

Small Applied Research Paper No. 2
**EXPENDITURE PATTERNS AND WILLINGNESS TO PAY
FOR HEALTH SERVICES IN BELIZE**

Analysis of the 1991 Belize
Family Life Survey

Submitted to:

Health Services Division
Office of Health
Bureau of Research and Development
Agency for International Development

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February 1993

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AID Contract No. DPE-5974-Z-00-9026-00

ABSTRACT

This paper combines information on expenditures and health care use patterns with responses to hypothetical questions about willingness to pay. The data on use patterns indicates considerable success in the public sector in delivering prenatal and obstetrical services, but with little or no selectivity about targeting public subsidies for those services to specific groups of women. The result is considerable self-targeting. While prenatal care is widely delivered through health centers, higher educated, urban, wealthier women are most likely to deliver their babies in government hospitals while less educated, rural, poorer women tend to deliver at home. There is some informal targeting by virtue of the fact that a small proportion of the women opt out of the public system and use private physicians for deliveries. Public subsidies reach those who use the public system.

For acute out-patient care, the private sector — broadly defined to include physicians, pharmacists, and traditional healers — is a much more important supplier of services, accounting for about half the visits. Roughly 65 percent of the sample incurs some expenditures for out-patient, well over 90 percent of those using the private sector and about 60 percent of those using the public sector. Drugs and medicines account for well over half of the expenses. Expenditures are quite high; we estimate on an annualized basis that households are spending three to seven percent of their incomes on acute health care alone, not counting expenditures related to pregnancy and young children.

The willingness-to-pay questions reveal extremely high willingness to pay for existing government health services and a virtually unanimous willingness to pay at least B\$15 for improved government services offering reasonable waiting times, supplies of drugs, and pleasant waiting rooms. Although these willingness-to-pay responses are almost certainly overestimates of what people will actually pay, they are so high that they leave plenty of flexibility for public action. The favorable willingness-to-pay responses, coupled with surprisingly high actual health care expenditures, suggest that the government has considerably more room to maneuver in considering cost recovery in the health sector than it has exercised in the past. The simple cross-tabulations used in this paper also indicate that there are substantial opportunities to improve the targeting of public subsidies under a user fee system.

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FOREWORD

The Health Financing and Sustainability (HFS) Project provides technical assistance, and conducts applied research, training, and information dissemination to developing countries in health economics, health sector policy of the project provides opportunities to increase knowledge of the complex issues underlying health financing problems, and augments the supply of qualified individuals who can contribute to policy analysis and reform. HFS is emphasizing the following policy areas for applied research activities: cost recovery, productive efficiency, social financing, and private sector development in the health sector.

As part of the project's AR component, HFS will complete up to 30 small applied research (SAR) activities over the life of the project, from 1989 through 1994. These include studies undertaken by developing country researchers, HFS researchers, or academics at universities in the United States. The objectives of the SAR program are to carry out practically-oriented research in developing countries, and to encourage the development of local capacities to undertake research.

Most SAR activities are initiated through proposals to the HFS Project. the proposals are evaluated by HFS staff, including criteria such as: practical policy orientation, resource and time requirements, and appropriateness to the HFS agenda. Most proposals for SAR activities accepted by HFS undergo several revisions, as the researchers refine their researchers refine their research objectives, hypotheses, and methodologies, based on suggestions and comments from the HFS staff. Once approved, SAR activities are overseen by HFS task managers, who work closely with principal investigators to monitor the timeliness and quality of the work, and facilitate logistics.

Other small applied research studies are done in conjunction with technical assistance or major applied research activities of the HFS project. In these cases, the SAR contributes to the technical guidance provided to clients, or adds to the body of knowledge on topics of health financing and economics.

As with all HFS research, drafts of small applied research reports are reviewed by HFS staff. Drafts are then evaluated by external technical reviewers selected on the basis of area substantive and/or geographic expertise.

HFS provided technical oversight for this activity, as it does with all project undertakings, including a technical review of the substance of this paper. However, the final version of this paper only incorporates some of the numerous comments and suggestions provided by HFS to the authors.

Holly Wong
Applied Research Coordinator

1.0 INTRODUCTION

Government health financing policies in Belize suffer from many of the same constraints that hobble health systems in other developing countries: a chronic shortage of revenues to finance the public system (despite accounting for about 10 percent of government expenditures), problems in efficiently allocating the constrained resources that are available, an inefficient public sector service delivery system, a heavily constrained private sector, and poorly developed risk-sharing mechanisms¹. The policy tool chosen to cut into this maze of problems is often the expansion of user fees in the public sector, which, although a single policy instrument, can affect each of these areas. It should increase revenues flowing into the public system, provide one means to target public sector subsidies for curative services to the poor, allow the government to reallocate tax-financed expenditures away from curative services to public health activities that have a broader beneficiary base, reduce the private sector's price disadvantage relative to the government sector, and increase incentives to create or expand risk-sharing institutions.

However, the political risks of imposing new fees or enforcing existing fees in a public system are extremely high, possibly even more risky than raising taxes, because they are tied to a valued social service. In Belize, the issue of user fees in the public health care system is politically charged. However, there is very little relevant information on which to base either the debate or potential policy changes. For example, there is no knowledge of what people are paying today for health services or what they might be willing to pay for government services. In the absence of such information, speculation, fear, and ideology tend to monopolize the political debate and make it far too general to be of much use in setting policy.

A study of cost recovery in Belize noted the following policy issues:²

1. The Ministry of Health (MOH) has always had a formal user fee policy, with charges for virtually all services.
2. However, revenues from fees constitute less than five percent of MOH expenditures. The following reasons are detailed in the report:
 - a. *Low prices.* The fee schedule dates from 1967, with few adjustments of the fees since then, not even for inflation.
 - b. *The exemption system is leaky.* The exemptions to fees have also not been changed since 1967, so virtually any working person now has an income high enough to merit payment of the full fees. However,

¹ La Forgia, Gerard and Ruth Levine (1991), "Health Financing in Belize: An Assessment for Policymakers." Mimeo in Six Volumes. HFS Project, 4800 Montgomery Lane, Suite 600, Bethesda, MD 20814.

² La Forgia, Gerard and Charles Griffin (1992), "Health Sector Cost Recovery in Belize: Current Situation and Prospects for Change." HFS Technical Report Number 5. HFS Project, 4800 Montgomery Lane, Suite 600, Bethesda, MD 20814.

nearly everyone is charged at a lower rate than the maximum in the fee schedule.

- c. *Poor enforcement.* Despite the low prices and lax interpretation of exemption rules, in fact, very few people are even presented a bill, and only a fraction of those presented the bill pay any part of it.

This paper analyzes the first population-based data in Belize on use and expenditure patterns for health care. The analysis of the survey is largely descriptive, with two exploratory regression estimates, and should be readily understood by people considering policy changes in Belize. It is divided into the following parts:

1. Prenatal and birth utilization of providers and costs.
2. Recent utilization and costs to care for sick family members.
3. Expenditures for specific childhood illnesses.
4. Willingness to pay for government-provided health care.

The analysis is based on simple cross tabs associating utilization patterns and expenditures with several household socioeconomic variables. In addition, the willingness-to-pay data are analyzed using a simple regression model. Before proceeding to the analysis, the next section describes the survey data.

2.0 SURVEY DATA

This paper represents an attempt to use the Belize Family Health Survey, for which the survey instruments were in the final stage in November 1990 (when La Forgia and Griffin performed the analysis of cost recovery issues in Belize). The survey is a nationally representative sample. To generate the population-based information on health expenditures and willingness to pay for government services, a number of questions were added to the survey. The Belize Family Health Survey is similar to a Demographic and Health Survey (DHS) that suffers from two shortcomings for this health expenditure work:

1. DHS surveys collect virtually no economic data, not even household income or expenditures. However, they do collect information on prenatal and obstetrical care as well as information on child sickness episodes. To adapt the survey to the needs of this analysis, consistent utilization and expenditure questions were added for prenatal and obstetrical care for recent births and for acute care episodes for the younger two children in the household. A categorical question on income was added. A module was added on general sickness episodes in the household to supplement the questions about child illness episodes. A double-bounded bidding game module was added to elicit willingness-to-pay information for health services.

Weaknesses remain for this analysis. All of the additional questions were prepared in a very short time and were not pretested. The income categories incorporated into the survey were too low, as were the bounds chosen for the willingness-to-pay bids. As a consequence, much of the sample is bunched in the highest income category³ and in the highest willingness-to-pay category.⁴

2. A DHS survey is not a random sample of the entire population. Instead, it is a random sample including only households containing women of child-bearing age — ages 15 to 44. However, the population from which the sample is drawn is an important demographic group for the health sector; and the goal of the survey was to fill quickly and inexpensively the gap of having no population-based information on use patterns, health expenditures, and willingness to pay for health services. Thus there is a problem in generalizing the results to the whole population, but this is a minor issue relative to the benefits of having obtained useful information from an important group.

The most unique set of questions added to the survey were the bidding game, or contingent valuation, questions. There were two bidding games included. In the first game, respondents were asked to reveal whether they would be willing

³ As a consequence, the income variable is not used in this report; asset variables, such as piped water and ownership of a refrigerator, are used to differentiate households according to their economic status.

⁴ The survey is available from HFS if the reader wishes to explore the details of the questions added to the survey.

to visit a government health care facility with present service levels and quality if they had to pay a specified amount. Each respondent was asked the same question over a range of prices. For the second bidding game, they were asked if they would visit a government health care facility with improved services and quality. These quality improvements included short waits, pleasant surroundings, and drugs readily available. The respondents were asked the question over the same range of prices as in the first bidding game. These games reveal what potential revenues could be generated if higher fees were imposed. It shows revenue potential with existing service levels, and if services were improved. With socioeconomic information on households, it is possible to see how different groups are affected by higher fees for visiting government health care facilities.

3.0 PRENATAL AND BIRTH CARE

The survey includes detailed questions on the mother's health care utilization during the pregnancy and at the time of birth. These questions were asked for the mother's last two pregnancies which led to live births. On prenatal care, questions were asked about the type of facility providing most of the care during pregnancy, expenditures on visits made to this facility, the amount that the mother spent on drugs and vitamins during the pregnancy, and the number of times that she visited the care facility. On the birth, there were questions on where the baby was delivered, who delivered the baby, the type of delivery, and the delivery costs.

The prenatal and birth analysis is divided into two parts. First, the sample means and simple frequencies are presented. Then two-way cross-tabulations are presented for some socioeconomic variables that are likely to be related to the mother's utilization behavior.⁵

3.1 PRENATAL CARE

Means and Simple Frequencies. Table 3 shows the distribution of the sample of women receiving prenatal care and recalling their expenditures (1,187 in total). In all, 1,394 mothers provided information on their most recent pregnancy. Of these, 1,344 had some form of prenatal care. Information reported in this section and the section on obstetrical services will include only these 1344 pregnancies and births. Care was provided by government clinics and hospitals, private doctors and hospitals, and midwives. These mothers overwhelmingly used government facilities (80.5 percent). The median number of times that these women visited the health care facility during the pregnancy was six times. Of those women who recalled what they paid, 65 percent (778) paid nothing for the care. Over 80 percent paid less than B\$50.⁶ For drugs and vitamins, 58 percent reported paying nothing. Only 26 percent reported paying more than B\$25.

Since these women described pregnancies from 1986 to 1991, there could be different behavior in women having pregnancies in the earlier years than the later ones. In terms of where the women got their prenatal care, the government facilities' share has increased slightly from 74.5 percent of the care in 1986 to 84 percent of the care by 1990. The percentage of women reporting that they paid nothing for their prenatal care has also risen slightly from 64 percent in 1986 to 70 percent in 1990. On the other hand, the proportion paying nothing for drugs and vitamins during the pregnancy decreased from 63 percent in 1986 to 50 percent in 1990. In general, there are no dramatic changes in prenatal care utilization and costs over the five or six- year period.

⁵ The analysis here is for the woman's most recent pregnancy.

⁶ One Belize dollar is worth approximately \$0.5 U.S. dollars. The discussion throughout this paper will be in Belize dollars. To convert to U.S. dollars, divide by 2.

3.1.1 Two-Way Frequencies and Means

Cross-tabulations are first performed between the chosen prenatal care facility and several household socioeconomic variables. Our analysis of average costs will include both women who paid nothing and those who incurred costs for their prenatal care.

In order to make inferences about mean expenditures and number of visits for households in two socioeconomic groups, tests of statistical significance will be made to see if two sample means are statistically different. We will indicate significance when statistical differences are found.

1. **Visits and Providers.** There was little variation in the average number of visits by facility. Mothers visited government clinics and hospitals approximately seven times during the pregnancy. Those using private facilities and doctors visited an average of just over 7.5 times.
2. **Expenditures and Provider.** The total costs of these visits was dramatically lower for women using government facilities. For women using government clinics, the total cost was approximately B\$35, while those using government hospitals paid an average of just B\$12. Women using private hospitals and doctors paid an average of over B\$200 for their prenatal care. The expenditure differences between government and private providers are statistically significant. There is high variation in expenditures by women using government facilities because most paid little or nothing. It is noteworthy that average expenditures are higher for women using government clinics relative to those visiting government hospitals. Exhibit 3-1 shows the distribution of visits on the left side (the important role of government clinics stands out clearly) and the average expenditure per visit on the right side (the relatively high cost of private care stands out). Also see Table A-2 in Appendix ___.
3. **Assets.** There are dramatic differences in average costs and utilization across different socioeconomic groupings. Just over 40 percent of the women in this survey have refrigerators. About 31 percent of women using government facilities own refrigerators. In contrast, over 60 percent of women using private facilities own refrigerators. Prenatal costs for women who have a refrigerator are approximately four times larger than for women who do not have a refrigerator, B\$133 versus B\$32. For drugs, there is a two-to-one difference, B\$42 versus B\$20. Each of these differences is statistically significant. Part of the prenatal care cost difference results from women with refrigerators visiting a health care facility 7.5 times compared to 5.4 times for women without refrigerators. However, when the average expenditures per episode are examined, women with refrigerators are still spending approximately three times as much per episode as households without refrigerators, and these differences are statistically different (see Table A-3 in Appendix).
4. **Visits, Expenditures, and Education.** Women were separated into the following groups by their educational background; (1) no school, (2) some primary school, (3) completed primary school, (4) completed secondary

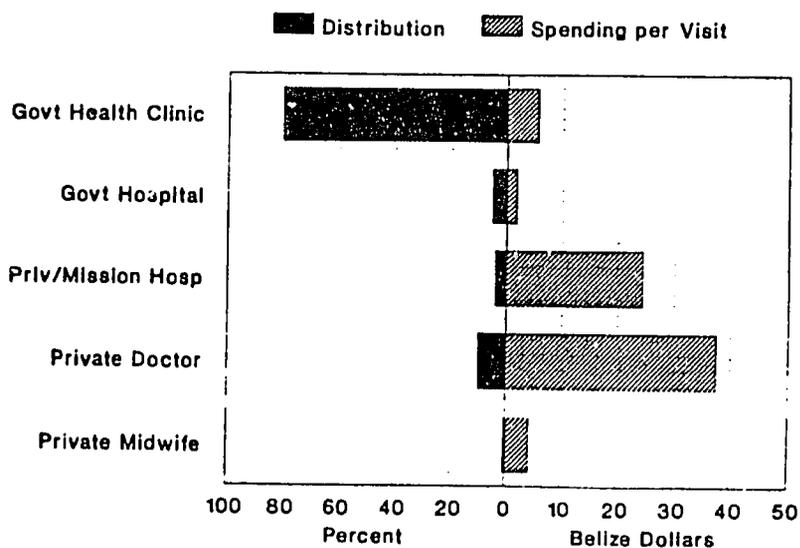


Exhibit 3-1 Use Patterns and Average Total Expenditures per Visit for Prenatal Care

school, and (5) post-secondary school. There are dramatic differences between women with primary schooling and less versus women with more education. In terms of visit expenses, women with primary schooling or less spent an average of between B\$8 and B\$55 on prenatal care visits. These expenditures are significantly less than the B\$136 spent by those who completed secondary school and B\$263 spent on average by women with post-secondary school education. The average expenditure differences between these two more educated groups are not significantly different. There are similar differences for drug costs. Women with primary schooling or less spent approximately B\$23 on drugs while women with secondary schooling spent B\$42, and women with post-secondary schooling spent an average of B\$66. Each of these differences is statistically different (see Table A-3 in Appendix).

Some of the prenatal cost differences are explained by utilization rates. Women with post-secondary education visited facilities an average of 8.1 times. Secondary education women visited the facilities 8.9 times on average. Mothers who had completed primary school visited 6.9 times, mothers with some primary went 6.3 times, and mothers with no schooling went 6.4 times (see Tables A-2 and A-3). Thus, while women with secondary school educations spent over three times as much on prenatal care as did women with primary school education, they spent less than three times as much per visit because they had more prenatal visits. These differences remain statistically different.

Overall, these statistics for prenatal care indicate:

- ▲ Almost all women (96 percent) receive some formal prenatal care.
- ▲ Over 80 percent of them get it from government sources, usually clinics.

- ▲ About 65 percent pay nothing for care, and 58 percent pay nothing for drugs and vitamins related to their prenatal care.
- ▲ Average spending on visits appears to have declined over time, but spending on vitamins and drugs has increased.
- ▲ Keeping the high rate of no payment in mind, average expenditure for the entire series of visits ranges from just over B\$30 in the public sector to about B\$250 in the private sector; for drugs or vitamins, the range is from about B\$20 in the public sector to B\$75 in the private sector.
- ▲ Expenditures are positively related to the number of visits, educational level, assets, and residence in Belize City, as would be expected.

3.2 OBSTETRICAL SERVICES

3.2.1 Simple Frequencies

Of the 1,394 births since 1986, 72 percent took place in government hospitals, 7.5 percent took place in private hospitals, and 19 percent took place at home or at the home of a friend. While 20 percent of the time a doctor assisted, nurse midwives assisted 61 percent of the time and midwives assisted 16 percent of the time. 90 percent of the time these were normal deliveries.

The expenditures can be viewed at in two ways. We can look at the median expenditure to see what the "typical" household paid for obstetrical services or we can look at average expenditures to give information on what revenue providers received for their services. While households generally paid under B\$100 for the delivery, there were several households that paid over B\$1,000. Thus median and average expenditures were quite different. In fact, median expenditures for the deliveries was B\$30 and average expenditures totalled B\$124. To give an indication of average revenues collected by delivery location, average expenditures will be discussed. To provide information on how well government subsidies are targeting poorer households, median expenditure information will be provided by socioeconomic characteristics.

3.2.2 Two-Way Crosstabs

The following sections summarize the major findings from cross-tabulations of delivery experience with socio-economic characteristics.

1. **Public and Private Differences: Expenditures.** Exhibit 3-2 shows the distribution and average expenditure on deliveries across sources of care, based on Table 5. The average expenditures on deliveries at a government hospital totalled B\$108. Households using private hospitals paid an average of B\$420 for their deliveries. Women giving birth in their own home or a relative or friend's home paid an average of B\$64 and B\$43, respectively. These in-home births were attended to by a midwife, nurse, or doctor 96 percent of the time, which explains the delivery expenditures. Thus the fee is likely to represent these services. The average expenditures for in-home and government deliveries are not

significantly different, but they are statistically less than the private hospital deliveries.

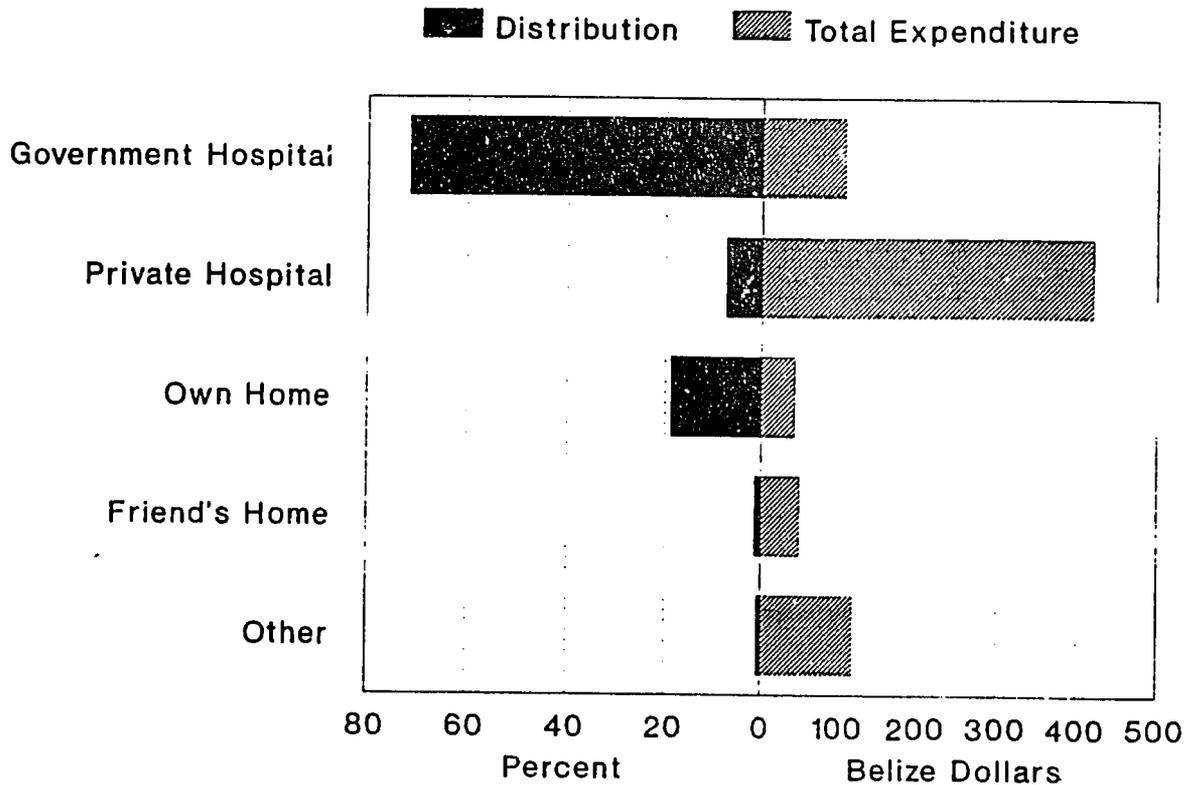


Exhibit 3-2 Use Patterns and Average Total Expenditures for Deliveries

- Delivery Location: Education and Assets.** Households that had deliveries in government and private hospitals had more education and assets than did households with deliveries in their own or a friend's home. While 4 percent of women giving birth at home had secondary education or above, 17 percent of women giving birth in a hospital had secondary education or above. On the other hand, over 60 percent of women giving birth in their own home had less than complete primary school education. Meanwhile, only 34 percent of women giving birth in a hospital had less than complete primary school education. Over 40 percent of women giving birth in a hospital had refrigerators while about 10 percent of women giving birth at home had a refrigerator.

There are also big delivery location differences by whether the household resides in an urban or rural area. While 60 percent of births in hospitals were women residing in urban areas, only 12 percent of home deliveries were urban residents. This may show the poor access that rural households have to obstetrical services. Time and cost of reaching hospitals located in urban areas may mean rural women must rely on caregivers willing to provide in-home services.

Estimates of the typical delivery cost are above B\$400.⁷ As we have seen, the average expenditure on deliveries is just over B\$100, which indicates that households utilizing the government hospitals are heavily subsidized. Since over 90 percent of hospital deliveries are at government hospitals, the concentration of obstetrical services provided to better educated, urban women with more assets indicates that there is very poor targeting of these subsidies.

3. **Expenditures, Education, Province, and Assets.** An even more disturbing picture of the distribution of subsidies is shown in Table A-5 in the Appendix. This contains the average total expenditures for the deliveries by education and assets. Rural households without refrigerators paid significantly more than did urban households without refrigerators. There is no difference between these two groups and urban and rural households with refrigerators. Even more troublesome, women in households with piped water paid less than did women in households without piped water. This is a clear indication of misapplied subsidies.

There are major differences by province with Belize, Stann Creek, Orange Walk, and Toledo paying significantly less than households from other provinces. There are also unexpected differences by education. While secondary and post-secondary educated women paid more than women with no schooling and primary school education, women with only some education paid as much as the more educated women.

In general, urban households and those with piped water were paying less than other households. While average payments from households in all socioeconomic groups are getting large subsidies, this information is another indication that households from urban households with more assets seem to be getting the largest subsidies.

Overall, these statistics for obstetrical services indicate that:

1. While government hospitals are the most common location for deliveries, (73 percent), over 20 percent of women deliver at home or at a friend's home. Private and mission hospitals are a minor source for this service.
2. About 25 percent of women had no cash expenditure connected with their deliveries, a much lower percentage than for prenatal care.
3. Average expenditure for births range from less than B\$43 at home, to B\$108 in government hospitals, to B\$421 in private hospitals.⁸

⁷La Forgia, Gerard and Charles Griffin (1992), "Health Sector Cost Recovery in Belize: Current Situation and Prospects for Change." HFS Technical Report Number 5.

⁸ Private hospitals in this context are either a mission hospital or maternity beds in private doctors' clinics.

4. Disturbingly, women's average expenditure for their deliveries were less for those residing in urban areas and having piped water than for other households.

4.0 RECENT ILLNESSES: HEALTH CARE COSTS AND UTILIZATION

The module added to the survey on acute illnesses is the basis for this section. During the interview, the respondent had already been asked about her own prenatal and delivery service use, as reported above. She had also been asked about specific symptoms of acute illnesses for her five youngest children. In addition, there is a new section of the questionnaire was introduced which asked the respondent about anyone else in the household who had been ill "... during the last two weeks. That is, has anyone been sick so that they could not perform their normal routine, such as going to work or school?" For each reported illness, the respondent was asked the sex and age of the individual, where treatment was sought, and how much was spent for different components of the treatment. This section of the report reviews the combined results of the questions on recent illness for the youngest children and the added module on other ill household members.

Also, there may have been some inconsistencies in field work during the survey, as the number of households experiencing recent illness was unbelievably low in Stann Creek and Toledo. Thus for this section of the paper, observations for households from these provinces were eliminated.

4.1 ILLNESS EXPERIENCE

There were 614 people reported ill during the period, with 12 percent of the households reporting at least one person as sick. Nearly 97 percent of the households had a single illness, but a handful of households reported that between four and eight members had been ill. These 614 episodes precipitated 765 visits to different providers (the question allowed for visits to more than one provider but did not ask about repeat visits to the same provider).⁹

4.2 INSURANCE AND THIRD-PARTY PAYMENT

For each ill individual, the respondent was also asked whether any of the expenses were reimbursed by an employer, social security, or private insurance. Less than 2 percent of the ill people received reimbursement from employers, less than 1 percent received reimbursement from social security, and less than 1 percent received reimbursement from private insurance. Overall, with less than 2 percent reporting any type of third-party payment for medical care, this issue will be ignored in the rest of the analysis.

4.3 USE PATTERNS

Table A-5 in the Appendix displays the full set of provider options that were used by the sample, arranged roughly according to major types of care: no visit, government, formal private, and informal private. Nearly 18 percent of the sick people chose not to use any formal services. There was extremely low use of private or mission hospitals (of which there are few in Belize), community health workers, and traditional healers. These three sources together account

⁹ The numbers reported in this section may differ slightly from those reported later because of missing values.

for only 6.9 percent of the visits.¹⁰ The major private sources were pharmacies, accounting for 12.4 percent of the visits, and private doctors, accounting for 24.3 percent of the visits. The two public sources (other than community health workers), government health centers and hospitals, accounted for 14.2 and 18.9 percent of the visits, respectively.

For those seeking care outside of the home, the public sector as a whole¹¹ accounted for 43 percent of visits, and the private sector¹² accounted for 57 percent.¹³ This is in contrast to the experience reported earlier for both prenatal and delivery services, for which the government is by far the primary source of care.¹⁴

4.4 EXPENDITURE BY PROVIDER

Exhibit 4-1 shows overall spending by provider, derived from Table A-6 (which shows expenditures by component and provider). This section was limited to individuals in the sample who visited only a single care giver.¹⁵ This section also limits its sample to households who reported an illness among family members other than the youngest five children.¹⁶ Taken as a whole, the sample spent an average of B\$36 on visits, drugs, lab and other costs, and transportation. Approximately 20 percent of spending was incurred for the visit itself, 61 percent for drugs, 5 percent for lab, and 14 percent for transport. As for the relative expense of providers, private doctors are by far the most expensive, with government hospitals and private pharmacies a distant second. Drugs are the most costly component of expenditure. However, the averages reported in Table A-6 are not very meaningful because many people included in the calculation of the averages paid nothing, and a few paid a lot.

¹⁰ Visits in this context include the *no visit* category.

¹¹ Community health worker, government health center or clinic, and government hospitals.

¹² Private or mission hospital, traditional healer, pharmacy, and private doctor.

¹³ These tabulations exclude cases where no visit is made.

¹⁴ We analyzed health care use patterns by socioeconomic characteristics. No statistically significant differences in use patterns were found except for differences by province. Residents of Belize City were found to use public facilities at a higher rate than residents of other provinces.

¹⁵ The sample is limited to single visits because only total expenditures are reported. Thus if an individual had four visits to different providers for an illness, total expenditures for all four would be reported, and it would be impossible to assign expenditures to one provider. Because 92.5 percent of the sample had only one visit, the 7.5 percent with multiple visits were simply eliminated from the analysis.

¹⁶ Only the module added to the survey which asked about sick members of the household other than five youngest children broke out costs into four categories: cost of visit, cost of medicines, transportation costs, and other costs.

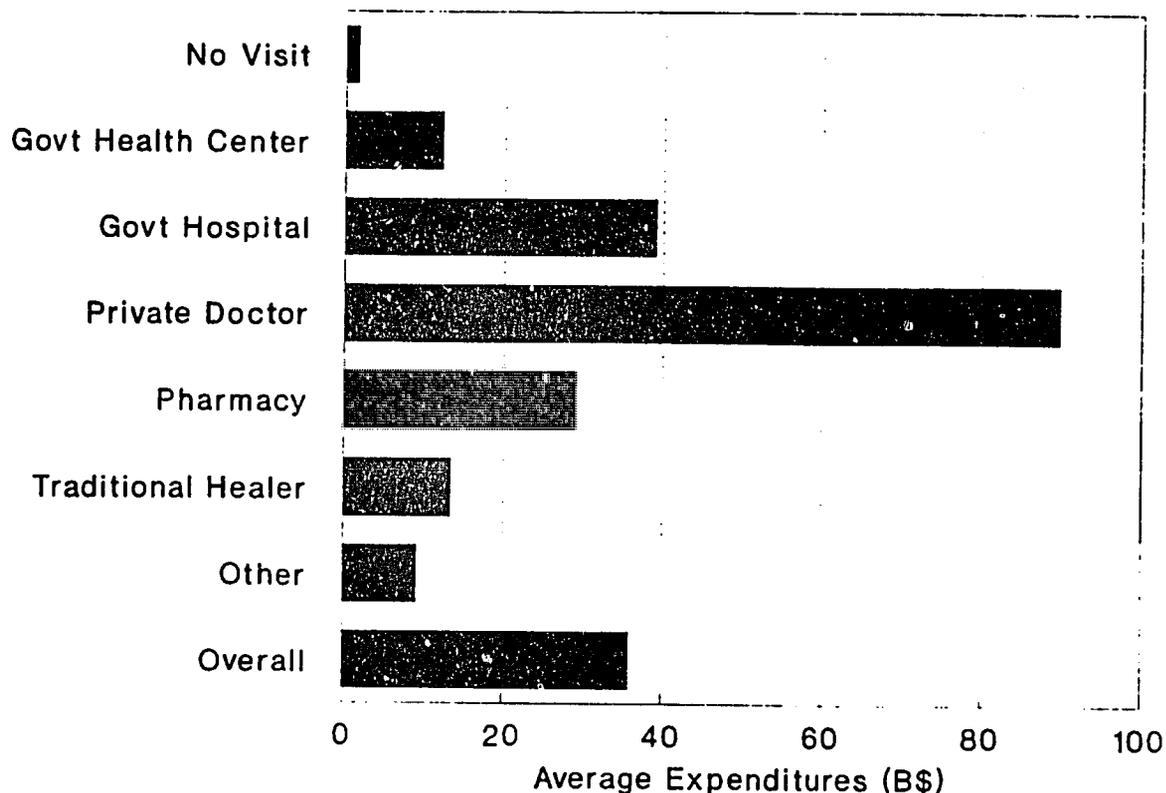


Exhibit 4-1 Average Expenditures for Full Sample of Ill Having a Single Visit, by Provider

Exhibit 4-2 shows the percentage of each provider's patients who actually paid something for one of the four categories of expenses. The exact numbers appear in Table 8. Just over 60 percent of the sick paid for something in connection with the visit. Those using private doctors and pharmacies almost always paid for something; government hospital patients paid over 60 percent of the time, and government health center patients paid less than 50 percent of the time. Those making no visit or using a traditional healer were least likely to incur an expense.¹⁷

Exhibit 4-3 shows average expenditure by those who paid something for each provider, with the bars subdivided according to the four components of expenditure. The average cost of private physicians and pharmacies does not change much because almost everyone pays, but if those not paying are eliminated from the other categories, the gap narrows between private sector and public sector providers. Why? Because the public sector nearly eliminates the visit expense, but patients who pay still incur substantial drug and transport expenses. Thus, because the visit price is relatively high for private doctors, drugs and transport constitute 67 percent of the total bill, compared to 80

¹⁷Health care expenses for households making no visit often included expenditures for medicines which must have been obtained without the assistance of a health care provider.

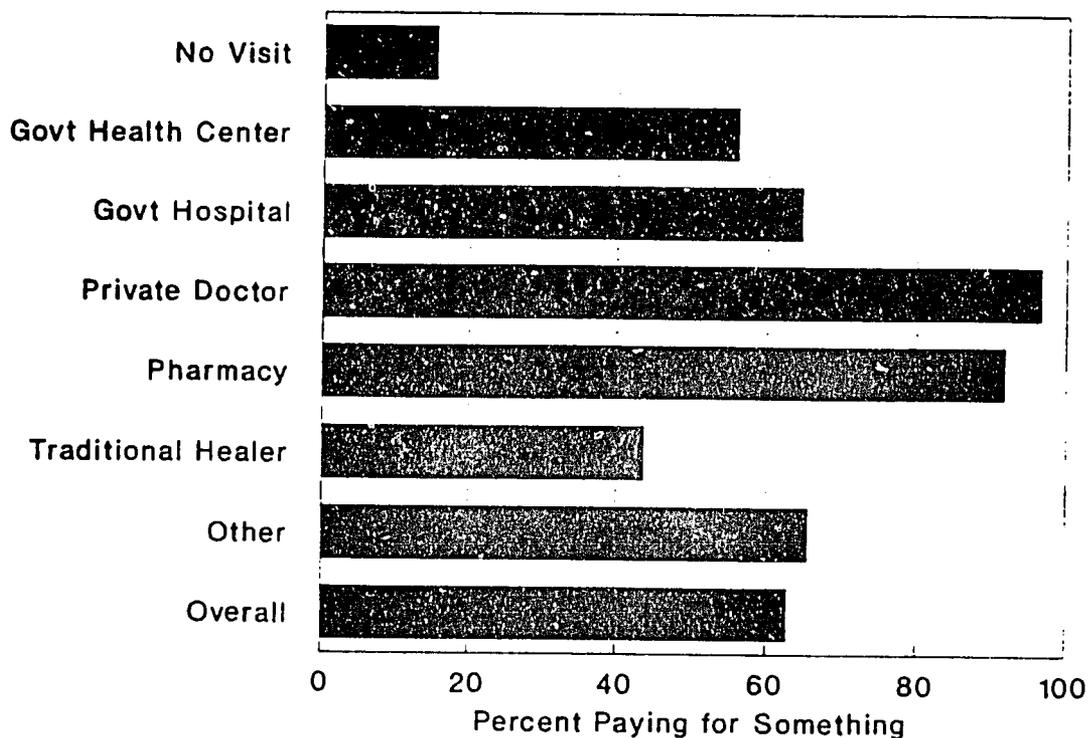


Exhibit 4-2 Percent of Sample Incurring Some Expenditure, by Provider

percent for government health clinics and 89 percent for government hospitals.¹⁸ For pharmacies, of course, drugs constitute 94 percent of the cost.

Table 4-1 shows the result of a simulation in which we show how expenditure patterns might change with a change in government fees. This example is for illustration only and may or may not have any connection with reality. One common approach to user fees is the following: if the government charges a fee for the visit that is high enough to pay for any drugs prescribed for the patient (on average), and it consistently keeps these drugs in stock as a result, it could offer a useful service to its clients by helping them avoid costly private sector pharmacies and providing them with appropriate treatment. Table 4-1 is motivated by this kind of reasoning.

Suppose that for government health centers, the visit fee were raised to B\$10 from the current average fee of B\$2. This increase allowed the government to reliably supply basic drugs and diagnostic tests required by patients, thus cutting their expenditures for these items as shown in the table.¹⁹ Visit prices in government hospitals are raised to B\$20, and the other costs are

¹⁸ Transport costs to hospitals are very high relative to all other providers, suggesting that some patients travel quite far to use them or that they are often emergency cases requiring paid transport.

¹⁹ We do not show expenditures going to zero because, people being people, they will still buy other items notwithstanding what the medical profession thinks they should do.

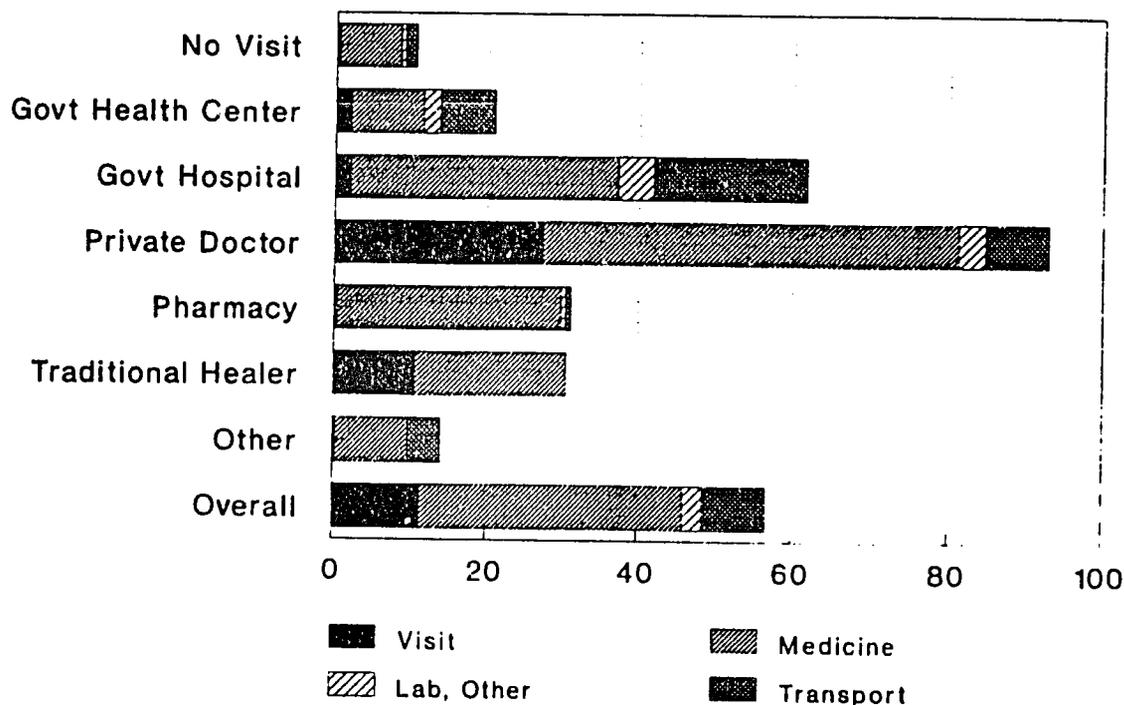


Exhibit 4-3 Amount and Composition of Expenditures for Those Incurring Some Expense (B\$)

assumed to fall as for the health centers. At these new prices, the average paying patient at the health center still incurs about the same costs, but expenditures fall by about a third for hospital patients. But the patient is able to secure one-stop treatment and knows in advance that this service will be available on a reliable basis. As a result, transport expenditures may drop, pressure may

Table 4-1 Example of Effect on Existing Expenditures of Change in Government Fees

Source		VISIT COST	DRUG COST	LAB, OTHER COSTS	TRANSPORT COST	TOTAL
GOVERNMENT HEALTH CENTER OR CLINIC	Now	2.00	9.51	2.11	7.35	20.97
	New	10.00	2.00	1.00	7.35	20.35
GOVERNMENT HOSPITAL	Now	1.97	35.38	4.59	19.79	61.73
	New	20.00	2.00	1.00	19.79	42.79
PRIVATE DOCTOR	Now	27.44	53.92	3.47	8.12	92.95

increase for cheaper drugs in the private sector, and private physicians may drop their prices or feel the need to deliver even higher quality services. Note that even with the higher visit prices in the public sector, all public sector costs for paying patients remain substantially below those using the private sector. Furthermore, note that we are addressing only patients who already pay; there is

still a large contingent paying nothing in the public sector that is excluded from the analysis.

4.5 EXPENDITURES BY SOCIOECONOMIC CHARACTERISTICS

This section breaks down average total health care costs for all households reporting an illness in the most recent two weeks.²⁰ It also includes health care expenditures by all households reporting an ill member, whether or not expenses were incurred. As before, a proxy for wealth or permanent income (possession of a refrigerator) has been used to differentiate the relative economic position of households. One might expect that households with refrigerators would spend more on health care. Average health care expenditure for households possessing and not possessing refrigerators, and for urban and rural households are shown in Table A-8 in the Appendix. Households with refrigerators spent about the same on health care as their counterparts without refrigerators. This is an unexpected result which may reflect differences in households' ability to invest in preventive practices, differences in length of time allowed to elapse before seeking care, preference for private sector providers, differential access to free public services, or other behavioral differences among asset groups.

Another way to divide up households is based on the mother's (respondent's) education.²¹ Table A-8 shows average total household health care expenditure by mother's education. If we look only at expenditures for those households with a sick member, as in Table A-8, there is a weak increase in expenditure from least to most educated.²² However, if expenditures are calculated on a per-household basis (illness or not), households with mother's education of some primary school spent the highest average amount of B\$24.3. Households with secondary school education spent the lowest average of B\$8.4. The underlying reason is because, as we saw earlier, more educated households have the least number of reported illnesses, even though when there is an illness they spend lavishly on it.

Table A-8 also contains average health care expenditures by province.²³ Again, there are large differences in average health care expenditures. Corozal and Orange Walk have the highest averages at B\$51.3 and B\$44.7, respectively, and they are relatively heavy users of private services. These levels are statistically greater than the levels spent in Cayo and Belize. Overall spending

²⁰This section includes health care expenditures for all household members who had an illness in the two-week period prior to the survey, except residents of Stann Creek and Toledo. Again, these respondents are excluded because of sample irregularities in observations from those provinces.

²¹ Due to constraints on the length of the questionnaire, it was not possible to determine the education of the sick person or the head of the household.

²²Only when women in the household have post-secondary educations are expenditures larger in a statistically significant sense.

²³As mentioned earlier, Stann Creek and Toledo are not included because of survey irregularities on recent illness questions.

in Belize City is lowest. Residents of Belize City used government facilities significantly more often than did residents of other provinces.

If these expenditure estimates are averaged across all households in the sample, we can calculate a rough estimate of spending per household for the sample. The average expenditures across all households (illness or not) is B\$18.60. If these two-week averages are typical, households spend an average of B\$485 per year on health care, or US\$242. This represents a very large expenditure on acute medical services. For the 1,200 households reporting household income, the median income is between B\$3,000 and B\$7,000. Taking a further leap into the unknown, if this were the median income for all households in the survey, it would indicate an average of 3 to 7 percent of household income is being spent on this portion of health care.²⁴

In summary, we have found heavy use of various private sector providers for out-patient services in contrast to the important role the public sector plays in providing prenatal and obstetrical care. About two-thirds of the sample incurs some expense for health services. This proportion is lower in the public sector and higher in the private sector. Drug costs are by far the largest component of expenditure. There appears to be considerable opportunity, both in the variability of total spending across providers and in the components of spending, for the government to develop reasonable policy innovations that increase revenues for the public system and either reduce or leave unchanged household spending patterns (but improve the quality and reliability of the services consumed). Such changes appear to be possible from the client's perspective; whether they can actually be managed within the current government system requires a careful assessment. The differences in use patterns and spending by geographical location, education, and asset ownership suggest severe problems in how public sector subsidies are targeted through the health system.

²⁴ This calculation does not include spending on health services for the mother's five youngest children, nor does it include prenatal and obstetrical care. It is probably an underestimate of total household spending. Public and insurance spending would have to be added to this estimate to derive a national estimate of spending.

5.0 EXPENDITURES TO CARE FOR SPECIFIC CHILDHOOD ILLNESSES

Another way to look at the data is to see how households dealt with specific child health problems. In this section, data on the household reaction to three types of childhood illnesses episodes is reviewed, including children suffering from diarrhea, a high fever, and a cough during the two weeks previous to the survey. Utilization patterns and average expenses by facility are reviewed.

5.1 DIARRHEA

Table A-9 contains counts of households with children having diarrhea problems and average expenses by health care facility. Of 126 households with children with diarrhea problems, 13.5 percent sought no advice, 25 percent went to a government facility for care, 20 percent went to a formal private health care facility, and 42 percent went to non-formal private facilities.²⁵ There is a wide range of average costs, but the highest averages are for government hospitals and private pharmacies, which each averaged about B\$75.²⁶ The least expensive were community health workers, government health clinics, and traditional healers.

5.2 HIGH FEVER

Table A-10 contains the same data for households having children with high fevers, a total of 206. 13 percent of these households sought no advice, 41 percent used government facilities, 19 percent used formal private health care, and 27 percent used other private facilities. The highest average expenditures were on private doctors, and the lowest averages were for community health workers and government health clinics.

5.3 COUGHS

Table A-11 contains the same data for households reporting children with coughs. 376 households reported cough problems in their children. 15 percent sought no advice, 32 percent went to government health care facilities, 19 percent went to formal private facilities, and 34 percent went to other facilities. Once again, households utilizing private doctors spent the most, while households going to any of the government facilities spent the least.

These results for common childhood illnesses simply reinforce what we discovered in the previous section. People using government facilities incur lower costs, but the expenses are typically not zero on average. People using the private sector incur substantial costs — be it for a private doctor, a traditional healer, or a pharmacy. One cannot help but wonder how effective the

²⁵ Non-formal private facilities include traditional healer, pharmacies, and other facilities.

²⁶These high expenditures for households using government hospitals may have been for the purchase of medicine rather than for the cost of the visit. Children with diarrhea who were taken to government hospitals are frequently reported to have been treated with antibiotics.

treatment regimes are that are consuming so much money for these common childhood problems.

6.0 CONTINGENT VALUATION OR WILLINGNESS TO PAY

The contingent valuation survey questions were also included in the survey. The respondents were asked to tell what they would be willing to pay to visit a government health center or hospital if they became ill. This question was asked in two parts. First, interviewees were asked what they would be willing to pay to make a visit without any quality changes to government facilities. Then households were asked what they would be willing to pay for a visit to an "improved" government facility. The improvements include waits of no more than an hour, pleasant waiting rooms, and medicine always available. In each case, the range of possible answers are from less than B\$2 to at least B\$15.²⁷

The contingent value method has been used extensively in environmental economics [Cummings, et al. (1986)]. Only in a couple of instances has it been applied to health economics [Thompson (1986) & Johannesson, et al (1991)].

6.1 WILLINGNESS TO PAY FREQUENCIES

For a visit to unimproved facilities, Table A-12 contains the interviewees' willingness-to-pay frequencies. 66 percent of households are willing to pay at least B\$15. 86 percent would be willing to pay B\$2, which is the highest fee for an out-patient visit with a general practitioner at Belize City Hospital. Just a look at the frequencies indicates that there is great potential for greater revenue generation, even without quality improvements. About two-thirds of the respondents would pay at least B\$15 for the current service. In choosing the categories for the questionnaire, it was expected that B\$15, which is about half the private sector price for an outpatient visit, was so high that few respondents would give a positive answer at that charge. Clearly there is considerable willingness to pay for existing services, indicating that the health system delivers a highly valued service.

Table A-13 contains interviewee's willingness-to-pay frequencies for a visit to an "improved" government health facility. 85 percent would be willing to pay the maximum amount of at least B\$15. Only 6 percent would not be willing to pay the present maximum charge of B\$2. It appears that with improved facilities, a floor fee of B\$2 could be set because virtually all households would be willing to pay that. Much higher fees could be applied to many

²⁷ The first "as is" set of questions were as follows: "Now I will ask you several questions about fees you might be willing to pay for government health services. Suppose you become ill today and visit a government health center or hospital. Would you be willing to pay a \$15 fee in total for the visit and any medicines you might receive?" The respondent was taken through a so-called double-bounded set of contingent valuation questions to ascertain how much she would pay, between \$2 and \$15. In the second "improved" set of questions, the same type of questioning was introduced by the following hypothetical change in the government's product: "Now I would like to ask you several more questions about fees in government facilities, but this time suppose that the facilities are improved. Waiting time is rarely more than one hour, waiting rooms are more pleasant, and medicines are always available. Suppose services are improved in this way, and you become ill today. If you visit one of these improved government health centers or hospitals, would you be willing to pay \$15 in total for a visit and any medicines?"

households. Note that 20 percent of the sample moves into the highest category for the improvements described.

6.2 WILLINGNESS TO PAY BY SOCIOECONOMIC CHARACTERISTICS

Frequencies of maximum willingness to pay were also tabulated by various characteristics. Table A-14 shows the maximum willingness to pay for unimproved health care by the mother's education. Table A-15 shows the willingness to pay for improved health care by mother's education. Generally, better educated women are willing to pay more, though differences by education level are only significant for unimproved health care. For unimproved health care, 50 percent of mothers with some primary school education or less are willing to pay B\$15 or more while 75 percent of mothers with secondary education or more are willing to pay B\$15 or more. For improved health care, over 75 percent of mothers of all education levels are willing to pay B\$15 or more.

If prices were raised to B\$15 and no improvements were made to service, approximately 25 percent of women with secondary education or above would be unwilling to pay the fee. For women with less than complete primary school education, the proportion unwilling to pay a B\$15 fee would be approximately 50 percent. If care were improved, over 75 percent of all groups would be willing to pay the maximum amount of B\$15 or more.

Table A-16 shows the maximum willingness to pay for unimproved health care by households by whether or not they reside in an urban setting and possess a refrigerator. Urban households with refrigerators are significantly more likely to be willing to pay B\$15 for unimproved health care than are households with rural residence and no refrigerator. The average percentages for these two groups' are about 77 percent and 54 percent, respectively. When we compare these groups maximum willingness to pay for improved health care in Table A-17, there are again no statistical differences because all groups have a high proportion of households willing to pay the maximum amount.

Also Table A-18 shows that households living in Corozal, Belize City, or Stann Creek are willing to pay more for unimproved care.²⁸ If care were improved, Table 20 shows that only in Toledo province would a substantial percentage of households have a maximum willingness to pay of less than B\$15 or more. In Toledo, about 50 percent of households would be willing to pay B\$15 or more.

6.3 WILLINGNESS TO PAY: ORDERED PROBIT RESULTS

Another way to measure willingness-to-pay differences by socioeconomic characteristics is to use regression analysis. Two ordered probit regressions are estimated for the unimproved and improved willingness-to-pay response. Ordered probit is used because the willingness-to-pay data is grouped into six ordered strata with known thresholds.

²⁸Negative correlation was found between maximum willingness to pay and recent expenditures on illness. The major cause of this counterintuitive result is the small expenditures by Belize City residents. These households now have access to inexpensive public health care.

Table A-20 contains the descriptive statistics for the explanatory variables. The variables used in these regressions include a subset of the variables used in the delivery regression; the labels in the table should be self-explanatory. These variables capture age, education, assets, ethnicity, religion, and whether residence is in an urban area. The ethnic groups are Creole, and Mestizo, with the bulk of the omitted households being native Indian. Membership in the Catholic Church is included as another control variable.

The results are shown in Table A-21 and Table A-22. For the unimproved health facility ordered probit, six of the 10 variables are significant at the 10 percent level of significance and five variables are significant at the 1 percent level.

Older mothers are not willing to pay as much as younger mothers, while more educated women will pay more. Households with amenities (piped water and refrigerators) will pay more than those without. Finally, urban residents will pay more than rural residents. Without any other changes to the government health care system, it appears that fees could be implemented which are much higher than at present but discounts could be targeted to rural households and households without amenities, such as refrigerators and piped water.

Given that the description of the improved facility pushed so many people into the B\$15 category, it is surprising to find that so many variables are significant, as there is little variation in the dependent variable to explain. Six of 10 variables are significant at the 10 percent level and four are significant at the one percent level. Households willing to pay more include those with more amenities, more educated mothers, Mestizos, and urban residence. These results indicate that fees of at least B\$15 could be charged with minor discounts for rural households and households with few amenities if government services were as described.

It is interesting to contrast these results with actual behavior. Urban households have a lower expenditure on average for medical care than do rural households. For acute out-patient services households with more educated mothers (those who completed secondary school) pay less than mothers with a few grades of primary school. Compared to Corozal, Orange Walk, and Cayo, Belize City residents pay the least for acute out-patient services. In these cases, those paying the least, on average, are more willing to pay for services. There are tremendous opportunities to rationalize the financing of public services and to better target public subsidies.

7.0 CONCLUSION

We emphasize the qualification that the questions on health care utilization patterns and expenditures were added on to a DHS-type survey in order to fill a serious void in Belize of having no population-based information on these two issues. The sample is not random — it is women of child-bearing age, and the questions about health are simple and incomplete. Yet the findings of the survey appear to be useful and are in some cases startling.

First, prenatal care is delivered primarily by government clinics, and almost all pregnant women are exposed to these prenatal services. Spending on prenatal care is low, except for women who use the private sector. However, by virtue of the fact that there is little or no targeting of prenatal care subsidies, and because use of the service is so widespread, many women who could and would pay are receiving free, subsidized care.

Second, deliveries also take place primarily in public hospitals, but with a significant proportion of women delivering at home. Spending on this service by women is low if they deliver at home or in the public sector, but quite high for the small proportion of women choosing private doctors. On distributional grounds, however, the reliance on home births means that public subsidies are flowing very heavily to urban, more educated, wealthier women. The private sector, however, picks off the cream of the crop — those most able to pay — and thus mitigates the distributional problem created by the public sector.

Third, utilization patterns are quite different for acute out-patient services. Private sector providers are heavily used. About 60 percent of the sample incurred some expenditure for illnesses: for the visit, medicine, lab or other fees, or transportation. Although over 90 percent of those using private services incurred expenditures, a substantial 60 percent of those using government services also incurred some costs. Average expenditures *for those having expenditures* were high, over B\$90 for private doctors, over B\$30 in pharmacies, over B\$20 in government health clinics, and over B\$60 in government hospitals. These expenditures are so high on average that there appears to be some scope for the government to save people money by rationalizing charges and delivering cost-effective services, drugs, and diagnostic tests for which people pay.

Fourth, a contingent valuation exercise revealing high willingness of the population to pay for health services from the government — both existing and improved services — is truly startling, especially to the author who has seen the facilities in action. Yet, given the high current level of expenditures, it is perhaps understandable that people would be willing to pay B\$15 for reasonable quality, effective government services. If the public sector could provide good services at that price, it is quite likely that consumers would save money or at least receive more value for the money they are currently spending. Health care in Belize is relatively expensive, creating an opportunity for the public sector to establish fees that can finance substantially improved services.

This paper has combined real information on expenditures and use patterns with hypothetical responses about willingness to pay. We can expect that the willingness-to-pay responses are overestimates of what people will actually pay.

Yet they are so high, and actual expenditures are so high, there can be little question that the government has considerably more room to maneuver in considering cost recovery in the health sector than it has exercised in the past. The simple cross-tabulations used in this paper also indicate that there are opportunities to improve the targeting of public subsidies under a user fee system.

APPENDIX

Table A-1

Price Comparisons for a Sample of Services: Government, Church Mission, and Private Providers (in B\$)

SERVICE	TYPICAL GOVERNMENT CHARGE*	CHURCH MISSION	PRIVATE SECTOR	
PHYSICIAN FEES	normal birth	\$25	\$130	\$300-600
	caesarian section	\$50	NP	\$400-800
	appendectomy	\$65	NP	\$400-500
	cataracts	\$65	NP	\$400-800
	GP visit	\$0	\$7	\$25
	specialist visit	\$5	NP	\$35
	dental visit	\$1	NP	\$20
FACILITY FEES	daily bed charge	\$2.50	\$25	\$95
	laboratory tests: "routine" ^b	\$0-4 ^c	\$5-15	\$4-8
	x-ray exams: extremities ^d	\$4-6	\$10-24	\$25

Notes: BZ \$1 = US \$.50

NP means service is not provided.

(a) Refers to charges to patients who are classified in "income category II" through an informal means test. Most patients are charged the "Category II" rate.

(b) FBC, ESR, blood sugar, BUN, cholesterol, bilirubin, SGO-T, GGP-T, uric acid.

(c) Tests for non-private out-patients are free. In-patients pay approximately \$1 per test at Belize City Hospital.

(d) Foot, ankle, hand, wrist, finger, and elbow.

Source: La Forgia, Gerard and Charles Griffin (1991), "Health Sector Cost Recovery in Belize: Current Situation and Prospects for Change." HFS Technical Report Number 5. HFS Project, 4800 Montgomery Lane, Suite 600, Bethesda, MD 20814.

Table A-2

Average Prenatal Expenses for Health Care Visits and Drugs by Types of Health Care Facility Visited (B\$)

SOURCE	NUMBER OF WOMEN	DISTRIBUTION (PERCENT)	AVERAGE EXPENDITURE FOR ALL VISITS	AVERAGE EXPENDITURE FOR DRUGS	AVERAGE EXPENDITURE PER VISIT
GOVERNMENT HEALTH CLINIC	955	80.5	34.5	22.1	5.6
GOVERNMENT HOSPITAL	59	5.0	12.5	11.8	1.8
PRIVATE HOSPITAL	47	4.0	224.5	79.7	24.4
PRIVATE DOCTOR	119	10.0	266.9	61.9	37.5
MIDWIFE	7	0.6	17.3	12.0	4.2
TOTAL	1187	100	64.1	27.8	9.3

Table A-3
Prenatal Care Expenses by Several Socioeconomic Variables
(B\$)

VARIABLE	TOTAL EXPENDITURES FOR VISITS, ALL EXPENSES	TOTAL EXPENDITURE FOR DRUGS AND VITAMINS	AVERAGE EXPENDITURE FOR EACH VISIT, ALL EXPENSES	AVERAGE NUMBER OF VISITS
LOCATION AND ASSETS				
URBAN AND REFRIGERATOR	131.4	45.1	17.2	8.0
RURAL AND REFRIGERATOR	142.3	43.6	20.1	7.2
URBAN AND NO REFRIGERATOR	31.9	21.3	6.8	7.2
RURAL AND NO REFRIGERATOR	31.3	17.1	5.7	5.7
PUBLIC AMENITIES				
PIPED WATER	100.3	29.5	16.8	8.7
NO PIPED WATER	58.1	26.6	8.7	6.9
PROVINCE				
COROZAL	36.5	27.1	5.5	6.2
ORANGE WALK	52.0	42.9	7.6	6.4
BELIZE	119.7	25.1	18.4	8.1
CAYO	33.9	8.4	6.5	7.0
STANN CREEK	76.8	40.3	10.9	5.8
TOLEDO	17.2	11.3	2.3	6.1
EDUCATION				
NO SCHOOLING	8.0	25.5	1.0	6.4
SOME PRIMARY	55.0	21.5	10.7	6.3
PRIMARY COMPLETE	43.0	24.7	6.5	6.9
SECONDARY COMPLETE	136.4	44.6	18.6	8.9
POST-SECONDARY	262.7	64.8	29.0	8.1

Table A-4
Average Delivery Expenses by Place of Delivery
(B\$)

SOURCE	NUMBER OF WOMEN	DISTRIBUTION (PERCENT)	AVERAGE TOTAL EXPENDITURE ON DELIVERY
GOVERNMENT HOSPITAL	892	71.5	108.1
PRIVATE HOSPITAL	93	7.5	420.6
OWN HOME	234	18.8	43.4
FRIEND'S HOME	17	1.4	50.0
OTHER	10	0.8	119.1
TOTAL	1246	100	

Table A-5

Utilization Patterns for Acute Care Services, Two Weeks before the Survey
(Percent)

SOURCE	NUMBER	FREQUENCY
NO VISIT	104	17.4
COMMUNITY HEALTH WORKER	14	2.3
GOVERNMENT HEALTH CENTER OR CLINIC	85	14.2
GOVERNMENT HOSPITAL	113	18.9
PRIVATE DOCTOR	145	24.3
PRIVATE OR MISSION HOSPITAL	8	1.3
PHARMACY	74	12.4
TRADITIONAL HEALER	19	3.2
OTHER	35	5.9
TOTAL	597	100.0

Table A-6

Use Patterns and Expenditures for Illnesses for Households with the Sick Persons Using a Single Source

SOURCE	NUMBER	FREQUENCY	VISIT COST	DRUG COST	LAB, OTHER COSTS	TRANSPORT COST	TOTAL
PRIVATE OR MISSION HOSPITAL	4	0.8	15.00	10.00	0.00	1.50	26.50
COMMUNITY HEALTH WORKER	10	2.0	0.57	0.14	0.00	0.00	0.71
TRADITIONAL HEALER	16	3.1	4.69	8.69	0.00	0.00	13.38
OTHER	29	5.7	0.17	6.28	0.00	2.75	9.20
PHARMACY	61	12.0	0.38	27.50	0.53	0.70	29.11
NO VISIT	104	20.4	0.06	1.26	0.08	0.24	1.64
GOVERNMENT HEALTH CENTER OR CLINIC	66	13.0	1.16	5.50	1.21	4.25	12.12
GOVERNMENT HOSPITAL	96	18.9	1.26	22.30	2.86	12.71	39.13
PRIVATE DOCTOR	123	24.2	26.54	52.14	3.36	7.85	89.89
OVERALL	509	100.0	7.25	21.89	1.60	5.17	35.91

NOTE:

Totals are the sum of the various components in this table rather than the actual average total expenditure, which differs slightly from that reported here because of different numbers of missing values for each component.

The sample size of 509 is for illnesses in which only one provider was seen and without missing values for the expenditure items. A total of 597 people was reported ill. Thus this table represents about 85 percent of the sick sample.

Table A-7

Expenditures for Sick People Incurring Some Expenditure and Using a Single Source

SOURCE	RAW NUMBER	PAYING NUMBER	PERCENT PAYING FOR SOMETHING	VISIT COST	DRUG COST	LAB, OTHER COSTS	TRANSPORT COST	TOTAL
NO VISIT	104	16	15.4	0.38	8.13	0.53	1.50	10.53
COMMUNITY HEALTH WORKER	10	2	20.0	2.00	0.50	0.00	0.00	2.50
GOVERNMENT HEALTH CENTER OR CLINIC	66	37	56.1	2.00	9.51	2.11	7.35	20.97
GOVERNMENT HOSPITAL	96	62	64.6	1.97	35.38	4.59	19.79	61.73
PRIVATE DOCTOR	123	119	96.7	27.44	53.92	3.47	8.12	92.95
PRIVATE OR MISSION HOSPITAL	4	2	50.0	30.00	20.00	0.00	3.00	53.00
PHARMACY	61	56	91.8	0.42	29.46	0.58	0.76	31.22
TRADITIONAL HEALER	16	7	43.8	10.71	19.86	0.00	0.00	30.57
OTHER	29	19	65.5	0.26	9.58	0.00	4.21	14.05
OVERALL	509	320	62.9	11.45	34.57	2.54	8.17	56.73

NOTE:

Totals are the sum of the various components in this table rather than the actual average total expenditure, which differs slightly from that reported here because of different numbers of missing values for each component.

The sample size of 509 is illnesses for which only one provider was seen and there are values for at least one expenditure item. A total of 597 people were reported ill. The sample of 320 is the subset of sick people who incurred any expense.

Table A-8

Expenditures for Household Illnesses in the Two Weeks before the Survey
(B\$)

VARIABLE	AVERAGE TOTAL EXPENDITURE	NUMBER OF HOUSEHOLDS	DISTRIBUTION OF HOUSEHOLDS
ETHNIC BACKGROUND			
CREOLE	32.1	853	37.1
MESTIZO	44.5	1088	47.3
OTHER	22.6	361	15.7
RESIDENCE			
URBAN	34.7	1548	67.5
RURAL	36.3	745	32.5
ASSETS			
REFRIGERATOR	42.3	1047	45.7
NO REFRIGERATOR	31.3	1246	54.3
PIPED WATER	28.7	517	22.5
NO PIPED WATER	36.5	1782	77.5
PROVINCE			
COROZAL	51.3	428	18.6
ORANGE WALK	44.7	533	23.2
BELIZE	27.2	920	40.0
CAYO	33.2	421	18.3
EDUCATION			
NO SCHOOLING	22.0	100	4.3
SOME PRIMARY	31.7	606	26.3
PRIMARY COMPLETE	37.4	1130	49.1
SECONDARY COMPLETE	29.5	292	12.7
POST-SECONDARY	68.3	174	7.6

Table A-9

Health Care Utilization and Expenditures for Households with Children
Having Diarrhea Problems and Taking Action

SOURCE	NUMBER OF HOUSEHOLDS	FREQUENCY (PERCENT)	AVERAGE EXPENSE (BELIZE DOLLARS)
SOUGHT NO ADVICE	17	13.5	1.1
COMMUNITY HEALTH WORKER	5	4.0	0.0
GOVERNMENT HEALTH CLINIC	13	10.3	2.8
GOVERNMENT HOSPITAL	13	10.3	75.8
PRIVATE HOSPITAL	3	2.4	10.0
PRIVATE DOCTOR	22	17.5	49.6
TRADITIONAL HEALER	10	7.9	2.2
PHARMACY	31	24.6	74.7
OTHER	12	9.5	1.1
TOTAL	126	100.0	35.8

Table A-10

Health Care Utilization and Expenditures for Households with Children
Having High Fever and Taking Action

SOURCE	NUMBER OF HOUSEHOLDS	FREQUENCY (PERCENT)	AVERAGE EXPENSE (BELIZE DOLLARS)
SOUGHT NO ADVICE	27	13.1	23.1
COMMUNITY HEALTH WORKER	6	2.9	1.8
GOVERNMENT HEALTH CLINIC	40	19.4	3.2
GOVERNMENT HOSPITAL	38	18.4	27.8
PRIVATE HOSPITAL	0	0.0	---
PRIVATE DOCTOR	40	19.4	49.1
TRADITIONAL HEALER	2	1.0	12.5
PHARMACY	37	18.0	29.1
OTHER	16	7.8	6.6
TOTAL	206	100.0	24.2

Table A-11

Health Care Utilization and Expenditures for Households with Children
Having a Cough and Taking Action

SOURCE	NUMBER OF HOUSEHOLDS	FREQUENCY (PERCENT)	AVERAGE EXPENSE (BELIZE DOLLARS)
SOUGHT NO ADVICE	57	15.2	38.1
COMMUNITY HEALTH WORKER	11	2.9	1.1
GOVERNMENT HEALTH CLINIC	56	14.9	3.4
GOVERNMENT HOSPITAL	53	14.1	5.1
PRIVATE HOSPITAL	3	0.8	21.7
PRIVATE DOCTOR	69	18.4	55.9
TRADITIONAL HEALER	10	2.7	20.2
PHARMACY	88	23.4	14.5
OTHER	29	7.7	3.2
TOTAL	376	100.0	21.6

Table A-12

Frequencies for Willingness to Pay for a Visit to an Existing (Unimproved)
Government Health Center or Hospital

CATEGORY	FREQUENCY	DISTRIBUTION
LESS THAN \$2	357	13.8
AT LEAST \$2 AND LESS THAN \$5	275	10.6
AT LEAST \$5 AND LESS THAN \$7	112	4.3
AT LEAST \$7 AND LESS THAN \$10	47	1.8
AT LEAST \$10 AND LESS THAN \$15	90	3.5
AT LEAST \$15	1708	66.0
TOTAL	2589	100

Table A-13

Frequencies for Willingness to Pay for a Visit to an Improved Government Health Center or Hospital

CATEGORY	FREQUENCY	DISTRIBUTION
LESS THAN \$2	148	5.7
AT LEAST \$2 AND LESS THAN \$5	97	3.7
AT LEAST \$5 AND LESS THAN \$7	55	2.1
AT LEAST \$7 AND LESS THAN \$10	19	0.7
AT LEAST \$10 AND LESS THAN \$15	65	2.5
AT LEAST \$15	2205	85.2
TOTAL	2589	100

Table A-14

Maximum Willingness to Pay for Unimproved Health Care
by Willingness to Pay Level and Mother's Education
(Percent)

WILLINGNESS TO PAY	NO SCHOOL	LESS THAN PRIMARY SCHOOL	PRIMARY COMPLETE	SECONDARY COMPLETE	POST- SECONDARY
LESS THAN \$2	14.9	17.5	13.5	9.1	10.2
AT LEAST \$2 AND LESS THAN \$5	19.3	14.4	9.5	5.9	6.1
AT LEAST \$5 AND LESS THAN \$7	7.0	7.2	3.4	3.1	3.6
AT LEAST \$7 AND LESS THAN \$10	4.4	2.3	1.5	0.9	2.0
AT LEAST \$10 AND LESS THAN \$15	7.0	4.5	2.8	5.0	2.0
AT LEAST \$15	47.1	54.2	69.2	75.9	76.0
TOTAL	100.0	100.0	100.0	100.0	100.0
TOTAL SAMPLE	114	710	1300	320	196

Table A-15

Maximum Willingness to Pay for Improved Health Care
by Willingness to Pay Level and Mother's Education
(Percent)

WILLINGNESS TO PAY	NO SCHOOL	LESS THAN SCHOOL	PRIMARY COMPLETE	SECONDARY COMPLETE	POST- SECONDARY
LESS THAN \$2	6.1	7.7	5.2	3.7	5.1
AT LEAST \$2 AND LESS THAN \$5	7.9	5.2	3.5	1.9	2.6
AT LEAST \$5 AND LESS THAN \$7	0.9	3.1	2.2	0.6	1.5
AT LEAST \$7 AND LESS THAN \$10	2.6	1.0	0.6	0.3	0
AT LEAST \$10 AND LESS THAN \$15	4.4	3.4	2.2	2.2	1.0
MORE THAN \$15	78.1	79.6	86.3	91.3	89.8
TOTAL	100.0	100.0	100.0	100.0	100.0
TOTAL SAMPLE	114	710	1300	320	196

Table A-16

Maximum Willingness to Pay for Unimproved Health Care
by Willingness to Pay Level, Urban/Rural & Refrigerator Possession
(Percent) (B\$)

WILLINGNESS TO PAY	RURAL, NO REFRIGERATOR	RURAL, WITH REFRIGERATOR	URBAN, NO REFRIGERATOR	URBAN, WITH REFRIGERATOR
LESS THAN \$2	17.8	23.1	12.9	10.3
AT LEAST \$2 AND LESS THAN \$5	15.6	8.3	12.0	5.9
AT LEAST \$5 AND LESS THAN \$7	6.1	5.8	5.9	2.3
AT LEAST \$7 AND LESS THAN \$10	1.9	0.8	2.8	1.3
AT LEAST \$10 AND LESS THAN \$15	4.6	3.3	3.1	3.3
AT LEAST \$15		58.7	63.4	76.9
TOTAL	100.0	100.0	100.0	100.0
TOTAL SAMPLE	808	121	683	1028

Table A-17

Maximum Willingness to Pay for Improved Health Care
by Willingness to Pay Level, Urban/Rural & Refrigerator Possession
(Percent) (B\$)

WILLINGNESS TO PAY	RURAL, NO REFRIGERATOR	RURAL, WITH REFRIGERATOR	URBAN, NO REFRIGERATOR	URBAN, WITH REFRIGERATOR
LESS THAN \$2	7.2	3.3	6.0	4.7
\$2 TO UNDER \$5	6.5	2.5	4.4	1.6
\$5 TO UNDER \$7	3.0	4.1	2.3	1.1
\$7 TO UNDER \$10	0.7	0	1.5	0.3
\$10 TO UNDER \$15	4.6	2.5	2.0	1.3
\$15 OR MORE	78.0	87.6	83.8	91.0
TOTAL	100.0	100.0	100.0	100.0
TOTAL SAMPLE	808	121	683	1028

Table A-18

Maximum Willingness to Pay for Unimproved Health Care
by Willingness to Pay Level and Province
(Percent)

WILLINGNESS TO PAY	COROZAL	ORANGE WALK	BELIZE CITY	CAYO	STANN CREEK	TOLEDO
LESS THAN \$2	13.5	27.2	4.9	18.1	3.5	26.3
AT LEAST \$2 AND LESS THAN \$5	9.3	14.9	5.9	13.9	5.6	28.0
AT LEAST \$5 AND LESS THAN \$7	4.0	5.2	3.7	5.1	9.1	0.8
AT LEAST \$7 AND LESS THAN \$10	0.5	1.7	1.6	2.3	4.0	3.4
AT LEAST \$10 AND LESS THAN \$15	2.3	3.7	4.1	4.6	2.0	3.4
AT LEAST \$15	70.1	47.2	79.8	56.0	75.8	38.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
TOTAL SAMPLE	428	536	928	432	198	118

Table A-19

Maximum Willingness to Pay for Improved Health Care
by Willingness to Pay Level and Province
(Percent)

WILLINGNESS TO PAY	COROZAL	ORANGE WALK	BELIZE CITY	CAYO	STANN CREEK	TOLEDO
LESS THAN \$2	0.9	10.3	1.8	10.6	2.5	20.3
AT LEAST \$2 AND LESS THAN \$5	3.0	3.0	1.4	7.9	2.0	19.5
AT LEAST \$5 AND LESS THAN \$7	4.2	2.1	1.0	2.3	0.5	5.9
AT LEAST \$7 AND LESS THAN \$10	0.7	0.9	0.4	1.2	0	1.7
AT LEAST \$10 AND LESS THAN \$15	5.6	2.8	1.5	1.6	2.0	2.5
AT LEAST \$15	85.5	81.0	93.9	76.4	92.9	50.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
TOTAL SAMPLE	428	536	928	432	198	118

Table A-20
Sample Means for Ordered Probit Estimates

VARIABLE	MEAN	STANDARD DEVIATION
MOTHER'S AGE	27.20	7.70
HOUSE HAS PIPED WATER	0.22	
HOUSE HAS REFRIGERATOR	0.44	
ETHNIC GROUP IS CREOLE	0.34	
ETHNIC GROUP IS MESTIZO	0.44	
MOTHER'S YEARS OF EDUCATION	8.19	3.37
RELIGION IS CATHOLIC	0.56	
NUMBER OF ROOMS IN HOUSE	2.89	1.33
LIVES IN A CITY	0.58	

NOTE: Standard deviations are provided only for the continuous variables

Table A-21

Ordered Probit Estimates for Willingness to Pay for a Visit to an
Unimproved Government Health Clinic or Hospital (2,589 Observations)

INDEPENDENT VARIABLE	COEFFICIENT	T-STATISTIC	SIGNIFICANCE
INTERCEPT	0.81	6.10	**
MOTHER'S AGE	-0.01	-1.68	*
HOUSE HAS PIPED WATER	0.25	3.60	**
HOUSE HAS REFRIGERATOR	0.18	2.90	**
ETHNIC GROUP IS CREOLE	0.11	1.52	
ETHNIC GROUP IS MESTIZO	0.01	0.09	
MOTHER'S YEARS OF EDUCATION	0.03	3.01	**
RELIGION IS CATHOLIC	0.08	1.64	
NUMBER OF ROOMS IN HOUSE	-0.03	-1.34	
LIVES IN A CITY	0.20	3.57	**
MU (1,1)	0.41	17.60	**
MU (2,1)	0.55	21.31	**
MU (3,1)	0.60	22.78	**
MU (4,1)	0.71	25.41	**
LOG-LIKELIHOOD	-2811.10		
LOG-LIKELIHOOD (SLOPES=0)	-2876.90		

NOTES:

The excluded ethnic group is primarily native Indian
 * Significant at the 10 percent level
 ** Significant at the 1 percent level

Table A-22

Ordered Probit Estimates for Willingness to Pay for a Visit to an Improved Government Health Clinic or Hospital (2,589 Observations)

VARIABLE	COEFFICIENT	T-STATISTIC	SIGNIFICANCE
INTERCEPT	1.18	7.73	**
MOTHER'S AGE	-0.01	-1.34	*
HOUSE HAS PIPED WATER	0.30	3.30	**
HOUSE HAS REFRIGERATOR	0.08	2.97	**
ETHNIC GROUP IS CREOLE	0.14	1.56	
ETHNIC GROUP IS MESTIZO	0.25	3.19	**
MOTHER'S YEARS OF EDUCATION	0.02	2.19	*
RELIGION IS CATHOLIC	0.08	1.30	
NUMBER OF ROOMS IN HOUSE	-0.01	-0.59	
LIVES IN A CITY	0.17	2.27	**
Mu (1,1)	0.27	9.93	**
Mu (2,1)	0.39	12.48	**
Mu (3,1)	0.43	13.34	**
Mu (4,1)	0.55	15.77	**
LOG-LIKELIHOOD	-1597.30		
LOG-LIKELIHOOD (SLOPES=0)	-1640.80		

NOTES:

The excluded ethnic group is primarily native Indian.
 * Significant at the 10 percent level
 ** Significant at the 1 percent level

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