

Choice of cooking fuels in developing countries is a big problem. About 40% of the world population, or 3 billion people, cook with solid fuels. Ranging from wood and dung to coal and charcoal, these fuels drastically increase indoor air pollution. Such pollution has been directly linked with severe illnesses like pneumonia and lung cancer. 27% more children died after being exposed to pollution caused by these solid fuels. In infants the mortality was higher at 43%.

One solution is LPG. Easily transportable, neutral to health, and easier to use than solid fuels, LPG promises to improve health and wellbeing of millions of households.

Adoption has not been smooth. Some households have complained of high cost. Some have thought the methods of adoption too difficult. Still others have thought the distance they must go to get it too far.

My hypothesis is that as households make purchasing decisions together, the more they become likely to use LPG for cooking. More people involved in a decision means more information that a single decision maker had not thought of. It also means challenges that had seemed insurmountable can seem more solvable, as one need not rely on his own limited means, thoughts, and feelings. And it can imply willingness to escape one's preconceived reality of what works and what doesn't; if after hearing another's view one has changed his mind, then one has practiced that willingness. This may be important as what binds solid fuels to many of their users is the traditional belief that such fuels are the only way.

I use the data from CEEW-Columbia Survey conducted over 6 states: Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh, and West Bengal. The states encompass, among those surveyed, 48 divisions, 51 districts, and 714 villages. From these, the data from Uttar Pradesh is used, totaling 3023 respondents. Uttar Pradesh lies in Central India, where highest number of

solid fuel users with highest intensity of use reside. If solid fuels can be done away with here, they may be easier to do away with elsewhere.

From the logistic regression and predicting the probability of using LPG for each decision maker type, the following result has shown:

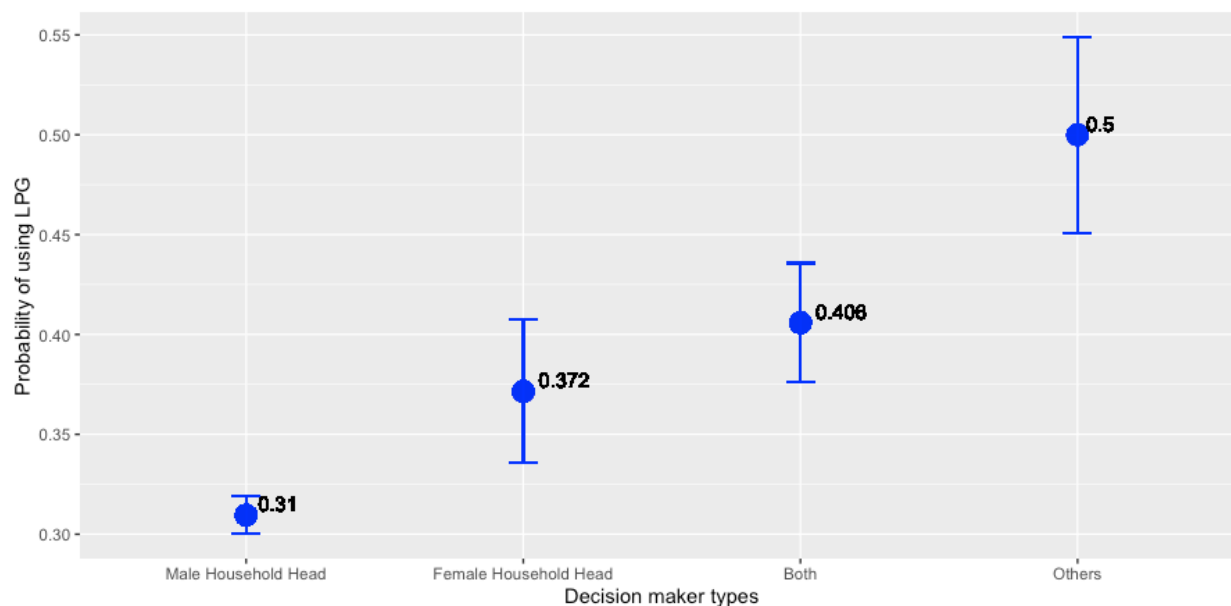


Figure 1. Probability of using LPG for each decision maker type: Male, Female, Both, and Others

As the graph shows, household with male decision maker had the lowest probability of using LPG, at 31%. The standard error of fits was .93%, also shown on the graph. At 2465 of the respondents, they were also the largest group. Those with female heads were a bit more likely, at 37.2%. Their standard error of fits was 3.57%. They totaled 183 respondents. And those where male and female made decisions together had a slightly higher likelihood, at 40.6%. Their standard error of fits was 2.98%. This group totaled 271 respondents. The basic relation in the hypothesis was therefore confirmed.

Interestingly, the highest likelihood was by those where “Others” made such purchasing decisions. The probability here was at 50%, with standard error of fits of 4.9%. At 104 respondents, they were similar in size to the households with female decision makers.

To investigate what was going on, I ran logistic regression on the other decision makers variable (m1_q38_decision_maker_other) and the LPG usage. Then I plotted the probabilities and the confidence intervals:

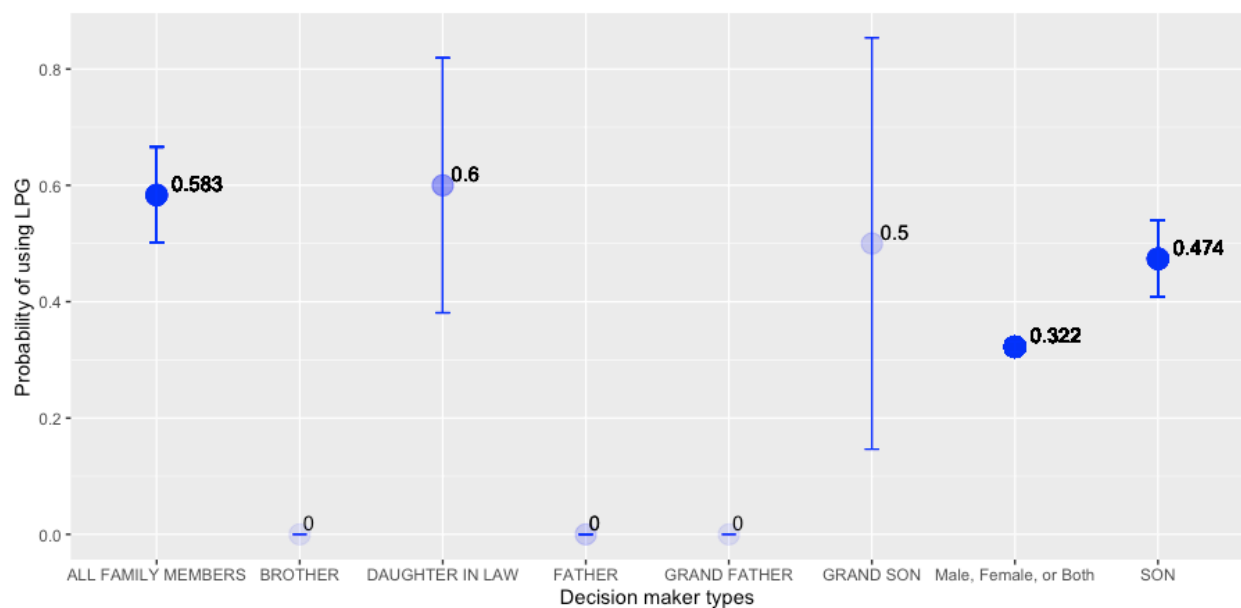


Figure 2. Probability of using LPG for other decision maker types: All family members, brother, daughter in law, father, grandfather, grandson, the previous data (male, female, or both), and son

As shown, households where all family members made purchasing decisions together had the highest probability of using LPG, at 58.3% with standard error of fits of 8.2% and 36 respondents. This was followed by those where sons made decisions, at 47.4% with standard error of fits of 6.6% with 57 respondents. The 32.2% by “Male, Female, or Both” is simply a placeholder, representing the previous variable of decision makers. The faded circles on the other decision makers like daughter in law mean nearly zero respondents responded there.

The two decision maker types of interest are, therefore, those who make decisions together as male and female or as a family. These two groups tend to be less bound by perceived limits. Asked if they don't have LPG because it is too far or unavailable, more of them replied no; the distance turned out to be similar for all groups. The same was the case when asked if they didn't know how to get LPG or whom to ask; more of them said no. The levels of wealth were similar. They were also much more likely to have heard about new technologies like solar home systems, indicating increased information flow amongst them.

A campaign to increase LPG use among the Uttar Pradesh residents should, therefore, first answer why certain households make decisions together. Perhaps they do so because they have more respect for one another. Or perhaps they are humbler than others and are willing to seek other opinions and change their own minds. The precise answer is beyond the scope of this paper and of the datasets. But once answered, drivers for those outcome variables must be found. What makes us respect one another? What makes us humble? When do we make that choice to be humble or respect others?

What can still be learned from the study is this: Willingness to go beyond oneself benefited the entire household. The world can use more of this.