

[Joan Costa-Font](#), Joan Rovira Forns and Azusa Sato
Eliciting health care priorities in developing countries: experimental evidence from Guatemala

**Article (Accepted version)
(Refereed)**

Original citation:

Costa-Font, Joan, Rovira Forns, Joan and Sato, Azusa (2016) Eliciting health care priorities in developing countries: experimental evidence from Guatemala. *Health Policy and Planning*, 31 (1). pp. 67-74. ISSN 0268-1080

DOI: [10.1093/heapol/czv022](https://doi.org/10.1093/heapol/czv022)

© 2015 The Authors

This version available at: <http://eprints.lse.ac.uk/61060/>

Available in LSE Research Online: May 2016

LSE has developed LSE Research Online so that users may access research output of the School. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LSE Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain. You may freely distribute the URL (<http://eprints.lse.ac.uk>) of the LSE Research Online website.

This document is the author's final accepted version of the journal article. There may be differences between this version and the published version. You are advised to consult the publisher's version if you wish to cite from it.

Eliciting Health Care Priorities in Developing Countries: Experimental Evidence from Guatemala

Joan Costa Font,

London School of Economics and Political Science

Department of Social Policy

E-mail: j.costa-Font@lse.ac.uk

with

Joan Rovira Forns

University of Barcelona

Azusa Sato

London School of Economics and Political Science

Abstract

While some methods for eliciting preferences to assist participatory priority setting in health care in developed countries are available, the same is not true for poor communities in developing countries whose preferences are neglected in health policy making. Existing methods grounded on self-interested monetary valuations may be inappropriate for developing country settings where community care is provided through ‘social allocation’ mechanisms. This paper proposes and examines an alternative methodology for eliciting preferences for health care programs specifically catered for rural and less literate populations but which is still applicable in urban communities. Specifically, the method simulates a realistic collective budget allocation experiment, to be implemented in both rural and urban communities in Guatemala. We report evidence revealing that participatory budget-like experiments are incentive compatible mechanisms suitable for revealing collective preferences, while simultaneously having the advantage of involving communities in health care reform processes.

1. Introduction

Given the large share of the population that is typically excluded from political decision-making in low and middle income countries (Iguanzo, 2011), community involvement in the development of health care policies is at the top of the agenda in many places. Such approaches can help correct imbalances in global health and development (Uneke *et al*, 2013). Nonetheless, involving the public in health decision-making is complex given the nature of social organisation – often times, communities lack basic infrastructure, and hold heterogeneous values and cultures to policymakers. Limited participation can result from multiple reasons, including high illiteracy rates and difficulties in communication where local languages are prevalent (Costa-Font, 2003). In other words, access barriers often go unnoticed by policy makers. Yet, experiences of participatory budgeting can improve access to vital public services, as shown in Porto Alegre between 1989 and 1996 for sanitation and schooling enrolment (Santos, 1998).

Health care reform in developing countries often runs the risk of failing to cater for the neediest majority, and often focuses on the minority elites' issues. Specifically, health policies in Latin America do not reflect the needs and preferences of the population, and instead civil servants and individuals working in the formal sector (and are therefore taxpayers on a payroll) tend to become prioritised, with the risk of leaving those without political voices neglected. Given such constraints, reforms call for a better understanding of preferences of those communities. Pattern *et al* (2006) discusses the implementation of a participatory action research project, which served to implement changes in one province of Canada and more generally Mitton *et al* (2009) review the literature on how participatory experiments are carried out and used. One aspect is the development of elicitation mechanisms to involve the public in health care decision-making (Mullen, 2004).

The design of preference elicitation methods are far from straightforward if communities are not accustomed to the formal rules of the market, with the consequence that market values are difficult to reveal. More specifically, given the differing cultural backgrounds of populations, we term the latter: 'cultural constraints to benefit revelation'. Further, once benefits have been revealed, another constraint exists – that of identifying individual social preferences for different programs.

In this paper, we describe a method to elicit and involve otherwise neglected populations in priority setting and report the results of an experiment in Guatemala, a country where the needs of indigenous populations are poorly represented. The strategy, based on ranking and discussions, was first pilot tested with a group of college students and an ethnic minority group; then on several groups at the community level. The study was conducted between 1998- 2001. The strategy was chosen because in such a setting, willingness to pay studies as a tool to value health system programs may not be appropriate (Costa-Font, 2005)¹. Further, from a policy perspective, such societies are subject to a highly constrained budget, funded wholly or in part through a mix of general taxation, transfers, aid and other sources. Hence, health program valuation does not only encompass the benefits and costs to the individual, but also social or collective sacrifice.

Under such circumstances, the opportunity cost of choosing a program is not the income forgone of the choice made, but that of benefits of an alternative program to the community and individuals. This raises some ethical issues insofar as traditional decision making criteria might not align with the preferences of excluded communities. In dealing with these issues, this paper explains a new methodology that contains some adapted techniques, which have previously been used for valuing health systems in Europe where health care is largely publicly funded (Costa-Font and Rovira, 2008). This implies that the individuals' rationale is no longer driven by market incentives but by community wellbeing. As Heyman and Ariely (2004) found, social markets are highly insensitive to the magnitude of the individual's compensation to motivate an activity. Hence, the design of preference elicitation mechanisms in community settings cannot be mixed with market mechanisms or monetary units.

Our experiment informs the wider debate on revealing values for health programs in societies where the communitarian way of life is normal. Individualistic elicitation techniques such as contingent valuation studies suffer from order effects when multiple goods are subject to valuation (Payne et al, 2000)². Further, monetary preferences are subject to monetary illusion, so that individuals would tend to reason on nominal, rather than real, terms (Shafir et al, 1997). WTP approaches do not usually frame the individual's decision within a budget

¹ Willingness to pay does not work in collective systems because the decision framing in collective settings is not a market one, and offering incentives influences social norms in line with what could be defined as "motivation crowding out". Heyman and Ariely (2004) show that individuals might frame a situation as social or monetary, and that framing a situation as monetary reduces pro-social behaviour.

² There is evidence from literature that shows monetary preferences are no longer stable following socio-economic shocks (Mataria et al, 2006), and are instead expressions of attitudes (Kanheman et al, 1999).

constraint and as a consequence, respondents are not likely to consider the opportunity cost of their valuations. Evidence suggests that the value of public goods falls when the good is valued further down the sequence (Carson *et al*, 1998; Carson, 2000). Yet, ordering effects cannot be explained by economic theory unless we accept that individuals are confronted with realistic decision-making contexts where real opportunity costs are taken into account. Evidence from willingness to pay studies shows that an *individual's reference point* in valuing goods differs when different programs are valued together, and in particular that some specific program characteristics might stimulate certain utility dimensions compared to others (Tversky and Simonson, 1993).

One way to improve the design of health policies in the context of a coverage package - given limited resources - is to define a set of incentive compatible mechanisms (designs that do not give rise to protests reactions) that involve the population in identifying what health systems related benefits they lack the most, and prioritise them accordingly. After all, one of the objectives of public participation in health care decision-making is to identify and improve health benefits. Indeed, although priorities for development are often determined by international organisations at the macro level, most developing countries have heterogeneous populations with different needs and preferences. Information problems are present in many communities, as is the case of the indigenous population of Guatemala. Further, perceived health benefits may differ across and within countries, and differences in values and cultures lead to varying conceptions of what the mission of the health system should be. In many countries, such fragmentation is magnified by illiteracy and heterogeneous ethnic groups, which may give rise to neglected populations. There are numerous reasons why some communities may not receive adequate health care services, including distance to health facilities, availability of health providers and other socioeconomic barriers. For example, improvement in hygiene and access to clean water might be more important improvements to the health of a community than the expansion a network of community doctors. However, to understand both whether this is the case and how it could potentially influence decision-making, a methodology should be developed to incorporate heterogeneity in benefit valuations.

This study aims to empirically explore new preference elicitation techniques of health system benefits in the context of developing countries. The objective of these techniques is ultimately to guide priority-setting mechanisms, including health system reforms and the

improvement of the health-related social welfare function. To validate findings, we draw upon different elicitation techniques that rely on pure ordinal ranking, budget experiments adapted to community-specific allocation mechanisms and cost contingent ranking. We developed an experiment analogous to a theoretical budget allocation and elicit preferences for each evaluated health program.

The following section describes the experiment. Section three contains the results and a final section concludes with a discussion. The following section reports the experiment including its design and instruments. Section three reports the main results; section four reports a discussion section, policy implications and conclusion.

2. Methods

2.1 Study Design

The study aimed primarily at developing suitable instruments to elicit resource allocation preferences for heterogeneous communities, particularly those who have low levels of literacy and especially ethnic minorities that do not speak the country's main language. We draw upon experimental evidence, which employs a proposed methodology designed to be of practical use across a wide spectrum of groups (particularly between population subgroups and more specifically between male and females, indigenous and non-indigenous as well as people of different age cohorts). In addition to practical aims, the methodology attempts to contribute to a wider academic discussion on how best to elicit preferences for health programs in different social environments. Specifically we have devised some instruments to elicit preferences for health related programs.

As is standard practice, a reference guide was developed and a facilitator's manual was drawn up (in Spanish), and ethical clearance was granted by the ethics committee of the economics and social science faculty of the University of Barcelona. The facilitator's guideline manual gave specific instructions, which were followed under normal circumstances; including specific notes on dealing with population responses and a description of the different steps of the experiment were outlined. We developed a specific questionnaire for each type of exercise. Given that the literature suggests that preferences can be altered after discussions and deliberative processes (Mitton et al, (2009), we did not follow a standard survey format exercise but used a set of deliberative group meetings in a focus

group format through which participants elicited their preferences. This deliberative method allowed participants to think hard about all aspects, and consider viewpoints, which they may not have thought of during their preliminary choice making. The meetings involved a first meeting where an open discussion on the health care needs and benefits of each population community and the health system were revealed, followed by a second meeting, where we came back to those needs and benefits after designing a set of targeted programs (after consultation with health policy makers).

The research methodology was tested on three different populations in Guatemala - one in a rural area and two in urban areas. The validation and pre-testing was carried out with the help of a local NGO (“Vivamos Mejor”) in collaboration with the Ministry of Health in Guatemala. The whole experiment was endorsed and supported by the government, which opened up access to facilities and communities. Data gathering started in 1998 and lasted until 2001 although the full data was not processed and ready for research until much later, and the data were only disclosed after a period where the analysis was checked and reliability testing was carried out.

Given the novelty of the experiment, we were compelled to perform different forms of pre-testing among participants of varying literacy level, social status and exclusion. The first carried out a focus group with 10 evening psychology students of both sexes aged between 25 and 50 years (mostly working as bureaucrats) as well as another group of eight students of apiculture (mostly from upper middle class families). However, to ensure the methods would be applicable to indigenous communities, we pre-tested with 8 participants of both sexes aged between 20 and 50 from the Patanitic community in the region of Solola, Kiché³. Given the group heterogeneity, the specific question phrasing was adapted to accommodate each group’s values and expectations.

2.2 Benefit Classifications and Program Design

Information was mainly portrayed to participants rather than facilitators to minimize potential biases. The discussion content was mainly focused on the needs of the community, rather than individual specific needs. Once the methodology was tested, a list of programs was subsequently elaborated upon and a second focus group took place to explain the results with

³ Most participants had an acceptable understanding of Spanish although their common language is Kiché.

the presence (only in this phase) of representatives from eight non-governmental organisations. Feedback was gathered as to how similar results could be transformed into action. This feedback was in turn helpful to evaluate the extent to which the tool was effective, and whether some amendments in its implementation were required. An example of the type of benefits identified were as follows, as revealed by a group of indigenous women between 20 and 50 years of age and classified in terms of health gain, process and equity (Table 1).

[Insert Table 1 about here]

Once a list of program was elaborated upon, participants were asked to discuss about the priorities of difference programs and perform a set of priority setting exercises. The first was a standard program priority (so called contingent) ranking. The program with the highest priority was assigned a number one, and the exercise was continued until 15. The number of programs was not specifically pre-determined but resulted from the need to make the decision-making realistic (which in turn was thought to motivate participants), and to avoid too much complexity. This led to a further reduction in the number of programs to be valued and prioritised: after the contingent ranking exercise, each participant was asked to announce which programs they ranked, alongside justifications. In both groups, participants held a stimulating discussion where the pros-and cons of different programs were discussed. Results were then written up on a poster, hung in the session room. At this point the facilitator explained the next activity was a hypothetical exercise in financial resource allocation.

After the priority ranking exercise, a financial allocation exercise followed, which was explained in detail to participants as a decision making problem where the Ministry of Health had 100,000 quetzals to spend on a list of programs. Participants were tasked to allocate this money, but not necessarily to all programs – just the ones which they thought to be most appropriate. Participants performed the assignment first on their own, and then after through a deliberative group discussion. As per the previous activity, amounts allocated were justified and discussed, and six programs were selected. Then the facilitator read and explained the list of selected programs and asked participants to prioritise them in terms of benefits. The information was also recorded on a flip chart on the wall, which was read or translated (depending on the ability of the community to understand).

2.3 *The community exercise*

A community exercise (in the form of a deliberative process) took place in 21 communities in ten municipalities in four departments in Guatemala. The sample and study designs were carried out with support from the following NGOs working in various municipalities (given in brackets): FUNDADESE (Quiché), Asociación Vivamos Mejor (Sololá), CARE (San Marcos) and the Cooperativa Chiquimulja (en Chiquimula). Each NGO undertakes and supports health related projects with the Ministry of Health. From those, below are the programs brought up and discussed in community meetings (or focus groups), alongside the number of meetings in which they were mentioned:

Program	# Communities discussed
Vaccination campaigns	21
Midwife training	19
Health promotion campaigns	16
Medical training campaigns	10
Health education campaigns	9
Community toilets	9
Food distribution	5
Community pharmacy	5
Access to traditional medicines	5

The choice of municipalities was made after a preliminary consultation with participating NGOs. On average, the number of inhabitants of such communities was 1407, but ranged from 240 to 5479. 70% of the communities where the exercises were undertaken have potable water, however only 3 out of 21 can be accessed by a paved road, 6 can be accessed by a quasi-paved road and the remaining have no access via paved road. Roughly the same numbers of communities by distance from the municipal capital (which tend to have better health care infrastructure) were chosen: 8 are at less than 5 km, 6 are within 10km and the remaining 7 are over 10 km from the municipal capital. However, the distance to a primary care centre is more convenient, with 10 out of 21 being under 5km and the remaining,

between 10-30 km. Distance ranges between 2 and 28 km. When we translate these distances in travel time, the majority (17 out of 21) must travel over an hour to access primary care.

The selection of participants in each session was carried out by facilitators based on the manuals that state that the final group should be representative of the population based on gender, age and status. However, the choice of participants was left to them. There were 95 participants in the 21 sessions, equating an average of 5 participants per session. 38% participants were women. Although in some meetings, the gender was imbalanced, the majority of sessions were mixed. If a participant walked out of a meeting before its conclusion, their characteristics were not registered. Participants of the meetings included many professionals including health promoters, midwives, traditional medicine healers, nurses and health educators and members of local health improvement committees. Most participants were bilingual, although for the most part, the most common language was of Mayan origin. Age profiles and ethnic groups of members are described below. The median age was 36 years, but ranged from 15 to 81. In terms of ethnicity, 47% were Latino, 22% were Quiché, 16% were Cachiquel and 10% were Mam; the remaining are classed as 'other'. The benefits and issues raised by meeting attendees were varied.

2.4 Meeting Dynamics

The adaptation of the preference elicitation methodology was carried out in two-step sessions. Prior to the community meetings (where preferences were elicited), local leaders were contacted and informed the about project goals. After hearing about the project, they decided whether to support it. By gaining their support, it was easier to increase the credibility of the exercise among the community, and to choose motivated participants. No more than 8 participants were called upon, and a mix of men and women was preferred. Participants were offered a meal and drinks as compensation for their time. In Maya communities, a translator was used. Trained researchers assisted technical personnel from the NGO. The majority of meetings took place in school premises or small health units (buildings where communities store drugs and basic health equipment). Meetings outlined the study goals and described the methodology, and participants were asked to name the programs or health actions to ascertain their knowledge and potential benefits. In addition, participants were asked about their expectations of the different programs and drew a picture that

identified the program. Alongside picture drawing, the specific characteristics of the program were described in detailed by the facilitators to ensure they understood the content of the program. Finally, the facilitator's instructions made it very clear that discussions should involve all participants and no single participant could take over the conversation. Reports from facilitators suggest that all participants successfully contributed to the discussion. At the population level, as in the case of community groups, the methodology was effective so long as people had some knowledge of Spanish. However, for monolingual communities, the illiterate, and those without exposure to the health system, the methodology may have presented some problems. An interesting feature is that rural group appeared to recognize better than urban groups the value of some programs, perhaps because of their greater need. As such, priorities are governed by how they satisfy basic community needs, but from the point of view of public health, it may not be the most appropriate. A clear example of this is the preference for food aid programs.

2.5 Elicitation Exercises

The first meeting ended by asking participants to present each program by drawing a picture in order to make sure participants had understood the content.

- *Ranking Exercise*

The second meeting began with a picture of a ladder with eight steps, and a picture of the eight programs under consideration. This was chosen as a way to represent - in a simple way - the priority ranking exercise in a society that is not used to making such decisions. Participants were asked to rank the most preferred program on the highest step, and the second most preferred on the second highest step, and so forth until they reached the bottom step of the ladder. The main purpose of the ranking followed by a valuation was to allow for a mechanism which ascertained respondents' consistency of preferences, as information was mainly portrayed by participants rather than facilitators to minimize potential biases.

- *Budget Exercise*

Once the ranking exercise was carried out, an icon of each program was developed to identify the health programs selected by the indigenous groups. These icons were attached to plastic glasses and respondents were then each allocated 100 wooden tokens, which represented additional funds in the hands of the Ministry of Health. They were requested to distribute the tokens among the glasses/programs according to the intensity of the preferences they had for each program. They were told that the sum of tokens allocated by each person would be taken as the collective values of the preferences of the community, making clear that they were not required to spend on every program. The advantage of this mechanism is that it allows the revelation of community preferences, and hence individuals could change their rankings and valuations to reflect their values. Finally, as a way to motivate individuals' participation they were told that their allocation would influence decision making, although the aggregation mechanism was not revealed to reduce potential strategic preference revelation.

3. Results

In the first step, the experiment identified health system benefits such as improvements people would like to see within the health system. These benefits are then classified in terms of structure, process and outcomes and, together with the improvements revealed by other groups, helped to define the list of potential programs within the health reform, which were valued and prioritised in a second step of the experiment as explained below. An example of the expected improvements elicited were the following: “expansion of health education on prevention”, “expand prevention campaigns”, “increase the availability of low cost medicines”, “medicines should be priced fairly”, “health services should be fairly distributed across the territory”, “avoid inaugurating health centres without the right equipment”, “reopen state pharmacies”, “expand traditional medicines converge and homoeopathy” and “get doctors to improve attention provided to their patients”.

The identified benefits were as follows:

- Supplementary feeding program
- Nutrition Program
- Accessible and inexpensive laboratory tests
- Construction and equipping of Hospitals and Health Centres
- Expanding the quality and quantity of health services

- Community Pharmacies
- Human relations program for health personnel
- Educational campaigns for prevention
- Mental health program
- Ministry of Health Staff Expansion
- Traditional Medicine Program.
- Homeopathy Program
- Expansion of health care personnel

The results of the first phase of validation showed that participants groups were able to identify with precision the concept of a "program", although many had never had contact with public health services. Populations in rural areas of the country were also able to identify and relate with programs given past experiences with health providers. These programs had been assigned benefits similar to those set forth in our program classification, categories and benefits. For the second phase, the study used a working guide, which presented the programs, followed by a short summary of the benefits that had been mentioned in the previous session. Finally, the list of programs were ranked and evaluated.

Table 2 reports the rankings of health programs based on the position individuals locate each program in each of the five community meeting groups. The rankings are per group and hence it is possible to carry out a varying set of preference aggregation exercises. However, for the purpose of our exercise, we aggregate ratings using the conventional Borda count, (a common aggregation procedure that computes the sum of total scores for each program). Given the nature of the experiment, we separated five priorities from highest to lowest. Two types of aggregations were also calculated, firstly on unweighted scores and secondly, on weighted scores.

The most important conclusion arising is the large heterogeneity in responses, which reflects differences in community-specific needs, in their use of health services. For instance, whilst participants in-group 1 would provide an extremely high valuation to the building of a health centre, this was not the case in other groups. In other words, the perception of health need is

very much localised⁴. Group 1 concentrates all health program rankings in only five programs. In contrast, other groups show a wider variation in rankings. In any event, programs that attain a high rank are those aiming at either improving infrastructure (e.g., new health centre or a community pharmacy) or improving patients' and professionals' education (e.g., educational campaigns or training midwives). Preference heterogeneity is indicative of the importance of designing well analysis methods, and highlights the importance of this type of exercises: unless these exercises are developed, it is hard for policy to target certain groups that are less likely to participate in the political process, and address their priorities and concerns.

[Insert Table 2 and Table 3 about here]

In Table 3 we report the aggregate valuation of different programs reporting the mean rating (based on tokens) and the standard deviation, the latter indicating the degree of agreement (or variability) of different valuations. Results are in line with previous findings from the ranking exercise, and suggest that infrastructure programs attained the highest valuation (although there is high variability in their valuation as shown by its standard deviation). We could not separate clearly the results in terms of the size of the community but valuation seem to exhibit a clear idiosyncratic or community specific effects which raise the point of the ideas aggregation mechanism. In addition, access to health care (e.g., nurses) and education campaigns appear to rank highly. However, in understanding the results of these exercises, it becomes apparent that there is a need to reduce the number of potential dimensions of benefits. This task can be performed using statistical techniques of principal component and factor analysis which allows one to convert a set of possibly correlated programs ratings into a set of linearly uncorrelated variables called principal components that reflect the dimensions of value that are reflected in valuations (Jolliffe, 2002).

[Insert Table 4 about here]

From Table 4 we identified some programs with implicit dimensions based on correlation analysis. On that basis, our interpretation is that the four dimensions that receive the highest value are infrastructure, access to health care, process utility benefit and finally patient and

⁴ In countries that exhibit differences in infrastructure need, such heterogeneity is expected. Such heterogeneity is found when similar methodologies are used in developed societies (Costa-Font and Rovira, 2008).

professional training. The results can be interpreted in term of a Maslow necessity pyramid (Maslow, 1954). The priority is shown to be coverage for basic needs and infrastructure, followed by the allocation of health resources and finally, process related matters. This dimensionality seems consistent with traditional problems that developing countries exhibit where often the main barriers to access to health care are actually outside the health system.

4. Discussion

Health system reforms in developed countries often need to confront questions on how to prioritise health system benefits, and what programs to design while taking into account the needs of the often marginalised. A stream of literature has focused on the development of deliberative choice of health plans; for example, in the so-called Choosing Health plans All Together (CHAT) exercise (Dannis et al, 2006 and Goold et al 2005). CHAT aims to empower users by involving them in the insurance design through deliberative and participatory processes that elicit values and preferences. However, obstacles are abundant, including selecting a representative, motivated and knowledgeable sample. Some evidence from Ontario suggests that citizens are generally reluctant to be involved in setting priorities (Lomas 1997) and whilst Goold et al (2005) found that it is possible to design an operative elicitation mechanism which engages the public, findings also suggest that disenfranchised, generally uninsured and less educated are less motivated by such exercises.

Different forms of priority setting exercises in developing countries have been developed, involving stakeholders and communities (The Working Group on Priority Setting, 2000, Feacham et al, 1989; Nuyens, 1997). Uneke et al (2013) developed mechanisms to assess qualitatively policy maker meetings at the macro level to assist priory-setting exercises, but they did not attempt to involve the public. Another example is an application of CHAT in Indian insurance decision making, which allowed many choice options and trade-offs within a limited budget. The exercise is built around a circular board, which displays insurance benefit options as slices of a pie chart, and participants are given stickers representing the monetary amount of their insurance premium (Danis et al, 2007). However, again, the experience relies on revealing individual, rather than collective, preferences, which is

pertinent when considering excluded groups. With this view in mind, both elicitation techniques and methodologies could be devised to explicitly address these issues⁵.

We have argued that elicitation techniques to deal with preference and valuation of different health programs are challenging where communities are heterogeneous and individual decision making follow communitarian patterns. In this paper we have tested the feasibility of a methodology for preference elicitation based on group meetings and budget allocation exercises based on allocating tokens to a list of programs that attain a set of previously revealed health care benefits. Alternative methodologies such as willingness to pay studies are not valid here as they assume individualistic reasoning that might not be entirely applicable in societies that organise their life collectively (Costa-Font and Rovira, 2004). Furthermore, decision making on behalf of society as a whole might be understood differently depending on the inclusiveness of individuals in society.

This study has proposed a mechanism to partially overcome this limitation using methods to draw out levels of opportunity cost when individuals pretend to be public decision makers. The experience was shown to be conceptually incentive compatible in close-knit communities and in addition, it is practical insofar as it manages to reveal reasoned preferences that capture the collective sacrifice of a set of different programs (or health actions). In doing so, we have been able to identify a list of programs that the population would value highly, and a set of potential benefits that the Guatemalan government could consider in making decisions on competing health programs.

In applying this new methodology, we believe that it has allowed us to visualize the enormous potential of deliberative methods, as confirmed by studies in both developed and developing countries (Mitton *et al* 2009). However, we believe that this potential is still underdeveloped and worthy of further exploration particularly in the context of coverage expansion within sector reform processes that takes place in-country. At the community level, this methodology is very important because the quantification of preferences was based on collective sentiments, not individual perceptions. Thus, many community leaders could

⁵ More specifically, evaluation techniques, widely applied in some countries to select portfolios of services/benefits covered by the health system, are a rather technocratic and the most widely used indicator of health benefits. The Quality Adjusted Life Years (QALY) method does involve the public in revealing health metrics, but does not capture all the societal values relevant for setting priorities and allocating resources in health care

clearly see that things that they thought were important to the community in fact are not, or less so (for example, men in the community did not think it was important to have a traditional medicine program, however females thought it was, and voiced this when assigning budgets). Although the data was collected a while ago and the results were reported immediately, the results and methods were not published because it was originally planned to be enriched by further evidence from another experiment that eventually did not take place. However, the evidence we report in the paper indicates that participatory priority setting processes nonetheless present an operational and sustainable framework, which can be used in a variety of settings.

An important limitation to mention when implementing priority setting exercises in developing countries is the inter-sectorial nature of health related needs which often rely on improving other basic services such as roads, housing and education. Given this, participatory exercises might also consider the possibility of expanding health care resources as a trade off with other sectors and projects (e.g., infrastructural projects).. Finally, another question lies in how best to aggregate and translate the results of the experiment to government actions, a topic left for future research.

6. Conclusion

This paper has proposed new method to elicit at community level health care preferences based on allocating a non-monetary budget among competing programs. Findings indicate promising potential for participatory priority setting even in indigenous populations where there may be implementation problems. The elicitation technique described appears to be incentive compatible insofar as preferences are revealed in group meetings and aggregation rule is not disclosed. Our results suggest that preferences of excluded populations could be taken into consideration if similar techniques were developed in other settings. Specifically, budget related experiments appear to be adequate to the specific cultural conditions of community preference formation of communities such as the Guatemalan ones examined here.. The possibility of involving individuals in the formulation of policy reform calls for the development of similar participatory practices in health systems with important indigenous communities.

It must certainly be acknowledged, that the priorities and consequent choices that this approach would lead to, are likely to differ if carried out by different professionals such as public health officials or health economists. Whether experts' and non-experts' views would converge if non-experts received some education/information and experts were more accountable to the citizens, is not clear. Further, it remains to be seen which informed preferences or priorities would prevail at the end.

References

- Boyle, KJ, Welsh, MP and Bishop, RC (1993). The role of question order and respondent experience in contingent valuation studies. *Journal of Environmental Economics and Management*, 25: 80-99.
- Carson, RT, Flores, NE, Hanemann, WN (1998). Sequencing and valuing public goods. *J Environmental Economics and Management*, 36: 314-323.
- Carson, RT (2000). Contingent Valuation: a user's guide. *Environmental Science Technology*, 34: 1413-1418.
- Costa-Font, J and Rovira, J (2005) Eliciting preferences for collectively financed health programmes: the 'willingness to assign' approach *Applied economics*, 37 (14). 1571-1583.
- Costa-Font, J (2005). Participación colectiva y revelación de preferencias sobre programas sanitarios: un enfoque de sistema sanitario. *Gaceta sanitaria* 19 (3), 242-252
- Costa-Font, J (2005). Establecimiento de prioridades, opinión pública y sistema sanitario en España. *Gaceta sanitaria* 15 (3), 237-244
- Danis, M, M Ginsburg and S D Goold (2006): 'The Coverage Priorities of Disabled Adult Medical Beneficiaries', *Journal of Health Care PoorUnderserved*, 17(3), pp 592-609.
- Danis, M E Binnendijk, S Vellakkal, A Ost, R Koren, D M Dror (2007). Eliciting Health Insurance Benefit Choices of Low Income Groups. *Economic and Political Weekly*, 331-339.
- Feacham RG, Graham WJ, Timaeus IM (1989). Identifying health problems and health research priorities in developing countries. *Journal of Tropical Medicine and Hygiene* 1989; 92: 133-91.
- Goold, S D, A K Biddle, G Klipp et al (2005): 'Choosing Healthplans AllTogether: A Deliberative Exercise for Allocating Limited HealthcareResources', *Journal of Health Politics, Policy and Law*, 30(4), pp 563-601.
- Heyman J1, Ariely D (2004). Effort for payment. A tale of two markets. *Psychol Sci.* 2004 Nov;15(11):787-93.
- Iguanzo, I (2011). Indigenous People, Democracy and Representation. The Cases of Bolivia and Guatemala, Boletín PNUD and Instituto de Latinoamerica, Salamanca
- Jolliffe, I.T. (2002). *Principal Component Analysis*, second edition (Springer).

- Kanheman, D, Ritov, I and Chkade, D (1999). Economic Preferences or Attitude Expressions? An Analysis of dollar responses to public issues. *Journal of Risk and Uncertainty*, 19(1-3): 203-235.
- Maslow, A. (1954). *Motivation and personality*. New York, NY: Harper
- Mataria, A, Giacaman, R, Khatib, R and Moatti, J-P (2006). Impoverishment and patients “willingness” and “ability” to pay for improving the quality of health care in Palestine: An assessment using contingent valuation method. *Health Policy*, 75: 312-328.
- Mitton, C N Smith, S Peacock, B Evoy and J Abelson (2009). Public participation in health care priority setting: A scoping review. *Health Policy*, 91(3): 219–228
- Mullen, P M (1999): ‘Public Involvement in Healthcare Priority Setting: An Overview of Methods for Eliciting Values’, *Health Expect*, 2(4), pp 222-34.
- Patten S, Mitton C, Donaldson C (2006). Using participatory action research to build a priority setting process in a Canadian Regional Health Authority. [Soc Sci Med](#). 2006 Sep;63(5):1121-34. Epub 2006 Mar 15.
- Nuyens Y (1997). Review of processes, mechanisms and outcomes of priority setting for ENHR. Geneva, Switzerland: Council on Health Research for Development, 1997.
- Payne, JW, Schkade, DA et al (2000). Valuation of Multiple Environmental Programs. *Journal of Risk and Uncertainty*, 21: 95-115.
- Santos, B (1998). Participatory Budgeting in Porto Alegre: Toward a Redistributive Democracy. *Politics and Society* 26(4): 461-510.
- Shafir, E, Diamond, P and Tversky, A (1997). Money Illusion. *Quarterly Journal of Economics*, 112(2): 341-74.
- The Working Group on Priority Setting (2000). Priority setting for health research: lessons from developing countries. *Health Policy Plan*. (2000) 15 (2): 130-136
- Tversky, A and Simonson, I (1993). Context Dependent Preferences. *Management Science*, 39: 1179-1189.
- Uneke, CJ E Ezeoha, Chinwendu D Ndukwe, P Gold Oyibo, F Onwe, B Kaur Aulakh (2013). Research priority setting for health policy and health systems strengthening in Nigeria: the policymakers’ and stakeholders’ perspective and involvement. *The Pan African Medical Journal*. 2013;16:10

Tables

Table 1. Health System Benefits as revealed by a group of indigenous women between 20 and 50 years of age

Category	Reveal Benefit
Equity	Free food for children and poor
Equity	Lower cost of laboratory tests
Process	Emergency care set up
Process	Improvement in hospital hygiene
Process	Qualified staff in new born deliveries
Process	Improve hospital proximity
Access	Medicine availability and access
Access	Availability of serum
Access	Access to Vitamins
Process	Better patient attention
Process	More time with patients

Table 2. Ranking of Health programs

PROGRAM RANK	1	2	3	4	5	Total
Construction of a health centre	35		14	7		56
Ambulance Services	9	7				16
Health Promotion Training	9					9
Community Pharmacy	8	7		6		21
Provision of potable water	5					5
Health education campaigns		12	7	16	13	48
Access to Medical Centre		8	9			17
More medication		7				7
Traditional Medicines			10		N/A	10

Training midwives			13	10		23
Community Pharmacy				6		6
Access to a Nurse					6	6
Equipment for health centres				6	5	11
TOTAL	66	41	53	45	24	229

Table 3. Program Valuation (number of tokens)

PROGRAM	MEAN	(STD. DEV)
Construction of a health centre	46.4	73.86
Ambulance Services	15.8	19.84
Health Promotion Training	11.0	19.04
Community Pharmacy	16.8	16.78
Provision of potable water	7.00	10.12
Health education campaigns	23.8	16.81
Access to Medical Centre	13.4	14.87
More medication	7.80	11.38
Traditional Medicines	8.40	12.17
Training midwives	46.4	15.89
Community Pharmacy	5.00	4.18
Access to a Nurse	46.4	1.58
Equipment for the health centres	15.8	3.56

Table 4 Principal component matrix (on valuations)

	INFRASTRUCTUR E	ACCESS TO HEALTH	PROCESS	TRAININ G
Construction of a health centre	.880	-.165	-.209	.394
Ambulance Services	.889	.312	.280	.183
Health Promotion Training	-.239	-.115	-5.341E-02	.255
Community Pharmacy	.818	.197	.479	.248
Provision of potable water.	-.239	-7.473E-02	-3.452E-02	.282
Health education campaigns	-.542	.451	.705	8.299E-02
Access to Medical Centre	-.263	.891	5.116E-02	.367
More medication	4.363E-02	.794	.606	-3.252E-

				02
Traditional Medicines	-.307	.315	-.642	.628
Training midwives	-.537	-5.775E-02	-.400	.741
Community Pharmacy	-.158	-.612	.630	.452
nurse	.548	.199	-.340	-.738
Equipment for health centres	-.239	-.798	.547	7.681E-02

Appendix

Table A1. Expectations

Food

Desayunos School
Food Distribution

Training

Empowerment Curanderos
Training of midwives
Training for Educators
Training sponsors Guardians.
Hygiene education
Programs Hygiene Cleaning, awareness of the community

Community

Ambulance
Equipment for midwives
Equipment for Educators
Equipment for developers
For Puesto / Centre, Unit Minimum Health
Telephone, Radio

Infrastructure

Drinking Water
Road access
Drainage
Greenhouses Mejoradas
Hospital
Latrines
More Latrines
Mejorar Dwelling
Puesto / Centre, Unit Minimum Health, UROC's, advice.

Medicines

Community kit
Community Pharmacy
Fluoride
Soap

Vaccination Campaign
More Medicines
More Vaccines
New Vaccines
New Medicines
Medicinal Plants
Serum

Personnel

Health educators
Nurses
Stimulus to Promoters
Jornada Medica, Increase # query.
More midwives
Emergency medical
Medico Permanent
Mejorar attention in SS.
Health promoters
Specialist.
Actions

Table A2. Identified health programs:

1. Vaccination Campaign for pregnant women and children
2. Midwives Training
3. Primary health care assistants
4. Occasional Medical Visits:
5. Health education for preventive activities
6. Placement of Latrines in the village
7. Food distribution to chronically ill and pregnant women.
8. Community pharmacy to ensure the distribution of essential medicines at low cost.
9. Medicinal plants including the harvesting and collection of medicinal plants.

Table A3. Identified Health Care Needs:

1. Centre smallest unit of health care need for a place within the community could have access to medical services.
2. Ambulance: in some communities mentioned the need for the availability of a vehicle to transport patients to places where they can receive timely medical attention.
3. Training promoter personal training of the community for most immediate needs.
4. Medical journey to provide direct medical care in the community.
5. Latrines: installation and distribution of latrines.
6. Mobile radio to ask for help in case of medical emergencies, especially at night.
7. Training of midwives: training midwives to attend births in the community.
8. Specialist such as paediatricians, surgeons, obstetricians, etc

9. Community pharmacy: local community distributing low cost medicine

10 hygiene programs, cleaning, and awareness of the community: educational programs and preventive care

11. Food distribution: basic foodstuffs distributed freely especially pregnant y nests.