THE SAFE SQUAT -
A SOLID INVESTMENT FOR INSECURE SANITATION FACILITIES:

Willingness to Pay for a Latrine Training Mat To Facilitate Potty-Training in Rural Kenya

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B.S. Industrial Design 2010
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An abstract of
A thesis submitted to the Faculty of the
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Master of Public Health in Global Health
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ABSTRACT

Background

Evidence suggests that children in developing countries continue to openly defecate long after they are developmentally ready to be potty-trained, despite recent focus to increase access to improved sanitation facilities. In 2011, the Safe Squat potty training tool was piloted in rural Kenya to facilitate children's use of mud-floored pit latrines. The Safe Squat is a wooden platform that gives small children a temporary and secure ground that is easy to clean.

Goal

To determine the willingness to pay (WTP) for the Safe Squat in rural Kenya and inform future sales of the Safe Squat mat.

Methods

Four focus group discussions were conducted to inform the financial decision making of potential WTP survey participants. WTP surveys (using the Becker-Degroot-Marschak method to elicit WTP through an incentive-compatible bidding process) were carried out in homes of men and women who had been exposed to the mat from mothers who participated in the previous pilot (n=30); and in local markets where men and women might be interested in purchasing a Safe Squat (n=124).

Results

The surveys indicated a need for the Safe Squat - of the 445 children below 10 years of age in both surveys, 138 did not use the latrine unassisted. Of these, 53% of market children were reported to openly defecate, compared to 100% of home based children. Women perceived themselves to have a higher level of financial decision making power in regards to sanitation than did men of their wives. The Becker-Degroot-Marshak method had a low completion rate (in terms of participants who provided monetary offers), but this rate was much higher in home based surveys compared to the market based surveys (n=11/30 vs. n=11/124), indicating that participants previously exposed to the Safe Squat were more likely to purchase it. However, the overall WTP was higher in market based surveys (KSH 304/$3.50) than in home based surveys (KSH 199/$2.30).

Conclusion

Considerations for future marketing should be given toward men and women, emphasizing long term options to women; encouraging prior exposure to the Safe Squat; and selling the Safe Squat in settings where WTP is higher such as markets.

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CHAPTER 1: INTRODUCTION

Background

Diarrheal diseases claim the lives of 1.5 million children a year all over the world [1], making them an important factor among individual diseases to the total burden of ill-health as measured in DALYs, accounting for 53% of the total [2]. This is despite the fact that in many cases diarrhea is preventable by improvements in hygiene, water, and sanitation [2]. Many of the root causes can be traced back to the lack of adequate water and sanitation facilities the population has access to, especially in rural areas. As an example of unimproved sanitation facilities, traditional mud-floored pit latrines can be unpleasant to use and even dangerous. This sort of basic infrastructure does not facilitate healthy sanitation behavior in adults, or more especially, children. [2]

The 2012 Joint Monitoring Programme for Water Supply and Sanitation states that the practice of open defecation has decreased globally, although the least amount of progress (from 36% to 25% of the population practicing open defecation) has been in Sub-Saharan Africa.[3]

It is common in Sub-Saharan Africa that children's sanitation practices are not generally regarded as a concern. In a focus group on latrine behaviors in a rural Kenyan village conducted by Van Schoyck [4] in 2011, one of the mothers mentioned that ages 3-4 was a great time to start training children to use the latrine, although child development specialists generally suggest that children are physically and mentally able to potty train starting around 18 months[5]. Another mother mentioned that children ages 5-7 "know

how to use a latrine even though they can't aim at the latrine hole correctly thus you'll always find that they have messed with the sides of the latrine hole." To prevent a buildup of visible dirt and smell inside the latrine, the common alternative practice in most of these cases is open defecation elsewhere in the compound.

When children openly defecate in areas outside the latrine, an adult (usually the mother) will pick up the feces and dispose of it in the latrine or bury it in the ground (**Figure** 1). This transfer from fecal matter to the hands creates another transmission route for infection, as the hands can contaminate anything they come into contact with. This of course extends out to any other family members or pets who come in contact with the feces in the compound [6]. However, child open defecation is practiced and even encouraged by adults, as one of Van Schoyck's focus group participants explains:

Figure 1 Child openly defecating [5]

> *"If [I] am going out, I do always give the child clear instructions to defecate behind the house, I will come back and dispose [of] the feces as compared to a child defecating anywhere in the compound which would be visible to a visitor.[4]"*

Bartram et al argues that improved sanitation technology is the best way to decrease prevalence of diarrheal disease [2]. Existing mud-floored pit latrines do not provide the adequate infrastructure needed for a child of latrine training age. The hole in a mud floor widens over time due to the eroding of material made worse by human traffic and exposure to water (**Figure** 2). In addition, the mud floor around the hole is often uneven. The combination of unstable ground and a hole too large for children's feet to stand around does not create the+ ideal environment for a child to confidently use a latrine. In fact, children and parents often fear that they will fall into the latrine hole. All of these concerns impede a child's ability to learn how to use a latrine, leading them to revert back to less desirable sanitation practices such as open defecation.

Figure 2 Child using a mud-floored pit latrine [5]

The Safe Squat

In 2011, Clair Null and Silantoi Kisoso received a Grand Challenges Exploration award from The Bill & Melinda Gates Foundation to develop the latrine training mat. Eventually named the Safe Squat, this innovative solution to the problem of children's

sanitation was developed to help children and mothers overcome the physical obstacles that influence children's defecation practices.

Design

The Safe Squat is a rigid platform that is meant to go over the existing hole in the floor of mud-floored pit latrines. The rigidity of the platform allows for the child to feel stable over ground that is typically uneven. The outside dimensions of the platform are intended to be large enough to cover a standard hole in a mud-floored pit latrine. As you can see in Figure 3, the platform features a keyhole in the center. The keyhole is small enough for children to comfortably stand with their feet on either side of the hole.

Figure 3 Design used for research in 2012

The first prototypes used were made out of plastic or wood. Although wood does not have the same anti-bacterial characteristics as plastic, it is much less expensive and more readily available in the rural settings where the Safe Squat was being piloted. The Safe Squat mats were painted yellow so dirt shows in order to promote frequent cleaning. The raised base prevents excess accumulation of dirt, water, and bacteria under the mat. The handles on the Safe Squat, along with its light weight, allows for portability so that the Safe Squat can be easily put on the latrine hole when in use for children and removed for other family members.

Prior research

This thesis builds on prior research conducted by Gabriella Van Schoyck who worked with Innovations for Poverty Action (IPA), a nonprofit dedicated to randomized evaluations as a tool for fighting poverty in countries all over the world. In the summer of 2011, Van Schoyck partnered with IPA in Busia, Kenya to gain more understanding of local sanitation practices, and pilot a few of the Safe Squat prototypes. She distributed one of the three prototypes to twelve mothers in two nearby villages for their children to use. After one week, focus groups were conducted to determine how the Safe Squat mats were used and if they were found to be helpful.

Willingness to pay

This willingness to pay study builds off of these previous pilots in which mothers and children gave positive feedback. The next logical step in the research process was to determine an appropriate selling price for target communities. By selling the tool at a price the community can afford, the Safe Squat can progress toward a sustainable product cycle. An affordable price which is sufficient to cover production costs will encourage potential sellers to enter the market, setting the stage for business models that will lead to improved sanitation practices.

The method used in this study allowed a potential buyer to state how much they would be willing to pay for the Safe Squat without knowing how much the mat actually costs. Depending on their answer the participant may be given the opportunity to purchase a mat with a discount.

CHAPTER 2: LITERATURE REVIEW

Introduction

The disregard of proper sanitation is killing the world's children, and the problem is greatly avoidable [2]. To understand the connection between sanitation and morbidity, one can look at the flow of fecal transmission (F-Diagram) created by Wagner and Lanoix in 1958. The diagram shows the pathway of feces to a new host where three of the four pathways (fluids, fields, and fingers) can bypass hosts such as food and lead directly to a new host (in this case the host being children under five).[7]

The practice of open defecation can contribute to this network of pathways. Open defecation is practiced by 221 million people in Sub-Saharan Africa, and 26% of rural habitants rely on unimproved sanitation (use of mud-floored pit latrines, or any latrine without a slab or platform). [1] More disconcerting is the fact that mothers are promoting open defecation for their children because of its acceptance in social culture, as well as it being an easy behavior to teach and maintain. [8]

What does sanitation entail?

In 2008 the Joint Monitoring Programme (JMP), supported by the World Health Organization (WHO) and UNICEF, decided to focus their research effort on sanitation and subsequently made 2008 the International Year of Sanitation. Even though the JMP creates an annual report on water and sanitation, 2008's focus provides the most recent comprehensive and thorough picture of the world's sanitation. [1]

The JMP claims the cause for most concern on the "sanitation ladder" is open defecation, which is described as "Defecation in fields, forests, bushes, bodies of water or other open spaces, or disposal of human feces with solid waste." Of the 5.6 million who practice open defecation in Kenya, about 90% live in rural areas[9]. These rural dwellers suffer both the health consequences and embarrassment of defecating in open and public spaces, but it is often their only option. The JMP stresses that addressing open defecation is of utmost importance. The risk for diarrheal disease it poses can affect an entire community even if only some members participate in the practice. [1]

Trends in Open Defecation

Largely because of the links between the unsanitary disposal of excreta, unsafe drinking water, and poor hygiene, one billion individuals a year are affected by diarrheal disease that ultimately claims the lives of 2.2 million people. If no action is taken to achieve the 2020 Millennium Development Goals (MDGs), as many as 135 million preventable deaths could occur by then. [10]

Of all of the geographic areas for which the JMP tracks trends in sanitation, Sub-Saharan Africa has seen the least amount of improvement in sanitation, the current level being at 30%. Sub-Saharan Africa was more than 10% off track from 1990-2010 for their MDG goal for 2015, which was 77% of the population using improved sanitation. As of 2010 there were still about 600 million people in Sub-Saharan Africa living without

improved sanitation. Needless to say, there is a long road ahead to a reality of 100% coverage of improved sanitation in Sub-Saharan Africa. [3]

Twenty-six percent of rural dwellers in Sub-Saharan Africa are one step above open defecation on the sanitation ladder. This level, called unimproved sanitation, includes pit latrines without a slab or platform, hanging latrines and bucket latrines. This level of sanitation is more hygienic than open defecation, but still fails to completely separate excreta from human contact. The population that uses unimproved sanitation is a critical one, since they are somewhat aware of the importance of using better sanitation technologies like the one presented later in this report. Despite this receptivity to sanitation technologies, rural areas are still an important target audience for unimproved sanitation, since access to only unimproved sanitation is two and half times higher than in urban areas. [3]

The other two forms of sanitation described by the JMP are shared facilities of an acceptable type (usually shared by households) or improved sanitation facilities (which may include flush toilets), where there is a hygienic separation between excreta and human contact. In Kenya, 42% of the population use improved facilities, 37% use facilities that would be counted as improved if they were not shared, 10% use unimproved facilities, and 11% practice open defecation. [1]

The Burden on Children

The use of unimproved sanitation and the practice of open defecation is an especially salient topic for children under five years of age as they are one of the populations most

vulnerable to diarrheal disease. Approaching 25 years since its first publication, Baltazar and Solon's case-control study on the disposal of feces and diarrheal incidence in children under two years old is still often cited as evidence of the negative effects that can be attributed to unsanitary waste disposal. Their study was conducted in the Philippines over a five month period and consisted of 275 cases and 381 controls. A 34% increase (OR=1.34) in clinically diagnosed diarrheal disease was associated with young children whose feces was disposed of in an unsanitary manner with a 63% increase (OR=1.63) in diarrheal cases that tested positive for pathogens. [11]

So what exactly contributes to the "sanitary" disposal of children's feces? According to Stadtler et al [5], children start showing that they are ready to be potty trained at around 18 months of age. By 24 months, parents should be giving their children a step by step approach in potty training, guiding them through the learning process. At 30-36 months, a child should be able to maintain continence during waking hours, and by 36-48 months children should be maintaining night time continence.[5]
But even parents who follow this timeline often rely on unsafe water supplies and unimproved sanitation and hygiene. These practices increase the transmission of diarrheal disease for these children, leading it to be the devastating cause of 20% of deaths in children under five, the second largest culprit being pneumonia.[1]

That said, diarrheal disease mortality in Kenya has decreased from 12% to 9%, which includes the child population[1]. This decrease is due primarily to preventative measures such as improved hygienic practices, upgrades in sanitation and cleaner water supplies. Thankfully, oral rehydration therapy (ORT) has been an accessible form of

treatment for diarrheal disease since its introduction in the 1980's, but treatment alone cannot be relied on to prevent mortality from diarrheal disease. [1]

Motivations of children's sanitation behaviors

Gil et al mention several anthropological studies in their meta-analysis that indicate that although it is rarely preferred by mothers, open defecation is culturally accepted and therefore a continued behavior by children. In addition to being culturally accepted, changing sanitation behavior may not have a valuable enough incentive, as open defecation is generally an easy skill to learn. In addition, mothers tend to find their children's feces as small and odorless which means less flies, less feces transport and less disease transmission. These factors can lead to a setting where open defecation by children is considered more of a social norm than by adults. [8]

When designing a new sanitation tool or system, these incentives are what a research team has to compete with to make a transition to better sanitation practices feasible. As it stands, the characteristics of an unimproved sanitation facility (mud-floored pit latrines) tend to not immediately attract young children and their mothers. Mud-floored pit or slab latrines are in many cases not well constructed, and their strong odors and poor lighting attract unwanted pests. Mothers subsequently often fear for their children's safety[8], whether they might fall into the pit contaminated by adult feces, or come in contact with insects or rats [4].

In all studies that Gil et al looked at, about 50% of cases reported removing feces from the ground's surface. Of these, 75% placed the feces in the latrine and 20% buried the feces in the soil. Gil et al's meta-analysis of practices was sorted into protective

behaviors (use of latrines, diapers, or other sanitation tools) and risky behaviors (open defecation, child handling excreta, etc.). An overwhelming association was made between risky behaviors and diarrheal diseases (risk ratio 1.23, CI 1.15, 1.32) compared to the protective behaviors (risk ratio of 0.93, CI 0.86, 1.00), which produced a barely protective effect on diarrheal disease.

What needs to be done to improve sanitation

Curtis et al explain that "If the construction of latrines reduces diarrhoeal disease then the effect is presumably due to the safe disposal of stools." [6] Montgomery et al emphasize that sanitation is not receiving the attention it deserves even though it is the major source of pathogens that cause water, sanitation and hygiene-related diseases. They blame this inattention on the difficulty of developing and implementing inexpensive systems that are also user-friendly [10].

In order increase the efficacy of these systems for water, hygiene, and sanitation systems, Bartram and Cairncross outline five key actions that need to be consistently implemented: "1. maintenance and periodical replacement of existing services/facilities; 2. establishment of new services/facilities to cope with population growth; 3. provision of additional coverage to meet the MDG target and eventually achieve universal access; 4. progressive improvement of existing services/facilities to ensure that everyone benefits from the highest achievable standards; and 5. exposure of everyone, particularly the caregivers of young children, to well-conceived hygiene promotion." To accomplish the first of these goals on a global scale will cost an estimated $52 billion annually.

However, the second and third goals combined will cost an estimated $18 billion annually. [12]

Montgomery et al suggest that combining marketing techniques with low-cost technology is the best way to include the community in changing their sanitation practices [10]. It is important to remember that the most successful promotion strategies to increase access to improved latrine coverage do not necessarily include praising the invaluable health benefits, but rather emphasizing the reduced smell, cleaner environment, and the privacy afforded to individuals themselves and visitors using latrine facilities[13]. Marion Jenkins and Beth Scott's study in Ghana on household decision-making and demand for sanitation found that the two most disliked attributes of defecation places were the smell and the uncleanliness (27% and 27% of non-toilet adopters respectively), followed by attributes such as distance to facilities, lack of comfort, having to pay to use facilities, and having to share facilities. Close to half of the participants in their study mentioned health benefits as a key reason to build a household toilet, but only one third of respondents said that germs caused illness while the other two thirds believed that illness was caused by heat, smell, feces or dirt. For these reasons, Ghanaians believe that keeping their sanitation areas clean prevented illness as well as diverted any impurities seen in a culture that valued mental and moral cleanliness. [14]

In addition to what messages are spread, the importance of where and how marketing efforts are carried out is crucial. These efforts, along with the need to understand the behaviors of the target population are also discussed in Jenkins and Scott's 2007 paper. They say that being aware of the beliefs and actions toward sanitation of the community

can inform professionals in creating an effective and inexpensive marketing strategy. The study outlines a conceptual framework for the preference, intention, and choice of consumers looking to purchase a sanitation product.

Unfortunately, there is very little evidence on how to improve practices related to the proper disposal of children's stool. Studies on this particular area of focus have been limited to observational studies that can be subject to confounding. Gil et al mentions how difficult it is for observational studies to accurately assess disposal of human waste in their report on children's feces disposal [8]. They mention one study done in Bangladesh whose questionnaire findings displayed better sanitation practices than what they saw through direct observation[15]. The study noted an over-reporting of "good" behavior, which can be due to stigma related to admitting poor hygiene. Another study in Zaire supports this finding, especially in the case of mothers who over-reported disposing of their children's feces in latrines by more than 30%[16]. The stigma related to poor hygiene may also be associated with the novelty of a researcher, as Gil et al mention a study in Burkina Faso[17] that saw a decrease in proper feces disposal by 30% over the course of eight observation periods. [8]

The lack of accurate information resulting from observation should not however, dissuade a researcher from collecting qualitative data. In Tanzania, pile sorting (a group activity involving sorting words or pictures into different piles) was found to be an effective way for a group of women to open up about their sanitation practices. [8] This type of qualitative discussion can be very useful when baseline data is hard to collect or non-existent. [8]

Their study sought to meet a list of objectives measuring household sanitation indicators [14]. These individuals can be beneficial for the evaluation of a sanitation program and can eventually be used in the cost benefit analysis for each program.

Benefits of Water and Sanitation

Hutton and Haller's evaluation of the costs and benefits of water and sanitation found that by improving just the MDG for water supply, the world would gain 919 million working days from adults suffering from diarrheal disease. But when evaluating the interventions that included sanitation, this number jumped up to 3.2 billion. When evaluating healthy infant/baby days 1500 million days were gained from improving water supply and an increase of 2400 days was gained when improving sanitation. [18] They estimate that interventions that dealt with just water supply improvements were about four times less expensive than the intervention that also improved sanitation. [18]

In contrast, Jamie Bartram and Sandy Cairncross assert that the combination of hygiene, sanitation, and water are actually the key to controlling diarrheal disease. As for the cost effectiveness of diarrheal disease interventions, hygiene promotion averts 200 DALYs for every $1000 USD spent. Promotion of sanitation can avert up to 90 DALYs for every $1000 USD spent. In contrast, Bartram and Cairncross estimate that water regulation and advocacy led to only 12 DALYs averted for every $1000 USD spent [12]. Of the $15.7 billion spent by the US in the 1990's on water and sanitation, only about one fifth of that ($3.1 billion) was reserved for sanitation as opposed to water. The

disparities between these can very well be due to the growing amount of evidence describing the benefits of hand washing, and the little attention paid to other hygienic or sanitation practices. [2]

Setting the stage for a new sanitation tool

The work leading up to the willingness to pay study outlined later in this thesis builds on prior research conducted by Van Schoyck. While in Busia, Kenya in 2011 she piloted a potty training tool (the Safe Squat) developed to facilitate children of potty training age. Her initial research in Kenya confirms many of the beliefs and practices mentioned previously in this paper as well as her own literature review. [4]

Through qualitative methods, Van Schoyck found that most children defecated in their yard, especially at night when caretakers wanted their children close to their home structures. Most of the mothers that participated in her interviews and focus group discussions used a tool to move their child's feces to another location (many times the latrine itself). Although these women had this practice ingrained in their social culture, they found picking up their children's feces a burdensome task and looked forward to potty training their children. Even so, potty training children to use a mud-floored pit latrine can be a difficult task. The uneven terrain and widening hole led to one of the major reoccurring themes in her research - the fear that mothers and children held while their child used the latrine. In addition to the fear that children had of falling into the pit holes, mothers also feared the thought of children contaminating themselves with waste from the latrine. A mother in one of the interviews conducted states:

> *"We don't want him to go to the latrine, he can find someone has messed in the latrine and he can touch the feces and start playing with it, or maybe, he can go looking through the pit hole and then fall inside."*

The mothers in rural Kenya were very receptive to the Safe Squat. Most of the women were able to train their children within a day, and many of the challenges faced before the arrival of the Safe Squat disappeared. One of the mothers captured the ease of her child's experience with the Safe Squat in an interview:

> *"I left it in the latrine because the children do use it by themselves whenever I am not around. I had already shown them such that even the youngest one here can just use it. The older one goes with her, places it, she uses it and then the older child removes it and places it leaning on the latrine wall."*

The children not only were no longer fearful of using the latrine because of the Safe Squat's stability, but they were excited to use sanitation facilities. Mothers reported cleaner latrines and a lighter workload. They were also quite pleased by the Safe Squat's ability to be easily cleaned and its portability.

Willingness to Pay

Mimi Jenkins lays out the decision making behaviors behind buying latrines in a field note to the Water and Sanitation Program in 2004. She describes opportunities to market sanitation to consumers who have varying defecation preferences and resources [19]. In another field note to the Water and Sanitation Program, Sandy Cairncross points out that many individuals want to change their sanitation facilities but may be renting under a landlord who has little incentive to upgrade facilities and may raise rent price if tenants upgrade themselves [20]. Regardless, upgrading to new facilities will involve building new infrastructure and changing current defecation and feces handling practices. Sufficient incentive is necessary to motivate these big changes. Jenkins lists out three simple reasons as to why people buy latrines: prestige and status benefits; well-being/benefits of sanitation; and for women comfort, cleanliness, and convenience are important [19]. Even with these benefits, suppliers must educate consumers about the new product category, encourage trial usage, build the distribution channel, and segment the market to better serve specific needs.

One of the most important points Cairncross brings about is the notion that people pay for upgrades in sanitation as a community wide effort. For example, when there are big overhauls of waste systems, it may be paid for indirectly by another governing body as opposed to individual effort. With respect to individual family upgrades, Cairncross says that pit latrines, or perhaps even a pour flush toilet, is all a family can afford. He outlines a successful program in Bangladesh that overcame the price barrier with a product that consisted of a tin sheet for a pour-flush pan with a plastic odor-protecting sealing tube. The simplicity of the design allowed the final price of the sanitation tool to

be around $0.30 USD, an incredibly affordable alternative compared with $500 cement options.[20]

As much as one can look at past price precedents on similar tools, the way to most accurately determine an appropriate selling price is to test the actual tool on the target population. Even still, it is difficult to recreate a real-life buying scenario for a participant or "customer" in an underdeveloped research setting. Dale Whittington noted that these types of economic studies (contingent valuation, a subset of willingness to pay) were fairly well-known but were not prominently researched in developing areas. His study highlights key tasks and challenges that need to be overcome when introducing such a seemingly complicated study into a new area. One of the most important points is the idea that what someone is willing to pay can be very different than what they are able to pay. What one most likely wants to find from a willingness to pay study is where those two numbers intersect. A contingent valuation's intention is to put the respondent in the hypothetical situation of purchasing an item, but the only way to get an actual purchase value is to have the respondent make a real purchase. [21]

Whittington also notes that it is crucial to go through a study instrument and carefully lay out questions in a manner that is easy to understand in the context you are presenting it, as respondent can sometimes give abstract answers. Just as important is the task of setting endpoint prices for your respondents. Giving them a large range may confuse or intimidate the respondent. Confusion could yield price values they are not confident with and may have not chosen otherwise. As mentioned later, debate has

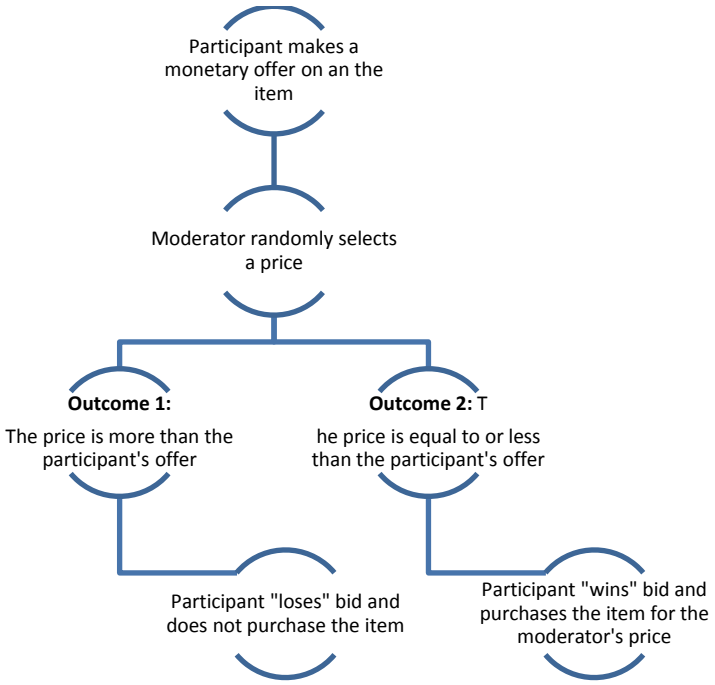
surrounded these reference prices that question the ethics involved in presenting price points. [21]

The Becker-Degroot-Marschak Method

In 1964, Gordon Becker, Morris H. Degroot and Jacob Marschak refined a theory and subsequent method to test willingness to pay (WTP) that would later be coined the Becker-Degroot-Marschak (BDM) method. Their objective was to create a sequential experiment that could quantify participants' preferences, as measured by the value they were willing to pay for an outcome. Becker and Degroot ran several experiments in which they tested their method and later accurately predicted the responses of their participants.

As shown in Figure 4, during their experiments the subject formulates a bid on an object. Their bid is then compared to a price determined by a random number (price) generator. If the subject's bid is greater than the "price", he or she pays the generated price and receives the item being sold. If the subject's bid is lower than the price, he or she pays nothing and receives nothing.[22]

Figure 4 Flow of a Becker-Degroot-Marschak Method Experiment



In theory and practice, if the subject valued the object, they would place a high monetary bid, or “utility”, on the object. If the subject did not value the object, he or she would have little incentive to place a high utility on it. Essentially, the subject will be forced to weigh the costs and benefits of paying for the object in an experimental setting instead of being biased by lack of reward or normal experiment conditions. [23]

Although seemingly foolproof, this method is not without criticism. In 2006, Horowitz argued that there could still be bias whether or not the subject is certain of his bid. That is to say, if a subject does not know an acceptable price range for the object in question, he could over or underestimate a value. On the other hand, even if the subject did have a range and was confident in his decision, who is to say that a price given by the respondent without a range is invalid?[22]

To take a look at the differences in methods, Shogren et al carried out a study comparing willingness to pay and willingness to accept (WTA) the opposite, so that the two options should hypothetically be equivalent. The “utilities” that come from these two measures should theoretically be the same when selling the same product, but results showed differently. When WTA values end up being higher than WTP values this is referred to as an endowment effect – people become attached to something as soon as they consider that it is theirs to start with and are less willing to let it go relative to how much they would value it if they didn’t yet possess it. Shogren’s study confirms this by using the BDM method along with the Vickrey Auction method, in which many subjects are silently bidding on an item at the same time. The highest bidder will win, but will pay the second highest bidder’s price. [24]

The BDM and Vickrey Auction methods were further reviewed by Noussair et al in 2004. This review states the argument that Horowitz later makes – that the endpoints of a price distribution can greatly influence a BDM’s bid. The review found that according to its study, the BDM method created more biases, but the researchers admit that they could not create a perfect tool with either method. [25]

With all the aforementioned evidence, it was decided by our research team that the BDM method would be an acceptable tool to determine the willingness to pay for Safe Squats in rural Kenya.

CHAPTER 3: METHODS

In the summer of 2012, a nine week willingness to pay research project was conducted in Busia, Kenya. The study was done in partnership with Innovation for Poverty Action, a non-profit research organization.

The two month timeline consisted of prepping for the study and five major elements: focus group discussions, follow-ups with previous Safe Squat recipients, a willingness to pay study among peers of previous recipients, a market-based willingness to pay study, and the direct sale of Safe Squat mats. In the first two weeks, the field officers were trained on proper qualitative and quantitative research methods. After training stake-holder meetings were held with Busia's district commissioner (who governs all affairs in their respective district), the Department of Education (the DOE was required to be notified of any research with respect to children), all market directors, and village leaders (ligurus).

During weeks three and four, four focus groups of 26 total participants were conducted to better understand families' financial decision making processes. Weeks four and five consisted of 12 follow up surveys with the participants in the previous year's Safe Squat pilots in the villages of Nakhaliro and Eshipararia. Weeks four through eight were spent in the village markets conducting 124 willingness to pay surveys at four different regularly-occurring outdoor markets. The research team would go to each market once a week and spend one day a week at the research office debriefing and working on

transcription or analyzing. All survey instruments were written in English and translated directly to Kiswahili.

The team obtained approval (IRB00057430) from Emory University's IRB on May 31st, 2013, 13 days prior to beginning the study. We also received approval from MOHEST (Ministry of Higher Education, Science and Technology), the institution that oversees Kenya's research programs.

Focus Group

The goal of the focus groups was to inform us about how families make financial decisions in regards to sanitation. There were four focus groups conducted in the villages of Sitekho and Bujungeri. There were two groups of fathers, one of traditional mothers, and one with untraditional mothers. We defined untraditional mothers as single mothers, widows, or untraditional caretakers such as grandparents. All four focus groups were conducted outside the liguru's home. The two male field officers would take turns moderating and note taking. The focus groups all lasted around two hours, with a ten minute break in between where refreshments were served.

We began the focus groups by asking the informants basic demographic questions about their family (how many children they had; what kind of latrine they owned, etc.). We then asked questions on who in the family is in charge of making decisions regarding sanitation (who pays for repairs for current latrine?; do you anticipate making any changes to your latrine in the next year?, etc.). We also asked them questions on how they made financial decisions regarding their children (what items did they buy for their

children? Who typically purchased these items?, etc.). Finally, we asked them questions on their market habits (What do you typically buy when at the market? How much money do you bring with you?, etc.). With the results of the focus groups, we were able to go into the market with a much more informed recruiting strategy. We also had a better idea of how much money people bring to markets with them, and if they will therefore be able to purchase a Safe Squat that day.

Follow-up Surveys

As previously mentioned, the twelve mothers who were given Safe Squats the previous year were followed up with in an open ended survey format. The findings from the surveys were useful programmatically for the Safe Squat program, but were not necessarily relevant to the willingness to pay study. However, the last question on the survey asked the participants if they would be able to recommend a mother who had seen their Safe Squat mat and fit the criteria, to participate in the willingness to pay study.

Home Based Survey

These “home based” surveys were conducted with an overall purpose of comparing results to those done in the market settings. Previous exposure to the Safe Squat may influence the parents’ decision to purchase one because of demonstration the product abilities, or the general amount of endorsement from the Safe Squat owners.

The mothers from the previous pilots gave us recommendations for mothers who met certain study criteria (mentioned later on in this paper) and might be also be interested in using the Safe Squat for their children. The study team immediately contacted those mothers and asked if they would like to be a part of our willingness to pay study. The team spent four days in the two villages conducting 30 home based surveys.

Once the recommended mothers were contacted, they were told to gather outside the liguru's home during the scheduled times at each village. The two field officers set up two survey stations on opposite sides of the grassy courtyard in the liguru's compound to ensure privacy. Each station was set up with two chairs facing each other, one for the field officer and one for the respondent. Each survey took approximately 30 minutes, depending on if the respondent completed the survey. The surveys were taken over the course of five scheduled days, ranging from two surveys per day to ten surveys per day.

The survey instrument design covered respondent family and sanitation demographics, as well as the Becker-Degroot-Marschak method for collecting willingness to pay data. The survey instrument will be further discussed in the market based survey section, as the same instrument was used with minor changes.

Regardless of if the respondent finished the survey or not, they were given a bar of soap as a gift for participating in our study.

Market Based Survey

The willingness to pay studies were conducted in the major markets around the Busia district and therefore under jurisdiction for the same district commissioner. The market was chosen to be the ideal survey setting because it offered realistic characteristics of where the Safe Squat might be sold in the future and if it would be an appropriate avenue. In addition, markets are the usually a large gathering place for the villages we targeted, making recruitment more efficient.

We went to four different markets – Ogallo, Murumba, Mundika, and Matayos. All of the markets were open air, where each vendor had their own stand. The markets sold a variety of goods, from food to clothing to home goods. During initial observations, we realized each village market had its own peak shopping time which we took as the optimal times to visit. Adults of all ages visited the markets, and there was a fair mix of women and men. However, more women shopped around the fruits, vegetables and grains stands, while the men were seen more around the poultry and fish stands. This was evident in our recruiting when we set up our stand in the different market sections each day.

The market survey stand was set up to mimic surrounding stands as closely as possible. The Safe Squats were displayed on a plastic sheet on the ground in view of passing shoppers. However, our survey area was unconventional in the sense that there was no covered tent, but rather we used our vehicle (a large van) to offer privacy to those being surveyed.

The van was set up in such a way that displayed openness and stability with a large IPA decal on the window as well as all vehicle doors open (Figure 5). These precautions were made to deter any possible discomfort from sitting in an unknown vehicle for an extended period of time.

Figure 5 Market stand set up

The initial strategy for recruitment was for one field officer to stand outside the vehicle by the Safe Squat display and answer any questions curious passersby posed (Figure 6).

If the person showed interest, they would be asked if they'd like to participate in a study IPA is doing to potentially sell the Safe Squat in the future, and that during the survey

Figure 6 Participant recruitment

they would have the opportunity to obtain the Safe Squat in the exercise during the survey. They were then asked if they fit the required criteria.

The interested participant would be directed toward the other field officer to begin the survey inside the van. If the person were to ask how much the Safe Squat was being sold for, the purpose of the survey would be reiterated to them, as well as the fact that we did not have an exact estimate. Typically at the beginning of the day, a lot of interest was generated by the Safe Squat and participants were asked to come back at designated times to complete the survey. Once crowds dissipated, both field officers were able to conduct surveys simultaneously, one in the van and one in chairs set up nearby.

The first half of the survey consisted of their informed consent, basic demographics of the participant and their children, as well as information on the latrines they used and the financial importance they placed on their sanitation. We asked them if they currently used any potty training tools in their compound. They were also shown the Safe Squat and asked if they had ever been exposed to the training tool.

As previously mentioned, the survey instrument used will be based off of the Becker-Degroot-Marschak method for economic incentives. The participants were asked to place the monetary value they would be willing to pay for the Safe Squat forward. Once they did, they were asked to choose an envelope with a paper on which was written an unknown value between KSH 50 and KSH 600 (~ US $0.60 - $7).Once the envelope was opened, if the value inside was less than the value they had placed on the Safe Squat, the respondent had to purchase it, and the difference between values was returned to

the participant. If the value in the envelope was more than the value they placed on the Safe Squat, they had no obligation in purchasing it. The option of buying the Safe Squat gave them the incentive of giving the true value they placed on it. Before providing their willingness to pay for the Safe Squat, participants were asked to go through a practice round using cookies.

Toward the end of the 9 week period, we had reached our sample size but still had a number of Safe Squat mats leftover. A couple days were used to try a different method of dispersing the mats. The Safe Squat stand was set up as it had been previously in the markets but instead of conducting the surveys, we attempted to sell the mats at a predetermined price of KSH 500 ($5.88). By selling the Safe Squats without any time commitment or expectation of reward (soap), there might be a different trend in willingness to pay or rate of purchase. We allowed for haggling, which made the predetermined price more flexible.

Project Implementation

IPA is a nonprofit organization that has been working in many areas around the world, mostly through randomized control trials, to improve poverty through different avenues including a mixture of health, economics, and microfinance.

The field officers were hired through IPA; both had backgrounds in quantitative and qualitative research performed either at IPA or other nonprofit organizations in the

area. They are both fluent in English and Kiswahili and had graduated from secondary school.

The proper authorities were contacted prior to starting the study. The District Commissioner of Busia granted us permission to run the study, and the Department of Education waived permission as the study did not pertain directly to children.
The participants of the study were given incentives to fairly balance our research. The survey allowed for the possibility of obtaining a Safe Squat for less money than it might have cost them otherwise. In addition, each participant was given a long bar of soap (worth approximately KSH 75 or $0.90), which has been determined as valuable to those in the area, but not so much so that it would be considered a coercive incentive.

Sample size

Focus group participants were chosen through each village liguru.
Inclusion/exclusion criteria included the following:

1) *All participants need to be a parent or caregiver of at least one child between the ages of 1-5*
2) *All participants need to have previous exposure to a Safe Squat mat, and need to be referred by a previous LTM user*
3) *All participants should be over the age of 18 years old*

The criteria did not include owning a mud-pit latrine as we wanted to see if those who used other style latrines had interest in buying the Safe Squat.

The target sample size for each focus group was 6-8 participants. There was to be one focus group from each village that consisted of fathers. One focus group was to consist of traditional mothers (women with husbands taking care of their direct offspring), and one was to consist of non-traditional mothers (any women who diverted from the traditional structure i.e. widows, grandmothers, single mothers).

Follow up surveys

The mothers who had received a Safe Squat through the previous research were contacted again through the village ligurus.

Home based survey

The home based surveys used a convenience sample, as mothers from the follow up surveys were asked to recommend another mother who might be interested in obtaining a Safe Squat.

Inclusion/exclusion criteria included:

1. *All participants need to be a parent or caregiver of at least one child between the ages of 1-5.*
2. *All participants need to have previous exposure to a Safe Squat mat, and need to be referred by a previous LTM user.*
3. *All participants should be over the age of 18 years old.*

Market based survey

Our sample size for the market based survey was n=120. This was determined based on the expectation of how many surveys could be done per day within the given budget. The participants were chosen through convenience sampling, as they were recruited from those able and willing to approach our market stand.

Inclusion/exclusion criteria for the market based survey were as follows:

1) *All participants need to be a parent or caregiver of at least one child between the ages of 1-5.*
2) *All participants should be over the age of 18 years old.*

Similar to the home based survey, the criteria did not include owning a mud-pit latrine as we wanted to see if those who used other style latrines had interest in buying the Safe Squat. One exception was made to a mother who had a mentally disabled child, and thought the Safe Squat would be useful to her.

Analysis Methods

The data was manually entered into Microsoft Access by the field officers, and then double entered by the author. Both datasets were then transferred to STATA and compared. Whenever a difference occurred between the two datasets, the original paper copy of the survey was opened and checked again.

STATA was used to analyze the quantitative data. Quantitative findings were extracted through simple summaries and tabulations of the data.

The focus group and open-ended survey data was transcribed immediately following data collection. Focus group data was analyzed for thematic codes that were compiled into a codebook and summarized.

CHAPTER 4: RESULTS

This chapter first presents a description of study participant characteristics, including demographics and latrine infrastructure, as these relate to defecation behaviors and the need for a Safe Squat. Decision-making for sanitation as well as other purchases, and practices related to attendance at markets are reviewed as context for the ultimate results on willingness to pay for the Safe Squat mat as elicited by BDM.

The targeted population

Focus group demographics

Two focus groups with fathers were performed in Sitekho and Bujungeri. Seven fathers participated in the group in Bujungeri and five participated in Sitekho. The age gap between all fathers was 26-84 (the 84 year old on behalf of his grandchildren). The focus group conducted for mothers was split into traditional mothers and non-traditional mothers (defined as widows, single mothers, grandmothers, etc.). Seven women participated in the traditional group in Bujungeri and seven in the non-traditional group in Sitekho. The age range in Bujungeri was only 20-24, while in Sitekho it was 20-45.

For non-traditional mothers from Sitekho, there were two widows taking care of children whose mothers have died, one widow taking care of her own child, and three women who say their boyfriends refused to help care for the child.

The men had an average of three to four children and the average age of their children under ten years old was 3.7. The average number of children the women had was three. The average age of children under 10 is 3.3 years.

Survey Demographics

Table 1 Basic demographics

Basic Demographics						
	Home Based (n=30)			Market Based (n=124)		
Gender	10% Male		90% Female	23% Male		77% Female
	Min	Max	Mean	Min	Max	Mean
Age (n=29, 124)	19	55	34	19	76	35
# of children	1	11	5	1	9	4
Age of children (under 10yo) (n=85,)	0	9	4	0	9	5
Money spent on latrine ($) (n=20, 84)*	1	71	23	1	471	67
# of latrines in compound	1	3	1.2	1	3	1.1

*Value given in USD (85KSH=1USD)

As previously mentioned, the twelve mothers interviewed for the follow ups from the previous study were asked to recommend one mother for our willingness to pay survey. The additional requirement was that they would have needed to be previously exposed to the Safe Squat and its use. Once mothers were recommended, meetings were set up for the next day at the liguru's compound. The response we got within 24 hour's word of mouth was so much larger than anticipated that the field officers used their lunch break to make copies of the survey nearby.

As shown in Table 1, the end sample size was 30 participants. Of those 30 participants, 3 were male and 27 were female. The youngest participants were 19 years of age. One woman was 75 years old, but was unable to complete the survey and was not included in

age demographics. The average number of children each woman had was 4.7 and the average age of any children under 10 was 4.2.

These demographics were similar for those who took market based survey. Twenty-eight males and 96 females participated in the study. Participants had an average age of 35 and had an average of 4 children.

The need for a latrine training mat

The current state of latrine use as revealed throughout the summer's research suggests a need for a tool such as the Safe Squat. We gathered comprehensive data from our focus groups and surveys about how many latrines each individual's household possessed as well as how many adults and children used them. More specifically, we asked where their children defecated if it was not in the latrine. In addition, the market survey asked participants about the type of floor in their latrine.

Latrine Usage

Most of the men and women from the focus group discussions said they only had one latrine on their compound, which was shared with other families (usually extended family members) in many cases but a few men and women reported using the latrine just within their immediate families. There were anywhere between two and ten adults sharing one latrine and anywhere between 2 and 18 children using these facilities.

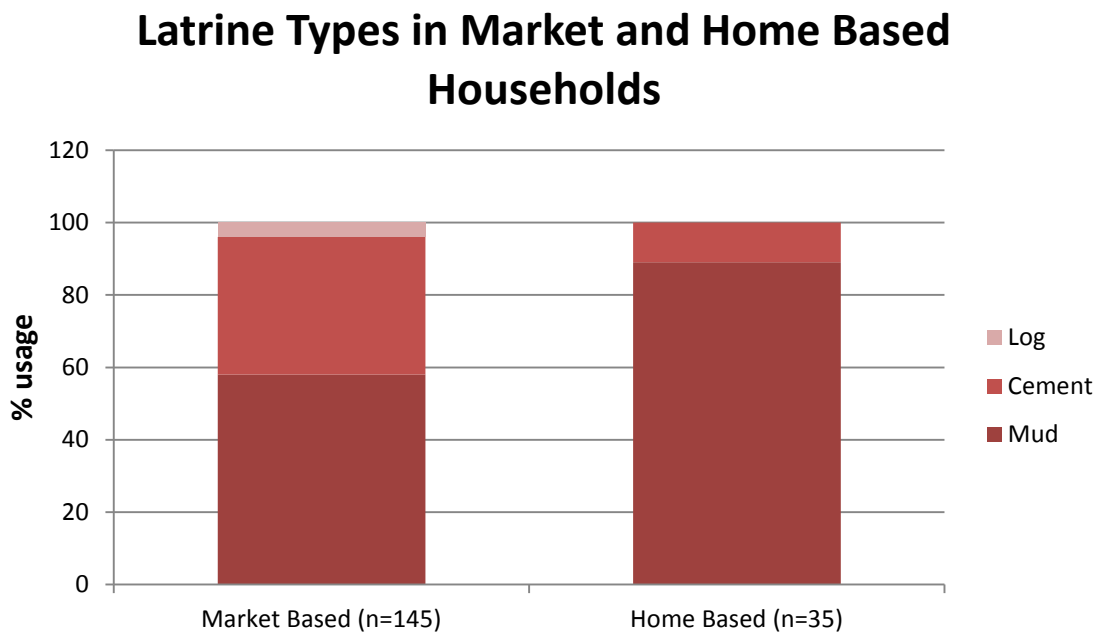
The women in the focus groups reported that an average of about five adults use the latrine, although one woman said there were too many to count. An average of about 5 children use the latrine, including one woman who said the children on her compound

do not use the latrine. The average age of children using the latrine with assistance was about three in both the market and home based surveys.

Latrine Types

Figure 7 shows that of the 145 latrines market participants owned, 60% were mud floored latrines, 39% were cement floored and 4% were wood floored. Figure 7 also shows that of the 35 latrines owned by the home based participants, 31 were mud floored and 4 were cement floored.

Figure 7 Latrine types (market based surveys)



*some HH's own two latrines

Study participants were asked if their children used the latrine with assistance or did not use the latrine at all. These numbers were then compared to children under aged ten and under who used the latrine without any assistance.

In the market, it was found that 352 children between the ages of zero and ten were accounted for. Of these 352 children, 225 (64%) used the latrine without assistance. The average age of these children was six and a half (age range one to ten). Only seven children, aged at an average of four years old (age range zero to five), used the latrine with assistance. Participants reported 120 (34%) children to not using the latrine at all. Not surprisingly, these were the youngest group of children, with an average age of two and a half (age range zero to ten).

In the home based study, a total of 93 children were reported to be aged ten or under. 62 (67%) children were reported to use the latrine without assistance. This group of children was an average age of five and a half (age range two to ten), one year younger than the market group. The thirteen children who were reported to using the latrine with assistance were at an average age of 3.3 (age range zero to five). The average age of children who did not use the latrine was slightly younger, at 2.8 (age range zero to five), although the sample size was much higher at n=18.

Defecation practices

Figure 8 shows a difference in children's defecation practices between the market and home-based samples. 94 market participants (76%) and only 13 home based participants (43%) reported that at least one child does not use their latrine without

assistance. Of the children who were reported to not use the latrine, 54% used their yard to defecate, 37% used a potty tool, and 3% used diapers. 100% of the home based participants whose children did not use the latrine reported them using the yard to defecate. Child defecation reports were stratified by the respondent parents' gender to see if there was any indication that mothers' responses differed from fathers', but there was also little difference in the percentage of women who had at least one child who used the latrine with assistance or did not use the latrine when compared to men.

Figure 8 Where do children defecate on the compound?

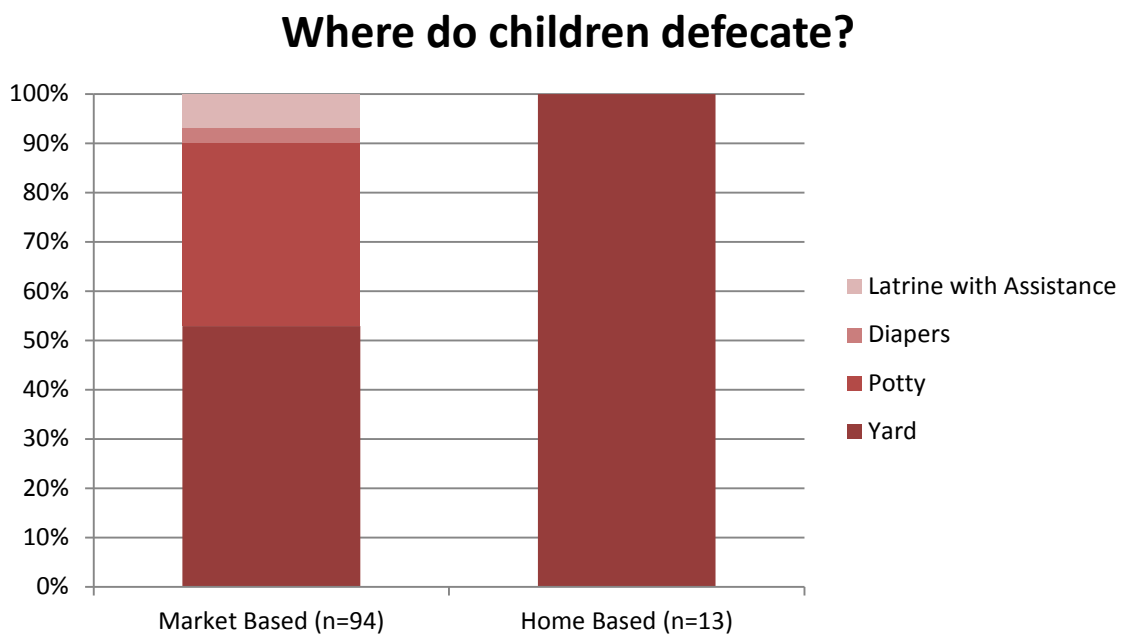
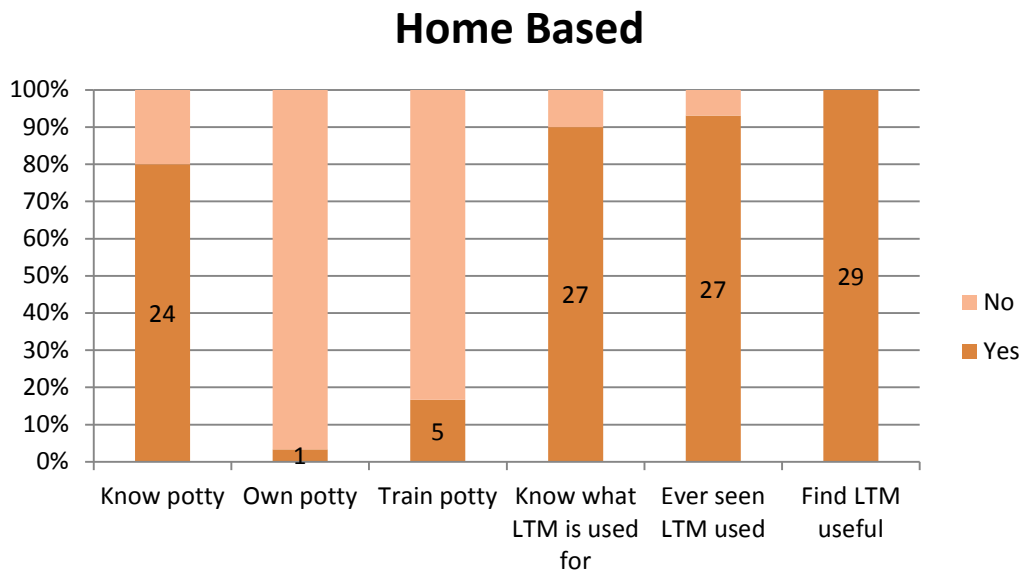


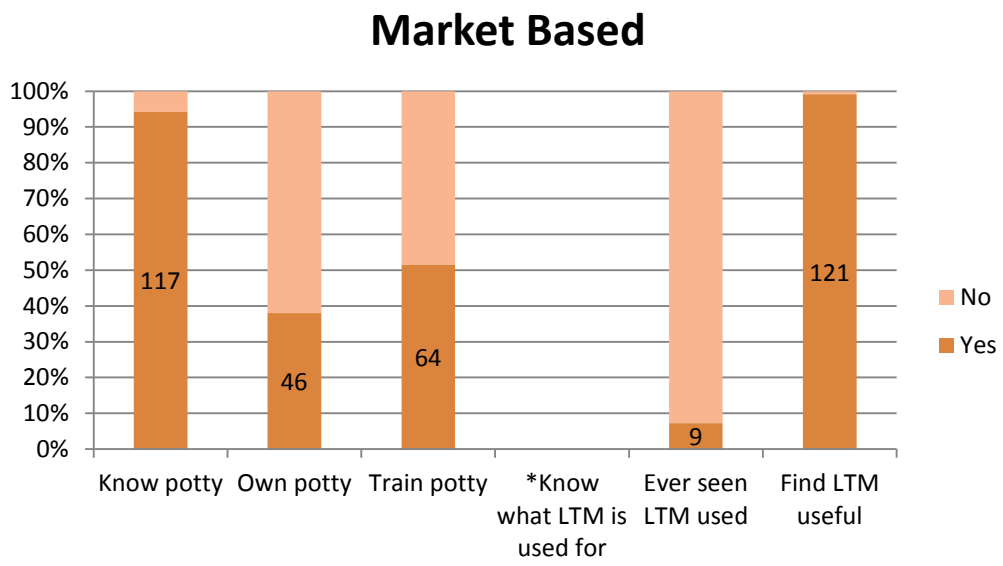
Figure 9 shows the breakdown of the knowledge market and home based participants had of existing potty training tools, as well as the Safe Squat. When a picture of a potty was presented to focus group participants, all men responded that they knew what the potty was and what it was used for, however, none of them had ever used a potty to train their own children. All of the women were fully aware of what a potty was and how it

was to be used. Three women owned potties, and two of these women mentioned they had purchased their potties at KSH 150 ($1.80).

As expected, most participants in the home based surveys had seen a Safe Squat mat and knew its intended use. In contrast, less than 10% had ever seen a Safe Squat mat in use. However, most participants knew what a "potty" was, although less than half owned or had used one to train their children. One woman reported the Safe Squat as not being useful to her needs, although her reasoning was unclear.

Figure 9 Knowledge of latrine training tools





Financial decision making regarding sanitation

The team also wanted to know how families invested in their sanitation. Both focus group and survey participants were asked how exactly their latrines were built and how much they estimated their latrines cost. They were also asked if they planned to make any updates to their latrines and when those changes could take place.

Most men had built the latrines themselves, but some had been built by their fathers before they were married. When asked why they built their latrines, they cited a variety of reasons including, shame from open defecation, the crowdedness and clearing of bushes making it harder to openly defecate, sanitation for themselves and for their children, preventing diseases, authorities telling them to, and privacy.

Five women said their latrine was built prior to their arrival on the compound, usually by their fathers (in-law). The rest of the women in the traditional mothers group said the

latrine was built while they were in the home. The rest of the non-traditional mothers claimed that they built the latrine themselves. These differences suggest that non-traditional mothers made the decision themselves, where traditional mothers may have had their husbands decide.

Some of the mothers in the non-traditional focus group performed the labor of building the latrine themselves. The rest of these mothers decided with their own fathers. Most of the women in traditional group consulted with their husbands prior to building.

The survey asked participants how much they estimated it cost to build their current latrine, mostly meaning the cost of materials and not labor, as many latrines were built by the families themselves. When converted to US Dollars, the money spent on current latrines reported in the home based study was an average of $23, the highest spend being about $71 and lowest being less than $2. The market based surveys reported a higher amount of money spent, at an average of $67, the highest being $471 and lowest also being less than $2. About 81% of survey participants in both settings had one latrine on their compound. 17% had two latrines and only two participants had three latrines.

Decision making in regards to latrines

In all but two cases, the men were involved in the decision to build their latrine. Five men said they made this decision alone, but others made the decision along with their families, head of household, or their wives. However, when asked if their wives were involved in the decision making process for latrines, one man said:

> "Things to do with latrine you must inform, she may have some money you come together and she may assist in construction and you may lack money. On incidence you must consult the wife"

But opposing views came up, some men saying they were the only to decide on construction while others citing it takes a family.

Most of the women in the group of traditional mothers said their husbands made most of the financial decisions regarding the latrine, whereas most of the non-traditional mothers made financial decisions themselves or occasionally with their fathers.

Most of the men had plans to make upgrades to their latrine within the next year or two if they had the money saved up. These upgrades included mostly roofing, but also changing the walls to brick and changing the flooring to cement slabs.

Market practices

When asked what a day at the market looks like for the participants, the men said they usually went to the market knowing what they wanted to buy and only purchased those items. Some men however, said they see the market as a social meeting place, to talk with friends and catch up on news. Regardless, all of the men said they usually attended every market day (usually once or twice a week).

The average amount of money women reported taking to the market was about KSH 162 ($1.90). As far as market practices went, most women visited their nearest market in the morning hours. Regardless of whether the women brought 200 shillings to the market or 1000 or where she acquired the money from, all the women said they only brought

the money they needed. They therefore did not usually have any money left over once they were done shopping.

Overall, men were skeptical of discounted products as they could be less valuable, but some men saw cheaper items as a better option. All of the women had seen the practice of bargaining in the markets and said bargained goods are usually of medium quality but very cheap.

Household purchases

When asked about household purchases, the men said they usually bought the soap, maize, sugar, and matchboxes, but some men said their job is to work and the wife buys, while others said wife only buys things like cooking oil and they make most purchases.

They said wives will usually buy cooking items (eggs, oil, salt etc.) , children's and her own clothes, and that they can usually buy these things without consulting their husbands. The fathers said they felt they should consult their wives for costlier items such as cows, land, tables, and flooring.

Interestingly, the women in the traditional groups responses to what items they buy for their homes were consistent with the men's responses for what wives buy (kitchen utensils, food, clothing, etc.), but the women in the non-traditional roles primarily mentioned items, such as soap and paraffin, that the men had mentioned buying themselves. Some non-traditional women said they could buy things like goats and chairs without consulting anyone, but most traditional mothers could not buy these items without consulting their husbands.

When it came to their children's basic needs, men said that purchases were a team effort between them and their wives, financially speaking. However, all men agreed that if there was a need lacking (medicine, food, clothes, school fees), either partner was able to purchase these items without consulting the other. When averaged, men said they spent about KSH 3,100 ($36 USD) on their children's needs each month.

When it came to how the women split up purchases for their children, if the women had husbands, the husbands would purchase things such as medicine or school fees. Otherwise, the mothers made all other purchases such as clothing and school supplies. The women in the non-traditional mothers estimated paying an average of KSH 1700 ($20 USD) a month for their children's basic necessities, compared to the much lower KSH 480 ($6 USD) average in the traditional mothers' group.

Table 2 Household latrine decision makers

Who makes decisions in households regarding latrines?			
	Women surveyed at home (n=27) n(%)	**Women surveyed in markets (n=96) n(%)**	**Men surveyed in markets (n=28) n(%)**
Myself	6 (22)	9 (9)	20 (74)
My partner	13 (48)	43 (45)	1 (4)
Myself and my partner	6 (22)	33 (34)	4 (15)
Myself and other	0 (0)	0 (0)	1 (4)
My partner and other	0 (0)	1 (1)	0 (0)
Other	2 (7)	10 (10)	1 (4)

Table 2 shows the stratified breakdown of how men and women reported who made decisions regarding sanitation in the home. Results showed that 34% of women in the markets and 22% in the home based surveys said they and their partner together were

the decision makers, whereas a noticeably higher 74% of males in markets reported that they were the sole decision makers when it came to sanitation.

Perceptions of the latrine training mat from focus group discussions

When shown a prototype of the Safe Squat, two men mentioned that they had seen the tool at a friend or employer's house. The rest of the men had never been exposed to the Safe Squat but were able to quickly guess its proper use. None of the women in either group had ever seen the latrine mat before, but they quickly picked up on its intended use for latrines. They said the Safe Squat's handles and overall design made it easy to clean. Both the men and women's focus groups cited the mat's smaller hole as the main benefit for children.

One man did not understand the Safe Squat's benefit, and when the mat's purpose was further explained he said he did not see that his wife would you use it for fear of the Safe Squat getting contaminated with feces.

The focus group participants were also asked how much they thought the Safe Squat would be sold for in a local market. The average response from the men was KSH 336.67 ($4) , not including one man who said he could see the Safe Squat being sold for KSH 4500 ($53) in town. One man who said he was a carpenter said that because of the materials and labor the Safe Squat would cost about KSH 500 ($5.88).

Most men said they would purchase the Safe Squat at the price they stated, two men would not, and one man thought the Safe Squat would be beneficial but not be put to good use by others.

All but two women said they thought the Safe Squat would cost KSH 1000 ($11.76) in the market (the other two women saying KSH 200 and 500 ($2.35 and $5.88)). This answer of KSH 1000 ($11.76) was given early on and seemed to have influenced the other respondents. Women had varied answers on whether or not they would purchase the Safe Squat at this price. Some said no, others said they would buy it if they saved enough money, while others said they could purchase the mat.

A lot of the men said they would consult their wives before purchasing mat, but two men said they would not necessarily consult wives if they had the money on them. Some men said they would consult their carpenters for reassurance of the Safe Squat's quality, or to see if they could make a similar version.

Participants in the non-traditional mothers group mostly said they would not need to involve anyone else in the decision to purchase the Safe Squat. Traditional mothers however, would involve not only their husbands, but mothers-in-law, sons, and extended families in the decision to purchase the Safe Squat.

It was generally agreed by the men that the Safe Squat was not a must have item as children defecate now without it. But all men found the Safe Squat to be very beneficial and some found it to be a useful tool for their children's hygiene. Contradicting the men's response, all women thought the Safe Squat was a basic necessity.

The focus group moderator asked the men how they would save up for an item such as the Safe Squat if it was being sold for KSH 700 ($8.24). The men said they would slowly work up to buying it, and that it would take perhaps a week to a month or until an odd job comes through. The traditional mothers said it would take approximately one month

to gather up 700 shillings, while the non-traditional mothers said it would take them a week. The money they gathered would come from their own savings.

Overall, men were skeptical of discounted products as they could be less valuable, but some men saw cheaper items as a better option. All of the women had seen the practice of bargaining in the markets and said bargained goods are usually of medium quality but very cheap.

Survey participants' willingness to pay for the Safe Squat

Figure 10 Progression of survey participants (market)

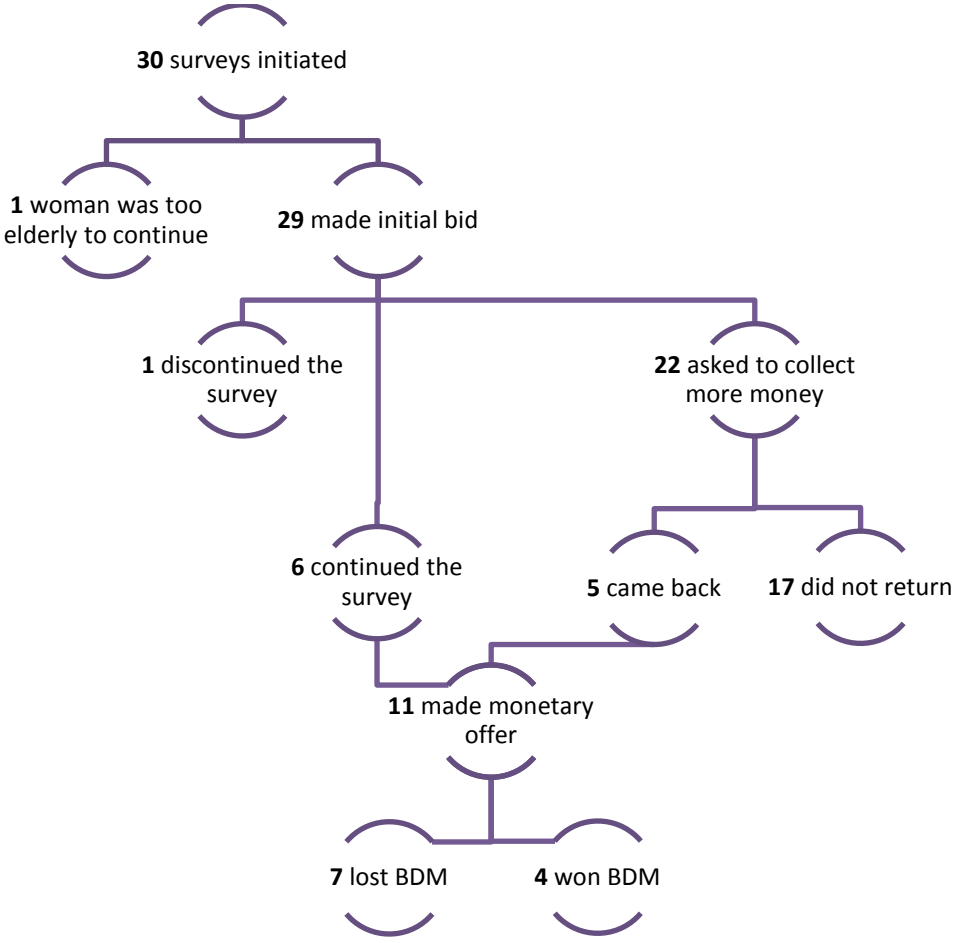


Figure 11 Progression of survey participants (home)

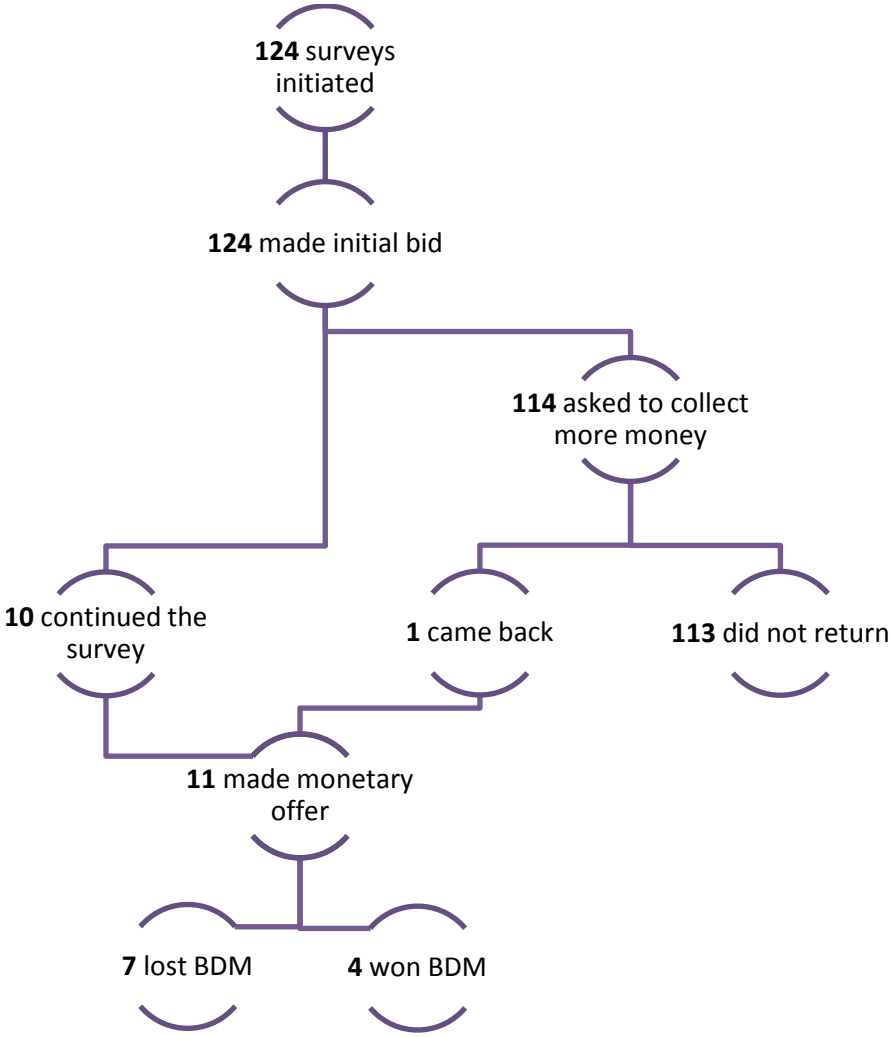
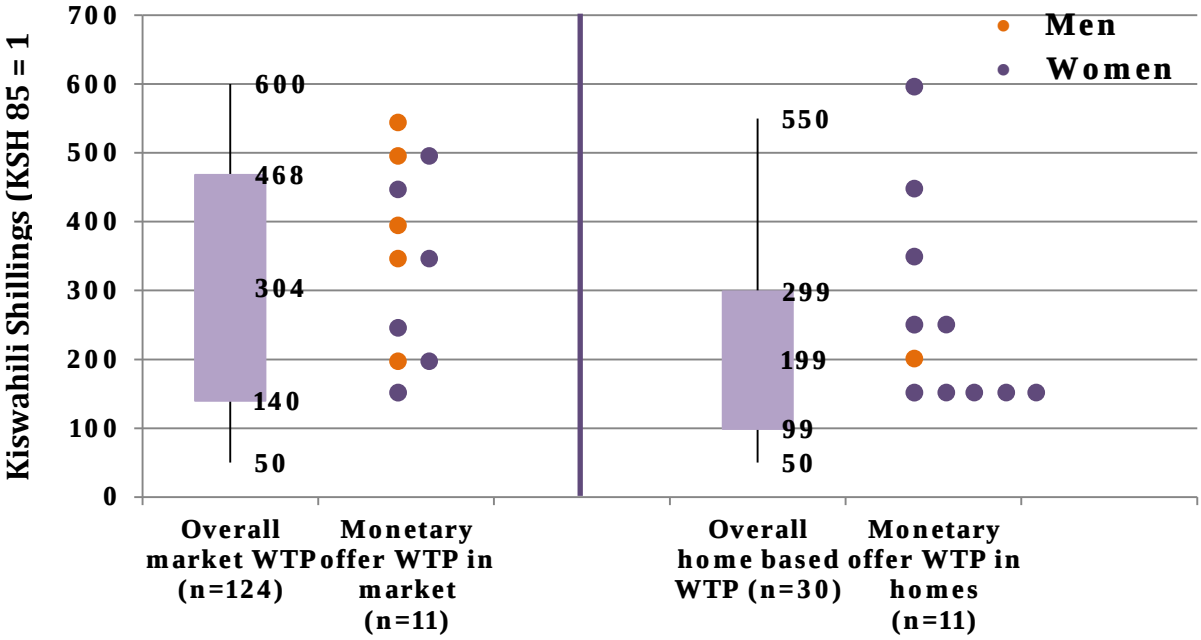


Figure 12 A comparison of overall willingness to pay offers from market and home based surveys



The participants' willingness to pay is shown in Figure 12. Because most participants did not complete the survey, the overall market and home based WTP shown is representative of the value given before the surveys were discontinued. This value in the sense does not necessarily represent the participants' willingness to pay (because no monetary offer was given), but rather how much they would pay if they could. Also

shown in Figure 12 is the willingness to pay from those who did make final offers, a total of eleven in each study setting.

The average of the overall willingness to pay in the markets was about KSH 100 ($1.20) higher than in the home based study. The individual purple and orange dots show the willingness to pay of those men and women who completed the survey with a monetary offer. In the market, those who completed the survey valued the Safe Squat at KSH 8 more than the overall group. In the home based surveys, those who completed the survey valued the Safe Squat at KSH 15 more than the overall group. The one woman surveyed in the market who had been previously exposed to the Safe Squat offered to purchase at KSH 500 ($5.88).

As a robustness check, we consider whether the prices in the envelopes were random. Of the eleven participants who made monetary bids in the market setting, four of them "won" the mat. Of the seven participants who made monetary bids in the home based setting, four also "won" the mat. When averaged, these two scenarios yielded an approximate 47% ratio of wins and losses, which suggests successful randomization.

Beginning during the middle of the survey implementation timeline, participants were asked if they would be interested in a long term payment plan for purchasing the Safe Squat. Of the 41 market participants asked, 31 said they would be interested. When asked how much they would be willing to pay per week, their responses averaged KSH 85 ($1).

Sale of remaining Safe Squat mats

Toward the end of the project timeline, it became clear that there would be leftover Safe Squat mats that would not be sold during the willingness to pay survey. Using a similar market setup, the remaining mats were displayed with a price tag of KSH 350 ($4). The mats were promoted with no addition of the survey to see if market visitors responded to a more realistic market sale scenario. During these scenarios, recruited "participants" were told there would be room for bargaining, which they took advantage of. Many men and women came and asked about the Safe Squat, creating a snowball of interest. In the end, four remaining Safe Squat mats were sold in two days. The mats were all bargained and sold to four men for KSH 100 ($1.20).

Of the remaining Safe Squat mats, two were donated to the children's school adjacent to IPA headquarters, and one was stored at IPA for future research.

CHAPTER 5: DISCUSSION

Economic differences in survey participants between home and market settings

Questions regarding the use and knowledge of potties and the Safe Squat confirmed the hypothesis that market respondents were not as familiar with the Safe Squat as home based respondents. In addition, a larger percentage of those in the market had seen, owned, used, or trained a child using potties. This could be due to the possibility of a higher socioeconomic status (SES) in market respondents.

Participants in the market survey reported spending more on their latrines than those in the home based setting. The average amount of money spent on current latrines in the home based surveys was $23 while in market based surveys the average amount spent was $67. Most households however, still only had one latrine per household. There were also a larger percentage of mud-floored pit latrines in home based surveys (89%) than market based surveys (59%) and a larger percentage of cement latrines in market based surveys (38%) than home based surveys (11%). All of these figures could also suggest a higher (SES) represented at the market when compared to those recruited for the home based surveys.

The team found that the willingness to pay in the home based setting was approximately 100 shillings higher than in the market setting. Although it is a small sample size to compare, we can also gather that there is a trend of a lower socioeconomic status level in the home based survey population when compared to the population seen at the market.

There was little difference in the willingness to pay between men and women, so we are unable to accurately confirm or deny the findings from the focus groups.

Gender differences in decision making power

We noted a number of differences between the participants in the home-based group and at the market which could affect interest in the Safe Squat and willingness to pay. The percentage of survey participants who were male was larger in the market setting than in the home based surveys. Although this difference is not statistically significant, it might be worth noting what could lead men to be more willing to participate in the market based study. The environment in which the surveys took place could have an effect on this distribution, as men might be more likely to be working near the market than the liguru's compound. The setup location in the markets could also greatly influence who gets recruited. On the team's first day in the market in Ogallo, our stand created a lot of primarily male interest. We suspect that this was due to the fact that the survey van was setup next to the live chicken vendors, a male run business as well as common gathering location for males. This hypothesis is consistent with what the mothers and fathers said in focus groups regarding husbands being in charge of making larger purchases such as livestock.

As mentioned, our survey showed that 78% percent of men said that they alone made the decisions regarding latrines in their household, but only 44% of women said their partner alone made these decisions. In addition, 34% of women said that they and their partner made decisions regarding their latrine, but only 3% of men admitted to making

latrine decisions with their spouse. These results showed an obvious discontinuity in power structure beliefs between men and women in the communities we targeted. It is hard to tell which group was “telling the truth”, but the focus group discussion results suggest that indeed men have more decision making power.

This trend could be important when considering how men and women view the Safe Squat differently. While men in the focus groups saw the benefits of the mat, they did not find it to be a basic necessity, in contrast to women, who did find the Safe Squat to be a basic necessity. While marketing efforts could be targeted toward women, behind their enthusiasm is a husband who needs to be convinced that the Safe Squat is indeed a basic necessity.

When the follow up surveys were implemented, the team asked each participant to refer us to at least one other mother who might want to use the Safe Squat. Since there were twelve follow up participants, our goal sample size for home based surveys was n=12. In fact, 30 mothers and caretakers came to participate in our home based surveys, far exceeding our expectations. At an early stage, our team was seeing the powerful effects of word of mouth recruiting. What the team could not assume at an early stage was that this response was due to previous exposure to the Safe Squat. Enthusiasm could have been due to a variety of reasons, including anticipated incentives (possibility of obtaining a free Safe Squat or a bar of soap), curiosity about IPA as outsiders, or the actual effect of previous exposure and acceptance of the Safe Squat. While these reasons could have still contributed to survey results, the home based surveys showed that previous exposure did indeed play a role in the likelihood of a participant placing a monetary offer (11/30 home based participants versus 11/124 market based

participants). It should also be noted that only one man made a monetary offer in the home based setting, compared to 5 men in the market study. When it came to home based surveys, of the 30 conducted, 18 elected to pause the survey to collect more funds for purchasing the Safe Squat. Of those 18, five participants returned to complete the survey. Although only four more participants than the market based surveys, this number showed an impressive turnout when considering the overall home based sample size is a quarter of the market based sample size. Because the home based surveys were done first, the percentage of completed surveys set the team up for unreached expectations in the market surveys. This however, showed signs that exposure to the Safe Squat could indeed have a large effect on a person's willingness to pay for the Safe Squat.

The purchase of four Safe Squat mats in two days during the fixed price sale at the end of survey implementation indicated that a real market situation may lead to quicker sales. The fact that those who purchased the Safe Squat mats were all male should be noted and perhaps researched further.

Limitations

Of the 124 surveys conducted in the markets, 114 participants elected to pause the survey so they could collect more money to "purchase" the Safe Squat. Of those 114 participants, only one came back. This led to a much smaller sample size of participants who gave an actual willingness to pay, as those were the only one who gave a monetary offer. Why did almost none of these participants come back? A possible reason could be that none of these participants ever had any intentions of returning to finish the survey, and just wanted to "let the field assistants down easy". Another explanation could be

that word of mouth travelled that the field assistants were giving out bars of soap as incentives to anyone who attempted the survey, whether they paused the survey or not. Participants may have also been intimidated by the upfront request for payment, especially if they were not familiar with IPA or the Safe Squat.

Another possible reason for low return rates could be due to the disproportionate amount of women who were recruited for the study. As indicated by our focus groups, both mothers and fathers said they would consult their husbands before making a purchase such as the Safe Squat. If this is indeed true, then most of these women would not have purchased the Safe Squat on the spot regardless of if they were financially able. Most women would need to go home and confer with their husbands, their husbands would need to approve of the Safe Squat, and the women would need to be motivated enough to return and purchase the Safe Squat.

The timing of the overall survey implementation could have played a large role in the purchase rates we observed. When casually speaking with other market vendors, it became clear that harvest season was due to begin within the month. This meant that most of the funds saved from the previous harvest season were now scarce, leading to low sales at the market as a whole.

One of the questions in the survey asked if the participants had knew what the Safe Squat was used for. The responses given to this question could have been influenced by the script given at the beginning of the survey that gave an introduction to the Safe Squat.

The fixed price sale of the Safe Squat mats at the end of survey implementation did not include rigorous methods. It was used as an exploratory method for market sales and should be followed up with further research or documented during actual Safe Squat sales.

Recommendations

The willingness to pay study was done with the purpose to inform the research team on how to proceed in the sale of the Safe Squat. This not only includes how much to sell the mats for, but who to sell the mats to and under what circumstances.

Marketing segmentation

In regards to who the Safe Squat mats should be sold to, the research team looked at marketing toward mothers and fathers. At first glance, it might seem like women are the obvious direction for market segmentation. The gender split shown in the surveys was overwhelmingly female. In addition, during the focus groups mothers expressed a higher value for the Safe Squat. But even so, something was holding these women back from purchasing the mats.

The men in the focus group gave the Safe Squat less of a monetary value and showed less enthusiasm about the Safe Squat overall. However, regardless of how much their wives value or endorse a product, it was seemingly clear that men in the household still hold the financial control. If this is true, it would be unlikely that a mother would come to the market to buy a relatively high ticket item as an “impulse buy”. As mentioned,

women value the opinions of their husbands and would need to consult them before making such purchases.

The Safe Squat should be marketed toward each gender, but perhaps with different strategies in mind. The salesman should be aware that more women will express interest, but they need to be reassured that they can go home, consult their husbands and come back to purchase the Safe Squat. For fathers, know that the location of where the Safe Squat is being sold is an important factor, so setting up the stand near areas they normally make purchases could garner more interest.

Previous exposure

Results also indicated that previous exposure to the Safe Squat plays a strong role in the initial interest to purchase the Safe Squat. A higher percentage of home based survey respondents made monetary offers than did the market based respondents (11/30 vs. 11/124 respectively). There may be an effect due to factors other than previous exposure to the Safe Squat, such as the surveys being conducted in a centralized village location or persuasion from friends or gatekeepers. The results of our research, however, still speak to the effect of marketing to communities instead of individuals.

But enthusiasm can only take you partway to a successful sale. The market based respondents who made monetary offers were willing to pay an average of over KSH 100 ($1.20) more for the Safe Squat. This information, combined with the market based respondent's higher prevalence of cement based latrines, suggests that market respondents may be at a higher SES. Therefore, we cannot say that a person's higher SES level will indicate a higher likelihood of buying the Safe Squat.

That said, it is still highly worth the effort to promote previous exposure to the Safe Squat even if their willingness to pay is less. If the latrine mat was marketed toward a community instead of sold at markets, it has the benefit of being endorsed by community members in addition to just an outside organization such as IPA. The Safe Squat's benefits would be approved by experiences instead of words. Most importantly, if the Safe Squat is introduced by community health workers instead of salesman, we can ensure that mothers and children get proper training on how to use and take care of the Safe Squat. Regardless, excitement about the Safe Squat seemed to be infectious, and that is something our research team can take advantage of.

CHAPTER 6: CONCLUSION

The WHO's report of 1.5 million children that die each year due to diarrheal disease[1] is a hard figure to digest. The fact that many of these deaths are completely preventable if changes are made to water, sanitation, and hygiene[2] has led to world-wide improvement efforts. Our research team chose to focus on the area of sanitation, specifically addressing the problem of children's open defecation practices which can make children more susceptible to diarrheal disease. We built off of previous research done by Gabriella Van Schoyck, who found women in rural Western Kenya were letting their children openly defecate to avoid a messy pit latrine and for fear of their children falling into the large latrine hole. [4]

Created and led by Clair Null and Silantoi Kisoso and in partnership with IPA, Gabriella Van Schoyck introduced the Safe Squat to the women of Busia, Kenya. The Safe Squat, a potty training tool that features a flat slab and a small keyhole in the center, was well received by mothers in the area. After the two week pilot, the mothers reported that when placed over the existing latrine hole, children felt stable and were excited to use the latrine. Mothers also reported the Safe Squat being easy to clean and convenient to store.

Based on the positive results from the pilots, the research team decided to proceed with the plan to sell Safe Squats in areas like Busia, Kenya. To determine a selling price, the research team conducted a willingness to pay study in the same town as the pilots the previous year. Focus groups were conducted to inform the team how mothers and fathers view financial decision making in regards to sanitation. Results showed an

indication that women were more involved in their children's day to day purchases, but men had more authority over large purchases, unless the women were considered "untraditional mothers". This idea was reiterated in the markets, where women reported higher levels of authority with their husbands, while most men reported being the decision maker in regards to latrines. When showed the Safe Squat, women put a higher monetary value on the mat, but both mothers and fathers praised the value the tool could have on their children's sanitation practices.

The willingness to pay study itself was based off of the Becker-Degroot-Marschak method, in which participants are put into a situation where they can actually purchase the Safe Squat, therefore incentivizing an accurate willingness to pay. The surveys were conducted in two study settings, one being in homes of women in the same village as the pilots from the previous year, and the other in markets of nearby villages. The two study settings allowed the team to compare the willingness to pay of those who had previously been exposed to the Safe Squat and those who had not.

Results showed that the average willingness to pay of 124 market participants was about KSH 100 ($1.20) higher than in the home based setting (KSH 304 and KSH 199, respectively). However, a larger percentage of the 30 home based participants completed the survey and placed monetary offers (36% versus 9%, respectively). This high level of survey discontinuation in the markets was unprecedented, but allowed researchers to reflect on market practices. As reported in the focus groups, men and women will often only bring the amount of money they need for the day to the markets, therefore not having leftover funds for impulse buys such as the Safe Squat. Such purchases need to be consulted with family members, and Safe Squat salesman should

allow for that time. However, it was shown that previous exposure to the Safe Squat had a positive effect, so introducing the mat into a village prior to its sale could be a successful business model.

With further funding, the team hopes to scale this project up in villages across Western Kenya and similar areas. The research team is optimistic in light of the positive responses received from the community and firmly believes the Safe Squat has the potential to lower rates of open defecation practices in children. We hope that lowered open defecation practices lead to a trend in improved sanitation and an overall decrease in unnecessary deaths due to diarrheal disease.

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APPENDICES

Appendix A: Decision-Making Focus Group Discussion Guide – Fathers Tool

Latrine Training Mat Project

Decision-Making Focus Group Discussion Guide – Fathers

Inclusion/Exclusion Criteria:

1) *All participants need to be a father of at least one child between the ages of 1-5.*
2) *All focus group and in depth interview participants should be currently using a mud floored latrine.*
3) *Focus Group participants without latrines, or with "non-mud-floored" latrines are ineligible.*

Goal:

1) *To understand how men shape household decisions to invest in sanitation structures and tools.*

Objectives:

1) To understand how men in the community prioritize sanitation expenses among other household expenses.
2) To understand the level of decision making power men have over these and other household related expenses.
3) To gain an in depth understanding of perceptions regarding the value placed on potties, latrine training mats and other toilet training tools.

Background Information

Date (dd/mm/yyyy): |__|__|/|__|__|/|__|__|__|__|

Interviewer ID/Name:
|_|__|_|__|/_____

Village: _____ Village ID number: |_|_|_|_|_|

Division: _____ District: _____

Location: _____ Sub-location: _____

Number of focus group participants: _____

Welcome & Informed Consent

Read the following paragraph to the respondent in Kiswahili, and ask if they agree to participate.

Read: We would like to thank everyone for coming to this discussion today, we appreciate your time. My name is _____and I am from Innovations for Poverty Action (IPA) a research based organization, in Busia Town. This is_____, and [she/he] is a note-taker.

We would like to have a discussion today about how you make decisions about spending money on sanitation and hygiene in your house and in your community. Even if you do not have direct experience with some of the questions or scenarios we would still like to know your opinions. Please remember that we value your thoughts on these topics. The information that you provide will help us improve programs in communities like yours; there are no right or wrong answers.

I will keep everything that you tell me entirely private and confidential, and will not talk to other people about what you have said. I will also keep you and your family's names confidential, and not tell anyone that you have talked to me. Your answers

will in no way affect the assistance that IPA may or may not provide to your community or your family.

The risks of participating in this research are small, and include feelings of discomfort or embarrassment that you might have over the course of this conversations. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us. Your participation is voluntary and you are free to leave at any time. However, we hope that you will stay for the whole discussion because your thoughts and opinions are valuable to this project.

If you have any questions about our study, or the conversation we will have today, you can call us at our IPA office in Busia town. The number is 0726709525**. [FO: Give each participant the contact information for IPA's Busia office].** You may flash our number and we will call you back to respond to any questions or concerns you may have. All answers will be kept private. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us.

We would like to use a voice recorder; the recorder will only record our voices. It does not take any pictures. We have a note taker but they are only taking notes in case the recorder fails. We use the recorder because it ensures that we gather all of your opinions and thoughts. The recordings are strictly confidential and will not be shared with anyone outside of the research team.

We will now explain the structure of this discussion.

- We will only use first names in the discussion.
- You do not need to speak in order, but only one person should speak at a time (it is difficult for the recorder to pick up more than one voice). It is important that everyone be able to hear each other so that you can have a group discussion.
- We would like to hear from everyone. It is important that you share your ideas with the group. If you agree or disagree with what other people say then please tell that to the group.
- It is important that there be a true group discussion. Please talk to the whole group not the person seated next to you.

  - I am here to facilitate the group but I am not an expert on the topics. The reason for being here is to hear your thoughts and opinions.

- We think that this group should last between 60 and 90 minutes. We look forward to hearing your thoughts and opinions whatever they may be.

- I will go around the room and ask your consent to participate. Please say yes or no **[FO: obtain consent from all Focus Group Participants]**.

- Thanks for your patience. Is everyone ready to begin? OK, we will begin recording now.

[FO begin recording now]

Introductory Questions

Let's start off by going around the room to introduce ourselves.

1. How many children do you have and what age are they?

2. How many latrines do you have in your household? [probe: Do you share the latrine with other families in your compound? How many people share the latrine?]

Latrine Decision-Making Questions

3. Why did you decide to build a latrine? [probe: who made this decision? Was it a family decision or did anyone in particular make the decision?]

4. What role did you play in deciding to build the latrine? [probe: materials selection? Upgrades? Labor?]

5. How do you and your wife decide when changes or repairs need to be made to the latrine? [probe: do you decide together, or does one of you make the decision?]

6. Have you talked about putting a cement or plastic slab on your latrine floor? [probe: Do you think you will do this in the next year? Who will make the final decision to do this?]

General Financial Decision Making Questions

7. Do you ever purchase things for your family? [probe: what kinds of things do you usually purchase?]

8. Is there anything your wife usually purchases? [probe:
What is your spouse in charge of purchasing?

9. Are you able to purchase things for yourself without asking your wife?[probe: if yes, what kinds of things? If no, why?]

10. What kinds of things do you have to consult your wife about before buying? [probe: what about your wife, when does he have to consult you?]

11. Is there anything your wife can purchase without asking you? [probe: if yes, what kinds of things? If no, why?]

Financial Decision Making Questions Regarding Expenses for Children

12. Who makes spending decisions when it comes to your children's basic needs? [probe: what do you buy? What does your wife buy?]

13. How much money do you think you spend per week on things for your children?[probe: what are these things? How many of these are necessities vs. things they want but don't need?]

14. Have you ever spent money on sanitation related products for your children? [probe: what kinds of products? Toilet paper? Soap? Diapers? Potties?]

15. Do you know what a pottie is? [if no, explain what is and what is looks like]

16. Have you ever used a pottie for your children before? [probe: do you own a pottie? What do you think of it? Did you pay for the pottie? How much did you pay for it?]

17. How about this latrine training mat? Have any of you ever seen something like this?

18. Do you know what the mat is for? [probe: if no, explain what the mat is for, and the benefits of the mat].

19. If you have children that are not using the latrine yet, do you think this would help them, not help them, or not make any difference?

20. If this was sold in a stand on village market day, how much do you think it would cost?

21. At the cost you have said it is, do you think you would be able to purchase it?

22. Would you be able to make the decision to purchase it alone, or would you have to make this decision together with your wife?[probe: is there anyone else you would involve in the decision making process?]

23. Would you consider this something that is a necessity for your child, or something that they should have but don't really need? [probe: why?]

We are now reaching the end of the discussion. Does anyone have any questions to add before we end this session?

Are there any final questions? **[FO: if no, proceed]** I would like to thank you all very much for you participation in this discussion, your experiences and opinions are very valuable to our research on latrine training mats. If there are no other questions, I will end our session now.

[FO-turn recorder off]

Appendix B: Decision-Making Focus Group Discussion Guide – Mothers Tool

Latrine Training Mat Project

Decision-Making Focus Group Discussion Guide – Mothers

Inclusion/Exclusion Criteria:

4) *All participants need to be a father of at least one child between the ages of 1-5.*
5) *All focus group and in depth interview participants should be currently using a mud floored latrine.*
6) *Focus Group participants without latrines, or with "non-mud-floored" latrines are ineligible.*

Goal:

2) *To understand how men shape household decisions to invest in sanitation structures and tools.*

Objectives:

4) To understand how men in the community prioritize sanitation expenses among other household expenses.
5) To understand the level of decision making power men have over these and other household related expenses.
6) To gain an in depth understanding of perceptions regarding the value placed on potties, latrine training mats and other toilet training tools.

Background Information

Date (dd/mm/yyyy): |__|__|/|__|__|/|__|__|__|__|

Interviewer ID/Name:
|__|__|__|__|/_____

Village: _____ Village ID number:
|__|__|__|__|

Division: _____ District: _____

Location: _____ Sub-location: _____

Number of focus group participants: _____

Welcome & Informed Consent

Read the following paragraph to the respondent in Kiswahili, and ask if they agree to participate.

Read: We would like to thank everyone for coming to this discussion today, we appreciate your time. My name is _____and I am from Innovations for Poverty Action (IPA) a research based organization, in Busia Town . This is_____, and [she/he] is a note-taker.

We would like to have a discussion today about how you make decisions about spending money on sanitation and hygiene in your house and in your community. Even if you do

not have direct experience with some of the questions or scenarios we would still like to know your opinions. Please remember that we value your thoughts on these topics. The information that you provide will help us improve programs in communities like yours; there are no right or wrong answers.

I will keep everything that you tell me entirely private and confidential, and will not talk to other people about what you have said. I will also keep you and your family's names confidential, and not tell anyone that you have talked to me. Your answers will in no way affect the assistance that IPA may or may not provide to your community or your family.

The risks of participating in this research are small, and include feelings of discomfort or embarrassment that you might have over the course of this conversations. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us. Your participation is voluntary and you are free to leave at any time. However, we hope that you will stay for the whole discussion because your thoughts and opinions are valuable to this project.

If you have any questions about our study, or the conversation we will have today, you can call us at our IPA office in Busia town. The number is 0726709525**. [FO: Give each participant the contact information for IPA's Busia office].** You may flash our number and we will call you back to respond to any questions or concerns you may have. All answers will be kept private. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us.

We would like to use a voice recorder; the recorder will only record our voices. It does not take any pictures. We have a note taker but they are only taking notes in case the recorder fails. We use the recorder because it ensures that we gather all of your opinions and thoughts. The recordings are strictly confidential and will not be shared with anyone outside of the research team.

We will now explain the structure of this discussion.

- We will only use first names in the discussion.

  - You do not need to speak in order, but only one person should speak at a time (it is difficult for the recorder to pick up more than one voice). It is important that everyone be able to hear each other so that you can have a group discussion.
  - We would like to hear from everyone. It is important that you share your ideas with the group. If you agree or disagree with what other people say then please tell that to the group.
  - It is important that there be a true group discussion. Please talk to the whole group not the person seated next to you.
  - I am here to facilitate the group but I am not an expert on the topics. The reason for being here is to hear your thoughts and opinions.

- We think that this group should last between 60 and 90 minutes. We look forward to hearing your thoughts and opinions whatever they may be.

- I will go around the room and ask your consent to participate. Please say yes or no **[FO: obtain consent from all Focus Group Participants]**.

- Thanks for your patience. Is everyone ready to begin? OK, we will begin recording now.

[FO begin recording now]

Introductory Questions

Let's start off by going around the room to introduce ourselves.

24. How many children do you have and what age are they?

25. How many latrines do you have in your household? [probe: Do you share the latrine with other families in your compound? How many people share the latrine?]

Latrine Decision-Making Questions

26. Why did you decide to build a latrine? [probe: who made this decision? Was it a family decision or did anyone in particular make the decision?]

27. What role did you play in deciding to build the latrine? [probe: materials selection? Upgrades? Labor?]

28. How do you and your husband decide when changes or repairs need to be made to the latrine? [probe: do you decide together, or does one of you make the decision?]

29. Have you talked about putting a cement or plastic slab on your latrine floor? [probe: Do you think you will do this in the next year? Who will make the final decision to do this?]

General Financial Decision Making Questions

30. Do you ever purchase things for your family? [probe: what kinds of things do you usually purchase?]

31. Is there anything your husband usually purchases? [probe: What is your spouse in charge of purchasing?

32. Are you able to purchase things for yourself without asking your husband?[probe: if yes, what kinds of things? If no, why?]

33. What kinds of things do you have to consult your husband about before buying? [probe: what about your husband, when does he have to consult you?]

34. Is there anything your husband can purchase without asking you? [probe: if yes, what kinds of things? If no, why?]

Financial Decision Making Questions Regarding Expenses for Children

35. Who makes spending decisions when it comes to your children's basic needs? [probe: what do you buy? What does your husband buy?]

36. How much money do you think you spend per week on things for your children?[probe: what are these things? How many of these are necessities vs. things they want but don't need?]

37. Have you ever spent money on sanitation related products for your children? [probe: what kinds of products? Toilet paper? Soap? Diapers? Potties?]

38. Do you know what a pottie is? [if no, explain what is and what is looks like]

39. Have you ever used a pottie for your children before? [probe: do you own a pottie? What do you think of it? Did you pay for the pottie? How much did you pay for it?]

40. How about this latrine training mat? Have any of you ever seen something like this?

41. Do you know what the mat is for? [probe: if no, explain what the mat is for, and the benefits of the mat].

42. If you have children that are not using the latrine yet, do you think this would help them, not help them, or not make any difference?

43. If this was sold in a stand on village market day, how much do you think it would cost?

44. At the cost you have said it is, do you think you would be able to purchase it?

45. Would you be able to make the decision to purchase it alone, or would you have to make this decision together with your husband?[probe: is there anyone else you would involve in the decision making process?]

46. Would you consider this something that is a necessity for your child, or something that they should have but don't really need? [probe: why?]

We are now reaching the end of the discussion. Does anyone have any questions to add before we end this session?

Are there any final questions? **[FO: if no, proceed]** I would like to thank you all very much for you participation in this discussion, your experiences and opinions are very valuable to our research on latrine training mats. If there are no other questions, I will end our session now.

[FO-turn recorder off]

Appendix C: Safe Squat Home Based Survey Tool

Safe Squat™ Home Based Survey for Friends/Neighbors of Previous LTM users

Inclusion/Exclusion Criteria:

7) *All participants need to be a parent or caregiver of at least one child between the ages of 1-5.*
8) *All participants need to have previous exposure to a Safe Squat mat, and need to be referred by a previous LTM user.*
9) *All participants should be over the age of 18 years old.*

Goal:

3) To investigate the value that children's guardians in rural Western Kenya place on a Safe squat training mat.
4) To evaluate whether those exposed to mats value the tool any differently than those who are seeing it for the first time.
5) To investigate whether there are specific identifiers shared by those who value the mat highly.

Objectives:

1) To determine the average monetary value placed on the Safe Squat mat by those previously exposed to the mat, using the Becker-DeGroot-Marschak method.

2) To collect data that will capture the level of interest generated by the Safe Squat mat when already in use in communities, as compared to a first time introduction in local markets.

3) To use survey methodology to evaluate whether those most interested in the mat share any common characteristics, such as use of existing sanitation tools, like potties.

Background Information

Date (dd/mm/yyyy): |__|__|/|__|__|/|__|__|__|__|

Interviewer ID/Name:
|__|__|__|__|/_____

Village: _____ Village ID number:
|__|__|__|__|

Division: _____ District: _____

Location: _____ Sub-location: _____

Introduction and Consent:

Hello. My name is _____. I am working with Innovations for Poverty Action, the organization that has created this tool [POINT OUT LATRINE TRAINING MAT]. I have told you about the tool and how it can help you and your family. Now, IPA would like to conduct a survey in Kenya, and we would like to ask you some questions about your household, and your opinion regarding the mat. The information that you provide will help us improve programs in communities like yours; there are no right or wrong answers.

I will keep everything that you tell me entirely private and confidential, and will not talk to other people about what you have said. I will also keep you and your family's names confidential, and not tell anyone that you have talked to me. Your answers will in no way affect the assistance that IPA may or may not provide to your community or your family.

The risks of participating in this research are small, and include feelings of discomfort or embarrassment that you might have over the course of this conversation. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us. Your participation is voluntary and you are free to leave at any time. However, we hope that you will stay for the whole survey because your thoughts and opinions are valuable to this project.

If you have any questions about our study, or the conversation we will have today, you can call us at our IPA office in Busia town. The number is 0726709525**. [FO: Give participant the contact information for IPA's Busia office].** You may flash our number and we will call you back to respond to any questions or concerns you may have. All your answers will be kept private. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us.

After we ask a few questions about yourself and your household, we'll give you a chance to buy the mat at a discounted price. We'll first walk you through an example of this, using biscuits, so you can get a sense of what the exercise will be like. To answer the questions

and participate in this exercise you must be over 18, and have at least one child between 1 and 5 years old in your household. The questions in this survey usually take about 60 minutes to complete.

All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions, since your views will provide us with important information. If I ask you any question you don't want to answer, just let me know and I will go on to the next question, or you can stop the interview at any time.

If you have any questions after our survey, please call the number on this card. You can flash us at this number and we'll call you back within 24 hours to help with any questions or concerns you have regarding the study.

[FO hand out number to Busia Office)

Do you have any questions?

May I begin the interview now?

[FO: Please circle option 1 or 2, depending on the participant's response]

Respondent Agrees to be Interviewed…1

CONTINUE TO NEXT PAGE

Respondent Does not Agree to be Interviewed…2

END SURVEY

Signature of Interviewer_____ Date _____

SECTION ONE

Fill in the blank

1. Sex: _____Male _____Female
2. Respondent's Age: _____years
3. Number of children: _____
4. Ages of children: 1) Gender_____Age_____ 2)Gender_____Age_____
   3)Gender_____Age_____ 4)Gender_____Age_____ 5)Gender_____Age_____
   6)Gender_____Age_____
5. Have you ever trained a child to use the latrine before? *Circle One* Yes No

6. Do you know what a potty is? *Circle One* Yes No

7. Do you own a potty? *Circle One* Yes No

8. Have you ever used one to potty train your children? *Circle One*

Yes No

9. Have you ever seen anyone/your friend use this latrine training mat? *Circle One*
   Yes No

10. Would you ever buy a mat like this for your own home? *Circle One*
    Yes No
11. Do you have a latrine in your home? *Circle One*
    Yes No
12. How many latrines do you have? *Fill in the blank* _____
13. What kind of floor does your latrine have? *Circle One*
    Mud Cement Logs Plastic Slab Other
14. *IF RESPONDENT HAS A SECOND LATRINE, NOTE THE FLOOR TYPE FOR THE SECOND ONE HERE: Circle One*

    Mud Cement Logs Plastic Slab Other

15. Is your latrine shared? *Circle One* Yes No
16. How many adults share it? *Fill in the blank* _____
17. How many children share it? *Fill in the blank* _____
18. How much money did you spend to build your latrine? *Fill in the blank* $_____
19. Do you think you'll make more changes to the latrine over time?
    Circle one: Yes No

    [probe: If Yes, what changes? *Write any answers in space provided below*]

20. Who makes decisions about fixing or changing your latrine? *Circle One*
    Myself my partner myself and partner together Other person _____

[FO say: Now I'm going to ask you some questions about your children.]

21. Do all of your children use the latrine unassisted? *Circle One* Yes No
22. IF NO How many children do not use the latrine, or use it with assistance?
    Fill in the blank _____
23. How old are the children that do not use the latrine, or use it with assistance?
    Fill in the blank with all relevant ages, separated by commas

    _____

24. If any children do not use the latrine, where do these children defecate? *Circle One*

Yard Pottie Diapers Other DontKnow Refused to Answer

IF OTHER Please specify _____

[probe: why do they use this other form?]

25. Have you ever trained a child to use the latrine before? *Circle One* Yes No

26. Do you know what a potty is? *Circle One* Yes No

27. Do you own a potty? *Circle One* Yes No

28. Have you ever used one to potty train your children? *Circle One*

Yes No

[probe: if NO, what do they use? Why do/did they use this other method? Provide answers to probe in space below]

SECTION 2: UNSPECIFIED PRICE BDM WILLINGNESS TO PAY METHOD

PRICE RANGE 150-600 KSH [FO: DO NOT SAY]

FO SAY:

" We will now go through an activity that will help us understand how much people would pay for the mat. Additionally, you will now have the chance to buy a Safe Squat mat through a special promotion. However, as we use a special procedure for this promotion, we would like you to practice first with the purchase of a packet of biscuits, as a demonstration. We thus start with the biscuits to demonstrate the procedure."

PRACTICE ROUND

The price of biscuits is usually 5Ksh. However, as a promotion we will offer some people a chance to buy the biscuits for less. So the price for these biscuits could be 5 KSH, or it could be less with the special promotion. *[Show the unopened set of envelopes containing price tickets to the respondent.]* Five possible prices are in these envelopes. *[Show the unopened set of envelopes.]* Please mix these up. *[Have the respondent shuffle the envelopes.]* Please choose one of these envelopes, but do not open it. *[Let the respondent choose one envelope. Put the other envelopes away or to the side.]* Inside this envelope is the price at which these biscuits will be offered to you. This is the only price I will be able to offer to you. Now, I want you to tell me the highest price you would be willing and able to pay for the biscuits. If the price you say is higher than, or equal to, the price in this envelope, then you will pay the price in the envelope, and I will give you the biscuits. If the price you say is lower than the price in the envelope, then I won't be able to sell you the biscuits.

Do you understand? *If not, explain the procedure again.*

Are you ready? Okay, please tell me the highest price you would be willing and able to pay for the biscuits.

Q1. Write the price quoted by the respondent here: |_____| shillings

FO: IF THE PRICE QUOTED IS <u>5 KSH</u>, PLEASE GO TO Q2.
FO: IF THE PRICE QUOTED IS <u>0 KSH</u>: SAY: "Do you understand you cannot purchase the biscuits? You will not be able to change your mind once the envelope is open. Would you purchase the biscuits at any price, at 1 KSH for example?" → Q3

Now, I would like to review your decision with you. You have told me that, if the price in this envelope is [*state the maximum price the respondent said they would be willing and able to pay],* or lower, you will purchase the biscuits, but if the price is higher than this, you will not. Do you understand that, if the price in the envelope is [*lowest price rejected*], you cannot purchase the biscuits? You will not be able to change your mind once the envelope is open. If the price is [*maximum price plus 1Ksh*], would you purchase the biscuits?

If yes, repeat with next price up until respondent finally does reject the price.

Q2. Highest price to which the respondent agrees: |_____|

You have told me that you will purchase the biscuits if the price is *[read price given above]*. Do you understand that if the price in the envelope is ___, then you will purchase the biscuits for ___ KSH, *[repeat for the maximum price stated, and all lower prices]*?

Tell me, if the price is *[maximum price stated]*, will you purchase the biscuits?

Would you please collect the money now?

If no, repeat with the price just less until the respondent finally does accept the price and is able to collect the money.

Q3. Final agreed price: |_____|

Now, please open the envelope.

Q4. Offer price (circle one): 1 2 3 4 5

If the offer price is less than or equal to the final agreed price: The price is *[offer price]*, which you agreed to pay.
Conduct transaction. Go to Q5.a.

If the offer price is higher than the final agreed price: The price is *[offer price]*, which you said you would not pay.
Go to Q6.a

Q5.a Did the participant ultimately pay the indicated amount? Yes

No

Q5.b *Indicate reason(s) for participant's non-payment:*
_____

_____
_____

_____

_____

Q6.a *For "losers" only:* I'm sorry, but I will not be able to sell the biscuits to you. But please tell me, if you could purchase at *[offer price]*, would you?

Yes

No

Refuses / DK

Q6.b *For "losers" only:* Do you wish you had agreed to a higher price for the biscuits?

Yes

No

Don't Know

Q6.c *For "losers" only:* What is the maximum price you wish you had agreed to?

_____ KSH

Don't Know

Q7.a *For all*: Thank you for participating in our sale. We have just a few more questions to ask to understand whether we are explaining the procedure correctly. Please tell me, what would have happened if the price in the envelope had been *[choose a price less than their maximum agreed-to price]*?*Do not prompt.*

FO: IF PRICE AGREED TO WAS <u>1 KSH or 0 KSH</u>: DO NOT ASK

Would have purchased Biscuits at th price

Other respon

Don't Know

Q7.b *If other response, record what the respondent said would have happened:*

_____

_____

Q8.a Please tell me, what would have happened if the price in the envelope had been *[choose a price higher than their maximum agreed-to price]. Do not prompt.*

FO: IF PRICE AGREED TO WAS 5 KSH: DO NOT ASK

Would not hav
purchased

Other respons

Don't Know

Q8.b *If other response, record what the respondent said would have happened:*

_____

_____

Q9.a *Winning respondents only: did the respondent attempt to bargain for a better price for the biscuits?*

Yes

No

Q9.b *Losing respondents only: did the respondent attempt to bargain to be able to buy the biscuits at a price higher than her final agreed-to amount?*

Yes

No

Q10. *FO: Eventually write other comments and observations:*

_____

SAFE SQUAT ROUND

Now you have the chance to buy a Safe Squat mat. The price could be as much as 600 KSH but could also be less. Ten possible prices are in these envelopes. *[Show the unopened set of envelopes.]* Please mix these up. *[Have the respondent shuffle the envelopes.]* Please choose one of these envelopes, but do not open it. *[Let the respondent choose one envelope. Put the other envelopes away or to the side.]* Inside this envelope is the price at which the Safe Squat will be offered to you. This is the only price I will be able to offer to you. Now, I want you to tell me the highest price you would be willing and able to pay for the mat. If the price you say is higher, or equal to, than the price in this envelope, then you will pay the price in the envelope, and I will give you the Safe Squat. If the price you say is lower than the price in the envelope, then I won't be able to sell you the Safe Squat.

Do you understand? *If not, explain the procedure again.*

Are you ready? Okay, please tell me the highest price you would be willing and able to pay for the Safe Squat.

Q1. Write the price quoted by the respondent here: |_____|

FO: IF THE PRICE QUOTED IS <u>350 KSH</u>, PLEASE GO TO Q2.
FO: IF THE PRICE QUOTED IS <u>0 KSH</u>: SAY: "Do you understand you cannot purchase the Safe Squat? You will not be able to change your mind once the envelope is open. Would you purchase the Safe Squat at a positive price, at 50 KSH for example?" → Q3

Now, I would like to review your decision with you. You have told me that, if the price is [*state the maximum price the respondent said they would be willing and able to pay*], or lower, you will purchase the Safe Squat, but if the price is higher than this, you will not. Do you understand that, if the price in the envelope is [*price stated plus 50 KSH*], you cannot purchase the Safe Squat? You will not be able to change your mind once the envelope is open. If the price is [*price stated plus 50 KSH*], would you purchase the Safe Squat?

If yes, repeat with next price up until respondent finally does reject the price.

Q2. Highest price to which the respondent agrees |_____|

You have told me that you will purchase the Safe Squat if the price is *[read price given above]*. Do you understand that if the price in the envelope is ___ KSH or less, then you have made a commitment to purchase the Safe Squat for the price in the envelope? That is, if the price in the envelope is *[highest agreed price]*, you will purchase the Safe Squat for [*highest agreed price*], if the price in the envelope is [*highest agreed price minus 5 KSH*], you will purchase the Safe Squat for [*highest agreed price minus 5 KSH*], and so on?

Tell me, if the price is *[highest price accepted]*, will you purchase the Safe Squat? Would you please collect the money now?

If no, repeat in increments of 10 shillings less until the respondent finally does accept the price and is able to collect the money.

Q3. Final agreed price: |_____|

Now, please open the envelope.

Q4. Offer price (circle one): 150 200 250 300 350 400 450 500 550 600

If the offer price is less than or equal to the final agreed price: The price is *[offer price]*, which you agreed to pay.
Conduct transaction. Go to Q5.a.

If the offer price is higher than the final agreed price: The price is *[offer price]*, which you said you would not pay.
Go to Q6.a

Q5.a Did the participant ultimately pay the indicated amount? Yes

No

Q5.b *Indicate reason(s) for participant's non-payment:*

_____

_____

Q6.a	*For "losers" only:* I'm sorry, but I will not be able to sell the Safe Squat to you. But please tell me, if you could purchase at *[offer price]* now, would you?	Yes No Don't Know
Q6.b	*For "losers" only:* Do you wish you had agreed to a higher price for the Safe Squat?	Yes No Refuses / DK
Q6.c	*For "losers" only:* What is the maximum price you wish you had agreed to?	_____ KSH Don't Know
Q7.a	*For all*: Thank you for participating in our sale. We have just a few more questions to understand whether we are explaining the procedure correctly. Please tell me, what would have happened if the price in the envelope had been *[choose a price less than their maximum agreed-to price]. Do not prompt.* ***FO: IF PRICE AGREED TO WAS <u>350 KSH or 0 KSH</u>: DO NOT ASK***	Would have purchased WC at that price Other respons Don't Know
Q7.b	*If other response, record what the respondent said would have happened:*	

_____

_____

Q8.a Please tell me, what would have happened if the price in the envelope had been *[choose a price higher than their maximum agreed-to price]. Do not prompt.*

FO: IF PRICE AGREED TO WAS <u>350 KSH</u>: DO NOT ASK

Would not ha
purchased

Other respon

Don't Know

Q8.b *If other response, record what the respondent said would have happened:*

_____

_____

Q9.a *Winning respondents only: did the respondent attempt to bargain for a better price for the Safe Squat?*

Yes

No

Q9.b *Losing respondents only: did the respondent attempt to bargain to be able to buy the Safe Squat at a price higher than his or her final agreed-to amount?*

Yes

No

Q10 *FO: Eventually write other comments and observations:*

_____

Before we finish the interview, I want to make sure I answer any questions you have.

Do you have any questions?

NOTE QUESTIONS AND ANSWERS HERE:

I want to remind you that all of your information will remain confidential and only the survey team will see your answers. If you have any questions later on, you can reach us at the information on this card. Thanks for taking time to answer these questions. Your answers will be really important to us as we move forward with the Safe Squat Mat.

Appendix D: Safe Squat Market Based Survey Tool

Safe Squat™ Market Based Survey

Inclusion/Exclusion Criteria:

10) *All participants need to be a parent or caregiver of at least one child between the ages of 1-5.*
11) *All participants should be over the age of 18 years old.*

Goal:

6) To investigate the value that children's guardians in rural Western Kenya place on a Safe squat training mat.
7) To evaluate interest generated by the mat in local markets around Busia, Kenya.
8) To investigate whether there are specific identifiers shared by those who value the mat highly.

Objectives:

1) To determine the average monetary value placed on the Safe Squat mat by shoppers at local markets, using the Becker-DeGroot-Marschak method.

2) To collect data that will capture the level of interest generated by the Safe Squat mat in local markets.

3) To use survey methodology to evaluate whether those most interested in the mat share any common characteristics, such as use of existing sanitation tools, like potties.

Background Information

Date (dd/mm/yyyy): |_ _|_ _|/|_ _|_ _|/|_ _|_ _|_ _|_ _|

Interviewer ID/Name:
|_ _|_ _|_ _|_ _|/_____

Village: _____ Village ID number:
|_ _|_ _|_ _|_ _|

Division: _____ District:
_____

Location: _____ Sub-location: _____

Introduction and Consent:

Hello. My name is _____. I am working with Innovations for Poverty Action, the organization that has created this tool [POINT OUT LATRINE TRAINING MAT]. I have told you about the tool and how it can help you and your family. Now, IPA would like to conduct a survey in Kenya, and we would like to ask you some questions about your household, and your opinion regarding the mat. The information that you provide will help us improve programs in communities like yours; there are no right or wrong answers.

I will keep everything that you tell me entirely private and confidential, and will not talk to other people about what you have said. I will also keep you and your family's names confidential, and not tell anyone that you have talked to me. Your answers will in no way affect the assistance that IPA may or may not provide to your community or your family.

The risks of participating in this research are small, and include feelings of discomfort or embarrassment that you might have over the course of this conversation. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us. Your participation is voluntary and you are free to leave at any time. However, we hope that you will stay for the whole survey because your thoughts and opinions are valuable to this project.

If you have any questions about our study, or the conversation we will have today, you can call us at our IPA office in Busia town. The number is 0726709525**. [FO: Give participant the contact information for IPA's Busia office].** You may flash our number and we will call you back to respond to any questions or concerns you may have. All your answers will be kept private. Participation is voluntary and there is no need to answer any question that you do not want to; however, what you do say will be very important to us.

After we ask a few questions about yourself and your household, we'll give you a chance to buy the mat at a discounted price. We'll first walk you through an example of this, using biscuits, so you can get a sense of what the exercise will be like. To answer the questions and participate in this exercise you must be over 18, and have at least one child between 1 and 5 years old in your household. The questions in this survey usually take about 60 minutes to complete.

All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions, since your views will provide us with important information. If I ask you any question you don't want to answer, just let me know and I will go on to the next question, or you can stop the interview at any time.

If you have any questions after our survey, please call the number on this card. You can flash us at this number and we'll call you back within 24 hours to help with any questions or concerns you have regarding the study.

[FO hand out number to Busia Office)

Do you have any questions?

May I begin the interview now?

[FO: Please circle option 1 or 2, depending on the participant's response]

Respondent Agrees to be Interviewed…1

CONTINUE TO NEXT PAGE

Respondent Does not Agree to be Interviewed…2

END SURVEY

Signature of Interviewer_____ Date _____

SECTION ONE

Fill in the blank

29. Sex: _____Male _____Female
30. Respondent's Age: _____years
31. Number of children: _____
32. Ages of children: 1) Gender____Age_____ 2)Gender____Age_____
    3)Gender____Age_____ 4)Gender____Age_____ 5)Gender____Age_____
    6)Gender____Age_____
33. Have you ever trained a child to use the latrine before? *Circle One* Yes No

34. Do you know what a potty is? *Circle One* Yes No

35. Do you own a potty? *Circle One* Yes No

36. Have you ever used one to potty train your children? *Circle One*

    Yes No

37. Have you ever seen anyone/your friend use this latrine training mat? *Circle One*
    Yes No

38. Would you ever buy a mat like this for your own home? *Circle One*
    Yes No
39. Do you have a latrine in your home? *Circle One*
    Yes No
40. How many latrines do you have? *Fill in the blank* _____
41. What kind of floor does your latrine have? *Circle One*
    Mud Cement Logs Plastic Slab Other
42. *IF RESPONDENT HAS A SECOND LATRINE, NOTE THE FLOOR TYPE FOR THE SECOND ONE HERE: Circle One*

    Mud Cement Logs Plastic Slab Other

43. Is your latrine shared? *Circle One* Yes No
44. How many adults share it? *Fill in the blank* _____
45. How many children share it? *Fill in the blank* _____
46. How much money did you spend to build your latrine? *Fill in the blank* $_____
47. Do you think you'll make more changes to the latrine over time?
    Circle one: Yes No

    [probe: If Yes, what changes? *Write any answers in space provided below*]

48. Who makes decisions about fixing or changing your latrine? *Circle One*
    Myself my partner myself and partner together Other person _____

[FO say: Now I'm going to ask you some questions about your children.]

49. Do all of your children use the latrine unassisted? *Circle One* Yes No
50. IF NO How many children do not use the latrine, or use it with assistance?
    Fill in the blank _____
51. How old are the children that do not use the latrine, or use it with assistance?
    Fill in the blank with all relevant ages, separated by commas
    _____

52. If any children do not use the latrine, where do these children defecate? *Circle One*
    Yard Pottie Diapers Other DontKnow Refused to Answer

    IF OTHER Please specify _____

[probe: why do they use this other form?]

53. Have you ever trained a child to use the latrine before? *Circle One* Yes No

54. Do you know what a potty is? *Circle One* Yes No

55. Do you own a potty? *Circle One* Yes No

56. Have you ever used one to potty train your children? *Circle One*

Yes No

[probe: if NO, what do they use? Why do/did they use this other method? Provide answers to probe in space below]

SECTION 2: UNSPECIFIED PRICE BDM WILLINGNESS TO PAY METHOD

PRICE RANGE 150-600 KSH [FO: DO NOT SAY]

FO SAY:

" We will now go through an activity that will help us understand how much people would pay for the mat. Additionally, you will now have the chance to buy a Safe Squat mat through a special promotion. However, as we use a special procedure for this promotion, we would like you to practice first with the purchase of a packet of biscuits, as a demonstration. We thus start with the biscuits to demonstrate the procedure."

PRACTICE ROUND

The price of biscuits is usually 5Ksh. However, as a promotion we will offer some people a chance to buy the biscuits for less. So the price for these biscuits could be 5 KSH, or it could

be less with the special promotion. *[Show the unopened set of envelopes containing price tickets to the respondent.]* Five possible prices are in these envelopes. *[Show the unopened set of envelopes.]* Please mix these up. *[Have the respondent shuffle the envelopes.]* Please choose one of these envelopes, but do not open it. *[Let the respondent choose one envelope. Put the other envelopes away or to the side.]* Inside this envelope is the price at which these biscuits will be offered to you. This is the only price I will be able to offer to you. Now, I want you to tell me the highest price you would be willing and able to pay for the biscuits. If the price you say is higher than, or equal to, the price in this envelope, then you will pay the price in the envelope, and I will give you the biscuits. If the price you say is lower than the price in the envelope, then I won't be able to sell you the biscuits.

Do you understand? *If not, explain the procedure again.*

Are you ready? Okay, please tell me the highest price you would be willing and able to pay for the biscuits.

Q1. Write the price quoted by the respondent here: |_____| shillings

FO: IF THE PRICE QUOTED IS <u>5 KSH</u>, PLEASE GO TO Q2.
FO: IF THE PRICE QUOTED IS <u>0 KSH</u>: SAY: "Do you understand you cannot purchase the biscuits? You will not be able to change your mind once the envelope is open. Would you purchase the biscuits at any price, at 1 KSH for example?" → Q3

Now, I would like to review your decision with you. You have told me that, if the price in this envelope is [*state the maximum price the respondent said they would be willing and able to pay],* or lower, you will purchase the biscuits, but if the price is higher than this, you will not. Do you understand that, if the price in the envelope is [*lowest price rejected*], you cannot purchase the biscuits? You will not be able to change your mind once the envelope is open. If the price is [*maximum price plus 1Ksh*], would you purchase the biscuits?

If yes, repeat with next price up until respondent finally does reject the price.

Q2. Highest price to which the respondent agrees: |_____|

You have told me that you will purchase the biscuits if the price is *[read price given above]*. Do you understand that if the price in the envelope is ___, then you will purchase the biscuits for ___ KSH, *[repeat for the maximum price stated, and all lower prices]*?

Tell me, if the price is *[maximum price stated]*, will you purchase the biscuits?

Would you please collect the money now?

If no, repeat with the price just less until the respondent finally does accept the price and is able to collect the money.

Q3. Final agreed price: |_____|

Now, please open the envelope.

Q4. Offer price (circle one): 1 2 3 4 5

If the offer price is less than or equal to the final agreed price: The price is *[offer price]*, which you agreed to pay.
Conduct transaction. Go to Q5.a.

If the offer price is higher than the final agreed price: The price is *[offer price]*, which you said you would not pay.
Go to Q6.a

Q5.a Did the participant ultimately pay the indicated amount? Yes

No

Q5.b *Indicate reason(s) for participant's non-payment:*
_____

_____
_____

_____
_____

Q6.a *For "losers" only:* I'm sorry, but I will not be able to sell the biscuits to you. But please tell me, if you could purchase at *[offer price]*, would you? Yes

No

Refuses / DK

Q6.b *For "losers" only:* Do you wish you had agreed to a higher price for the biscuits?

Yes

No

Don't Know

Q6.c *For "losers" only:* What is the maximum price you wish you had agreed to?

_____ KSH

Don't Know

Q7.a *For all*: Thank you for participating in our sale. We have just a few more questions to ask to understand whether we are explaining the procedure correctly. Please tell me, what would have happened if the price in the envelope had been *[choose a price less than their maximum agreed-to price]*?*Do not prompt.*

FO: IF PRICE AGREED TO WAS <u>1 KSH or 0 KSH</u>: DO NOT ASK

Would have purchased Biscuits at th price

Other respon

Don't Know

Q7.b *If other response, record what the respondent said would have happened:*

_____

_____

Q8.a Please tell me, what would have happened if the price in the envelope had been *[choose a price higher than their maximum agreed-to price]. Do not prompt.*

FO: IF PRICE AGREED TO WAS <u>5 KSH</u>: DO NOT ASK

Would not hav purchased

Other respons

Don't Know

Q8.b *If other response, record what the respondent said would have happened:*

_____

_____

Q9.a *Winning respondents only: did the respondent attempt to bargain for a better price for the biscuits?* Yes / No

Q9.b *Losing respondents only: did the respondent attempt to bargain to be able to buy the biscuits at a price higher than her final agreed-to amount?* Yes / No

Q10. *FO: Eventually write other comments and observations:*

_____

_____

SAFE SQUAT ROUND

Now you have the chance to buy a Safe Squat mat. The price could be as much as 600 KSH but could also be less. Ten possible prices are in these envelopes. *[Show the unopened set of envelopes.]* Please mix these up. *[Have the respondent shuffle the envelopes.]* Please choose one of these envelopes, but do not open it. *[Let the respondent choose one envelope. Put the other envelopes away or to the side.]* Inside this envelope is the price at which the Safe Squat will be offered to you. This is the only price I will be able to offer to you. Now, I want you to tell me the highest price you would be willing and able to pay for the mat. If the price you say is higher, or equal to, than the price in this envelope, then you will pay the price in the envelope, and I will give you the Safe Squat. If the price you say is lower than the price in the envelope, then I won't be able to sell you the Safe Squat.

Do you understand? *If not, explain the procedure again.*

Are you ready? Okay, please tell me the highest price you would be willing and able to pay for the Safe Squat.

Q1. Write the price quoted by the respondent here: |_____|

FO: IF THE PRICE QUOTED IS <u>350 KSH</u>, PLEASE GO TO Q2.
FO: IF THE PRICE QUOTED IS <u>0 KSH</u>: SAY: "Do you understand you cannot purchase the Safe Squat? You will not be able to change your mind once the envelope is open. Would you purchase the Safe Squat at a positive price, at 50 KSH for example?" → Q3

Now, I would like to review your decision with you. You have told me that, if the price is [*state the maximum price the respondent said they would be willing and able to pay*], or lower, you will purchase the Safe Squat, but if the price is higher than this, you will not. Do you understand that, if the price in the envelope is [*price stated plus 50 KSH*], you cannot purchase the Safe Squat? You will not be able to change your mind once the envelope is open. If the price is [*price stated plus 50 KSH*], would you purchase the Safe Squat?

If yes, repeat with next price up until respondent finally does reject the price.

Q2. Highest price to which the respondent agrees |_____|

You have told me that you will purchase the Safe Squat if the price is *[read price given above]*. Do you understand that if the price in the envelope is ___ KSH or less, then you have made a commitment to purchase the Safe Squat for the price in the envelope? That is, if the price in the envelope is *[highest agreed price]*, you will purchase the Safe Squat for [*highest agreed price*], if the price in the envelope is [*highest agreed price minus 5 KSH*], you will purchase the Safe Squat for [*highest agreed price minus 5 KSH*], and so on?

Tell me, if the price is *[highest price accepted]*, will you purchase the Safe Squat? Would you please collect the money now?

If no, repeat in increments of 10 shillings less until the respondent finally does accept the price and is able to collect the money.

Q3. Final agreed price: |_____|

Now, please open the envelope.

Q4. Offer price (circle one): 150 200 250 300 350 400 450 500 550 600

If the offer price is less than or equal to the final agreed price: The price is *[offer price]*, which you agreed to pay.
Conduct transaction. Go to Q5.a.

If the offer price is higher than the final agreed price: The price is *[offer price]*, which you said you would not pay.
Go to Q6.a

Q5.a Did the participant ultimately pay the indicated amount? Yes

No

Q5.b *Indicate reason(s) for participant's non-payment:*

_____
_____

_____
_____

Q6.a *For "losers" only:* I'm sorry, but I will not be able to sell the Safe Squat to you. But please tell me, if you could purchase at *[offer price]* now, would you? Yes

No

Don't Know

Q6.b *For "losers" only:* Do you wish you had agreed to a higher price for the Safe Squat? Yes

No

Refuses / DK

Q6.c *For "losers" only:* What is the maximum price you wish you had agreed to? _____ KSH

Don't Know

Q7.a *For all*: Thank you for participating in our sale. We have just a few more questions to understand whether we are explaining the procedure correctly. Please tell me, what would have happened if the price in the envelope had been *[choose a price less than their maximum agreed-to price]. Do not prompt.*

FO: IF PRICE AGREED TO WAS 350 KSH or 0 KSH: DO NOT ASK

Would have purchased WC at that price

Other respons

Don't Know

Q7.b *If other response, record what the respondent said would have happened:*

_____

_____

Q8.a Please tell me, what would have happened if the price in the envelope had been *[choose a price higher than their maximum agreed-to price]. Do not prompt.*

FO: IF PRICE AGREED TO WAS 350 KSH: DO NOT ASK

Would not ha purchased

Other respon

Don't Know

Q8.b *If other response, record what the respondent said would have happened:*

_____

_____

Q9.a *Winning respondents only: did the respondent attempt to bargain for a better price for the Safe Squat?* Yes / No

Q9.b *Losing respondents only: did the respondent attempt to bargain to be able to buy the Safe Squat at a price higher than his or her final agreed-to amount?* Yes / No

Q10 *FO: Eventually write other comments and observations:*

_____

_____

Before we finish the interview, I want to make sure I answer any questions you have.

Do you have any questions?

NOTE QUESTIONS AND ANSWERS HERE:

I want to remind you that all of your information will remain confidential and only the survey team will see your answers. If you have any questions later on, you can reach us at the information on this card. Thanks for taking time to answer these questions. Your answers will be really important to us as we move forward with the Safe Squat Mat.