Pre-Analysis Plan

**GiveDirectly Iganga Cash Transfer Program**

Submitted by: **GiveDirectly**

May 2018

# Meta-information

* This is the second version of the Pre-Analysis Plan (PAP) for GiveDirectly’s Iganga Coffee Project.
* The original version of the PAP and this update were written by IDinsight with significant input from GiveDirectly.
* The update was made to account for changes in the survey made during piloting and the beginning of endline launch, including minor changes to the outcome indicators. It also specifies more clearly how to deal with polyamorous households, merged households, and refused responses.
* The original PAP was written during GiveDirectly’s baseline, which launched in June 2016 and was completed in August 2016. This modified version was completed in May 2018, while the endline was ongoing.
* **IDinsight Team**: Nicholas Parker (Associate), Deng-Tung Wang (Associate), Ignacio Busto (Manager), Dan Stein (Chief Economist), and Paul Wang (Founding Partner).
* **Objective of Evaluation**: The goal of this evaluation is to determine the impact of an unconditional cash transfer (UCT) on the productivity and welfare of households in the Iganga region of Uganda. The study has been commissioned by Benckiser Stiftung Zukunft (BSZ), a charitable foundation who have funded both the intervention and the evaluation. This study will examine the impact of a UCT intervention on recipient households, with a further examination of the impact of UCTs on a specific subset of recipients: coffee farmers.

# Overview of PAP

The purpose of this PAP is to provide an explicit plan for evaluating GiveDirectly’s UCT program in Iganga, Uganda. This PAP will be submitted as part of the study registration in the RIDIE trial registry organized by 3ie. The data analysis will adhere to this plan, and any deviations will be noted in the final report.

This PAP includes the following sections:

1. **Background Information:** This section covers context, including a description of GiveDirectly, an overview of the intervention, and this program’s Theories of Change.
2. **The Evaluation:** This section is an overview of the evaluation, including the evaluation design, causality assumptions, and unit of treatment.
3. **Data Collection:** This section discusses GiveDirectly’s data collection, including their unit of analysis, data collection timeline, and sampling procedure.
4. **Analytical model:** This section covers econometric specifications and discusses outcome variables.
5. **Limitations and Corrections to Data:** This section discusses potential limitations to the analysis and possible corrections to the data.

# Background information

*This section provides important project context.*

### Organization Overview

GiveDirectly provides an end-to-end platform that enables funders to give direct cash transfers to the extreme poor. The organization locates poor communities using publicly available data and then sends field staff door-to-door to digitally collect data on poverty and enroll recipients. GiveDirectly targets households using criteria that vary by region, including aggregating a range of poverty-related factors. Additionally, they use a set of independent checks to verify that recipients are eligible and did not pay bribes.

GiveDirectly transfers recipient households roughly one year's budget for a typical household. They use electronic payment systems; typically, recipients receive an SMS alert and then collect cash from a mobile money agent in their village or nearest town. GiveDirectly calls each recipient to verify receipt of funds, flag issues, and assess their customer service. In addition, GiveDirectly staffs a hotline for inbound calls and in some cases conducts follow-ups in-person.

### Project Overview

In partnership with funders BSZ, GiveDirectly have developed an intervention and study designed to understand the impact of cash transfers on a specific group of recipients, coffee farmers, as well as other, non-coffee farming households in the treatment group. The intention is to explore the subject that BSZ has asked GiveDirectly to test, namely: the impact of cash transfers on these two groups. This study also provides the opportunity to expand the evidence-base on for whom large capital transfers have an impact, and what those impacts are.

GiveDirectly will deliver UCTs of 3,400,000 UGX (equivalent to ~1,000 USD) to approximately 3,600 households in the Iganga district of Uganda. The Iganga district was chosen due to an intersection of coffee production and poverty, using publicly available, government census data. The money will be transferred in three payments: one token payment (400,000 UGX) to ensure that the transfer process is working correctly and two bulk transfers (1,500,000 UGX each). These transfers will take place between September 2016 and February 2017. The token payments will go out in September and October, with the first bulk payments transferred one month after the initial token payments, and the second bulk payments transferred three months after the initial token payments. The recipients will be a combination of coffee and non-coffee farmers.

This program is being rolled out in conjunction with a Randomized Controlled Trial (RCT), in which GiveDirectly has randomly assigned 1,894 recipients to a treatment group (receiving cash) and another 1,894 non-participants to a control group (not receiving cash). Program impact will be measured through a comparison of the treatment and control groups across relevant outcomes (*see Outcome Variables section*). The treatment and control households have been selected according to an index developed conjointly between IDinsight and GiveDirectly, built from a combination of assets owned, housing materials and other indicative measures of household wealth, all collected during GiveDirectly’s census.

### Program Logic Framework

There are two relevant Theories of Change (TOC) for this intervention. The first TOC is for the overall program, and describes the impact of cash transfers on households’ welfare. The second TOC is specific to coffee farmers, and illustrates how cash transfers change coffee-farmer household wellbeing.

### Theory of Change: **Overall Program**

*The following channels are for GiveDirectly’s overall Iganga cash transfer intervention.*

UCTs could lead to (1) an investment in durables, (2) increased livestock holdings, (3) increased land use through either ownership or rental, (4) improved food security and medical expenditures, (5) increased savings and debt reduction, and (6) increased expenditures on education. All of these purchases lead to increased household revenue and / or improved household wellbeing.

Cash transfers could, however, also generate negative outcomes, such as increased tension within communities, increased intra-family tension, and increased expenditures on temptation goods (i.e. alcohol, tobacco, and gambling). Given findings in similar studies (Evans and Popova 2014) we do not expect to see an increase in temptation good spending.

For a visual representation of the overall program Theory of Change, **please see Appendix A**.

### Theory of Change: **Coffee Farming**

*The following channels are specific to coffee farmers.*

UCTs could lead to three types of positive coffee-related activities: (1) quality improving activities, (2) yield improving activities, and (3) improved processing activities. The quality improving activities consist of spending additional time on farming processes (pruning, stumping, mulching, weeding, harvesting, etc.), hiring additional labor to assist with farming practices, and purchasing additional agricultural inputs (fertilizer, pesticides, etc.). All of these activities will improve the quality of coffee cherries. The yield improving activities consist of the above, plus the purchasing of additional land and the purchasing of additional coffee trees / seeds. Finally, cash transfers could also lead farmers to invest more time in processing their coffee cherries. Improved processing activities will lead to higher priced coffee yields.

Although coffee farming is capital-intensive, it is also plausible that a cash transfer could cause households to shift investments to even more capital-intensive endeavors (such as off-farm businesses). Additionally, a cash transfer could decrease motivation to work. If either of these were the case, GiveDirectly’s cash transfers could lead to less coffee farming.

For a visual representation of the coffee Theory of Change and for more of GiveDirectly’s thinking on coffee farming, **please see Appendix B**.

# The Evaluation

*This section discusses GiveDirectly’s planned evaluation. It covers the evaluation design, causality assumptions, and unit of treatment.*

GiveDirectly will answer the following questions in this evaluation:[[1]](#footnote-1)

|  |  |
| --- | --- |
| **Question 1** | What is the impact of a UCT on households’ productivity and welfare in Iganga? GiveDirectly will focus on agricultural productivity and welfare measured through income, assets, and consumption. |
| **Question 2** | What is the impact of the UCTs on coffee farmers?[[2]](#footnote-2) Besides looking at the overall effects described above, GiveDirectly will also focus on the effect of cash transfers on coffee investment, productivity, and sales for coffee farmers. |

There are two arms to this study – treatment and control – with two subgroups in each arm: coffee and non-coffee farmers. GiveDirectly will be evaluating the impact of the cash transfers by comparing the treatment and control arms. GiveDirectly will also look at the impact of the intervention on coffee and non-coffee farmers separately.

This evaluation will establish causal impact through an RCT. After the completion of the initial census, GiveDirectly will randomly assign eligible households to the treatment or control groups. Randomization will happen at the household level – this is the **unit of treatment**. GiveDirectly chose to randomize at the household level to increase power and for logistical ease (e.g. GiveDirectly will need to survey fewer households to achieve the same level of power).

In the study region, some households are polygamous, under a number of different sharing arrangements. In polyamorous situations, GiveDirectly considers each wife to be a separate household, and therefore eligible for separate transfers. Therefore, for the purpose of randomization we considered each wife to constitute a separate household. At endline, we found that some polygamous households shared some assets among different wives. We will discuss how we deal with this situation in the “Corrections to the Analysis” section.

# Data Collection

*This section defines GiveDirectly’s unit of analysis, the data they will collect, the data collection timeline, and their sampling procedure.*

For all major questions in the evaluation *(see The Evaluation)*, GiveDirectly’s **unit of analysis** will be the household. This is the same as the unit of treatment.

Data is collected by GiveDirectly Field Officers using smartphones. GiveDirectly uses Segovia, a technology company, for all data management (i.e. controlling the survey instrument, accepting incoming data, and storing incoming data). After the initial census, IDinsight applied GiveDirectly’s eligibility criteria, with randomization, to the data and provided GiveDirectly with the list of households that are eligible to receive cash transfers. The survey was administered through ONA – an Open Data Kit (ODK) based survey software. The endline survey will be administered in early 2018.

### Types of Data

GiveDirectly collect data through enumerator-administered in-person surveys.[[3]](#footnote-3) During the baseline, their enumeration teams coupled basic research questions with GiveDirectly’s regularly administered census. This happened between June – August, 2016. For the endline, GiveDirectly will send out enumeration teams to administer a stand-alone survey.

The GiveDirectly team has taken the following actions to mitigate data quality risks: (1) the survey instrument underwent extensive piloting, (2) the GiveDirectly enumeration teams were provided with substantial training and field support, and (3) these data are regularly checked for consistency and unusual patterns.

### Gantt Chart

The following Gantt chart provides a sketch of upcoming work activities. This plan may be subject to modifications.

Figure 1: Work Plan (updated May 2018)



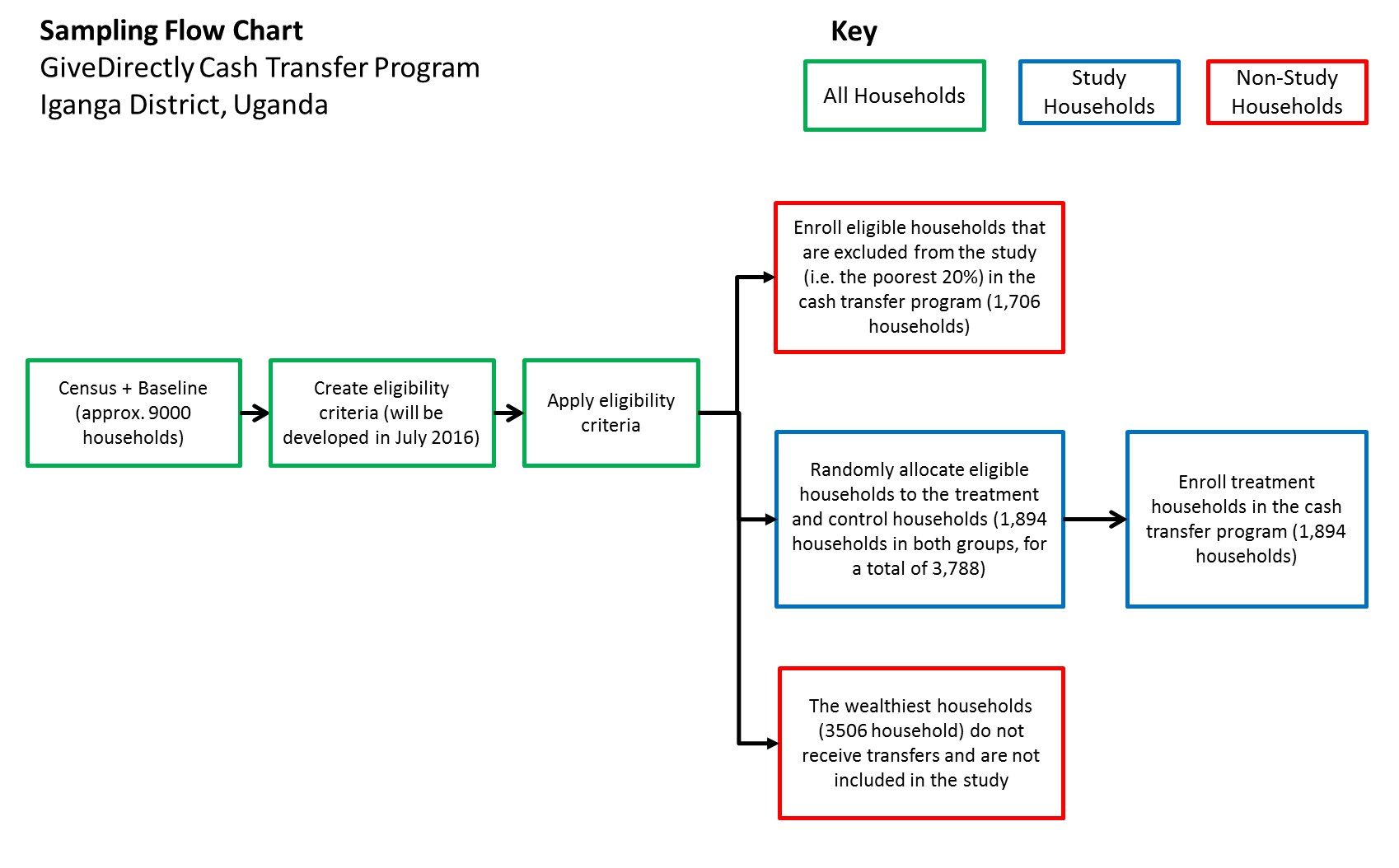
Sampling

GiveDirectly censuses all households in the regions where they work. They then develop criteria for determining households’ eligibility, before enrolling eligible households in the cash transfer program. For this project, GiveDirectly will follow the same procedure, with some slight adjustments. The following is GiveDirectly’s sampling strategy for this evaluation:

1. Census all households in the relevant regions.
2. Decide eligibility criteria.
3. Apply eligibility criteria.
4. Enroll the poorest eligible households, who are excluded from the study, in the cash transfer program.
5. Remove the wealthiest households from the program and study
6. Randomly allocate the study households, those who were not removed from the study in (3) and (4), into the treatment and control groups (stratification approach described below).
7. Enroll treatment households in the cash transfer program.

GiveDirectly will not include the poorest 20% of households in the study (i.e. these households won’t be assigned to the treatment or control arm).[[4]](#footnote-4) Instead, these households will be automatically eligible to receive the UCT. GiveDirectly will also exclude the wealthiest 36% of households.[[5]](#footnote-5) Thus, only households between the 20th and 64th percentiles will be included in the study. The poverty index has been created as part of the eligibility criteria.

Figure 2: Sampling Flow Chart

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**Sampling Frame**: All households within the relevant regions received the census questionnaire. All households that meet GiveDirectly’s eligibility criteria and fall within the poverty bounds of this research will be randomized into either the treatment or control group.

**Assignment Method**: Eligible households have been assigned to the treatment and control groups using matched pair randomization. Households were first grouped into coffee-growers and non-coffee producers (within the last year). Coffee growers were additionally grouped into “high production”, “medium production”, and “low production”, based on their tercile for the amount of coffee they sold during the most recent main coffee season. Non-coffee producers were divided in two groups: those that own coffee trees and those who don’t. Within each group, households were then sorted by the value of the targeting index, and matched with their nearest neighbor. Within each pair, one household was randomly assigned to treatment, and one to control.[[6]](#footnote-6) Randomization was conducted using STATA.

**Power:** We have a total of 3,788 households in the study, 1,894 in the treatment arm and 1,894 in the control arm. Of all the households in the study, 1,351 grew coffee the previous year (677 in the treatment arm and 674 control in the control arm). Assuming 80% power and a size (significance level) of .05, we have a minimum detectable effect size (MDES), in standard deviations of the outcome, of .09 for outcomes that apply to the entire sample. For outcomes that apply only to coffee farmers, we have a MDES of .16. Based on the results of previous studies such as Haushofer and Shapiro (2016), this is well within the range of expected effects. To compare effects of coffee farmers to non-coffee farmers, the MDES is .14. However, we expect differential effects between these two groups to be quite small, so we do not expect to be powered for this analysis.

# Analytical model

*This section covers econometric specifications and outcome variables.*

The primary research question of this evaluation is: what is the effect of receiving the UCTs provided by GiveDirectly for the outcomes of interest? The unit of analysis is the household.

There are two classes of outcome variables: those that apply to all households, and those that apply to only coffee farmers[[7]](#footnote-7). There are two main equations that GiveDirectly will estimate. The first equation is the main specification, used for outcomes that are relevant for both coffee farmers and non-coffee households:

(1)

Where is the outcome of interest for household *i,*  is a constant, is an indicator that takes a value of 1 if household *i* has been assigned to treatment, and is an idiosyncratic error term. is a dummy that takes the value of one if the farmer is a coffee farmer. *X* is a matrix of controls corresponding to the strata dummies and the target index[[8]](#footnote-8). In this equation is the treatment effect for non-coffee farmers, and is the treatment effect on non-coffee farmers. is the differential effect on coffee farmers vs non-farmers, but we do not consider this a primary outcome since we do not expect to have enough power to detect these differences. Standard errors will be corrected for heteroscedasticity using the Huber-White covariance matrix (STATA’s robust command).

Some outcomes (such as total coffee sold) only apply to coffee producers. For these outcomes, the following equation will be estimated.

(2)

Equation 2 estimates the overall effect of treatment on the outcome of interest, with being the treatment effect.

## Outcome Variables

In order to conduct effective inference, GiveDirectly will shrink the space of outcome variables to a handful of key outcomes and indices. All indices will be created according to the procedure described in Anderson (2008). The following outcomes will apply for all households:

* Total household consumption
* Total asset value
* Agricultural and Business Income
* Food security index[[9]](#footnote-9)

The following indicators will be used as outcomes for just coffee farmers:

* Coffee investment index
* Revenue from coffee sales

The following variables will encompass each index:

1. Total Household Consumption[[10]](#footnote-10):
   1. Food expenditure
   2. Value of own-produced food consumed
   3. Temptation good expenditure (tobacco, alcohol, and other intoxicants)
   4. Other frequent consumption (fuel, transport, entertainment, airtime, personal care, etc.)
   5. Infrequent Consumption (medical, education, assets, etc.)
2. Total estimated value of owned assets:
   1. Bicycle
   2. Motorcycle/scooter
   3. Car/truck
   4. Kerosene stove
   5. Radio/Casette player/CD player
   6. Sewing machine
   7. Kerosene Lantern
   8. Bed
   9. Mattress
   10. Bednet
   11. Fridge and/or Freezer
   12. Pots and Pans
   13. Tables
   14. Sofa pieces
   15. Chair
   16. Cupboards/dressers
   17. Clock or Watch
   18. Electric Iron
   19. Television
   20. Mobile Phone
   21. Car Battery
   22. Hoes
   23. Pangas
   24. Slashers
   25. Hand Cart
   26. Wheelbarrow
   27. Ox plow
   28. Solar panel
   29. Generator
   30. Livestock (chickens, goats, cattle, pigs, other)
   31. House
   32. Land
   33. Home improvements
   34. Plates
   35. Cleaning tools
   36. Roof is not thatched\*
   37. Walls are not earth/mud\*
   38. Floor is not earth/mud\*
   39. House has toilet or pit latrine\*

\*Outcomes with an asterisk will be studied but not included in the asset total as they are binary indicators.

For polygamous households in which an asset is reported as shared among the wives, each individual wife will be allocated (total value of asset/number of wives).

1. Monthly Agricultural and Business Income
   1. Total value of production of major crops, scaled to monthly figure[[11]](#footnote-11) (own-consumed)
   2. Total value of production of major crops, scaled to monthly figure (sold)
   3. Non-farm enterprise revenue (in the last 1 month)
2. Food Security Index (same as Haushofer and Shapiro 2014)
   1. Meals skipped (adults and children)
   2. Whole days without food (adults and children)
   3. Eat less preferred/cheaper foods
   4. Rely on help from others for food
   5. Purchase food on credit
   6. Hunt, gather wild food, harvest prematurely
   7. Beg because not enough food in the house
   8. All members eat two meals
   9. All members eat until content
   10. Number of times ate meat or fish
   11. Enough food in the house for tomorrow?
   12. Respondent slept hungry
   13. Respondent ate protein
   14. Proportion of household who ate protein
   15. Proportion of children who ate protein
3. Coffee Investment Index
   1. Number of Coffee Trees owned/Land dedicated to coffee
   2. Respondent stumped (rehabilitated) coffee trees
   3. Respondent pruned coffee trees
   4. Amount spent on hired labor for coffee
   5. Amount spent processing/transporting coffee
   6. Amount spent on other coffee inputs
   7. Percentage of cherries sold that were picked once ripe (percentage of cherries that were picked red as opposed to green)
   8. Coffee price per kilogram
4. Revenue from Coffee Sales

**Outcomes not included:** Studies on UCTs generally include a wider range of outcomes, as UCTs can have a wide range of effects. Due to budgetary restrictions of this study and its focus on coffee outcomes, we have a more limited set of outcomes. Specifically, we draw on the result of the similar study undertaken by Haushofer and Shapiro (2016), and have concentrated on outcomes in which there were significant effects. Specifically, we do not include outcomes akin to their ‘Health Index’ or ‘Education Index’. We also do not include the psychological outcomes included in this previous study, despite them showing significant effects.

We do not consider an aggregate measure of success across all of our outcomes. While it would have been possible to create an index out of all outcomes, we elect not to do so since the magnitude of any changes in such an index would be very difficult to interpret. Instead, we measure impact on a range of measures of general well-being and funder-led outcomes, leaving the reader to determine how to aggregate this result. We believe this is the correct approach, as different parties may find varying importance in the different outcomes. (For instance, BSZ has a particular interest in coffee outcomes, while other readers may not.)

In order to limit noise caused by variables with minimal variation, sub-indicators for which 95 percent of observations have the same value within the relevant sample will be removed from the indices. In the event that omission decisions result in the exclusion of all constituent variables for an indicator, the indicator will not be included. Also note that variables with monetary outcomes will be winsorized at the upper 1% tail to control the influence of outliers.

We also do not consider temptation goods as a separate outcome, due to overwhelming evidence that UCT programs do not cause an increase in temptation good expenditure (Evans and Popova, 2014).

# Limitations and Corrections to the Analysis

*This section covers potential limitations to the analysis.*

**Spillovers:** One major concern with the individual-level randomization that is the key to our identification is the possibility of spillovers. If effects of the transfer also effect people who in our control group, then our treatment estimates will be biased. This could happen through a number of channels: direct transfers, loans, increased demand for labor, etc. We believe this is not a major risk due to the results of Haushofer and Shapiro (2016), who showed no spillover effects in a very similar setting. Additionally, we will ask about intra-village transfers and asset sales on the follow-up survey in order to understand the magnitude of any spillovers.

**External Validity:** This study looks at how a UCT affects spending patterns in the Iganga region of Uganda. Spending reactions to a cash transfer are likely to be different in different contexts, however, we view this as a contribution to the large literature on UCTs being done worldwide. The effects of the UCT on coffee farming would arguably be applicable to other coffee farmers in similar situations to those in Uganda. In order to gain more perspective on external validity, we collect data to compute the Progress out of Poverty (PPI) index.[[12]](#footnote-12) PPI will allow us to calculate how the poverty level of our sample compares to that of households out of our sample, giving an indication as to where the results will generalize.

**Attrition:** As with any survey, it is likely that some households will not be able to be surveyed at endline, and will therefore drop out of the sample. Based on the similar Haushofer and Shapiro (2016) study, it is reasonable to expect attrition to be low and not correlated with treatment status. In this case, GiveDirectly will simply use the endline sample and assume that attrition is not biasing the results. In the unlikely case that attrition is large or correlated with treatment status, GiveDirectly will address this issue by constructing Lee bounds.

GiveDirectly has also kept track of the number of households that refuse to speak with their Field Officers. Approximately 8% of households refused to participate in the initial census.

**Non-response:** An additional potential limitation is respondent refusal to answer certain questions, leaving a lower sample size for specific regressions. To avoid this problem, GiveDirectly will properly train enumerators to complete the entire survey, which includes asking respondents to give an educated guess even if they aren’t sure of the answer to a question. Assuming that this happens in a small number of cases, GiveDirectly will proceed with the analysis for households that answered all questions. If it happens for a large number of cases, GiveDirectly will present results with different number of observations for each regression. In cases where there are scattered non-responses for minor components of primary outcomes (such as a specific consumption category), GiveDirectly may proceed with zero or mean imputation to allow the observation to be included in the regression. Preliminary estimates suggest this will require imputation in only around .018% of relevant survey entries.

**Polygamous or Combined Households**: In the study area, around 20% of households are polygamous, and these households have a number of different arrangements. Frequently, different wives act as completely different households, with very little overlap among other wives. However, various forms of sharing arrangements exist, in which the definition of a household can be murky. GiveDirectly considers each wife to be a potential recipient of a cash transfer, and therefore in polygamous households each wife was randomized individually. At endline, it was found that some wives who were randomized individually were part of the same household that shared meals, land, or assets. In some cases, these polygamous households contained both treatment and control women. Therefore, we decided to drop households in cases where (a) the polygamous household contained both a control respondent and another wife who was assigned to treatment or received a transfer[[13]](#footnote-13) and (b) the different wives shared agricultural land[[14]](#footnote-14) or had common meals. Respondents who are part of polygamous households that share agricultural land or have common meals are estimated to compose around 2.5% of our baseline sample.

Additionally, in some cases respondents that were separate in our baseline have ended up combining into a household with another respondent (or GiveDirectly recipient) due to marriage or other arrangements. In cases where this has happened and a control respondent is now sharing a household with someone who has been assigned treatment or received a transfer, we will drop all respondents in our sample that are part of this new household.

Taking into account all the above conditions, we estimate needing to drop around 1.5% of the total sample.

**Multiple Inferences:** As in any cash transfer program, the program could have an effect on a wide variety of outcomes. This creates a difficulty in conducting inference, as standard p-values become unreliable. As is standard in the literature, GiveDirectly takes two approaches to adjusting their analysis for multiple hypotheses.

First, GiveDirectly will decrease the amount of variables in the outcome space either by aggregation or grouping similar outcomes into indices, following the procedure proposed by Anderson (2008), and also used in the original Give Directly RCT (Haushofer and Shapiro, 2016). GiveDirectly will correct p-values across indices for the False Detection Rate (FDR).

Although grouping into indices and adjusting P-values for the FDR follows best practices for multiple inference, doing so could obstruct insights into the exact mechanisms at play. GiveDirectly will also present regressions for subcomponents of the variables that make up the outcome components, along with unadjusted p-values. While the statistical significance of these results will be more difficult to ascertain, they will provide clues to the exact mechanisms that result in movement in the primary indices.

# References

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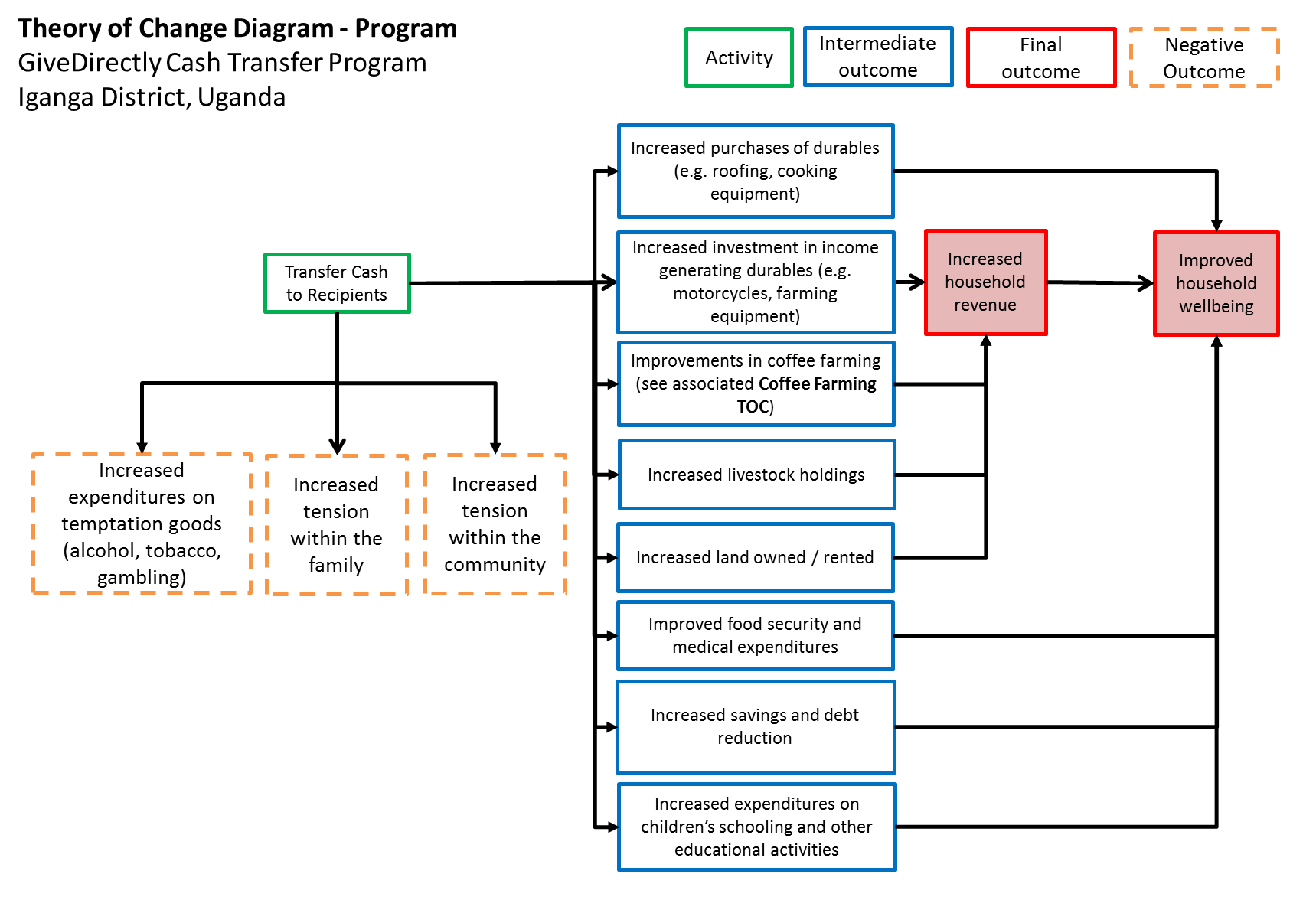
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# Appendix A: Program TOC

This TOC diagram was built from interviews conducted in the Iganga region of Uganda. All of the logical connections between an infusion of cash and outcomes were first mentioned by households and then codified by the GiveDirectly team. The GiveDirectly team has included the outcomes that were most frequently mentioned during interviews and that had inherent logic.

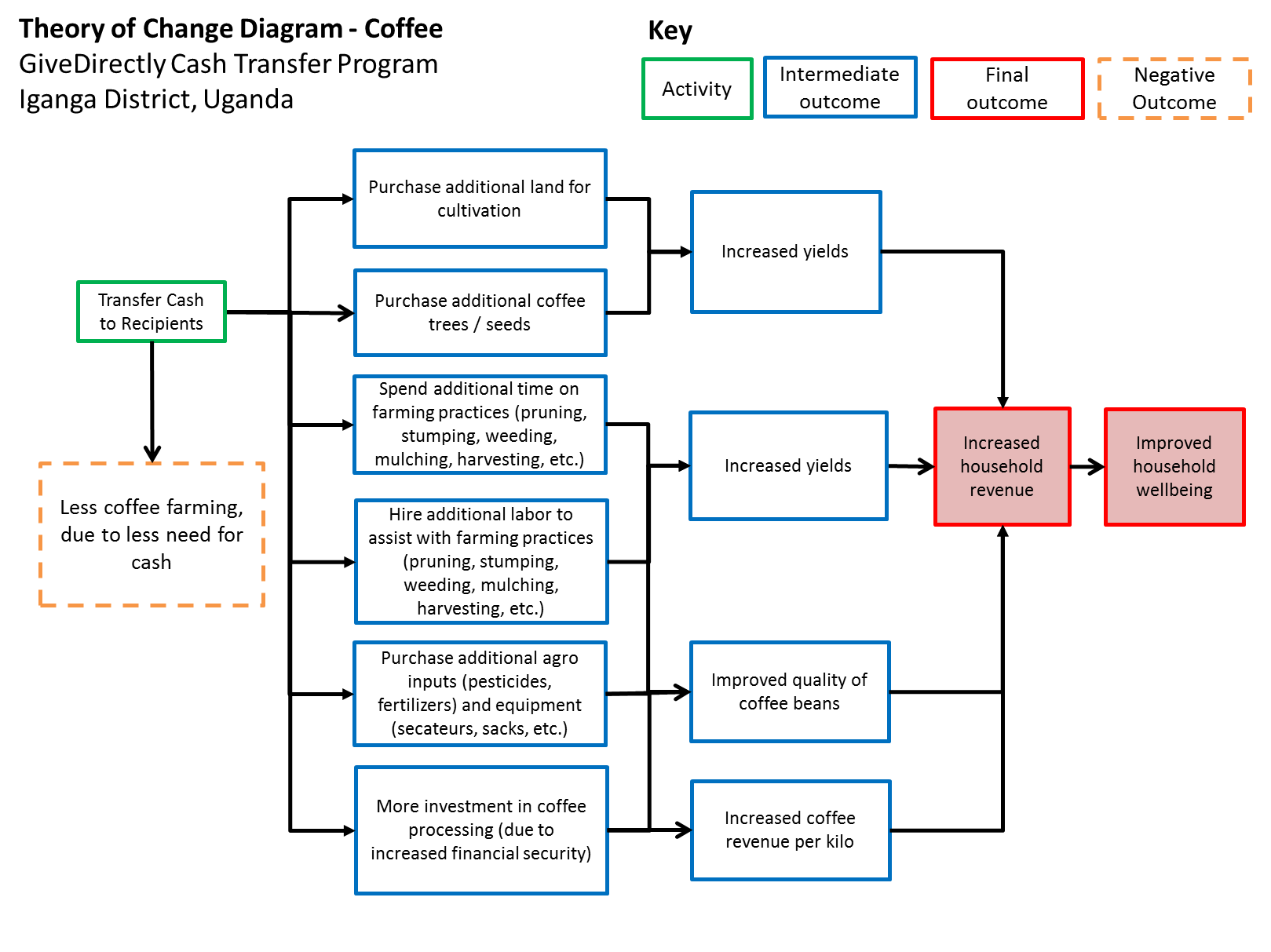
Figure 3: Program TOC



# Appendix B: Coffee TOC

This TOC diagram was built from interviews conducted in the Iganga region of Uganda. All of the logical connections between an infusion of cash and outcomes were first mentioned by coffee farmers and then codified by the GiveDirectly team. The GiveDirectly team has included the outcomes that were most frequently mentioned during interviews and that had inherent logic.

Figure 4: Coffee TOC



Below is an explanation of select parts of the coffee TOC diagram:

* Farmers expressed a desire to purchase more land to grow coffee. For many farmers, they are constrained by their limited land holdings.
* Because of the long growing time, landlords will generally disallow growing coffee on their land. As such, farmers are forced to buy land if they want to expand their coffee production.
* Stumping (cutting down the tree and allowing it to regrow – a form of rejuvenation) and pruning (cutting away unnecessary branches) **increase the size of the yield and improve the quality of coffee cherries.** Many farmers appear to understand the importance of these tasks, but they do not stump or prune out of a concern over an immediate loss in yields.
* From the interviews, GiveDirectly found that coffee farmers in Iganga process their coffee in one of three ways:
  1. The farmer picks the coffee and then promptly sells it (wet) to buyers that come directly to their home. This requires the least amount of work and produces the lowest priced cherries. GiveDirectly calls this Tier One.
  2. The farmer picks the coffee and dries it and then sells it to buyers that come directly to their home. This requires slightly more work than Tier One (approx. one extra week) and produces cherries that command the second highest price. GiveDirectly calls this Tier Two.
  3. The farmer picks the coffee and dries it and then takes it to a mill to remove the fruit from the bean. This requires the most work (of the common processing techniques found in Iganga) and these cherries command the highest prices. GiveDirectly calls this Tier Three.

Farmers that sell at the lower tiers (i.e. at Tier One or Two), will often claim that they need money immediately and are thus forced to speed up their processing of cherries. They argue that if they had enough money to meet their basic needs then they could spend more time processing their cherries and thus increase their revenue.

# Appendix C: The cost of the intervention

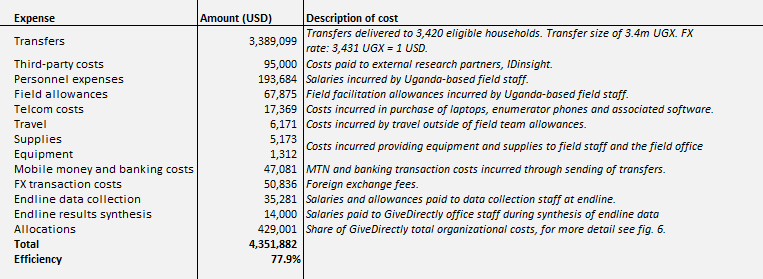
The impact evaluation will also include information about cost-effectiveness, to contextualize the results in terms of the cost of achieving them. Below, GiveDirectly provide an estimate for the total cost of the intervention. At the end of the program, GiveDirectly will provide details of the actual incurred costs.

***The program budget***

Below, we attach a breakdown of the expected costs of this intervention. These estimates cover both costs incurred directly by the campaign and the share of GiveDirectly organization-wide operational costs attributed to this program. We will also seek to distinguish: a) the costs that result from the intervention itself, b) the costs that are borne solely of the requirements of conducting a randomized controlled trial, and c) the anticipated efficiency if this program were to extend beyond a one-off intervention.

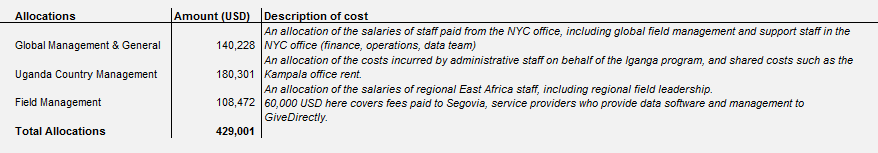
A breakdown of the expected costs incurred directly by the campaign, alongside the rationale, are below in *figure 5*. The allocation of the overall GiveDirectly organization-wide costs attributed to the campaign are shown in *figure 6*, alongside a description of each cost.

*Figure 5: Iganga program budget*



GiveDirectly calculate efficiency as the percentage of the total program budget that is given to recipients in the form of transfers. This is calculated with the total transfer size as the numerator, and the total program budget as the denominator. In this case, an efficiency of 77.9% means 77.9 cents of every donated dollar is delivered directly to a recipient in the form of a cash transfer.

*Figure 6: Iganga program’s allocation of overall organization-wide GiveDirectly budget*



Allocations at GiveDirectly are attributed following an *ex-transfers* approach, assigned according to a campaign’s operational costs (total budget, less transfers and allocations) as a proportion of organisation-wide operational costs.

***The estimated cost of the intervention***

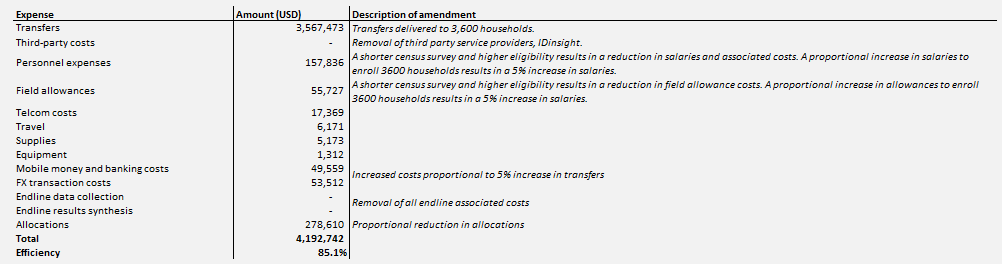
We have further examined the cost of this program in order to estimate the costs that are incurred by the intervention itself, and those that are incurred as a result of the measurement of the program – namely the cost of designing and implementing an RCT. The contributing factors in this estimate are:

1. The fees paid to third-party implementing partners
2. An estimate of the operational costs associated with:
   1. The additional survey length required to conduct a baseline, in addition to the usual GiveDirectly census
   2. The requirement to survey more households, in order to collect data amongst treatment and control groups for the study
   3. Decisions made to protect the integrity of the study that had a negative impact on the efficiency of the program
   4. The costs associated with collection and synthesis of data at endline
   5. The costs associated with senior management time in the design and delivery of the RCT
3. An estimated reduction in global allocations, resultant of reduced operational costs

The estimates are as follows:

1. We remove the 95,000 USD fee paid to external research partners, IDinsight.
   1. We remove the baseline component of the census survey, reducing the survey length such that the field team can increase their daily target from 12 to 20 surveys per day, matching current Uganda operations where no RCT is being carried out. This increases productivity by 67% at census, reducing the days conducting these surveys from 40 to 24. The estimated resultant saving is 22,722 USD, of which 12,878 USD relates to salaries and associated costs and 9,844 USD is field allowances.
   2. The sample requirements of the RCT (namely, surveying a treatment and control group), resulted in a large census of 8,580 households. With 3,600 households initially enrolled, the eligibility rate was around 42%. The eligibility rate, had GiveDirectly not conducted a randomization and instead enrolled all households within the treatment and control groups, would have been 64%. Without the requirements of an RCT, GiveDirectly would have enrolled 3,600 households at an eligibility rate of 64% and therefore conducted a census of 5,622 households. The associated saving in terms of salaries and field transport costs are estimated to be 6,659 USD and 5,091 USD respectively.
   3. A decision was made during enrolment to not replace any of the 3,600 households who were deemed ineligible during the latter stages of enrolment in the program. This decision was made purely on the grounds of maintaining research integrity, and reduced the total transfer budget from 3,567,473 USD to 3,389,099 USD. Returning the transfer size to its original, intended total would increase transfer sizes by 178,374 USD. This 5.3% increase in transfers would result in a proportional increase in costs associated with delivering more transfers, namely salaries, field transport, FX transaction costs and mobile money sending and withdrawal fees, as noted in figure 7.
   4. The removal of costs associated with endline data collection and data synthesis would result in a reduction of 49,281 USD.
   5. An estimate of Director-level engagement with the project to match current practice across the existing Uganda operations, removing the requirements created by the design and delivery of the RCT, results in a reduction in salaries and associated costs of 24,202 USD.
2. Allocations in the current budget are 80.4% of the operational costs, excluding transfers and the allocation itself. A reduction in operational costs would see a proportional fall in allocations from 429,001 USD to 278,610 USD.

*Figure 7: Estimated budget, excluding all costs associated with RCT.*



Based on these calculations, we project that the total operational cost of this program will be 962,783 USD, of which 625,269 USD is attributed to the intervention and 337,514 USD to the design, implementation and measurement of the RCT. An estimate of the true efficiency of the intervention, calculated as transfers as a percentage of total campaign costs, *excluding those associated exclusively with conducting the RCT*, is 85.1%.

***The estimated cost of the program operating at scale***

We make a final estimation of the cost of implementing this program at scale, rather than as a one-off intervention. To do so:

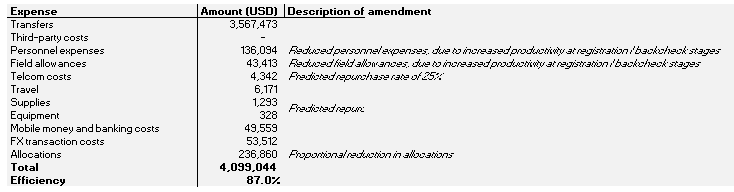
1. We remove the costs of the RCT, as above
2. We estimate a 25% annual re-purchase of field team equipment
3. We estimate that field teams will improve productivity to meet the standard of current Uganda core operations, improving efficiency at the ‘registration’ and ‘backcheck’ stages of enrolment by 50% (from 8 to 12 surveys per day). We believe that this improvement in productivity would result from:
   1. A reduction in the amount of data collected by surveyors at this stage
   2. A greater density of recipient households within each village, and therefore less time spent travelling between villages populated more sparsely with GiveDirectly recipients.

This improvement in productivity would reduce days spent conducting these stages from 60 to 40, and a commensurate reduction in salaries of field-based staff of 16,097 USD and field allowances of 12,314 USD. The reduction in overall project time would also result in a 5,645 USD reduction in salaries paid to senior managers.

1. We estimate that operational costs at scale, excluding transfers and allocations, would therefore fall to 294,712 USD. Maintaining allocations at 80.4% of operational costs, would see them fall to 236,860 USD.

According to these estimates, efficiency operating at scale in Iganga would be 87%, or 87 cents in every donated dollar. This efficiency can be compared to the efficiency of GiveDirectly’s existing Uganda operations, which recorded 86% efficiency in the 2015-2016 financial year.

*Figure 8: Estimated budget of the program if enacted at scale.*



We will track and measure these costs over the course of the intervention. At the end of the intervention, a final reconciliation of these costs will be published as an appendix to the final paper, alongside a table of the final budget. These costs will be backed by:

* The project’s financial report, pulled from *Intacct* budgeting software
* GiveDirectly’s regularly audited financial statements at the organisation-wide level

1. The survey instrument will also gather qualitative information on beneficiary reactions to the transfers, which will be used alongside the quantitative data to inform future studies and optimize program benefits. [↑](#footnote-ref-1)
2. Comparisons of coffee farmers and non-coffee farmers will be illustrative as statistical test will not be powered at conventional levels. [↑](#footnote-ref-2)
3. GiveDirectly used in-person open-ended interviews to inform program design and to lay the groundwork for their baseline. The GiveDirectly team interviewed approximately 40 households on agricultural practices, asset holdings, etc, during June 2016. [↑](#footnote-ref-3)
4. This is for ethical reasons. GiveDirectly does not want to exclude the poorest members of a community from immediately receiving a cash transfers. [↑](#footnote-ref-4)
5. This is for research reasons. GiveDirectly is interested in measuring the impact of their cash transfer program on relatively poorer households. [↑](#footnote-ref-5)
6. In the case of odd numbers of HHs in groups, we allow matching across the coffee production terciles. Remaining odd HHs were grouped together and repaired based only on their targeting index. [↑](#footnote-ref-6)
7. By default, we will define coffee farmers as those harvesting coffee at baseline during either of the previous two seasons (Sept-Dec 2016 or May-June 2016). However, there is a large group of farmers that self-identify as coffee farmers and have coffee trees but did not report harvesting at baseline. One primary reason for this is if they have trees that are too young to produce. If a large proportion of this group (greater than around 70%) reports harvesting coffee at endline, we will redefine the definition of coffee farmer to include this group. [↑](#footnote-ref-7)
8. Best-practice for paired randomization would involve including all pair dummies as control. Unfortunately, after randomization the pair information was lost in the dataset, and cannot be perfectly recreated due to ties in some of the stratification variables used to create the pairs. Therefore, for analysis we will recreate higher-level strata dummies using all variables used to make the original pairs apart from the targeting index. We will then include all these dummies plus the targeting index as control variables in the regression. [↑](#footnote-ref-8)
9. The food security index will be the same as in Hauhofer and Shapiro (2016). [↑](#footnote-ref-9)
10. In order to avoid capturing opposing effects, the consumption index will not include flow spending on durables, such as roof repair. These types of spending could go down as a result of buying new asset. [↑](#footnote-ref-10)
11. Our survey asks about harvest and sales from the most recent harvest season. Given that there are two harvest seasons for most crops in the regions, we convert to an approximate monthly figure by dividing by 6. [↑](#footnote-ref-11)
12. Information on PPI can be found here: http://www.progressoutofpoverty.org/country/uganda [↑](#footnote-ref-12)
13. Some households in the village received transfers even though they were not part of this study. [↑](#footnote-ref-13)
14. We consider land to be shared if the wives report having joint land ownership with other wives or share in agricultural inputs or outputs. There are some situations where wives do not share land with each other, but the husband has an own separate plot of land that is not attached to any wife. We do not consider this a shared land situation. [↑](#footnote-ref-14)