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SUMMARY

Many NGOs providing reproductive health (RH) services are facing reductions in donor funding, requiring them to generate more of their own resources. Prosalud, CIES and APSAR, Bolivian NGOs, wanted to build skills in costing and market research to support efforts to improve financial sustainability. Staffs attended a one-week workshop, followed by implementation of three operations research (OR) studies designed to reinforce skills and generate information for decisionmaking. The Prosalud and CIES studies included the calculation of unit cost per service; measurement of client willingness to pay (WTP) higher prices for services, and a market segmentation assessment in selected areas where Prosalud clinics are located. The APSAR study focused on cost estimation, exclusively.

Prosalud had very high levels of cost recovery (83 to 109 percent depending on the service), CIES had lower levels of cost recovery (38-46 percent depending on the service), and APSAR only 10 –25 percent, depending on the service. The WTP studies conducted by both Prosalud and CIES found that clients rejected the idea of paying higher prices for clinical services; and the market assessment also suggested that it would be difficult for the organizations to increase prices. Two potential avenues for increasing financial sustainability were identified for Prosalud: (1) investing in new services that can be sold at a profit and will attract new clients, and (2) investing in new approaches that will result in selling more revenue generating services to existing clients. Both alternatives will be examined in a second round of OR studies. An experiment to test the cost recovery of a new service package will be tested, and a model for estimating costs and revenues of new services under consideration by Prosalud will be developed. CIES had very high costs, especially fixed costs, and their priority should be cost-control. APSAR does not recover its variable costs, indicating that every additional client served will result in greater financial loss. Unless it is possible to increase prices, the organization will be unable to increase its financial sustainability.

Because the three studies used the same methodologies to focus on similar services, this final report presents only the Prosalud study in its entirety. The APSAR and CIES results and recommendations are presented in a separate section of the final report. The APSAR and CIES methodology sections have been omitted to avoid redundancy.

I. INTRODUCTION

In many developing countries, non-governmental organizations (NGOs) providing reproductive health (RH) services face an uncertain future. Declining donor funding is forcing NGOs to look beyond their traditional social mission and become more business-like. As a first step, NGO managers must realize that their programs do not function in isolation, but as part of a market composed of providers with different service offerings, prices, and amenities. To compete effectively, managers of NGOs need to know the costs of producing services; the attitudes of clients toward proposed price changes; and characteristics of competing providers, including the market advantages and disadvantages of each. Evidence on costs, willingness to pay (WTP) and characteristics of other providers allows NGOs to develop strategies to exploit their comparative advantages and improve income and market share.

The capacity to generate and use such information does not exist within most NGOs providing RH services in developing countries. As a part of the FRONTIERS program emphasis on financial sustainability and capacity building, a workshop entitled "Operations Research Techniques to Improve Financial Sustainability" was offered in May 2003 to Latin American NGOs. The first half of the workshop provided an overview of techniques for improving sustainability through operations research. During the second half of the workshop participants from three Bolivian NGOs and one Honduran NGO developed proposals for small-scale projects. This report summarizes the three studies carried out by Prosalud/Bolivia to provide a picture of the competitiveness of the organization in terms of costs, prices, and amenities. The studies included: (1) a cost analysis of RH services selected on the basis of their importance to the agency either in terms of volume or price, (2) a willingness-to-pay survey (WTP) of Prosalud clients; and, (3) a comparative study of the prices, convenience and amenities provided by the agency and other competitors. The methodology and results of each study are presented separately in this report; and, because each study was conducted to contribute to a single decision – the type of cost recovery strategy that would be tested by Prosalud – they are followed by a single unified discussion section that details the nature of the decisions made with the help of the data gathered in these studies.

Prosalud/Bolivia

Prosalud is a not-for-profit organization offering preventive and curative health services in 32 clinics throughout Bolivia. In 2002, the most recent year for which data were available, the organization provided approximately 240,000 preventive services and 380,000 curative services. Full-time general practitioners and nurses and part-time specialists staff the clinics. Prosalud targets low- and medium income groups, a market it shares with the Ministry of Health (MOH), other NGOs, and some private for-profit clinics (PCs).

Prosalud's main challenge is to improve financial sustainability. In 2002, the agency recovered 73 percent of costs, a figure targeted to increase to 90 percent by 2007. The main strategy of Prosalud is to cross-subsidize services, which means that some services are offered at profitable prices that subsidize other services provided at less than cost.

Each study was conducted in 2004, in the same seven clinics located in La Paz and the suburb of El Alto (3 clinics), Santa Cruz (3 clinics), and Cochabamba (1 clinic). One clinic in La Paz and one in Santa Cruz served clients characterized as high income by Prosalud. The remaining five clinics served low to medium income clients. All clinics were selected because they had a large caseload that facilitated research procedures and increased the reliability of results.

STUDY I: A COST ANALYSIS OF PROSALUD SERVICES

Knowledge of service production costs is essential for all types of financial decisionmaking including cost containment, cost recovery, and income generation. This study identified costs and cost recovery rates of six major Prosalud services: (1) Gynecology, (2) General Medicine, (3) Pediatrics, (4) Family Planning, (5) Ophthamology, and (6) Ultrasound. These services were selected because they are the most important for Prosalud in terms of volume and/or revenue.

Study I: Methodology

A. Analysis of Unit Costs of Reproductive Health Services

"Unit cost" refers to the sum of all costs incurred to produce one unit of output. In this study, we distinguished between financial and economic costs. Financial costs are actual expenditures that programs make to purchase inputs, while economic costs include costs of all resources used to produce output. For example, economic costs include resources such as donated contraceptives and volunteer labor, whereas financial costs do not. Economic costs reflect the full resource requirements of the program, regardless of who bears the cost.

The process of conducting a cost study from an economic perspective includes four steps:

1. Define outputs of the program (in this case, clinical consultations of different types);
2. Identify all resources used to produce outputs;
3. Measure the amount of each resource that is used to produce one unit of output;
4. Assign a value to each resource

Health centers incur a range of costs in the process of producing consultations, including labor, supplies, and infrastructure.

1. Clinical Labor

Clinical labor is the cost associated with the physicians and nurses directly involved in providing services.

a. Physician labor

Prosalud uses a fee for service system in which physicians are paid according to the number of clients seen. These fees vary depending on health center location and type of consultation.

b. Nurse labor

Nursing is the other main component of clinical labor. Nursing services include direct support to physicians, as well as activities such as injections and care of minor injuries.

2. Administrative and Support Labor
Each health center employs staff in administrative or support functions. Administrative and support labor costs include annual salaries plus benefits.

3. Clinic Supplies and Medicines
Information on the type and quantity of medical supplies was collected from providers in each service delivery point studied. Prosalud accounting staff determined the unit cost of these items.

4. Capital Costs – Building and Equipment
Capital costs are associated with resources with a useful life of one year or more. Since these resources last for more than a year, costs must be annualized. Information was collected on equipment and furniture, replacement cost, and useful life of each item. Annualization was calculated using a discount rate of 5 percent.

Building costs were obtained in one of two ways, depending on whether the health center facility was leased or owned. If the facility was leased, the annual rental payment was used as the building cost. If the facility was owned, either an "equivalent rent" was derived from knowledge of rental values in the same vicinity, or the construction cost per square meter was estimated and annualized.

5. Other Expenditures
Miscellaneous costs (e.g., insurance, utilities, maintenance) were obtained by examining clinic records, as was the case with all other costs.

Study I: Results

Tables 1 and 2 present information on average unit costs for selected consultation types, by the major cost components. Table 1 shows costs of gynecology, general medicine, and pediatric consultations, while Table 2 shows family planning, ophthalmology and ultrasound costs. The total unit costs include all clinic-level costs, but do not include administrative overhead incurred in the main office in Santa Cruz.

Unit costs of the consultations included in Table 1 show little variation in the total cost, cost components, or range of costs across the seven study clinics. These outpatient consultations are all very similar in character and content, and it is not surprising that their costs are similar. The last row of the table shows that on average, Prosalud clinics are approaching full cost recovery for all three services. The lower cost recovery percentage for general medicine results from a lower fee, not because of higher costs of the consultation. Clinical labor is the largest cost component, followed by miscellaneous costs and administrative support labor. A price increase of 5 Bolivianos (approximately US$0.60) would bring cost recovery for this service to 100 percent.

Table 1: Costs (in US$) of Gynecology, General Medicine, and Pediatric Services

Component	Gynecology		General Medicine		Pediatrics	
	Mean cost	Range	Mean cost	Range	Mean cost	Range
Clinical Labor	1.69	1.14 - 2.37	1.38	0.79 - 1.84	1.73	1.14 - 2.41
Materials and Medicines	0.14	0.10 - 0.33	0.08	0.04 - 0.13	0.06	0.03 - 0.09
Equipment/ Infrastructure	0.17	0.09 - 0.28	0.17	0.09 - 0.28	0.16	0.09 - 0.26
Administrative Support Labor	0.72	0.42 - 1.06	0.72	0.43 - 1.06	0.72	0.42 - 1.06
Miscellaneous Costs	0.77	0.50 - 1.07	0.77	0.50 - 1.07	0.77	0.50 - 1.07
Total Cost	3.50	2.54 - 4.37	3.13	1.92 - 3.78	3.41	2.24 - 4.30
User Fee	3.32	2.50 - 4.37	2.51	1.50 - 3.12	3.26	2.5 - 4.37
% Cost Recovery	97%	64% - 128%	83%	51% - 110%	98%	65% - 139%

The three services in Table 2 are, on average, also very close to complete cost recovery. It should be noted that Prosalud policy requires that family planning services be provided free of charge, and therefore the cost recovery percentage for FP is zero.

Table 2: Costs (in US $) of Family Planning, Ophthalmology and Ultrasound Services

Component	Family Planning		Ophthalmology		Ultrasound	
	Mean cost	Range	Mean cost	Range	Mean cost	Range
Clinical Labor	2.02	1.60 - 2.29	2.03	1.60 - 2.29	3.19	2.39 - 4.08
Materials and Medicines	0.04	0.04 - 0.04	0.08	0.07 - 0.12	0.06	0.06 - 0.09
Equipment/ Infrastructure	0.16	0.09 - 0.22	0.36	0.09 - 0.96	0.17	0.09 - 0.28
Administrative Support Labor	0.71	0.42 - 1.06	0.73	0.42 - 1.06	0.72	0.42 - 1.06
Miscellaneous Costs	0.81	0.63 - 1.02	0.88	0.63 - 1.07	0.77	0.50 - 1.07
Total Cost	3.76	3.37 - 4.24	4.09	3.41 - 5.00	4.92	3.86 - 5.64
User Fee	0.00	0.00 - 0.00	4.37	4.37 - 4.37	4.87	1.62 - 6.25
% Cost Recovery	0%	0% - 0%	109%	88% - 129%	100%	36% - 162%

STUDY II: WILLINGNESS TO PAY FOR PROSALUD SERVICES

Pricing is a critical issue in sustainability. If prices are set lower than clients are willing to pay, the organization needlessly foregoes revenue. If prices are set higher than most clients are willing to pay, demand (and probably revenue) will decrease. Prosalud was considering raising prices as a strategy to increase financial sustainability, but they were not willing to completely sacrifice their mission of serving the poor to achieve sustainability. Thus, they needed estimates of the number of clients that would be lost at defined price increments, and accompanying changes in total revenue earned at each price point. Prosalud therefore decided to conduct a willingness-to-pay survey (WTP).

Study II: Methodology

1. Selection criteria for health centers and respondents

The study was carried out in all seven Prosalud centers included in the research project. Client exit interviews were conducted to obtain WTP data. Respondents were selected for interview if

they were seeking one of the studied services. After a client received her service, an interviewer explained the purpose of the study and obtained informed consent. The study used a quota sample: all clients receiving a service of interest were interviewed until a minimum of 400 interviews per-clinic was completed.

2. Survey Instrument

Four questions were used to elicit client WTP. The first question ascertained the amount paid for the service received. The second question asked whether the respondent would pay a moderate increase for that service. If the answer was "yes," the client was asked about WTP a higher price. If the answer was "no," the client was asked her WTP a lower price. Regardless of which price was accepted, all respondents were asked the highest price they were willing to pay for the service.

Study II: Results

1. Respondents

Total number of respondents was 3,660, with a mean of 523 (range 390-625) interviews per clinic.

2. Estimated revenues and demand at different price levels

Table 3 provides information on client willingness-to-pay higher prices for general medicine, gynecology and pediatrics. The first row of each section shows the mean price that clients are currently paying for the service, the proportion of the sample willing to pay the current price (100 percent), and the amount of revenue that Prosalud would earn from a cohort of 100 clients. The remaining rows of each section show how many clients would accept the price changes, and the impact on clinic revenues. For example, if the price of a general medicine consultation were increased from 20 (US$2.50) to 25 Bs (US$3.12), 54 percent of clients said they would pay the higher price, but the total revenue from the original 100-client cohort would decline to 1,318 Bs (US$164) from 2,014 Bs or US$252. Table 3 shows demand and revenues associated with the proposed price increases.

Table 3: Predicted Changes in Utilization and Revenue for Selected Services

General Medicine		
Mean Price	*% Mean WTP*	*Mean Revenue*
20	100	2,014
25	54	1,318
29	31	820
33	13	471
Gynecology		
Mean Price	*% Mean WTP*	*Mean Revenue*
27	100	2,717
32	54	1,760
37	30	1,150
42	14	625
Pediatrics		
Mean Price	*% Mean WTP*	*Mean Revenue*
26	100	2,625
31	49	1,513
36	24	892
41	11	478

STUDY III: RELATIVE MARKETING ADVANTAGES OF COMPETING PROVIDERS

Market segmentation allows programs to determine the salient characteristics of their clients and tailor their services accordingly. Prosalud targets the middle and lower SES urban groups in Bolivia. They share this market with the Ministry of Health (MOH), other NGOs, and private for-profit clinics (PC). Prosalud wished to know its relative competitive advantages and disadvantages in terms of prices, convenience (service hours), and amenities to determine if drawing clients away from competitors was a viable strategy in increasing their own client base and, hence, financial sustainability.

Study III: Methodology

1. Selection of study clinics and competitors

Prosalud staff in each of the selected clinics identified nearby clinics belonging to the Ministry of Health, NGOs, and private practitioners offering the same range of services and serving the same clientele (according to Prosalud staff) as Prosalud.

2. Services

Four services provided by specialists were included in the analysis: Family planning, Gynecology, Pediatrics, and Ultrasound. We also included another category called "General Medicine," which comprised a large variety of preventive and curative services offered at a single price by a general practitioner. Services were selected for their importance in terms of service volume and, in the case of Ultrasound, by the amount of net revenue produced. Not all competitors offered all services provided by Prosalud.

3. Prices

Service prices were those posted in Prosalud and competitors' clinics. Where service prices were not posted, facility staff was asked the prices of the services included in the study. No facility refused to provide prices.

4. Convenience

The measure of convenience was the number of hours per week that general medicine and specialist services were offered by the clinic.

5. Amenities

Included in this category were general appearance of the outside of the clinic building, the appearance and comfort of the clinic itself (availability of seating, lighting, condition of paint), and the cleanliness of bathroom facilities.

6. Procedure

Data on each of the three variables was gathered by observations (in cases where prices were not posted, information was obtained by interviews with clinic staff) at all Prosalud and competitor clinics. All clinic directors were informed of the purpose of the observation visits, and no competitor refused to participate in the study. Observers had spent several weeks in the Prosalud clinics as part of a previous research study, and were competent to make comparisons between Prosalud and competitors. Observations were recorded on structured data collection forms. In

most cases only a single visit was needed to make all observations and gather data on service availability and prices.

The observers rated the amenities provided by competitors against the same amenities offered by the relevant Prosalud health center on a three-point scale. (3=better than the Prosalud health center, 2=equal to the Prosalud center, 1=worse than Prosalud). Average scores were calculated for the three amenities categories. If the amenity score was larger than 2, the competitor amenity was superior to that of Prosalud; if less than 2, the amenity was inferior. Comparisons between Prosalud facilities and competitors were also made on the price of services, and hours each service was offered per week.

Study III: Results

1. Type of competition

Table 4 shows the number and type of competing providers that were selected for the comparisons with Prosalud facilities. There was considerable variation in the number of facilities that were identified as comprising the competition in each area, from a low of two facilities in the case of Ismael Suarez clinic, to a high of 17 facilities in Cochabamba. Also, the type of competitor selected for visits was not always in agreement with the socio-economic status (SES) of Prosalud clients visiting the reference clinic. For example, although the SES of Irpavi clients are relatively high, clinic managers selected three MOH facilities as comprising the competition for Irpavi. This situation may reflect a situation of limited competition (for example, there may not be any NGOs or private providers of RH services in the vicinity of Irpavi) or it may suggest an incomplete understanding of the criteria for selecting competitors.

Table 4: Prosalud Health Centers and Competitors

Prosalud Health Center/ Location	Client SES	Competitor		
		MOH	NGO	PC
Irpavi (La Paz)	High	3	0	0
Villa Fatima (La Paz)	Medium - Low	1	0	2
Alto Lima III (El Alto)	Low	1	0	3
Ismael Suarez (Santa Cruz)	High	0	0	2
El Carmen (Santa Cruz)	Medium - Low	0	3	6
Las Pampitas (Santa Cruz)	Low	0	5	1
Clinica de Cochabamba (Cochabamba)	Medium - Low	6	4	7
Total Competitors		11	12	21

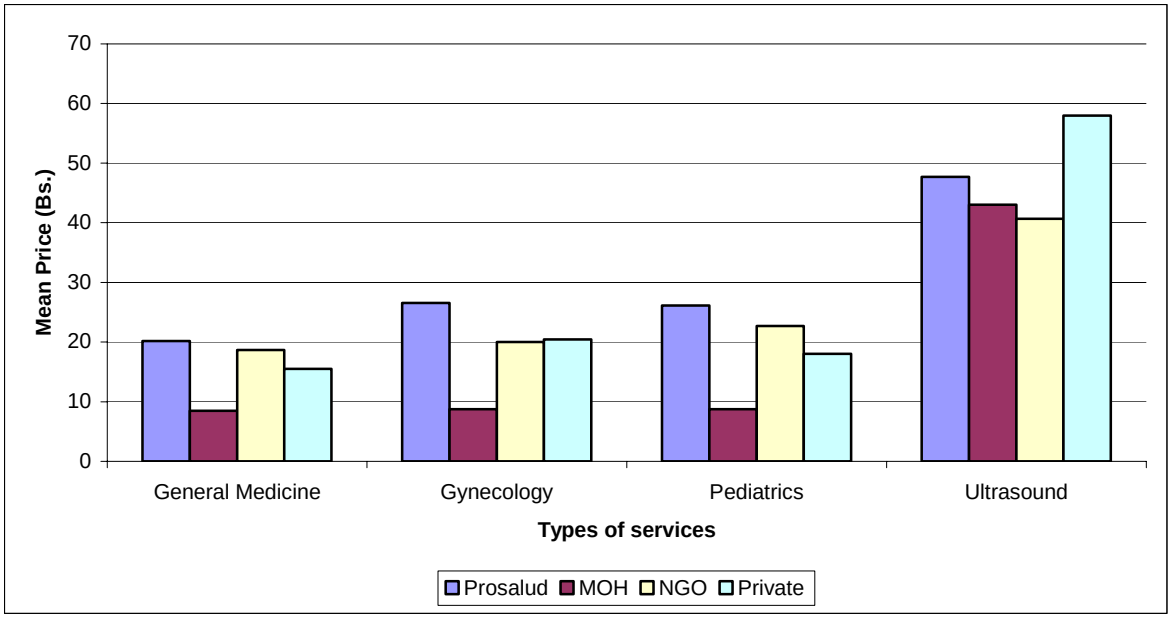
2. Visible quality of Prosalud health centers

On average, none of the three competitor types had visible quality scores higher than Prosalud's index score of 2.0 on a three-point scale. Facilities operated by private providers were the nearest to Prosalud, scoring 1.8 points, followed by MOH facilities (1.6 points) and then facilities operated by NGOs (1.3 points). The relative measure of visible quality, although somewhat crude, suggests that the average Prosalud facility is more appealing than the competition, considering visible amenities that are thought to matter in client selection of a health facility.

3. Prosalud and competitors' prices by type of service

One of the most important factors in selecting a service provider is price, especially in the middle and low-income markets in which Prosalud competes. Figure 1 compares fees charged by Prosalud and its competitors for pediatrics, gynecology, ultrasound, and general medicine. Family planning is not shown because Prosalud does not charge for this service and none of the competing service delivery points (SDP) provide family planning. Fees charged in MOH facilities tended to be the lowest; while the average price charged by Prosalud is higher than the competition in all cases except for ultrasound services provided in the private sector.

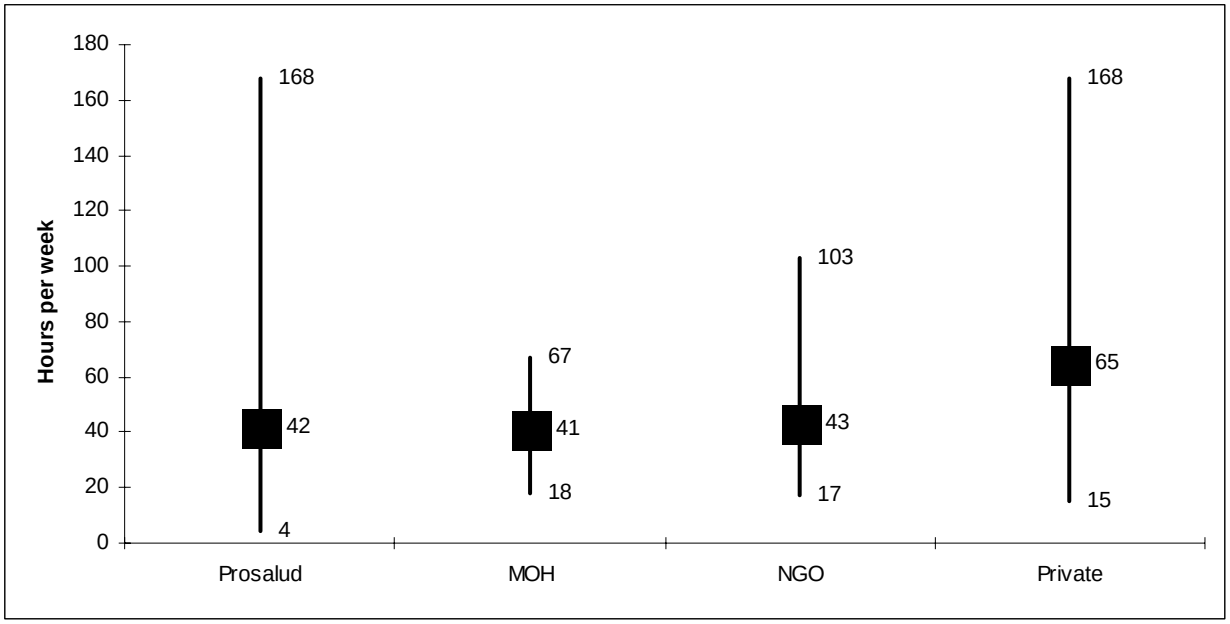
Figure 1: Prosalud and Competitors' Fees by Type of Service



4. Prosalud and competitors' hours of service of all types of services

Figure 2 presents information on the range of hours per week that services are offered in Prosalud clinics and in clinics operated by competitors. The box on each line indicates the average hours per week across all services. For example, Prosalud's service hours range from 4 hours per week to 168 (i.e., 24 hours per day, seven days per week), with an average of 42 hours per week. Prosalud's MOH and NGO competitors have similar average numbers of hours per week, but the range of hours is much smaller. Average hours per week and the range of hours per week are highest among private sector competitors, followed by Prosalud. The MOH had the most restricted hours.

Figure 2: Prosalud and Competitors' Hours of Service



CONCLUSIONS

Each of the services studied were important contributors to Prosalud costs and revenues. With the exception of family planning (which is offered free of charge), the services already have high levels of cost recovery ranging from 83 percent for General Medicine to 109 percent for Ophthamology. However, high cost recovery levels are associated with high prices. With the exception of ultrasound, Prosalud prices were higher than any of their competitors including the private, for-profit sector. Therefore, it is not surprising that only about half of clients were willing to pay more for services. Additionally, Prosalud hours were about the same as those of for-profit providers, and the level of amenities was also similar.

Providers fell into three groups and probably serve clients with different characteristics. Prosalud and the for-profit sector have relatively high prices, convenient hours, and attractive amenities. The ministry of health offered lower prices, limited hours, and relatively few amenities. Other NGOs studied were intermediate between Prosalud and the MOH in prices, hours and amenities. Although a comparison of the characteristics of the clients of the different providers was not conducted, it is likely that other NGOs and the MOH served a clientele with fewer resources that was willing to forego convenience and amenities in favor of lower prices. In contrast, Prosalud probably competes with the for-profit sector for the segment of the low to middle income market that is more willing to pay for amenities and convenience.

There seems to be little opportunity for the organization to reach financial sustainability goals by increasing the number of users of its profitable services or by raising prices. Possible alternatives are: (1) reducing costs, (2) investing in new services that can be sold at a profit and will attract new clients, or (3) investing in new approaches that will result in selling more services to existing clients.

UTILIZATION

The results of the studies helped Prosalud decide to test a strategy to sell more services to existing clients. If successful, the strategy will make a contribution to public health, reduce client costs, and increase agency revenues.

Medications and drugs account for a relatively small portion of income and profits, because Prosalud on-site pharmacies are underutilized, and commercially branded drugs produce low per-unit margins. Prosalud would like to increase profits earned in its on-site pharmacies through the sale of generic drugs offered as part of a service package that includes diagnosis, medication, and a follow-up visit. The intervention, if successful, will allow Prosalud to increase its profit margin while still providing medications at less than the price of branded products.

Prosalud managers believe that curative packages will make a contribution to both client health and organization sustainability. Currently, clients with acute conditions who present at Prosalud health centers for outpatient care receive a diagnostic consultation and, if indicated, a prescription that can be filled at an on-site pharmacy or at a commercial pharmacy. Many clients do not fill their prescriptions because of high commercial-sector prices of medications, or because the prescribed drug is not available in the Prosalud pharmacy. Other clients purchase only the amount of medication that they can afford, but not enough to fully treat their illnesses, and yet others forego needed revisits. Such consultations fail to address client needs, and also negatively affect public health through potential increases in drug resistance. The package offers such clients the possibility of an effective cure at a lower price than the current system allows. Prosalud managers also believe that packages will attract new clients who prefer a one-stop service to making separate trips to the health center and then to an off-site pharmacy.

As part of the strategy of long-term capacity building involvement with organizations that utilize the results of financial sustainability studies, FRONTIERS will support the above research with technical assistance and funding for the research.

CAPACITY BUILDING

In the current studies, Prosalud staff learned to conduct cost analyses, willingness to pay surveys, and benchmarking of their own amenities, prices, and service hours in comparison with those of other organizations. The curative package study will expose Prosalud staff to new research techniques including: (1) the use of time-series designs to measure changes in costs and revenues before and after the introduction of an intervention; (2) the training and use of mystery clients to measure provider compliance with instructions to offer the package; and, (3) the use of exit interviews to determine whether the client purchased the package or not, and the reasons behind the client's decision.

Although Prosalud's cost recovery has been improving over time, senior managers recognize that continued progress requires the agency to innovate and invest in new services and infrastructure. But such investments can be risky if decisions are based on internal agency politics rather than more objective estimates of the potential for increasing net revenue. To mitigate these risks the agency wishes to develop capacity at its regional offices (where many investment ideas originate

and all must be tested) to more accurately estimate the cost and revenues of proposed innovations. FRONTIERS will hold a two-day workshop and provide TA as part of a "desk-exercise" to evaluate the potential profitability of up to three proposed investments using the break-even analysis technique.

RESULTS FROM APSAR AND CIES STUDIES

Two other Bolivian agencies attended the workshop on sustainability-related OR in May 2003. The Asociación de Programas de Salud del Area Rural (APSAR) conducted a study of the costs of selected reproductive health services, while Centro de Investigación, Educación y Servicios (CIES) carried out the same three studies as Prosalud. The objectives and methods were the same as those reported in the Prosalud report. Results of these studies are presented below.

I. APSAR Cost Study

Table A1 presents results of the activity sampling study carried out in the outpatient area of Mallco Rancho Hospital. All three types of providers spent the vast majority of their time involved in productive activities, either direct contact with clients or non-contact productive tasks. Nurses spent relatively less time in direct contact with clients, and more time on non-contact productive activities, mainly administrative tasks and preparing the consultation room between clients. Non-productive time was extremely low across all provider types, with the gynecologist and ophthalmologist spending less than 2 percent of time idle or on non-work activities.

Table A1: Percent Time Spent in Various Activities, by Type of Staff

Activity	Gynecologist (n=10)*	Ophthalmologist (n=4)*	Nurse (n=3)*
Mean Time Spent in:	%	%	%
Direct Client Contact	60.1	72.8	41.8
Non-contact Productive	34.1	25.8	45.9
Approved Work Breaks	4.2	0.8	8.3
Non-productive	1.6	0.6	4.0
Total	100.0%	100.0%	100.0%

* n refers to the number of 8-hour workdays observed for each type of staff

Table A2 presents findings on the costs of services delivered in the outpatient clinic. The costliest RH services were IUD insertions and DMPA injections, mainly because of the cost of contraceptive commodities and the higher physician salary costs, which were related to the length of the visit. The cost of an ophthalmology consultation was nearly equal to the cost of an IUD insertion, but the components of total cost were very different. As mentioned above, commodity and labor costs were important elements of the cost of an IUD insertion, while the cost of an ophthalmology consultation was driven by labor and by costs of the specialized equipment used to evaluate client vision problems.

Table A2: Cost Components and Total Cost of Clinical Services, by Type of Visit

Cost Components	***Gynecology***	***Prenatal***	***Pap Smear***	***IUD Insertion***	***DMPA Injection***	***Ophthalmology Consultation***
Clinical Labor						
Physician Direct Cost	*7.24*	*7.24*	*7.24*	*8.79*	*8.79*	*6.74*
Physician Indirect Cost	*4.81*	*4.81*	*4.81*	*5.84*	*5.84*	*4.47*
Nursing Cost	*1.41*	*1.41*	*1.41*	*1.41*	*1.41*	*n/a*
Total Clinical Labor	**13.46**	**13.46**	**13.46**	**16.04**	**16.04**	**11.21**
Materials and Medicines	**3.86**	**0.95**	**1.99**	**18.57**	**8.63**	**2.65**
Equipment/ Infrastructure	**2.81**	**2.81**	**2.81**	**2.81**	**2.81**	**22.00**
Administrative Support Labor	**11.53**	**11.53**	**11.53**	**11.53**	**11.53**	**11.53**
Miscellaneous Costs	**18.16**	**18.16**	**18.16**	**18.16**	**18.16**	**18.16**
Total Cost	**49.82**	**46.91**	**47.95**	**67.11**	**57.18**	**65.55**
Client Fee	**11.00**	**0**	**5.00**	**17.00**	**9.50**	**11.00**
Cost Recovery	**22%**	**0**	**10%**	**25%**	**17%**	**17%**

The largest cost components were those associated with resources that are considered as indirect or overhead, such as administrative/labor support and miscellaneous expenditures. Mallco Rancho is a full-service hospital as well as an outpatient clinic, and has a larger administrative and supervisory staff than would typically be found in a stand-alone outpatient clinic. Thus, it is not surprising that costs per care unit would be high. This probably also explains why miscellaneous expenditures are higher on a per-visit basis than would be expected in an outpatient clinic.

Client fees are very low relative to the cost of services, as seen in the penultimate row of Table A2. Fees cover from 10 percent to 25 percent of the total cost, depending on the service. Put another way, APSAR is providing a subsidy to clients of 39 – 55 Bs. for every outpatient visit produced. Moreover, none of the service fees covers even the variable cost (clinical labor plus supplies) of the service, which means that there is no contribution from fee revenue to help cover APSAR's fixed costs.

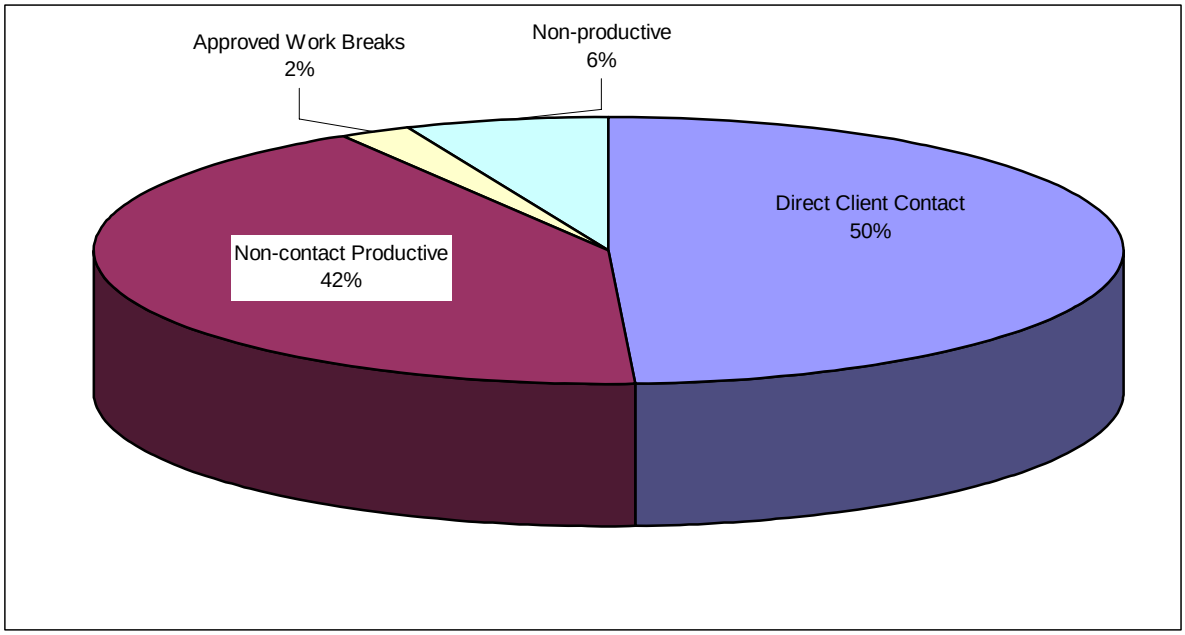
II. CIES Sustainability Studies

A. Cost Study

1. Activity Sampling

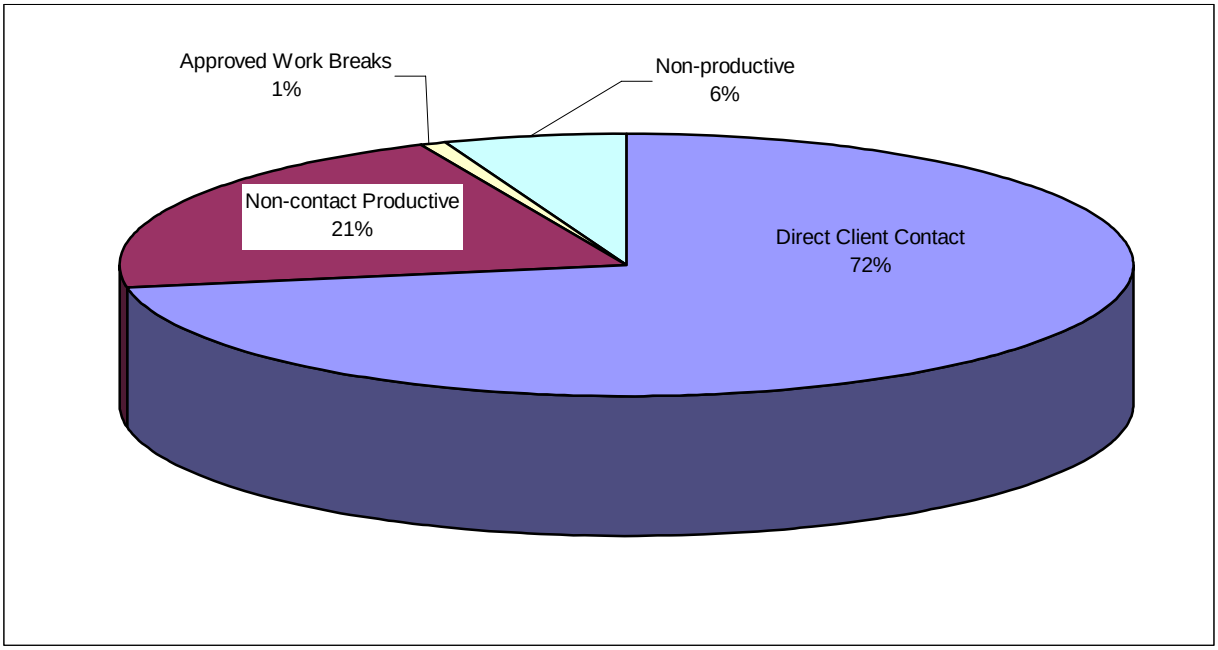
Figure A1 presents results of the activity sampling study that was carried out with medical directors in CIES clinics. Medical directors perform two main tasks: overall administration and supervision of the clinic, and direct patient care for general medicine clients. The activity sampling study found that CIES medical directors spent an average of 50 percent of their time in direct contact with clients; this proportion ranged from a low of 43.3 percent to a high of 59.9 percent across the three study clinics. A slightly lower proportion of time (mean 42%; range 35.3% – 52.5%) was spent in non-contact productive activities, including clinic administration and client-specific paperwork. The remainder of time was spent in approved work breaks and non-productive time. This last category represents the potential time available to serve more clients.

Figure A1: Time-use patterns of CIES Medical Directors



Time-use patterns among gynecologists were different than those among medical directors (see Figure A2). Gynecologists are not responsible for the same range of administrative duties, and this is reflected in a higher proportion of time in direct client contact (72% on average). Only 21 percent of the gynecologists' time was spent on administrative or non-contact time with clients. Non-productive time was low for both medical directors and gynecologists, indicating that nearly the entire work shift was dedicated to direct client care or administrative tasks.

Figure A2: Time-use Patterns of CIES Gynecologists



2. Costs and Cost Recovery for Selected CIES Services

Table A3 presents means and ranges of unit cost for gynecology, general medicine and family planning consultations. The total cost includes all clinic-level costs, but does not include overhead associated with the main CIES office in La Paz. Mean total cost was consistent across the three services, reflecting the similar duration and usage of disposable supplies in all cases. The range of unit costs across clinics varied from B.40 to B.60. Finally, the fee of B.18 to B.20 covered less than one-half of the cost of a consultation in the lower-cost clinic, and one-third of the unit cost in the higher-cost clinic.

Table A3
Cost Components and Total Cost of Gynecology, General Medicine and Family Planning Services, CIES

Component	Gynecology		General Medicine		Family Planning	
	Mean cost	Range	Mean cost	Range	Mean cost	Range
Clinical Labor	13,55	11,86 - 15,12	12,20	13,66 - 22,94	14,10	12,06 - 16,11
Materials and Medicines	3,18	2,45 - 4,65	3,52	2,95 - 4,65	3,45	3,35 - 3,65
Equipment/ Infrastructure	11,95	7,29 - 20,18	11,95	7,29 - 20,18	11,95	7,29 - 20,18
Administrative Support Labor	9,67	8,28 - 11,76	9,67	8,28 - 11,76	9,67	8,28 - 11,76
Miscellaneous Costs	9,78	6,14 - 12,95	9,78	6,14 - 12,95	9,78	6,14 - 12,95
Total Cost	48,12	40,59 - 60,40	50,82	40,37 - 60,40	48,94	41,69 - 59,87
User Fee	18,67	18,00 - 20,00	18,67	18,00 - 20,00	18,67	18,00 - 20,00
% Cost Recovery	39%	33% - 44%	38%	33% - 45%	39%	33% - 43%

Table A4 presents estimates of means and ranges of unit cost for pediatrics and ultrasound consultations. Pediatrics costs and levels of cost recovery were similar to the costs of the three services in Table A3. Ultrasound consultations had substantially higher costs for three reasons: first, clinical labor was more costly, reflecting the higher earnings of ultrasound specialists; second, material and medicine costs were higher, mainly due to the costs of the imaging paper used to provide the client with a photograph of her unborn child; and third, ultrasound machines are expensive, which pushed up the costs of equipment. The average fee for an ultrasound was nearly double that of the other services, but higher ultrasound costs resulted in a cost recovery percentage that was only slightly higher than that for the other services.

Table A4: Cost Components and Total Cost of Pediatrics and Ultrasound Services, CIES

Component	Pediatrics		Ultrasound	
	Mean cost	Range	Mean cost	Range
Clinical Labor	15,18	13,99 - 17,48	28,29	23,62 - 34,78
Materials and Medicines	2,89	2,37 - 3,15	20,83	6,40 - 28,05
Equipment/ Infrastructure	11,20	6,33 - 19,54	16,42	11,35 - 25,15
Administrative Support Labor	9,67	8,28 - 11,76	9,67	8,28 - 11,76
Miscellaneous Costs	9,78	6,14 - 12,95	9,78	6,14 - 12,95
Total Cost	48,72	41,98 - 61,32	85,00	79,95 - 94,11
User Fee	19,33	18,00 - 20,00	39,33	35,00 - 45,00
% Cost Recovery	41%	33% - 47%	46%	44% - 48%

B. Willingness to Pay

Table A5 provides information on client willingness to pay higher prices for pediatrics, gynecology, ultrasound and adolescent services. The total number of respondents was 1,139 with a mean of 380 (range 265 - 477) interviews per clinic. The first row of each section shows the mean price that clients are currently paying for the service, the proportion of the sample willing to pay the current price (100 percent), and the amount of revenue that CIES would earn from a cohort of 100 clients. The remaining rows of each section show how many clients would accept the price changes, and the impact on clinic revenues. For example, if the price of a pediatrics consultation were increased from 19 Bs (US$2.37) to 21 Bs (US$2.63), 70 percent of clients said they would pay the higher price, but the total revenue from the original 100-client cohort would decline from Bs 1,900 (US$237) to Bs 1,496 (US$187), a reduction of US$50.

Table A5: Predicted Changes in Utilization and Revenue for Selected Services

Pediatrics		
Mean Price	**% Mean WTP**	**Mean Revenue**
19	100	1,900
21	70	1,496
23	49	1,136
25	27	669
Gynecology		
Mean Price	**% Mean WTP**	**Mean Revenue**
19	100	1,900
21	75	1,535
23	50	1,128
25	24	605
Ultrasound		
Mean Price	**% Mean WTP**	**Mean Revenue**
37	100	3,700
39	58	2,214
41	35	1,376
43	9	352
Adolescent Services		
Mean Price	**% Mean WTP**	**Mean Revenue**
18	100	1,800
20	82	1,633
22	60	1,320
24	33	800

According to the WTP survey, demand is highly elastic for all services at all price levels tested. In this circumstance, even small absolute increases would trigger large declines in demand, resulting in lower total revenues. Higher price probes result in even larger declines in utilization and revenues.

C. Competition Study

1. CIES clinics and types of competitors

Table A6 shows the number and type of competing providers that were selected for the comparisons with CIES facilities. All three clinics defined themselves as serving low-middle-class clients, and each clinic identified 2-3 MOH clinics as constituting part of their competition. Clinic staff in Cochabamba and Santa Cruz identified many more NGO and private clinics as competitors than did staff in the La Paz clinic.

Table A6: CIES Clinics and Competitors

CIES Clinic/ Location	Client SES	Competitor		
		MOH	NGO	PC
La Paz Clinic	Medium - Low	3	1	1
Cochabamba Clinic	Medium - Low	2	5	5
Santa Cruz Clinic	Medium - Low	3	7	8
Total Competitors		**8**	**13**	**14**

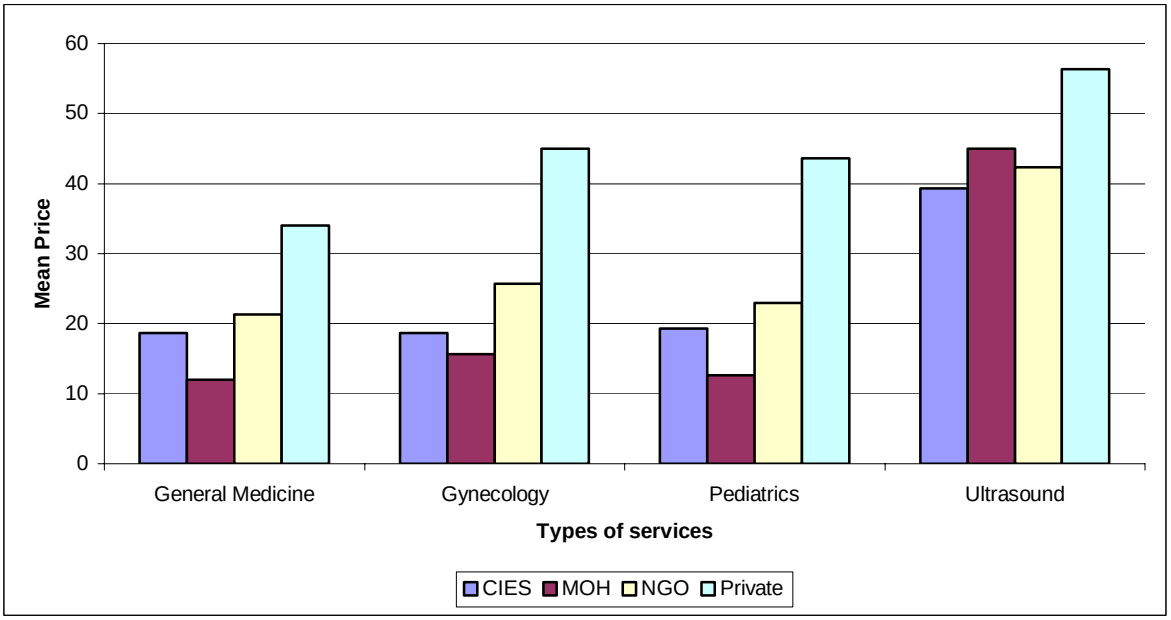
2. Visible quality of CIES health centers

Visible quality scores across the three CIES facilities were slightly lower than those of the three types of competitors. These average scores mask important differences between clinics, however. In La Paz the amenities in CIES were rated as approximately equal to those of the competition, while in Cochabamba the competition had substantially higher ratings, and in Santa Cruz the competition had lower ratings.

3. CIES and competitors' prices by type of service

One of the most important factors in selecting a service provider is price, especially in the middle and low-income markets in which CIES competes. Figure A3 compares fees charged by CIES and its competitors for pediatrics, gynecology, ultrasound, and general medicine. CIES fees are higher than those charged in the MOH, and lower than other NGOs; fees charged by private providers for gynecology and pediatric consultations were more than twice as high as CIES fees.

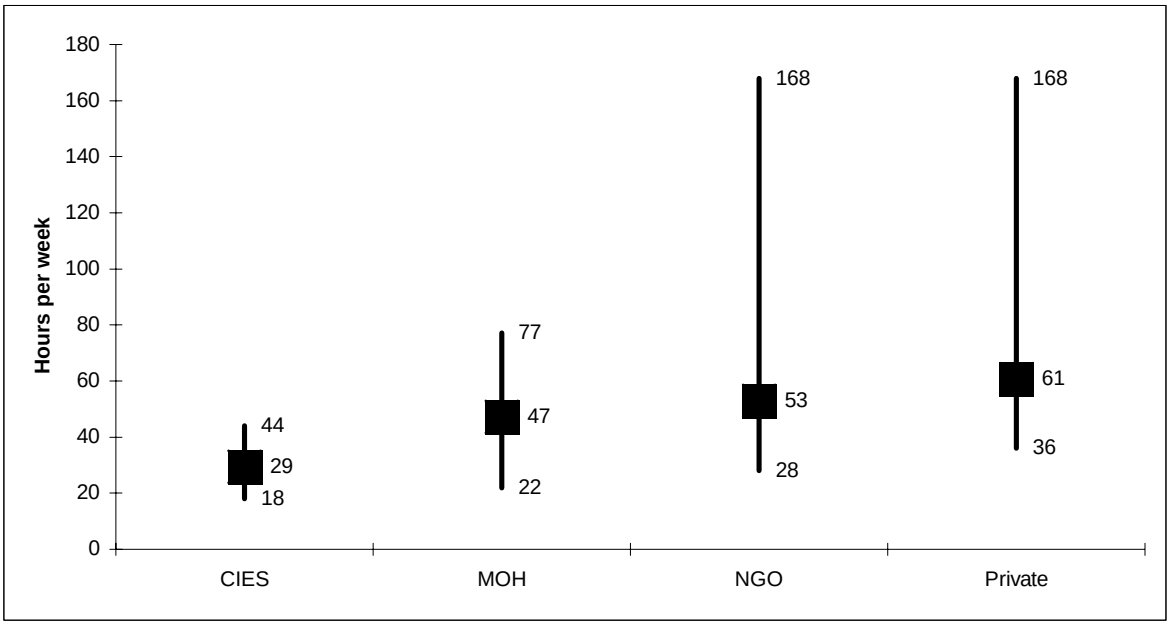
Figure A3: CIES and Competitors' Prices by Type of Service



4. CIES and competitors' hours of service of all types of services

Figure A4 presents information on the range of hours per week that services are offered in CIES clinics and in clinics operated by competitors. The box on each line indicates the average hours per week across all services. For example, CIES service hours range from 18 to 44 hours per week, with an average of 29 hours per week. CIES NGO and private sector competitors offer the widest range of service hours, up to a maximum of 168 hours per week (i.e., 24 hours per day, 7 days per week). MOH facilities occupied an intermediate position between CIES clinics and the NGOs and private sector.

Figure A4: CIES and Competitors' Hours of Service for Five Types of Services (General Medicine, Gynecology, Family Planning, Pediatrics, Ultrasound)



Conclusions and Utilization

APSAR and CIES both face a difficult struggle in reducing the level of subsidy provided to users of clinic-based services. On the cost side, there appears to be some potential for reducing unit costs of services by increasing the number of clients. In the case of APSAR, however, limits of current fixed capacity would soon be reached, necessitating additional staff and higher costs. But considering the population served by the hospital (i.e., poor, dispersed) even modestly larger client loads do not appear likely. On the revenue side, meaningful price increases probably are not feasible in this context. Thus, APSAR will continue to require donations of money, equipment and volunteer labor from foreign faith-based groups for the foreseeable future.

CIES costs were considerably higher than Prosalud's for the same services, and cost control would be an important first step toward improved sustainability. But clinical staff had low amounts of unproductive time, indicating little potential for increasing output within current staffing constraints. A major challenge will be to control clinical and administrative support

labor costs. Clinical labor includes the shared risk (riesgo compartido) payment to some physicians offering pediatric and ultrasound services, which should be adjusted based on market conditions (i.e., the amounts that physicians are receiving at competing institutions) and not simply increased by a fixed percentage every year. CIES also should evaluate whether paying all physicians on a shared risk basis could potentially reduce costs of clinical labor. The other largest cost elements are all fixed costs. The cost per unit of output for these elements will decline only if: (1) the cost itself is reduced through elimination of some expenditures, or (2) output increases. Making more intensive use of fixed resources is one of the best ways to improve sustainability. Unit costs decline with every extra client served, and each extra client contributes additional revenue to help finance the fixed costs. CIES management must seek ways to achieve higher output from the same investment in fixed resources. CEMOPLAF (Ecuador) has been very successful in this regard, and may be a good resource to consult.

There appears to be little potential currently for CIES to generate significant resources through fee increases. Clients resoundingly rejected the idea of even small price increases for all services studied. Although CIES prices were found to be slightly under the level of NGO competitors, CIES visible quality scores also were lower. Thus, price increases likely would not be tolerated by clients and could lead to net declines in total revenues. The agency should seek to improve amenities at its clinics before attempting any fee increases, and then any increases should be very small to gauge actual client response.

Data collected in the three studies has been used in the CIES strategic planning process. The main benefit of the research for APSAR is the development of a cost-estimation capacity by its staff.

APPENDIX I

FORMULAS FOR CALCULATING PER UNIT COSTS

Physician Labor
Physician cost per consultation = Sum of fee-for-service payments/Total 2003 physician consultations

Cost of nurse labor
Nursing Cost per Consultation = Total 2003 Annual Nurse Salary and Benefits x Proportion of all nursing activities that were consultations / Total 2003 Consultations

Administrative and Support Labor
Administrative and Support Labor per Consultation = Total 2003 Annual Salary and Benefits of Administrative and Support Staff / Total 2003 Consultations

Capital Costs
Capital Cost per Consultation = (Annualized costs of visit-specific equipment / Total 2003 consultations of that visit type) + (Annualized costs of shared equipment / Total 2003 consultations of all types) + (Annual building cost / Total 2003 consultations)

Other Expenditures
Miscellaneous Expenditures per Consultation = Total 2003 Miscellaneous Expenditures / Total 2003 Consultations