The effects of vouchers for essential household items on child health, mental health, resilience, and social cohesion among internally displaced persons in the Democratic Republic of Congo

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Acronyms

- **3ie**: International Initiative for Impact Evaluation. Funder of this study.
- **CP**: *Comité de Pilotage*. The provincial RRMP steering committee composed primarily of UNICEF, OCHA, and implementing partners, and relevant sectoral Cluster coordinators; responsible for deciding the location, type and scale of needs assessments (MSAs) and interventions
- **DRC:** Democratic Republic of Congo
- **DRC:** Danish Refugee Council, one of the RRMP implementing partners
- **FGDs**: Focus group discussions. Part of the qualitative data collection.
- **CBPF:** Country-based Pooled Ffund, created by OCHA in 18 countries, including DRC
- **HSC:** Hopkins Symptom Checklist
- **IDPs:** Internally displaced persons
- **EHIs**: Essential household items; also known as Non-Food Items (NFI). The intervention under study distributes cash vouchers to families to access for EHIs.
- **MONUSCO:** United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (French acronym)
- **MSA**: Multi-sectorial assessment. Undertaken by the RRMP implementing partners under the direction of the CPs (*comité de pilotage)*, steering committee, to provide information to RRMP and other humanitarian programs and actors.
- **MUAC**: Mid-upper arm circumference
- **NRC**: Norwegian Refugee Council, one of the RRMP implementing partners
- **OCHA:** United Nations Office for the Coordination of Humanitarian Affairs
- **PAP:** Pre-analysis plan
- **PTSD:** Post Traumatic Stress Disorder
- **RRMP**: Rapid Response to Movements of Population. The program under study.
- **UCB**: *Université Catholique de Bukavu;* Catholic University of Bukavu
- **UNICEF**: United Nations Children's Fund. The overall manager and coordinating agency for RRMP.
- **WASH**: Water, sanitation and hygiene.
- **WFP:** World Food Program
- **WHO:** World Health Organization

Executive Summary

Background

In May 2014, the International Initiative for Impact Evaluation (3ie), in partnership with the DRC Humanitarian Country-Based Pooled Fund (CBPF), requested qualifications from research teams interested in studying the effectiveness of humanitarian assistance in eastern Congo.[1] CBPF and 3ie matched qualified research teams with humanitarian organizations that had previously expressed interest in the evaluation methods promoted by 3ie. Our research team was matched with the Rapid Response to Movements of Population (RRMP) program, jointly managed by the United Nations Children's Fund (UNICEF) and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). The program that evolved into RRMP began in 2004, and is currently implemented in one-year cycles. RRMP8 (May 2017 – April 2018), the intervention phase under study, provided humanitarian assistance to vulnerable populations wherever was necessary, especially in the conflict affected in the provinces of North Kivu, South Kivu, Ituri, Tshopo, Haut Katanga, Tanganyika, and the Kasai region, who had fled from armed conflict, or had recently returned to their home communities after such displacement, or were hosting displaced people.[2] The RRMP8 budget was approximately 25 million USD and the program assisted nearly 1.4 million people.

To provide the highest quality scientific evidence within the available budget, we focused on one component of the RRMP program: the provision of Essential Household Items (EHI)[3] via cash vouchers for use at UNICEF-organized EHI fairs.[4] The total voucher amount ranged from $55-90[5] per household, depending on the specific intervention's budget and the size of each household. We measured effects[6] on four groups of outcomes that are central to RRMP's mandate of improving health and well-being: 1) child physical health, 2) adult mental health, 3) social cohesion, and 4) resilience. Our research question was: *What is the effect of humanitarian assistance (specifically the provision of vouchers for essential household items (EHI)) provided to recently displaced persons, and vulnerable host families, on health and well-being?* While research on cash-based humanitarian studies has accelerated greatly in the last ten years, to our knowledge there are no studies on the effects of EHI or vouchers for EHI on these outcomes (Doocy and Tappis 2017).

[1] OCHA created the first country-based pooled fund (CBPF) in Angola in 1995. As of 2016, CBPFs operate in 18 countries. The DRC Humanitarian Pooled Fund was created in 2006 and in its first decade allocated nearly $900 million to 1,250 projects. In 2015, it received $41 million from seven donors, and 80% of the projects it funded were implemented by NGOs.
[2] Thresholds mandating interventions vary according to province, averaging roughly 500 households in a locality or 1,200 total in an intervention site (i.e. two or more adjacent localities).
[3] While we prefer the term EHI, "Non-food items" (NFI) is commonly used within the humanitarian community for the same sector.
[4] RRMP is a multi-sectoral response program which can include response activities in Health, Education, and WASH in addition to access to EHI. RRMP partners or other actors often distributed food alongside RRMP assistance. See Section 8.1.1 for more details.
[5] All "$" in this report refer to US dollars
[6] We use "effects" and "impacts" interchangeably.

Method

We conducted a randomized control trial (RCT) of vouchers for EHI, complemented by focus group discussions (FGD). In close collaboration with RRMP8 implementing partners, we focused on seven RRMP8 interventions, covering 25 villages, in the province of North Kivu. DRC. In each site, RRMP8 provided vouchers for EHI to vulnerable households (both displaced and local). For the study, we enrolled an additional 976 households who were just below the vulnerability threshold for receiving RRMP assistance. Of these, 488 were randomly assigned to the EHI voucher group and 488 to control. We successfully interviewed 856 households (88%) just before the EHI fair (baseline survey). We interviewed 434 households (89%) from the voucher recipient group just after the EHI fair (midline survey, 3-8 days after the baseline). And we interviewed 769 households (90% of the households interviewed at baseline) five-to-six weeks after the baseline survey. The baseline and endline interviews lasted about one hour each, and included multiple questions about each of the four outcome groups, along with questions about basic demographic and socioeconomic information. The endline survey also included rapid diagnostic tests for malaria, haemoglobin measurements, and height, weight, and mid-upper arm circumference (MUAC) measurements of all children aged 6-59 months. The shorter midline survey focused on which items were purchased at the fair, and at what price. Alongside the endline survey, we conducted 20 focus groups with eight people each across the seven sites,[7] 10 FGDs with internally-displaced persons (IDP) and 10 FGDs with locals (including hosts of IDPs). About half of the FGD respondents had participated in EHI voucher fairs, and half had not. We asked about their daily struggles, their relationships with the community, and their perceptions of RRMP. The study was pre-registered at http://egap.org/registration/2832

Key findings

We found strong effects of EHI vouchers on adult mental health, and to a smaller degree on resilience and social cohesion. Specifically, we found a large improvements in mental health, by about 0.35 standard deviations, and moderate increases in resilience (0.18 standard deviations) and social cohesion (0.15 standard deviations). This is encouraging as EHI items seem to have increased both coping *and* consumption. Both life satisfaction and reduced anxieties, on the one hand, and investments in assets, food security and financial deepening (through incurring debt), on the other hand, are predictive of longer run consumption and incomes, suggesting that the benefits of EHI vouchers may persist beyond the five-to-six week period measured here. There was no increase in community tensions or conflict. In fact, there was a marked *increase* in social capital for recipient households. The qualitative evidence reinforces the positive effects of the EHI, with almost all recipients reporting that EHI were beneficial. There were also many reports of sharing EHI, which supports the increase in social cohesion. In addition, households sold EHI to meet more urgent needs, such as food and medicine, both of which were major concerns for respondents. The FGDs also revealed, however, that the targeting and selection process was poorly understood. We found no evidence for an impact of EHI

[7] "Site" refers to a group of localities targeted by RRMP for assistance. It does not refer to camp-like, collective sites where migrants have settled.

vouchers on child physical health. This may be due to the short time duration between receiving vouchers and the endline survey, the type of EHIs purchased, how EHI were used, or other reasons, which provides an impetus for essential future research. In sum, when considering all the evidence from this study, the results show a positive overall impact from the provision of EHI via vouchers and fairs.

Conclusions, limitations, and recommendations

We applaud UNICEF, OCHA, and the implementing partners for investing in research despite the urgency of their work and the pressure from their donors and other stakeholders. We recommend that they continue to do so as the program and context evolve. They have been pioneers in supporting research into humanitarian activities.

This study provides highly credible evidence, due to random assignment, that the provision of EHI via vouchers and fairs causes substantial improvements in adults' mental health, and moderate improvements in resilience and social cohesion. We find no evidence of any effect of child health, a finding which is even more credible due to the use of medical tests rather than self-reported measures.

As with any study, there are a number of limitations. One important limitation is that we do not know if the positive effects found here persist for longer than six weeks. We focused on this time period because it is consistent with the humanitarian mandate of RRMP. Another key limitation is that we lack evidence on the overall effect of the RRMP intervention at the site level, because we could not randomly assign the intervention at that scale. If the intervention had spillover benefits for the households in our control group, then our measures will underestimate the true benefit.

We must think carefully about the extent to which these results would be replicable in other contexts. For example, if this program were implemented in the Central Africa Republic, would it have the same results? To help answer that question, we have provided information about our sample at baseline, about the context of the intervention, and about heterogeneity of effects across intervention sites.

Overall, the results of this study support the claim that humanitarian assistance can cause important increases in well-being in the short term. We recommend continued funding for the RRMP program, along with additional research to continue to innovate and improve. The effect of the health component of RRMP on child health is of particular interest.

1. Introduction

In 2017, across the globe, an estimated 201 million people in 134 countries needed humanitarian assistance, and public and private organizations spent a total of $27.3 billion to assist them (Development Initiatives, 2018). The amount of funding for humanitarian assistance has steadily increased over the last two decades. Research on the effectiveness of such assistance, however, has not kept pace (Waldman and Toole 2017). There is an increasing demand from donors, policy-makers and implementing agencies to remedy this situation and to generate more evidence about what works and why. Research on humanitarian assistance, however, is challenging. It must overcome ethical dilemmas, security concerns, logistical hurdles, a relative paucity of high-quality monitoring data, and the urgency of humanitarian action. Nonetheless, a growing community of researchers in the humanitarian space, academia, and elsewhere are developing innovative methods to overcome these challenges and carry out high quality studies in emergency contexts (Blanchet et al 2017).

In the Democratic Republic of Congo (DRC), humanitarian actors have been present for over 20 years in response to ongoing armed conflicts and low state capacity in the mountainous east and south of the country, and more recently in the Kasai region. Acute crises such as population displacement and natural disasters exacerbate a situation of chronic vulnerability, especially among the rural population. As of December 2017, the Internal Displacement Monitoring Center estimated that ongoing conflicts in North and South Kivu and an increase in inter-communal clashes in southern and central provinces had caused 4,480,000 people to be displaced from their homes, out of a total national population of approximately 80 million.[8] At that time, it was the highest number of IDPs in Africa. Most of these IDPs lack sufficient access to food, clean water, and sanitation facilities, and threats to security are pervasive. Similar conditions hold even for most non-displaced rural populations in the east, where armed conflict has been common for over 20 years.[9]

1.1 Literature review

To date our understanding of the impact of humanitarian aid is limited.[10] Reviewing 39 impact evaluations of humanitarian assistance programs that took place since 2005, Puri et al (2017) found that for many studies (n=23) it was impossible to determine the credibility of the counterfactual, many studies (n=29) did not discuss the confidence with which their results were measured (i.e. did not undertake power analyses or show sample size calculations), and very few (n=5) discussed ethical issues. We address each of these issues in this study. Puri et al (2017) also sent an online survey to "stakeholders across the humanitarian sector." Health and modality of assistance (cash, in-kind, etc.) were identified as the two top priorities for future research. An additional 53 key informant interviews with professionals in the humanitarian and research sectors confirmed those priorities. This study measures the effect of one modality, vouchers, which combines the flexibility of cash with the security of in-kind assistance, on health and well-being.

To date, most humanitarian assistance is provided in kind, but there has been a growing trend in the past 10 - 20 years towards increased use of cash-based modalities such as vouchers, e-transfers, and direct cash transfers (Tabor 2002; Tesliuc 2006; CALP 2018). Justifications for in-kind assistance may include asymmetric information between provider and recipient, safety, absence of markets, labor complementarities (to counteract disincentives of transfer), or paternalistic arguments (Currie and Gahvari 2008). Doocy and Tapis (2017) provide a review of studies exploring the effects of cash-based approaches on individual and household outcomes in humanitarian emergencies. A total of 108 unique studies were

[8] http://internal-displacement.org/countries/drc (accessed 24 Sept 2018).
[9] http://www.unocha.org/story/drc-number-internally-displaced-people-rises-38-million-highest-africa (accessed 07 July 2017).
[10] We make use of the following definition. "Humanitarian aid is designed to save lives and alleviate suffering during and in the immediate aftermath of emergencies, whereas development aid responds to ongoing structural issues, particularly systemic poverty, that may hinder economic, institutional and social development in any given society, and assists in building capacity to ensure resilient communities and sustainable livelihoods". From *Humanitarian Coalition (Canada)*. http://humanitariancoalition.ca/media-resources/factsheets/from-humanitarian-to-development-aid (accessed 17 July 2017)

included in the review, of which only nine studies were found in peer-reviewed publications. The authors conclude that the body of evidence is of low quality due to methodological limitations. Regardless of methodological quality, few studies have assessed the effectiveness of voucher-based assistance (with the exceptions being food assistance, e.g. Aker 2017; Hidrobo et al 2014).

Specifically related to eastern DRC, our research area, Humphreys et al (2012) found no evidence that a large community-driven development program had an impact on social cohesion or socio-economic outcomes, including (child) health outcomes.[11] The program under study, although implemented in a post-conflict area, did not relate directly to humanitarian assistance.

Bonilla et al (2017) used a non-pre-specified, pseudo-difference-in-differences approach to estimate the impacts of unconditional cash transfers to vulnerable households in eastern Congo. They found that transfers of $120 improved food security, increased expenditures, increased the percentage of households with any savings and the average savings, decreased the percentage of households with any debt but *increased* the average debt, decreased the percentage of households skipping medical treatment for lack of money, increased the percentage of boys enrolled in school, and resulted in households owning more EHI. There were no effects on the percentage of girls enrolled in school. Twenty-four percent of beneficiaries reported improved community relations; five percent reported a deterioration; and 71 percent reported no change.

In the wider literature, including the literature that relates to non-humanitarian assistance (development projects, etc.), there is some evidence that EHIs can improve health outcomes. In particular, soap and jerry cans help reduce exposure to pathogens and thus lower the risk of infection, particularly of diarrheal diseases (Roberts et al, 2001; Curtis and Cairncross, 2003). Insect-treated bed nets have also been shown to reduce the risk of malaria infection by preventing exposure to Anopheles mosquitos (Lengeler, 2004). However, we know of no studies that have looked at the effectiveness of these items in the context of humanitarian assistance.

1.2 Research question

The specific research question that we focus on[12] is: *What is the effect of humanitarian assistance (specifically the provision of vouchers for EHI) provided to recently displaced or returned persons, and vulnerable host families, on health and well-being?*

To the best of our knowledge, this is the first study with a counterfactual to measure the causal effect of EHI vouchers. It will add to the small but growing evidence base for humanitarian assistance. And it will provide information that should help improve a flagship UN program with a strong record of learning and adaptation that has been expanded to Central African Republic, Iraq, South Sudan, and Yemen.

2. Intervention, theory of change and research hypotheses

2.1 Intervention

RRMP[13] conducts multi-sectoral needs assessments (MSA) and responds to the humanitarian needs of households affected by population movement, whether they are fleeing from armed conflict or natural disasters, hosting displaced families, or returning to their home communities after such displacement. The program is based on prepositioned response capacity via multiple international NGOs on the ground ready to conduct needs assessments and mobilize a response to the humanitarian consequences of population movements in their zones of intervention. This evaluation focused on IDPs in host communities and the

[11] Laudati et al (2018) show that there are also no effects in the longer run.
[12] See pre-analysis plan (PAP) registered at the Evidence for Governance and Politics (EGAP) registry: http://egap.org/registration/2832.
[13] RRMP8 is the eighth renewal of RRMP. The program is up for renewal each year. (http://www.rrmp.org/)

communities who hosted them, rather than on returnees or IDPs staying in spontaneous camps or collective sites. IDPs in host communities constituted 83% of RRMP beneficiaries between May 2017 and June 2018.

Based on gap analysis and vulnerability thresholds, RRMP can potentially provide multisectoral humanitarian assistance in the following sectors: 1) EHI, 2) health and nutrition, 3) child protection and education, and 4) water, sanitation and hygiene (WASH). Starting with RRMP8, unconditional multi-purpose cash transfers were added as a modality of assistance with a potential impact on all the sectors, including food security. The sector(s) addressed in any particular response depend on household and community vulnerabilities identified during an MSA and the local and international response capacities.[14] RRMP implementing partners may carry out MSAs as soon as the Steering Committee (*Comité de Pilotage* (CP)[15] decides that an emergency situation potentially meets RRMP's response mandate. CPs, chaired by UNICEF and OCHA, are set up in different zones of intervention and decisional hubs: Goma (for interventions in Ituri, Tshopo, Nord Kivu, and South Kivu), Kalemie (for interventions in Maniema, Tanganyika, and Haut Katanga) and Kananga (for interventions in Lomami, Kasai, Kasai Central, and Kasai Oriental). These CPs meet on a regular basis to discuss received alerts and RRMP positioning for evaluations and response. During the RRMP8 cycle, the program conducted 69 MSA and 56 interventions. The seven interventions that were part of the study were among these 56 interventions.

When assessing an alert and a possible intervention, each CP uses the decision tree below.[16] However, the decision to intervene also depends on contextual factors such as whether or not other, non-RRMP actors can respond and whether or not RRMP has enough resources available. In other words, there is no hard and fast rule to determine when and where RRMP intervenes.

RRMP Decision tree

1. Is the alert recent or in a zone that recently became accessible?
    a. If yes: continue to evaluate the following questions
    b. If no: refer to another actor with relief programs
2. Are the displaced or returned families in lodging that does not guarantee their protection against weather and / or which represents an immediate epidemic risk, such as spontaneous sites or collective sites?
    a. If yes: validate an intervention
    b. If no: answer questions 3 and 4
3. If the displaced are in a host community, is the number of displaced households more than 30% of the households in the host community?
4. If an evaluation was done, were the vulnerability thresholds surpassed in at least two sectors?
    a. If yes to either 3 or 4, validate an intervention
    b. If no, continue to follow the alert or refer it to other actors

For each potential sector of intervention, if at least two sector-specific questions can be answered in the affirmative, then an intervention can be validated. In the EHI sector specifically, the following questions are evaluated:

[14] Prior to RRMP8, community-level MSAs were administered systematically before the decision to mobilize an intervention. Beginning with RRMP8, the program sometimes relied on pre-diagnostic tools, remote date collection and secondary information, rather than an MSA, when this information was sufficient to determine the scale and level of needs to make a response decision.
[15] The CP includes representatives of OCHA, RRMP implementing NGOs, relevant sectoral Cluster coordinators, and other NGOs who may work in the same areas.
[16] OCHA/UNICEF. "Arbre Décisionnel ecissionne RRMP9." 2018-2019.

1. Did the displaced families leave their homes suddenly (in a non-preventive manner) and/or were they victims of pillage, looting, or arson in their home areas, preventing them from carrying their belongings?
2. Are there intercommunal tensions or other tensions that prevent the sharing of EHI in the area where the families are now living?
3. Do the displaced/returned have limited access to means of subsistence in the arrival zone?
4. Do the displaced/returned have limited access (physical, security, financial, or other) to markets to obtain EHI in the arrival zone where they are now living?
5. Is there an absence of an actor leading/planning an EHI intervention in the zone that targets displaced populations?

If the CP decides to validate an intervention, then the MSA team returns to the community to conduct a registering process during which individual household-level vulnerability indicators are also collected (for more information on the vulnerability scoring, see section 5.2 below). Based on the survey results, a vulnerability score is calculated for each household. This is a composite score that includes food security vulnerability, material vulnerability[17], and social vulnerability. Host family households are also included in the survey and can could be potentially targeted for assistance based on their vulnerability levels. RRMP may also target some vulnerable non-host households who are identified together with the host communities. Non-host households normally represent less than 5% of the total number of assisted households.

For this study, we focus on RRMP assistance in the form of EHIs. In humanitarian assistance parlance, EHI—or NFI (Non-Food Items) as is more commonly used – generally refers to the items that individuals and households affected by a disaster—in this case a forced population movement—will need to carry out essential daily activities. RRMP and the NFI/Shelter Cluster in the DRC typically focus on EHI to assist people with clothing themselves; preparing, serving, and storing food; collecting, storing, and using water for hygiene and cleaning activities; sleeping; and in some cases essential livelihood activities.[18] By assisting people in accessing EHI—through either direct distributions of family relief kits, or, as is the focus of this study, by having families select EHI themselves at a voucher fair—the objective of an EHI intervention is the same: to allow families and individuals to better undertake these essential daily activities with security and dignity.

This study focuses specifically on vouchers for EHIs that were used at voucher fairs organized by RRMP. While there are rules on forbidden items and maximum prices for certain items, dozens of different types of items are typically available for purchase at these fairs including buckets and basins, saucepans, cooking pots, clothing, cloth, soap, sheeting and plastic tarpaulin, jerry cans, mattresses, bedsheets, shoes/sandals/boots, plates, cups, batteries, small solar panels, utensils, light bulbs, radios, flashlights, furniture (chairs, beds, tables), and (rarely) bed nets. (see **Table 4** for data on the items purchased at the study sites).

EHI interventions in the relevant provinces are implemented by RRMP partner NGOs, including: Mercy Corps and Danish Refugee Council (DRC) in the southern part of North Kivu, and Solidarités International and Norwegian Refugee Council in the northern part of North Kivu and Ituri.

As noted above, EHI assistance can be provided either via direct distributions or via voucher fairs—or a combination of both. The research team and the RRMP leadership decided to focus on EHI fairs (instead

[17] In the context of RRMP and EHI assistance, 'material vulnerability' specifically refers to a household's possession and/or access to EHI. This vulnerability level is determined based on a tool developed by UNICEF and the NFI/Shelter Cluster in the DRC called the EHI or NFI Score-Card. Assessment teams evaluate the quality and quantity of eight essential EHI to determine levels of vulnerability. The EHI/NFI Score-Card exercise is often also used in post-intervention monitoring to determines levels of change—hopefully improvement—in terms of EHI assets.

[18] Shelter is not a full intervention area of RRMP, but in both distributions and fairs, shelter reinforcement materials – particularly plastic tarpaulin – are often included or permitted.

of distributions), as this is RRMP's primary means of providing access to EHI. While in-kind distributions of EHI remain a common practice in many humanitarian emergencies, the use of cash vouchers as a modality for accessing EHI was pioneered in the DRC and has now become more common than in-kind distributions in the country. RRMP EHI voucher fairs began as a pilot program in 2008, and grew during the subsequent years such that by 2013 over 50% of EHI assistance was delivered via voucher fairs. From 2009-2016 approximately half of EHI assistance occurred via fairs (more than 790,000 beneficiary households out of a total 1.68 million during that period).[19] Rather than receiving a pre-composed kit, RRMP partners give families cash-valued vouchers worth around $75 on average ($55, $75, or $95 depending on the size of the family) which can be used as they browse, compare and bargain to buy what they choose at a voucher fair market organized by the NGO.[20] RRMP uses paper vouchers and each family receives a page of detachable vouchers of different values ranging from $0.50 to $15. The general policy is to have families represented at the fairs by the head woman in the household, but there are exceptions depending on implementation staff discretion.

EHI fairs are typically closed temporary 'markets' made up of between 40-80 participating vendors identified from local and regional markets. In each fair, RRMP tries to provide vendors with a list of the types of items that they should bring to the fairs. While bargaining and deal-making is encouraged, RRMP partners together with representatives of the beneficiaries and vendors will fix price ceilings on a list of key items. There are also a number of items which are not permitted (e.g. food, livestock, medicines, and weapons). According to RRMP policy, the implementing NGO must carry out awareness and sensitization activities on "good practices associated with the usage of certain items."[21]

Each year that RRMP is renewed, a workshop – with UNICEF, the implementing NGOs and experts on EHIs in DRC – is held to review and update key RRMP policies. Decisions on approximate voucher values and EHI eligibility are made, based on consensus among the attendees, during this meeting. In all cases, however, RRMP partners undertake market analysis in the intervention zones to help adjust voucher values based on local markets.

2.2 Theory of change: how EHI could improve health and well-being

Unlike other forms of humanitarian assistance, such as food aid and WASH programs, the expected outcomes for families who receive EHI assistance—via distributions or voucher fairs—can be challenging to assess as it targets multiple humanitarian sectors (health, livelihoods, shelter, etc) depending on the choice of EHI by beneficiaries. EHI assistance is cross-cutting, and different types of items can contribute to different outcomes for beneficiary households: soap and buckets can contribute to improved hygiene and health; cooking pots and utensils can improve food security; clothing can improve well-being and provide protection; a farming tool can lead to improved food security and livelihoods. As such, assessing the impact of EHI programs requires a wide set of outcomes to determine if improvements have occurred. UNICEF, for example, considers EHI interventions under its Core Commitments for Children in Humanitarian Action in Health.[22] At the global cluster level, EHI is generally housed under the Global Shelter Cluster, although some items are included within other sectoral clusters. The global Sphere standards include EHI within Shelter and Settlements, but more sector-specific items like soap and water

[19] For more information on the transition from the use of in-kind distributions to cash-based vouchers in the EHI/NFI sector in the DRC, see the Global Shelter Cluster Shelter Projects 2015-2016 case study: 'DRC Congo 2008 – 2016 / NFI Voucher Fairs,' pp. 70-73, April 2017; http://shelterprojects.org/shelterprojects2015-2016/SP15-16_A17-DR%20Congo-2008-2016.pdf

[20] In two of our seven sites, voucher amount was a function of household size. In Site 1: $55 for 1-3 household members; $70 for 4-6, and $90 for 7 or more. In Site 2 all vouchers were $72. In Sites 3 and 4: $50 for 1-3 household members; $60 for 4-6, and $80 for 7 or more. In Site 5: $56 for 1-3 household members; $66 for 4-6, and $92 for 7 or more. In Site 6 all vouchers were $75. In Site 7: $55 for 1-3 household members; $62 FOR 4-6, and $81 for 7 or more.

[21] RRMP. May 2018. "Guide d'orientation pour les partenaires de mise en ouvre." p89.

[22] UNICEF's Core Commitment 5 for Health is: 'Women and Children have access to essential household items,' UNICEF Core Commitment for Children in Humanitarian Action, April 2010, p. 24.

storage items are included in WASH programmes.[23] Given these complexities, humanitarian actors often limit themselves to counting the number of families who have received EHI assistance, but do not explore what the provision of EHI might have meant in terms of improvements to an emergency-affected individual or family's life.

RRMP's program objectives specific to the provision of EHIs are 1) to lower EHI vulnerability scores—that is to see increases in household assets, and 2) to improve families' abilities to undertake essential daily activities. The theory of change for this study presents the research team's views, based on available evidence, and incorporating feedback from the implementing partners, about how the provision of EHI via vouchers and fairs could lead to improvements in health and well-being, specifically: child physical health, adult mental health, social cohesion, and resilience. These outcomes are derived from RRMP's overall goal to increase health and well-being among vulnerable populations.[24] These outcomes attempt to capture the multi-sectoral and multi-faceted nature of EHI assistance interventions.

Families fleeing from the threat of violence often leave behind most of their possessions, in addition to losing access to their fields and their livestock, typically their primary income sources. The villages and towns that host these IDPs may provide some relief, by sharing food and shelter, and paying IDPs to work on their fields. However, at the same time, hosts may insist on being compensated for lodging – particularly in cases of prolonged displacement -- which can put the IDPs in debt. To cope, IDPs may pull children out of school, forego medical care, or skip meals, which can in turn further increase their vulnerability. The "daily stressors" following displacement (e.g., discrimination, dependency, socio-economic hardship) have been associated with depression and mental distress (Miller et al, 2008; Ellis et al, 2008; Heptinstall, Sethna, and Taylor 2004).

The first steps in the theory of change are that households agree to participate as beneficiary in the program, attend the EHI fair, and purchase EHI with their vouchers. If households do not trust the program, do not understand the program, if the fair is too costly to reach, or if the fair conflicts with the recipient's obligations, then these steps may not take place. Over the past ten years, however, RRMP implementing partners have been able to achieve take-up rates nearing 100% (based on RRMP own assessment). Ideally, the household member (generally the female household head) who has received the EHI vouchers and attends the fair on behalf of the household will use it to buy the items that will best serve the household.

Below, we present theories on how receiving EHI vouchers can lead to changes in each of the four main outcomes.

Physical health

Several of the EHIs, if purchased and used appropriately, can reduce exposure to pathogens and thus reduce rates of illness. Soap and jerry cans can keep water clean and prevent fecal-oral transmission of diarrheal disease. Bed-nets (which are only rarely available at fairs) can reduce exposure to malaria-infected mosquitos. Adequate cooking items can contribute to a healthier diet. Sheeting and tarp give recipients the option of constructing their own temporary housing, which may reduce overcrowding, a risk factor for pneumonia (Jackson et al 2013). EHIs may in some cases also be sold or traded for food or medicine which might contribute to positive physical health outcomes for children. We focused on physical health of children under five years old because they are at greater risk for the above illnesses.

Mental health

[23] The Sphere Handbook 2018: Humanitarian Charter and Minimum Standards in Humanitarian Response.

[24] Note that RRMP's program objectives specific to the provision of EHIs are 1) to lower EHI vulnerability scores, and 2) to improve families' abilities to undertake essential daily activities. Our measure of resilience contains a measure of assets, as does the EHI vulnerability score. Our measures of mental health and food security give some indication of the ability to undertake essential daily activities.

EHIs can promote well-being and mental health by facilitating the daily tasks that emergency-affected families face: being adequately clothed, preparing meals, finding or maintaining adequate shelter, cleaning, and hygiene; adequate conditions for rest and sleep. The ability to carry out these tasks can increase dignity and reduce stress. For example, access to cooking items (pots, pans, ladles, etc) to prepare meals, without having to borrow these from other households can greatly improve independence, self-reliance and hence dignity. EHIs could also protect mental health by protecting physical health, as a decline in the latter is often associated with a decline in the former. Additionally, specific EHI such as radios may improve access to information and help households re-assure themselves about their present security and their ability to adapt to future events.

Social cohesion

Social cohesion refers to an absence of conflict and ease of collaboration within families and communities. IDPs may share EHIs with host families, friends or family members in other households. EHIs may enable IDPs to contribute to public goods, such as religious and community centers or events (e.g. by selling an EHI and using the money for a donation). For some IDPs, this may be the first opportunity to give something back to their host community. These forms of sharing could be in the form of loans, gifts, or payments, each with a different set of social ramifications. Sharing may help the displaced integrate themselves into a host community, building social cohesion. If distribution of aid to IDPs causes jealousy or resentment within the community, sharing may ameliorate these negative reactions. This may be especially relevant if RRMP targeting rules are poorly understood. Alternatively, if IDPs only share or gift resources to subset of the community, resentment may be exacerbated, and social cohesion could suffer. This is one reason why host families were considered in the eligibility lists for RRMP and many other household-level humanitarian assistance programs in the DRC. It should also be noted there is evidence that improvements in social cohesion may drive improvements in mental health (Kawachi and Berkman 2001; Echeverría et al. 2008).

Resilience

There is little consensus in the scientific or humanitarian community about the meaning of resilience. We use it to refer to households' ability to cope with additional negative shocks. To the extent that EHIs constitute assets that contribute to, or are exchanged for, household wealth, EHIs may increase beneficiaries' resilience by providing them with assets that can be exchanged for other needs when a negative shock arises. Similarly, these assets (or net assets in the case they are used to reduce debt or procure services that would otherwise be paid for) may be used to reduce food insecurity, and their availability may decrease the adoption of negative coping mechanisms such as removing children from school, choosing not to access health services, or the consumption of alcohol and tobacco. Additionally, assets may make households more 'credit-worthy,' contributing to financial deepening in terms of accessing loans or credit.

Assumptions

We emphasize three assumptions that are necessary for the program to lead to benefits. First, EHIs must reach the intended beneficiary. EHI beneficiaries receive a beneficiary card indicating that they have been selected to participate in the fair, generally the day of the fair or 1-2 days prior, which they then must present at the fair to obtain their vouchers. They must be able to attend the fair, claim their vouchers, use the vouchers, and safely transport their purchases back home. RRMP has developed procedures to minimize the risks of theft faced by beneficiaries, but of course it is impossible to eliminate them completely.

Beneficiaries who are ill or otherwise unable to attend the fair can be represented by other family members able to clearly identify themselves. Beneficiaries—particularly the elderly who may have difficulties reading the vouchers or collecting items—are also permitted to have a family member accompany them into the fair area to purchase and carry items.

Second, for the EHIs to be effective, they must be used according to the theory of change. For example, soap can only promote physical health if people use it to wash hands. Jerry cans can only promote physical health if people use it to store clean drinking water. Bed nets can only promote physical health if people sleep under them consistently.

Third, there is the assumption that all the background factors are in place to permit RRMP to operate. This includes a relatively stable and secure environment, without active conflict between armed groups. It also includes the absence of extreme weather, such as flooding, and it includes the availability and willingness of vendors to travel from the nearest city to attend the fair, if they are not local.

2.3 Evaluation question, hypotheses and outcome measures

This study aimed to answer the following research question: What is the effect of humanitarian assistance (specifically the provision of vouchers for essential household items) to recently displaced persons, and vulnerable families in host communities, on their health and well-being?

We have translated this research question to four specific hypotheses that we aim to test:

- ***H1***: EHI vouchers have a positive effect on physical health of children
- ***H2***: EHI vouchers have a positive effect on mental health of adults
- ***H3***: EHI vouchers have a positive effect on social cohesion of adults
- ***H4***: EHI vouchers have positive an effect on resilience

Table 1 presents how we measured the four outcomes. These are standard measures used in social science, chosen for their relevance to the research questions and the study context. Detailed variable definitions can be found in **Table 15**. We briefly discuss each measure now.

Table 1: Outcomes and measures

Hyp.	Outcome	Measure
H1	Physical health	• Mothers' reports of diarrhoea, cough, and fever among children in the last two weeks • Anthropometry (height, weight, and middle upper arm circumference (MUAC)) • Haemoglobin (anaemia indicator) • Malaria rapid diagnostic test
H2	Mental health	• Selections from the Hopkins Symptom Checklist • World Health Organization Well-being Index • Response to satisfaction with life question
H3	Social cohesion	• Group membership • Contributions to the village • Contributions to other households in dwelling • Problems with other households in dwelling • Trust • Incidences of theft

H4	Resilience	• Self-reported and enumerator observations of number of assets owned • Debt • Savings • Income • Responses to standard food security questions • Proportion of children aged 5-18 in school per household • Unhealthy behaviours: alcohol consumption

Note: Physical health is for children under the age of five years old.

Physical health

We operationalized physical health as several measurements of child health. We asked parents about episodes of diarrhea, cough, and fever in the previous two weeks among children under 5, following a standard series of questions used in demographic and health surveys (DHS). Additionally, local nurses measured the height, weight and arm circumference of children. Height and weight of children have been shown to be associated with episodes of illness in the prior 30 days (Richard et al 2013). The nurses also took blood pricks for rapid diagnostic tests for malaria and a rapid assessment of hemoglobin. We obtain these biological measures to have a complementary but more objective indicator of child health than mothers' reports.

Mental health

We operationalized mental health as anxiety and depression among adults as measured by selections from the Hopkins Symptom Checklist (HSC), the World Health Organization's 5-item Well-being Index (WHO-5), and a question about life satisfaction. In a review of studies of humanitarian assistance, Blanchet et al (2013) find that the HSC is the most commonly used instrument to measure mental health in humanitarian contexts. Bass et al (2013) find a correlation of 0.87 between an adapted HSC and the post-traumatic stress disorder (PTSD) checklist (civilian version) in a sample of 405 eastern Congolese survivors of sexual violence. Pham et al (2010) also used the HSC in eastern Congo to measure mental health in a general population study. The WHO-5 includes five simple, non-invasive, and positively worded questions and has been used as a screening tool for depression in research studies around the world. In a systemic review of the literature, Topp et al (2015) found that the WHO-5 has adequate validity both as a screening tool for depression and as an outcome measure in clinical trials. and has been applied successfully across a wide range of fields. As a measure of overall contentment, we also asked, "All things considered, how satisfied are you with your life as a whole these days on a scale of 1 to 10?"

Social cohesion

The substantial literature on social cohesion, social networks, and social capital offers many options for measurement (King et al 2010, Valli et al 2018). To measure the aspects of social cohesion that derive from the absence of conflict, we asked about theft and problems with other households, following Lehmann and Masterson (2014). To measure aspects of social cohesion that derive from a community's ability to collaborate and take collective action, we asked about trust, group membership, and contributions to other households and to the village, following Valli et al (2018).

Resilience

Resilience refers to households' ability to cope with additional negative shocks. We operationalized resilience as wealth, income, food security, and negative coping strategies. We calculated a household wealth index based on physical assets (including EHIs). We also asked households about debt, savings,

and income. We calculated a food security index based on a standard food security survey (including some negative coping strategies) and reported types and values of food consumed in the previous seven days. Finally, other negative coping strategies were measured as the number of school-aged children not currently attending school, and the consumption of alcoholic beverages.

3. Context

In consultation with UNICEF and OCHA, we decided to work in the Kivu region of eastern DRC because that is where displacements have been most common, and thus where RRMP was most likely to respond. Displacements are more common in the eastern part of the country because the national capital exerts relatively little influence, due to distance (1,500 km), lack of transportation infrastructure (for most intents and purposes it is impossible to travel by road from the capital to the east), and lack of investment.

Specifically, the study took place in the province of North Kivu. This province borders Uganda and Rwanda, and has experienced intense periods of conflict in the Congolese wars 1996-98 and 1998-2003. Despite the formal end of the war in 2003, the region has continued to suffer from violence. The number of armed groups active in eastern DRC is estimated to have increased from around 70 in 2015 to around 120 today (Congo Research Group 2018). This fragmentation appears to be both a cause and effect of increased violence in the region.

The 2006 constitution subdivided DRC's 11 provinces into 26 provinces. Englebert and Mungongo (2016) argue that this decentralization has fostered provincial centralization at the expense of local governments, increasing the degree to which the state extracts resources from citizens. However, in 2018, the governor of North Kivu described "an absence of state authority" in the province. "Where there is no police, army or justice system, it's the law of the jungle. We have to do better." (*The Guardian* 2018)

In 2017, the violence and associated displacement became so severe that the UN declared a Level 3 emergency in DRC, putting it in the same category as Syria and Yemen (*ReliefWeb* 2017). The root causes of the conflict "are a continuation of armed group mobilization that dates back over two decades, rooted in land conflicts, local power struggles, and economic racketeering," all of which was exacerbated by the influx of refugees during the Rwandan genocide in 1994 (Congo Research Group 2018).

The population that we studied is not representative of the DRC as a whole, nor the population of eastern Congo nor even North Kivu (see Section 6.4). All of our interviewees were either displaced persons or non-displaced households in host communities that were judged to be particularly vulnerable by those communities or according to data collected by the implementing NGOs. Thus, our study population consists of households that are in particularly dire circumstances. Similar populations may be found in other settings of on-going conflict in areas with chronic poverty, such as South Sudan, northern Nigeria, and Afghanistan.

4. Timeline

On November 19, 2014, 3ie awarded the research team with a pilot grant to assess the feasibility of an impact evaluation of the RRMP program. Over the next two and a half years, we had a series of meetings with UNICEF staff and RRMP NGO partners to learn about RRMP and collaborate on study design. This process was complicated by turnover of UNICEF staff, changes in RRMP procedures with each annual iteration, the need for sensitivity in working with the program and the target population for research, and instability in DRC. We piloted the instruments and trained enumerators in July, 2017. The data collection started on August 9, 2017 and finished in May 27, 2018. Half of the targeted households were assigned to the voucher treatment (discussed in detail in the next section).

Table 2 gives an overview of data collection in each of the seven sites, including the targeted number of households and the number that were successfully interviewed during the baseline, midline and endline surveys.

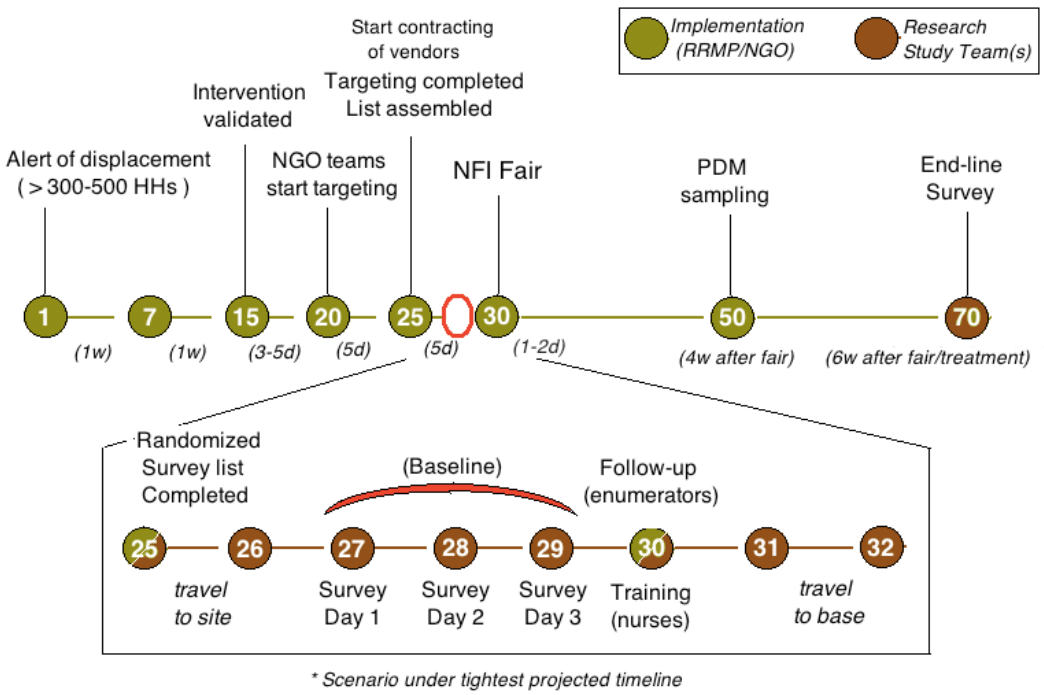
Table 2. Interventions studied

#	Site name	Area	Baseline	Midline	Endline	Organization	Target	BL	ML	EL
1	Butale	Masisi	Aug 9-12	Aug 12-16	Sep 13-18	Mercy Corps	140	111	59/70	100
2	Kibarizo	Masisi	Sep 8-13	Sep 13-16	Oct 20-26	Mercy Corps	140	121	52/70	105
3	Kitsombiro	Lubero	Nov 21-26	Nov 30 – Dec 12	Jan 11-17	NRC	140	131	70/70	124
4	Mbau	Beni	Dec 7-12	Dec 12-15	Jan 23-28	Solidarités	116	110	58/58	102
5	Kirumbu	Masisi	Jan 27-Feb 2	Feb 2-7	Mar 14-19	DRC	140	115	47/69	104
6	Pinga	Walikale	Feb 7-16	Feb 19 -23	Mar 29 - Apr 9	Mercy Corps	140	124	67/70	99
7	Nyabiondo	Masisi	Mar 30 - Apr 4	Apr 5-7	May 19-27	Mercy Corps	160	144	74/80	136
	TOTALS						976	852	434/487	770

Target = targeted households; BL = households successfully surveyed during baseline; ML = treatment households successfully surveyed / treatment households in sample; EL = households successfully surveyed during endline

Figure 1 describes how data collection was incorporated into the timeline of a typical RRMP intervention. One of the most challenging aspects of this study was that in each site we had only about 12 days between the validation of an intervention by RRMP staff and the moment when baseline data collection should begin.

Figure 1. Timeline for RRMP intervention and data collection



Note: PDM = post-distribution monitoring, RRMP's internal monitoring and quality check. In this case we are not looking at distributions, but vouchers with fairs.

5. Evaluation: Design, methods, and implementation

5.1 Ethics

We obtained Internal Review Board (IRB) approval from the Catholic University of Bukavu (UCB/CIE/NC/006/2017) and New York University Abu Dhabi (#064-2017), and we received an exemption from Simmons University. We discuss a number of ethical issues related to this study below.

Random assignment to assistance

The use of random assignment to assistance in the context of a humanitarian program may appear unethical. The study design aimed to mitigate this concern in two ways. First, all households who would normally receive assistance from RRMP continued to receive assistance. That is, each household above the RRMP vulnerability threshold received EHI vouchers. For the purpose of this study, UNICEF allocated *additional* funds to provide assistance to a set of households just *below* the RRMP vulnerability threshold. In total 486 such households received EHI vouchers. These households were randomly drawn from a pool of household 9below but close to the vulnerability threshold.

Second, from the perspective of the communities where RRMP works, the beneficiary household targeting process used for the study design was identical to that used during standard RRMP operations. The standard targeting operations involve sensitization of the community, broad buy-in of the process, and then a calculation of a household vulnerability score for each household in the affected area. The threshold for vulnerability can vary across sites (see section 2.1). At the end of this process, households are not told their scores; rather, they are simply told whether or not they qualified for assistance. The study design required adding a small group of households (approx. 55 per community) to the beneficiary list. From the perspective of the community, there was no difference between how these households were selected and how the others were. As one focus group participant explained, “they told us that they enter data in the computer and the computer will determine if you deserve aid or not. We never know what really was happening because we don’t know how to use computers.”

Medical testing

The endline surveys included two measures that required drops of blood (for malaria and hemoglobin). The measures were administered by nurses from a nearby health facility with experience on those techniques and who received additional refresher training (including on sanitary and waste disposal procedures). If children tested positive, they were referred to the nearest health care facility. Where possible, respondents were referred to local health facilities supported by NGOs or to mobile clinics deployed by NGOs as part of the RRMP intervention to receive their treatment free-of-charge. Notable exceptions were cases of severe acute malnutrition (SAM), which were referred to the closest feeding center or community therapeutic feeding program. In cases where treatment could not be assured free-of-charge, patients were given referral forms and arrangements were made with the relevant health center (including paying for the initial consultation). On a case-by-case basis, support was provided to patients to facilitate transport to the relevant health center.

Security issues

Any prospective RRMP intervention to be studied was only validated and implemented following thorough security assessments by the implementing NGOs and UNICEF/OCHA. Nevertheless, given the inherent unpredictability and instability in the region where RRMP operates and the sometimes close proximity of interventions to armed groups, additional measures were taken to minimize risk to study personnel.

First, survey teams aligned themselves as much as possible with the security protocols of the implementing NGOs in a given area. The Field Research Coordinator maintained close contact with the security advisors of the relevant NGOs, the International NGO Safety Organization (INSO), and UNICEF. Survey teams and

the Field Research Coordinator also maintained close contact with local authorities, usually Local Support Committees (*Comités d'Appui Local)* (CAL). During travel to and from the field, and during interviews, survey teams maintained contact with the Field Coordinator (or their assistant) based in Goma (for interventions in southern North Kivu) or Beni (northern North Kivu) via mobile, radio, or satellite communications at regular intervals. In the case of any dispersion of enumerators, groups maintained regular contact with each other via two-way radio and/or mobile phone. Basic contingency plans for evacuation and emergency medical treatment were drafted prior to any decision to send staff to the field. Whenever possible, vehicles carrying survey teams to and from the field convoyed with those of other NGOs, UN agencies, and/or MONUSCO.

In all cases, the relevant security advisors and local authorities were contacted at regular intervals for advice and information prior to any travel to and from (and during operation in) the survey area. Field survey teams were composed only of Congolese nationals, with at least half of team members originating from the province of operations whenever possible. We hired 14 research assistants in Bunia, 18 in Beni, and 35 in Goma for a total of 67, of whom 23 were women (34.3%). There was not a strict educational minimum to be hired. The vast majority had *Licence* (5 years of university) or *Graduat* (3 years) degrees, and all but 3 (who were women with a great deal of experience) had at least some post-secondary education. All of our field teams included 7 or 8 enumerators with a degree in nursing. We also trained and hired approximately 90 local nurses across the 7 sites for help with the medical testing. Finally, we employed one Congolese national as data collection field manager and another (a physician) as medical team leader.

The field coordinator, a US national, travelled to the field in one intervention area in the context of a larger humanitarian operation backed by MONUSCO. He informed the US embassy, the relevant NGO(s), and the UN Department of Safety and Security.

Given the risk of roadblocks, looting, and theft of tablets, survey data were uploaded at daily intervals to the secure server via mobile network, satellite network, or Wi-Fi. In cases where this was not possible, the team leader downloaded survey data to a USB device that could be more easily secured, and which posed a lower risk of damage and/or theft. This was of particular concern prior to the team's travel back from the field when survey data had accumulated and was physically concentrated, and thus particularly vulnerable to loss or theft. Survey data for an entire intervention was not transported together without being uploaded beforehand or unless significant precautions have been taken (i.e. backed up as encrypted files over other USB devices and transported via separate vehicles of trusted organizations/personnel). The complete security protocol can be found in the PAP under 'Protocols.'

Data collection issues

All measures were taken to minimize the amount of data collected and the time required of respondents to answer the surveys. The mobile surveys incorporated skip-logic whenever possible, such that only the relevant questions were asked, which reduced the effective length and duration of the survey significantly.

Enumerators were trained on protocols to maintain the confidentiality of respondents' answers to the extent possible in dynamic field situations. These protocols were designed to minimize not only bias in respondents' answers, but also to mitigate risk of tensions between the survey team and the community (and within the community itself) as a result of this study.

Following the survey protocol, survey teams were careful to clearly identify themselves as UCB personnel (both visually and in their verbal interactions with the community), to explain the purpose of their visit, and to obtain informed consent of participants prior to beginning data collection. An additional, more specific informed consent was acquired during the endline survey, prior to conducting any anthropometry or child testing.

5.2 Evaluation strategy

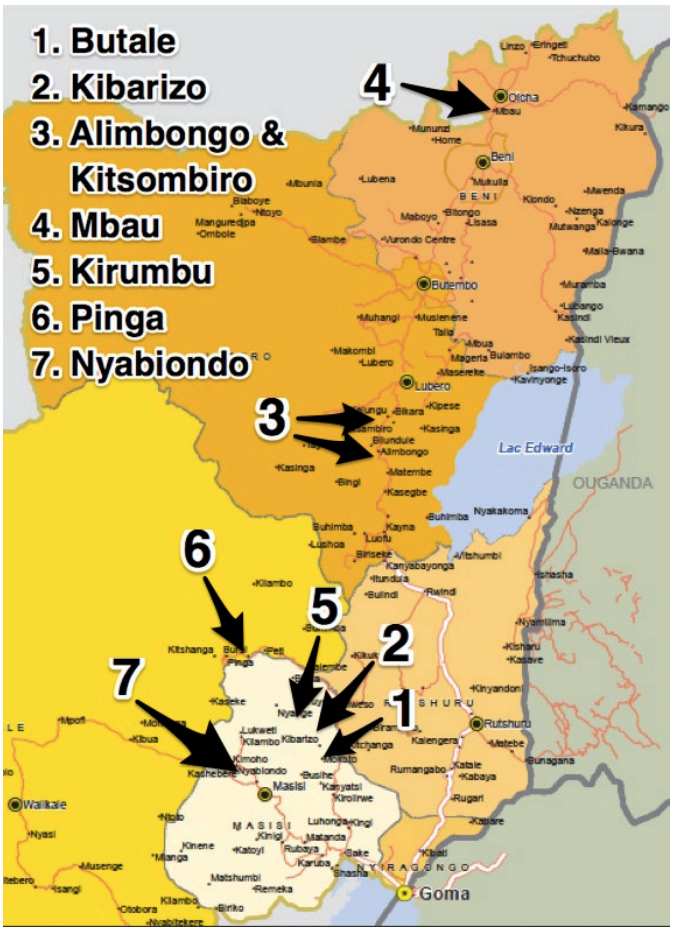
To learn about the causal impact of EHIs, we made use of a block randomized control trial at the household level. We randomly assigned a subset of eligible households to receive EHI vouchers. Because of this random assignment, we expect that households across treatment and control are similar in every respect except for receiving EHI vouchers. We discuss the details of the experimental design below.

Research site selection

RRMP8 was implemented across four provinces in eastern DRC where RRMP responds to emergencies within one to four weeks from being alerted to a population movement occurring. Thus, it was not possible to precisely select a study site before an emergency occured. Consultation with UNICEF revealed that two provinces (North Kivu and Ituri) were likely to have a much higher rate and density of interventions under RRMP8. We ended up only working in North Kivu because no suitable interventions occurred in Ituri during the study period.

Figure 2 gives an overview of the location of the seven sites that were selected. The figure also includes the city of Goma, the capital of the North Kivu province.

Figure 2. Locations of intervention sites



Note: underlying map from UN OCHA: https://reliefweb.int/map/democratic-republic-congo/rdcongo-reference-map-province-du-nord-kivu-carte-administrative-mars

Sampling frame and assignment to treatment

The RRMP targeting processes included a household survey of all IDP and host family households in the intervention area. Each household received a vulnerability score based on their EHI/NFI score[25]: the quality and quantity of key household items (EHI/NFI) they possessed; as well as and key social vulnerability criteria such as physical disability or mono-parental household. The household vulnerability score ranges from 0-5, with five being the most vulnerable. Typically, the intervention threshold is 3.8; however, this can vary from intervention to intervention depending on the number of potential beneficiaries and the resources available. Our study aimed to cover 1,000 households in total. Specifically, we expected to include 100 households that were closest to *but below* the vulnerability threshold in each of ten RRMP intervention sites. Because these 1,000 households were below the vulnerability threshold, they were among the most vulnerable households in the community, but would not have received assistance according to standard RRMP criteria. After piloting, we adjusted for some loss-to-follow-up between randomization and baseline by increasing the number of households per site 140. Among these households, we randomly assigned half of them to receive EHI vouchers and half to receive nothing.

Unit of randomization

Displaced individuals often flee to a cluster of villages. As a result, one RRMP intervention often targeted multiple villages. As blocking variables, we thus use the village within an RRMP intervention site, totaling 25 blocks across the seven intervention sites. In the pre-analysis plan, we planned to also use the number of households per dwelling and migrant status (host/displaced). Unfortunately, information on households per dwelling was not available at the moment of randomization because it was not collected by the implementing NGOs. We randomized EHI vouchers within each block to half of the eligible households.

5.3 Sample size and statistical power

For the purposes of sample size calculations, we used diarrhea prevalence as a key outcome. Diarrhea prevalence has been measured in eastern Congo previously, and it is a component of physical health, one of our four primary outcomes. The available data on our other primary outcomes are less representative. Data on child health are available from the 2013/2014 DRC Demographic and Health Survey. We focus on diarrhea in particular because we believed it was the most likely to be reduced by the EHI available in an RRMP voucher fair. Looking at mothers' reports of symptoms in the two weeks prior to the survey, for rural children under 5 years of age, 16% had diarrhea (std. dev=13%), 6.9% had a cough (std. dev=6.4%), and 29.2% had a fever (std. dev = 20.6%). To be conservative, we assumed that the prevalence of diarrhea was slightly higher in displaced populations than in rural populations; we assumed a baseline prevalence of 20%. The minimum detectable effect (MDE) increases rapidly up to a sample size of 400 households, after which the increase levels off.

At 400 households, the MDE is 10 percentage points, or a 50% reduction in diarrhea from baseline. We judged that a smaller reduction in diarrhea prevalence would still be meaningful; therefore, we aimed for a sample size of 1,000 households (500 voucher; 500 control), which would allow us to detect a reduction in diarrhea prevalence of 7 percentage points from a baseline prevalence of 0.2 with power 0.8 and a significance level of 0.05.

[25] Initiated in 2007, the EHI/NFI Scoring is a tool developed in the DRC by UNICEF, RRMP, and the DRC NFI/Shelter Cluster to better assess 'material vulnerability' – that is a household's access to what are considered key EHI assets. Both the quantity and quality of items are considered, some in relation to household size. Key items evaluated include cooking pots, jerry-cans, buckets and basins, bedding, and clothing.

5.4 Primary quantitative and qualitative baseline surveys

5.4.1 Data sources and sampling

Sampling design for quantitative surveys

Data for this study was collected in collaboration with (but independently from) the RRMP implementing partners in eastern DRC. We have four quantitative data sources:

Village survey

This is a brief survey with village leadership about events that have affected the entire village. The seven sites in which we worked contained a total of 25 villages. We successfully interviewed leadership in all of them.

Household baseline survey

The baseline survey was targeted at, on average, 140 study households in each RRMP intervention to measure demographics, socioeconomic characteristics, health, well-being, and vulnerability (see **Table 3** for details).

Household midline survey

This brief survey was administered during or shortly after each intervention's EHI fair to the study households that received an EHI voucher to ascertain what was purchased. See **Table 4** for details.

Household endline survey

The endline survey targeted all households visited during the baseline. We again measured demographics, socioeconomic characteristics, health, and well-being, such that any changes since the baseline survey six weeks prior could be estimated. We also measured the height, weight, mid-upper arm circumference, and hemoglobin of children under 5, and administered rapid diagnostic tests for malaria.

Sampling design for qualitative data collection

We carried out all qualitative work after the endline household survey, which occurred five-to-six weeks after the EHI fair. Our qualitative data come from 20 different focus group discussions (FGD). In each site, we organized focus group discussions with two groups of people: IDPs and locals. These were individuals who did not participate in the quantitative survey. FGDs covered challenges faced by community members, perceptions of RRMP and the effects of EHI vouchers. Details on the FDGs can be found in section 7.4 below.

5.4.2 Survey instruments

The survey instruments can be found in Appendix B.

5.4.3 Survey implementation

The principle investigators and local collaborators referred enumerators to this project from past projects. Groups of 25-30 enumerators were invited to three-day trainings. The questionnaire was discussed question-by-question to ensure a common understanding. We used role-plays and simulations in which the enumerators interviewed each other. We intended to have 50% of our enumerators be women, but unfortunately were not able to find enough women with past experience; over one-third (34.30%) of our enumerators were women.

We piloted the questionnaire in Kanyaruchinya village on August 5, 2017. We held supplementary trainings with individuals around difficult concepts like household definitions. We carried out this process in Goma,

Beni, and Bunia to create teams of 15 in each location. We also had seven trained reserve enumerators in Goma.

5.4.4 Quality control measures and field team composition

We heavily invested in training and supervision. Data were collected on tablets and, in all interventions except one (Kirumbu, for lack of mobile data network), the data were uploaded to a secure server each day after interviews. The field coordinator checked basic information about the survey (start/end time of survey, number of households per dwelling, host and hosted status, household lists, and number of interviews per enumerator) and went through any questions the enumerators had. Where needed, we organised refresher trainings. In addition, we implemented spot-checks in the field.

5.5 Limitations of data collection and challenges faced

There are several limitations to the data. First, part of the data relies on self-reported data, which can be subject to recall bias, social desirability bias, and other flaws. Second, some households may have been aware of their treatment status (i.e. whether they would receive EHI vouchers or not) when the baseline survey was administered, if beneficiary lists were already posted. This could influence their responses.

Security is a major concern in eastern Congo which complicates both research and implementation logistics. RRMP interventions are regularly delayed due to the actions of armed groups. The time between 1) the targeting of households, 2) random assignment to voucher or control, and 3) the baseline survey can be quite short and difficult to predict. The field coordinator had to remain in close contact with the NGOs, and survey teams were always on standby.

Transportation to study sites and within study sites was another major challenge. Roads may be controlled by armed groups or rendered impassable by weather. Within sites, some households may be located in areas that are only accessible on foot or by motorbike (if available for hire). We typically sent our enumerators to sites in 4x4 jeeps, but a helicopter was necessary in one site (subsidized by the UN).

Finally, identification of dwellings and households was another major challenge. Street addresses are not used in the study areas. The residence of recently arrived IDPs may not be widely known in villages, and IDPs sometimes change residences in a fairly short period. We addressed these challenges in three ways: 1) hiring local guides to assist us; 2) asking the NGOs to collect higher resolution geographic data during the targeting process; and 3) carrying out the endline survey six weeks after baseline, rather than waiting longer and risking greater attrition.

6 Programme: Design, methods, and implementation

6.1 Key program elements, activities, and background

UNICEF and OCHA created the Rapid Response Mechanism (RRM) in DRC in 2004, with the aim of having a pre-positioned needs assessment and response programme which could provide emergency assistance to IDPs. Initially the programmatic focus was EHI assistance (through distributions), but in 2005 and 2006, RRM expanded to also include WASH and Education sectors. In 2010, RRM merged with the Program of Expanded Assistance to Returnees (PEAR), a programme that addressed the needs of returning IDPs, to become RRMP. The EHI voucher fair approach was introduced into RRM and PEAR in 2008 and 2009. Thus, we are evaluating a component of a program that has been evolving in DRC for 14 years.

RRMP operates in one-year cycles; this study took place during RRMP8 (May 2017 – July 2018). This cycle included operations in the provinces of North Kivu, South Kivu, Ituri, and ex-Katanga province, primarily the new province of and Tanganyika. The area where we worked was divided into ‘southern North Kivu,’ covered by Mercy Corps, and Danish Refugee Council (DRC) and Medair, and ‘northern North Kivu

and Ituri,' covered by Solidarités, and Norwegian Refugee Council (NRC) and Save the Children. The RRMP8 budget for all the response sectors (EHI, WASH, Education/Protection, and Health/Nutrition) was approximately $24 million.

6.2 Coordination mechanism and monitoring system

UNICEF and OCHA organized weekly CP meetings in each province or sub-province (e.g. northern and southern North Kivu) to discuss new alerts and RRMP positioning for evaluations and response (see Section 2.1 for more details). New alerts were recorded in OCHA's online database, ehtools.org. The RRMP monitoring and evaluation system consists of external evaluations, monitoring by UNICEF and other funders, post-intervention evaluations conducted by implementing partners, monitoring by implementing partners' field staff, and feedback from beneficiaries via complaint registration and focus groups.

6.3 Recruitment strategy

In terms of recruitment at the household level, there are two types of targeting approaches for RRMP NFI interventions. In a "blanket" intervention, all households in an affected area are offered assistance. Blanket interventions occur when the implementing NGO judges that a high proportion of the host community is vulnerable and where there could be significant risks involved in a targeted approach.

In contrast to blanket interventions, targeted interventions require that NGOs survey households in a targeted community in order to assign a vulnerability score. Then, based on the distribution of scores and the available budget, a threshold score is chosen. Households with a score above the threshold are invited to participate in the EHI voucher fairs; those below the threshold are not. This evaluation focuses on households in targeted interventions that are below the vulnerability threshold.

6.4 Comparison of actual beneficiaries to targeted population

The RRMP interventions we studied intended to provide assistance to IDPs and vulnerable members of the host community. Our data indicate that the program was successful in this regard. As per our design, the participants in our study were, according to RRMP metrics, *less* vulnerable than typical beneficiaries (i.e. our participants are just below the vulnerability score threshold), and yet they were much more vulnerable than the average Congolese citizen. The table below compares key characteristics across our sample to national statistics from the DHS. Our sample is on average less educated (with the exception of 60-69 year olds) and more likely to be widowed, and mothers report much higher prevalence of common illnesses such as cough, fever, and diarrhea among their children under 5 years old. Our sample is also more Catholic and Protestant, almost entirely comprised of eastern Congolese ethnic groups, less likely to be single, and more likely to have access to water from a protected well. The summary statistics in Appendix F have further information about our sample.

Table 3. Comparison of RRMP study sample with Congolese population

	DRC	Study population
Median female educational attainment (years) by age		
16-29	6	5
30-39	5	4
40-49	4	3
50-59	2	2
60-69	0	2
Religion		
Catholic	29.7%	34.0%
Protestant	26.8%	49.9%
Other Christian*	37.2%	NA
Evangelical	NA	5.6%
Muslim	1.2%	0.8%
No religion	0.8%	1.1%
Other	0.7%	8.1%
Don't know/Missing	0.3%	0.5%
*Ethnicity/native language***		
Basele-K, Maniema and Kivu	19.7%	98.7%
Kinyarwanda	NA	34.1%
Kinande	NA	18.8%
Swahili	NA	14.4%
Kinyabwishi	NA	5.3%
Kinyanga	NA	9.5%
Kihunde	NA	16.6%
Other	0%	1.3%
Don't know/Missing	0.1%	0.1%
Marital status		
Single	26%	4%
Married	46.5%	45.8%
Living together	17.7%	34.2%
Divorced/separated	7.5%	3.2%
Widow	2.2%	11.8%
Refused	0%	1%
Primary water source		
Public tap	24.9%	47.7%
Protected well	23.5%	34%
Unprotected well	41.7%	7.7%
River/stream	9.2%	7%
Other	0.3%	3.3%
In the 2 weeks prior to the interview, percentage of children under 5 experiencing…		
Cough	7%	47.3%
Fever	30%	57.4%
Diarrhea	19%	32.8%

Data for DRC come from the 2013/4 Demographic and Health Survey, which covers women aged 15-59 years. Responses on education, and marital status are limited to female respondents (818 out of 976 total respondents).

*The DHS results include the category 'other Christian' and do not include 'Evangelical'.

** DHS data on ethnicity are collected at a lower resolution than our survey data; nearly all of our respondents fall into one category in the DHS framework (viz. Basele-Komo, Maniema, and Kivu, which is not an ethnicity but rather a region). We show our data on subgroups in that category (e.g. Kinyarwanda). Our estimate of ethnicity is based on the respondent's native language.

6.5 Differences between actual and planned implementation

We note one departure from our planned implementation strategy. As per our Pre-Analysis plan and agreements with partners, we intended to study 10 RRMP interventions. However, within the study time window just seven RRMP interventions involving EHI fairs were implemented in North Kivu. As a result, we report on data from fewer intervention sites than initially planned.

6.6 Possible weak links in implementation

There are several limitations with the implementation of the program and the study. For most. It is impossible to say whether they result in an under- or over-estimate of the true treatment effect. For example:

1. Delays in assessment of an alert, leading to greater variability in the time between displacement and participation in an EHI fair. If the treatment effect is influenced by that duration, this introduces noise into our measurement.
2. Possible errors in assessment of vulnerability. The vulnerability scoring was based on a rapid survey within each household of assets held (the EHI scoring described above) along with social vulnerabilities such as widowhood and disability. This is arguably a crude measure, prone to severe measurement noise. As a result, potentially vulnerable households did not receive assistance, and less vulnerable households may have received assistance.
3. Errors in migrant status. This is related to the previous point; there may have been misinformation provided by the locals about who is an IDP.
4. There were delays in the community assessment and organization of the EHI fair where households would receive and redeem their vouchers. As a result, households in need of EHI may have suffered more negative consequences from displacement than they otherwise would have.
5. Along similar lines, at some fairs, key EHI items may not have been available to all attendees, reducing both the choice set of households holding vouchers, and providing a possible mismatch between household needs and goods available. The FGDs mentioned a few items (e.g. pots and pans) for which demand exceeded supply.
6. Also, in some instances the distance to the EHI fair was large, providing a severe time strain on households and time pressure once at the fair (it is often not safe to travel after sunset; given the distance to the equator, there are 12 sun hours on most days).
7. In some instances, food assistance was provided just after EHIs. On one hand, this may increase the probability that households sell EHIs to meet immediate food needs, because more food is available in the community and households have assets to sell or trade. On the hand, the food distribution may satisfy a household's demand for food, leading to them keep EHI that they otherwise would have sold. In any case, by design, the receipt of EHI vouchers in our study population should not be correlated with receipt of food. We also find no evidence that this is the case.

6.7 Project implementation and manipulation check

Before moving to the results, we verify that the fair was actually implemented, and that those households assigned to the receive vouchers attended the fairs and used them to purchase EHI.

Records and audit reports from the implementing partner suggest that the program was well implemented. Fairs were successfully organized at all seven intervention sites.

One worry with this study is compliance. For example, those with a voucher beneficiary card may sell, barter or be forced to give it to non-beneficiary households before the fair. At the fairs, beneficiaries—particularly the elderly, disabled, or pregnant women--are permitted to be accompanied by a family member to help them use the vouchers and to carry purchases. While this is necessary, in previous fairs, there

have been instances where non-beneficiary individuals attempt to present themselves as those accompanying a beneficiary at the fair in order to manipulate the beneficiary and use a portion of the vouchers for their own purchases. The RRMP program puts in place safeguards to ensure that those selected beneficiary households are also those that attend and use the vouchers during the EHI fair. They also attempt to carefully verify that those people accompanying beneficiaries are indeed known to the beneficiary and not someone attempting to take advantage of a beneficiary.

The midline survey, which was conducted shortly after the EHI fair with members of the treatment group who we were able to locate at the fair, provides information about whether individuals visited the market fair and what items were purchased. In 79% of the cases, the actual registered beneficiary card voucher recipient purchased items at the fair, in 14% it was the spouse of the beneficiary card recipient, and in 4% of the cases it was a child of the beneficiary. In addition, the midline survey included the question "How long did it take to go to the fair, purchase goods, and come back?" Data suggest that the mean hours travelled to reach the fair was two, with 5% of respondents traveling 5 hours or more (max 12).[26]

Table 4 presents information from the midline survey with households randomized to vouchers about what was purchased at the EHI fair, and for how much.[27] Almost all households (see the 'Share' column), 86%, bought clothes during the fair. Other popular items that were purchased by more than 25% of the households were cloth (74%), pots and pans (56%), soap (51%), mattresses (35%), blankets (33%), luggage (27%), and buckets and basins (27%). The "other" category includes items like plates, bowls, jugs, footwear (sandals, boots, shoes), bedsheets, thermoses, batteries, and solar panels.

The next column ('Average spent in $') provides information about the average dollar amounts spent overall by all the surveyed families on this item category, including families that did not purchase this item. Clothes is the item the average beneficiary spent the most money on: $17.39. Other popular items on which the average beneficiary spent over $5 were: cloth ($13.06), mattresses ($9.90), buckets and basins ($9.30), and furniture including chairs, beds or tables ($5.29). Finally, the last column of **Table 4** ('Avg. spent for those that purchased the item') gives the average dollar amount spent for this item category by those households that actually purchased the item. In other words, households that did not purchase this item are not included. The highest amounts were spent on mattresses and clothes.

[26] The data does not specify whether the response is in minutes or hours. We assume values above 14 are minutes.
[27] Note that we did not ask about every possible type of EHI available at the fair. Other types are captured in the 'other' category.

Table 4. EHI Fair Purchasing Pattern Information

EHI	Obs.	Share	Average spent in $	Avg. spent for those that purchased the item
Farming tools	426	0.04	0.17	4.18
Cloth	427	0.74	13.06	17.64
Clothes	427	0.86	17.39	20.17
Mattress	424	0.35	9.90	27.99
Soap	426	0.51	1.18	2.33
Blanket	427	0.33	4.29	13.00
Jerry can	427	0.10	0.32	3.10
Bed net	427	0.01	0.01	1.25
Tarp	427	0.17	2.97	17.39
Luggage	427	0.27	3.87	14.14
Radio	426	0.15	1.68	11.37
Flash light	427	0.11	0.52	4.57
Bicycle	426	0.00	0.00	0.00
Buckets and basins	426	0.27	9.30	4.00
Pots and pans	427	0.56	1.06	9.53
Chairs, beds or tables	427	0.01	5.29	11.50
Generator	425	0.01	0.16	14.67
Other	419	0.69	0.10	13.53

Notes: Summary information of the recipient household at midline.

Of course, selling, bartering or gifting of EHI by beneficiary households to non-beneficiary households may also take place after the fair. However, as we will observe in **Table 9**, data collected during the endline survey around 6 weeks after the fairs suggest that beneficiary households have much higher asset holding than non-beneficiary households.

7. Impact analysis and results of the key evaluation questions

7.1 Primary quantitative specifications

We now assess the effects of the RRMP program on each of the four outcome families. Given randomization of EHI vouchers to individual households within village-level blocks, our basic specification is:

$$y_{iEL} = \alpha_v + \beta_1 T_i + \delta y_{iBL} + \varepsilon_i \qquad (1)$$

where y_{iEL} is the outcome of interest for respondent *i* at the endline survey. T_i is the treatment indicator that takes value 1 for households which received EHI vouchers ("treatment households") and 0 otherwise ("control households"). α_v, the blocking variable, captures village fixed effects. We add the baseline level of each outcome variable y_{iBL} to increase precision (McKenzie 2012) and ε_i is a household level idiosyncratic error term. Our main outcome of interest is β_1 the intention-to-treat effect.

The estimate of the treatment effect is a potential lower bound if it is the case that the spillover effects on non-treated households are in the same direction as the treatment effect.

Table 5 shows summary statistics and tests for baseline balance in all outcome variables. Outcomes are balanced on all but two of 20 dimensions, which is close to what we would expect given chance alone.

Table 5. Balance Information for Outcome Variables at Baseline

	Mean Control	St. Dev.	Mean Treatment	St. Dev.	Difference	(se)	N
Diarrhoea	0.34	0.40	0.32	0.41	-0.02	(0.03)	625
Fever	0.57	0.42	0.58	0.44	0.01	(0.03)	624
Cough	0.45	0.43	0.50	0.43	0.05	(0.03)	624
WHO	1.53	0.55	1.50	0.58	-0.03	(0.04)	856
Hopkins	0.93	0.60	0.99	0.62	0.06	(0.04)	856
Satisfied	3.07	1.67	3.17	1.71	0.10	(0.12)	856
Member	1.47	3.28	1.73	3.73	0.25	(0.24)	857
Village	0.25	0.43	0.33	0.47	0.08***	(0.03)	856
Dwelling	0.34	0.47	0.31	0.46	-0.02	(0.04)	561
Problems	0.14	0.37	0.13	0.35	-0.01	(0.03)	559
Trust	3.82	0.79	3.83	0.82	0.01	(0.06)	856
Theft	0.25	0.63	0.25	0.56	0.00	(0.04)	856
Assets	1.17	0.67	1.15	0.71	0.02	(0.05)	856
Savings	7.60	59.46	5.27	44.19	2.34	(3.58)	856
Income	11.79	14.05	12.88	19.32	-1.08	(1.16)	856
Food security	1.96	0.78	2.00	0.81	-0.04	(0.05)	856
Coping	2.08	0.90	2.14	0.94	-0.07	(0.06)	856
School	0.42	0.38	0.42	0.37	0.01	(0.03)	829
Debt	15.28	26.03	20.75	50.29	-5.47**	(2.75)	855
Alcohol	0.17	4.96	0.23	4.99	-0.06	(0.34)	856

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Differences based on ordinary least squares (OLS) regression. Based on baseline data.

We dropped the following outliers from the analysis that follows: one measure of child height that was under 40cm, and 35 measures of haemoglobin that were under 5 g/dL.

7.2 Primary quantitative analysis

Summary measures for all outcomes are given in **Table 14** in the appendix, and **Table 15** in the appendix gives a careful overview of how these measures have been constructed. The effects of the vouchers on each outcome family are presented in four tables with a common structure. We explain the results for the first outcome in the greatest detail, so as to facilitate interpretation of the results for the other outcomes.

Outcome 1: Children's physical health

Table 6 presents the results related to physical health of children under five years. The bottom row in the table, 'N', indicates the number of observations for which we have data on the measure in that column. If there are numbers in the 'Baseline' row, then N indicates the number of observations for which we have both baseline and endline data. Recall that the medical tests and anthropometry were not done at baseline. Thus we had 510 valid responses at both baseline and endline for mother's reports of diarrhea, cough, and fever in the past two weeks. At endline, we had 511 measurements of height and weight, 514 of arm circumference, 506 of haemoglobin, and 509 of malaria. To calculate the mean effects index, we only need

information on at least one of the measures, and we only use endline values (more on this below), so it is to be expected that we have a higher number of observations meeting these criteria (605, in this case).

The second row from the bottom, 'Control', displays the estimated level of each measure at endline for individuals who did not receive any EHI vouchers. This can be interpreted as the expected level of the measure in the absence of the program. This can be in dollars, percentages, or other units, depending on the measure. At endline, in households that did not receive EHI vouchers, 33% of children under 5 had diarrhea in the last two weeks, 56% had fever, and 46% had cough. Ten percent of children in control households tested positive for malaria. The mean haemoglobin level was 10.95 g/dL. The mean Z-score for weight-for-height was 0.25 and for middle upper arm circumference, -0.35. These Z-scores represent distance in standard deviations (sd) away from the median child according to WHO growth standards. Standard deviations can be converted to percentiles using a normal distribution. At endline, children in the control group were, on average, at the 60th percentile of weight for children at their height, and the 36th percentile for arm circumference.

The first row in the table, 'Treatment', provides the estimated effect of receiving EHI vouchers, which is calculated as the average difference in the measure between those that received the vouchers and those that did not. The number gives the direction and the size of the estimated effect. The row below Treatment shows the standard error (se) for each estimate of the treatment effect. This is a quantification of the uncertainty around the treatment effect. Generally speaking, if the treatment effect is not at least twice as large as the standard error, it is considered to be too imprecise to be statistically significant. An effect twice as large as the standard error corresponds to a 5% risk of Type 1 error (i.e. concluding there is an effect when in fact no effect exists; mistaking noise for signal).

Looking at the child health outcomes, none of the treatment effects are statistically significant at the standard threshold of 5%. The effect on weight for height is significant using a 10% threshold. Children in households that received EHI vouchers had, on average, weight-for-height Z-scores that are 0.17 sd greater than children in control households. However, we urge caution when interpreting the results of any single outcome. By chance alone, 1 in 20 estimates of effect will be statistically significant even if there is in fact no effect. That is one reason why we combine the measures into a mean effect index.

Whenever an analysis contains multiple measures for each outcome, problems related to interpretation and multiple inference may arise. For example, it may be that all measures trend positive, but none are individually statistically significant. In such a case it is possible that effects are jointly significant across the family of measures for that outcome. In other words, when we consider all the variables for the outcome simultaneously, the combined effect may be statistically significant. Conversely, it may be that a change in one measure is significant while most are not, or some may even indicate opposing effects. In such cases it is possible that there is no significant effect when considering the entire family of measures for that outcome. In order to generate a meaningful summary of mean effects within each family, we follow the approach of Kling, Liebman and Katz (2007) and create a control group standardized index for each family of outcome measures.[28] We then test for differences in this index between treatment and control households. The differences are measured in standard deviations. These are indicated in the column "Mean effects." Note that we do not have baseline measures for this measure, and that by design the value for the control average is equal to zero. The mean effects index for child health is small (0.02) and not statistically significant (se=0.08).

Where possible, we control for the baseline level of each measure, which increases the precision of our estimates of the treatment effect. This is displayed in the third row of the table, 'Baseline.' The coefficient

[28] This is done as follows. First, where necessary we reorient each of the variables of interest in a family, so that higher values imply positive changes. Second, we rescale each of the redefined variables using the mean and standard deviation of the control group units. Third, the index averages over the subcomponents and the outcomes in the table represent the average standard deviation difference relative to the control group.

on the baseline variable indicates the strength of the correlation between baseline and endline levels in the absence of treatment. In other words, it provides an estimate of how the measure changed between baseline and endline for people who did not receive EHI vouchers. If there is a treatment effect, it is in addition to this change. For diarrhea, fever, and cough, the positive coefficients in the baseline row indicate that children who showed symptoms at baseline were more likely to show symptoms at endline, compared to children who did not show symptoms at baseline. The row under 'Baseline' displays the standard errors for the estimates of the correlation between baseline and endline values.

Table 6. Children Physical Health

	Diarrhoea^{r}	Fever^{r}	Cough^{r}	Weight for Height	Arm Circumference	Haemoglobin^{r}	Malaria^{r}	Mean Effects
Treatment	0.01	-0.03	0.01	0.17*	-0.07	-0.12	-0.03	-0.02
(se)	(0.03)	(0.04)	(0.04)	(0.10)	(0.08)	(0.10)	(0.02)	(0.08)
Baseline	0.20***	0.18***	0.15***					
(se)	(0.04)	(0.04)	(0.04)					
Control	0.33	0.56	0.46	0.25	-0.35	10.96	0.10	0
N	510	510	510	511	514	506	509	605

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Control row indicates average value of the dependent value in the control condition at endline. ^{r} item reversed so that higher values mean better health outcomes.

Outcome 2: Adult mental health

We find large effects of EHI vouchers on mental health of adult respondents. Our mean effects estimate – coded so that higher values mean better adult mental health – equals 0.35 s.d. (0.07 s.e.) (**Table 7**). The size of this effect is consistent with findings from studies of cash transfers (Haushofer and Shapiro 2016, Baird, De Hoop, and Ozler 2013) and other welfare programs (Lund et al 2011, Banerjee et al 2015).

Looking at the individual measures, this effect appears to be driven by higher levels of well-being (as measured by the WHO scale), and life satisfaction (as measured by "All things considered, how satisfied are you with your life as a whole these days on a scale of 1 to 10?"). There is no change in the Hopkins index (for results by question, see **Table 16** in the appendix).

Table 7. Adult Mental Health

	Hopkins	WHO	Satisfied	Mean Effects
Treatment	-0.05	0.20***	0.59***	0.35***
(se)	(0.04)	(0.05)	(0.12)	(0.07)
Baseline	0.24***	0.21***	0.26***	
(se)	(0.04)	(0.04)	(0.04)	
Control	1.38	1.09	3.29	0.00
N	769	769	769	770

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Control row indicates average value of the dependent value in the control condition at endline.

Outcome 3: Social cohesion

Table 8 displays our social cohesion measures. Overall the impact of the treatment is positive (0.15 s.d. with 0.07 s.e.), suggesting access to EHI items increased social cohesiveness of recipient households.

Comparing this effect to that found in other studies is difficult due to differences in how social cohesion is defined and measured, and to differences in pre-intervention cohesion (e.g. communities with higher baseline social cohesion may yield smaller effects, all else equal). Valli et al (2018) estimate the effects of cash transfers, food distribution, and food vouchers on social cohesion among Columbian refugees and vulnerable Ecuadorians. All three modalities have benefits of a similar magnitude, 0.14 to 0.19 sd. In a review of five community-driven development programs and two curriculum interventions, King et al find effects on social cohesion ranging from -0.2 to 0.35 sd. (King et al 2010). Lehmann and Masterson (2014) found that cash transfers to Syrian refugees in Lebanon made them more likely to be helped by locals, and less likely to be insulted (no mean effects index was calculated).

Looking at each of our social cohesion measures, the effects appear to be driven by increases in requests to treatment households for contributions to the village. There are no changes in problems between households, or instances of theft, suggesting that the distribution of EHI vouchers did not increase tensions within the village.

Table 8. Social Cohesion

	Member	Village	Dwelling	Problems	Trust	Theft	Mean Effects
Treatment	0.07	0.08**	-0.01	-0.03	-0.04	-0.02	0.15**
(se)	(0.05)	(0.03)	(0.04)	(0.03)	(0.05)	(0.03)	(0.07)
Baseline	0.03***	0.18***	0.26***	0.03	0.09***	0.05**	.
(se)	(0.01)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	.
Control	0.49	0.24	0.24	0.10	3.97	0.26	0
N	770	769	409	407	768	769	770

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Control row indicates average value of the dependent value in the control condition at endline.

Outcome 4: Resilience

Finally, we assess impacts on household level resilience (**Table 9**). In our preferred specification, dropping debt and alcohol from the index, we find a positive, moderate effect of 0.18 sd. (0.06 s.e.) (column “Mean effects (excl.)”). This result is driven by increases in assets and food security.

We drop debt and alcohol because their association with resilience is ambiguous. An increase in debt may indicate greater access to credit (which would increase resilience), or it may be the result of increased borrowing to meet daily needs (which would reduce resilience). Similarly, an increase in alcohol consumption may be a result of greater income or wealth (increased resilience) or a coping strategy to deal with the difficulties of everyday life (decreased resilience). If we include debt and alcohol in the index as positively associated with resilience, the positive effect of EHI is even larger: 0.28 s.d. (0.07 s.e.) (column “Mean effects (pos.)”). If instead we code them as negatively associated with resilience, the effect remains positive but is no longer statistically significant (column “Mean effects (neg.)”).

Comparing our results to other studies is challenging due to the many definitions of resilience, so we focus on studies of food security and assets. Hidrobo et al (2018) conducted a meta-analysis of the effect of social protection on food security and asset formation. They defined social protection as targeted non-contributory interventions such as cash and in-kind transfers, vouchers, and labor-intensive public works. They found that the average program raised food consumption by 13% and asset ownership by 7%. Lehmann and Masterson (2014) found that $575 of cash transfers to Syrian refugees in Lebanon reduced the proportion of households engaging in negative coping strategies from around 10% in the control group to around 5% in the treatment group, and did not affect debt levels. Hidrobo et al (2014)

found that $240 worth of cash transfers, food assistance, or food vouchers for Columbian refugees and vulnerable Ecuadorians had similar effects on food consumption, increasing it by $5-9, from a baseline mean of $47. Finally, Haushofer and Shapiro found that a cash transfer of $1,525 (over fifteen times the dollar amount of the EHI vouchers) increased food security by 0.26 sd, increased assets by $300, roughly 0.70 sd, and increased nondurable expenditures by $36, roughly 0.43 sd.

Table 9. Resilience

	Assets	Savings	Income	Food security	Coping	School	Debt	Alcohol	Mean Effects (pos.)	Mean Effects (excl.)	Mean Effects (neg.)
Treatment	0.16***	0.32	-0.01	0.13**	-0.07	0.03	6.97***	0.21**	0.28***	0.18***	0.05
(se)	(0.04)	(0.49)	(1.23)	(0.05)	(0.06)	(0.02)	(2.34)	(0.08)	(0.07)	(0.06)	(0.07)
Baseline	0.41***	0	0.21***	0.24***	0.17***	0.47***	0.16***	0.01			
(se)	(0.03)	(0.00)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.01)			
Control	1.20	1.41	14.24	2.15	1.79	0.42	16.27	0.26	0	0	0
N	769	769	769	769	769	729	767	769	770	770	770

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Control row indicates average value of the dependent value in the control condition at endline. Coping refers to an index of 11 questions about cutting the size of or skipping meals. Mean effects (excl.) excludes debt and alcohol. Mean effects (pos.) codes debt and alcohol as positive indicators of resilience; mean effects (neg.) codes them as negative.

Heterogeneous effects

We assessed several dimensions of treatment heterogeneity and we briefly summarise them here. **Table 17** in the appendix assesses whether households from a minority ethnic group in the village benefit more (or less) from the treatment compared to those from majority ethno-linguistic groups. Overall, it seems that recipients that belong to a minority group have higher increases in mental health than those belonging to the majority group.

Table 18 compares households that were poorer at baseline (i.e. had fewer assets) to those that were less poor. At baseline, poorer households have much lower (0.44 s.d.) resilience index scores than less poor households, which is not surprising since the resilience index includes assets. More surprisingly, poorer households did not differ from less poor households in terms of children's health, adult mental health, or social cohesion. This may be due to the high vulnerability of all households in the study or the less than perfect correlation between material wealth and those outcomes. Turning to treatment effects, there is no evidence that EHI vouchers had a different effect for the poor compared to the less poor (i.e. none of the interaction terms between treatment and baseline poverty are statistically significant for the mean effects indices).

7.3 Primary qualitative analysis

We conducted 20 FGDs across the seven intervention sites: ten with IDPs and ten with local residents—including beneficiary and non-beneficiary families (**Table 10**). Each FGD had eight participants, three or four of whom were EHI voucher beneficiaries.

Table 10. Location and composition of FGDs

#	Site	Location	Note
1	1	Butale	Displaced (Mixed gender)
2	1	Butale	Locals / Hosts (Mixed gender)
3	2	Kibarizo	Displaced (Mixed gender)
4	2	Kibarizo	Locals / Hosts (Mixed gender)
5	3	Alimbongo	Displaced (Mixed gender)
6	3	Alimbongo	Locals / Hosts (Mixed gender)
7	4	Mbau	Displaced (Mixed gender)
8	4	Mbau	Locals / Hosts (Mixed gender)
9	5	Kirumbu	Displaced (Men)
10	5	Kirumbu	Displaced (Women)
11	5	Kirumbu	Locals / Hosts (Men)
12	5	Kirumbu	Locals / Hosts (Women)
13	6	Pinga (Masisi)	Displaced (Men)
14	6	Pinga (Walik.)	Displaced (Women)
15	6	Pinga (Masisi)	Locals / Hosts (Men)
16	6	Pinga (Walik.)	Locals / Hosts (Women)
17	7	Nyabiondo	Displaced (Men)
18	7	Nyabiondo	Displaced (Women)
19	7	Nyabiondo	Locals / Hosts (Men)
20	7	Nyabiondo	Locals / Hosts (Women)

Notes: hosts refers to households that are hosting an IDP household; locals refers to other residents of the village (non-IDPs)

The claims made in the FGDs must be interpreted with caution. First, we were not able to verify the claims with follow-up investigations. Second, it is easy for rumours to spread in mobile populations with low literacy and low access to information. Even if a claim is true, we have no way of knowing if it is widespread, or if it is an isolated incident. Third, although the interviewers from the research team clearly explained that they were not affiliated with any NGO and thus had no ability to provide further assistance, FGD participants may have nonetheless responded in a way that they believed would increase their chance of receiving assistance in the future.

We have organized our analysis in terms of the questions that guided the FGD. FGDs with IDPs included the following six questions:

1. How is your life now compared to before you were displaced?
2. How will you know when it is safe to return home?
3. How were people selected to receive vouchers for EHI? Was it fair?
4. Were the items that you bought helpful? Are there other items that you would have liked to purchase?
5. How is your relationship with your hosts and with other locals?
6. How is your relationship with other IDP?

FGD with locals and host families included the following questions:

1. What was life like before the arrival of the IDPs?
2. How has life changed since the arrival of the IDPs?
3. How were people selected to receive vouchers for EHI? Was it fair?
4. Were the items that you bought helpful? Are there other items that you would have liked to purchase?

5. How is your relationship with the IDPs?

We combine IDP and local perspectives on the targeting process and the value of EHI because we did not discern any systematic differences between them.

How IDPs describe life now compared to before displacement

IDP respondents across all seven sites were unequivocal in citing hunger, famine, and starvation as their biggest problem. The lack of access to their fields and to their livestock put them at the mercy of their hosts. Several respondents reported attempting to return to their home fields to obtain food and being raped, assaulted, or robbed on the journey. There were reports of killings, kidnappings, and a $500 ransom demand.

- "At home we eat three times a day, but here we eat once and yet by chance." (IDP, Site 6)
- "I wish that the shooting would stop, we were not used to hearing gun shots but currently it's become usual and we wish this to stop. We don't really need these donations, all we need is to returning at home in peace. Each person will get food from his fields. We wish for you to plead for us to the authorities to end this war. I am the village head man and I am shot like an animal. We want peace so that everyone returns to his home." (IDP, Site 4)

In Site 5 there were also reports of abuses by armed groups.

- "We want the government authorities re-established, because for a small fault, you may find yourself in jail three days without eating and once out, you are sick." (IDP, Site 5)
- "There is really not peace because they are torturing people…If you are sentenced by Nyatura [an armed group], the fine is always exorbitant but if you don't pay it, you are whipped so much and some people die." (IDP, Site 5)

IDPs also cited an increase in illnesses since displacement, along with difficulty paying for medical treatments. The most common illnesses reported were malaria, diarrhea, kwashiorkor, cough, hypertension, and headache.

IDPs reported removing their children from school due to inability to pay school fees. They also cited difficulty sleeping in crowded conditions – although these conditions were preferred to sleeping in the open air. They reported traveling for 1-3 days to reach the host area from their home.

Most IDPs earned money by working in locals' fields. Typically, a labourer is paid 1,000-2,000 FC ($0.6 - $1.3) to work a plot of about 10m by 15m for one day. Others earn money carrying charcoal or beer, or by trading. Many of the IDPs reported that their hosts required them to pay rent.

How locals describe life before and after the arrival of IDPs

Locals also describe food security as a major concern since the arrival of IDPs. Some also mentioned decreasing soil fertility, and shortages of medicine.

- "The sweet potatoes that I could eat with my family for a month [now] takes one week to finish because there are so many people to feed." (Local, Site 1)
- "…you will see that even if they own fields you will see that displaced people have started getting into [other] people's fields to search for food. You will see them cutting down bananas and when the owner of the field will get there, will realize that everything has been picked from his field." (Host, Site 6)

How IDPs will know when it is safe to return home

Most respondents claimed that the government will tell them when it is safe to return, and that it will be safe to return when government soldiers have secured the area. Some were waiting for an announcement via the radio. Other respondents said that they will observe the security situation first-hand during their return trips to their home fields.

Local and IDP views on the selection process for EHI vouchers

There was a great deal of confusion and dissatisfaction with the selection process. Nearly all respondents voiced a strong desire that every family (IDP and local) receive assistance. Some even suggested that the voucher amount be lowered so that everyone could receive something.

Most respondents described the targeting process as a taking of names, and then it was not clear why some names disappeared when the vouchers were distributed.

- "I have noticed that their computers were lying because they told us that the computer rejected some people because their life conditions were good but when you see those people you cannot believe your eyes, I mean it's not a matter of computer, they were looking for a given number of people they wanted to reach… they told us that they enter data in the computer and the computer will determine if you deserve aid or not. We never know what really was happening because we don't know how to use computers." (Host, Site 4)
- "To my mind I think some people were not selected because they were unable to answer the questions. I remember there were some questions in the computer that people should answer." (IDP, Site 6)
- **"**Assistance is aimed at IDPs but only a few IDPs received it. The local committee started by making a list of IDPs, then other agents came with big phones and cancelled the lists that we made. That is why so many IDPs lost their names." (IDP, Site 4)
- "There is a group of persons who arrived at our office to meet the IDP's chief, these want to redo the same work by themselves that is why so many names are lost from the first list. There is something that they do on their phones that we don't know about." (IDP, Site 4)
- "They were looking for IDPs; they have been using telephones to register names and this was the first time we saw such a thing, I am wondering if they were really well trained to use Android. Why is it that among one hundred IDPs in this area there is not even one to benefit? You may check what I am saying well. I don't understand how they have been processing so that names got lost." (Site 5)
- "Let me talk a little bit about the enrollers. They don't master their work very well. You can see people are enrolled but will not benefit from anything." (Local, Site 6)
- "They tricked us during the registration. Someone can see his name announced to go take the vouchers but when going to get it, you cannot find it. You wonder what this displaced person is supposed to do in this situation. You see someone going to get his/her vouchers but can't find it. This bothered us much and we wonder what to do to those people who did not benefit from anything. You will be hearing them coming to you telling you to buy them something. You can't say no as long as both are in the same displacement problem." (IDP, Site 6)

There were some reports of people paying to be selected.

- "You did well not taking our names, now I know can tell you everything I saw, the first team that came for registration was corrupted, because they were asking for money for registering people." (Local, Site 1)

Another respondent in Site 1 reported a cost of 2,000-3,000 FC ($1.3 - $1.9) to be eligible for vouchers. In Site 2 the price was reported to be 500-2,000 FC ($0.3 - $1.3), and the sale of beneficiary cards for 10,000 FC ($6.3) was also reported.

- “Some [of those who did the registering] were impartial and there are some who were asking for money. Some other one was asking their friends from Kichanga [a nearby town] to come here for registration.” (IDP, Site 5) Respondents at Site 4 also reported people from nearby areas coming to be registered.
- **“**There are some people who paid $10 to be picked and at the end were not selected.” (IDP, Site 5)
- “Locals were paying to be picked and that is why they were the most numerous of those who which benefited from the assistance.” (IDP, Site 5)
- “The assistance was good, but it was not those who deserved it who received the assistance. The ones who deserved to receive assistance were the poor people but actually it was the ones with money who received the assistance.” (Local, Site 2)
- “Some were offering money to be registered, ten persons could contribute up to $100 and when it was time for the assistance, there were already signatures on their names.” (IDP, Site 2)

This issues with targeting and beneficiary registration lists must be considered in a context where there are no fixed addresses for residences, no census data, and only rarely do people have ID cards. In other words, it is difficult to imagine a targeting process that is not subject to the problems described above.

Local and IDP views on the EHIs, and on vouchers versus cash

There was a clear and consistent opinion across the FGDs that the EHIs were helpful.

- “God bless those who gave the assistance.” (IDP, Site 1)
- “The assistance helped so much.” (IDP, Site 1)
- “We are thankful for the vouchers.” (Local, Site 4)
- “Previously we are were sleeping poorly, the kids were starving, and we were all living in inhumane conditions, but the day when we received assistance we were overjoyed and we again found hope that we will make it.” (IDP, Site 3)
- “We had nice life when we received the assistance, receiving pans, blankets, we were very happy and proud. We were eating three times a day when we received donations but currently we are eating once per day so as to not to finish provisions…” (IDP, Site 3)

This is consistent with the results we see under resilience, and mental wellbeing. IDPs feel more at ease and better able to cope due to the EHIs.

At the same time, food was often mentioned as a higher priority than EHI.

- “We were not satisfied because we are starving, and if they had brought food then we would be pleased.” (IDP, Site 5)

Respondents would have liked to be able to purchase food, farming tools (e.g. hoes), livestock, radios, and roofing materials (tools and roofing were available in some but not all sites). Roofing material was cited by locals; IDPs preferred tarpaulin, which can be transported back to their home village. Tarpaulin was also popular with IDPs as a means to build one’s own home and thus avoid paying rent.

Most respondents reported preferring cash to vouchers, because cash would allow them to buy food, save for later, or pay for school fees or medication. In several sites it was reported that there is a regular market, once or twice a week. This often came up when voicing a preference for cash.

But some respondents expressed a clear preference for vouchers.

- “What I may add is that money sold the son of God, if they came with money some people would not buy anything at all and they would take it home and this may have been source of many problems.” (IDP, Site 1)

- “There are some fathers of the family who love drinking beer, so the vouchers we had to finish use them inside [the fair]. We could not take them outside the fair. That is why I believe that those vouchers were really necessary.” (Local, Site 1)
- “The vouchers were necessary because if it was money my husband could maybe ask me for money.” (Local, Site 2)
- “Money could create trouble in some households.” (IDP, Site 6)

Some respondents requested that the vouchers be in Congolese francs rather than USD.

In Site 3, electronic vouchers were used. They were generally praised because they offered privacy and made it difficult for vendors to steal. However, some people had trouble understanding how to use them.

There were several reports of people selling EHI purchased at a fair afterwards for food or medicine. Although there was complementary food assistance for EHI voucher beneficiaries at five of the seven study sites (see **Table 13** below), in only one case was this assistance conducted simultaneously with the EHI fair. In the other cases, the food assistance occurred several weeks after the EHI fairs, which would not have prevented highly food insecure families from selling a portion of their EHI for food.

- “The IDP I am hosting is in the hospital with his children. He sold everything [he purchased at the fair] at a cheaper price than he purchased it for. Cans and plates that he bought $10 or $16 he was obliged to sell back at $6 or $8, that is one of the disadvantages of vouchers.” (Local, Site 4)
- “…something that he bought for $20, once out, he sells it back for $5 because he is starving…” (IDP, Site 5)

One man in Site 4 reported selling a mattress that he bought for $35 for $13. One respondent in Site 7 reported that an $80 voucher could be sold for $50 cash.

In almost all sites there were reports of vendors raising prices above the set price ceilings, or charging prices that were too high. There were also several reports of vendors taking advantage of illiterate beneficiaries.

There was only one complaint about the quality of the EHI. The thermoses in Site 4 were said to be “pirated” or imitation.

Relationships between IDPs and locals

For the most part, IDPs spoke in positive terms about their relationships with locals, and vice versa. There were many reports of sharing EHI.

- “I have nice relationship with my IDP family, we always cook in the same pans and our husbands eat at the same moment, from the same plates.” (Local, Site 4)
- “IDP and locals, we have a good relationship. We love them so much because they lent us some of their fields to cultivate some sweet potatoes or wheat.” (IDP, Site 1)
- “If I go to the fields my IDPs comes with me, if there is work to be done, we do it together like fetching water.” (Local, Site 4)
- “The relationship between IDPs and locals is good because they are sharing food, their children are in the same school, using the same toilets, the same churches and medicines.” (IDP, Site 6)

This closely links up with the positive social cohesion results presented in **Table 10**, where we report an increase in within village contributions to public good provision.

However, both IDPs and locals talked about how food shortages were putting a strain on their relationships. In addition, when there are robberies, IDPs are often blamed. One local in Site 4 complained that young displaced men did not want to work and were instead stealing guinea pigs.

- "We don't have a good relationship with locals. We could have nice relationships if there was enough food. I tell you truly that if there is not food you cannot love any one. I saw someone who was convicted for theft of maize. They have been saying that it's IDPs who are stealing but locals steal as well." (IDP, Site 5)
- "I witnessed a dispute between an IDP and a local. I remember that the IDP was a non-beneficiary [of vouchers], the local took the IDP to soldiers and he was beaten such that he could not walk any more. We took him to the hospital." (IDP, Site 5)
- "When a native suffers from a given sickness it is said that comes from an IDP." (IDP, Site 1)

Locals reported that they host IDPs because of family obligations, religious beliefs, business relationships, and anticipation of being displaced themselves. No one reported being coerced to host.

- "When they arrived here, we noticed that among them there were women spending the night under the stars, and we had pity on them so we could not let them be homeless, we welcomed them into our own houses. You could not let them die of with hunger; we had to share with them." (Local, Site 1)
- "We took IDPs in our homes knowing that war may come from anywhere. There was a time when we were fleeing to their areas." (Local, Site 2)
- "There is a benefit, when you receive someone. He will have to like you, so I think that the first benefit is love." (Local, Site 2)

Several FGDs mentioned that conflict between children can cause tension between IDPs and hosts.

In some sites, IDPs can only borrow money or food via their host. As their debt rises, this puts tension on the relationship.

In many parts of Congo there is a day, once a week or once a month, called *salongo,* when everyone is required to work on behalf of the community. We found that IDPs are expected to participate in this work. Police will arrest those who do not participate. Typical work includes road cleaning and construction of roads, bridges, and fences.

Despite these occasional tensions, there appears to be no indication of a significant worsening of relationships between IDPs and locals due to the EHI voucher distribution. Quantitatively, we report no changes in tensions within the village, and improved cohesion overall.

Relationships within the IDP community

There was a great deal of solidarity expressed among IDPs. The IDP committee was frequently cited as the first venue for conflict resolution outside of the family. However, there were also accounts of tensions between those who were selected for vouchers and those who were not.

- "Presently in the community the people who received the assistance are not having good relationships with the ones who were not assisted." (IDP, Site 2)
- "You can see them [those who were selected] becoming proud." (IDP, Site 6)

7.4 Cost information

UNICEF provided cost information specifically for RRMP8.[29] They estimate that $3,918,388 (this does not include implementation costs) was transferred to 269,677 beneficiaries via EHI fairs, or $14.53 per beneficiary.

The implementation costs for the EHI fairs are difficult to parse out precisely from the overall implementation costs for RRMP, since all assistance modalities draw on the same system of collecting information on

[29] 14092018_UNICEF DRC_Revised Cash flow analysis_RRMP8 Final.xls and RRMP8_Beneficiaires VERSION FINALE.xls

recent displacements. The total implementation cost for individual assistance (EHI fairs, EHI direct distributions, and cash transfers) was $4,204,086. If we attribute part of that to EHI fairs based on the proportion of total individual assistance beneficiaries that participated in EHI fairs (269,677 out of 661,769 total beneficiaries), then $1,713,204 is the estimated cost of implementing EHI fairs. Adding that number ($1,713,204) to the amount transferred to beneficiaries ($3,918,388) and dividing by the number of beneficiaries (269,677) yields an estimated total cost per EHI fair beneficiary of $20.88.

Note that these costs are similar to what Aker (2017) reports for the costs to provide food vouchers (US$ 14.35 per recipient) and direct cash transfers (US$ 11.34 per recipient) in an IDP camp in eastern DRC, which does not pose the same logistical challenges as a rapid response for displaced people living with host families.

8 Discussion

8.1 Internal validity

We discuss some potential threats to internal validity below.

8.1.1 Other interventions

There were several other interventions in the study sites, primarily other components of RRMP (**Table11**). We do not regard these as a threat to the internal validity of our results, as their targeting strategies where not based on the randomization lists used in this study. Thus, by randomly assigning households to vouchers or control, we ensured that, on average, the households in our study sample all had the same probability of receiving benefits from other interventions. In other words, the effects of other interventions are controlled for by our study design.

RRMP implemented health interventions, targeted at health facilities, in five of the sites, while MSF assisted facilities in the other two sites. In four of the intervention sites, the WFP or NRC provided food between our baseline and endline surveys. In two other sites, food was provided after the endline survey. And in one site no food was provided. RRMP also implemented WASH interventions, targeted at the community-level, in five of the seven sites.

After the fourth endline survey, we added a question to the survey about non-RRMP assistance received in the six weeks between baseline and endline. Of the 339 households who responded, only 15 (4%) reported receiving other assistance. It seems unlikely, therefore, that other interventions serve as a potential threat to internal validity.

Table 11. Other interventions in the study sites

Site	Health interventions			Food distributions	WASH
	RRMP?	NGO	Description		
1	Yes	Medair	Mobile clinic	Several weeks after NFI fair	Yes
2	Yes	Medair	Support for health center	Several weeks after NFI fair	Yes
3	Yes	Save The Children	Two mobile clinics: at Ndoluma and Vutsorovya	Parallel to NFI fair	No
4	Yes	Medair	Support to regional health center Mbau	Several weeks after NFI fair	No
5	No	(MSF-Belgium)	Supports hospital nearby	After Endline	Yes
6	Yes	Medair	Mobile clinic (in Bushimoo, problematic access) and support in Mpeti (20km east)	Not before Endline	Yes
7	No	(MSF-Holland)	Supports hospital in Nyabiondo	During Endline, several weeks after NFI fair	Yes

8.1.2 Self-selection into the intervention

There were certainly incentives for households to seek access to EHI vouchers. The implementing partners went to great lengths to explain that the program is intended to assist only the most vulnerable households, and that vulnerability was determined via a household survey. Nonetheless, it is possible that some households provided inaccurate information in hopes of gaining access to the vouchers. The implications of this inaccuracy depend on who is misreporting and what the true effects are. For example, if only control households presented themselves as more vulnerable than was the case, if the program had a positive effect, and if all households reported accurately at endline, then the effect will be underestimated. The balance in outcome variables at baseline mitigates this concern.

8.1.3 Spillovers

Because randomization occurred within villages, rather than across villages, we cannot credibly estimate spillover effects. We merely articulate some possible channels here. Direct spillovers may have occurred through sharing of EHIs between treatment and control households within the same village, which could reduce the treatment effect on assets and thus our measure of resilience. Indirect spillovers may have occurred through reduced infectious disease transmission. Malaria, pneumonia, and diarrheal diseases are infectious diseases that are common throughout eastern Congo. If beneficiaries used EHIs to reduce the prevalence of infectious diseases among themselves, it may have lowered the risk of infection that non-beneficiaries in the same community faced. To the extent that mental health is transmissible, the improved mental health of beneficiaries may aid non-beneficiaries as well. In a sense, social cohesion is an outcome that incorporates spillovers – it measures the relationship between beneficiaries and non-beneficiaries. We found positive effects, suggesting that more collaboration and less conflict occurred between beneficiaries and non-beneficiaries following the provision of EHI vouchers.

8.1.4 Behavioural responses to the evaluation

The intervention and measurement strategy were designed to minimize Hawthorne and John Henry effects. Hawthorne effects in the context of RRMP could theoretically be of concern if beneficiaries were more likely to keep the items they purchased and use them appropriately because they were under observation for the study. John Henry effects in the context of RRMP could occur if the households who did not receive benefits worked harder to increase their well-being and reduce their morbidity and mortality than they would have in the absence of RRMP.

Respondents in the control group may have provided more *negative* answers if they believed this would increase their probability of receiving vouchers in the future, increasing our treatment effect. This is unlikely. First, RRMP is a once off intervention spanning a 7-10 day period. It is unlikely that by the endline respondents still hoped RRMP would come back if they expressed lower values to the research assistants. Second, treatment respondents may have expressed lower values at endline for similar reasons. This would have the opposite effect and decrease the treatment effect. Third, such concerns are minimal as the research assistants where elaborately trained and blinded to treatment status. Finally, as both treatment and control groups faced similar levels of scrutiny, risks of symmetry violations were minimal.

8.1.5 Attrition

We faced attrition at two moments in each site: 1) between the creation of the randomization list (based on information provided by the implementing NGOs) and the baseline survey, and 2) between the baseline survey and the endline survey. Of the 976 households on our randomization lists across the seven sites, we were unable to locate in total 120 (12.3%) at baseline (see flow diagram in Appendix E). This was not associated with treatment status; a regression of this attrition on treatment yields a coefficient of 0.017 (0.02 s.e.; p=0.41). Of the households interviewed at baseline, 10.2% (n=87) were not found at endline. Treatment is not associated with this attrition either; the coefficient on a regression of attrition on treatment is 0.003 (0.02 s.e.; p=0.99). We conclude that attrition is not a major concern for interpreting the results of this study.

8.2 Limitations of the evaluation

There are a number of limitations to this study. Because we randomly assigned the intervention at the household level, we cannot observe general equilibrium effects at aggregate levels. In other words, we cannot observe the overall impact of RRMP on the entire population in each intervention site. These effects could be important given the scale of the intervention and severity of poverty in these areas.

Second, we measured effects that manifest within six weeks. If effects take longer to develop, they will not be detected by this study.

Third, the external validity of this study may be limited to populations with a similar level of vulnerability living in similar contexts. We return to this point in the next section.

Fourth, some may argue with our operationalization of the outcome variables, particularly social cohesion and resilience. The finding of beneficial effects on social cohesion is driven by an increase in requests that households contribute to the village. Some may argue that this is not sign of social cohesion, but rather a survival tactic in a context of scarcity. Similarly, some may argue that we have included measures of resilience that are not relevant, or that we overlooked measures that are.

Finally, it is also important to note that the current study does not evaluate the RRMP programme as a whole. Rather it focuses on one component, the provision of vouchers for EHI. Depending on the needs assessment of potential recipient communities, the RRMP programme also includes the provision of health services, water and sanitation, and education/protection support.

9 Specific findings for policy and practice

Evaluating the impacts of emergency aid is challenging. Analysing the effect of EHI assistance in particular is complex given the potential multi-sectoral contribution that different items can have on different outcomes. Using a unique design, where mobile research teams worked closely with RRMP implementing partners, we measured the impact of one component of the RRMP program: the provision of EHI via voucher and subsequent fairs. We looked for effects on four families of outcomes that are relevant to RRMP's mission: child health, adult mental health, social cohesion and resilience. Over a six-week time window, the data suggest there are no effects on physical health. In contrast, we find strong beneficial impacts of the program for mental health and moderate beneficial impacts on resilience and social cohesion. This is encouraging as EHI items seem to have increased both coping and consumption. Both satisfaction and anxieties, on the one hand, and investments in assets, food security and financial deepening (through incurring debt), on the other hand, are predictive of longer run consumption and incomes. At the same time, there was no increase in community tensions or conflict. In fact, there is a marked *increase* in social capital for recipient households.

In sum, the results provide demonstrate a positive overall impact of RRMP's EHI vouchers and fairs. This lends support for the significant amount of donor funds that go into this (and similar) programs. We urge the funding of additional research to investigate the other components of the program, particularly those that may impact child health.

Reflections on the study

It was a major challenge to begin this study. Stakeholders at multiple levels of UNICEF and OCHA had to buy in to the study objectives and design. The CBPF was also involved in early discussions. Some humanitarian specialists in these agencies were not receptive to the idea of a randomized trial in an emergency setting. In addition, the frequent turnover in staff at these agencies made the necessary relationship cultivation and trust-building more difficult than it otherwise would have been. One additional barrier to initiation was the unpredictable level of funding for RRMP. It was at times not clear if there would be enough eligible households for the study to be feasible. In total, nearly three years passed between the first discussions of this study and the pilot.

Fortunately, and thankfully, we did not face major challenges once data collection was underway. This was surprising given the difficulty of the terrain, possible insecurity in the region, and complex logistics.

One key challenge that we overcame (thanks in large part to a highly skilled field coordinator) was to learn how to communicate with four different implementing NGOs (Mercy Corps, Solidarités, NRC, and DRC) as each conducts operations and targets beneficiaries slightly differently. In addition, there were the usual technical challenges with tablets, batteries, and other hardware.

We feel that the current study provides a good benchmark for future research projects as it highlights seemingly complicated and challenging assessment is possible if enough attention is given to planning, a sound security protocol, strong training and supervision, and maintaining excellent relations with implementing partners and donors.

External validity

To what extent do the results from this study generalize beyond our seven study sites? It is worth noting that the environment of our study is similar to that found in other developing countries on some key dimensions. Conflict, displacement, and vulnerable populations are to be found in many other developing countries. In addition, factors related to the intervention itself also help with the results' external validity. We worked together with an ongoing emergency program that has served as a model for similar programs in Central African Republic, Iraq, South Sudan, and Yemen.

The seven RRMP interventions differed on many dimensions. Some interventions covered two villages, others covered eight villages. Some operated within a village population of 1,300 while others within much larger populations of up to 19,603. The smallest intervention targeted 928 people (excluding the research component) while the largest targeted 4,098. The seven interventions were also implemented during different time periods. Rainy seasons can have an important impact on what people need. The interventions were also implemented by four different NGOs. In addition, because the displacement dynamics may be very different from site to site, and different vendors participate in the fairs, what the beneficiary population buys at the fair is also likely to be different based on which items vendors have brought to sell. The analyses in the previous sections control for randomization blocks and thus control for these differences across intervention sites. However, to learn about how far the results travel beyond our seven study sites, we may want to explore the results by intervention site. If the intervention had a positive impact on, for example, mental health in all seven sites, then we may be more confident to expect a positive impact in a future RRMP EHI intervention.

Table 12 reports the result for the mean effects by intervention site. We find that the point estimate for the effect on physical health is positive in four sites and negative in the three others; however, in no sites is it statistically significant. The impact of the intervention on mental health, social cohesion and resilience are more consistent, with positive impacts across almost all intervention sites. This provides some positive evidence in favor of external validity.

Table 12. Mean Effects by Intervention

	Physical health	Mental health	Social cohesion	Resilience
Treatment effect site 1	-0.273	0.134	0.063	0.366**
(se)	(0.321)	(0.214)	(0.209)	(0.140)
Treatment effect site 2	0.162	0.701***	0.226	0.015
(se)	(0.187)	(0.162)	(0.244)	(0.172)
Treatment effect site 3	-0.204	0.321*	0.012	0.460**
(se)	(0.189)	(0.182)	(0.157)	(0.198)
Treatment effect site 4	0.191	0.604***	0.131	0.868***
(se)	(0.196)	(0.205)	(0.183)	(0.166)
Treatment effect site 5	-0.270	0.365*	0.129	-0.086
(se)	(0.183)	(0.199)	(0.231)	(0.251)
Treatment effect site 6	-0.249	-0.025	0.280*	-0.111
(se)	(0.237)	(0.182)	(0.163)	(0.129)
Treatment effect site 7	0.256	0.362**	0.242	0.385**
(se)	(0.182)	(0.168)	(0.150)	(0.153)

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level.

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Appendix A. Sample design

See main text and PAP, publicly available at: http://egap.org/registration/2832

Appendix B. Survey instruments

The survey instruments and protocols are publicly available at: http://egap.org/registration/2832

Appendix C. Pre-analysis plan

The pre-analysis plan is publicly available at: http://egap.org/registration/2832

There are three deviations from the pre-analysis plan. First, we aimed to collect data from 1,000 households: 100 households in ten sites. However, data were only collected in seven sites. The reason is that at the moment when the grant period stopped (July 2018) only seven interventions fit the criteria for this study in North Kivu. Between the registration of the pre-analysis plan and the start of the interventions and data collection, we decided to target 140 households per site. We thus continue to make use of around 1,000 households.

Second, we suggested to test for heterogeneous effects along the following eight dimensions: 1) Baseline poverty/vulnerability, 2) migrant/host status, 3) ethnic majority/minority status (relative to village), 4) discordant or concordant ethnicities within the dwelling, 5) assigned voucher amount per capita, 6) occupation of recipient, 7) education of recipient and 8) distance to market. In the report, we report results only for poverty status and ethnic minority status. We choose not to focus on the other characteristics because: they are conditional measures and we would only look at subsets of the data (discordant or concordant ethnicities within the dwelling, assigned voucher amount per capita); there is no variation in the characteristic (e.g. occupation of recipient: almost all people are farmers); or the data is not suited for heterogeneous effects (e.g. distance to market we only have at the village level).

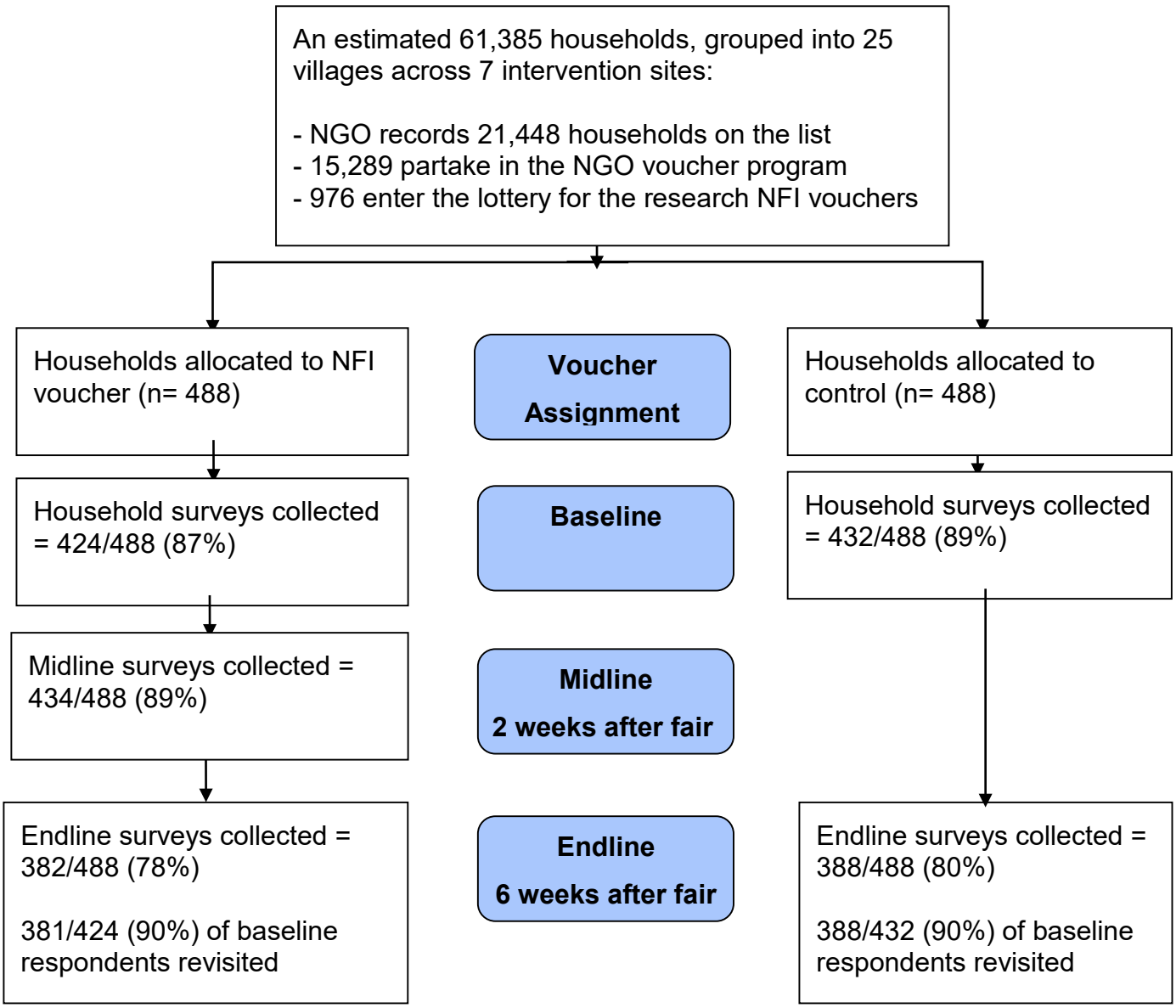
Third, we dropped debt and alcohol from our index of resilience. As we discuss above, the relationship between these variables and resilience is ambiguous.

In sum, these deviations are unlikely to change the results presented in the report.

Appendix D. Sample size and power calculations

See the pre-analysis plan: http://egap.org/registration/2832

Appendix E. Flow diagram of recruitment, randomization, and attrition



Appendix F. Summary statistics and variable definitions

Table 13. Summary Statistics

	Observations	Mean	St. Dev.	Min	Max
Female respondent	856	0.88	0.33	0	1
Born in village	856	0.22	0.41	0	1
Is hosting another family in dwelling	856	0.32	0.47	0	1
Is being hosted by another family in dwelling	856	0.37	0.48	0	1
Neither hosted nor hosting	856	0.31	0.46	0	1
Time in village if neither host nor hosting (n=204)	*Number*	*Percent*			
Less than one year	*152*	*75*			
One to five years	*25*	*12*			
Over five years	*27*	*13*			
Diarrhoea	596	0.32	0.39	0.00	1.00
Fever	597	0.54	0.42	0.00	1.00
Cough	597	0.48	0.43	0.00	1.00
Weight for Height	511	0.33	1.16	-3.46	4.3
Arm Circumference	514	15.03	1.26	7.00	19.10
Haemoglobin	506	10.90	1.29	5.90	16.60
Malaria	509	0.09	0.24	0.00	1.00
WHO	770	1.35	0.63	0.00	2.90
Hopkins	770	1.19	0.71	0.00	3.00
Satisfied	770	3.60	1.81	1.00	10.00
Member	770	0.53	0.73	0.00	5.00
Village	770	0.29	0.45	0.00	1.00
Dwelling	449	0.22	0.42	0.00	1.00
Problems	448	0.09	0.30	0.00	2.00
Trust	769	3.96	0.75	1.00	5.00
Theft	770	0.25	0.43	0.00	1.00
Assets	770	1.28	0.66	0.11	4.11
Savings	770	1.58	6.72	0.00	111.11
Income	770	14.34	17.93	0.00	166.67
Food security	770	2.21	0.90	0.10	5.10
Coping	770	1.74	0.96	0.00	4.91
School	743	0.44	0.38	0.00	1.00
Debt	769	19.33	33.06	0.00	300.00
Alcohol	770	0.35	1.15	0.00	7.00

Notes: Summary information based on endline survey, except for information on gender, and migrant/host status

Table 14. Variable Definitions

Family	Outcome	Description	Survey Q
Physical	Diarrhoea	Continuous 0 to 1. Share of children that had diarrhoea in the last two weeks. As reported by the respondent.	Q45
Physical	Fever	Continuous 0 to 1. Share of children that had fever in the last two weeks. As reported by the respondent.	Q47
Physical	Cough	Continuous 0 to 1. Share of children that had a cough in the last two weeks. As reported by the respondent.	Q49
Physical	Weight for Height	Continuous. Weight-for-height z-score using WHO Child Growth Standards.	Q158, Q159
Physical	Arm Circumference	Continuous. Child's middle-upper arm circumference z-score using WHO Child Growth Standards.	Q160
Physical	Haemoglobin	Continuous in grams per decilitre (g/dL). Child's hemoglobin level as measured in blood sample.	Q161
Physical	Malaria	Binary. Positive or negative result of malaria Rapid Diagnostic Test.	Q162
Mental	WHO	Continuous 0 to 3. Average across the following statements. Over the last two weeks: 1) I have felt cheerful and in good spirits, 2) I have felt calm and relaxed, 3) I have felt active and vigorous, 4) I woke up feeling fresh and rested, 5) My daily life has been filled with things that interest me. Response options: 0) Not at all, 1) Some or little of the time, 2) Occasionally or a moderate amount of time, 3) Most of all the time	Q139-Q143
Mental	Hopkins	Continuous 0 to 3. Average across 23 statements. Over the last two weeks have you experienced: 1) Suddenly scared for no reason, 2) Feeling fearful, 3) Faintness, dizziness or weakness, 4) Nervousness or shakiness inside, 5) Heart pounding or racing, 6) Trembling, 7) Feeling tense or keyed up, 8) Headache, 9) Spell of terror or panic, 10) Feeling restless or can't sit still, 11) Feeling low in energy, slowed down, 12) Blaming yourself for things, 13) Crying easily, 14) Loss of sexual interest or pleasure, 15) Poor appetite, 16) Difficulty falling asleep, staying asleep, 17) Feeling hopeless about future, 18) Feeling lonely, 19) Feeling of being trapped or caught, 20) Worry too much about things, 21) Feeling no interest in things, 22) Feeling everything is an effort, 23) Feeling of worthlessness. Response options are: 0) Not at all, 1) Some or little of the time, 2) Occasionally or a moderate amount of time, 3) Most of all the time.	Q114-Q138
Mental	Satisfied	Continuous 1 to 10. Response to "All things considered, how satisfied are you with your life as a whole these days on a scale of 1 to 10?" 1= very dissatisfied, and 10= very satisfied.	Q145

Soc. Coh.	Member	Continuous 0 to 11. Number of associations the household is a member of: 1) Credit or savings, 2) Farming, 3) Protection/ security, 4) Women, 5) Youth, 6) Religious, 7) Conflict resolution, 8) Development, 9) Health, 10) Education, 11) Other	Q146
Soc. Coh.	Village	Binary. In the last two weeks, have you been asked to contribute to the village? Yes=1, No=0	Q147
Soc. Coh.	Dwelling	Binary. In the last two weeks, did the other households in your dwelling ask you for anything?	Q152
Soc. Coh.	Problems	Continuous 0 to 2. Have you had any problems with the other households in this dwelling? Response options: 0) No problems, 1) Some problems, 2) Many problems	Q156
Soc. Coh.	Trust	Continuous 1 to 5. Average across the following. How much would you trust the following person to go to the market for you if you can't go yourself? Asked about the following: 1) Your family, 2) Host family, 3) Other displaced households in the village, 4) Hosted displaced family 5) Other family in the village. Response options: 1) Completely distrust, 2) Somewhat distrust, 3) Neither trust nor distrust, 4) Somewhat trust, 5) Completely trust	Q157
Soc. Coh.	Theft	Binary. Has anything been stolen from your household in the past month?	Q111
Resilience	Assets	Continuous. Average amount of items owned of the following list: identity card, chair, bicycle, motorcycle, hoe, cloth, generator (for electricity), flashlight, radio, mattress, blankets, jerry can, bed net (treated or not), tarp, clothes other, soap, buckets, pots, pans, luggage.	Q109
Resilience	Savings	Continuous in US dollars. How much does your household have in savings?	Q100
Resilience	Income	Continuous in US dollars. In the last 4 weeks, how much income did your household earn or receive? (Through labor, sales, remittances, etc.)	Q98
Resilience	Food security	Continuous. Average across the following: In the last seven days, how many days has your household eaten or consumed: 1) Corn, sorghum, rice, bread, 2) Cassava, plantains, other tubers, 3) Peanuts, beans, peas, lentils, etc., 4) Vegetables (and their leaves), 5) Fruits, 6) Meat, fish, chicken, eggs, 7) Milk, cheese, yogurt, other dairy, 8) Sugar, honey, other sweeteners, 9) Oils and fats, 10) Condiments, spices.	Q76-85
Resilience	Coping	Continuous. Average across the following: In the last seven days, how many times: 1) have adults cut the size of meals or skipped meals?, 2) have adults gone a whole day without meals?, 3) Have children (<14) cut the size of meals or skipped meals?, 4) Have children (<14) gone a whole day without meals?, 5) Have household members had to eat less preferred or less expensive foods?, 6) Have household members had to borrow food or rely on help from a friend or relative to	Q87-97

		get enough food?, 7) Have household members had to purchase food on credit?, 8) Have household members had to gather wild food, hunt, or harvest immature crops because of food shortage?, 9) Have household members had to consume seed stock held for next season?, 10) Have household members had to go elsewhere to eat because there was not enough food in the house?, 11) Have household members had to go beg because there was not enough food in the house?	
Resilience	School	Continuous 0 to 1. Proportion of children aged 5-18 in school per household.	Q40
Resilience	Debt	Continuous in US dollars. How much does your household owe in debts?	Q101
Resilience	Alcohol	Continuous. In the last seven days, how many days has your household consumed alcohol?	Q86

Notes: Definition of all outcome variables.

Appendix G. Additional Results

Table 15. Hopkins Symptom Checklist for Anxiety and Depression

Measure	Treatment	(se)	Baseline	(se)	Control	N
Suddenly scared for no reason	-0.02	(0.07)	0.11***	(0.04)	1.41	749
Feeling fearful	0.03	(0.07)	0.06	(0.04)	1.40	736
Faintness, dizziness or weakness	-0.06	(0.06)	0.05	(0.04)	1.54	750
Nervousness or shakiness inside	-0.01	(0.07)	0.04	(0.04)	1.13	724
Heart pounding or racing	-0.01	(0.07)	0.19***	(0.04)	1.30	745
Trembling	-0.03	(0.07)	0.08**	(0.04)	0.95	716
Feeling tense or keyed up	-0.09	(0.07)	0.16***	(0.04)	1.00	722
Headache	-0.02	(0.07)	0.09**	(0.04)	1.53	760
Spell of terror or panic	0.05	(0.07)	0.09**	(0.04)	1.40	748
Feeling restless or can’t sit still	0	(0.07)	0.12***	(0.03)	1.04	729
Feeling low in energy, slowed down	-0.07	(0.07)	0.14***	(0.04)	1.42	745
Blaming yourself for things	0.03	(0.07)	0.11***	(0.04)	1.44	723
Crying easily	0.01	(0.07)	0.16***	(0.03)	0.78	700
Loss of sexual interest or pleasure	-0.14*	(0.08)	0.15***	(0.04)	1.19	677
Poor appetite	-0.05	(0.07)	0.08**	(0.04)	1.25	740
Difficulty falling asleep, staying asleep	-0.15**	(0.07)	0.13***	(0.04)	1.61	755
Feeling hopeless about future	-0.11	(0.08)	0.19***	(0.04)	1.80	737
Feeling lonely	-0.12	(0.07)	0.15***	(0.04)	1.34	734
Feeling of being trapped or caught	-0.15**	(0.07)	0.19***	(0.04)	1.01	727
Worry too much about things	0.01	(0.07)	0.16***	(0.04)	2.04	750
Feeling no interest in things	0.02	(0.08)	0.11***	(0.04)	1.14	729
Feeling everything is an effort	-0.14**	(0.07)	0.28***	(0.04)	2.16	749
Feeling of worthlessness	-0.13*	(0.08)	0.17***	(0.04)	1.51	728

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Control row indicates average value of the dependent value in the control condition at endline.

Table 16. Results by Respondent's Ethnic Minority Status

	Treatment	(se)	Minority	(se)	Treatment x Minority	(se)	N
Physical health							
Diarrhoea	0.01	(0.04)	0.07	(0.05)	-0.1	(0.08)	572
Fever	-0.01	(0.04)	0.05	(0.06)	-0.06	(0.08)	573
Cough	0.03	(0.04)	0	(0.06)	0	(0.09)	573
Height/Weight	0.20*	(0.12)	0.01	(0.17)	-0.14	(0.25)	497
Arm Circumference	-0.08	(0.12)	0.19	(0.19)	-0.34	(0.27)	490
Haemoglobin	-0.12	(0.11)	-0.11	(0.17)	0.07	(0.24)	482
Malaria	-0.02	(0.02)	-0.01	(0.04)	-0.03	(0.05)	484
Mean effects	-0.04	(0.09)	-0.08	(0.14)	0.05	(0.20)	580
Mental health							
WHO	-0.05	(0.05)	0.15*	(0.08)	-0.09	(0.11)	736
Hopkins	0.16***	(0.06)	-0.17*	(0.09)	0.23*	(0.12)	736
Satisfied	0.51***	(0.14)	-0.24	(0.21)	0.46	(0.30)	736
Mean effects	0.28***	(0.08)	-0.29**	(0.13)	0.35**	(0.18)	736
Social capital							
Member	0.10*	(0.06)	0.06	(0.09)	-0.05	(0.13)	736
Village	0.08**	(0.04)	0.07	(0.05)	0.02	(0.08)	736
Dwelling	0.02	(0.04)	0.14**	(0.07)	-0.15	(0.10)	429
Problems	-0.02	(0.03)	0.08	(0.05)	-0.04	(0.07)	428
Trust	-0.07	(0.06)	-0.16*	(0.09)	0.09	(0.13)	735
Theft	-0.02	(0.04)	-0.05	(0.05)	0.02	(0.08)	736
Mean effects	0.14*	(0.08)	0.08	(0.13)	0.01	(0.18)	736
Resilience							
Assets	0.23***	(0.05)	0.22***	(0.07)	-0.20**	(0.10)	736
Savings	0.38	(0.55)	0.32	(0.85)	0.87	(1.19)	736
Income	0.33	(1.42)	0.13	(2.18)	-0.46	(3.05)	736
Food security	0.14**	(0.06)	-0.02	(0.10)	-0.03	(0.14)	736
Coping	-0.1	(0.07)	0.08	(0.11)	0.02	(0.15)	736
School	0.07**	(0.03)	-0.04	(0.05)	-0.06	(0.07)	710
Debt	6.63**	(2.77)	-0.11	(4.25)	-2.13	(5.95)	735
Alcohol	0.19*	(0.10)	-0.06	(0.15)	0.07	(0.21)	736
Mean effects	0.34***	(0.08)	0.03	(0.12)	-0.09	(0.17)	736

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Minority are those that speak a language different than the most common language among natives in the village. Minority: n=189, Majority: n=630.

Table 17. Results by Respondent's Poverty Status

	Treatment	(se)	Poor (assets)	(se)	Treatment x Poor	(se)	N
Physical health							
Diarrhoea	-0.05	(0.04)	-0.06	(0.05)	0.09	(0.06)	595
Fever	-0.06	(0.05)	0.01	(0.05)	0.08	(0.07)	596
Cough	0.04	(0.05)	0.04	(0.05)	0	(0.07)	596
Height/Weight	0.11	(0.14)	-0.07	(0.15)	0.13	(0.21)	510
Arm Circumference	-0.06	(0.14)	-0.07	(0.16)	-0.2	(0.22)	513
Haemoglobin	-0.09	(0.13)	0.03	(0.14)	-0.08	(0.20)	505
Malaria	-0.02	(0.03)	0.03	(0.03)	-0.01	(0.04)	508
Mean effects	0.05	(0.11)	0.01	(0.12)	-0.19	(0.16)	604
Mental health							
WHO	0.01	(0.06)	0.14**	(0.07)	-0.14	(0.09)	769
Hopkins	0.22***	(0.07)	-0.12	(0.07)	-0.02	(0.10)	769
Satisfied	0.64***	(0.17)	-0.03	(0.18)	-0.04	(0.24)	769
Mean effects	0.31***	(0.10)	-0.19*	(0.11)	0.08	(0.14)	769
Social capital							
Member	0.15**	(0.07)	-0.06	(0.07)	-0.15	(0.10)	769
Village	0.10**	(0.04)	-0.11**	(0.05)	-0.02	(0.06)	769
Dwelling	-0.03	(0.05)	-0.10*	(0.06)	0.03	(0.08)	448
Problems	-0.03	(0.04)	-0.01	(0.04)	0.02	(0.06)	447
Trust	-0.06	(0.07)	-0.04	(0.08)	0.06	(0.11)	768
Theft	-0.02	(0.04)	-0.07	(0.05)	0.01	(0.06)	769
Mean effects	0.22**	(0.10)	-0.12	(0.11)	-0.16	(0.14)	769
Resilience							
Assets	0.16***	(0.06)	-0.32***	(0.06)	0.01	(0.08)	769
Savings	0	(0.68)	-0.9	(0.72)	0.85	(0.97)	769
Income	-3.13*	(1.73)	-7.40***	(1.83)	6.17**	(2.50)	769
Food security	0.07	(0.08)	-0.20**	(0.08)	0.09	(0.11)	769
Coping	-0.11	(0.08)	0.08	(0.09)	0.05	(0.12)	769
School	0.07**	(0.04)	-0.12***	(0.04)	-0.08	(0.05)	742
Debt	2.46	(3.34)	-3.42	(3.54)	7.55	(4.82)	768
Alcohol	0.15	(0.12)	0	(0.12)	0.1	(0.17)	769
Mean effects	0.19**	(0.09)	-0.44***	(0.10)	0.18	(0.14)	769

Notes: *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on two-tailed tests. Fixed effects at the randomization block level. Poor (rich) is measured as those below (above) the median assets score. Poor: n=426, Rich: n=430.