Effects of Health Marketing Interventions on Cookstove Purchasing, Health Awareness and Willingness to Pay

Final Report

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1.1 Introduction

In Kenya an estimated 14.9m people are affected by indoor air pollution, primarily due to the use of biomass in inefficient cookstoves (GACC, 2012). The problem is not particular to Kenya. The IEA estimates that by 2030 indoor air pollution will be responsible for more premature deaths than HIV/ADIS, malaria or tuberculosis (IEA, 2010). Inefficient cookstoves are also a major environmental concern, with the use of biomass leading to deforestation in countries with poor forestry regulation. Many improved cookstoves (ICS) have been designed to be more efficient leading to a reduction in smoke emissions and potential health, economic and environmental gains. Improving take up rates of ICSs is a priority for many developing country governments and leading development organizations. Despite the apparent benefits of ICS many households have not made the change. Understanding the barriers to take-up and how to increase the rate of ICS is an important research question with significant real world policy implications.

The study aims to test the impact of three health-based interventions combined with a broader marketing campaign designed to drive cookstove purchases and improve awareness of the health risks of indoor smoke exposure caused by cookstoves. The interventions were tested by means of a randomized evaluation in eight villages in Kimabu county, Kenya. Respondents were randomly selected into three treatment groups and a control group. All respondents were subject to a baseline survey before each treatment. An endline was completed around five weeks after completion of the baseline. Willingness to pay for an ICS, along with responses to questions forming part of a health awareness index were included within both the baseline and endline surveys.

The three treatments were health-based behavioral interventions, designed to positively affect cookstove purchase decisions and smoke health awareness. All respondents, including the control group, received flyers advertising a particular improved cookstove and a short account of the health risks of smoke caused by inefficient cookstoves was read out after completion of the baseline survey. In addition to this a market demonstration of an ICS took place in each village. The first treatment group also received SMS messages detailing the health risks of smoke exposure and the benefits of an ICS for five days following the baseline. The second treatment group were shown a graphic image of the effect of smoke on the lungs, similar to images used in many anti-smoking campaigns as for instance discussed in Hammond (2011). The third treatment group were engaged in a goal setting exercise based on Adriaanese et al (2010), designed to make the obstacles to ICS purchase more surmountable. The control group were subjected to the general marketing campaign, which included the market demonstration, flyers and health information given out to all respondents at baseline but no further interventions.

Results from this study will be of use to policy makers focused on driving take-up of energy efficient cookstoves, and also to bodies involved in disseminating related health awareness information.

1.2 Core Research Questions

1. What is the impact of SMS messages on willingness to pay for an improved cookstove, cookstove purchases and health awareness?

2. What is the impact of graphic imagery on willingness to pay for an improved cookstove, cookstove purchases and health awareness?

3. What is the impact of goal-setting on willingness to pay for an improved cookstove, cookstove purchases and health awareness?

3. Intervention

3.1 Context

Eight villages in Kiambu County, Kenya, were selected for involvement in the study. Villages were selected to ensure they fit the required definition of peri-urban whilst ensuring comparability of subject pools and effective implementation of treatments required for the study. The final villages selected for the study were Lusigetti, Kamangu. Thogoto, Gikambura, Kinoo, Rironi. Ting'ang'a and Ikinu, which are all in Kikuyu, Limuru and Kiambu sub-counties of Kiambu County.

3.2 Marketing Campaign

In addition to the baseline survey and various treatments, all respondents and villages were subjected to some additional marketing initiatives to promote the use of improved cookstoves. The marketing initiatives were selected and delivered to ensure consistency across all respondents in different villages.

As part of the marketing campaign each respondent was provided with a flyer with information on the improved cookstove offered by the distributor in the area at the end of the baseline survey. The stove described in all the marketing materials was the Phillips gasifier. The Phillips gasifier has a retail price of 10,000KSh, depends on biomass fuel and is 70% more efficient than normal charcoal cookstoves. It also offers a 90% reduction in smoke and CO2 emissions compared to normal charcoal cookstoves. A scanned copy of the flyer is included in Appendix 6.

A market demonstration of the improved cookstove also took place in each village. This involved field officers demonstrating the improved cookstove in comparison with a normal charcoal cookstove. The charcoal cookstove used in the demonstration was a ceramic jiko. This is a very basic type improved cook stove with a metal casing and inner ceramic liner. This type of cookstove was used by 64% of the respondents in the study as per baseline data. Though

designed to reduce indoor air pollution, it does not compare in efficiency and smoke reduction to the Philips gasifier. Given the popularity of the charcoal jiko amongst our sample, it was used during the market demonstration in order to demonstrate to the benefits gained from adopting the Philips gasifier over the more commonly used ceramic jiko. Upright banners were positioned on either side of the demonstration tents and flyers were also handed out to attendees. These flyers were the same as the ones given out at baseline and in Appendix 6. All respondents were reminded about the market demonstration by SMS message for two days prior to the demonstration date.

3.3 Control Group

The control group received the baseline survey and no further treatments. Lusigetti served as a pure control village, and respondents from the remaining 7 villages were also randomly selected into the control group, in order to ensure that part of the control group were representative of the treated population.

3.4 SMS Messaging Treatment Group

The aim of second treatment was to ascertain whether health messaging can be made more effective through the use of SMS messaging. Our hypothesis is that SMS messaging will increase the salience of health risks over a longer time span than a door-to-door visit or market demonstration, leading to a higher willingness to pay and better performance on the health awareness index questions.

A vast number of studies have demonstrated how SMS messages can be use to drive behavior change. For example Karlan et al. (2010) in three different randomized evaluations with banks in Bolivia, Peru and The Philippines, find that reminders increased the likelihood of achieving a savings goal by 3% and total savings increased by 6%. Also, staying in the realm of financial inclusion, Cadena and Schoar (2011) find that text messages were as effective as a 25% rate reduction in terms of improving repayments. In terms of health, Fjeldsoe et al. (2009) find that messages lead to short-term positive benefits, in a review of studies focusing on health behavioral change interventions through SMS messaging.

The content of the messages was adapted from the health information script read to respondents in the treatment groups as part of the baseline survey. Respondents were able to choose between English and Swahili messages. Contents of the messages in both English and Swahili are included in Appendix 5.

3.5 Graphic Imagery Treatment Group

Our hypothesis is that health information will be more salient if provided alongside visual depictions of relevant health effects, and in particular graphic depictions of the effects smoke has on the lungs. Respondents in the second treatment group were shown a laminated flyer with a

graphic picture of a lung before and after exposure to smoke. These were not given out to respondents in order to avoid spillover risks. A copy of the flyer used is available upon request.

Studies have shown that graphic imagery can be an effective tool in driving improvements to health-based behavior. This technique is perhaps most often associated with tobacco reduction campaigns. For example Hammond (2011) in a review of tobacco warning messages finds that warnings with pictures are significantly more effective than messages that only contain text. In a developed country context Hammond et al (2003) in an assessment of warning labels on cigarette packets in Canada find that graphic warnings are an effective way to promote smoking cessation.

3.6 Goal Setting Treatment Group

Our hypothesis is that health messaging has more of an impact on the purchase of improved cookstoves if combined with consideration of future health goals for individuals and family. Bernard et al. (2014) show that in a rural setting in Ethiopia participants shown a documentary on individuals with successful small businesses had higher aspirations 6 months later along with higher levels of education spending and savings. Further, Beaman et al (2012) demonstrate how an increased ratio of female village leaders in villages in India, led to increased aspirations among adolescent girls and improved educational outcomes.

The fourth treatment group were engaged in a goal setting exercise based on Adriaanese et al (2010), which details and implements MCII (mental contrasting and implementation intentions) in an effort to improve healthy eating. In two studies healthy eating improved. After the health information script respondents were asked to think about their goals regarding smoke pollution in their home.

4. Evaluation Design

4.1 Sampling Strategy

Households were selected to take part in the study using a random walk methodology, adapted from that detailed in the Afrobarometer Round 6 Survey Manual. The middlemost landmark for each village was selected as a starting point for field officers. The two field officers assigned to each village started at this location, back to back, with one field officer facing East, and one field officer facing West. Field officers walked straight counting the households on the right of the road until the 10th household was reached. This household was then surveyed. At every junction, intersection, or place where there was an option of more than one road to take field officers rolled a die. If the die landed on 1 or 2, they would take a left turn, 3 or 4 and they would continue straight, and if the die landed on a 5 or 6, they would take a right turn. If only two options were available the die would be re-rolled until a relevant number was achieved. At the end of each survey day the end location was recorded and field officers started from the same point on the following day. If a field officer walked for five minutes without coming to a 10th household then they would return to the initial landmark and roll the die to establish a new

starting number from which to restart the count from. Random spot-checks were implemented throughout the baseline to ensure that this process was followed. The survey tablets were also equipped with GPS locators to allow monitoring of household distribution.

One pure control village was selected where no treatments were administered. This design was chosen in order to ensure that part of the control group was not at risk of spillovers. Beyond that treatments were randomized at the individual level and respondents were selected via the random walk methodology from each non-control village. Respondents were allocated to treatment or control groups at random based on a randomized list of survey identifiers that, when inputted into the survey tablet, linked the respondent to a specific treatment group.

964 respondents were surveyed in the baseline survey. 200 per treatment group were targeted though due to an error in Survey ID allocation, the final treatment group numbers were 234 in the control group, 330 in SMS treatment group, 203 in the graphic imagery treatment group and 197 in the goal-setting treatment group. Treatment assignment nevertheless remained random.

4.2 Treatment Design

Six focus groups were held with respondents demographically similar to our target population to aid intervention and treatment design. In addition 20 in-depth interviews were held with community health workers in Limuru. The main purpose of these focus groups and interviews was to aid development and testing of treatments. Through the focus groups the development of potential behavioral interventions was informed and narrowed down to the final three. The focus groups also helped establish the ideal frequency, content and timing for the SMS messages for the second treatment group.

4.3 Data Collection

The baseline occurred during July and August 2015 and took 4 weeks to complete. The survey consisted of six core sections, covering household demographics, cooking practices, and health. At the end of the survey willingness to pay for an ICS was ascertained, followed by a section specific to each treatment for respondents in the three treatment groups.

Willingness to pay at baseline was initially established using multiple price lists (MPL) with respondents being offered the choice between an improved cookstove and cash at intervals of 1,000KSh up to 15,000KSh. Pilots of both MPL and the Becker-DeGroot-Marschak (BDM) mechanism with demographically similar respondents suggested that MPL was easier to comprehend and resulted in more accurate accounts of willingness to pay than BDM. However the first two days of surveys showed that the majority of respondents were choosing the cookstove even compared to the highest cash option available. The implied willingness to pay was also very often higher than the hypothetical maximum respondents said they would be willing to pay for a cookstove. Qualitative questioning of respondents suggested that this was due

to a reluctance to choose cash when directly presented with the alternative of a hard asset, and not representative of a high valuation of the cookstove.

After consultation with our partners we switched to using the BDM method to ascertain willingness to pay. Under the BDM mechanism respondents were asked to input a price that they were willing to pay for an improved cookstove and informed that a random lottery would dictate whether or not they would have the opportunity to buy the item. The respondent was then told that if they won the lottery, they would only be able to purchase the cookstove in the case that their stated willingness to pay was higher than a random number selected. Monitoring of the BDM mechanism in the first few days that it was incorporated into the survey demonstrated that willingness to pay data was more in line with the hypothetical maximum and minimum respondents gave. In addition qualitative follow-ups by field officers suggested that the concerns of cash versus asset were less salient than they had been with the MPL technique. Baseline willingness to pay is not an outcome of interest and therefore this shift does little to affect our analysis. However when considering baseline willingness to pay the observations which used MPL will be included in regressions only when controlled with a dummy variable representing which elicitation method was used to establish willingness to pay. 120 observations contain baseline willingness to pay were elicited through the MPL method rather than BDM.

Further, a number of health related questions were designed with answers given on a Likert scale from 1 to 5. These questions were piloted to ensure sufficient heterogeneity in responses and were designed to be compiled into a health awareness index, which would serve as a further outcome of interest between baseline and endline.

After the baseline and marketing campaign, an endline survey was completed. The endline was staggered amongst respondents to ensure that there was an interval of around 5 weeks between baseline and endline. The endline included similar questions to the baseline, and also involved a back check comprising 10% of respondents. The endline took three weeks to complete during August and September 2015.

Back checks for both baseline and endline were conducted by the manager of the field officer team. Field officers were aware this procedure would take place. Respondents were paid 200KSh compensation in cash for taking part in the baseline, and endline survey.

In addition to the endline survey 40 qualitative interviews were conducted with a subsection of the respondent pool. Respondents were recruited for participation in the endline survey at random, stratified by village and treatment group.

4.4 Treatment Delivery

Respondents were informed which treatment they would receive after completing the baseline survey. Each treatment was delivered in accordance with a specific protocol, which included

instructions relevant to the treatment and a number of questions to ensure the protocol was being followed, and to ascertain some brief responses to the treatment. All respondents in the treatment groups were read a short script detailing some of the health benefits of cookstoves prior to the selected treatment.

Respondents in the SMS treatment group received SMS messages for five days commencing the day after the baseline survey was completed. Respondents in the graphic imagery treatment group were shown a laminated flyer with imagery of lungs before and after exposure to smoke. These were not given to respondents to keep in order to avoid spillover risks. As part of the goal setting treatment respondents were provide with a pen and paper to aid with collating their thoughts if needed. These were not collected again by field officers to allow respondents to feel able to express confidential information on the paper, without consideration of their account being recorded.

5. Analysis and Results

All analysis tables are presented in Appendix 1. References to tables throughout the next sections refer to tables contained in Appendix 1.

5.1 Basic Demographics

Summary statistics for basic baseline demographic, financial and health information is presented in the Table 1.

The gender bias of the population is a consequence of the baseline survey taking place during the week. As we did not have census data for the villages in the study this naturally meant that our sample reflects the demographics of people who were more likely to be at home during the week: typically a higher proportion of women, unemployed individuals and those who have a higher number of dependents than would likely be the case with a representative sample from the villages.

5.2 Balance Tests

Tables 2 and 3 demonstrate the balance of selected baseline covariates by treatment group. It is clear from the Table 2 that there is significant imbalance in in terms of age, income and education level. The imbalance is partly due to the presence of a pure control village, which created distortions on a number of baseline characteristics. Without the pure control village there is only significant imbalance between assignment to treatment groups in terms of age to Treatment 1, and both education level and whether a respondent is a main earner for Treatment 3. Controlling by village with dummy variables for each location produces similar distortions as the sample does without the pure control village as demonstrated in Table 3. Imbalance persists on age and the main earner covariates. These covariates will be used as controls within the analysis of treatment effects to ensure that these imbalances in assignment between treatment

groups do not result in treatment effects being seen that could be explained by the different demographic make-up of each treatment group.

An F test to test joint significance of the baseline covariates assessed in Tables 2 and 3 finds no jointly significant imbalance in assignments to treatment groups.

5.3 Sample Attrition

We found overall attrition rates of 13 per cent between baseline and endline. There was some variation between treatment group with attrition rates at 11 per cent for the control group, 14 per cent for the SMS treatment group, 11 per cent for graphic imagery and 17 per cent for goal setting treatment groups. Reasons for attrition included relocation of respondents and lack of availability despite multiple follow-ups.

Analysis found that attrition was imbalanced in terms of age and but not by treatment group. There is also statistically significant differences in attrition levels between villages, which further supports the need to take into account village fixed effects in the analysis of treatment effects. Throughout the endline efforts were made to counter the unequal levels of attrition between villages, with different teams of Field Officers sent to follow up on refusals. This served to partly mitigate the differing levels of attrition between villages.

5.4 Basic Identification of treatment effects

There are three main outcomes of interest in this study: the willingness to pay for an ICS, the health awareness index and whether respondents change their cookstove between baseline and endline. Willingness to pay for a cookstove was measured using the BDM lottery mechanism detailed in Section 4.3. The health awareness index formed part of the baseline and endline as detailed in Section 4.3 and whether respondents changed their stove between baseline and endline was collected via self-report during the endline survey.

We present histograms of the willingness to pay for a cookstove and the health awareness index below.

Figure 1: Histogram of Willingness to Pay (Frequency against Willingness to Pay)

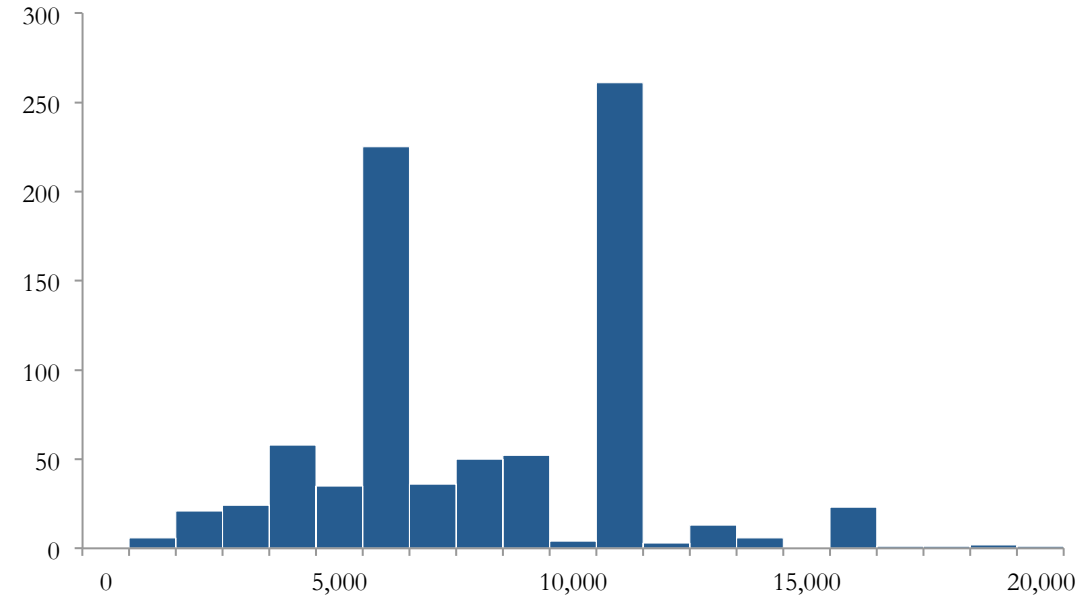

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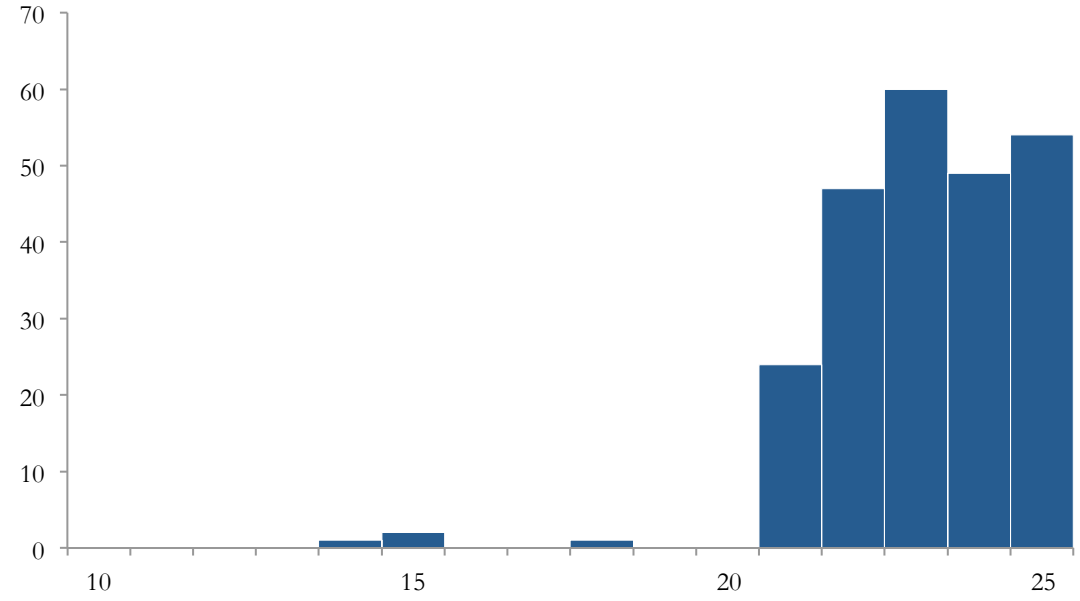
Figure 2: Histogram of Health Awareness Index (Frequency against Health Awareness Index)



In Table 4 we present the basic identification of the three treatments on the outcomes of interest using the following specifications:

$$WTP_i = \beta_0 + \beta_1 SMS_i + \beta_2 graphic_i + \beta_3 goal_i + \varepsilon_i \qquad (1)$$

$$HAI_i = \beta_0 + \beta_1 SMS_i + \beta_2 graphic_i + \beta_3 goal_i + \varepsilon_i \quad (2)$$

$$CS_i = \beta_0 + \beta_1 SMS_i + \beta_2 graphic_i + \beta_3 goal_i + \varepsilon_i \quad (3)$$

SMS_i is a treatment indicator that takes the value 1 for individuals that the SMS messaging treatment and 0 otherwise. $graphic_i$ is a second treatment indicator that takes the value 1 for individuals in the third treatment group that were shown the graphic imagery and 0 otherwise. $goal_i$ is a third treatment indicator that takes the value 1 for individuals in the goal setting treatment group and 0 otherwise, and ε_{iht} is the idiosyncratic error term. In Table 4, and with the above specification, we do not take into account control variables or village fixed effects.

Willingness to Pay

We find that the SMS treatment group is associated with a decrease of 1,189KSh in willingness to pay. This is significant at the 1% level. The graphic treatment group demonstrates a 963KSh decrease in willingness to pay, significant at the 5% level, whilst the goals treatment group is associated with a 895KSh decrease in willingness to pay, significant at the 10% level.
These decreases in willingness to pay are surprising and against our hypothesis. Analysis below will investigate whether these results are robust once village fixed effects and appropriate controls are taken into account. One explanation as to why willingness to pay is negative with treatments is that the distribution partner did not have stock of the Phillips gasifier during the duration of the study. When people called to inquire about purchasing the gasifier, or for further information they were directed to a cheaper improved cookstove. This may explain the negative willingness to pay assuming that respondents in the treatment groups were more likely to contact the distributor.

Health Awareness Index

Results for the health awareness index are more in line with our expectations. All treatment groups demonstrate a positive increase in the health awareness index of similar magnitude. These results are all statistically significant at either the 1% or 5% level.

Cookstove Change

None of the results on cookstove change are statistically significant. It is also worth noting that only a very small (1.4%) proportion of the sample changed their cookstove between baseline and endline.

5.6 Taking into account village fixed effects

The analysis so far does not take into account village fixed effects. Fixed effects are needed as it is important to check that the treatment effects being seen are not the result of unobservable characteristics that differ between villages. Without compensating for the presence of these

unobservable characteristics we would end up with omitted variable bias, and misleading results. It should be noted that taking into account fixed effects does not completely control for this eventuality if it is the case that some of these unobservable characteristics vary over time. Fixed effects regression does however allow us to control for within village variation over time, variation that is not possible to control for with the covariates that we have in our dataset. This way we are able to help eliminate potential omitted variable bias. By including village fixed effects we can control for the average differences between villages that may be due to unobservable village characteristics. Given the small number of villages under observation we elected not to use clustering in our regressions as a method to control for potential differences between villages. In Table 5 we present the basic identification of the three treatments on the outcomes of interest taking into account village fixed effects.

Taking into account village fixed effects removes all significant findings from Table 4. The only treatment that now demonstrates a significant finding on one of the outcomes of interest is the goal setting treatment, which leads to a small increase in the likelihood of changing cookstove between baseline and endline, significant at the 10% level. It is clear that the directional change on willingness to pay and the health awareness index is maintained, however there results are not at statistically significant levels. Further, grouping all treatment groups to test for effects finds no statistically significant difference between the treated and untreated respondents on the outcomes of interest.

5.5 Addressing imbalance between treatment groups

As discussed in Section 5.2 respondents in control and treatment groups at baseline differ on certain covariates that are likely related to the outcomes of interest being measured. These imbalances mean that we may be observing biased treatment effect estimates. It is therefore important to compensate for these imbalances when assessing treatment effects.

Using the covariates which are imbalanced between treatment groups as control variables is one way to test whether treatment effects would remain, even with the imbalance in baseline covariates. In this assessment it is also important to take into account village fixed effects. In Table 6, we show that the result in the Table 5 does not remain significant when the baseline covariates, which were found to be unbalanced between treatment groups, are taken into account. [1]

[1] We view consideration of village fixed effects with control variables to be an adequate level of robustness at this stage. Further analysis could make use of wild percentile-t bootstrap standard errors to check robustness of this finding however given that there are no statistically significant treatment effects when taking into account controls and village fixed effects we do not view is as necessary to further test this result with a method which will likely serve to widen standard errors.

5.6 Testing for heterogeneous treatment effects

Testing for heterogeneous treatment effects allows us to assess whether treatment effects vary across individuals. This can help us understand whether certain treatments had particular effects on different types of people, such as women, younger or more educated people. We tested whether the impact of the various treatments varies with pre-determined individual characteristics measured at the baseline, denoted by X_1, with the following specification:

$$WTP_i = \beta_0 + \beta_1 SMS_i + \beta_2 graphic_i + \beta_3 goal_i + \beta_4 X_1 + \beta_5 (SMS_i X_1) + \beta_6 (graphic_i X_1) + \beta_7 (goal_i X_1) + \varepsilon_i \quad (4)$$

$$HAI_i = \beta_0 + \beta_1 SMS_i + \beta_2 graphic_i + \beta_3 goal_i + \beta_4 X_1 + \beta_5 (SMS_i X_1) + \beta_6 (graphic_i X_1) + \beta_7 (goal_i X_1) + \varepsilon_i \quad (5)$$

$$CS_i = \beta_0 + \beta_1 SMS_i + \beta_2 graphic_i + \beta_3 goal_i + \beta_4 X_1 + \beta_5 (SMS_i X_1) + \beta_6 (graphic_i X_1) + \beta_7 (goal_i X_1) + \varepsilon_i \quad (6)$$

We investigated whether there were heterogeneous treatment effects of each treatment for respondents with the following characteristics:

- Gender
- Education Level (Completed Standard 8)
- Education Level (Primary Plus)
- Main Earner
- Employment Status
- Recent Health

Tables 7 to 13 present the results of this analysis. We do not find consistent or statistically significant differences between outcomes for respondents with these different characteristics. The only statistical significant difference (at the 10% level) is that the graphic imagery treatment has a negative impact on the health awareness index score for those with worse than average health in the last year. There is however no consistent effect for this across other outcomes of interest.

5.6 Correlation analysis.

Tables 14 to 20 present correlational analysis of our outcomes of interest with a number of potentially interesting characteristics of respondents. In order to perform this analysis we used run the following specification:

$$Y_i = \alpha_0 + \beta X_i \quad (7)$$

where Y_i is a vector of outcome variables, X_i is the vector of personal characteristics, β is a

vector of the coefficients estimated for each of these characteristics. This allows us to test individually which characteristics have significant correlation with our outcome variables of interest.

We investigate correlations with a number of baseline covariates and the following set of dependent variables:

Baseline Dependent Variables

- Willingness to Pay at Baseline (elicited through BDM)
- Willingness to Pay at Baseline (elicited through BDM and MPL)'
- Health Awareness Index at Baseline
- Use of Open or Surrounded Fire at Baseline

Endline Dependent Variables

- Willingness to Pay at Endline
- Health Awareness Index at Endline
- Change of Stove between Baseline and Endline

Our analysis can be seen in two parts. First we investigate how a number of baseline characteristics are correlated to the baseline dependent variables detailed above. As part of this analysis we look at how current stove ownership at baseline is correlated with a number of demographic characteristics. For this analysis we use a dummy variable for whether individuals use a three stone or surrounded fireplace for cooking. In terms of willingness to pay as detailed above the elicitation method for willingness to pay was changed from MPL to BDM after the first 120 surveys. As a consequence where willingness to pay is considered, the change in elicitation method is controlled for with a dummy variable representing whether the BDM was used to establish willingness to pay. We also test all correlational findings relating to baseline willingness to pay on the sample population when willingness to pay elicited using MPL are excluded to ensure robustness of results. Second we look at how endline outcomes of interest are correlated with the same set of baseline demographic characteristics.

The correlational analysis demonstrates a number of interesting findings. In terms of the various outcomes of interest:

5.6.1 Baseline Dependent Variables

Willingness to Pay (BDM Only)

Having worse than average health over the last year is associated with a lower willingness to pay though this is not consistent across other health measures. There is a also a slight negative correlation (significant at the 10% level) between the number of dependents a respondent has and their willingness to pay for a cookstove. This could be explained by their being more

monetary demands for respondents with higher number of dependents. There is also negative correlation between fuel trip time and willingness to pay (significant at the 1% level) though the effect size is very small, representing only a 7KSh reduction.

Willingness to Pay (BDM and MPL)
Most of the correlations seen when only looking at willingness to pay elicited through the BDM method are not present when including observations where willingness to pay was elicited through MPL. The significant and negative correlation between fuel trip time and willingness to pay remains, now representing a 9KSh reduction.

Health Awareness Index
There is little of interest that is consistent across baseline characteristics in terms of correlations with the health awareness index at baseline.

Use of Open or Surrounded Fire
The correlational analysis in regards the likelihood to use an open or surrounded fire is more interesting. Those above average age are 39.6% more likely to use this sort of stove (significant at the 1% level). In addition when a respondent is not the decision maker in the household respondents are 16.4% less likely to use an open or surrounded fire (significant at the 1% level). The correlational analysis for education level does shows results at significant levels though these are not consistent across measures of education level.

5.6.1 Endline Dependent Variables

Willingness to Pay
Completing primary education is associated with a higher willingness to pay, at statistically significant levels. However this is not consistent across all education covariates.

Health Awareness Index
When looking at the correlational analysis on the health awareness index a number of characteristics are associated with a lower score on the health awareness index. One of these characteristics is being above average age, a main earner in the household or the household decision maker. The results for recent bad health are also consistent across measures of recent health on an annual level, but not significant when looking at a two-weekly basis. This inconsistency makes sense if we consider that health learnings and prioritization likely take a longer time to gain relevance than during the course of a two-week timeframe. Household size is also correlated with a higher score on the health awareness index.

Changed Stove

For a change of stove there is some evidence of a decreased likelihood of changing stove with higher education levels however this is not consistent across all education measures.

To further test the robustness of these correlations we would need to consider village fixed effects to analyze whether these relationships persist when differences at the village level are taken into account.

6 Further Discussion

A sample of respondents who took part in the field study were asked to take part in an in-depth follow up interview. 40 respondents from the three treatment groups and the control group were surveyed. Respondents were randomly selected from the endline survey with stratification to ensure a representative sample from both village location and treatment group were included.

Interviews took place between 7th and 14th September 2015 in respondents' homes across the 8 villages that had been randomly selected for this study. Respondents were asked to take part in the interview in advance via phone calls. In this section we present findings from these interviews along a number of core themes, supported where useful with data from the baseline and endline surveys.

In terms of gender and treatment group the survey sample can be broken down as follows:

Follow-up survey sample distribution by gender and treatment group

Treatment Group	Male	Female	Total
Control	1	11	12
SMS messaging	2	9	11
Graphic Imagery	1	7	8
Goal setting	0	9	9
Total	4	36	40

6.1 Cookstove Purchasing Decision

A number of themes emerged during interviews related to the question regarding "What do you think about when buying a cook stove" This was a free flow answer that aimed to capture more broadly what people were thinking about when considering purchasing a cookstove. The table below presents a summary of the most frequently referenced considerations.

Considerations for cookstove purchase from follow-up survey

Consideration	Frequency
Durability	6
Smoke Emissions	10
Cook stove price	15

Cooking time	17
Fuel type used	7
Ease of use	8
Health	5
Cook stove type	4
Financing options available	3
Need for the cook stove	4
Fuel consumption	2
Heat produced	2
Appearance	4
Accommodates a variety of meals	1

The most commonly mentioned considerations with regards to purchasing a cookstove were: Cooking time, whether or not a stove emits smoke, the price of cook stove and the fuel type used.

2.2.1 Cooking time

The majority of the respondents cited cooking time as their main consideration when purchasing a cookstove. Depending on the number of meals prepared daily, cooking can take up hours each day and is often intermingled with other household chores. As such, tending to a fire is a key factor when looking at the convenience of a cook stove. Cookstoves that require less tending and considered to cook fast were more preferred when one is making a purchasing decision for a cook stove. The below table includes data collected at baseline about the meals cooked per day by our respondents. Most respondents indicated that they cooked either two or three meals per day, suggesting that this activity takes up a significant portion of their daily routing. This further supports the notion that cooking time would be a key driver of whether a new cookstove would be a good purchase.

Baseline data on cooking time

Meals Cooked per Day	Frequency	Percentage
One meal	46	4.8%
Two meals	429	44.5%
Three meals	465	48.2%
More than three meals	25	2.6%
Total	965	100%

2.2.2 Smoke Emissions

A smokeless cook stove was another key consideration mentioned by respondents when asked about the decision around purchasing a cook stove. 10 responses mentioned that whether a cook stove that emitted little or no smoke would be part of the decision making process. From this

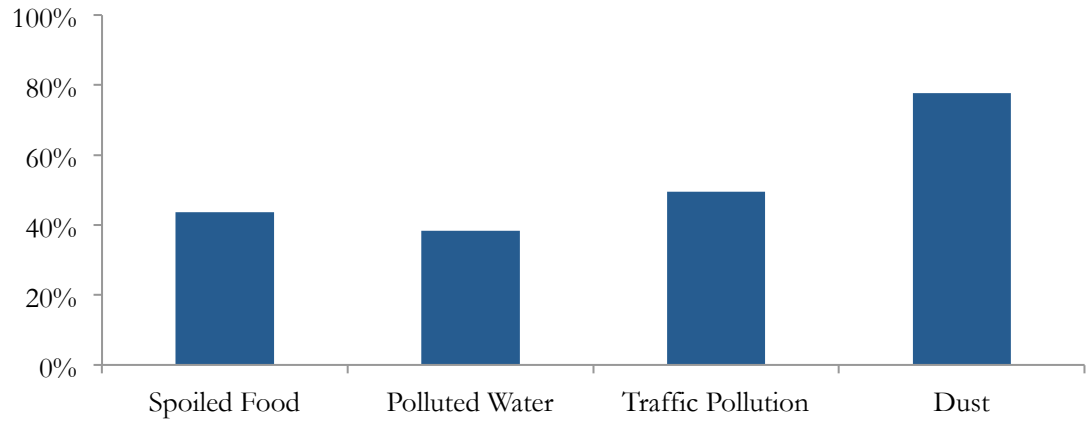
response, and from other questions in the follow-up survey is it clear that some of the respondents interviews are aware of the risks of smoke. As part of the baseline survey we asked respondents what measures they take to reduce exposure to smoke in their homes. 80 per cent of respondents took one or more precautions to limit smoke exposure demonstrating an awareness of the risks of smoke pre treatment. The below table demonstrates the top five methods mentioned and the percentage of respondents who employ each method.

Baseline data on smoke prevention methods: Top five responses

Smoke Prevention Methods	Frequency
Increased Ventilation	37%
Adopt cleaner stove	26%
Dry fuel before using	23%
Adopt cleaner fuel	18%
Cooking Outside	13%

We also asked comparative questions about whether smoke was considered to be a greater health risk than a number of other common potential health risks in daily life. The chart below presents the results of these questions:

Figure 3: Baseline data on perceived comparative health risks of smoke



Note: Percentages represent proportion of respondents who answered affirmatively to questions asking if smoke were worse for health compared to the other risks detailed

Clearly smoke is seen as worse for health than dust by a majority of respondents, and although there are still large numbers of respondents who view the health effects of smoke to be worse than the other risks mentioned there is still significant variation within the population. These results differ between respondents with individuals who had experienced above average levels (within the sample population) of bad health in the last year being more likely to agree that smoke was more of a risk to health than the others mentioned in the questions.

3 Physical features

In response to the question what are the preferred physical features of a cook stove, a number of themes emerged. The below table details the physical features selected by respondents in the follow up survey as forming part of their cookstove purchasing decision, along with the frequency each feature was mentioned.

Preferred physical features of a cookstove when considering a purchase

Physical Feature	Frequency
Material used	32
Handles	16
Stand	16
Air inlet	12
Pot support	12
Ventilation holes (grate)	3
Appearance	8
Size	8

3.1.2 Material used

A vast majority (32 responses) considered the material used to make the cook stove as the main physical feature they look out for when making a purchasing decision. In particular the material's durability was cited as the most important feature. Preferred durable materials mentioned primarily included metal and stainless steel. Respondents in the follow up survey also raised concerns about stoves cracking and other parts breaking where ceramic material was used.

3.1.3 Handles and Stand

Follow-up study participants also considered the stands and the handles of the cook stove as important factors. 40 per cent of the responses mentioned that handles and a stand were physical features they would look for in a new cookstove. Most cook stoves heat up the metallic outer surface when cooking making it difficult to hold the cook stove. Respondents mentioned that handles needed to be firm and not easy to break. The stand was deemed necessary for the stability of the cook stove, and in particular, preference was for it to be wide at the bottom to avoid toppling when in use.

3.1.3 Air inlet and pot support

30 per cent of the responses given in the follow-up survey showed that the air inlet or door in a cook stove was a key consideration when purchasing a cook stove. Respondents mentioned that the air inlet would enable combustion, smoke emission and would also be necessary for removal of ash.

3.1.4 Appearance and Size

20 percent of the responses given cited appearance of the cook stove and the size as an important physical feature of a cookstove. The respondents mentioned they preferred a cookstove that is large enough to accommodate the different sizes of sauce-pans (sufuria) for adoption of this stove to be considered.

6.2 Qualitative Assessment of Treatment Effects

7.1 SMS messaging treatment

Eleven respondents in our follow up interviews received the SMS messaging treatment. 8 respondents read the text messages they received and found them helpful. This is supported by endline data which shows that 78 per cent of respondents agreed to a question asking whether the SMS messages were useful. Respondents were also asked at endline on a scale of 1 to 10 how effective the SMS messages were. The mean of these reported scores was 8.3 out of 10.

With regard to improving this treatment, respondents said there was need to put more emphasis on the health implication of exposure to smoke. One respondent mentioned it would be nice to send messages that can be shared or forwarded so that they are able to pass on the information to other people.

7.2 Graphic imagery treatment

Eight respondents in our follow up sample had received the graphic imagery treatment. All respondents agreed that the graphic images of the health and unhealthy lung were very effective in passing on the message of the damaging effects of smoke. The initial response from the respondents on seeing the images was shock. The majority of respondents also noted that the treatment made them realize how exposure to smoke affects their lungs even when they feel perfectly healthy. With regards to improving the treatment, the majority recommended having the images on bill boards, hospitals and giving away flyers so that the message can reach the public.

7.3 Goal setting treatment

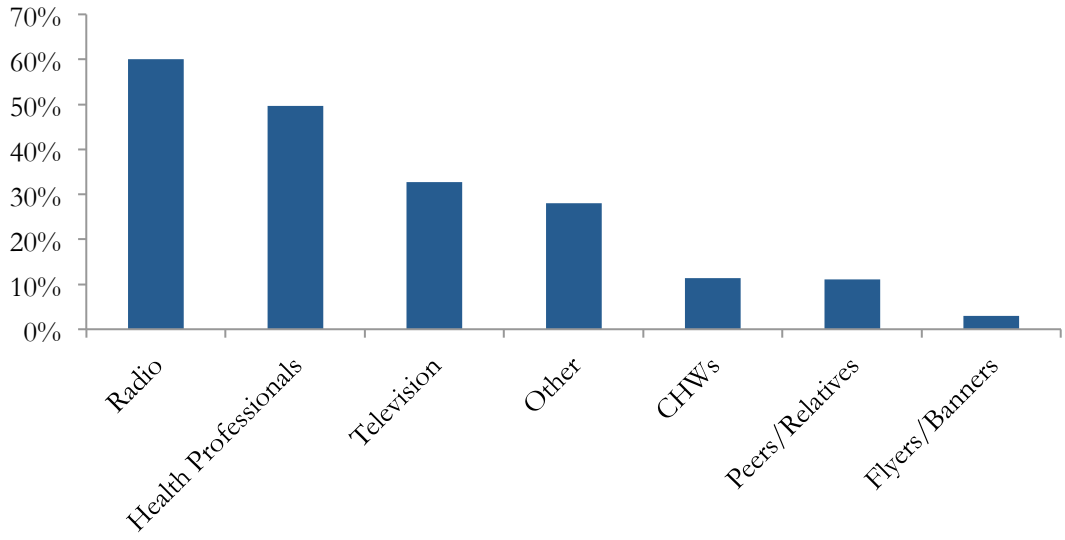
Nine respondents in our follow up group received the goal setting treatment. All respondents were of the view that the treatment was useful. A couple of respondents mentioned that they had changed their behavior whilst cooking, including taking their stove outside when cooking or ensuring adequate ventilation at home. Three respondents said that the treatment did not make them change anything since they did not have finances to purchase an improved cook stove that emits less smoke.

7.4 Further medium considerations

Mediums for improvement suggested by respondents included advertising the improved cook stove on radio and TV, giving away flyers, writing a book, and conducting education campaigns

in the communities. It was also mentioned that making the cook stove readily available in the shops would aid take-up. The mention of alternative mediums as a potentially useful way to disseminate health information is supported by baseline data, which details how respondents receive their health information. The below chart demonstrates that television and radio are among the top three methods for receiving information on health. It may be that these would be useful avenues to explore in future health campaigns.

Figure 4: Baseline data on typical mediums of health education



6.4 Financing a Cookstove

When asked what financial options would be most helpful for the purchase of a cook stove, respondents gave the options as shown in the table below.

Follow-up survey responses of most helpful financial options for a cookstove purchase

Funding Method	Frequency
Loans	18
Business proceeds	12
Savings	6
Salary	3
Borrowing (from friends and family)	4
Remittances	1
Paying in installments	1
Groups	1
Money from the lottery	1

Loans and business proceeds were mentioned most often by respondents. Respondents also added further detail mentioning that they would take a loan from a bank, SACCO or from their

women groups. For respondents who practiced farming as a business, they said they would sell their farm produce and use part of the profits to finance the purchase of a cook stove. Of the financing options mentioned, remittances, paying in installments, groups and money from the lottery were mentioned far less frequently.

In the baseline survey cookstove cost and lack of financing was cited by a vast majority of respondents as being the obstacle they would need to overcome to purchase an ICS in the goal setting treatment group. Table 1 demonstrates the savings characteristics of the sample population interviewed at baseline, along with responses to questions about the maximum and minimum amount respondents were willing to pay for a healthy stove or fuel. These questions were asked without incentives such as the BDM mechanism used to elicit the willingness to pay, which was used as an outcome of interest.

As evident from the table only 49% of the sampled population admitted to currently having savings. It is therefore perhaps unsurprising that being able to finance the purchase of an improved cookstove is a key consideration and obstacle to uptake. Further research on how best this financing hurdle can be overcome would likely make behavior change in terms of cookstove up-take resulting from health education more feasible.

7. Conclusion and Recommendations

We summarize our conclusions from this study in two main areas of interest.

Optimizing Health Awareness Campaigns

Although the treatments did not show significant results in terms of health awareness when village fixed effects and control variables were taken into account the effects still moved in a positive direction. Qualitative feedback on all treatments also suggests that the treatments were useful in improving health awareness of the damaging impact of smoke on health. In addition to this there was a significant impact (at the 10% level) of the goal setting treatment on cookstove change with the goal-setting treatment.

Survey data from respondents demonstrate that health information is acquired through a number of different mediums, with television and radio amongst the top three mediums cited. Our treatments focused on specific mediums to improve health awareness: SMS messages, graphic imagery and goal setting. Furthermore, feedback in the follow-up survey from respondents in the graphic imagery treatment included suggestions that the imagery should be employed more broadly through posters, advertisements and other community based activities.

We did not have the sample size to test how broader community based interventions can impact health awareness and drive behavior change. The improvements in health awareness, although not statistically significant, do suggest that with a larger sample size the interventions used in this

study may demonstrate significantly positive effects. Future research investigating how community based and broader marketing campaigns including the use of mediums such as television and radio would also be useful to help understand how best health marketing campaigns can drive improvements in health awareness.

In addition to this it is clear from the correlational analysis on the use of open or surrounded fire stoves that there are clear differences in the type of respondent who is more likely to use such a stove. Better understanding how stove use varies across demographics, and how best different market segments can be targeted is also likely to be an important consideration in the quest to help move individuals to adopt more efficient stoves.

Translating Improvements in Health Awareness to Cookstove Adoption

When considering how it is possible to translate improvements in health awareness to a change in cookstove it is important to consider a number of factors, which may explain why the study did not demonstrate higher levels of respondents changing their cookstove between baseline and endline.

First a new cookstove is a costly purchase. The most frequently mentioned obstacle to purchasing an improved cookstove in the goal setting treatment group was that of cost. Savings data of our respondents also demonstrates that a cookstove purchase would represent a significant portion of current savings, which is likely put aside with other investments in mind, or earmarked for use as a safety net. Understanding how purchasing a new cookstove can be a more feasible cost for low income households is therefore essential in ensuring that improvements in health awareness can lead to cookstove adoption.

Second the time between baseline and endline in this study was an average of five weeks. Given the financial constraints households face, the purchase of a new cookstove may well take more time that that of our study to enable individuals to accumulate savings or make discussions with different stakeholders within a household. Further research could investigate whether there is a longer lag between an increase in awareness of the risks of cookstoves, and a move to less polluting and more energy efficient cookstoves. This would help establish optimal impact evaluation procedures for similar campaigns.

Third our study focused on health awareness at the individual level. As 47.5% of our respondents did not classify themselves as the sole decision maker within the household it may well be the case that a broader approach to health awareness that targets not just a sole individuals within a household but the household as a whole would be more effective at driving behavior change in relation to cooking practices and cookstove uptake.

It was not within the remit of this study to assess which of the abovementioned points were most relevant to the connection between health awareness and cookstove purchasing and

willingness to pay. It would however be a fruitful area of further research and enable policy makers to better tailor health awareness campaigns directed at behavior change and cookstove adoption.

Appendix 1: Tables

Table 1: Baseline Summary Statistics

Variable	Obs	Mean	Std. Dev.
Age	965	42.387	15.78
Dependents	965	2.48	1.911
Current Savings	399	14219.24	46123.63
Willingness to Pay (Baseline)	839	6755.012	3972.921
Min Willingess to Pay	954	2975.366	2422.069
Max Willingess to Pay	953	5060.273	4126.036
bl_HAI_comp	965	23.152	2.412

Table 2: Balance Test of Baseline Characteristics

	Age	Gender	Income	Education	Main Earner	Recent Health
SMS Treatment	-2.008	-0.0424	0.313	-0.136	-0.0215	-0.0528
	(1.347)	(0.033)	(0.089)***	(0.042)**	(0.041)	(0.042)
Graphic Treatment	1.178	-0.0599	0.347	-0.112	-0.0263	-0.0318
	(1.493)	(0.038)	(0.105)**	(0.047)*	(0.046)	(0.047)
Goals Treatment	-4.257	0.00423	0.263	-0.162	-0.0817	-0.0501
	(1.536)**	(0.036)	(0.101)**	(0.048)***	(0.045)	(0.048)
Constant	43.68	0.833	2.182	0.624	0.376	0.598
	(1.035)***	(0.024)***	(0.060)***	(0.032)***	(0.032)***	(0.032)***
Observations	964	964	926	964	964	964

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Balance Test of Baseline Characteristics with Location Controls

	Age	Gender	Income	Education	Main Earner	Recent Health
SMS Treatment	-2.576	0.00446	0.136	-0.0604	-0.0509	-0.0427
	(1.678)	(0.042)	(0.104)	(0.051)	(0.049)	(0.050)
Graphic Treatment	0.626	-0.0143	0.174	-0.0385	-0.0587	-0.0198
	(1.779)	(0.046)	(0.118)	(0.056)	(0.053)	(0.054)
Goals Treatment	-4.888	0.0528	0.0888	-0.0932	-0.110	-0.0463
	(1.821)**	(0.044)	(0.114)	(0.056)	(0.053)*	(0.055)
Village 2	3.561	-0.0875	0.169	-0.0243	0.0182	-0.0432
	(2.446)	(0.055)	(0.147)	(0.075)	(0.073)	(0.077)
Village 3	-0.498	-0.184	0.664	-0.248	0.140	-0.0113
	(2.398)	(0.059)**	(0.167)***	(0.074)***	(0.074)	(0.076)
Village 4	1.841	-0.0986	0.265	-0.0391	0.160	-0.0308
	(2.420)	(0.057)	(0.137)	(0.076)	(0.077)*	(0.078)
Village 5	-2.616	-0.0714	0.359	-0.310	0.0867	-0.134
	(2.515)	(0.057)	(0.176)*	(0.076)***	(0.077)	(0.079)
Village 6	-0.710	-0.102	0.549	-0.121	-0.0218	0.0825
	(2.408)	(0.056)	(0.142)***	(0.074)	(0.073)	(0.075)
Village 7	5.111	-0.174	0.291	-0.193	0.138	0.120
	(2.496)*	(0.060)**	(0.147)*	(0.076)*	(0.076)	(0.075)
Village 8	5.028	-0.0643	0.504	-0.222	0.00226	-0.108
	(2.434)*	(0.055)	(0.139)***	(0.075)**	(0.073)	(0.077)
Constant	42.64	0.899	1.949	0.717	0.333	0.606
	(1.488)***	(0.030)***	(0.085)***	(0.046)***	(0.048)***	(0.049)***
Observations	964	964	926	964	964	964

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Basic Treatment Effects Dependent Variables: Outcomes of Interest

Dependent Variables: Outcomes of Interest

	Willingness to Pay	Health Index	Changed Stove
SMS Treatment	-1189.1	0.528	0.0102
	(317.810)***	(0.156)***	(0.012)
Graphic Treatment	-963.2	0.536	-0.00883
	(364.398)**	(0.166)**	(0.010)
Goals Treatment	-894.5	0.510	0.0283
	(355.801)*	(0.179)**	(0.018)
Constant	8047.8	23.68	0.0144
	(246.363)***	(0.128)***	(0.008)
Observations	830	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Basic Treatment Effects with Village Fixed Effects
Dependent Variables: Outcomes of Interest

	Willingness to Pay	Health Index	Changed Stove
SMS Treatment	-663.7	0.187	0.0172
	(349.905)	(0.181)	(0.012)
Graphic Treatment	-507.1	0.130	-0.0000822
	(387.153)	(0.193)	(0.010)
Goals Treatment	-396.4	0.180	0.0347
	(381.963)	(0.203)	(0.018)*
Village 2	428.6	1.242	-0.0215
	(594.100)	(0.272)***	(0.021)
Village 3	-2243.0	0.608	-0.0175
	(600.486)***	(0.299)*	(0.022)
Village 4	-414.9	1.503	-0.0245
	(617.125)	(0.246)***	(0.020)
Village 5	-1078.0	1.101	-0.0357
	(580.722)	(0.346)**	(0.018)*
Village 6	-2858.7	1.057	-0.0209
	(523.364)***	(0.266)***	(0.020)
Village 7	-1771.2	-0.953	0.0347
	(568.775)**	(0.270)***	(0.029)
Village 8	-441.0	1.147	-0.0282
	(568.815)	(0.254)***	(0.020)
Constant	8750.0	23.23	0.0227
	(404.535)***	(0.182)***	(0.016)
Observations	830	839	839

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Basic Treatment Effects with Village Fixed Effects and Controls

Dependent Variables: Outcomes of Interest

	Willingness to Pay	Health Index	Changed Stove
SMS Treatment	-677.7	0.150	0.0165
	(350.892)	(0.177)	(0.012)
Graphic Treatment	-465.4	0.132	-0.000312
	(390.080)	(0.190)	(0.010)
Goals Treatment	-424.7	0.107	0.0333
	(387.546)	(0.202)	(0.018)
Village 2	447.6	1.283	-0.0208
	(594.996)	(0.272)***	(0.021)
Village 3	-2298.1	0.644	-0.0164
	(601.486)***	(0.294)*	(0.022)
Village 4	-448.3	1.556	-0.0231
	(618.167)	(0.244)***	(0.021)
Village 5	-1179.2	1.085	-0.0353
	(580.977)*	(0.339)**	(0.018)
Village 6	-2883.9	1.035	-0.0212
	(521.855)***	(0.265)***	(0.020)
Village 7	-1748.4	-0.874	0.0363
	(567.554)**	(0.267)**	(0.030)
Village 8	-398.3	1.200	-0.0274
	(565.409)	(0.250)***	(0.020)
Age	-14.68	-0.0117	-0.000146
	(8.123)	(0.005)*	(0.000)
Main Earner	253.4	-0.170	-0.00582
	(245.450)	(0.109)	(0.012)
Constant	9305.8	23.79	0.0309
	(542.152)***	(0.274)***	(0.018)
Observations	830	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Heterogenous Treatment Effects by Variable: Female (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Stove
SMS Treatment	-1189.1	-570.0	0.528	0.306	0.0102	0.0232
	(315.445)***	(754.337)	(0.146)***	(0.349)	(0.013)	(0.031)
Graphic Treatment	-963.2	-495.0	0.536	0.271	-0.00883	-0.0294
	(351.507)**	(825.714)	(0.163)**	(0.380)	(0.015)	(0.034)
Goals Treatment	-894.5	-926.9	0.510	0.398	0.0283	0.00763
	(360.641)*	(894.902)	(0.168)**	(0.415)	(0.015)	(0.037)
Female		201.1		0.00353		-0.0180
		(654.775)		(0.302)		(0.027)
SMS X Female		-765.7		0.277		-0.0171
		(830.942)		(0.384)		(0.035)
Graphic X Female		-578.2		0.336		0.0250
		(913.183)		(0.421)		(0.038)
Goals X Female		40.43		0.134		0.0247
		(978.082)		(0.454)		(0.041)
Constant	8047.8	7878.8	23.68	23.68	0.0144	0.0294
	(239.369)***	(600.319)***	(0.111)***	(0.276)***	(0.010)	(0.025)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Heterogenous Treatment Effects by Variable: Less than 30 (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Stove
SMS Treatment	-1189.1	-1063.4	0.528	0.555	0.0102	-0.00389
	(315.445)***	(355.086)**	(0.146)***	(0.165)***	(0.013)	(0.015)
Graphic Treatment	-963.2	-955.9	0.536	0.536	-0.00883	-0.0176
	(351.507)**	(383.411)*	(0.163)**	(0.178)**	(0.015)	(0.016)
Goals Treatment	-894.5	-1040.0	0.510	0.483	0.0283	0.0258
	(360.641)*	(417.348)*	(0.168)**	(0.195)*	(0.015)	(0.017)
Less than 30		193.8		0.173		-0.0176
		(612.924)		(0.286)		(0.026)
SMS X Less than 30		-573.5		-0.151		0.0636
		(781.760)		(0.364)		(0.033)
Graphic X Less than 30		33.34		0.0778		0.0611
		(984.327)		(0.459)		(0.041)
Goals X Less than 30		424.5		0.0226		0.0150
		(852.528)		(0.397)		(0.036)
Constant	8047.8	8011.3	23.68	23.65	0.0144	0.0176
	(239.369)***	(266.044)***	(0.111)***	(0.124)***	(0.010)	(0.011)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Heterogenous Treatment Effects by Variable: Completed St 8 (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Stove
SMS Treatment	-1189.1	-991.8	0.528	0.421	0.0102	0.0302
	(315.445)***	(490.819)*	(0.146)***	(0.229)	(0.013)	(0.020)
Graphic Treatment	-963.2	-983.2	0.536	0.307	-0.00883	-0.0130
	(351.507)**	(540.653)	(0.163)**	(0.252)	(0.015)	(0.023)
Goals Treatment	-894.5	-367.1	0.510	0.347	0.0283	0.0537
	(360.641)*	(536.332)	(0.168)**	(0.250)	(0.015)	(0.022)*
Completed St 8		251.9		-0.240		0.00216
		(495.550)		(0.231)		(0.021)
SMS X Completed St 8		-328.2		0.153		-0.0385
		(643.985)		(0.300)		(0.027)
Graphic X Completed St 8		91.14		0.390		0.00847
		(715.083)		(0.333)		(0.030)
Goals X Completed St 8		-1064.9		0.265		-0.0553
		(734.489)		(0.342)		(0.031)
Constant	8047.8	7889.6	23.68	23.83	0.0144	0.0130
	(239.369)***	(392.712)***	(0.111)***	(0.184)***	(0.010)	(0.016)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Heterogenous Treatment Effects by Variable: Primary Plus (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Stove
SMS Treatment	-1189.1	-531.2	0.528	-0.722	0.0102	-0.0556
	(315.445)***	(1197.794)	(0.146)***	(0.534)	(0.013)	(0.048)
Graphic Treatment	-963.2	700.0	0.536	0.211	-0.00883	-0.0556
	(351.507)**	(1370.462)	(0.163)**	(0.631)	(0.015)	(0.057)
Goals Treatment	-894.5	-1323.1	0.510	-0.504	0.0283	0.0214
	(360.641)*	(1266.992)	(0.168)**	(0.583)	(0.015)	(0.053)
Primary Plus		1359.5		-0.229		-0.0451
		(870.549)		(0.395)		(0.036)
SMS X Primary Plus		-733.9		1.340		0.0713
		(1241.601)		(0.555)*		(0.050)
Graphic X Primary Plus		-1799.4		0.351		0.0509
		(1417.878)		(0.653)		(0.059)
Goals X Primary Plus		462.3		1.103		0.00790
		(1321.494)		(0.608)		(0.055)
Constant	8047.8	6800.0	23.68	23.89	0.0144	0.0556
	(239.369)***	(834.036)***	(0.111)***	(0.377)***	(0.010)	(0.034)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Heterogenous Treatment Effects by Variable: Bad Recent Health (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Sto
SMS Treatment	-1189.1	-1590.9	0.528	0.853	0.0102	0.00397
	(315.445)***	(487.945)**	(0.146)***	(0.226)***	(0.013)	(0.020)
Graphic Treatment	-963.2	-983.0	0.536	0.919	-0.00883	0.00108
	(351.507)**	(547.124)	(0.163)**	(0.253)***	(0.015)	(0.023)
Goals Treatment	-894.5	-1213.3	0.510	0.577	0.0283	0.0163
	(360.641)*	(557.090)*	(0.168)**	(0.259)*	(0.015)	(0.023)
Bad Recent Health		-610.0		0.240		0.00410
		(488.729)		(0.226)		(0.020)
SMS X Bad Recent Health		675.4		-0.566		0.0115
		(640.305)		(0.297)		(0.027)
Graphic X Bad Recent Health		9.376		-0.656		-0.0171
		(714.435)		(0.331)*		(0.030)
Goals X Bad Recent Health		527.4		-0.106		0.0215
		(731.579)		(0.340)		(0.031)
Constant	8047.8	8413.3	23.68	23.54	0.0144	0.0119
	(239.369)***	(378.263)***	(0.111)***	(0.175)***	(0.010)	(0.016)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Heterogenous Treatment Effects by Variable: Employed (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Stove
SMS Treatment	-1189.1	-1327.2	0.528	0.645	0.0102	0.0241
	(315.445)***	(616.662)*	(0.146)***	(0.284)*	(0.013)	(0.026)
Graphic Treatment	-963.2	-1458.1	0.536	0.951	-0.00883	0.0189
	(351.507)**	(679.860)*	(0.163)**	(0.314)**	(0.015)	(0.028)
Goals Treatment	-894.5	-954.3	0.510	0.404	0.0283	0.0377
	(360.641)*	(679.860)	(0.168)**	(0.314)	(0.015)	(0.028)
Employed		-365.8		0.111		0.0191
		(556.449)		(0.257)		(0.023)
SMS X Employed		172.5		-0.159		-0.0185
		(718.375)		(0.332)		(0.030)
Graphic X Employed		674.9		-0.580		-0.0380
		(795.113)		(0.368)		(0.033)
Goals X Employed		48.86		0.168		-0.0118
		(803.562)		(0.372)		(0.034)
Constant	8047.8	8323.5	23.68	23.60	0.0144	-1.01e-15
	(239.369)***	(483.062)***	(0.111)***	(0.223)***	(0.010)	(0.020)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Heterogenous Treatment Effects by Variable: Main Earner (1/0)

	(1) Willingness to Pay	(2) Willingness to Pay	(3) Health Index	(4) Health Index	(5) Changed Stove	(6) Changed Stove
SMS Treatment	-1189.1	-1217.4	0.528	0.457	0.0102	0.0174
	(315.445)***	(397.882)**	(0.146)***	(0.183)*	(0.013)	(0.017)
Graphic Treatment	-963.2	-1232.7	0.536	0.291	-0.00883	-0.00684
	(351.507)**	(441.332)**	(0.163)**	(0.204)	(0.015)	(0.018)
Goals Treatment	-894.5	-1016.9	0.510	0.200	0.0283	0.0194
	(360.641)*	(443.366)*	(0.168)**	(0.204)	(0.015)	(0.019)
Main Earner		-150.8		-0.665		-0.00273
		(494.708)		(0.228)**		(0.021)
SMS X Main Earner		71.50		0.159		-0.0203
		(654.685)		(0.301)		(0.027)
Graphic X Main Earner		755.0		0.646		-0.00582
		(732.203)		(0.337)		(0.031)
Goals X Main Earner		369.2		0.861		0.0292
		(769.332)		(0.355)*		(0.032)
Constant	8047.8	8104.7	23.68	23.93	0.0144	0.0154
	(239.369)***	(303.677)***	(0.111)***	(0.140)***	(0.010)	(0.013)
Observations	830	830	839	839	839	839

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Correlation Analysis with Baseline Measures

Dependent Variable: Willingness to Pay (Baseline)

	(1)	(2)	(3)	(4)	(5)
Above Average Age	-438.290				
	(284.509)				
Female	-224.404				
	(353.734)				
Main Earner	-227.091				
	(326.220)				
Decision Maker	87.791				
	(307.498)				
Bad Health 2 Weeks		-27.604			
		(329.624)			
Bad Health Year		-832.749			
		(349.228)**			
Bad Health 2 Weeks HH		421.958			
		(379.999)			
Bad Health Year HH		474.988			
		(372.654)			
Household Size			38.011		
			(82.767)		
Dependents			-146.092		
			(87.632)*		
Primary Plus				761.710	
				(620.193)	
Secondary Plus				191.462	
				(298.617)	
College Plus				-878.976	
				(516.144)*	
University Plus				-645.572	
				(1,139.723)	
Meals Cooked per Day					-486.858
					(463.774)
Fuel Trip Time					-7.378
					(2.831)***
Constant	7,169.494	6,811.867	6,959.193	6,041.964	8,867.087
	(356.701)***	(236.430)***	(312.522)***	(586.990)***	(1,313.487)***
R^2	0.00	0.01	0.00	0.01	0.03
N	839	839	839	839	214

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 15: Correlation Analysis with Baseline Measures
Dependent Variable: Combined Willingness to Pay (MPL and BDM)

	(1)	(2)	(3)	(4)	(5)
Above Average Age	-533.376				
	(300.532)*				
Female	-309.027				
	(378.286)				
Main Earner	-478.722				
	(348.524)				
Decision Maker	159.922				
	(321.102)				
Bad Health 2 Weeks		-167.577			
		(346.665)			
Bad Health Year		-309.016			
		(366.171)			
Bad Health 2 Weeks HH		295.050			
		(394.152)			
Bad Health Year HH		410.659			
		(388.762)			
Household Size			66.214		
			(90.651)		
Dependents			-83.048		
			(93.094)		
Completed St 8				65.425	
				(311.723)	
Primary Plus				998.734	
				(654.774)	
College Plus				-499.796	
				(570.385)	
University Plus				-963.841	
				(1,226.482)	
Meals Cooked per Day					-87.952
					(482.522)
Fuel Trip Time					-9.200
					(3.052)***
Constant	7,940.717	7,295.188	7,305.391	6,464.902	8,401.900
	(379.250)***	(249.759)***	(344.440)***	(692.812)***	(1,335.643)***
R^2	0.01	0.00	0.00	0.01	0.03
N	959	959	959	959	236

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 16: Correlation Analysis with Baseline Measures

Dependent Variable: Health Awareness Index (Baseline)

	(1)	(2)	(3)	(4)	(5)
Above Average Age	-0.244				
	(0.163)				
Female	0.162				
	(0.232)				
Main Earner	-0.018				
	(0.203)				
Decision Maker	-0.095				
	(0.174)				
Bad Health 2 Weeks		0.293			
		(0.184)			
Bad Health Year		0.017			
		(0.206)			
Bad Health 2 Weeks HH		0.092			
		(0.214)			
Bad Health Year HH		0.206			
		(0.195)			
Household Size			0.055		
			(0.047)		
Dependents			0.052		
			(0.046)		
Completed St 8				-0.317	
				(0.170)*	
Primary Plus				0.231	
				(0.359)	
College Plus				0.274	
				(0.234)	
University Plus				0.087	
				(0.582)	
Meals Cooked per Day					-0.107
					(0.271)
Fuel Trip Time					0.000
					(0.002)
Constant	23.188	22.882	22.796	23.075	23.409
	(0.226)***	(0.150)***	(0.190)***	(0.379)***	(0.745)***
R^2	0.00	0.01	0.01	0.01	0.00
N	965	965	965	965	238

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 17: Correlation Analysis wtih Baseline Measures
Dependent Variable: Uses Open or Surrounded Fire (1/0)

	(1)	(2)	(3)	(4)	(5)
Above Average Age	0.237				
	(0.030)***				
Female	0.010				
	(0.041)				
Main Earner	-0.026				
	(0.037)				
Decision Maker	-0.098				
	(0.033)***				
Bad Health 2 Weeks		0.026			
		(0.038)			
Bad Health Year		-0.009			
		(0.040)			
Bad Health 2 Weeks HH		0.039			
		(0.041)			
Bad Health Year HH		0.021			
		(0.041)			
Household Size			0.047		
			(0.009)***		
Dependents			0.007		
			(0.009)		
Completed St 8				0.083	
				(0.033)**	
Primary Plus				-0.104	
				(0.055)*	
College Plus				-0.199	
				(0.065)***	
University Plus				0.080	
				(0.132)	
Meals Cooked per Day					0.015
					(0.029)
Fuel Trip Time					0.000
					(0.000)
Constant	0.598	0.617	0.445	0.724	0.873
	(0.042)***	(0.027)***	(0.035)***	(0.060)***	(0.083)***
R^2	0.06	0.00	0.04	0.03	0.00
N	965	965	965	965	238

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 18: Correlation Analysis with Endline Measures

Dependent Variable:Willingness to Pay

	(1)	(2)	(3)	(4)	(5)
SMS Treatment	-1,215.745	-1,189.369	-1,180.942	-1,210.330	-1,517.742
	(316.875)***	(319.439)***	(319.279)***	(316.688)***	(699.544)**
Graphic Treatment	-961.997	-943.114	-946.023	-1,002.442	-1,110.520
	(363.547)***	(365.823)**	(365.227)***	(363.678)***	(786.105)
Goals Treatment	-932.238	-912.994	-891.256	-879.325	-1,602.054
	(357.986)***	(355.397)**	(363.174)**	(353.105)**	(705.652)**
Above Average Age	-406.694				
	(246.646)*				
Gender	-159.185				
	(321.262)				
Main Earner	206.883				
	(300.274)				
Decision Maker	-82.241				
	(263.117)				
Bad Health 2 Weeks		-98.988			
		(283.103)			
Bad Health Year		-354.326			
		(287.942)			
Bad Health 2 Weeks HH		27.133			
		(320.605)			
Bad Health Year HH		340.224			
		(326.866)			
Household Size			64.021		
			(84.733)		
Dependents			-6.247		
			(88.721)		
Primary Plus				963.591	
				(528.391)*	
Secondary Plus				23.481	
				(261.521)	
College Plus				-287.919	
				(409.304)	
University Plus				-1,153.919	
				(959.570)	
Meals Cooked per Day					34.675
					(437.259)
Fuel Trip Time					-1.942
					(2.540)
Constant	8,357.294	8,144.573	7,790.847	7,195.016	8,904.410
	(399.081)***	(307.453)***	(364.580)***	(554.205)***	(1,376.566)***
R^2	0.02	0.02	0.02	0.03	0.03
N	830	830	830	830	220

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 19: Correlation Analysis with Endline Measures

Dependent Variable:Health Index

	(1)	(2)	(3)	(4)	(5)
SMS Treatment	0.543	0.523	0.533	0.518	0.661
	(0.155)***	(0.157)***	(0.157)***	(0.158)***	(0.319)**
Graphic Treatment	0.571	0.550	0.554	0.521	0.220
	(0.163)***	(0.168)***	(0.167)***	(0.167)***	(0.357)
Goals Treatment	0.487	0.501	0.508	0.509	-0.114
	(0.178)***	(0.181)***	(0.180)***	(0.180)***	(0.404)
Above Average Age	-0.269				
	(0.116)**				
Gender	0.014				
	(0.179)				
Main Earner	-0.321				
	(0.153)**				
Decision Maker	0.265				
	(0.122)**				
Bad Health 2 Weeks		0.100			
		(0.136)			
Bad Health Year		-0.245			
		(0.141)*			
Bad Health 2 Weeks HH		-0.067			
		(0.156)			
Bad Health Year HH		0.258			
		(0.150)*			
Household Size			0.078		
			(0.033)**		
Dependents			-0.017		
			(0.031)		
Education				0.012	
				(0.114)	
Primary Plus				0.494	
				(0.328)	
College Plus				-0.011	
				(0.209)	
University Plus				-0.074	
				(0.430)	
Meals Cooked per Day					0.524
					(0.270)*
Fuel Trip Time					0.002
					(0.002)
Constant	23.759	23.711	23.392	23.223	22.403
	(0.201)***	(0.160)***	(0.192)***	(0.338)***	(0.879)***
R^2	0.04	0.03	0.03	0.03	0.07
N	839	839	839	839	222

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 20: Correlation Analysis with Endline Measures

Dependent Variable:Changed Stove

	(1)	(2)	(3)	(4)	(5)
SMS Treatment	0.010	0.010	0.010	0.006	0.014
	(0.012)	(0.012)	(0.012)	(0.012)	(0.028)
Graphic Treatment	-0.009	-0.009	-0.010	-0.010	-0.014
	(0.010)	(0.010)	(0.010)	(0.010)	(0.017)
Goals Treatment	0.027	0.029	0.028	0.023	-0.015
	(0.018)	(0.018)	(0.018)	(0.017)	(0.018)
Above Average Age	-0.004				
	(0.010)				
Gender	-0.019				
	(0.017)				
Main Earner	-0.010				
	(0.014)				
Decision Maker	0.003				
	(0.011)				
Bad Health 2 Weeks		0.005			
		(0.013)			
Bad Health Year		0.007			
		(0.011)			
Bad Health 2 Weeks HH		-0.017			
		(0.009)*			
Bad Health Year HH		0.014			
		(0.010)			
Household Size			-0.003		
			(0.004)		
Dependents			-0.001		
			(0.004)		
Education				-0.016	
				(0.009)*	
Primary Plus				-0.024	
				(0.024)	
College Plus				0.060	
				(0.039)	
University Plus				-0.087	
				(0.038)**	
Meals Cooked per Day					0.030
					(0.020)
Fuel Trip Time					0.000
					(0.000)
Constant	0.034	0.012	0.029	0.045	-0.066
	(0.021)	(0.011)	(0.014)**	(0.027)*	(0.055)
R^2	0.01	0.01	0.01	0.02	0.04
N	839	839	839	839	222

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Appendix 2: Baseline Survey Instrument

No.	Question	Instructions	Responses
SECTION A: DEMOGRAPHIC INFORMATION			
A1	Time of interview	Hour/minutes	[ ] /[ ]
A2	Date of interview	dd/mm/yyyy	[ ] /[ ] /[ ]
A3_i	Enumerator name		_____
A3_ii	Enumerator gender		1. [ ] Male 2. [ ] Female
A4	Survey ID		
A5	Where is the interview taking place?		1. [ ]At the respondent's home 2. [ ]At the respondent's work 3. [ ]Other (Specify)
A6	GPS Co-ordinates		
A7	House type		1. [ ] Standalone house → skip to A9 2. [ ] Flat 3. [ ] Other (Specify)
A8	If flat, what level are you talking to?		1. [ ] Ground floor 2. [ ] First floor 3. [ ] Second floor 4. [ ] Third floor 5. [ ]Other (Specify)
Geographic information			
A9	Enumeration Area Location		1. [ ] Kikuyu 2. [ ]Limuru 3. [ ]Kiambu
A10	Enumeration Sub Location		1 [ ]Lusigetti 2 [ ]Kamangu 3 [ ]Thogoto 4 [ ]Gikambura 5 [ ]Kinoo 6 [ ]Rironi 7 [ ]Ting'ang'a 8 [ ]Ikinu
Contact information			
A11	Respondent name	Write 3 names	
A12	Contact number (And re-enter later to provide check for this)	Cell phone number should be 9 numbers starting with'7'(700000000)	☐☐☐☐☐☐☐☐☐
A13_i	Alternative contact number	Cell phone number should be 9 numbers starting with'7'(700000000)	☐☐☐☐☐☐☐☐☐
A13_ii	Who owns the alternative contact?		1 [ ]Self 2 [ ]Spouse

No.	Question	Instructions	Responses
			3 [ ]Other (Specify)
A14	Can you tell me your date of birth/ age		Dd/mm/yyyy
A15	Gender of respondent		1. [ ] Male→ skip to A17 2. [ ] Female
A16	Are you a member of any women groups?		1. [ ] Yes 2. [ ] No
A17	What best describes your marital status		1. [ ]Single → Skip to A19 2. [ ]Married 3. [ ]Divorced/Separated → Skip to A19 4. [ ]Cohabiting, but not married 5. [ ]Relationship, but not cohabiting→ Skip to A19 6. [ ]Widowed→ Skip to A19 7. [ ]Refused to answer
A18	Does your spouse live with you in the same household?		1 [ ] Yes 2 [ ] No
A19	In total how many people live in your house including you?		
A20	Are you the head of the household?		1. [ ] Yes 2. [ ] No
A21	Do you have children?		1. [ ] Yes 2. [ ] No
A22	How many dependents do you have?		
A23	What is the highest level of schooling that you have completed?		1 [ ] Std 1 2 [ ] Std 2 3 [ ] Std 3 4 [ ] Std4 5 [ ] Std 5 6 [ ] Std 6 7 [ ] Std 7 8 [ ] Std8 9 [ ] Form 1 10 [ ] Form 2 11 [ ] Form 3 12 [ ] Form 4 13 [ ] College

No.	Question	Instructions	Responses
			14 [ ] Univ 1 15 [ ] Univ 2 16 [ ] Univ 3 17 [ ] Univ 4 18 [ ] None 19 -98- Refused 20 -777- Other (specify)
A24	What is the highest level of schooling completed by your spouse/partner?		1 [ ] Std 1 2 [ ] Std 2 3 [ ] Std 3 4 [ ] Std4 5 [ ] Std 5 6 [ ] Std 6 7 [ ] Std 7 8 [ ] Std8 9 [ ] Form 1 10 [ ] Form 2 11 [ ] Form 3 12 [ ] Form 4 13 [ ] College 14 [ ] Univ 1 15 [ ] Univ 2 16 [ ] Univ 3 17 [ ] Univ 4 18 [ ] None 19 -98- Refused 20 -777- Other (specify)
A25	Can you read a letter in English?		1. [ ] Yes 2. [ ] No
A26	Can you read a letter in Kiswahili		1. [ ] Yes 2. [ ] No
SECTION B: LABOR AND HOUSEHOLD INCOME			
B1	What best describes your employment status?		1. [ ]Salaried employee 2. [ ]Self employed 3. [ ]Casual labourer 4. [ ]Not working but looking for work 5. [ ]Not working and not looking for work
B2	What best describes the employment status of your spouse/partner?		1. [ ]Salaried employee 2. [ ]Self employed 3. [ ]Casual labourer 4. [ ]Not working but looking for work 5. [ ]Not working and not looking for work
B3	Approximately what % of household income do you think you contribute?		1. [ ]None 2. [ ]A little 3. [ ]Around half 4. [ ]More than half 5. [ ]All

No.	Question	Instructions	Responses
B4	Who is the main income earner in the household?	*The main income earner brings in the largest share. Probe if answer to previous question was around half*	1. [ ]Self 2. [ ]Spouse/partner 3. [ ]Parent 4. [ ]Child 5. [ ]Other relative 6. [ ]We are equal partners
B5	Which of these best describes your income per month?		1. [ ] 0 2. [ ]< 5000 3. [ ]6000-10000 4. [ ]11000-20000 5. [ ]21000-30000 6. [ ]31000-40000 7. [ ]> 50000
B6	Which of these best describes the total household income for all members in your household per month?	*Household income will be used for demographic purposes only and will be reported in aggregate with data from other panel households.*	1 [ ]< 5000 2 [ ]6000-10000 3 [ ]11000-20000 4 [ ]21000-30000 5 [ ]31000-40000 6 [ ]> 50000
In order to help us to understand your role in the financial activities of your household, please tell us whose responsibility it is for the following financial tasks			
B7	Who is responsible for making the financial decisions in your household?		1. [ ]Self 2. [ ]Spouse/partner 3. [ ]Parent 4. [ ]Child 5. [ ]Other relative 6. [ ]We both make the decisions
B8	If your household wanted to buy a new cook stove, who would make the decision?		1. [ ]Self 2. [ ]Spouse/partner 3. [ ]Parent 4. [ ]Child 5. [ ]Other relative 6. [ ]We both make the decisions
Now, I am going to ask you a few questions about savings in your household			
B9	Do you set aside any % of your household income as saving?		1. [ ] Yes 2. [ ] No→skip to C1
B10	How much in savings do you currently have?		_____ -98- Refused to answer -99- Don't know
B11	Which of the following categories, if any, are you saving money for?		1. [ ]Education 2. [ ]Retirement 3. [ ]Your children 4. [ ]Major appliance, car or other big purchase 5. [ ]Home purchase 6. [ ]Pay off debts 7. [ ]Unexpected expenses

No.	Question	Instructions	Responses
			8. [ ]To leave behind some inheritance/charitable donation 9. [ ]Other (specify) 10. -98- Refused to answer
C. CURRENT COOK STOVE AND COOKING PRACTICES: ***First I would like to ask a few questions about the cook stove you use for cooking in your household***			
C1	What type of cook stoves do you use in your household?		1. [ ]Open fire (3 stoned fireplace) 2. [ ]Surrounded fire 3. [ ]Improved single pot stove 4. [ ]Improved multiple pot stove 5. [ ]Kerosene stoves 6. [ ]Traditional charcoal stove 7. [ ]Jiko okoa 8. [ ]LPG (Gas stove) 9. [ ]Other(Specify)
C2	How many cook stoves does your family currently use?		1. [ ]1 cook stove→ skip to C4 2. [ ]2 cook stoves 3. [ ]3 cook stoves and more
C3	If you have more than one stove how do you decide which stove to use when cooking?		1. [ ]Meal type 2. [ ]Fuel availability 3. [ ]Time of day 4. [ ]Smoke 5. [ ]No reason
C4	Which cook stove do you most commonly use?		1. [ ]Open fire (3 stoned fireplace) 2. [ ]Surrounded fire 3. [ ]Improved single pot stove 4. [ ]Improved multiple pot stove 5. [ ]Kerosene stoves 6. [ ]Traditional charcoal stove 7. [ ]Jiko okoa 8. [ ]LPG 9. [ ]Other(Specify)
C5	For how long have you had this stove? (in years)		1. [ ]< 1 year 2. [ ]1-2 years 3. [ ]2-3 years 4. [ ]> 3 years
C6	Who did you buy your cook stove from?		1. [ ]Peddler 2. [ ]Store/Shop center/market 3. [ ]Producer 4. [ ]Self constructed 5. [ ]Other (specify)
C7	Where did you buy it?		1. [ ]Within the community 2. [ ]Neighbouring trading centres 3. [ ]In a more distant town 4. [ ]Other (specify)
C8	What is the distance from your home to the place you bought your cook stove?		1. [ ]< 3km 2. [ ]3-10 km 3. [ ]11-30 km 4. [ ]>30 km

No.	Question	Instructions	Responses
C9	What do you like about your most commonly used cook stove?	*Select all that apply*	1. [ ]Tradition 2. [ ]Cheap 3. [ ]Simple to use 4. [ ]Best stove available 5. [ ]Ignites easily 6. [ ]Use many sizes of pots 7. [ ]Don't know any other stoves 8. [ ]Cooks quickly 9. [ ]Can control heat/fire easily 10. [ ]Other(Specify)
C10	What do you dislike about your most commonly used cook stove?	*Select all that apply*	1. [ ]Dirty (gets soot in the house, pots) 2. [ ]Smoky 3. [ ]Dangerous (not stable) 4. [ ]Uses a lot of fuel 5. [ ]Can cause fires/burn people 6. [ ]Cooks too quickly 7. [ ]Cooks too slowly 8. [ ]Can't control heat/fire easily 9. [ ]Other (specify)
Fuel Usage:*Now I am going to ask you a few questions on the type of fuel you generally use in your household*			
C11	What type of fuel does your household mainly use for cooking?		1 [ ]Firewood 2 [ ]Charcoal 3 [ ]Kerosene 4 [ ]LPG 5 [ ]Agricultural residue 6 [ ]Biogas 7 [ ]Electricity 8 [ ]Solar energy 9 [ ]Other(Specify)
C12	For each of the fuel types mentioned, how often do you use them?		1. [ ]Use frequently 2. [ ]Use occasionally 3. [ ]Use rarely 4. [ ]Other (specify)
C13	For each of the fuel types mentioned, what are your reasons for use?		1. [ ]Readily available 2. [ ]Cheap 3. [ ]Easy to use 4. [ ]Cooks fast 5. [ ]Produces less smoke 6. [ ]Everyone uses it 7. [ ]Other(Specify)
C14	For each of the fuel types mentioned how do you acquire your fuel?		1. [ ]Purchase 2. [ ]Collect 3. [ ]Barter trade 4. [ ]Relief agency 5. [ ]Other (specify)

No.	Question	Instructions	Responses
C15a	If firewood is collected, who collects it?		1. [ ]Self 2. [ ]Someone else in the household (Specify) 3. [ ]Other (specify)
C15b	How long does it take round trip to get the fuel?	Record in minutes	
C15c	Do you collect on your own or in a group?		1. [ ]Own 2. [ ]Group
C16a	If you purchase fuel, how much do you pay for it? a) Per day? b) Per week? c) Per month?		
C16b	Is this a reasonable price?		1. [ ]Yes 2. [ ]No
C16c	Has the price been stable, increasing, decreasing?		1. [ ]Stable 2. [ ]Increasing 3. [ ]Decreasing
C17a	Are you experiencing any problems with the current type of fuel?		1. [ ]Yes 2. [ ]No
C17b	If yes, what kind of problem are you experiencing with your current cooking fuel?		1. [ ]High price 2. [ ]Poor quality 3. [ ]Problems with personal security in obtaining the fuel 4. [ ]Fuel shortages 5. [ ]Long distances must be travelled to collect the Fuel 6. [ ]Seasonal fluctuation in fuel availability 7. [ ]Competition between groups for access to fuel or foraging land 8. [ ]Other (specify)
Cooking practices: *Now I am going to ask you a few questions about your cooking practices*			
C18	Who in the household is the main/primary cook?		1. [ ]Self 2. [ ]Spouse 3. [ ] House help 4. [ ]Other (Specify)
C19a	Where do you cook your meals from?		1. [ ]Inside the house 2. [ ]Outside → Skip to C19 3. [ ]In a separate kitchen→ Skip to C219

No.	Question	Instructions	Responses
			4. [ ]Other (Specify)
C19b	If cooking is done inside the house, how often is this done?		1. [ ]All year round 2. [ ]Only during the cold/rainy season 3. [ ]Other (Specify)
C19c	If cooking is done inside, does the cook stove have a chimney?		1. [ ]Yes 2. [ ]No
C20	How many meals a day do you prepare?		1. [ ]One meal 2. [ ]Two meal 3. [ ]Three meals 4. [ ]More than three meals
C21	Whom do you prepare meals for?		1. [ ]Immediate family 2. [ ]Extended households 3. [ ]Neighbours 4. [ ]Paying customers
C22	Approximately how many people do you prepare meals for in a day?		
C23	Do you know of any fuel-saving practices that you can use when cooking?		1. [ ]Yes 2. [ ]No →skip to C25
C24	If yes, what fuel saving practices do you use?	*Read options*	1. [ ]Pre-soaking foods 2. [ ]Covering pots with lids when cooking 3. [ ]Cutting large pieces of wood into smaller pieces 4. [ ]Cutting ingredients into small pieces before cooking 5. [ ]Sheltering the cooking fire from wind 6. [ ]Cooking with two pots on the same fire 7. [ ] Adjust the wick in the kerosene stove 8. [ ]Other (Specify)
C25	Other than cooking, for what other purpose do you use your cook stove?		1 [ ]Heating water for bathing 2 [ ]Using stove for lighting or heating 3 [ ]Heating water for washing dishes 4 [ ]Other (Specify)
D: HEALTH AWARENESS INDEX: *To test knowledge and priority of health benefits* *For the questions below, kindly state if you agree or disagree*			
D1	Having a cleaner cook stove is important to you?		1 [ ]Strongly agree 2 [ ]Agree 3 [ ]Neither agree nor disagree 4 [ ]Disagree 5 [ ]Strongly disagree

No.	Question	Instructions	Responses
D2	Indoor smoke is bad for your health?		1 [ ]Strongly agree 2 [ ]Agree 3 [ ]Neither agree nor disagree 4 [ ]Disagree 5 [ ]Strongly disagree
D3	Indoor smoke can affect children's health		1 [ ]Strongly agree 2 [ ]Agree 3 [ ]Neither agree nor disagree 4 [ ]Disagree 5 [ ]Strongly disagree
D4	Indoor smoke leads to respiratory problems		1 [ ]Strongly agree 2 [ ]Agree 3 [ ]Neither agree nor disagree 4 [ ]Disagree 5 [ ]Strongly disagree
D5	A cook stove that produces less smoke can lead to health benefits for your household		1 [ ]Strongly agree 2 [ ]Agree 3 [ ]Neither agree nor disagree 4 [ ]Disagree 5 [ ]Strongly disagree
E HEALTH & HEALTH IMPACTS: ***Now I would like to ask you a few questions about your health and health in general***			
E1a	Do you think the smoke from the stove has an effect on health?		1. [ ]Yes 2. [ ]No→ Skip to E2a
E1b	In your opinion what are the health risks of cook stove smoke?	*Do not read options, select all that apply*	1 [ ]Eye problem 2 [ ]Cough 3 [ ]Chest illness 4 [ ]Shortness of breath 5 [ ]Headache 6 [ ]Asthma 7 [ ]Blocked/runny nose 8 [ ]Backache 9 [ ]Other (Specify)
E2a	Are you bothered by smoke emitted when you cook?		1. [ ]Yes 2. [ ]No
E2b	Have you done anything to prevent/reduce exposure from smoke?		1. [ ]Yes 2. [ ]No→ Skip to E2d
E2c	If yes, what have you done to prevent/reduce exposure from smoke?		1 [ ]Dry fuel before using 2 [ ]Cooking outside 3 [ ]Keep children away while cooking 4 [ ]Enclosed fire inside stove 5 [ ]Increased ventilation 6 [ ]Adopted cleaner fuel 7 [ ]Adopted cleaner stove(ICS) 8 [ ]Installed chimney

No.	Question	Instructions	Responses
			9 [ ]Installed hood 10 [ ]Increased window size 11 [ ]Added windows 12 [ ]Increased door size 13 [ ]Constructed separate cooking area 14 [ ]Nothing 15 [ ]Other (Specify)
E2d	If No, why have you not done anything to prevent/reduce exposure from smoke?		1 [ ]Too expensive to make changes 2 [ ]Smoke has benefits 3 [ ]accustomed to cook stove smoke 4 [ ]It would make no difference 5 [ ]Other(specify)
E3	What do you think may prevent/reduce exposure from smoke?		1 [ ]Dry fuel before using 2 [ ]Cooking outside 3 [ ]Keep children away while cooking 4 [ ]Enclosed fire inside stove 5 [ ]Increased ventilation 6 [ ]Adopted cleaner fuel 7 [ ]Adopted cleaner stove(ICS) 8 [ ]Installed chimney 9 [ ]Installed hood 10 [ ]Increased window size 11 [ ]Added windows 12 [ ]Increased door size 13 [ ]Constructed separate cooking area 14 [ ]Nothing 15 [ ]Other (Specify
E4	What do you think are the health benefits of smoke reduction?		1 [ ]Not harmful for the eyes 2 [ ]No cough 3 [ ]No headache 4 [ ]No benefit 5 [ ]Other (Specify) 6 [ ]Don't know 7 [ ]Refused to answer
E5	Other than the health benefits, what do you feel are the most valuable ways in which smoke reduction could benefit / has benefited you?		1 [ ]Clothes don't get dirty 2 [ ]Cooking utensils don't get dirty/ soot 3 [ ]Kitchen doesn't get dirty 4 [ ]Less cost for soap 5 [ ]Less work in terms of cleaning 6 [ ]Tasty food 7 [ ]Don't know 8 [ ]Refused to answer
E6	Do you believe indoor smoke is worse for your health than Dust		1. [ ]Yes 2. [ ]No
	Spoiled food		1. [ ]Yes 2. [ ]No

No.	Question	Instructions	Responses
	Polluted water		1. [ ]Yes 2. [ ]No
	Traffic pollution		1. [ ]Yes 2. [ ]No
E7	Do you smoke?		1. [ ]Yes 2. [ ]No→ Skip to E9
E8	How much do you smoke in a day (quantity in cigarrete sticks)		
E9	Does anyone else in the household smoke?		1. [ ]Yes 2. [ ]No
E10	In the last one year have you experienced any of the following ailments Eye problem Cough Chest illness Shortness of breath Headache Asthma Blocked/runny nose Backache		1. [ ]Yes 2. [ ]No
E11	In the last two weeks, have you experienced any of the following ailments: Eye problem Cough Chest illness Shortness of breath Headache Asthma		1. [ ]Yes 2. [ ]No

No.	Question	Instructions	Responses
	Blocked/runny nose Backache		
E12	In the last one year has anyone in your household experienced any of the following ailments Eye problem Cough Chest illness Shortness of breath Headache Asthma Blocked/runny nose Backache		1. [ ]Yes 2. [ ]No
E13	In the last two weeks has anyone in your household experienced any of the following ailments Eye problem Cough Chest illness Shortness of breath Headache Asthma Blocked/runny nose Backache		1. [ ]Yes 2. [ ]No

No.	Question	Instructions	Responses
E14	Where do you get your information on health?	**Probe**	1 [ ]CHWs 2 [ ] Health professional 3 [ ]Television 4 [ ]Radio 5 [ ]Flyers/Banners 6 [ ]Peers/relatives 7 [ ]Magazines/books 8 [ ]Health professional 9 [ ]Other(specify
E15	Do you think some cooking fuels are better for your health than others?		1. [ ]Yes 2. [ ]No→ Skip to E17
E16	If yes, which ones?		10 [ ]Charcoal 11 [ ]Firewood 12 [ ]Kerosene 13 [ ]Gas 14 [ ]Solar 15 [ ]Other(specify)
E17	If you were told some fuels are better for your health than others, would you be willing to change?		1. [ ]Yes 2. [ ]No
E18	If the best fuel for your health was more expensive than the one you currently use, would you be willing to change?		1. [ ]Yes 2. [ ]No
E19	How much per week extra would you be ready to pay?		
E20	Do you think some cooking stoves are better for your health than others?		1 [ ]Yes 2 [ ]No→ Skip to E22
E21	If yes, which ones?		1. [ ]Open fire (3 stoned fireplace) 2. [ ]Surrounded fire 3. [ ]Improved single pot stove 4. [ ]Improved multiple pot stove 5. [ ]Kerosene stoves 6. [ ]Traditional charcoal stove 7. [ ]Jiko okoa 8. [ ]LPG (Gas stove)

No.	Question	Instructions	Responses
			9. [ ]Other(Specify)
E22	If you were told some stoves are better for your health than others, would you be willing to change?		1 [ ]Yes 2 [ ]No
E23	If the best stove for your health was more expensive than the one you currently use, would you be willing to change?		1 [ ]Yes 2 [ ]No
E24	If yes, how much money would you be willing to spend?		
F: WILLINGNESS TO PAY FOR COOKSTOVE			
Tell the respondent	I am going to read a list of alternatives to you. Please select, out of the alternatives I read out which option you would prefer. As part of our research we will run a random lottery to randomly pick one person, and after that, randomly select an option out the list I am about to ask you to give to the winner. Please note that this process means there is no reason not to tell the truth, and the lottery process means that it makes most sense to tell us the option you would genuinely prefer. Then: 16 separate questions: 1. 15,000KSh or an improved cook stove 2. 14,000KSh or an improved cook stove 3. 13,000KSh or an improved cook stove 4. 12,000KSh or an improved cook stove 5. 11,000KSh or an improved cook stove 6. 10,000KSh or an improved cook stove 7. 9,000KSh or an improved cook stove 8. 8,000KSh or an improved cook stove 9. 7,000KSh or an improved cook stove 10. 6,000KSh or an improved cook stove 11. 5,000KSh or an improved cook stove 12. 4,000KSh or an improved cook stove 13. 3,000KSh or an improved cook stove 14. 2,000KSh or an improved cook stove 15. 1000KSh or an improved cook stove 16. 0KSh or an improved cook stove		
F1			

No.	Question	Instructions	Responses
F2	What is the minimum you would pay for an improved cook stove?		
F3	What is the maximum you would pay for an improved cook stove?		

SECTION F **TREATMENT 1: SALIENCE (SMS TEXT MESSAGING)**		
NO.	**Question**	**FO Comments**
F	**Tell the Participant:** As part of our research we are providing free information about the health benefits of cookstoves. We will also be sending SMS messages for a short time as part of the health information we will be providing. READ HEALTH BENEFITS and ICS SCRIPT *NEW FO QUESTION: Please confirm that you have read the health benefits and ICS Script* GO TO TREATMENT 1 PROTOCOL	
F1a	Does the respondent agree to receive SMS messages?	1 [ ]Yes 2 [ ]No
F1b	If not, why not?	
F2	What is the respondent's language preference for receiving the text messages?	1 [ ]English 2 [ ]Kiswahili
F3	Does the respondent understand that they will receive the text messages for 5 days consecutively?	1 [ ]Yes 2 [ ]No
	Interviewer instructions: Re-explain the procedure to stop following Busara.	
	FO Comments:	

SECTION G **TREATMENT 2: SALIENCE (VISUAL DEPICTION)**		
NO.	**Tell the Participant:** As part of our research we are providing free information about the health benefits of cookstoves. We will also be using a goal setting exercise as part of this process. *NEW FO QUESTION: Please confirm that you have read the health benefits and ICS Script* GO TO TREATMENT 3 PROTOCOL	**FO Comments**
G1	Do you have any issue with looking at graphic images?	1 [ ]Yes 2 [ ]No

G2	Do you have any visual difficulties that makes viewing images difficult?	1 [ ]Yes 2 [ ]No
G1	Do you understand what these pictures depict?	3 [ ]Yes 4 [ ]No
	Interviewer instructions: Re-explain the how to use the visual pictures to relate to their health	
G2	Is the respondent able to relate these images to their health?	2 [ ]Yes 3 [ ]No
	FO Comments	4

SECTION H **TREATMENT 3: ASPIRATIONS (GOAL SETTING)**		
NO.	**Question**	**FO Comments**
H	**Tell the Participant:** As part of our research we are providing free information about the health benefits of cookstoves. We will also be using a goal setting exercise as part of this process. *NEW FO QUESTION: Please confirm that you have read the health benefits and ICS Script* GO TO TREATMENT 3 PROTOCOL	
H1	Do you want to have a smoke free house?	1 [ ]Yes 2 [ ]No
H2	What is the biggest obstacle you face in achieving a smoke free house?	
H3	How do you plan to overcome this obstacle?	
	FO Comments	

Appendix 3: Endline Survey Instrument

No.	Question	Instructions	Responses
SECTION A: DEMOGRAPHIC INFORMATION			
A1	Time of interview	Hour/minutes	[ ] /[ ]
A2	Date of interview	dd/mm/yyyy	[ ] /[ ] /[ ]
A3	Enumerator name		_____
A4	Survey ID		
A5	GPS Co-ordinates		
Geographic information			
A6	Enumeration Area Location		4. [ ] Kikuyu 5. [ ]Limuru 6. [ ]Kiambu
A7	Enumeration Sub Location		9 [ ]Lusigetti 10 [ ]Kamangu 11 [ ]Thogoto 12 [ ]Gikambura 13 [ ]Kinoo 14 [ ]Rironi 15 [ ]Ting'ang'a 16 [ ]Ikinu
Contact information			
A8	Respondent name	Write 3 names	
A9	Contact number (And re-enter later to provide check for this)	Cell phone number should be 9 numbers starting with'7'(700000000)	| | | | | | | | |
A10	Alternative contact number	Cell phone number should be 9 numbers starting with'7'(700000000)	| | | | | | | | |
A11	Who owns the alternative contact?		4 [ ]Self 5 [ ]Spouse 6 [ ]Other (Specify)
Now, I am going to ask you a few questions about savings in your household			
B. CURRENT COOK STOVE AND COOKING PRACTICES: ***First I would like to ask a few questions about your change of cook stove in your household***			
B1	What type of cook stoves do you use in your household?		10. [ ]Open fire (3 stoned fireplace) 11. [ ]Surrounded fire 12. [ ]Improved single pot stove 13. [ ]Improved multiple pot stove 14. [ ]Kerosene stoves 15. [ ]Traditional charcoal stove 16. [ ]Jiko okoa 17. [ ]LPG (Gas stove) 18. [ ]Other(Specify)
B2	Have you changed your cook-stoves in the last 5 weeks?		4. [ ] Yes 5. [ ] No→ Skip to B6 6. [ ] Others(Specify)

No.	Question	Instructions	Responses
B3	If **Yes** how much did you spend on your new cookstove?		_____
B4	If **Yes** why did you change to your new cookstove?		1. [ ]Smoke-free 2. [ ]Simple to use 3. [ ]Best stove available 4. [ ]Ignites easily 5. [ ]Use many sizes of pots 6. [ ]Economical 7. [ ]Cooks quickly 8. [ ]Can control heat/fire easily 9. [ ]Other(Specify)
B5	If **Yes** which stove were you using before?		1. [ ]Open fire (3 stoned fireplace) 2. [ ]Surrounded fire 3. [ ]Improved single pot stove 4. [ ]Improved multiple pot stove 5. [ ]Kerosene stoves 6. [ ]Traditional charcoal stove 7. [ ]Jiko okoa 8. [ ]LPG (Gas stove) 9. [ ]Other(Specify)
B6	If **No** do you plan to change your cook stove in the near future?		1. [ ] Yes 2. [ ] No 3. [ ] Others(Specify)
	FO Comments:		
C Fuel Usage: *Now I am going to ask you a few questions on the type of fuel you generally use in your household*			
C1	For the last 5 weeks have you changed the type of fuel you have been using?		1. [ ] Yes 2. [ ] No→Skip to C3
C2	If **Yes** what type of fuel is your household using now?		10 [ ]Firewood 11 [ ]Charcoal 12 [ ]Kerosene 13 [ ]LPG 14 [ ]Agricultural residue 15 [ ]Biogas 16 [ ]Electricity 17 [ ]Solar energy 18 [ ]Other(Specify)
Cooking practices: *Now I am going to ask you a few questions about your cooking practices*			
C3	Since we last visited you have you changed where you cook your meals from?		1. [ ] Yes 2. [ ] No→Skip to D1

No.	Question	Instructions	Responses
C4	If **Yes** where do you cook your meals from?		5. [ ]Inside the house 6. [ ]Outside 7. [ ]In a separate kitchen 8. [ ]Other (Specify)
	FO Comments:		
D: HEALTH AWARENESS INDEX: *To test if they have now prioritised health benefits since we last visited. (For the questions below, kindly state if you agree or disagree)*			
D1	Having a cleaner cook stove is important to you?		6 [ ]Strongly agree 7 [ ]Agree 8 [ ]Neither agree nor disagree 9 [ ]Disagree 10 [ ]Strongly disagree
D2	Indoor smoke is bad for your health?		6 [ ]Strongly agree 7 [ ]Agree 8 [ ]Neither agree nor disagree 9 [ ]Disagree 10 [ ]Strongly disagree
D3	Indoor smoke can affect children's health		6 [ ]Strongly agree 7 [ ]Agree 8 [ ]Neither agree nor disagree 9 [ ]Disagree 10 [ ]Strongly disagree
D4	Indoor smoke leads to respiratory problems		6 [ ]Strongly agree 7 [ ]Agree 8 [ ]Neither agree nor disagree 9 [ ]Disagree 10 [ ]Strongly disagree
D5	A cook stove that produces less smoke can lead to health benefits for your household		6 [ ]Strongly agree 7 [ ]Agree 8 [ ]Neither agree nor disagree 9 [ ]Disagree 10 [ ]Strongly disagree
	FO Comments:		
E HEALTH & HEALTH IMPACTS: *Now I would like to ask you a few questions about your health and health in general*			
E1a	Do you think the smoke from the stove has an effect on your health?		3. [ ]Yes 4. [ ]No 5. [ ]Others (Specify)
E1b	In your opinion what are the health risks of cook stove smoke?	*Do not read options, select all that apply*	10 [ ]Eye problem 11 [ ]Cough 12 [ ]Chest illness 13 [ ]Shortness of breath 14 [ ]Headache 15 [ ]Asthma 16 [ ]Blocked/runny nose

No.	Question	Instructions	Responses
			17 [ ]Backache 18 [ ]Other (Specify)
E1c	If yes, what have you done in the last 5weeks to prevent/reduce exposure from smoke?		16 [ ]Dry fuel before using 17 [ ]Cooking outside 18 [ ]Keep children away while cooking 19 [ ]Enclosed fire inside stove 20 [ ]Increased ventilation 21 [ ]Adopted cleaner fuel 22 [ ]Adopted cleaner stove(ICS) 23 [ ]Installed chimney 24 [ ]Installed hood 25 [ ]Increased window size 26 [ ]Added windows 27 [ ]Increased door size 28 [ ]Constructed separate cooking area 29 [ ]Nothing 30 [ ]Other (Specify)
E1d	If No, why have you not done anything to prevent/reduce exposure from smoke?		6 [ ]Too expensive to make changes 7 [ ]Smoke has benefits 8 [ ]accustomed to cook stove smoke 9 [ ]It would make no difference 10 [ ]Other(specify)
E2	What do you think are the health benefits of smoke reduction?		8 [ ]Not harmful for the eyes 9 [ ]No cough 10 [ ]No headache 11 [ ]No benefit 12 [ ]Other (Specify) 13 [ ]Don't know 14 [ ]Refused to answer
E3	Do you now believe indoor smoke is worse for your health than: Dust		3. [ ]Yes 4. [ ]No
	Spoiled food		3. [ ]Yes 4. [ ]No
	Polluted water		3. [ ]Yes 4. [ ]No
	Traffic pollution		3. [ ]Yes 4. [ ]No
E4	For the last 5 weeks have you smoked?		3. [ ]Yes 4. [ ]No→ Skip to E7

No.	Question	Instructions	Responses
E5	How many cigarettes do you smoke per day (quantity in cigarette sticks)		_____
E6	If the best fuel for your health was more expensive than the one you currently use, would you be willing to change?		3. [ ]Yes 4. [ ]No
E7	How much per week extra would you be ready to pay?		_____
E8	Do you think some cooking stoves are better for your health than others?		3 [ ]Yes 4 [ ]No→ Skip to F1a
E9	If **Yes**, which ones?		10. [ ]Open fire (3 stoned fireplace) 11. [ ]Surrounded fire 12. [ ]Improved single pot stove 13. [ ]Improved multiple pot stove 14. [ ]Kerosene stoves 15. [ ]Traditional charcoal stove 16. [ ]Jiko okoa 17. [ ]LPG (Gas stove) 18. [ ]Other(Specify)
	FO Comments:		
F1: WILLINGNESS TO PAY FOR COOKSTOVE			
Tell the Respondent	As part of our research we will be conducting a lottery across all the villages we will be working with. One person among those that we survey will receive 20,000Kshs. The winner will have the opportunity to buy an improved cook stove with that money. The winner will be able to keep the money they do not spend on an improved cook stove for themselves. You will be asked to give a price that you would be willing to pay for an improved cook stove in the event that you win the lottery. A random number will be generated by the computer, you will buy the improved cook stove if the amount you have said that you have said that you want to buy an improved cook stove for is above the random number you generated. Please note that this process means there is no reason not to tell the truth, and the lottery process means that there is no reason not to tell the truth, and it makes most sense to tell us the price you are willing to buy the cook stove for.		
F1a	Sometimes back we had a Market Demo in the local here, Did you attend?		1 [ ]Yes 2 [ ]No

No.	Question	Instructions	Responses
F1b	What price would you pay for an improved cook stove if you win the lottery?		_____
F1c	What is the minimum you would pay for an improved cook stove?		
F1d	What is the maximum you would pay for an improved cook stove?		

SECTION F **TREATMENT 1: SALIENCE (SMS TEXT MESSAGING)**		
NO.	**Question**	**FO Comments**
F2	**Remind the Participant:** As part of our research we were providing free information about the health benefits of cook-stoves inform of SMS messages. *NEW FO QUESTION: Please confirm that they were receiving those messages.* GO TO TREATMENT 1 PROTOCOL	
F2a	Were you receiving SMS messages?	3 [ ]Yes 4 [ ]No
F2b	If not, why not?	
F2c	Did you find them useful?	3 [ ]Yes 4 [ ]No
F2d	How were they useful?	
F2e	In a scale of 1-10, 10 being the highest how effective were they?	
	FO Comments:	

SECTION G **TREATMENT 2: SALIENCE (VISUAL DEPICTION)**		
NO.	**Remind the Participant:** As part of our research we provided free information about the health benefits of cookstoves. We also used a goal setting exercise as part of this process. GO TO TREATMENT 3 PROTOCOL	**FO Comments**
	Interviewer instructions: Re-explain the visual pictures	
G1	Were you able to relate the images to your health?	1. [ ]Yes **2.** [ ]No

G2	Did those image change anything in terms of your health? How did the images help you?	1. [ ]Yes 2. [ ]No
	FO Comments	

SECTION H **TREATMENT 3: ASPIRATIONS (GOAL SETTING)**		
NO.	**Question**	**FO Comments**
	Remind the Participant: As part of our research we were providing free information about health benefits of cook stoves. We used a goal setting exercise as part of the process.	
H1	Did you find them useful?	2 [ ]Yes 2 [ ]No
H2	How were they useful?	
H3	How have you overcome the obstacle of smoke free house?	
	FO Comments	

Appendix 4: Qualitative Survey Instrument

QUESTIONS Section 1; (ASPIRATIONS)

(Now, I am going to read to you two stories. These stories are based on REAL people who live in places like Kibera. We have changed the names and some details to maintain anonymity, but otherwise these stories are true)

1. What did you think about the story that was read to you?

2. Did you find it aspirational?

a) If Yes, Explain why? *(Let the respondent share aspects in the story that they find (un) aspirational)*

b) If No, Explain why

3. How did the story affect how much you chose to pay for the cookstove?

4. When "you will now be entered into a lottery to be able to buy a cookstove you just heard about" what did you understand by that?

5. When you heard the information "if you are selected by the lottery, you will receive shs 4000 and have an opportunity purchase a cook stove using that money":

a) What came to your mind?

b) How did that affect how much you chose to pay for the cookstove?

6. Do you think the amount you chose to pay for cook stove (during lab) was accurate? Why?

7. Did you understand how the winner was selected to have an opportunity to buy the cookstove? Explain *(let the respondent explain "the computer will generate a random number. if the amount you chose to pay is higher than the random number, you will buy the item. If the amount you chose to pay is less than the random number, you will not buy the item")* NOTE: *do not read it to the respondent.*

8. How did that affect how much you chose to pay for the cookstove?

9. [Read these stories again]. What do the stories make you think regarding purchasing a cook stove? *Respondent to explain the aspects in the story that triggers their decisions regarding HOW they want to buy cookstoves)*

10. Do you think goals or aspirations have any effect on people purchasing clean cook stove?

11. Do you know anyone who owns an improved charcoal stove? If yes, how many do they own?

12. On a scale of 1-5 where 1 = Not influenced at all, 2= Influenced a bit, 3= Neutral, 4=Influenced, 5=Most influenced, was how much you want to pay influenced by the following:

.

a. Reference to the cost of other cook stoves (Gas, Kerosene, Charcoal, e.t.c)
b. The perception of the cost of the improved cook stove.
c. Knowledge about the improved cook stove.
d. Names used in the aspirational stories.
e. How the story was presented to you.
f. The amount offered (in this case Kshs 4000).
g. You friends who own improved cook stove
h. Preference of cash vs cook stove (the amount to be given as cash if one wins the cook stove)

QUESTIONS Section 1; SCARCITY

A willingness to buy

(Remember that if you are the lucky lottery winner and you suggest a number higher than the random number generated, you will have to pay this amount out of the 4000 KSh that you receive. Please note that we only have one cook stove so if more than one lottery winner wishes to buy the cookstove we will have to select at random who will be able to purchase the cookstove)

1. What came to your mind when you heard the above information?

2. If Yes, on a scale of 1-5, how well did you understood the information 1=very poor, 2=poor, 3=fair, 4=good, 5=very good

3. How did the information I just read to you (above) affect the amount you chose to pay for cookstove?

4. Do you think the money you you chose to pay for was accurate? Why?

5. When you heard the information "*Please note that we only have ONE COOK STOVE so if more than one lottery winner wishes to buy the cookstove we will have to select at random who will be able to purchase the cookstove*" what came to your mind in terms of:

a. Quality of the cookstove
b. Reliability of the cookstove
c. Price/cost of the cookstove
d. Efficiency of the cookstove
e. Uniqueness

6. How did the information "*Please note that we only have ONE COOK STOVE so if more than one lottery winner wishes to buy the cookstove we will have to select at random who will be able to purchase the cookstove*" affect how much you chose to pay for?

7. In life have you ever been presented with a situation where the commodity you want to buy is limited but the buyers were many?

.

a. If Yes, what did you do?

b. If No, what would you have done?

8. On a scale of 1-5 where 1 = Not influenced at all, 2= Influenced a bit, 3= Neutral, 4=Influenced, 5=Most influenced, was how much you want to pay influenced by the following:

a. Reference to the cost of other cook stoves (Gas, Kerosene, Charcoal, e.t.c)
b. The perception of the cost of the improved cook stove.
c. Knowledge about the improved cook stove.
d. Names used in the aspirational stories.
e. How the story was presented to you.
f. The amount offered (in this case Kshs 4000).
g. You friends who own improved cook stove
h. Preference of cash vs cook stove (the amount to be given as cash if one wins the cook stove)

Appendix 5: SMS Message Content

Message 1:
English: Did you know that improved cookstoves emit less smoke than normal jikos, and that smoke is dangerous to your health and that of your family. Thank you

Swahili: Je,wajua kwamba moshi ni hatari kwa afya yako na familia yako?
Wekeza kwa jiko iliyoboreshwa isiyotoa moshi mingi na uishi maisha ya afya zaidi. Asante sana.

Message 2:
English: Protect your children's health from the harmful smoke from traditional cookstoves. Invest in an Improved cook-stove to prevent diseases such as asthma.

Swahili: Linda afya ya mtoto wako kwa kutumia meko iliyoboreshwa. Moshi kutoka kwa jiko za kawaida,husababisha magonjwa ya kupumua kama vile Asthma(Pumu)

Message 3:
English: Adoption of clean cookstoves will improve your health by reducing the likelihood of coughs, colds, sore eyes, headaches and dizziness caused by smoke

Swahili: Matumizi ya jiko iliyoboreshwa huweza kupunguza homa, kohozi na vilevile kuboresha utendakazi wa mapafu hivyo kuboresha afya yako

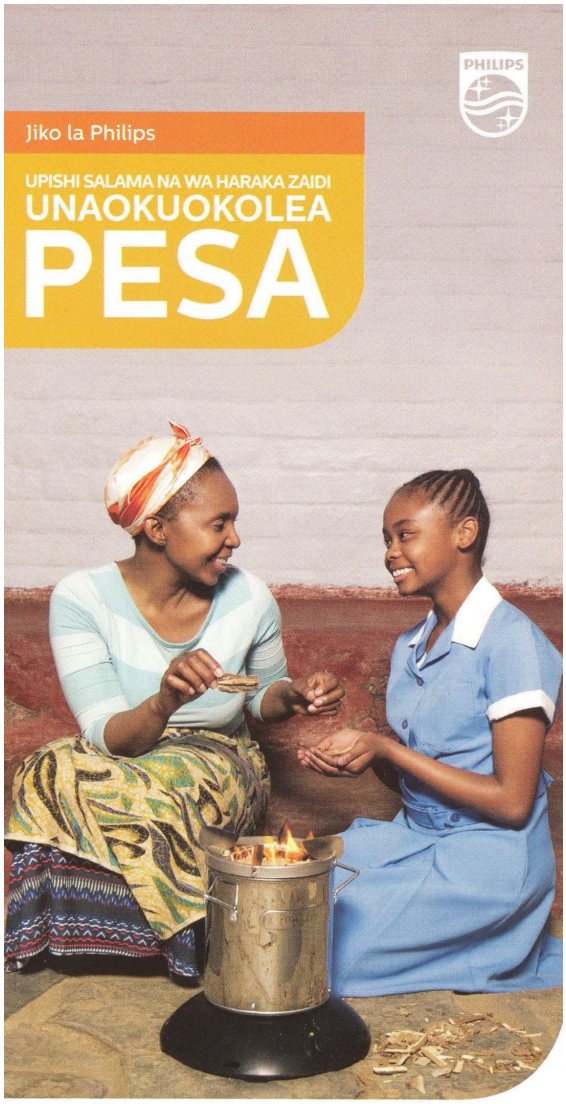
Message 4:
English: Buy an improved cookstove and have more peace at home with less smoke emission and fewer hospital visits for cases of coughs or smoke related diseases.

Swahili: Unaponunua jiko iliyoboreshwa,utakuwa na amani ya kiakili kwa sababu ya moshi kidogo na kupunguza ziara za hospitali kwa magonjwa kutokana na moshi

Message 5:
English: Smoke from traditional cookstoves leads to nose, eye and throat irritations. Buy an improved cookstove that emits less smoke and live a healthier life.

Swahili Moshi kutokana na jiko za kawaida husababisha mwasho wa pua,macho na koo,
Unaponunua jiko iliyoboreshwa, familia yako itaweza kuwa na afya njema.

Appendix 6: Cookstove Flyer



Jiko la Philips litaboresha maisha yako. Vipi?

Inaokoa pesa

Tumia **vipande vidogo vidogo vya kuni** badala ya kutumia pesa kununua mafuta taa au makaa.

Moshi mchache

Pika chakula chako ndani ya chumba bila kusumbuliwa na moshi, ambayo ni bora kwako na kwa watoto wako.

Hupika Haraka Zaidi

Chemsha maji lita 5 kwa dakika 20, ukiokoa muda na pesa.

Imeundiwa Wewe

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