors clustered by sampling block where relevant. The dashed vertical lines represent the median of the full-sample ("All") value across samples in each panel.

Figure S2: Recall and Contemporaneous pre-COVID-19 Survey Responses

A. Nepal—NPL1



B. Bangladesh—BGD4



Notes: Pre-COVID-19 living standards elicited in post-COVID-19 surveys compared to comparable data elicited in pre-COVID-19 surveys. A. Recall survey data on monthly household security in NPL1 sample. Solid line reflects responses about prior year elicited in May–June 2020, and dashed line represents responses about prior year elicited in April–May 2019. B. Survey data on monthly household earnings in April for BGD4 sample. Yellow bar reflects recall responses elicited in August–December 2018, and blue bars reflect recall responses elicited in April–May 2020.

C. Variable Construction

C.1 Drop in income measure

C.1.1 BGD1. Bangladesh Rural Sample

Income was measured at the household level. In the post-COVID-19 survey, respondents were asked:

- What was your total household monthly income in the last month?
- What was your total household monthly income in an ordinary month last year, approximately at this time of the year?

If a household reported income in the last month that was smaller than income in an ordinary month last year, we identified them as having experienced a drop in income.

C.1.2 BGD2–3. Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar

Income was measured at the individual level. In the pre-COVID-19 survey, wage employees were asked:

- Do you get paid by the [hour/day/week/half month/month/quarter/year]?
- How much do you typically earn each [prefill unit from previous item]?

Self-employed workers were asked:

- What was your profit from this farm/enterprise/business in the past month?

In the post-COVID-19 survey, wage employees were asked:

- What was your salary/wage from your main occupation in the past month?

For self-employed workers, the question was:

- Could you tell me what was your profit from this farm/enterprise/business last month?

In both cases, we asked about weekly or daily wages / profits in cases where the respondent could not recall or did not know their monthly labor income. At baseline, we interviewed two randomly selected adults above aged 15 or above in each household. In the COVID-19 survey, we asked to speak with one of the two adults interviewed in 2020. In cases where one of the individuals interviewed in 2019 was re-interviewed in 2020 (n=707), our measure of drop in income is the difference in labor income (wages or firm profits). In cases where none of them were available, we interviewed a third adult (n=205). Since we do not have baseline data for these observations, we excluded them from the analysis.

C.1.3 BGD4. Participants in a Lottery for Agricultural Work

Income was measured at the household level. In the post-COVID-19 survey, respondents were asked:

- What was your total household monthly income in the last month?
- What was your total household monthly income in an ordinary month last year, approximately at this time of the year?

If a household reported income in the last month that was smaller than income in an ordinary month last year, we identified them as having experienced a drop in income.

C.1.4 BGD5. Landless Rural Agricultural Laborers

Income was measured at the household level. In a previous endline survey conducted in June 2019, respondents were asked:

- We are now interested in learning about household's work and income over the last 6 months, from 1 Poush 2018 to 1 Asharh 2019.
  - Over the last 6 months, did anyone in this household engage in own agriculture, where the household member(s) made the farming or livestock decisions, either with their own or in rented/borrowed land?
  - What was the households' total income earned from this own agriculture (cultivation and livestock) from 1 Poush 2018 to 1 Asharh 2019?
  - What were the total costs related to the households' own agriculture (cultivation and livestock) from 1 Poush 2018 to 1 Asharh 2019?
  - Over the last 6 months, did anyone in this household work as agricultural hired labor in other farms while living at home (i.e., not migration)?
  - What was the household's total income earned from this hired agricultural labor (not including value of food or other benefits) from 1 Poush 2018 to 1 Asharh 2019?
  - Value of non-cash benefits received for agricultural labor (e.g. value of food received) from 1 Poush 2018 to 1 Asharh 2019
  - Costs incurred by the household for this same agricultural labor (e.g., equipment rental or transportation) from 1 Poush 2018 to 1 Asharh 2019
  - Over the last 6 months, did anyone in this household work as hired labor in non-farm work while living at home (i.e., not migration)?
  - What was the household's total income earned from this kind of (not including value of food or other benefits) from 1 Poush 2018 to 1 Asharh 2019?

- Value of non-cash benefits received for non-farm labor (e.g. value of food received) from 1 Poush 2018 to 1 Asharh 2019
- Costs incurred by the household for this same non-farm labor (e.g., rickshaw rental or transportation) from 1 Poush 2018 to 1 Asharh 2019
- Over the last 6 months, did anyone in this household have a business or work as self-employed while living at home (i.e., not migration)?
- What was the household's total income earned from this business and/or self-employment from 1 Poush 2018 to 1 Asharh 2019?
- Costs associated with this business and/or self-employment from 1 Poush 2018 to 1 Asharh 2019
- Over the last 6 months, was anyone from this household away from the upazila for work or in search of work?
- What was the total income earned by the household member(s) (not including value of food) during their time away from the upazila?
- Value of non-cash benefits received during migration (e.g., value of food received)
- Costs associated with this same migration income (e.g., equipment rental for rickshaw pulling)

The sum of all income and non-cash benefits received by the household, net of all related costs incurred, constituted a measure of each household's net income over a period of 6 months, which was converted to a monthly measure.

In the post-COVID-19 survey, respondents were asked:

- In the last 7 days before today ["before Eid" for any survey conducted after], what was the total monetary earnings for all household members from all sources of work (job, business, farm, etc.)?

This income measure was also converted to a monthly measure. If a household reported post-COVID-19 income that was smaller than income reported during the 2018 endline survey, we identified them as having experienced a drop in income.

C.1.5 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR samples (Burkina Faso, Colombia, Ghana, Philippines, Rwanda, and Sierra Leone) calculate a drop in income at the individual level, based on whether the respondent reported earning less income than in the pre-COVID-19 period. This is constructed from the following questions, which collects individual-level data for the following questions for the pre-COVID-19 period:

- During February 2020, did you work for someone else for pay, for one or more hours?
- During February 2020, did you run or do any kind of business, farming or other activity to generate income?

Respondents who indicated they had been working for pay prior to the pandemic answered the following question:

- During the past 7 days, did you earn more, the same, or less pay than you did in a typical week before government closed the schools/in February 2020/before the COVID-19 crisis?

C.1.6 KEN1. Rural Households in NGO Cash Transfer Study

The KEN1 sample calculates drop in income at the household level, based on experiences in the past 7 days. This indicator takes a value of one if the respondent answered yes to the following prompt to the question "In the past 7 days, have you or any household member experienced any of the following cases? Select all that apply":

- Unable to buy the amount of food we usually buy because our household income has dropped

This question was not included in the first 2 weeks of surveys, so the number of observations in Table 2 is 6,807.

C.1.7 KEN2–3 National Sample (WB) and Refugees (UNHCR)

The KEN2 and KEN3 samples generate a measure of household income for two weeks in February 2020 (and for the same period last year in agriculture to account for seasonality), and during the 14 days prior to the survey date. These measures are used to construct an indicator variable equal to one for households that report less income in the past 14 days compared to the February 2020 / same period last year baseline. Because we did not ask about employment income or self-employment profits for employees that are no longer employed and businesses that no longer operate, we also classify a household's income as dropped if some household members lost their job and none started a job and / or some businesses closed down and no businesses were started since February 2020. (Note, this is a conservative estimate of the share with incomes dropped, as some may have taken lower-paying jobs.)

These measures are constructed from the following questions:

- In the past 14 days, what were the total earnings for your household for those agricultural and pastoralist activities combined?

- How much were the total earnings for your household from agricultural and pastoral activities over the same 14-day period last year?
- Since January 2020, other than farming, how many non-agricultural self-employed enterprises have members of your household run?
- When was this enterprise established?
- Is this enterprise currently operating?
- When did this enterprise stop operating?
- What was the total profit of this enterprise over the past 14 days? *We ask this for each enterprise that a household is running.*
- In a typical 2-week period in February 2020, what was the total profit of this enterprise? *We ask this for each enterprise that a household was running in February.*
- Which ADULT household members are currently employed, working for pay?
- In the past 14 days, what was the total cash salary of [NAME]? *We ask this for each adult household member that is employed*
- In a typical 2-week period in February 2020, what was the cash salary of [NAME]? *We ask this for each adult household member that is employed now and was employed in the same job in February.*
- Since January 2020, which ADULT members of this household were laid off / lost their job involuntarily (even if only temporarily)?
- When did [NAME] get laid off / lose their job? *We ask this for each adult household member that was laid off / lost their job*

C.1.8 NPL1. Agricultural Households in Western Terai, Nepal

The Nepal sample calculates the drop in income at the household level, based on wages earned in the past two weeks and remittances received in the past month, both converted into monthly measures. Questions on wage earnings are asked to all adults present in the village, and data on remittances in the past month are asked about all adults currently away or that have returned in the past 30 days. The original data is at the individual level and aggregated up to the household level, and the questions used are below:

- In the past two weeks, has [Adult Name] done any paid work?
  - Was the wage paid daily, weekly, or monthly?

  - How many days did [Adult Name] work?

- Over the last month, did you receive any remittances from [Adult Name]?
- How much was sent?

If a household reported income during the October 2019 survey that was greater than the income reported in April 2020, we identified the household to have experienced a drop in income.

C.1.9 SLE1. Towns that are Candidates for Rural Electrification

The Sierra Leone Rural Electrification sample calculates the drop in income at the household level, using current and retrospective earnings reported in the post-COVID-19 survey. We asked the following questions:

- Before the government closed schools, how much would you earn in a typical week?
- In the past 7 days, what was your total weekly income?

We separately averaged the pre- and post-COVID-19 reported earnings across the multiple survey rounds for each household. If the average pre-COVID-19 earnings are greater than the average post-COVID-19 earnings, we identify the household as having experienced a drop in income.

C.2 Drop in employment measure

C.2.1 BGD1. Bangladesh Rural Sample

A drop in participation in paid employment was measured at the household level. At baseline, respondents were asked the following question for all current household members 5 years or older:

- What activities did [NAME] do in the past 12 months? (This include all activities that help to increase household income no matter they don't receive a wage or salary)
- (For each activity listed) What was the type of the activity?
  1. Wage (cash/kind) employment
  2. etc.

If one or more household members listed an activity that was classified as "Wage (cash/kind) employment," we considered that household as participating in paid employment at baseline.

During the COVID-19 phone survey, we asked each respondent the following question:

- Did your household receive any income from this source in the last month?
    1. Income from wages
    2. etc.

If the answer for "Income from wages" was yes, we considered that household as participating in paid employment following the COVID-19 pandemic.

If a household was participating in paid employment at baseline but no longer does following the COVID-19 pandemic, we identified them as having experienced a drop in employment.

C.2.2 BGD2–3. Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar

Participation in paid employment in the 7 days prior to the survey was measured at the individual level both during the 2019 baseline and the 2020 COVID-19 follow-up. The question was phrased as:

- In the past 7 days, have you worked for remuneration for at least one hour? Y/N

At baseline, we interviewed two randomly selected adults above aged 15 or above in each household. For the COVID-19 survey, we asked to speak with one of the two adults interviewed in 2020. We measure drop in employment as the difference in employment status in cases where one of the individuals interviewed in 2019 was re-interviewed in 2020 (n=707). In cases where none of them were available, we interviewed a third adult (n=205). Since we do not have baseline data for these observations, we excluded them from the analysis.

C.2.3 BGD4. Participants in a Lottery for Agricultural Work

A drop in participation in paid employment was measured at the household level. At baseline, surveyors were asked to record the following information for all current household members 10 years or older:

- Starting from the main activity, list all the economic activities that s/he engaged in for livelihood. After the respondent tells about everyone's activity, ask him/her again that what else they did except that activities. Be sure that they are not engaged in any other activity. If they were engaged in economic activity in a different location within Bangladesh, or abroad, for some part of the past 12 months, include those activities as well. Activities: Job/ on the basis of wage/ Sole and joint proprietorship activities - agriculture and non-agriculture. Note: Family labor without any wage or payment has to be counted here. For example: If someone works in father's or brother's farm, that information will be counted. But the information of housewife's activities or household chores will not be counted.

For each household member's reported activity, respondents were asked the following questions:

- (For each activity listed) What is the type of your employment?
    1. Wage employment in Bangladesh
    2. Self-employment in non- agriculture
    3. Self-employment in agriculture (crop)
    4. Self-employment in agriculture (poultry/livestock/farming)
    5. Self-employment in agriculture (fish farming / fishing)
    6. Self-employment in agriculture (forestry farming)
    7. Employment abroad

If one or more household members listed an activity that was classified as "Wage employment in Bangladesh" or "Employment abroad," we considered that household as participating in paid employment at baseline.

During the COVID-19 phone survey, we asked each respondent the following question:

- Did your household receive any income from this source in the last month?
    1. Income from wages
    2. etc.

If the answer for "Income from wages" was yes, we considered that household as participating in paid employment following the COVID-19 pandemic.

If a household was participating in paid employment at baseline but no longer does following the COVID-19 pandemic, we identified them as having experienced a drop in employment.

C.2.4 BGD5. Landless Rural Agricultural Laborers

N/A

C.2.5 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR samples (Burkina Faso, Colombia, Ghana, Philippines, Rwanda and Sierra Leone) calculate a drop in employment at the individual level, based on whether the respondent reported that they had been employed (including self-employment) in February for any length of time, but not in the most recent week. This is constructed as an indicator from the following questions, which collect individual-level data for the pre-COVID-19 and post-COVID-19 period:

- During February 2020, did you work for someone else for pay, for one or more hours?
- During February 2020, did you run or do any kind of business, farming or other activity to generate income?
- (IF YES), In the past 7 days, did you spend at least one hour working? [Please consider day labor, work for wages or in-kind, and working on your own account or your own business, including an agricultural business (farm).

C.2.6 KEN1. Rural Households in NGO Cash Transfer Study

The Kenya KEN1 sample calculates a drop in employment at the household level, based on whether, among households with a member working for wages in March 2020, any member of the household reports being laid off / losing their job involuntarily since February 2020 and is not currently employed. This is constructed from the following questions, which collects individual-level data, and which we aggregate to a household level.

- Which ADULT household members are currently employed, working for pay?
- Did [NAME] work in this job before March 2020?
- Since January 2020, which ADULTS in your household were laid off / lost their job (even if only temporarily)? *If this number is greater than zero, we then collect the month of the layoff. Layoffs occurring in February 2020 or earlier are not counted.*

C.2.7 KEN2–3. National Sample (WB) and Refugees (UNHCR)

The Kenya KEN2–3 samples calculate a drop in employment at the household level, based on whether the number of household members that reported being laid off / losing their job since February 2020, is greater than the number of people that report starting employment since February 2020. This is constructed from the following questions, which collects individual-level data, and which we aggregate to a household level.

- Which ADULT household members are currently employed, working for pay?
- Did [NAME] work in this job before March 2020?
- Since January 2020, which ADULTS in your household were laid off / lost their job (even if only temporarily)? *If this number is greater than zero, we then collect the month of the layoff. Layoffs occurring in February 2020 or earlier are not counted.*

C.2.8 NPL1. Agricultural Households in Western Terai, Nepal

The Nepal survey measures the drop in employment at the household level. We identify households who reported at least one member working for wages or on a non-farm business in the past two weeks in October 2019 and none in April 2020. This is constructed from the following questions, aggregated at the household level:

- In the past two weeks, has [Adult Name] done any work on a non-farm business that they or a member of the household owns?
- In the past two weeks, has [Adult Name] done any paid work?

C.2.9 SLE1. Towns that are Candidates for Rural Electrification

The SLE1 survey measures the drop in employment at the individual level, focusing on the household head (since they are the main target of the post-COVID-19 survey). We measure pre-COVID-19 employment at baseline in 2019 using the following question:

- Is [Household Head Name] currently employed with a business or an organization?

We measure post-COVID-19 employment between April-July 2020 using the following question :

- What is your occupation as of this LAST month?
  - Farmer
  - Self-Employed / Business Owner
  - Wage-Employed
  - Unemployed

A household head who reported being wage-employed pre-COVID-19 and unemployed in all of the post-COVID-19 survey rounds was identified as having experienced a drop in employment.

C.3 Reduced access to markets measure

C.3.1 BGD1–5. Bangladesh Rural Sample, Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar, Participants in a Lottery for Agricultural Work, and Landless Rural Agricultural Laborers

We measured shortages in essential food items and market closures as reported by one adult household member. We asked the filter question:

- Was your household able to buy essential food items over the past 7 days? Y/N

If "No", we asked:

- Why were you unable to buy these items? (1=Some items were not available, 2=Some items were more expensive than usual, 3=Markets/shops were closed, 4=You did not have enough money; e.g., lack of resources, 5=None of the above)

We calculated the percentage of households who selected option "3=Markets/shops were closed" out of the total number of households surveyed. Since this question was only asked to those who answered "No" to the filer question, we provide a lower bound estimate of the fraction of households facing reduced access to markets.

C.3.2 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR samples (Burkina Faso, Colombia, Ghana, Philippines, Rwanda, Sierra Leone) calculate reduced access to markets at the individual level based on three binary measures, as below:
In the past 7 days, have you or any household member experienced any of the following...

- Difficulties in going to food markets due to mobility restrictions imposed by government? Y/N (Burkina Faso, Colombia, Sierra Leone)
- Difficulties in buying food due to most food markets being closed? Y/N (Burkina Faso, Colombia, Sierra Leone)
- Been unable to buy the amount of food you usually buy because of shortages in the markets you buy from? Y/N (Burkina Faso, Colombia, Ghana, Sierra Leone)

C.3.3 KEN1 Rural Households in NGO Cash Transfer Study

The KEN1 sample calculates reduced access to markets at the household level, based on experiences in the past 7 days. This indicator takes a value of one if any of the following responses to the question "In the past 7 days, have you or any household member experienced any of the following cases? Select all that apply" were selected by the respondent:

- Difficulties in going to food markets due to mobility restrictions imposed by government
- Difficulties in buying food due to most food markets being closed
- Unable to buy the amount of food we usually buy because of shortages in markets

This question was not asked in the first 2 weeks of the survey, and thus we have 6,807 observations for this outcome.

C.3.4 KEN2–3 National Sample (WB) and Refugees

N/A

C.3.5 NPL1. Agricultural Households in Western Terai, Nepal

N/A

C.3.6 SLE1. Towns that are Candidates for Rural Electrification

The Sierra Leone Rural Electrification sample calculates reduced access to markets at the household level, based on the following question:

- Are your local markets open?

If a household responded No to this question during any of the post-COVID-19 survey rounds, they were classified as experiencing reduced access to markets.

C.4 Missed or reduced meals measure

C.4.1 BGD1–4. Bangladesh Rural Sample, Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar, and Participants in a Lottery for Agricultural Work

We asked the filter questions:

- Was your household able to buy essential food items over the past 7 days? Y/N

If "No", we asked:

- Why were you unable to buy these items? (1=Some items were not available, 2=Some items were more expensive than usual, 3=Markets/shops were closed, 4=You did not have enough money; e.g., lack of resources, 5=None of the above)

Those who reported being unable to buy food because of a lack of resources were asked:

- In the past 7 days, did you use any of the following to cover your household's basic needs?

The answer options included "Reduce the number or size of meals for some household members" and "Rely on less preferred and less expensive foods." We calculated the share of households missing or reducing meals as an indicator equal to one for individuals mentioning either of these two, out of the total number of households surveyed. Therefore, we provide a lower bound estimate of the fraction of households who missed or reduced meals.

C.4.2 BGD5. Landless Rural Agricultural Laborers

We asked respondents the following question:

- Thinking back over the last 4 months, in each month, how often did you or anyone in your household restrict the portion size or number of meals consumed in a day? [1 = Rarely (0-5 days), 2 = Sometimes (6 days to half the month), 3 = Regularly (more than half the month and up to 24 days), 4 = Often (25 days or more per month)]
  - Baishakh (Apr-May 2020)
  - Chaitra (Mar-Apr 2020)
  - Falgun (Feb-Mar 2020)
  - Magh (Jan-Feb 2020)

If a respondent indicated "Sometimes," "Regularly," or "Often" restricting the portion size or number of meals consumed in a day during the months of Baishakh or Chaitra, we identified them as missing or reducing meals following the COVID-19 pandemic in Table 2. In Figure 2 we define food insecurity more strictly as reducing portions or missing meals for more than half of th edays in the month (i.e. "Regularly" or "Often").

C.4.3 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR samples calculate the share of households missing or reducing meals as an indicator equal to one for individuals reporting positive values to either of the following two questions:

- In the past 7 days, how many days have you or someone in your household had to limit portion size at meal-times?
- In the past 7 days, how many days have you or someone in your household had to reduce number of meals eaten in a day?

C.4.4 KEN1–3 Rural Households in an NGO Cash Transfer Study, National Sample (WB) and Refugees (UNHCR)

The KEN1, KEN2 and KEN3 samples calculate the share of households missing or reducing meals as an indicator equal to one for households reporting positive values to any of the following questions:

1. In the past 7 days, how many days have adults in your household skipped meals or cut the amount of meals?

2. In the past 7 days, how many days have children in your household skipped meals or cut the amount of meals?

3. In the past 7 days, how many days have adults in your household gone entire days without food?

4. In the past 7 days, how many days have children in your household gone entire days without food?

In panel D1. of Figure 1, we use the first 2 questions to plot the average number of days that adults or children skip meals or cut the amount of meals over time. We report each week's average as a percentage change from the average value of the first week of observations.

C.4.5 NPL1. Agricultural Households in Western Terai, Nepal

The Nepal sample identifies a household as missing or reducing meals in Table 2 if either of the following two questions had a positive value [out of 0: Never (0 time), 1: Rarely (1 time), 2: Sometimes (2-5 times), 3: Often (more than 5 times)] during the April 2020 survey round:

- In the last 14 days, how often did you or someone in your household eat smaller meals than you thought you should/needed because of lack of money or other resources?

- In the last 14 days, how often did you or someone in your household have to skip a meal because there was not enough money or other resources to get food?

The index of household food insecurity we report in Panel B of Figure 2 was constructed using the following questions [with possible answers 0: Never (0 time), 1: Rarely (1 time), 2: Sometimes (2-5 times), 3: Often (more than 5 times)]:

1. In the last 14 days, how often did you or someone in your household worry that your household would not have enough food due to lack of resources?

2. In the last 14 days, how often did you or someone in your household eat smaller meals than you thought you should/needed because of lack of money or other resources?

These questions were asked contemporaneously in each survey round in late 2019 and early 2020. In the May 2020 survey they were also asked about a retrospective 12-month "typical year". The index is constructed by first standardizing the integer responses (0-3) for each question so that they have mean 0 and SD 1. We then average the standardized versions of the questions to create the index.

C.4.6 SLE1. Towns that are Candidates for Rural Electrification

The Sierra Leone Rural Electrification sample calculates the post-COVID-19 prevalence of missing or reducing meals at the household level, based on the following questions:

- Over the last 7 days (week), how often has your household ...

    1. Reduced portions/quantities served per meal for adult males? [Y/N]
    2. Reduced portions/quantities served per meal for adult females? [Y/N]
    3. Reduced portions/quantities served per meal for boys under age 10? [Y/N]
    4. Reduced portions/quantities served per meal for girls under age 10? [Y/N]
    5. Eaten fewer times per day than normal for this time of year? [Y/N]

If the answer to any of these questions is Yes during any of the post-COVID-19 survey rounds, then we identified the household as missing or reducing meals.

In panel D2. of Figure 1, a household is classified as having adults who have reduced portions if the answer to any of questions 1 and 2 is Yes, while a household is classified as having children who have skipped meals if the answer to any of questions 3 and 4 is Yes.

Since a representative subset of households was surveyed each week, we construct the post-COVID-19 average weekly share of adults and children reducing portions across each week, expressed as a percentage change from the pre-COVID-19 profits.

The pre-COVID-19 prevalence of reducing meals for adults and children at the household level was measured at baseline in 2019, using the exact same questions and method for the post-COVID-19 measure above.

C.5 Received NGO or government support measure

C.5.1 BGD1–3. Bangladesh Rural Sample, Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar

We asked the following filter question:

- Was your household able to buy essential food items over the past 7 days? Y/N

If "No", we asked:

- Why were you unable to buy these items? (1=Some items were not available, 2=Some items were more expensive than usual, 3=Markets/shops were closed, 4=You did not have enough money; e.g., lack of resources, 5=None of the above)

Those who reported being unable to buy food because of a lack of resources were asked

- In the past 7 days, did you use any of the following to cover your household's basic needs?

The answer options included "Rely on Government or NGO assistance." We report the share of households choosing this option, out of the total of household surveyed. This provides a lower bound estimate of the fraction of households who relied on assistance.

C.5.2 BGD4–5. Participants in a Lottery for Agricultural Work and Landless Rural Agricultural Laborers

During the COVID-19 phone survey, we asked each respondent the following question:

- Did your household receive any income from this source in the last month?

    1. Assistance from government/NGO (cash or in-kind)
    2. etc.

If the answer for "Assistance from government/NGO" was yes, we considered that household as receiving NGO or government support.

C.5.3 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR samples calculate this measure at the individual level, based on the receipt of any support in the past 30 days. This variable is an indicator equal to one for households reporting positive values to any of the following questions:

- Do you usually receive a regular transfer from [names of cash transfer programs]/ any social safety net programs? [HINT: Social safety net programs include cash transfers and in-kind food transfers (food stamps and vouchers, food rations, and emergency food distribution).]
- Have you received any food, cash or other support from the government in the past month that you do NOT usually receive?
- Have you received any food, cash or other support from anyone else in the past month, that you do NOT usually receive? If so, from which source? (Recorded as one if 'NGO/CSO' option selected)

C.5.4 KEN1–3 Rural Households in NGO Cash Transfer Study, National Sample (WB) and Refugees (UNHCR)

The KEN1, KEN2 and KEN3 samples calculates this measure at the household level, based on the receipt of any support in the past 14 days, on the basis of the following survey questions:

- In the past 14 days, did anyone in this household receive a gift / assistance of money or goods, or job from a government program?
- In the past 14 days, did anyone in this household receive a gift / assistance of money or goods from a non-governmental organization or community group?

C.5.5 NPL1. Agricultural Households in Western Terai, Nepal

N/A

C.5.6 SLE1. Towns that are Candidates for Rural Electrification

The Sierra Leone Rural Electrification sample measures reception of NGO or government support at the household level, using the following question:

- Have you received any food, cash or other support from the government/local authorities in the past month that you do NOT usually receive?

If a household responded Yes to this question during any of the post-COVID-19 survey rounds, they were classified as receiving NGO or government support.

C.6 Healthcare Access Delayed

C.6.1 BGD1–5. Bangladesh Samples

N/A

C.6.2 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR samples calculate this measure at the household level by asking whether anyone in the household delayed or canceled important healthcare appointments since the beginning of shutdowns. It is based on the following question, modified in each country to easily mark a salient point in time near the start of the crisis:

- Have you or any other person your household delayed, skipped or been unable to complete health care visits since schools were closed (March 20)?

C.6.3 KEN1 Rural Households in NGO Cash Transfer Study

N/A

C.6.4 KEN2-3 National Sample (WB) and Refugees (UNHCR)

We calculate lack of healthcare access at the household level among households that report needing medical care in the past month. The following question serves as a filtering question:

- In the past 30 days, have you or any member of your household needed medical treatment or needed to make routine visits to a health facility? Include check-ups, chronic illnesses, emergency visits, etc.? [Yes/No]

For households that answer yes, we then classify the type of care that they needed into two groups: i) prenatal and routine care, and ii) all other types of health care.

For those seeking prenatal or routine care, we consider healthcare access reduced or delay if respondents report that, compared to March 2020, their checkups are "not as frequent but still able to go" or "not able to go at all" (versus "as frequently as before March"). For those seeking other types of health care, we consider healthcare access to be reduced if respondents answer "no" to the following question:

- Were you or the member of your household able to access the medical treatment?

C.6.5 NPL1. Agricultural Households in Western Terai, Nepal

N/A

C.6.6 SLE1. Towns that are Candidates for Rural Electrification

The Sierra Leone Rural Electrification sample calculate this measure at the household level by asking the following question:

- Have you or any other member of your household delayed or skipped needed health care visits since schools closed in March? [Y/N]

If a household responded Yes to this question during any of the post-COVID-19 survey rounds, they were classified as delaying healthcare access.

C.7 Poverty/SES measurement

C.7.1 BGD1. Bangladesh Rural Sample

The Bangladesh Rural Sample classifies households based on total household expenditure collected at baseline in 2017 and at midline in 2019, using the following questions (repeated during each survey round):

- How much did the household spend on food in the past month?

- How much did the household spend on everything else, apart from food, in the last month (e.g. rent, household durables (e.g., furniture), travel, education, entertainment, medical)?
- Apart from the items above, what else did the household spend on in the last month (e.g., festival (marriage, Eid, Pooja), catastrophic expenditure for health or similar shocks, large investments)?

After adjusting for inflation, we define total household expenditure as the average of the total household expenditure (sum of the three questions) reported in 2017 and 2019. Households with average total expenditure above (below) the pre-COVID-19 median were classified as having higher (lower) SES status.

C.7.2 BGD2–3. Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar

The CBPS sample classifies households based on total household expenditure collected at baseline in 2019. Food expenditure was measured using the following questions:

- Did your household consume [ITEM] in the past 7 days?
- How much [ITEM] did your household CONSUME in the last 7 days?
- How did you get that [ITEM]? [01. Purchase, 02. Wage in-kind, 03. Self-produced, 04. Humanitarian assistance, 05. Gift, 06. Barter]
- How many times did your household buy [ITEM] in the last 7 days?
- How much [ITEM] did your household BUY last time?
- What was the total amount you paid for [ITEM] the last time?

The above questions were asked for the following food items: Rice—Medium, Rice—Coarse, Rice Flour (Atta), Wheat Flour (Atta), Maida, Flattened rice, Puffed rice, Barley/Semolina, Maiza/corn, Other cereal, Lentils, Other pulses, Soybean oil, Mustard oil, Palm oil, Dalda/ghee, Other oil, All kinds of spinach, Basil leaves, Mint leaves, Other leafy vegetables, Cauliflower, Cabbage, Potato, Tomato, Beans, Cucumber, Radish, Bitter Gourd, Okra (Dherosh), Pointed gourd, Brinjal, Pumpkin, Bottle gourd, Carrot, Snake Gourd, Green Banana, Green Papaya, Lemon, Other vegetable, Chicken, Beef, Mutton, Duck, Other meat, Sea fish, Pangash, Rui, Tilapia, Hilsha, Puti/Big puti, Shrimp, Katla, Mrigel, All dried fish (Shutki), Other fish, Chicken egg, Milk (Liquid), Milk (Powdered), Milk (Condensed), Yogurt (Sweet/sour), Other dairy products, Banana, Orange, Apple, Mango, Papaya (ripe), Coconut, Jackfruit, Lychee, Black plum (jam), Wood apple, Dates (khejur), Watermelon, Sugarcane, Boroi, Taal, Grapes, Pomegranate (Dalim), Guava, Tamarind (Tetul),

Starfruit (Kamranga), Olive (Jolpai), Other fruit, Soft drinks (Coke, 7up etc.), Packaged juice, Tea/Coffee (prepared), Instant drinks (Horlicks, tang), Other drinks, Dried chili, Turmeric, Jeera, Elachi, Cinnamon, Salt, Panchforon, Coriander, Ginger, Garam Masala, Mustard, Kalo jeera, Bay leaf, Garlic, Green chili, Onion, Other spice, Sugar, Molasses (goor), Tea leaves, Nuts, Honey, Rice items (khichudi, biryani, panta, polao, tehari etc.), Bhat/bhorta/bhaji/torkari, Bread items (bread (bonruti), sandwiches, burger), Payesh, Firni, Shemai, Halua, Jilapi, Pitha, Fried items (Shingara, samosa, alur chop, peyaju, puri, nimki), Chanachur, Fuchka, chotpoti, Confectionary (biscuits, cakes), Packet chips/crisps, Other outside food, specify, Tobacco, Cigarette/Biri, Betel leaf (Paan), Jorda, Chuna, Other tobacco, specify, Fuel, Firewood, Gas, Other fuel, Other food.

Non-food expenditure was measured using the following questions:

- Did your household use [ITEM] in the past 30 days?
- What were the sources of [ITEM] the last 30 days?
- How much did you spend on [ITEM] in the past 30 days?

The above questions were asked for the following non-food items:

- Cosmetics and personal care products (soap, shampoo, toothpaste, toilet paper, cosmetics, etc.)
- Household supplies & cleaning products (soap, washing powder, detergents, cleaning products, garbage bags, paper napkins, aluminum foil, matches, candles, lamp wicks, etc.)
- Fuels and lubricants for personal vehicles (diesel, gas/petrol, alcohol and two-stroke mixtures; lubricants, brake and transmission fluids, etc.)
- Passenger transport by road (bus, minibus, taxi, etc.) or railway (EXCLUDE expenses to travel to school and health care facilities)

After summing the total amount paid for each of the food items in the past 7 days and converting it to a monthly measure, we added it to the amount spent on each of of the non-food items in the past 30 days, giving a monthly expenditure measure for each household. Households with total expenditure above (below) the baseline sample median were classified as having higher (lower) SES status (the median was calculated separately for each of the A2 and A3 samples).

C.7.3 BGD4. Participants in a Lottery for Agricultural Work

This sample classifies households based on total household consumption expenditure collected at baseline in 2018. Consumption expenditure consists of food and non-food expenditures. Food expenditure was measured using the following questions for a detailed list of locally purchased food grains, pulses, fish, eggs, meat, vegetables, milk & dairy, sweetmeat, oils & fats, fruits, drinks, sugar & molasses, miscellaneous, dining out, cigarette & tobacco products, spices, betel leafs & chewgoods:

- Did you consume [INSERT ITEM] in the last 7 days?
- Did you consume [INSERT ITEM] in the last 14 days?
- Total quantity consumed
- Value (Taka) consumed [Estimate value if not purchased]

Food expenditure was estimated by adding the value consumed for each listed item after being converted from 7 or 14 days into an annual measure.

Non-food expenditure was measured using the following questions for a detailed list of fuel, local transportation costs, other expenditures [recall period of one week], house utilities, rent, health expenses, utensils for household's use, taxes, family events, wedding expenses, communication, household use and personal toiletries, entertainment, travelling expense (not local), other expenses [recall period of one month], and shoes, sandals and clothing, education, purchase of transport (for own use), and other [recall period of twelve months]:

- Total cash expenditure in taka [FOR EACH ITEM]
- If not purchased, value in taka [FOR EACH ITEM]

Non-food expenditure was estimated by adding the value consumed for each listed item after being converted from the different recall horizons into an annual measure.

Households with total annual food and non-food expenditure above (below) the baseline sample median were classified as having higher (lower) SES status.

C.7.4 BGD5. Landless Rural Agricultural Laborers

This sample classifies households based on net income measured in a previous endline survey conducted in June 2019, as outlined earlier in section B.2.4. Households with net income above (below) the pre-COVID-19 endline sample median were classified as having higher (lower) SES status.

C.7.5 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR surveys included a Poverty Probability Index for each country (povertyindex.org/. The PPI constructs a logistic regression model with an elastic net penalty predicting poverty status relative to a given poverty line or national consumption percentile. The covariates of these models are picked via the stability-selection resampling method described by Kshirsagar et al. (2017), using the most recent nationally representative household consumption survey for each country. In each case, five covariates were chosen, including geographic unit and household size. Poverty line thresholds were chosen at 200% of the national poverty line for all countries except Colombia and the Philippines, which used 100% of the national poverty line, each typically close to the 40th percentile of the RECOVR sample to allow for reasonably precise estimates in each subsample. The basis for each RECOVR sample's PPI are outlined below:

- The Burkina Faso PPI indicators are based on analysis Burkina Faso's 2014 Enquête Multisectorielle Continue (EMC) Survey.
- The Colombia PPI indicators are based on analysis of Colombia's 2016 Gran Encuesta Integrada de Hogares (GEIH) Survey.
- The Ghana PPI indicators are based analysis of Ghana's 2016/17 Living Standards Survey (GLSS7).
- The Sierra Leone PPI indicators are based on analysis of Sierra Leone's 2003/4 Integrated Household Survey.
- The Rwanda PPI indicators are based on analysis of Rwanda's 2016/17 Integrated Household Living Conditions Survey (EICV5) produced by the National Institute of Statistics Rwanda (NISR) and the Ministry of Finance and Economic Planning.

The PPI provides poverty headcount ratio estimates for each sample, then households were classified as 'poor' if their index value fell below the corresponding percentile value (e.g. in a sample with a poverty rate of 20%, the bottom 20% of households are classified as poor).

C.7.6 KEN1 Rural Households in NGO Cash Transfer Study

The KEN1 sample classifies households based on consumption values collected as part of the follow-up survey round, thus we only have this information for households surveyed both at that point in time and during the COVID-19 phone surveys. During 2016-17, we collected

in-person data on household consumption expenditure as part of endline survey activities for an unconditional cash transfer evaluation. Households with total per-capita consumption expenditure above the sample median (USD PPP 1.63) are classified as higher SES, those below this level are considered lower SES.

C.7.7 KEN2-3 National Sample (WB) and Refugees (UNHCR)

The KEN2 and KEN3 sample surveys include recall questions about February 2020 income levels, as described in the income loss measure. Households with total February 2020 income above (below) the sample median were classified as having higher (lower) SES status.

C.7.8 NPL1. Agricultural Households in Western Terai, Nepal

The Nepal sample classifies households based on total annual household income reported during the October 2019 survey round using the following question:

- What was your family's total annual income across all sources last year?

Households with total annual household income above (below) the sample median were classified as having higher (lower) SES status.

C.7.9 SLE1. Towns that are Candidate for Rural Electrification

The Sierra Leone Rural Electrification sample classifies households based on consumption values collected at baseline in 2019 using the following questions:

- About how much money did your household spend on staples consumed in total in the past 7 days?
- About how much money did your household spend on vegetables consumed in total in the past 7 days?
- About how much money did your household spend on MEAT in total in the past 7 days?
- About how much money did your household spend on FRUIT in total in the past 7 days?
- About how much money did your household spend on OTHER GOODS in total in the past 7 days?

Household consumption was defined as the sum of household expenditure on the five categories above, and households with consumption above (below) the baseline sample consumption median were classified as having higher (lower) SES status.

C.8 Consumption

C.8.1 KEN1 Rural Households in NGO Cash Transfer Study

We construct a measure of total consumption expenditure from questions about the household's consumption of its own agricultural production, gifts of food, food expenditure, and a variety of aggregate non-food expenditure categories (household and personal items; assets / durables; local services; communication; housing; energy and utilities; transport; and medical expenses). We collect information on food consumption for the last 7 days, and non-food expenditure for the last 14 days.

C.8.2 SLE2 Towns that are Candidates for Rural Electrification

We construct a measure of food consumption expenditure from questions about the household's consumption of five staple food items: Rice, Cassava, Bonga Fish, Oil Palm, and Cube of Maggie.

We measure pre-COVID-19 expenditure on these five staple food items using the following questions:

- Rice:
  - How many CUPS of RICE would you normally buy at the market?
  - Think about this time LAST year, about how much would a cup of RICE be at the market?
- Bonga Fish:
  - How many BONGA FISH would you normally buy at the market?
  - Think about this time LAST year, about how much would a BONGA FISH be at the market?
- Oil Palm:
  - Think about this time LAST year, about how much was a PINT of OIL PALM at the market?
  - How many PINTS of OIL PALM would you normally buy at the market?
- Cube of Maggie:
  - Think about this time LAST year, about how much was a CUBE of MAGGIE at the market?
  - How many CUBES of MAGGIE would you normally buy at the market?
- Cassava:

  - Think about this time LAST year, about how much would the plastic of TUBERS be?

For the pre-COVID-19 quantity of Cassava purchased, we had to rely on the 2019 baseline survey, using the following question:

- How many tubers of CASSAVA did your household consume in the past 7 days?

We measure post-COVID-19 expenditure on these five staple food items using the following questions:

- Rice:
  - In the past 7 days, how much was a cup of RICE at the market?
  - In the past 7 days how many CUPS of RICE did you last buy at the market?
- Bonga Fish:
  - In the past 7 days, how much was a BONGA FISH at the market?
  - In the past 7 days, how many BONGA FISH did you last buy at the market?
- Oil Palm:
  - In the past 7 days, how much was a PINT of OIL PALM at the market?
  - In the past 7 days, how many PINTS of OIL PALM did you last buy at the market?
- Cube of Maggie:
  - In the past 7 days, how much was a CUBE of MAGGIE at the market?
  - In the past 7 days, how many CUBES of MAGGIE did you last buy at the market?
- Cassava:
  - In the past 7 days, think about that plastic you bought and the price it was. About how much was a single tuber of CASSAVA this week at the market?
  - In the past 7 days, think about when you bought CASSAVA at the market, about how many TUBERS are in the plastic?

The design of the post-COVID-19 survey was such that each week, a subset of households that is representative of the underlying study sample was surveyed, making each week's responses representative of households' food expenditure across the sample. Using all surveyed households' pre-COVID-19 food expenditure as a benchmark, we calculate the average post-COVID-19 weekly food expenditure for each week's respondents as a percentage change from the baseline pre-COVID-19 food expenditure benchmark.

C.9 Prices

C.9.1 KEN1 Rural Households in NGO Cash Transfer Study

The survey collects price data for the following 20 products. Each household is asked about a subset of four items, randomly selected. For each item, we ask: i) In the past 14 days, did your household purchase [product]? ii) What is the current price of [UNIT] of [PRODUCT] in the nearest market? That is, what did you (or would you) pay if you bought this item today. (ii) is asked regardless of whether or not the household purchased the product. We include options for "don't know" and "not currently available at local village / market."

The list of products, and associated units, are as follows, and build on market price surveys in Egger et al. (2019).

- Maize (2kg)
- Beans (2kg)
- Rice (1kg)
- Tomatoes (Four)
- Onions (Four)
- Banana-sweet (Bunch)
- Egg (One)
- Beef meat (1kg)
- Fish (Tilapia) (Whole)
- Cooking Fat (500g)
- Sugar (1kg)
- Bar Soap (One)
- Charcoal (2kg)
- Calf (local) (One)
- Goat (One)
- Chicken (hen) (One)
- Panadol (Pair)
- Adult head shaving (One)

- Fixing a small hole at a tailor (One)
- Grinding of maize (1kg)

We convert these into into a price index by matching households to the nearest weekly market center, and calculate the mean price at the market center-week level for each product. We assign expenditure weights to products following Egger et al. (2019) to generate a food price index and a non-food price index for each market, and average across 61 markets in our study area with equal weights. We then report mean prices relative to the first week for which we have data (April 5).

C.9.2 SLE1. Towns that are Candidates for Rural Electrification

We construct a measure of food prices using the price questions outlined in the Consumption section for the Sierra Leone sample. We once more focus on five staple food items: Rice, Cassava, Bonga Fish, Oil Palm, and Cube of Maggie.

We use all surveyed households' pre-COVID-19 food prices as a benchmark and calculate the average weekly price of each food item as a percentage change from the baseline pre-COVID-19 price benchmark for that item. The average weekly price index of the five items is constructed as a weighted average of each item's price change, using the average pre-COVID-19 household expenditure on each item as weights.

C.10 Enterprise profits

C.10.1 KEN1 Rural Households in NGO Cash Transfer Study

The enterprise profit data comes from the sample of enterprises (rather than households). Enterprises that were operating in February 2020 but have since stopped operating (either temporarily or permanently) are coded as having zero profits. Pre-COVID-19 enterprise profits are calculated based on reported profits from February 2020. These measures come from the following survey question: What was the total profit of this enterprise... *Note: Here we mean the amount you received after paying for expenses for this business, including hired workers, money for household members who helped, purchase of goods for sale or for inputs, such as raw materials, fuel, and electricity, but before purchasing personal items for yourself or your household. If unsure, FR can estimate. Ask in terms of "commission" if the FR runs an M-Pesa shop.)*

- in the last 14 days?
- in a typical 2-week period in February 2020?

C.10.2 SLE1. Towns that are Candidates for Rural Electrification

Enterprise profits were measured based on each household head's self-employment activities. For pre-COVID-19 profits, we used the following question:

- Think about LAST month, how much were your profits in a typical week?

We construct average pre-COVID-19 profits using only responses from the first wave of the COVID-19 survey, which was administered between April 29 and May 15 and referred approximately to the last month before the first lockdown was imposed.

For post-COVID-19 profits, we used the following question:

- In the past 7 days, what was your profits from your business?

Since a representative subset of households was surveyed each week, we construct average post-COVID-19 weekly profits by averaging reported profits across each week, expressed as a percentage change from the pre-COVID-19 profits.

C.11 Enterprise revenues

This measure is only available for the KEN1 sample. The enterprise revenue data comes from the sample of enterprises (rather than households). Enterprises that were operating in February 2020 but have since stopped operating (either temporarily or permanently) are coded as having zero revenues. Pre-COVID-19 enterprise profits are calculated based on reported revenues from February 2020. What were the total earnings of this enterprise (money in only—do not subtract any expenses) in the:

- last 14 days?
- in a typical 2-week period in February 2020?

C.12 Domestic violence

C.12.1 KEN1 Rural Households in NGO Cash Transfer Study

These questions are only asked when female enumerators are surveying female respondents. Prior to beginning of these questions, respondents are first asked if they are in a situation where there is privacy and they feel comfortable answering sensitive questions, then if they are open to answering some questions about their relationship. Only those that answer yes receive the following questions. Respondents are reminded that they can skip any questions that they do not want to answer. All questions only require "never/sometimes/often" responses from the respondent to help ensure privacy.

We use the following questions to construct an adult domestic violence measure as an indicator variable equal to one if respondents answering "sometimes" or "often" to any of the following questions:

- (if married/cohabiting) In the last 2 weeks, have any of your partners ever threatened to harm you or someone else close to you? (1=Never, 2=Sometimes, 3=Often, –88=Refuse)
- (if married/cohabiting) During the last 2 weeks, did your husband/partner ever hit, slapped, kicked, or physically hurt you? (1=Never, 2=Sometimes, 3=Often, –88=Refuse)
- (if married/cohabiting) During the last 2 weeks, did your husband/partner ever force you to perform any sexual acts you did not want to? (1=Never, 2=Sometimes,3=Often, –88=Refuse)

Our measure of child domestic violence is an indicator equal to one for responses of "sometimes" or "often" to the following question:

- (if children in the HH) During the last 2 weeks, did you, or your husband/partner ever beat any of the children living in this household? (1=Never, 2=Sometimes, 3=Often, –88=Refuse)

We use the first week of data collection as our pre-COVID-19 reference measure, as this collects information going back two weeks from late March.

C.13 Household size measure

C.13.1 BGD1. Bangladesh Rural Sample

Household size was measured at baseline in 2017 using a household roster listing. All members of the household, including those who do not currently live there due to temporary migration, were recorded.

C.13.2 BGD2–3. Rohingya Refugees from Myanmar & Communities Living Near Refugee Camps in Cox's Bazar

Basic socio-demographic information for each household member was collected during the 2019 baseline survey using a standard household roster.

A household was defined as follows:

"A group of persons who normally cook, eat, and live together. These people may or may not be related by blood, but make common provision for food or other essentials for living and they have only one person whom they all regard as the head of the household.

There can be situations where people eat together and even sleep under one roof, but have different persons whom they regard as head. These groups of people should be considered as belonging to separate households.

There can also be one-member households where a person makes provisions for his/her own food or other essentials for living. Such a person is the head of his/her own household."

C.13.3 BGD4. Participants in a Lottery for Agricultural Work

Household size was measured at baseline in 2018 using a household roster listing. All members of a study participant's current household were included, including the participant even if they are not present in the household.

C.13.4 BGD5. Landless Rural Agricultural Laborers

Household size was measured at baseline in 2018 using a household roster listing using the following household definition:

- A household can be a single person or a group of people living in the household, sleeping in the household, and eating from the same pot.

C.13.5 RECOVR samples: BFA1, COL1, GHA1, PHL1, RWA1, SLE2 National Samples

The RECOVR surveys asked each respondents how many individuals lived in their household, as below:

- How many people were living in your current household (where you are living now)in February 2020? (Burkina Faso, Sierra Leone)
- How many people are living in your current household? (Colombia, Ghana)

C.13.6 KEN1–3 Rural Households in NGO Cash Transfer Study, National Sample (WB) and Refugees (UNHCR)

For the Kenya samples, residing in the household is defined as "eating from the same pot" and generally spending 4 nights a week in the home. In both samples, we collect information about the number of adults (18 or over) and children living in the household. (For households in the GE sample that were previously surveyed as part of in-person activities, we pre-fill a household roster and use this to collect information on the number of adults and children still in the household, as well as any new adults and children that are now currently living in the household.)

C.13.7 NPL1. Agricultural Households in Western Terai, Nepal

Household size was measured at baseline in 2019 using a household roster listing. A household was defined as follows in the survey manual:

- In this survey, a household will be defined as a group of people who have usually slept in the same dwelling and taken their meals together for at least 9 of the 12 months preceding the interview. The following are examples of a household:
  - A household consisting of a man and his wife/wives and children, father/mother, nephew and other relatives or non-relatives;
  - A household consisting of a single person;
  - A household consisting of a couple or several couples with or without their children.
- All listed persons who have been away from the household for more than three months are not considered to be household members.

C.13.8 SLE1. Towns that are Candidate for Rural Electrification

Household size was measured at baseline in 2019 using a household roster listing. A household was defined as follows:

"I will now ask you about everyone living in your household. As we said, a household consist of people living under the same roof and eating from the same pot.

Think about all the people living in your household. Can you help me make a list of them?"

C.14 Investment decisions

C.14.1 KEN1–2

In the KEN1 and KEN2 samples, we construct an indicator for whether households engaged in agriculture that have completed the planting season report planting less than in the previous season, based on the following question: "In this planting season, did your household plant more, less or the same as last planting season?"

D. Research approvals

BGD1. Rural Sample: Yale University IRB Protocol 1609018380 and Innovations for Poverty Action IRB Protocol 13964.

BGD2. Rohingya Refugees from Myanmar: Innovations for Poverty Action IRB Protocol 14742 and George Washington University 071721.

BGD3. Communities Living near Refugee Camps: Innovations for Poverty Action IRB Protocol 14742 and George Washington University 071721.

BGD4. Participants in a Lottery for Agricultural Work Permits: Innovations for Poverty Action IRB Protocol 14679.

BGD5. Landless Rural Agricultural Laborers: Yale University IRB Protocol 1010007571.

BFA1. National Sample (RECOVR): Innovations for Poverty Action IRB protocol 15608; Comité d'Ethique Institutionnel pour la Recherche en Sciences de la Santé approval A13-2020.

COL1. National Sample (RECOVR): Innovations for Poverty Action IRB protocol 15582.

GHA1. National Sample: Innovations for Poverty Action IRB protocol 15542.

KEN1. Rural Households in NGO Cash Transfer Study: UC Berkeley, Maseno University.

KEN2. UNHCR Refugees: Maseno University.

KEN3. National Sample: Maseno University.

NPL1. Agirucltural Households in Western Terai: Yale University IRB Protocol 2000025621.

PHL1. National Sample (RECOVR): Innovations for Poverty Action IRB approval 15641.

RWA1. National Sample (RECOVR): Innovations for Poverty Action IRB protocol 15591; Rwanda National Institute for Scientific Research permit No.0856/2020/10/NISR; and Rwanda National Ethics Committee approval No.16/RNEC/2020.

SLE1. Towns that are Candidates for Rural Electrification: Sierra Leone Ethics and Scientific Review Committee (SLERC 2904202) and Wageningen University protocol 24062020.

SLE2. National Sample (RECOVR): Innovations for Poverty Action IRB protocol 15592; Sierra Leone Ethics and Scientific Review Committee approval (no approval number).

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