



Beneficiary Preferences Pilot Final Report

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ACROYNMS

BDM	Becker-DeGroot-Marshak
CDF	Constituency Development Fund
CEA	Cost-Effectiveness Analysis
CRA	Commission on Revenue Allocation
DSW	Dispensers for Safe Water
ITN	Insecticide-Treated Bed Net
KSH	Kenyan Shilling(s)
MP	Member of Parliament
OECD	Organization for Economic Cooperation and Development
SD	Standard Deviation
US	United States
USD	US Dollar(s)
VSL	Value of Statistical Life
WTA	Willingness to Accept
WTP	Willingness to Pay

EXECUTIVE SUMMARY

Background

GiveWell conducts in-depth research on charities to identify high impact giving opportunities. This requires comparisons of charities that target different outcomes, such as deaths averted or gains in household consumption. To facilitate standardization of these outcomes, GiveWell assigns them subjective numerical values. These numerical values, or ‘moral weights’, are currently provided by GiveWell staff based on existing evidence and internal thought experiments.¹

While moral weights values (i.e. relative values of different outcomes) are important in determining the benefits of different interventions, there is limited data on how potential beneficiaries trade off different outcomes.² Therefore, GiveWell has partnered with IDinsight to measure beneficiary preferences on interventions and outcomes associated with GiveWell’s top charities.

Pilot Overview

IDinsight piloted several methods in Kwale County, Kenya to determine which were most promising for measuring beneficiaries’ preferences in a low-income country context.³ The goal was to test the appropriateness and accuracy of these options with the following questions in mind:

- Which method for measuring beneficiary valuations of interventions and outcomes performs best in terms of implementation and respondent understanding?
- Are respondents comfortable with and capable of putting monetary values on certain outcomes?
- How varied are the responses and do they seem realistic?

Recommendations

As a result of the piloting exercise, IDinsight has the following recommendations:

- **Focus on the taking and giving framings of the stated preference method to measure respondent’s value of statistical life (VSL).**⁴ Both approaches showed promise as respondents understood what was being asked and were comfortable providing answers to the questions. In addition, these approaches yield values that can be integrated directly into GiveWell’s cost-effectiveness model.
- **Continue to test solutions to outstanding issues based on our field observations and techniques from the literature in order to produce usable results.** This initial pilot provided insight into which methods were the most promising. However, it also highlighted issues that may prevent respondents from giving their true valuations with these two approaches. We recommend continuing to test solutions to these issues in a second piloting exercise based on our field observations and techniques from the literature in order to produce usable results. This exercise would also rely on qualitative questions to interpret respondents’ understanding of the new questioning, as well as the rationale behind their answers.
- **The relationship between the valuations of different individuals could be useful to GiveWell and may be the easiest to measure accurately.** The relationship between the

¹ <https://www.givewell.org/how-we-work/our-criteria/cost-effectiveness/comparing-moral-weights>

² <https://blog.givewell.org/2017/12/22/uncertain-cost-effectiveness-analysis/#MoralWeights>, <https://www.givewell.org/how-we-work/our-criteria/cost-effectiveness/comparing-moral-weights>

³ The pilot took place between January 25 and February 28, 2018.

⁴ The taking framing asks respondents for their willingness to pay to avert deaths of 1) household members and 2) community members of various ages. The giving framing asks respondents whether they would provide medicine for an individual or cash transfers to a certain number of households in rural Kenya.

valuations of different individuals addresses a key area of interest for GiveWell and is likely the easiest to measure accurately.

Next Steps

IDinsight recommends a second piloting exercise to further refine the giving and taking framings of the stated preference value of statistical life methods. This pilot will be used to determine whether the methods can be used to generate evidence on absolute values, ratios of these absolute values, and rankings of the values of different lives that can inform GiveWell's moral weights.

We are confident that we can accurately capture the ranking of different lives with a few amendments. We will also test techniques to overcome the issues preventing accurate measurement of absolute values. If these amendments are successful, we could potentially collect data from this additional pilot that could be used by GiveWell staff to update their moral weights.

We will approach the pilot in two phases:

Phase 1 (~2 months) – Desk research: IDinsight will review existing literature and consult with experts to develop solutions to address outstanding issues. We will also explore tests that we can introduce so that we will know if these solutions have been successful. This phase will finish with a design document outlining the exact details of the proposed additional piloting exercise that will be shared with GiveWell.

Phase 2 (~4 months) – Data collection and analysis: IDinsight will implement the solutions identified in Phase 1 in an additional pilot within Kenya. The whole piloting exercise is anticipated to take around four months, with approximately four weeks of fieldwork planning, eight weeks of data collection, and four weeks of analysis and report writing.

This additional piloting exercise will enable us to finalize which approach offers the most promise for accurately measuring beneficiaries' preferences. At the end of this pilot, we expect to be able to make a judgment on whether any approach could inform GiveWell's decision making, and if suitable, recommend the design of a scale-up. We will also consider whether data from the additional pilot is sufficiently reliable to be used by GiveWell.

INTRODUCTION

GiveWell is a nonprofit which aims to find “outstanding giving opportunities” by determining “how much good a given program accomplishes (in terms of lives saved, and/or lives improved) per dollar spent”.⁵ Currently, there is limited data on the preferences of beneficiaries for GiveWell to consult when making its top charity recommendations. Therefore, GiveWell has engaged IDinsight to investigate the feasibility of measuring beneficiaries’ preferences and incorporating them into its cost-effectiveness analysis (CEA), which is one of the key considerations GiveWell uses when making its charity recommendations.⁶

This engagement aims to provide evidence to inform the subjective values included in the CEA model, called “moral weights”. The moral weights are parameters which mainly estimate the value of averting a death at different ages relative to an increase in consumption. These moral weights are currently developed through a combination of staff reviewing current evidence and using thought experiments.⁷ Furthermore, inputted values for moral weights have a large influence on the relative cost-effectiveness of charities.⁸

IDinsight designed this pilot to test methods to capture beneficiaries’ preferences with the aim of informing further piloting or a scaled-up data collection to update GiveWell’s decision making. All pilot activities were conducted with the following questions in mind:

- Which methods for measuring beneficiary valuations of interventions and outcomes perform best in terms of implementation and respondent understanding?
- Are respondents comfortable with and capable of putting monetary values on certain outcomes?
- How varied are the responses and do responses seem realistic?

LITERATURE REVIEW

GiveWell’s CEA model compares the benefits of interventions, such as lives saved, to the benefits of a cash transfer. This engagement focused on methods that measure the trade-off between receiving cash and saving life, which is the focus of value of statistical life (VSL) studies.

There is substantial literature on the measurement of VSL, although it is predominately based in high-income countries. These studies measure the trade-off between money and risk of death, usually using small risks. They often use a willingness-to-pay (WTP) approach that asks how much a respondent is willing to pay to reduce risk, or a willingness-to-accept (WTA) approach that studies the compensation needed to incur small increases in risk (Viscusi, 2012). VSL studies take two formats: revealed or stated preference.

Revealed Preference

Revealed preference methods are based on inferring people’s valuations of outcomes (in this case, mortality reductions) from observed choices and can be measured using different types of choices. These include increases in wages employees receive for greater risk of death in the workplace (Viscusi and Hersch; 2001), lower prices for consumers living in dangerous or polluted neighborhoods, and price premiums from safer vehicles (Viscusi, 2005). Revealed preference studies have the advantage of inferring values from real

⁵ <https://www.givewell.org/about>

⁶ The other considerations GiveWell uses when making top charities recommendations are room for more funding; transparency; and the organizational and staff quality of charities. For more information, see <https://www.givewell.org/how-we-work/criteria>

⁷ The moral weights consist of: 1) Value assigned to doubling consumption for one person for one year; 2) Value assigned to short-term health benefits from one year of deworming; 3) Value assigned to averting the death of an individual under 5; 4) Value assigned to averting the death of an individual 5 or older; 5) Value assigned to averting the death of a 3- to 59-month old child; 6) Value assigned to averting the death of a 6- to 59-month old child.

⁸ <https://blog.givewell.org/2017/12/22/uncertain-cost-effectiveness-analysis/#MoralWeights>

behavior, thus removing the risk of hypothetical bias.⁹ However, a limitation is that individuals in specific contexts may lack full information regarding mortality risks, and hence, their values of choices may not reflect their values of mortality reduction. Another limitation is the potential presence of selection bias, especially in wage studies as people self-select into jobs with different risk profiles (Viscusi, 2012).¹⁰

One common revealed preference approach is to measure VSL using the hedonic wage method. This approach examines for example choices for products and occupations associated with different mortality risks, and price or wage levels. It assumes that people trade off income and mortality risks when making such choices. Viscusi and Aldy (2003) employed this approach and found a median VSL of around 7-million USD, which aligns with studies they considered most reliable. Papers examining the US labor market using this approach found a VSL in the range of 5- to 12-million USD (Viscusi and Aldy, 2003).

Relatively few revealed preference studies have been conducted in lower income contexts, with only two that we found conducted in Sub-Saharan Africa. Leon and Miguel (2016) used a revealed preference approach to measure the value of statistical life for travelers to and from the international airport in Sierra Leone. Different travel options have different mortality risks and prices, which can be used to estimate the VSL. The authors found an average VSL for African travelers of 577,000 USD compared to 924,000 USD for Western travelers. Though this study was from Sierra Leone, it focused on a wealthier population among Africans, and therefore is not representative of those whom GiveWell's top charities typically serve. Kremer et al. (2011) studied the implied VSL by examining the use of improved water sources and its impact on child diarrhea in rural Kenya, a relevant context for GiveWell. They found a mean VSL of 769 USD for a child – much lower than the values in revealed preference studies in high income countries. However, it is unclear whether respondents in the study had enough information associating improved water sources with reduction in diarrhea and child mortality.

Stated Preference

Stated preference studies provide participants with hypothetical options of mortality reduction and ask for their associated valuations. This approach allows for the opportunity to provide participants with complete information about the scenario to which they are asked to respond. Additionally, it allows the study of risks for which there is no market, and of individuals who are not involved in activities which are exploitable in revealed preference studies. However, it is possible that stated preference studies are subject to hypothetical and social desirability biases and are limited by respondents' ability to understand small probabilities. These issues are further discussed below in the context of the pilot study. Typically, stated preference studies find lower values than revealed preference, which is counter to expectations given that stated preference studies typically try to inform respondents of actual risk (Viscusi, 2012). Kochi et al. (2006) found a mean VSL from 18 stated preference studies in high income countries to be 2.8-million USD, in 2000 US Dollars. Additionally, the OECD (2017) summarized all stated preference studies that estimate the adult VSL in environmental, health, and transport risk contexts. These studies found a range of values between 1.9- to 7-million USD in 2017 US Dollars.¹¹

Our Approach

While revealed preference approaches contain fewer potential biases than stated preference, they require either finding the relevant context and data or taking advantage of natural or randomized experiments, which are difficult to find in relevant settings. In addition, we are not aware of revealed preference methods

⁹ Hypothetical bias is when respondents do not give fully accurate answers as they are being asked about what they would do in a hypothetical situation rather than observing what they actually do (List and Gallet, 2001; Blumenschein et al, 1998).

¹⁰ Selection bias is where the selection of respondents is not randomized and, therefore, could be biased in some way.

¹¹ OECD, "Mortality Risk Valuation in Environment, Health and Transport Policies." Taken from: https://www.givewell.org/how-we-work/our-criteria/cost-effectiveness/comparing-moral-weights#footnote10_8ezn42t

which incorporate VSL for children, something we are particularly interested in capturing (Viscusi, 2012). Therefore, we predominantly focused on stated preference methods.¹²

SAMPLING METHODS

The goal of this pilot was to explore methods to measure preferences among potential beneficiaries of the programs that GiveWell currently recommends. Therefore, the pilot setting and participants were selected to represent potential beneficiaries of GiveWell's top charities.

Country Selection

GiveWell's recommended top charities work across different locations, predominately in Sub-Saharan Africa. The criteria for selecting the location of the pilot were:

- 1) A country that contains populations similar to the beneficiaries of GiveWell's recommended top charities.¹³ The selection criteria consisted of the following:
 - High rates of poverty
 - High prevalence of malaria
 - High prevalence of parasitic worms
- 2) A country with which IDinsight is familiar. Given the pilot's objectives of informing a second pilot or scaling up data collection rather than producing ready-to-use results, working in a location where IDinsight had prior data collection experience made logistical and financial sense.

Based on these two considerations, we conducted the pilot in Kenya.

County Selection within Kenya

Within Kenya, we first selected counties with high poverty rates. Within this set of counties, we selected counties that had high prevalence of malaria and parasitic worms. Given available data and prevalence levels, we narrowed down the options to Busia, Kwale, and Siaya. We were concerned that the frequency with which beneficiary surveys on aid interventions are carried out in both Busia and Siaya (located in western Kenya) may affect respondents' response to our survey. **Therefore, we conducted the piloting exercise in Kwale County.**¹⁴

Selection of Locations within the County

Sublocations within Kwale County were selected after removing those that were too remote or did not meet the selection criteria for the pilot.¹⁵ We originally started with six sublocations in each sub-county. As the pilot progressed, we adjusted the selection, replacing sublocations that were too urban with some that contained a larger proportion of rural poor. We felt that the preferences of respondents in more urban sublocations might be fundamentally different from those of a typical GiveWell top charity beneficiary.

¹² We attempted measuring VSL using revealed preference in our pilot by eliciting values of health interventions and backing out the implied VSL; however, this approach turned out unsuccessful as respondents anchored their responses on market prices of the interventions (see discussion on the Becker-DeGroot-Marshack auctions in Appendix D).

¹³ For this piloting exercise, we focused on cash transfers, deworming, and malaria interventions.

¹⁴ For more details about the criteria for each county, see in Table 9. More information about Kwale County can be found in Appendix F.

¹⁵ Sublocations are small geographic units consisting of several villages. While the sublocation is not an administrative area anymore, it is still commonly used as a geographical unit. We removed remote sublocations for logistical reasons as (i) we did not think answers should be different from the ones in less remote sublocations in our sample, and (ii) convenience sampling was acceptable for the purpose of testing methods as opposed to collecting representative data. The sampling list of sublocations was taken from the 2009 Census data.

Once we arrived in a sublocation, we selected respondents who:¹⁶

- Had a child under the age of five
- Were either the main caregiver or the household head
- Spoke Kiswahili
- Appeared to be among the poorer members of the community¹⁷

Figure 1 shows the distribution of the surveys across Matuga and Kinango Sub-Counties. The red dots represent the 166 health interviews and the blue dots the 21 consumption interviews.¹⁸

Figure 1: Map of all interviews conducted

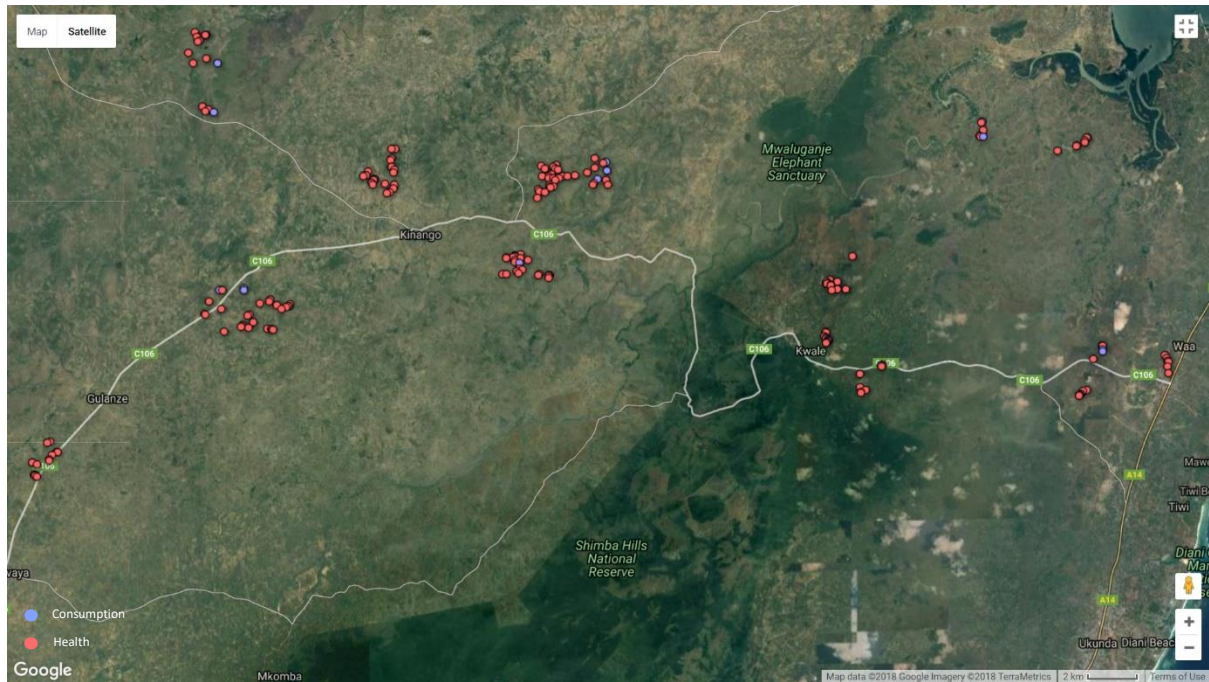


Table 1 shows the summary statistics for all respondents by sub-county. Respondents were primarily female (95 percent) with some education (66 percent have attended some level of schooling) and an average of four children in the household. There appeared to be a difference in background characteristics between areas that were more urban (e.g. Matuga), compared to those that were more rural (e.g. Kinango). Matuga had a higher proportion of respondents who had completed primary school and who were literate, although the sample size was small in Matuga.

¹⁶ This applied to both the individual and group exercises. However, for the group exercises we relied on the traditional chief to mobilize respondents.

¹⁷ To make this assessment, we visually screened potential respondents living conditions, paying particular attention to their housing conditions (i.e., did the house have a thatched roof).

¹⁸ “Health interviews” refers to the survey module asking about values for health outcomes and interventions. This is the main survey we conducted in this pilot, though we also conducted a small number of consumption surveys and lottery exercises (“consumption interviews”) in each village we visited.

Table 1: Summary Statistics

	All N = 187		Matuga N = 35		Kinango N = 152	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Age	29.52	(8.26)	29.86	(7.81)	29.44	(8.39)
Number of adults in household	2.65	(1.24)	2.91	(1.36)	2.59	(1.21)
Number of children in household	4.28	(2.22)	4.06	(2.21)	4.34	(2.23)
Age of spouse ¹⁹	27.31	(37.24)	31.68	(29.15)	26.24	(39.02)
Age of youngest child	1.71	(1.37)	1.94	(1.45)	1.65	(1.34)
	N	(%)	N	(%)	N	(%)
Males (%)	9	(4.81%)	1	(2.86%)	8	(5.26%)
Never attended school (%)	63	(33.69%)	8	(22.86%)	55	(36.18%)
Completed primary education (%)	10	(5.35%)	5	(14.29%)	5	(3.29%)
Illiterate in Kiswahili (%)	92	(49.20%)	9	(25.71%)	83	(54.61%)
Illiterate in English (%)	133	(71.12%)	16	(45.71%)	117	(76.97%)

METHODOLOGICAL OVERVIEW

The pilot experimented with several methods to measure beneficiary preferences with the goals of identifying the most promising ones and better understanding the challenges of implementing such approaches in a low-income country context. The methods were adapted from existing approaches found in the literature. Many of the piloted methods focused on capturing how respondents value outcomes. This is preferable to measuring how they value interventions because:

1. Outcome values can be directly entered into the cost-effectiveness model.
2. Outcome values could be used for evaluating future top charities that use different interventions to achieve the same outcomes (e.g. saving lives).

However, given the complexity of capturing respondents' preferences for outcomes, we also included approaches that captured preferences for interventions associated with top charities. The methods were refined or dropped throughout the pilot based on feedback from both the enumerators and respondents.

A summary of the methods can be seen in Table 2. The objective from each approach can be seen in bold in the description column.

¹⁹ Not every respondent had a spouse. For all locations, we had 127 answers for the age of the spouse (25 in Matuga and 102 in Kinango).

Table 2: Summary of Methods Piloted

Method	What is measured	Description
Becker-DeGroot-Marshack Auction for ITNs and deworming pills	Values of interventions ²⁰	Captures how much respondents value each intervention.
Value of Statistical Life (Stated Preference)	Values of outcomes	Uses several framing approaches to capture how respondents value different lives using hypothetical questions.
Person Trade-Off	Values of outcomes	Directly tries to measure how respondents compare different lives.
Willingness to Pay to Avoid Malaria Symptoms	Values of outcomes	Measures how respondents value avoiding the short-term health consequences of malaria.
Ranking of Development Policy Goals	Values of outcomes	Collects ordinal preferences across a range of relevant policy goals.
Lottery	Values of outcomes and interventions	Compares respondents' preferences for a smaller cash transfer with a larger amount with uncertainty.

We also conducted a consumption survey with three respondents in each sublocation to collect information on the consumption levels of respondents. The purpose of this was to compare the poverty level of our respondents and the beneficiaries of GiveDirectly, one of GiveWell's top charities.

RECOMMENDATIONS

The piloting exercise provided insights into which methods are the most promising for measuring beneficiaries' preferences in a GiveWell-relevant context. It also provided additional insight into respondents' thought processes when engaging with each method. This section details our recommendations resulting from this piloting exercise.

Recommendation 1: Focus on the taking and giving framings of the stated preference method to measure respondent's value of statistical life

The stated preferences VSL framings are the most promising approaches for two reasons:

1. They yield evidence that can directly inform GiveWell's CEA model.
2. The pilot demonstrated that respondents appeared to understand what was being asked and were comfortable answering these questions.

The other methods that were found to be inappropriate or infeasible are described in Appendix D.

Taking Framing

The taking framing approach elicited respondents' values of their own and family members' lives by asking how much they would be willing to pay for a medicine that cures an individual of a hypothetical disease with a given mortality rate. Respondents were asked about willingness to pay to cure 1) themselves; 2) their own child under five; 3) their own child if they were twelve; and 4) their spouse.²¹

Initially, we asked these questions using different probabilities of mortality (1 percent, 50 percent or 100 percent). It became apparent that respondents struggled to understand small probabilities.²² Since the goal of the pilot was to explore respondents' general understanding of the question and willingness to respond,

²⁰ We directly measure values of interventions in this approach. However, we also hoped to back out respondents' values of the associated outcomes using a revealed preference approach, by eliciting their beliefs of the effect of the interventions on health outcomes and giving them information on this.

²¹ The ordering of these questions was randomized for each respondent.

²² This is discussed in more detail below.

we decided to narrow down to one probability of mortality which was the easiest to understand: 100 percent. All results reported in this document refer to respondents' answers to a 100 percent mortality rate.

In the hypothetical scenario, we also explained to respondents that there was a lender willing to lend to the respondent as much as they wanted to borrow that the respondent could pay back over their lifetime.²³ When a respondent gave a value, enumerators probed to ensure this was truly the maximum value.

The exact wording of the question was as follows:

Imagine a disease affecting [Person in question].²⁴ Everyone with the disease will die.²⁵ Imagine [Person in question] has/have the disease. How much would you be willing to pay for a drug that completely cures the disease? Imagine you could borrow as much as you want from a lender, but you have to repay the borrowed amount over future years. (ENUMERATOR: Probe: If the treatment cost is higher than ___ (the amount they just stated), say, 'if it is ___ KSH (something higher), would you pay for the treatment? Imagine you can borrow without a limit from a lender and repay over your lifetime.' Go up to a value where they say no, and then lower down bit by bit until you hit their threshold where for any treatment cost above that, even if they can borrow without limit, they would not want to pay for treatment.)

The advantage of this method was that it aimed to capture the respondent's preferences which are of direct interest to GiveWell.²⁶ However, we anticipated that even with the additional information about the lender, an individual's response could be affected by their perceived liquidity constraint, placing an artificial upper bound on the values of statistical life they provide. Therefore, we also asked each respondent the taking framing using a community leader's perspective, which asked the respondent to imagine they were the village chairperson.²⁷ The exact wording of this approach was as follows:

Imagine a disease affecting [Person in question]²⁸. Everyone with the disease will die.²⁹ Imagine [Person in question] has/have the disease. Imagine you are the village chairman and are responsible for deciding the maximum amount of budget to be spent on paying for a drug that completely cures the disease when a child/ adult in the community contracts the disease. How much should this budget be? Imagine you could borrow on behalf of the community as much as you want from a lender but it has to be repaid over future years. (ENUMERATOR: Probe: If the treatment cost is higher than ___ (the amount they just stated), say it is ___ KSH (something higher), would you pay for the treatment? Imagine your community can borrow without a limit from a lender and repay over your lifetime. Go up to a value where they say no, and then lower down bit by bit until you hit their threshold where for any treatment cost above that, even if they can borrow without limit they would not want to pay for treatment.)

²³ See Appendix F for contextual information about lenders in rural Kenya.

²⁴ This refers to the respondent's own life, her/his own child under five, their own child if the child was twelve, and their spouse.

²⁵ We also initially asked with a mortality rate of one and 50 percent.

²⁶ In this report, "preferences" refer to what people would choose for themselves (or their family members), while "moral views" refers to what people think should be done (including to those unrelated to them).

²⁷ More information on the context in Kenya regarding community budgetary decisions can be found in Appendix F

²⁸ This refers to a 1-, 12-, 30- and 60-year-old individual in the respondent's community.

²⁹ This was also initially asked with a mortality rate of one percent.

We included the community leader's taking framing because of three potential advantages:

- 1) We expected it to loosen individuals' liquidity constraint since respondents were asked to spend the community budget rather than their own money.³⁰ As with the previous framing, we emphasized that there was a lender that could lend money to the community.³¹
- 2) The familial emotion could be removed by asking about an unspecified community member instead of the respondents' own life or family.
- 3) We could get a better gauge of how respondents valued different aged lives as we asked about community members of specific ages (a 1-, 12-, 30- and 60-year-old).

The main disadvantage compared to the questions about the respondent's own household is that this approach arguably captures the respondents' moral views rather than their preferences regarding their life and family. This method is also less tested within the literature.

Giving Framing

The giving framing was designed to remove the concern of the liquidity constraint. It was a similar approach to the taking framing but referred to a hypothetical donor who was providing either medicine or cash as opposed to the respondent having to pay with her/his own money.³²

Respondents were told that a donor was trying to decide between giving a Kenyan individual who has a disease with a 100 percent mortality rate a medicine that would cure them, or giving a cash transfer of 1,000 USD to a number of extremely poor Kenyan households.³³ The question was repeated with increasing numbers of households receiving the cash transfer until either the option of cash transfers was selected or we reached the maximum number of households allowed, which was set at 10,000.³⁴ Prior to asking this question, we asked respondents about the potential benefits from a 1,000 USD cash transfer to give them a chance to think about the impact of receiving the transfer.

This approach had the advantage that it could remove the liquidity constraint associated with the taking framing, and it was possibly easier for respondents to understand than the taking framing questions. It also provided a comparison across different aged individuals. The exact wording of the giving framing for the cash transfer to one household was:

"Now I am going to ask you a hypothetical question. Suppose a donor is choosing between two options: buying a medicine that costs 100,000 KSH which can be used to save the life of a Kenyan 1-/12-/30-/60-year-old who

³⁰ It should be noted that funding decisions follow two streams in Kenya: one through county governments and one through the national government. While there is no individual budget for the village, funding decisions are made at the ward level by different committees. We looked at whether there was any correlation between the average consumption level in the sublocation and the average values for the community framing to further investigate whether there might be some correlation between richer communities and the community VSL answers. We did not find a correlation between the two.

³¹ Enumerators also specified that the community as a whole would be responsible for any borrowing, as a few respondents were under the impression that they would individually be responsible for repayment. We found that respondents gave lower values in the community leader framing than in the one with their own household. This could be driven by a tighter (perceived) liquidity constraints in the former case, or lower intrinsic values of the lives of community members compared to household members. See Table 3 for more details.

³² The taking framing that used a community leader's perspective also attempted to remove the respondent's liquidity constraint. However, this may still have been vulnerable to a perceived community liquidity constraint, whereas a donor would not have this constraint. The giving framing initially asked about saving the respondent's own life and her/his own child under 5, as well as an adult and child under 5 in the community, and asked the respondent how large a cash transfer to themselves would need to be for them to accept the cash over the medicine. However, respondents frequently refused to take any value of cash, especially for their own life and their own child's life (nine out of 18 (50 percent) respondents refused, with a common reason being they did not want to risk the life in question).

³³ The question was asked in Kenyan shillings.

³⁴ The reason for limiting the number of households to 10,000 was that this represents 10-million USD, which is on the higher end of the VSL found in studies conducted in the US, as shown in the Conceptual Framework section.

would otherwise die from a disease, and giving 100,000 KSH each to 1 extremely poor Kenyan family for them to improve their lives. Which one do you think the donor should choose?”

To explore whether there was an upper bound for the respondents who always accepted the medicine, we added a question toward the end of the pilot to find out whether respondents would ever choose the cash transfers. Of the 16 respondents who always chose the medicine for some age group and were asked this question, only one was willing to provide a number of households that would need to receive the cash transfer.³⁵ This suggests that most respondents who always chose the medicine may have the view that one should always save a life rather than giving cash transfers to the poor.

Like the taking framing with unspecified community members, the disadvantage of this framing is that it likely captures respondents’ moral views. However, we decided to explore this framing in case respondents found this approach easier to understand and the information this approach provides could be informative to GiveWell staff and donors when considering their own moral weights.

Differences in Results Across Approaches

The difference between the mean values in the two taking framings can be seen in Table 3. Mean values are higher for the respondents’ own household members in comparison to the community members. This could be for several reasons:

- The community member approach asks respondents to imagine they were the village chairperson. This could either increase or decrease the maximum amount the respondent believed they could borrow compared to the framing with their own household. This could then lead to lower or higher values for the community members.
- Asking from the perspective of the community leader could also introduce a greater opportunity cost, as the head of the community is responsible for many different things. This could lead to lower values for community members.
- Asking about community members removes any emotion associated with providing a value for a family member.
- The difference could be driven by the fact that the household member framing captures the respondents’ own preferences, while the community member approach captures respondents’ moral views.

Table 3: Values from the Taking Framing³⁶

	Individual perspective		Community perspective	
	Mean (USD)	SD (USD)	Mean (USD)	SD (USD)
Under five child	3,757	6,957	1,659	2,012
12-year-old child	4,108	6,765	1,962	2,325
~30-year-old (own life)	2,637	3,998	1,546	1,895
~30-year-old (spouse’s life)	2,161	3,039		
60-year-old	N/A	N/A	777	2,012

³⁵ The respondent’s answer was 15,000 households for a 12-year-old’s life.

³⁶ Excludes the 95th percentile and above.

Table 4 compares the median values from the taking framing with community members, and the giving framing.³⁷ There are large differences between these values, with the giving framing providing much higher values for the 1-, 12-, and 30-year-old. This could be due to a few reasons:

- Respondents were asked only for a value of statistical life in the taking framing, while in the giving framing they were able to always choose the medicine. This framing may have made them more likely to always accept the medicine, leading to higher values of lives.
- The liquidity constraint was not an issue in the giving framing as we asked about what a donor should do. In the taking framing, the respondent could be bound by a liquidity constraint in relation to the maximum community budget.

Table 4: Value Life from Taking versus Giving Framing

Life	Median Value – Taking (USD)	Median Value of Switching Points - Giving (USD) ³⁸
1-Year-Old	1,000	10,000,000
12-Year-Old	1,000	10,000,000
30-Year-Old	950	10,000,000
60-Year-Old	500	1,000

Recommendation 2: Continue to test solutions to outstanding issues based on our field observations and techniques from the literature in order to produce usable results.

This pilot provided insight into which method is the most promising. However, it also highlighted issues which likely prevented us from accurately measuring respondents' preferences with this method. We recommend continuing to test solutions to these issues to further refine the taking and giving framing. Table 5 summarizes the issues and potential solutions³⁹. Each issue is discussed separately in the following section.

³⁷ Table 4 uses median values as we cannot estimate means using the giving framing: we looked at the switching points from providing the medicine to cash transfers, and hence can only derive bounds on values. We compare the taking framing with community members with the giving framing because they both ask about the same types of individuals (unspecified, of various ages).

³⁸ These are the medians of the lower bounds of values.

³⁹ The list of possible solutions would be further refined prior to an additional piloting exercise.

Table 5: Issues with the VSL Questioning

Remaining Issue	Description	Implication	Possible Solutions
Liquidity Constraint	The value the respondent might give could be constrained by the amount of liquid assets available to the respondent based on imperfect debt markets.	Answers could be upper-bounded, and respondents who conceptualize an imperfect debt market will possibly have answers bounded by the liquidity constraint.	<ul style="list-style-type: none"> - Use small probabilities - Explain likely lifetime income to respondents alongside possible borrowing options with perfect functioning debt markets
Conceptualizing Large Numbers	Respondents may be unable to conceptualize large values, such as large amounts of money, due to a lack of personal experience with such values.	Answers will be upper-bounded, with respondents that cannot conceptualize larger numbers giving values lower than their true valuation.	<ul style="list-style-type: none"> - Use small probabilities - Discuss potential lifetime income beforehand with the objective of increasing the maximum amount they can conceptualize
Conceptualizing Small Probabilities	Respondents may not understand small probabilities.	It will not be clear whether respondents understand probabilities in the same way, and therefore, their answers may not be comparable.	<ul style="list-style-type: none"> - Use a familiar example - Use tests to determine whether respondents understand. - Incorporate visual aids and training
Hypothetical Bias	Given that questions are purely hypothetical, respondents may not provide answers that reflect their true preferences.	Answers may not accurately reflect respondents' valuations.	<ul style="list-style-type: none"> - Ask about preference certainty and restrict the sample to those that are certain
Social Desirability Bias	Respondents may provide answers that they believe the enumerators wants to hear.	Answers may not accurately reflect respondents valuations.	<ul style="list-style-type: none"> - Continue to use the giving framing or taking framing asking about what others would do

Liquidity Constraint

A major issue we encountered when asking about the VSL was a perceived liquidity constraint, which meant that respondents' answers were bounded by a maximum amount they could imagine borrowing, given imperfect debt markets. This is an issue if respondents' true valuation of life falls above this maximum amount.

We identified this as a possible issue prior to the start of the pilot. Therefore, the framing of the question explicitly mentioned that there was a lender willing to lend the respondents as much money as they wished, and this would be paid back over the duration of their lifetime. However, it is still possible that responses could have been bounded by respondents' perceived liquidity constraint if they believed it would not be possible to borrow the money to pay up to their maximum amount. Given the lack of formal lenders in the study area and the relatively small amounts they typically lend, it is possible that the mentioning of a lender does not fully remove the liquidity constraint. These common lenders are unlikely to fully represent a perfect functioning debt market. This may be true for the piloting exercise as we saw relatively low valuations from respondents in the taking framing questions. This can be seen in Table 3.

IDinsight has several initial ideas in order to overcome the liquidity constraint:

- Use lower probabilities of mortality to lower the amount of money respondents need to provide in their answer to remove a given risk.
- Discuss with the respondent their likely lifetime income prior to asking questions about their valuation. Respondents may underestimate how much they will earn over their lifetime; when respondents understand their potential lifetime income, they may realize they are able to borrow a higher amount. Then discuss an amount that they could realistically borrow if they faced a perfect debt market. This would give a total amount they could realistically access, potentially removing the liquidity constraint imposed by the imperfect debt markets.
- Modify the questions so that respondents are asked to provide values which they will pay off over their lifetime rather than asking respondents to provide values that must be made as a one-off payment.
- Ask respondents if they truly value two lives an equal amount in the instance they provide identical values for each. This will help test if respondents have a ceiling value, which could be due to a liquidity constraint.

Conceptualizing Large Numbers

Respondents also may have struggled to conceptualize large values or numbers. This was indicated by the fact that respondents were visually surprised at the sum of money they would potentially earn across the rest of their lifetime.⁴⁰ Likewise, respondents rarely come across these large numbers in their day to day lives and therefore might have low familiarity with these large numbers. This issue may also have led respondents to give lower values than what is typically found in the VSL studies in the literature, as shown above in the conceptual framework.

The possible solutions to this approach are identical to those for the liquidity constraint issue: using lower probabilities of mortality; discussing potential lifetime income and borrowing options; and spreading out repayments over the respondents' lifetime. We will also ask respondents if they truly value two lives an equal amount in the instance they provide identical values for each.

Conceptualizing Small Probabilities

Respondents also struggled to understand small probabilities, a common challenge in the VSL literature. Carson et al. (2001) suggest that respondents may struggle to understand small probabilities in the context of contingent valuation methods. Additionally, respondents tend to overestimate large risks and underestimate small risks (Bosworth et al. 2017). In the pilot, issues conceptualizing small probabilities were apparent when respondents reasoned that they would not be the one in 100 who would die because they were typically lucky, and vice versa. However, the one percent probability is identical, regardless of to whom it is asked. Therefore, we felt that respondents were interpreting this in different ways.

There are several possible ways to address this:

- Use visual aids or games to help respondents understand small probabilities. For example, this could involve a spinning wheel with different colored sections representing different probabilities, a technique used by IDinsight in other projects. Similarly, Hoffman et al. (2012) used a grid with colored squares to represent probabilities. In either case, these could be used to confirm respondents' understanding of probability.
- Use examples with which respondents are more familiar. This may provide additional context to the respondent to help them internalize the probabilities. For instance, use events of which the respondent is aware that occur with a similar probability. Hoffman et al (2012) also used this approach through using real life events such as a Mongolian TV show.

⁴⁰ We calculated the lifetime income for respondents by asking them for their yearly income and multiplying this by the number of years of productive life they felt they had left. However, this was not explicitly done with reference to the value of statistical life questioning.

- After asking respondents about their value of statistical life answers, ask simple probability questions to gauge respondents' understanding. The analysis could then be restricted to those who demonstrated understanding. This approach has been conducted in the literature (Gaurav & Singh, 2012).

Hypothetical Bias

The stated preference nature of the VSL questions makes them vulnerable to hypothetical bias. Hypothetical bias occurs when respondents do not provide answers which are fully accurate, given the hypothetical nature of the questioning. This can be driven by preference uncertainty on the part of the respondent (List and Gallet, 2001; Blumenschein et al, 1998).

One possible way to overcome this is to:

- Ask respondents how certain they are regarding their preferences or answers, and either only keep those answers from respondents who are relatively certain or attempt to recode answers that are uncertain (Blumenschein et al., 2008).

Social Desirability Bias

Finally, the taking and giving framings are vulnerable to social desirability bias, whereby respondents give answers that they believe enumerators would want to hear. Social desirability bias can also refer to the discomfort respondents may have in revealing their true preferences. The VSL literature offers potential solutions to overcome this bias:

- Use the framing of asking respondents what others would do if they were a donor or the village elder. This was done by Norwood & Lusk (2011) who asked questions about what respondents believed others would do to remove the social desirability bias.

There are several promising solutions that we can use to try to overcome the issues experienced in the first pilot. Therefore, **we recommend conducting a second piloting exercise to further improve the most promising methods**, with the objective of refining these approaches to produce the most robust results possible.

Recommendation 3: The relationship between the valuations of different individuals could be useful to GiveWell and may be the easiest to measure accurately

Two of the moral weights used in the CEA model are the values of averting the deaths of an individual under five and an individual over five. These two values are then compared to one another, giving the relative value of the two lives. Therefore, it is of particular interest to collect the valuation for these different aged lives. The results from the giving and taking framings can be used to update the CEA model in three possible ways:

- **Absolute values** – The estimated values of the different lives can be directly used as inputs for moral weights of the CEA: these values could be entered as a separate column (“Beneficiaries”) in the model or used by staff to update their own values. The absolute values from the piloting study using the taking framing for respondents’ own household can be seen in Table 3.⁴¹ It should be noted that given the small sample size, these results are only indicative of the possible magnitude.
- **Ratios of the value of different aged lives** – The ratios of the value of different lives can be used to compare how respondents value different aged individuals. These can be used to update staff values for moral weights. Staff could replicate these ratios in their moral weights values or use this information as an additional source when determining their own values. This approach does not

⁴¹ It should be noted that with the questions used in this pilot, respondents valued life in terms of income and not consumption.

necessarily require the absolute values to be correct. The ratios can be seen in Table 11 and Table 12 in Appendix C.

- **Ranking of different aged lives** – The final option is to use the ranking of the different aged individuals to update staff values within their inputs into the CEA. This ranking could be either the average values across all respondents, or the proportion of respondents whose preferences align with a certain ranking.

We are most confident in being able to measure beneficiaries’ ranking of different lives, as this has the fewest challenges to address. While rankings cannot be directly entered into the CEA model, GiveWell staff can still consider them when determining their moral weights. The issues listed above have different implications for the three approaches to be integrated into the model. This is shown in Table 6 below.

Table 6: Remaining Issues and Different Outcomes

Remaining Issue	Issue for:		
	Absolute Values	Ratios	Ranking
Liquidity Constraint	X	X	
Conceptualizing Large Numbers	X	X	
Conceptualizing Small Probabilities	X		
Hypothetical Bias	X	X	
Social Desirability Bias	X	X	X

Accurately measuring absolute values is vulnerable to all of the issues mentioned in Table 6. Ratios are less vulnerable to the issue of small probabilities. This is due to the fact that the ratios would still be correct if we ask a respondent about different lives using the same small probability as we believe respondents would interpret these small probabilities the same across the different lives. Finally, focusing on rankings is only vulnerable to the social desirability bias. For example, a respondent may feel that the enumerator would want to hear that children are valued higher than adults, but their true preference would be to value adults greater. In this case, the ranking of the lives would not reflect their true preferences.

Better understanding beneficiaries’ ranking of lives of different age groups can qualitatively influence GiveWell’s moral weights. GiveWell staff mostly value individuals over five higher than those under five.⁴² However, there is an indication from the piloting exercise that a majority of respondents displayed the opposite preference, ranking children under five above adults, both within their household and within community members.

Table 7 below shows that 57 percent of respondents ranked the life of their own child under five above their own life and their spouse’s life. Contrastingly, 28 percent displayed preferences that are more aligned with GiveWell staff. This also holds true for the values of community members. If these results reflect true preferences, GiveWell staff may be placing a lower value on saving the life of a child relative to an adult than potential beneficiaries do.

⁴² All but one staff member providing greater values for individuals over five in comparison to individuals under five.

Table 7: Ranking of Different Lives⁴³

Ranking	N	Total	%
Own Child under 5 > Own Life and Own Spouse	65	114	57.02
Own Child under 5 < Own Life and Own Spouse	38	135	28.15
1-year-old community member > adult (30 year and 60 year) community member	72	139	51.80
1-year-old community member < adult (30 year and 60 year) community member	36	139	25.90

Additionally, learnings suggested that two age categories (under five versus over five) may not fully capture how beneficiaries value lives of different ages; they are unlikely to value all individuals over five similarly. This can be seen in Table 3 in which the mean value for a 12-year-old is above that of a one-year-old, while the mean value of a 30 and 60-year-old is less than that of a one-year-old. We recommend that GiveWell consider adding age categories of 5-18, 18-59, 60 and over to its model as future charities may target these different age categories.

NEXT STEPS

IDinsight recommends a second piloting exercise to further refine the giving and taking framings based on learnings from this piloting exercise and approaches from the literature. This additional piloting exercise would involve two distinct phases:

1. **Desk research (~2 months)** – An initial phase will review the existing literature and consult with experts to develop solutions to address the outstanding issues from the initial piloting exercise.⁴⁴ We will also seek out possible tests to determine whether these issues have successfully been overcome by these changes to better help us interpret our results.
2. **Data collection and analysis (~4 months)** - The second stage would then test these amendments during an additional piloting exercise within Kenya. This exercise would also rely on qualitative questions to help interpret respondents’ understanding of the new questioning, as well as the rationale behind their answers. The whole piloting exercise is anticipated to take around four months, with approximately four weeks of fieldwork planning, eight weeks of data collection, and four weeks of analysis and report writing.

This additional piloting exercise could then have three possible outcomes:

1. The approaches used in the additional pilot are successful and the results are trustworthy. This could enable the results to inform GiveWell’s moral weights.
2. The approaches are found to be successful after significant trialing and modification. We would then recommend a scaled-up study to collect data with the objective of these results being used to inform GiveWell’s moral weights.
3. The approaches are not successful at overcoming the issues outlined in this report and therefore, we do not recommend any further work.

Accurately and precisely measuring beneficiary preferences is a challenging endeavor, but it has the potential to provide critical information for GiveWell’s decision making. This piloting exercise provided useful insights into the most promising approaches. We recommend building on these learnings in future work.

⁴³ The ranking uses the value of statistical life data that has been trimmed to exclude the top 5 percent of observations.

⁴⁴ We will also continue to look for possible opportunities to use a revealed preference approach.

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APPENDIX A – ADDITIONAL TABLES AND FIGURES

We decided to split the modules into two surveys to keep each interview at a reasonable length:

- **Health Interviews** – This was the standard survey asked to respondents. The modules in this survey focused on measuring the respondent’s valuations for certain interventions and outcomes.
- **Consumption & Lottery Interviews** – We administered this survey to a maximum of three respondents per sublocation.⁴⁵ This survey included a module measuring respondent’s household consumption and a few real and hypothetical lottery games.⁴⁶

We conducted 166 health interviews and 21 consumption and lottery interviews across a total of 187 respondents in two sub-counties, as shown in Table 8.

Table 8: Sublocations Visited

Sub-County	Sublocation	Number of Health Interviews	Number of Consumption & Lottery Interviews
Matuga	Golini	21	3
	Matuga	8	3
Kinango	Kinango	71	7
	Kifonzo	27	3
	Gulanze	14	2
	Dumbule	16	0
	Puma	9	3
Total		166	21

As mentioned above, we considered county-level poverty rates, malaria prevalence, and parasitic worm prevalence to identify a pilot location with similar characteristics to locations where GiveWell’s top charities operate. This information is displayed below in Table 9 with green indicating high rates, yellow indicating medium rates, and red, low rates.

⁴⁵ Each of the three enumerators was instructed to conduct the consumption interviews for their first interview on the second day in each sublocation. The only exception was Kinango Sublocation, which contained many villages. We worked in several villages within this Sublocation as it contained a large number of rural poor and, therefore, conducted a larger number of consumption and lottery surveys.

⁴⁶ The consumption module measured the consumption levels of respondents so that we could compare them to the consumption levels of GiveDirectly’s recipients. The lottery compared preferences for receiving a large cash transfer with a small probability and receiving a small cash amount with certainty.

Table 9: Poverty, Malaria, and Parasitic Worm Prevalence in Kenyan Counties

County	Poverty	Malaria (per 100,000)	Parasitic worm prevalence
Baringo	52.3%	21,513	Medium
Bomet	51.3%	13,357	High
Bungoma	47.3%	22,829	High
Busia	60.4%	77,747	High
Elgeyo Marakwet	52.7%	13,533	High
Embu	35.3%	18,721	Medium
Garissa	58.9%	3,874	Low
Homa Bay	48.4%	58,820	High
Isiolo	65.3%	23,892	N/A
Kajiado	38%	11,190	Low
Kakamega	49.2%	37,657	High
Kericho	39.3%	24,503	High
Kiambu	24.2%	2,485	High
Kilifi	58.4%	10,861	High
Kirinyaga	25.9%	6,218	Medium
Kisii	51.4%	26,212	High
Kisumu	39.9%	46,444	High
Kitui	60.4%	20,614	Medium
Kwale	70.7%	27,540	High
Laikipia	47.9%	7,107	Medium
Lamu	32.3%	6,630	High
Machakos	42.6%	7,281	Medium
Makueni	60.6%	14,646	Medium
Mandera	85.8%	1,615	N/A
Meru	31%	30,346	N/A
Migori	49.6%	56,736	High
Marsabit	75.8%	5,255	N/A
Mombasa	34.8%	14,823	High
Muranga	33.2%	1,479	High
Nairobi	21.8%	3,875	Medium
Nakuru	33.5%	14,625	High
Nandi	40%	30,030	High
Narok	41%	11,360	N/A
Nyamira	50.7%	16,909	Medium
Nyandarua	38.8%	2,283	High
Nyeri	27.6%	166	High
Samburu	71.4%	10,053	N/A
Siaya	38.2%	69,761	High
Taita Taveta	50.4%	10,179	Medium
Tana River	75.6%	7,562	Medium
Tharaka	41%	47,923	Medium
Trans Nzoia	41.2%	19,348	High
Turkana	87.5%	18,089	Low
Uasin Gishu	33.9%	19,528	High
Vihiga	38.9%	41,402	High
Wajir	84.2%	2,977	Low
West Pokot	66.3%	25,693	Low

Source: Poverty Rates: <http://www.kenya-atlas.org/onlineatlas.html>. Poverty rates above 60% colored green, between 40-60% colored yellow and less than 40% colored red. Malaria rates come from the Ministry of Health – “Health at a glance” publications, with malaria rates below 20,000 colored red, rates between 20,000 and 30,000 colored yellow and rates above 30,000 colored green. Deworming prevalence data is from the Global Atlas of Helminth Infections: <http://www.thiswormyworld.org/maps/ke>

APPENDIX B – QUALITATIVE REASONING

Table 10 presents the most common reasons for the valuation of the different lives from stated preference VSL approaches used in the piloting exercise. This table focuses on the taking framing for which we collected much more qualitative reasoning than the giving framing.

Table 10: Common Reasons and Examples for Values Given in VSL Questions – Taking Framing

Perspective	Individual and Age	Common Reason	Example ¹
Own Household	Own Life	They have an important role in the household e.g. caregiver or breadwinner	<i>“In order to be able to help the husband take care of the kids”</i> <i>“Wants to be alive to continue providing for his family and see all children through education”</i>
Own Household	Spouse	Important role of the spouse, either through caregiving or main provider (often cited the need to help to pay for children’s education)	<i>“Needs the husband to help her take care of the kids, paying school fees, and very important to her emotionally”</i>
Own Household	Child under five	Want their child to grow up and contribute to the household	<i>“Child will help in the future by providing finances and providing for the family”</i>
		Route out of poverty	<i>“The child will grow to be a big person and get a good job which will help the family out of poverty”</i>
		Want their child to continue their lineage	<i>“Wants the child to grow to help in continuity of the lineage plus assist the family in future”</i>
Own Household	12-year-old (projected from child under five)	Would want the child to contribute to the household and they are almost of productive age	<i>“The child would still be important to him as would be almost turning into an adult”</i>
		Would value the child the same	<i>“The child value is the same and the benefit of a child is also the same, irrespective of age”</i>
		Would give higher value as invested more in the child	<i>“Invested much in the child. Child is grown and needs to live to assist her in future”</i> <i>“She would have invested much in the child and the child would almost become an adult(sic)”</i>
Community	1-year-old	Future leaders of the community	<i>“The children are the leaders of tomorrow”</i> <i>“He/ she can be a leader and help the community as a policeman or maybe a chief”</i>
		Can help family financially in the future	<i>“In order to be able to help his/ her family when he/ she start working”</i> <i>“In order to be able to take care of the family financially when he / she finishes school”</i>
Community	12-year-old	May have started helping the family	<i>“Important in the society since the 12-year-old has started school and is helping with chores at home”</i> <i>“The child should be helped to grow to maturity and almost become useful”</i>
Community	30-year-old	They are needed to take care of the family	<i>“Needs to be alive to continue taking care of their children”</i> <i>“The person could be a breadwinner in his family and should be healthy to provide for his family”</i>
Community	60-year-old	Can provide counsel and guidance to the community	<i>“Is old but useful in passing good morals to youths”</i> <i>“They are the chief advisors in the community”</i>
		Can promote peace and harmony	<i>“Wants the 60-year-old to continue helping in promoting harmony in the society”</i> <i>“Old but still useful in promoting harmony in the society”</i>
		They have lived most of their life and so get a lower value	<i>“The person has already lived and should not give the community burden of helping him out”</i>

¹These examples capture exactly how enumerators entered responses into the tablet but may not reflect the verbatim response from the respondent.

APPENDIX C – RESULTS FROM THE STATED PREFERENCE VALUE OF STATISTICAL LIFE METHODS

This appendix presents the results from the three stated preference VSL approaches that IDinsight recommends for a further pilot. It is important to note that the sample size is relatively small and that respondents were not representatively sampled. Therefore, these numbers are more indications than robust estimates. These estimates are from the framing that asked about an illness with a 100 percent mortality rate.

Table 11 and Table 12 below display the results from the taking framing for the household’s own members and community members, respectively. These contain the mean, standard deviation, median, minimum and maximum values, along with ratios and rankings.

Table 11: Value of Statistical Life Taking Framing Results – Household Members

	N	Absolute Values (USD)						Ratio (own life)	Ranking
		Mean	SD	Median	Min	95 th percentile	Max. with all data	Mean ¹	Percent who give this the highest value (%)
Own Life	141	2,637	3,998	1,500	20	20,000	5,000,000	N/A	8.13
Own Child (under five)	143	3,757	6,957	1,500	10	40,000	5,000,000	1.36	7.32
Own Child if 12	148	4,108	6,765	2,000	15	40,000	5,000,000	1.53	43.09
Own Spouse²	111	2,161	3,039	1,000	50	15,000	5,000,000	0.87	5.69

Note: All summary statistics in this table are computed without the top 5 percent of values to reduce the influence of outliers, except the column “Max. with all data”, the ratios and the ranking.

¹The ratios are computed for each respondent, and then the average values are presented.

²There are fewer observations for the spouse as not all respondents had a spouse.

Table 12: Value of Statistical Life Results – Community Members

	N	Absolute Values (USD)						Ratio (30-year-old)	Ranking
		Mean	SD	Median	Min	95 th percentile	Max. with all data	Mean ¹	Percent who give this the highest value (%)
1-Year-Old	138	1,659	2,012	1,000	20	10,000	5,000,000	1.52	9.82
12-Year-Old	135	1,962	2,325	1,000	10	10,000	5,000,000	1.90	26.38
30-Year-Old	138	1,546	1,895	950	5	10,000	5,000,000	N/A	14.72
60-Year-Old	136	777	1,114	500	0	6,000	5,000,000	0.90	19.02

Note: All summary statistics in this table are computed without the top 5 percent of values to reduce the influence of outliers, except the column “Max. with all data”, the ratios and the ranking.¹The ratios are computed for each respondent, and then the average values are presented.

Table 13 shows the results from the giving framing, which displays the number of respondents that chose cash transfers over medicine for the first time at various numbers of households for individuals of different ages.

Table 13: Answers under the Giving Framing

	1-year-old		12-year-old		30-year-old		60-year-old	
	n	%	n	%	n	%	n	%
1 Household	12	7.59	23	14.56	36	22.78	94	59.49
10 Households	20	12.66	12	7.59	13	8.23	21	13.29
100 Households	13	8.23	10	6.33	15	9.49	5	3.16
1,000 Households	5	3.16	6	3.80	7	4.43	1	0.63
10,000 Households	1	0.63	0	0.00	1	0.63	0	0.00
Always Medicine	107	67.72	107	67.72	86	54.43	37	23.42
Total	158	100	158	100.00	158	100.00	158	100.00

APPENDIX D – DISCARDED METHODS

The piloting exercise revealed that two of the stated preference VSL approaches were the most promising. However, distinct approaches of the stated preference VSL as well as other piloted methods proved not to work. This appendix details these approaches and methods that IDinsight no longer recommends exploring, as well as the rationale for no longer pursuing them.

Becker-DeGroot-Marshack (BDM) Auction

The BDM auction is an incentive-compatible mechanism to measure respondents' true willingness to pay for a product. In addition, it could be used as a revealed preference approach to measure respondents' values of associated outcomes. The motivation to include this framing in the pilot originated from the Shapiro (2015) paper, which asks respondents their willingness to pay for common aid interventions. We used a similar approach to measure respondents' willingness to pay for the interventions associated with GiveWell's recommended top charities. The approach had two objectives: 1) directly measure the value of the intervention itself; and 2) measure the value of the outcome (i.e. life) using revealed preference.

We originally planned to conduct the BDM auction for a deworming tablet (Albendazol) and an insecticide-treated bed net (ITN).⁴⁷ The respondents were incentivized to provide their true valuation as there was the possibility of winning either the health intervention (ITN or the deworming tablet) or cash. The BDM auction started with the enumerator describing the entire process to the respondent. Once it was felt that the respondent understood the process, the following question was then asked:

“What is the amount of cash such that receiving the cash will be as good to you as receiving the health product?”

After the respondent stated an amount of cash as good as receiving the health intervention for both the ITN and the deworming tablet, one of the two auctions was randomly selected to be implemented. For the auction, a random price was drawn which was then compared to the value the respondent stated. If the random price drawn was greater than the price the respondent stated, she/he received the random price cash. If the random price was less than or equal to the number they stated, the respondent received the health product.⁴⁸

In order to be able to convert respondents' values to the BDM auction (which are their valuations of the health interventions) to their valuations of outcomes (e.g. averting deaths), the approach was complemented by additional questions about respondents' beliefs regarding the effectiveness of the health interventions in affecting the outcomes. Furthermore, we asked about their own personal experiences with the interventions and diseases associated with each intervention to capture factors that may affect their valuations of the interventions.

Firstly, to back out respondents' values of life (e.g. that of their child) from their values of health interventions (e.g. ITNs), we needed to know their belief about the effect of the health intervention (e.g. ITNs) on reduction of mortality (e.g. under five child mortality due to malaria). We elicited their beliefs in several steps: we first asked about their belief on the probability of a child (like their youngest child) catching malaria if they slept under an ITN versus not, and then asked about the probability of a child dying if they had malaria.

Secondly, we asked about respondents' own experiences with these interventions and the conditions that they prevent. Respondents' valuation of these interventions might differ if they previously received them

⁴⁷ It is important to note that there are different types of deworming tablets, which have different availability in Kwale. Therefore, it was important to emphasize which deworming tablet the respondent had the chance to win.

⁴⁸ Given that it was essential that the respondent understood the process and implications of the value they provided, this process was done with a practice BDM auction for a small packet of biscuits before bidding for the health products. These biscuits were worth approximately 0.05 USD (5 KSH). Initially, we completed the game for both the deworming tablet and the ITN, then randomly selected which auction would be implemented for the respondent. However, after considering that respondents may have a preference for which game they wished to actually be implemented, we restricted drawing the random price only for the health product which was randomly selected, as we didn't want to upset the respondent.

for free or already owned them. Therefore, we asked respondents if their household currently owned any ITN or had previously received deworming tablets in the last year, and from where. We also asked respondents whether anyone in their household had experienced either malaria or parasitic worms in the last year, which could also have influenced their values for these interventions.

Challenges

One concern with the BDM method was that respondents would be anchored around the market price of the interventions. The objective of this approach was to capture respondents' valuations of outcomes using interventions that attempt to achieve these outcomes. Therefore, capturing the market value would be a clear sign that respondents were not incorporating the value associated with the outcomes. To confirm whether this was the case, we asked respondents whether the interventions were available at the local market, and if so, at what price. This allowed us to make the comparison between the known market price and the value they gave in the BDM auction.

We asked respondents about their reasoning for the value they provided during the BDM auction. For the ITN and the deworming tablet, the common reasoning for a respondent's value was that they were stating the market price. Variation in price for the ITN was due to perceived high quality, rather than accounting for any of the benefits of sleeping under an ITN.

Table 14 below shows the mean values for both the respondents' BDM and market price valuations, as well as the average of the individual differences between the two. As can be seen for both the ITN and the deworming tablet, the mean values for the BDM and the market prices are relatively close, implying people may anchor around the known market prices for the BDM auction.

Table 14: Comparison of BDM Values and Known Market Prices

	BDM Mean	Market Mean	Average difference (KSH)
Insecticide Treated Bed Net	545.83	450	83.33
Deworming Tablet	133.33	55.63	104.73

This trend of responses anchored around the market price was observed both by the enumerators and IDinsight staff early into the piloting exercise, while still in Matuga. Since Kinango is more rural than Matuga, we decided to test BDM also in the former since we were unsure whether ease of access to the health product or the prevalence of the health product was driving the anchoring around the market price. We found a similar trend of respondents anchoring their values for the products around market prices.

Additionally, we also added pure stated preference questions for respondents' valuations for the ITN, deworming tablet and chlorine dispenser. The question was exactly the same as the one asked in the BDM auction, without the auction. We added chlorine treatment because we expected it to be less prevalent within the communities we were working in than ITNs and deworming tablets. Therefore, the market price was less likely to be known. Table 15 below shows the mean and median values for the three health interventions using the stated preference approach. As can be seen, these values do not differ from the known market prices, especially the median values. Likewise, the qualitative reasoning also confirmed respondents were anchored around the market price.

Table 15: Stated Preference Values for Interventions

	Stated Preferences Mean (KSH)	Stated Preferences Median (KSH)	Market Mean (KSH)
Insecticide Treated Bed nets	302.94	300	450
Deworming Tablet	235.29	100	55.63
Chlorine Treatment	226.47	100	53.75

Given the consistent anchoring around the market prices across health products and locations, we dropped this approach early into data collection as it did not capture people’s true valuation of health interventions or reflections of their valuations of associated health outcomes (e.g. averting deaths).

Person Trade-Off

The person trade-off approach asked the respondent to choose between saving the life of two different aged individuals in the community. This approach looked to directly compare the value of different aged lives, instead of producing absolute values. This direct comparison of lives could produce information to be directly entered into the CEA model. The respondent was asked:

Imagine a donor who has some money which can be used to buy a medicine to save the life of a 1-year-old/ 12-year-old/ 30-year-old who would die otherwise. Alternatively, the money could be used to buy a medicine to save a 60-year-old person who would die otherwise. Which one do you think should be saved?

If the respondent answered that the donor should save the younger individual, this question was then followed-up with:

Now imagine the money could be used to save a 1-year-old/ 12-year-old/ 30-year-old, or a number of 60-year-olds. The donor has to choose between either saving the 1-year-old/ 12-year-old/ 30-year-old or a number of 60-year-olds. In your opinion, how many 60-year-olds need to be saved in order for the donor to choose saving them over saving the 1-year-old/ 12-year-old/ 30-year-old?

Challenges

Using the 60-year-old as the reference individual was not successful since every respondent chose to save the younger individual and then refused to state a number of 60-year-olds that would be equivalent to saving one of the younger individuals.⁴⁹ There were two possible reasons for this: 1) Respondents placed such little value on the life of a 60-year-old that there was no number of 60-year-olds that would be equivalent to a younger individual, or 2) Respondents were not willing to trade-off one life for another in such a direct manner.

In an attempt to explore which of these two options might be driving the refusals, we changed the reference individual to a 30-year-old in the community. If respondents refused to give an answer due to the 60-year-old being valued too low, then using the 30-year-old should have helped overcome this. For this question, the majority of respondents still declined to give a number of individuals.⁵⁰

Given the high proportion of respondents refusing to engage with this question for both 60-year-olds and 30-year-olds, it appears that respondents are uncomfortable directly trading-off lives of different aged individuals. Therefore, we decided not to pursue this method.

⁴⁹ This questioning was asked to 23 respondents.

⁵⁰ For the 1-year-old, two out of 21 respondents provided an equivalent number of 30-year-olds and for the 12-year-old, three respondents out of 24 provided an equivalent number of 30-year-olds.

Ranking of Policy Goals

Given the complexity of the other methods being tested in the piloting exercise, IDinsight and GiveWell wanted to include a simple approach that attempted to determine an ordinal ranking of different policy goals. This approach provided respondents with a list of six possible policy goals and asked them to rank them in order of importance. This approach was based on that used by Tortora (2009), which asked respondents to rank 12 goals related to the Millennium Development Goals. For our ranking exercise, we chose six policy goals most relevant for GiveWell's top charities, out of the 12 used in the Tortora study. The six policy goals we asked respondents about were the following:

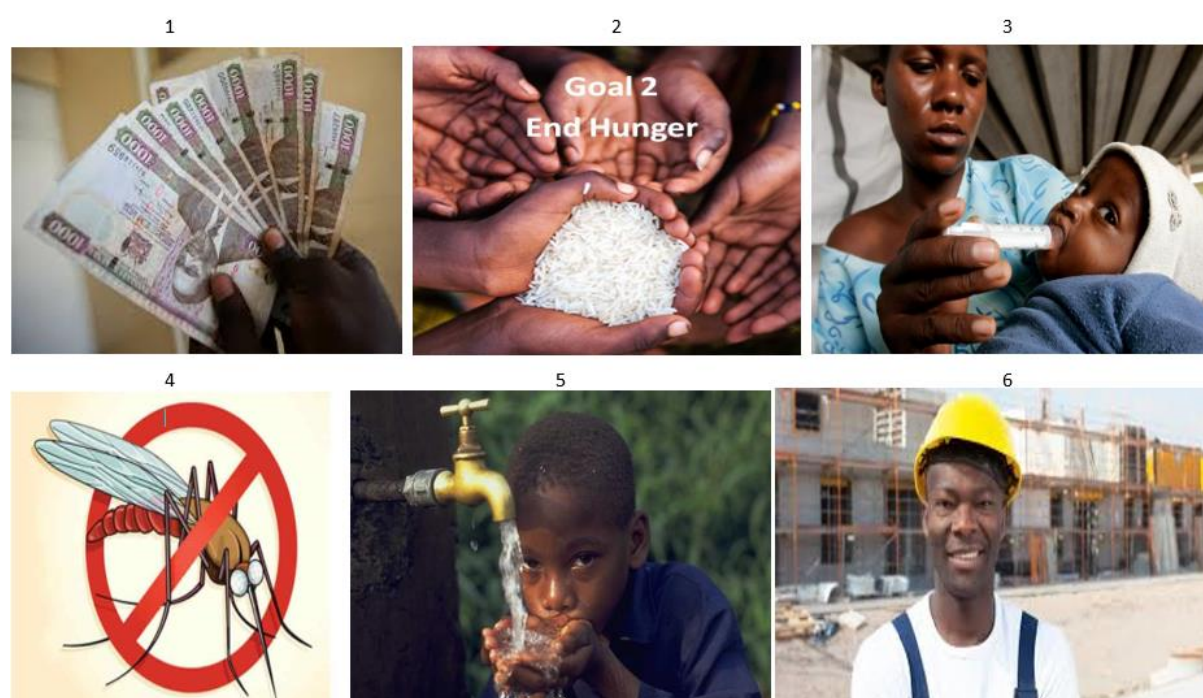
1. Reducing poverty
2. Reducing hunger
3. Reducing death rate of children under five
4. Reducing the spread of malaria
5. Improving access to safe drinking water
6. Providing more jobs for youth

We followed the initial approach of reading the list out to the respondent, from which they selected the most important. The remaining five policy options were then read out to the respondent again, from which they then selected the next most important. This process was repeated until they had ranked all the policies. This was done for both literate and illiterate respondents. However, for respondents who can read Swahili, we also showed them the policy goals in writing.

Challenges

We found that illiterate respondents struggled to retain all this information while trying to make a decision. Therefore, we were concerned that they may be forgetting some policy options. To counter this, we added pictures which represented the different policy goals and were shown to the respondents. The pictures used can be seen in Figure 2. Additionally, we originally asked the ranking question after asking about beliefs on ITNs and malaria, which we felt might have affected respondents' answers. To overcome this, we moved the ranking exercise towards the beginning of the questionnaire to ensure that any questions we asked did not influence respondents' answers.

Figure 2: Policy Ranking Images



The results from the ranking exercise are presented below in Table 16. These only include answers after the two changes mentioned above were made. These results are disaggregated by sub-county as Kinango was more rural and therefore, had respondents who may have had differing priorities in comparison to respondents in Matuga.

Table 16: Ranking Exercise Results

	Total		Kinango		Matuga	
	#	Average Ranking N = 165	#	Average Ranking N = 136	#	Average Ranking N = 29
Reducing Poverty	1st	2.41	1st	2.43	1st	2.31
Reducing death rate of children under five	2nd	3.02	2nd	3.05	2nd	2.90
Reducing Hunger	3rd	3.65	3rd	3.51	6th	4.31
Improving Access to Safe Drinking Water	4th	3.77	4th	3.79	4th	3.66
Reducing the spread of malaria	5th	3.82	5th	3.88	3rd	3.59
Providing Job for Youth	6th	4.32	6th	4.34	5th	4.24

Reducing poverty was clearly the main priority for all respondents across both counties, given its average ranking was lower than the other policy options. Likewise, reducing the death rate of children under five was ranked as the second most important across both sub-counties. On average across both sub-counties, reducing hunger, improving access to safe drinking water, and reducing the spread of malaria all received relatively similar average ranking scores, with providing jobs for the youth receiving the lowest average ranking. Reducing hunger received a higher average ranking in Kinango compared to Matuga, which may reflect different priorities and the fact that the locations in Kinango were more rural and, therefore, potentially more food insecure.

However, given that this method was implemented in case all else failed, we do not recommend pursuing this approach. Results from this approach do not contain enough information to be used as moral weights inputs. For instance, even if we see that respondents think “reducing poverty” is more important than “reducing death rate of children under 5”, we do not know by how much they prefer one to the other, and due to the vagueness of these policy goals we do not know what they mean in concrete terms (e.g. reducing poverty is equivalent to increasing people’s income by how much).

Willingness to Pay to Avert Short-Term Malaria Symptoms

This method attempted to measure how respondents valued avoiding the short-term health consequences of malaria. To do this, we used two different framings which were both tested on a similar number of respondents.

The first framing asked respondents whether they would be willing to pay some amount of money to ensure that they would not get malaria symptoms over the next 30 days. The question was asked for the respondent and their own child and had three symptom severities: mild, moderate, and severe.⁵¹ Each severity was described to the respondent.⁵² Therefore, each respondent answered three questions about themselves and three for their youngest child under five.

Challenges

The framing of these questions meant that the respondents’ willingness to pay could depend on their perceived chance of themselves or their child getting the symptoms by default over the next 30 days. It was important to disentangle this belief from the respondent’s willingness to pay to avoid the health symptoms.

Given this, we changed to a second approach which asked respondents whether they would be willing to pay some amount to avoid symptoms over the next seven days. In this hypothetical scenario, they would get the described symptoms for certain if they did not pay. This was once again asked for symptoms of different severities as well as for themselves and youngest child under five. We felt this approach was more direct in measuring how much a respondent would be willing to pay to avert short term malaria symptoms (independent of their belief of getting the symptoms). The exact wording of these questions can be seen below:

Imagine that THERE IS A DISEASE. This disease feels just like mild/moderate/severe malaria: IF YOU HAVE THE DISEASE you will have [Symptom]. But this disease is not malaria, and malaria medication does not resolve this disease. It only involves symptoms described just now, but there will not be death, long term harm, or any other consequences of malaria. Would you be willing and able to pay KSH [Price] to avoid this health problem for the next one month for yourself, including if you could borrow or get money from others? Please imagine what it is like for you to have mild/moderate/severe malaria, and just focus on the experience itself without any other consequences or long-term harm.

Imagine that THERE IS A DISEASE. This disease feels just like mild/moderate/severe malaria: IF YOU HAVE THE DISEASE you will have [Symptom]. But this disease is not malaria, and malaria medication does not resolve this disease. It only involves symptoms described just now, but there will not be death, long term harm, or any other consequences of malaria. Imagine you know for sure that you would be getting this health problem and it would last for the next 7 days. But this has not happened yet, and you could pay some money now so that you will completely avoid experiencing it for the next 7 days. Would you be willing and able to pay KSH [Price] to avoid this health problem? Please imagine what it is like for you to have mild/moderate/severe malaria for 7 days, and just focus on the experience itself without any other consequences or long-term harm.

Where [Symptom] describes the health symptoms and [Price] is the amount the respondent was asked to pay. Table 17 and Table 18 below show the results for this adapted approach. As can be seen, there does not

⁵¹ One monetary value was randomly selected for each person-symptom combination.

⁵² The description was taken from the Global Burden of Disease disability weights.

appear to be a downward sloping demand curve in any of the graphs, and there does not appear to be a difference in the amount people would be willing to pay across the mild, moderate, and severe malaria symptoms. However, this could be due to the small sample size.

Table 17: Willingness to Pay to Avert Malaria Symptoms for the Respondent's Own Child

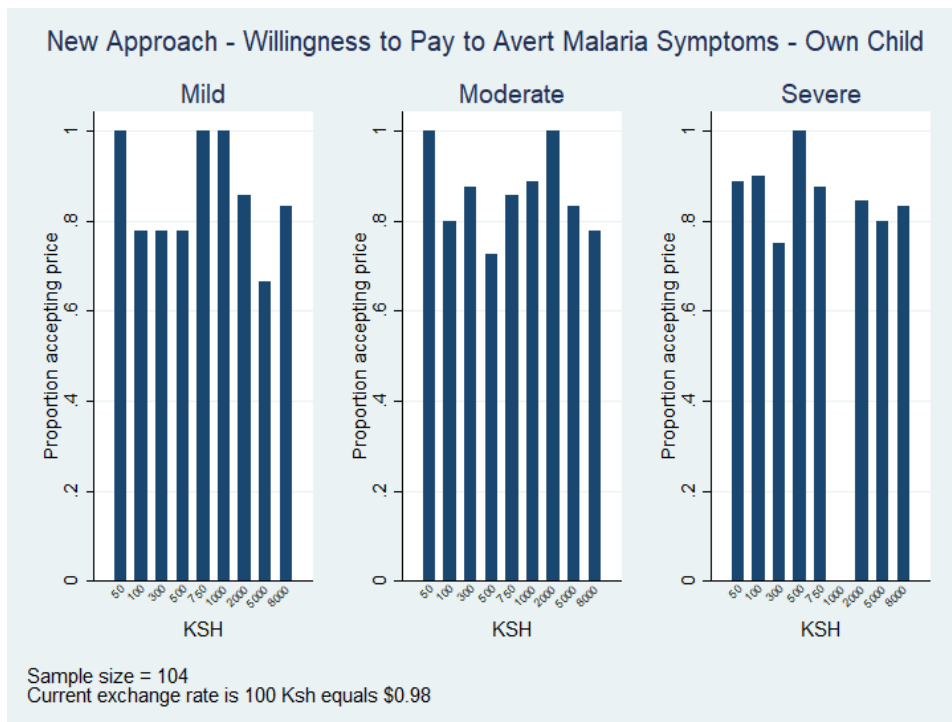
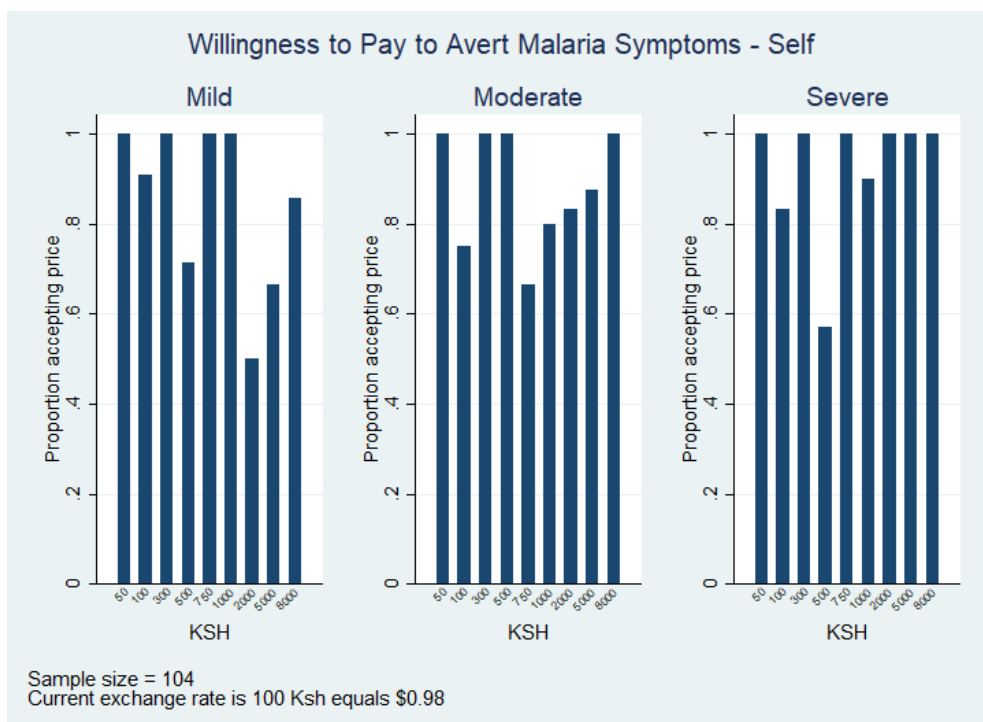


Table 18: Willingness to Pay to Avert Malaria Symptoms for the Respondent



We do not recommend pursuing this method further given the uncertainty surrounding this method. Firstly, the lack of a downward sloping demand curve and little observable differences between willingness to pay values for mild, moderate, and severe malaria suggest the respondents might not have understood the

question. Additionally, the fact that the impact of malaria symptoms seems relatively low based on the GBD results also contributes to the skepticism surrounding respondents' understanding.⁵³

Lottery

IDinsight designed lottery games with real and hypothetical stakes with the objective of understanding how beneficiaries value interventions such as GiveDirectly's large cash transfers compared to interventions like deworming or ITN distribution (which we believe will be equivalent to small cash values to beneficiaries). The goal of this method was to compare the respondents' preferences for receiving many interventions worth a certain amount compared to one intervention worth the sum of the many interventions. This method was designed as an add-on to the BDM auction to further inform how respondents value interventions.

The lottery consisted of three different games:

- A low-stake, real payout game
- A medium-stake, hypothetical payout game
- A high-stake, hypothetical payout game

Our interest was in the responses to the last game, which compares different certain amounts to a 1 percent chance of receiving 100,000 Kenyan Shillings (KSH) (roughly equal to 1,000 USD), the amount of the GiveDirectly cash transfer. The respondent was then asked to make a choice between the two options. These choices were worded as follows:

"The first choice is the following: would you rather receive 500 KSH for sure, or receive 100,000 KSH with the chance of one out of a hundred. For the second option, imagine playing a chance game where you will randomly draw a bean out of 100 beans, 99 red and 1 black (show them the beans), and you will receive 10,000 KSH if you get the black bean, and nothing if you get a red bean. This game will not actually be played but we ask you to imagine it. Now, would you rather receive 500 KSH for sure, or receive 100,000 KSH with the chance of one out of a hundred?"

The reason we initially started with the low-stake option was that we wanted to encourage respondents to give accurate answers that reflected their true preferences. In addition, respondents had the chance of winning money with the low-stake option to further incentivize them to give accurate answers. The medium-stake lottery was meant to increase gradually the stakes to help the respondent think critically.⁵⁴

Table 19 below shows the percentage of respondents that displayed irrational preferences (by displaying inconsistent preferences or making dominated choices) in each of the different lottery games.⁵⁵ The final column shows the percentage of respondents who neither displayed inconsistent preferences nor made dominated choices. It was evident that more respondents displayed both types of irrational behaviors for the higher stake, hypothetical lotteries.

⁵³ In the 2016 GBD results, mild malaria has a DALY of 0.006, moderate malaria has a DALY of 0.051, and severe malaria has a DALY of 0.133.

⁵⁴ This approach has been used by Holt and Laury (2003).

⁵⁵ The dominated choice in this instance is when the respondent chose a gamble with a probability of winning some cash amount lower than 100 percent instead of the certain amount of the same monetary value (e.g. the respondent is given the choice between 1,000 KSH for certain or a 10 percent chance of 1,000 KSH, and chooses the latter option). This implies extreme risk loving preferences to an extent that seems unrealistic.

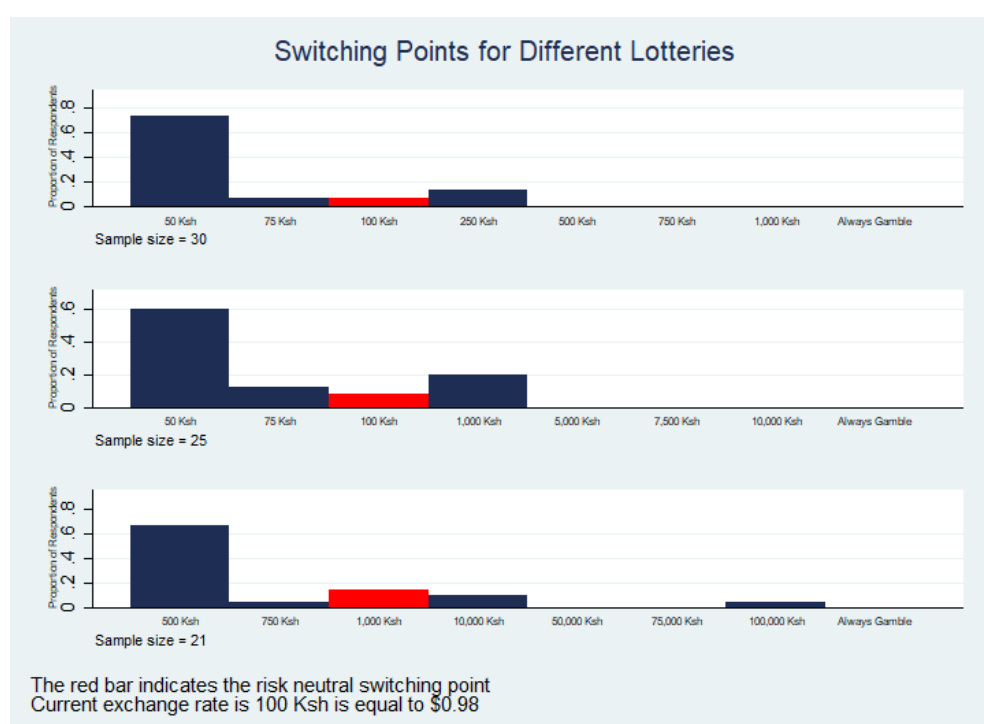
Inconsistent preferences are defined as when a respondent selects the certain amount at one point, then for a larger certain amount, picks the gamble. This behavior displays inconsistent preferences, as in theory, the respondent should switch to the certain amount at the point they are no longer willing to accept the gamble. After switching, the respondent should then continue to select the certain amount as the stakes increase and not switch back to the gamble at any later point.

Table 19: Inconsistent Respondents in the Lottery Exercise

	Inconsistent Preferences (%)	Dominated Choices (%)	Rational (%)
Real Lottery	6.06	6.06	90.91
Hypothetical Lottery 1 ⁵⁶	18.18	12.12	75.76
Hypothetical Lottery 2 ⁵⁷	16.00	4.00	84.00

Figure 3 shows the points at which each respondent switched from the gamble to the certain amount.⁵⁸ The red bar indicates the point at which a risk neutral individual would switch. Any respondent switching before this displays a risk averse preference and any respondent switching afterwards indicates risk loving preferences. For all three games the majority of respondents were risk averse, with most respondents always taking the certain amount throughout each game.

Figure 3: Switching Points for the Lottery Exercise



Given the fraction of respondents displaying irrational preferences on the high-stake lottery, the lottery we most care about, and the fact that the BDM auctions this method was designed to supplement were dropped, we do not recommend pursuing this method further.

Stated Preference VSL – Hypothetical Pill

Another approach which attempted to measure the VSL asked respondents how much they would be willing to pay to extend their life by one year, or for a pill that would prevent an illness that would reduce their life by one year. This additional hypothetical year of life was described to be at the individual's peak in productivity. This approach was designed to find an individual's value of statistical life for one year. Asking about one year made it less likely that liquidity constraints would be a concern since the valuation for this pill was expected to be much lower than the valuation to avert death with a 100 percent mortality

⁵⁶ Medium stakes.

⁵⁷ High stakes.

⁵⁸ Respondents who displayed either type of irrational preferences were excluded from the results presented in Figure 3.

rate. This question was added towards the end of the piloting exercise. The two framings can be see below in Table 20.

Table 20: Hypothetical Pill Values

	N	Mean Value (USD)	Min	Max
Extend	22	50,273.64	0.00	1,000,000.00
Reduce	12	937.50	0.00	5,000.00

However, respondents had difficulty understanding this question, especially regarding the fact that the additional year of life would be at the respondent’s most productive age. Additionally, respondents often commented that the time period was too short. Finally, the range in responses was large. Some gave high values, while some were indifferent about losing a year of life. Therefore, we decided not to explore further this approach.

Stated Preference VSL – Group Exercises

For the various approaches to the VSL questions, we also attempted to collect this data using group exercises. The rationale behind this was to allow respondents to give their answers anonymously, as we felt this might allow them to provide their true valuation. The respondents were mobilized by the village elder, who recruited mothers with children under five. However, we quickly realized that this approach was not successful for several reasons:

- Respondents often arrived with their children, and this created an environment that was not conducive for the respondents to fully focus on the questions being asked.
- It was necessary for the recruitment to be conducted by village chiefs. Doing our own mobilization was logistically complicated and did not ensure the respondents to show up to the event. However, this sampling strategy appeared to create a selection bias with respondents generally more well-off for example than the respondents from the individual surveys.
- During the individual questionnaire, probing was required to ensure respondents give their true maximum value. Given the group setting and the rationale that it would enable us to collect answers anonymously, it was not possible to probe in a similar approach.
- Group discussions were often dominated by one or two individuals, and we felt that this was influencing the answers from other respondents.

Therefore, given all of these issues, we dropped this approach relatively early in the piloting exercise.

APPENDIX E – EVOLUTION OF METHODS

During the pilot, some methods evolved as we were learning what was working or not. This section focuses on these methods and details how their framing has evolved throughout the pilot.

Stated Preference VSL

Taking Framing for Own Family Members

The first framing for the value of statistical life taking question can be seen below. This line of questioning purely focused on the individual being interviewed and members of their household. The question was asked in four different ways:

- For children under five with 1/200 mortality rate (explained as a deadly disease that causes one in every two hundred children affected to die)
- For children under five with 1/2 mortality rate (explained in a similar way as above)
- For adults (self or spouse) with 1/200 mortality rate (explained in a similar way as above)
- For adults (self or spouse) with 1/2 mortality rate (explained in a similar way as above)

A respondent would only be asked one version of the question on each person (self, spouse, and child), both of which would involve the same mortality rate and would be randomly selected. These questions were always followed with a question asking about their reasoning. The question below uses the child under five framing as an example.

Imagine there is a disease affecting children under 5. One out of every two hundred children with the disease die. [Respondent's child's name] is infected with the disease. How much would you be willing to pay for a drug that completely cures the disease? Imagine you could borrow as much as you want from a lender, but you have to repay the borrowed amount over future years.



The only change between the two is the changing of the lower probability from one in two-hundred to one in one-hundred. This was for the ease of understanding. Additionally, the half mortality rate was changed to a 100 percent mortality rate. Which probability the respondent was asked was still randomly selected.

Additional Changes:

- Questions were added to each value of statistical life question, asking the life expectancy of the individual.
- Additional questions were also asked for the respondent's spouse and their own child if they were 12.
- Enumerators were asked to probe more about whether, if the treatment cost was higher than the value they stated, they would pay this higher cost.
- We ended up only using 100 percent mortality rate as we felt respondents were not understanding small probabilities.

Imagine there is a disease affecting children under 5. All children with the disease die. [Respondent's child's name] is infected with the disease. How much would you be willing to pay for a drug that completely cures the disease? Imagine you could borrow as much as you want from a lender, but you have to repay the borrowed amount over future years.

Taking Frame for Community Members

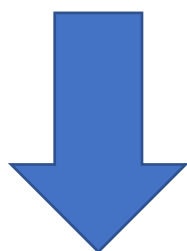
As well as asking respondents about their own family members, we also wanted to ask about the value they would assign to lives of unspecified community members of different ages. This initial questioning once again asked for adults and children under five and involved two probabilities: 1) one out of every two hundred and 2) one hundred out of every two-hundred dying. The key difference was that this question was then asked from the perspective of the village chairman, rather than the individual, and asks how much the budget should be to cure the community member of the disease.

Imagine there is a disease affecting adults. One out of every two hundred adults with the disease die. Imagine you are the village chairman and are responsible for deciding the maximum amount of budget to be spent on paying for a drug that completely cures the disease when an adult in the community contracts the disease. How much should this budget be? Imagine you could borrow on behalf of the community as much as you want from a lender but it has to be repaid over future years.



The only change between the two is the lower probability (from one in two-hundred to one in one-hundred). This was for the ease of understanding. Additionally, the $\frac{1}{2}$ mortality rate was changed to a 100 percent mortality rate. The probability which the respondent was asked was still randomly selected.

Imagine there is a disease affecting adults. One out of every **one** hundred adults with the disease die. Imagine you are the village chairman and are responsible for deciding the maximum amount of budget to be spent on paying for a drug that completely cures the disease when an adult in the community contracts the disease. How much should this budget be? Imagine you could borrow on behalf of the community as much as you want from a lender but it has to be repaid over future years.



- The framing was altered slightly to mention it was an unspecified adult or child in the community.
- The enumerators were instructed to probe to determine the true maximum amount.

Imagine a disease affecting an adult member of the community. One out of every one hundred adults with the disease will die. Imagine an adult member of the community has/have the disease. Imagine you are the village chairman and are responsible for deciding the maximum amount of budget to be spent on paying for a drug that completely cures the disease when a adult in the community contracts the disease. How much should this budget be? Imagine you could borrow on behalf of the community as much as you want from a lender but it has to be repaid over future years. **(ENUMERATOR: Probe: If the treatment cost is higher than __ (the amount they just stated), say it is __ KSH (something higher), would you pay for the treatment? Imagine your community can borrow without a limit from a lender and repay over your lifetime. Go up to a value where they say no, and then lower down bit by bit until you hit their threshold where for any treatment cost above that, even if they can borrow without limit they would not want to pay for treatment.)**



- Question was now asked for an under 5-year-old, a 12-year-old, a 30-year-old and a 60-year-old. The under 5-year-old was then changed to a 1-year-old.
- The probability of mortality was changed to 100 percent as we felt respondents were not understanding the small probabilities.

Imagine a disease affecting an adult member of the community who is 30 years old. Every adult with the disease will die. Imagine an adult member of the community has/have the disease. Imagine you are the village chairman and are responsible for deciding the maximum amount of budget to be spent on paying for a drug that completely cures the disease when a adult in the community contracts the disease. How much should this budget be? Imagine you could borrow on behalf of the community as much as you want from a lender but it has to be repaid over future years. **(ENUMERATOR: Probe: If the treatment cost is higher than __ (the amount they just stated), say it is __ KSH (something higher), would you pay for the treatment? Imagine your community can borrow without a limit from a lender and repay over your lifetime. Go up to a value where they say no, and then lower down bit by bit until you hit their threshold where for any treatment cost above that, even if they can borrow without limit they would not want to pay for treatment.)**

Giving Framing

The giving framing originally took the same framing as the taking framing but attempted to remove the liquidity constraint by using donor's money rather than the respondent's or the community's money. This was once again asked for both the respondent's own life and their child's life, as well as for an unspecified adult and child in the community. The original framing can be seen below.

Imagine there is a disease affecting adults. Half of all adults with the disease die. That is, imagine a village with two hundred adults, if all of them have the disease, one hundred will die. Imagine you are infected with the disease. A donor is trying to decide whether to give you a medicine that will completely cure the disease, or instead give you some amount of cash which you can use to improve the lives of your family, but if you choose the cash then you cannot get the medicine because it's not available in the market. What amount of money, in your opinion, would be as good as providing the medicine that completely cures the disease?



This approach underwent similar changes as those listed above, changing the probability and the individuals in question. However, it became apparent that respondents were uncomfortable answering this framing and a large proportion refused to give responses. Therefore, we completely adjusted the framing of the question.

Now I am going to ask you a hypothetical question. Suppose a donor is choosing between two options: buying a medicine that costs 100,000 KSH which can be used to save the life of a Kenyan 1-/12-/30-/60-year-old who would otherwise die from a disease, and giving 100,000 KSH each to 1 extremely poor Kenyan family for them to improve their lives. Which one do you think the donor should choose?



As can be seen above, the question changed significantly. This question was asked for a 1-year-old, 12-year-old- 30-year-old, and 60-year-old. The number of households that would receive the cash transfer increased until the respondent selected the cash transfer option. These increments were changed after we found 10 households to still be too small, with many households still selecting the medicine. The original increments are on the left, whilst the updated increments are on the right:

1 household	1 household
2 households	10 households
4 households	100 households
6 households	1,000 households
8 households	10,000 households
10 households	

Now I am going to ask you a hypothetical question. Suppose a donor is choosing between two options: buying a medicine that costs 100,000 KSH which can be used to save the life of a Kenyan 1-/12/30-/60-year-old who would otherwise die from a disease, and giving 100,000 KSH each to 1 extremely poor Kenyan family for them to improve their lives. Which one do you think the donor should choose?

Willingness to Pay to Avert Short-Term Malaria Symptoms

The first framing to determine the willingness to pay to avoid short term malaria symptoms can be seen below. The framing involves asking how much the respondent would be willing to pay to essentially insure themselves from getting the symptoms over the next 30 days. These questions were asked about both the respondent and their child. For each individual, we asked about mild, moderate, and severe malaria symptoms. The descriptions ([Symptom] in the question below) were as follows:

- Mild Malaria - a low fever and mild discomfort, but no difficulty with daily activities.
- Moderate Malaria - a fever and aches, and feels weak, which causes some difficulty with daily activities.
- Severe Malaria - a high fever and pain, and feels very weak, which causes great difficulty with daily activities.

Likewise, the price ([Price] in the question below) was randomly selected for each question from the following prices: 50KSH, 100KSH, 300KSH, 500KSH, 750KSH, 1,000KSH, 2,000KSH, 5,000KSH, and 8,000KSH.

Imagine that THERE IS A DISEASE. This disease feels just like mild/moderate/severe malaria: IF YOU HAVE THE DISEASE you will have [Symptom]. But this disease is not malaria, and malaria medication does not resolve this disease. It only involves symptoms described just now, but there will not be death, long term harm, or any other consequences of malaria. Would you be willing and able to pay KSH [Price] to avoid this health problem for the next one month for yourself, including if you could borrow or get money from others? Please imagine what it is like for you to have mild/moderate/severe malaria, and just focus on the experience itself without any other consequences or long term harm.



We felt that this question was hard for respondents to understand, and respondents' answers would be influenced by unknown factors, such as their default probability of getting the illness. Therefore, to directly measure individuals' willingness to pay, we changed the framing of the question.

Imagine that THERE IS A DISEASE. This disease feels just like mild/moderate/severe malaria: IF YOU HAVE THE DISEASE you will have [Symptom]. But this disease is not malaria, and malaria medication does not resolve this disease. It only involves symptoms described just now, but there will not be death, long term harm, or any other consequences of malaria. Imagine you know for sure that you would be getting this health problem and it would last for the next 7 days. But this has not happened yet, and you could pay some money now so that you will completely avoid experiencing it for the next 7 days. Would you be willing and able to pay KSH [Price] to avoid this health problem? Please imagine what it is like for you to have mild/moderate/severe malaria for 7 days, and just focus on the experience itself without any other consequences or long term harm.

APPENDIX F – CONTEXTUAL INFORMATION

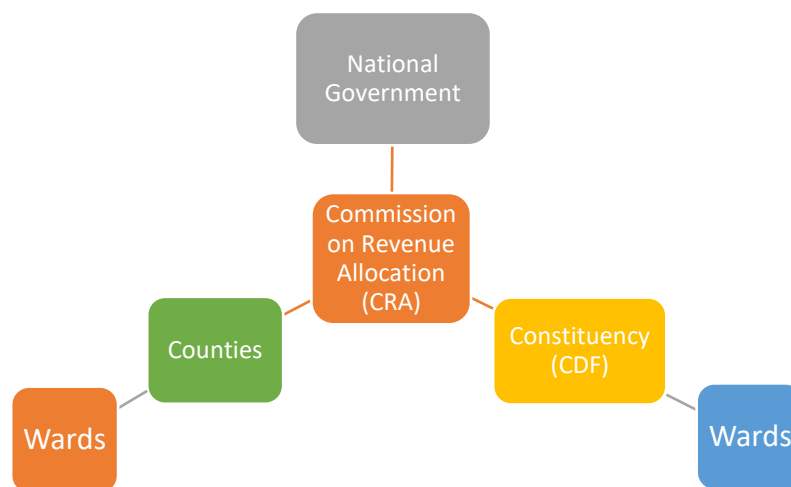
Kwale County

Kwale county is located in the southeastern part of the country, on the coast of the Indian Ocean.⁵⁹ It has high poverty rates of around 70 percent, high prevalence of parasitic worms, and relatively high rates of malaria. Kwale has a population of around 650,000 and is predominately Muslim. It consists of four sub-counties: Msambweni, Matuga, Kinango and Lunga Lunga. After our scoping trip, we excluded Lunga Lunga as both the road and mobile network are poor, and Msambweni as this is located along the coast and consists of the more urban and wealthy population of Kwale county. As a result, we decided to pilot in Matuga and Kinango sub-counties.

Funding Channels

The Government structure in Kenya is currently based on two levels; the locally and popularly elected units called counties and the national government. Each county is in charge of revenue collection and allocating such funds to improve services for the locals. The other channel is through the national government allocating funding to each constituency and county for specific projects.

These funding channels can be summarized as follows:



Kenya is divided into constituencies that are represented by the elected Member of Parliament (MP). During the budget making process in the national assembly, each constituency is allocated funds by the Commission on Revenue Allocation (CRA) based on population, equal share, poverty levels, land area, fiscal effort, special needs (education bursaries, building of health facilities and schools) and development factor.⁶⁰ At the constituency, there is a CDF committee that oversees the management of the fund.

⁵⁹ Although all locations for our pilot are inland.

⁶⁰ Mandate of the Commission on Revenue Allocation, under Article 216, is to make recommendations concerning the basis for the equitable sharing of revenue raised by the national government between the national and county governments including Constituencies.

The National Government, through CRA, also allocates funds to counties which are further subdivided into smaller units called wards, which are headed by an elected member called Member of County Assembly (MCA).⁶¹ Each MCA represents their ward during budget making in the public participation forum and decisions are made on where and how much money will be channeled for specific projects in each ward. These projects include installation of street lights, construction of cattle dips, and roads. This money is received from national government and local revenue collection from markets rates, land rates, water and garbage collection bills etc. Each ward has a budget management committee that oversees the management of the allocated funds.

Safe Drinking Water

Provision of safe drinking water is implemented by both county governments, health facilities, and dispensers for safe water (DSW).⁶² County governments connect settlements and villages with chlorine treated piped water. However, this supply could sometimes be erratic and/or expensive for the poor households and the water points could be located in far places, therefore sub optimally reaching the targeted population. In the health facilities, pregnant mothers are given chlorine tablets and offered basic training on how to treat drinking water. In some instances, such tablets are not trusted, people have negative beliefs or facilities run out of stocks and the targeted individuals end up drinking untreated water. DSW install chlorine dispensers at the water points with a requirement that everybody treats water at source before leaving. However, some issues are still encountered, such as locals vandalizing the dispensers due to negative beliefs about the chlorine, or the dispensers not being refilled on time when the stock is finished.

Youth Unemployment

Youth unemployment is rife in Kenya and is estimated between 22.2 and 40 percent.⁶³ The majority of those unemployed are youth without formal education.

Lotteries

In Kenya, lottery or gambling companies are numerous and charge as little as KSH 10 to KSH 20,000 (about 0.10 USD to 200 USD) for each bet, most of which are focused around sports.⁶⁴ Betting is still reserved for those who have extra income to spend. Those who are poor cannot afford to bet regularly due to liquidity constraints, lack of mobile phones or high illiteracy levels. It is also worth noting that individuals in Kwale are predominately Muslim, and any form of gambling is prohibited in Islam.

Lenders in Rural Kenya

Typically, in rural Kenya there are a few different lenders available:

1) Shy-Locks - These act in a similar fashion to pawn brokers where an individual provides an item of value to the lender, who then provides a loan less than the value of the item. The interest rate provided for these types of loans tends to be relatively high, and the value that an individual can borrow is typically low.

⁶¹ Mandate of the Commission on Revenue Allocation under Article 216, is to make recommendations concerning the basis for the equitable sharing of revenue raised by the national government between the national and county governments. More information at <http://www.crakenya.org>

⁶² Water supply and sanitation in Kenya is characterized by low levels of access to water and sanitation, in particular in urban slums and in rural areas, as well as poor service quality in the form of intermittent water supply. The Kenyan water sector underwent far-reaching reforms through the Water Act No. 8 of 2002 but still challenges have made it not possible to optimally supply the commodity. Find more info at <http://www.water.go.ke>

⁶³ Latest UNDP report says that nearly four in every 10 Kenyans of working age have no jobs — the worst level of unemployment in the region. 39.1 per cent of the Kenyan population of working age are unemployed compared to Tanzania's 24 per cent, Ethiopia's 21.6 per cent, Uganda's 18.1 per cent and Rwanda's 17.1 per cent <https://www.businessdailyafrica.com/news/UN-report-exposes-Kenya-jobs-crisis/539546-3911838-i88gx6/index.html>

⁶⁴ <https://betmoran.co.ke/list-sports-betting-sites-kenya>

- 2) FSA - If an individual has savings with the FSA, they will loan the individual three times the amount they have saved. The interest charged is typically lower, but it is limited to those who have savings.
- 3) Informal lenders - This can be through informal arrangements with friends or local business owners, who may agree to lend to the individual. However, the amounts that can be borrowed through this approach are somewhat low.