HEALTH CARE DECENTRALIZATION IN PARAGUAY:

EVALUATION OF IMPACT ON COST, EFFICIENCY, BASIC QUALITY, AND EQUITY

Baseline Report

MEASURE Evaluation Technical Report Series, No. 4

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Executive Summary

During the past decade, policymakers responsible for the development of national health policy have looked increasingly at the decentralization of health care services as way to improve the delivery of health services. It is generally believed that by replacing a centralized and hierarchical administrative system with one that is controlled at the local level, a health system will be more efficient, more responsive to local needs, and provide better quality services. To date, however, there has been relatively little scientific evaluation of the health and other effects of health system decentralization.

Paraguay's decentralization initiative presents a unique opportunity to examine the impact of this process for two reasons. First, it has been possible to collect information from health facilities and households before the decentralization, and second, the phased implementation of decentralization has enabled the identification of a control group, thus including in the analysis the performance under the centralized regime.

This report presents the results of the first phase of the study, which consists of establishing baseline measures for key performance indicators. These results present the status of the health care system in the study municipalities prior to implementation of decentralization.

Study Objective

The objectives of this study are to identify and to quantify changes in the health care system that result from the transfer of management control for basic health services provision from the central to municipal governments in Paraguay. Specifically, this study examines the impact of decentralization in the following four areas:

- Cost of providing basic health care services
- Efficiency in the use of resources to provide basic health services
- Basic health service quality at health facilities and from the client's perspective
- Patterns of health service use and equity in the use of health services by the population

Health Reform in Paraguay

The health reform process in Paraguay can be divided into two phases. The first phase (1990-1995) is characterized by the "deconcentration" of administrative responsibilities within the structure of the Ministry of Health (*Ministerio de Salud Público y Bienestar Social*, MSPBS). During the first phase, certain administrative responsibilities were transferred from the central levels of the MSPBS to the Health Regions (*Regiones Sanitarias*).

The second phase of health reform, which started at the end of 1995, involves the transfer of key managerial responsibilities from the central to municipal governments. The main municipal authorities are directly elected by the municipality's population. Through decentralization, the municipal government assumes administrative, supervisory and monitoring responsibility for public facilities. The municipal government, in turn, delegates the responsibility of administering these facilities to a Local Health Council, which prepares and implements a Local Health Plan, controls the budget, and supervises the functioning of the public facilities. The facilities subject to decentralization include district hospitals, health centers and health posts.

Paraguayan Law No. 1032/96, enacted in December 1996, provides the legal framework for the decentralization initiative. The explicit objective of health service decentralization, as stated in the law, is to improve the efficiency and quality of service provision, improve the equity of service provision and promote community participation in the planning and delivery of health services.

Implementation of the Local Health Plan is funded through central government funds, contributions from the municipality and user fees. The municipality contributes at least 5% of its budget to implement the Local Health Plan, and facility revenues are deposited directly into a municipal account that is earmarked for health activities. At the end of 1998, 23 (17 in Central, two in Cordillera, and four in Misiones) municipalities had signed decentralization agreements. In 1999, 17 of the 23 municipalities renewed them.

Study Design and Instrumentation

To assess the impact of the decentralization, the study has a pre- and post-decentralization design with a control group. This evaluation design requires the measurement of baseline indicators for each of the four areas of performance before the decentralization is implemented. Then, the measurement of these same performance indicators for the same units is repeated two years after the implementation of decentralization. The units of analysis include health facilities that provide basic health services, their clients and the population of each municipality.

This design allows for two types of analysis. First, the performance of the health system before decentralization can be compared with performance after decentralization for the municipalities adopting the decentralization model. Second, the performance of health systems in municipalities where decentralization has been implemented can be compared with the performance in those municipalities where it has not.

This study uses data from facilities, clients and households in 20 municipalities in the departments of Central, Cordillera and Misiones. These 20 municipalities constitute the main study group, which consists of 11 municipalities that signed decentralization agreements and nine municipalities that did not. Furthermore, to obtain a more complete description of the service supply environment, data were collected in 19 municipalities that are geographically adjacent to the municipalities in the main study group. Baseline data were collected during the second half of 1998.

The study focuses on the departments of Central, Cordillera and Misiones for two reasons. First, most of the decentralization initiatives have taken place in these departments. Second, these departments are priority regions for USAID. Over 70% of the municipalities in each department are included in the study.

Data collected through a facility survey, a client-exit survey and a representative household survey are used to generate the baseline results presented in this report:

- Facility Survey: detailed facility questionnaires and staff time-logs were administered in 52 public health facilities in the main study group municipalities. These data were used to define key indicators of efficiency, cost, equity and basic quality. We also surveyed 72 public facilities in adjacent municipalities and 19 private facilities in both the main study group and adjacent municipalities.

- Client Exit Interviews: 1,261 clients attending facilities in the main study group, including private facilities, were surveyed. Client data were used to construct indicators of service utilization, household social and economic status, and client perceptions of service quality.

- Representative Household Survey: Data on the health status, social and economic status, and health service utilization patterns were collected from a representative sample of households in the three study departments. The sampling frame was adjusted and a module was added to the 1998 *Encuesta Nacional de Salud Materno Infantil*, ENSMI. A total of 2,150 interviews were conducted in the three departments, and 1,200 were completed in the main study group municipalities.

Baseline Results

The baseline data provide a picture of the health care, health behavior and the population's health status prior to any changes in the administration and delivery of basic health services that might result from decentralization.

Service Availability

The range of health services available is important for examining the quality, equity, efficiency and cost of providing services. In terms of basic health services, this study examined the public and private availability of family planning, maternal health, and infant and child health services.

Family Planning

- Pills, condoms and IUDs were available in all of hospitals and 98% of health centers. Seventy-seven percent of health posts provided pills, 75% provided condoms, and 42% provided IUDs.
- Public facilities in Cordillera had the highest availability of pills and condoms (100%), followed by Misiones (94%), and Central (84-86%). Public facilities in Asunción had the lowest availability of both methods (69%). IUD availability in public facilities was lowest in Misiones (56%), Central (61%) and Asunción (66%), and highest in Cordillera (82%). Injection availability in public facilities was lowest in Cordillera (41%) and highest in Misiones (94%).
- Compared to hospitals, heath centers and health posts had the most problems with stockout of reversible methods. Stockout conditions may reflect a high demand for reversible family planning services in public facilities, specifically at health centers and posts. The stockout problem was particularly severe for injections which were out of stock across all public facility types. More than 50% of facilities in Cordillera and Misiones experienced stockouts of injections.
- Private availability of reversible methods was low: 32% offered pills and condoms and 47% offered IUDs and injections. Private family planning availability varied also by facility type, method and department.

Infant & Child Health Services

- All of the hospitals offered the five main infant and child health services. Almost all of health centers offered diarrhea treatment, ARI treatment, immunizations and perinatal care; 84% offered growth monitoring.
- Availability of infant and child health services at health post was lower than in more sophisticated facilities: 94% offered diarrhea treatment; 86-88% offered ARI treatment and polio/DPT/Measles immunizations; 72% offered BCG immunizations; and between 61 and 68% offered growth monitoring and perinatal care.
- Between 74 and 84% of private facilities offered infant and child health services. Immunization services, offered in 74% of private facilities, were the least available service.

Maternal Health Services

- Prenatal care and tetanus toxoid vaccination services were available in all hospitals and in 98% of health centers. Tetanus toxoid vaccinations were available in 84% of health posts, while only 77% offered antenatal care. Folic acid and iron supplements were less available in health centers (28% and 49%, respectively) and posts (23% and 45%, respectively) than in regional hospitals (33% and 67%, respectively).
- Delivery services were available in all public hospitals, 74% of health centers and 22% of health posts. The capacity to manage complicated delivery was present in all regional hospitals, 67% of district hospitals and only 42% of health centers.
- Of public facilities sampled, post-partum care and cancer screening (PAP) were available in all public hospitals, 95-98% of health centers, and in roughly 70% of health posts.

User Fees

- The prices charged in private facilities for the health services examined in the study were around ten times higher than the prices charged by public facilities. Most of the public facilities seemed to have a mandated, set price for each service, and they seldom deviated from that price. The pricing patterns were similar across most public facilities in the sample.
- Sixty-seven percent of district hospitals and health centers charged for family planning services, while 48% of health posts and 67% of regional hospitals offered family planning free of charge.
- Over 85% of health centers and health posts charged for services requiring more time to deliver (e.g., pre- and post-natal care, pap smears), while a smaller percentage (13-33%) charged for lower-intensity services such as tetanus toxoid immunization and nutritional supplements.
- In health centers and health posts that charged for services, there appeared to be little association between the average price of a service and the effort required to provide the service.
- Almost all sanatoriums charged for child health services.

Staff Availability

- Physicians (general doctors, pediatricians, OB/GYNs), licensed and auxiliary nurses, and technicians staffed hospitals and health centers. One-half of public facilities in Misiones had no physicians, while public facilities in Central and Cordillera had a median of one physician.
- Health centers in the sample had a median of four physicians, one licensed and seven auxiliary nurses, and one health technician.
- Auxiliary nurses were the main health providers at health posts. Health posts had a median of only one auxiliary nurse. The auxiliary nurse was the most common type of provider in all types of facilities.
- Private facilities in the sample had a median of two general doctors, two pediatricians, one OB/GYN, and four auxiliary nurses.

Staff Training

- Almost all health centers had at least one staff member trained in family planning, diarrhea and ARI management, and 16% had no staff member trained in delivery.
- Ninety-three percent of health posts had at least one staff member trained to manage diarrhea, 84% had staff member trained to manage ARI, and 75% had a staff member trained to deliver family planning services. Only 36% had a staff member trained in attending deliveries, which is a service offered by few health posts.
- Overall, though private facilities tended to have a higher median number of physicians than health centers, the proportion of private facilities with staff trained to provide family planning, delivery, and ARI and diarrhea management was generally lower than in public health centers.

Group Talks and IEC

- More than 90% of hospitals and health centers offered group talks.
- Cordillera had the highest percentage (95-100%) of public facilities that offered group talks on key health themes. Asunción lagged behind other departments in terms of the percent of public facilities that offered family planning (69%) and maternal health (76%) talks.
- Health education by means of group talks was a distinctive characteristic of public facilities. Between 11 and 32% of private facilities offered group talks on family planning or MCH themes. Only one of every ten private clinic offered family planning talks.

Medicine and Equipment Supply

- Cordillera had the highest proportion of public facilities with a stock-outof vaccines (10-40%). While Misiones experienced no vaccine stock-outs, it had the highest proportion of facilities with stockouts of syringes (38-78%) and gloves (60-100%).
- The lack of vaccines, syringes, gloves and oral rehydration salts (ORS) was a problem in health centers and health posts. The lack of equipment and supplies to administer vaccines was an important problem for health centers.
- Roughly 13% of health centers and health posts ran out of tetanus toxoid vaccine, and 7% of health centers ran out of BCG vaccine. Of equal or greater concern was health center stock-out of disposable and non-disposable syringes (27-46%) and disposable and non-disposable gloves (36-46%). The lack of these items may have disrupted provision of immunization and injectable contraceptive services as well as jeopardized infection control practices.
- Health posts were the only type of facility to experience stock-out conditions for all vaccines, ranging from 11% for polio and DPT to 20% for BCG. The proportion of health posts that experienced a stock-out of syringes and gloves was comparable in magnitude to stock-out levels at health centers.

Facility Supervision

- In Misiones, 40% of public facilities received supervisory visits for family planning, MCH and immunization services within the three months preceding the survey. In Cordillera, 20% of public facilities received immunization supervision, 30% received family planning supervision and 40% received MCH supervision in the three months preceding the survey.
- Despite greater accessibility of public facilities in Central, facilities in this department suffered from inadequate and non-existent supervision for the three types of health services. More troubling was the high proportion of public facilities that had never been supervised for family planning (16%), MCH (23%) or immunization services (13%).
- One hundred percent of regional and district hospitals received supervisory visits for family planning, maternal and child health, and immunization services in the three months preceding the survey. Supervision at health centers was substantially lower than at hospitals.
- Health post supervision was weak. Between 27 and 33% of health posts received no family planning, MCH or immunization supervision in the six months preceding the survey, and between 17 and 23% had never been supervised.

Cost of Basic Health Services

Total Recurrent Cost

A total of 709.6 million Guaraníes (US$252,091) per month was spent on staff, medicines and recurrent overhead expenses at public health facilities in the primary study group for which complete cost estimates were constructed (47 of 52).

On average, sampled municipalities in Misiones had the highest per capita monthly expenditure (2,281 Guaraníes, US$0.81), and sampled municipalities in Corillera had the lowest (921 Guaraníes, US$0.33). In the sampled municipalities in Central, average per capita monthly expenditure was 946 Guaraníes (US$0.34).

Distribution of Total Recurrent Cost by Component

Overall, medical staff costs constituted 63% of the total recurrent cost, followed by 21% for medicines and supplies, 13% for administrative staff cost, and 3% for other recurrent overhead expenses. Medical staff costs were distributed as follows: physicians (31%), nurses (27%), and nurse auxiliaries (41%). This distribution varied by facility type and department.

Distribution of Total Recurrent Cost by Service Type

Of the total expenditure (including staff time) to provide basic health services, 38% was expended for maternal health services, 21% for infant and child health services, 38% for "other" services, and 3% for family planning services.

Overall, deliveries were the most costly service to provide, averaging 148,942 Guaraníes (US$52.91) per normal delivery, while immunizations were the least expensive service, averaging 1,594 Guaraníes (US$0.57) per case.

The per visit cost for selected basic health services were 7,429 Guaraníes (US$2.64) for prenatal care, 6,896 Guaraníes (US$2.45) for family planning, 7,117 Guaraníes (US$2.53) for treating ARI, and 5,799 Guaraníes (US$2.06) for treating diarrhea.

With the exception of immunizations and family planning services, per visit cost for other basic health services was higher in health posts than in health centers or hospitals.

Efficiency of Basic Health Services

Staff Productivity

Overall, physicians had the highest productivity, attending an average of 5.4 patients per hour, compared to nurse auxiliaries (4.4 patients/hour) and nurses (3.0 patients/hour). For all types of health providers, productivity was highest in the public facilities of Central, while nurse and nurse auxiliary productivity was lowest in Cordillera.

Staff Utilization Rates

Overall, health providers spend an average of 70% of their time in direct patient contact (utilization rate). By type of provider, 77% of physician time was spent with patients compared to 54% for nurses and 32% for nurse auxiliaries.

By department, utilization rates for physicians (96%) and nurse auxiliaries (42%) were higher in Central than in Misiones and Cordillera, while nurse utilization rates were highest in Misiones (83%). Utilization rates for all types of health providers were highest in hospitals (84%) and lowest in health posts (42%).

Utilization rates for all types of health providers were highest in hospitals (84%) and lowest in health posts (42%).

Utilization Rate for Inpatient Beds

By department, hospital bed utilization rates were higher in Misiones (43%) than in Central (25%), and health center bed utilization was higher in Central (19%) than in either Misiones (15%) or Cordillera (10%).

Overall, the average inpatient-bed utilization rate (weighted by the number of beds at each facility) was low, with only an average utilization rate of one bed for every five. Bed utilization rates were highest in hospitals (30%) and lowest in health posts (2%).

Maternity patients used the majority (69%) of inpatient bed-days, followed by pediatric patients (18%) and other medical cases (13%).

Cost Recovery

Overall, cost recovery rates were highest for deliveries, with roughly 66% of the recurrent cost of providing this service recovered in user fees. For all other basic health services, user fees accounted for 30% or less of the recurrent cost of providing the services.

Client Exit Interview and Client Perspections on Quality of Service

Client Characteristics and Client Perceptions of the Quality of Care in Public Facilities

- Among public-sector clients, 66% had completed only a primary level education; the average monthly income was low (678,592 Guaranies, US. $241); only 38% were employed; and 91% had no health insurance (social security or private).
- Overall, 93% of clients reported that they were satisfied with the facility's hours of operation.
- Waiting times were long. Public facilities have an average of 57 minutes and a median of 35 minutes. The longest waiting times were in district hospitals, and the shortest in health posts. Overall, 31% clients reported dissatisfaction with the length of the wait.
- Duration of the consultation was relatively short – approximately 10 minutes. For most clients the short duration was characteristic of all facilities and all departments. Ninety-three percent of clients stated that they were satisfied with the length of the consultation, and 94% reported that there was sufficient time during the consultation for their concerns to be addressed. About 95% of clients reported that the level of privacy during their consultation was sufficient and that they had received a clear explanation from the provider.
- Almost all clients interviewed would return to the same facility to obtain medical care, though 11% of clients reported that the condition for which they had sought care was not resolved by the visit or that they were referred elsewhere for care. This percentage of unresolved health conditions ranged from 7% in Cordillera to 18% in Cordillera.
- In general, 29% of clients stated that the prescribed medication to treat their condition was not available in the facility at the time of their appointment. This percentage ranged from 21% in Misiones to 36% in Cordillera. Perceived lack of medicine was greater among clients in health centers (39%), district hospitals (37%) and regional hospitals (29%) than among health post clients (10%).
- Private facility clients were richer, more educated and had a higher level of health insurance coverage than public-facility clients. Like clients at public facilities, private-sector clients had a favorable perception of service quality, except in the perception of waiting time and the availability of medications.
- Public clients waited longer than private clients to be attended, and the duration of the consultation was shorter. Overall, 69% of public clients perceived the length of waiting time to be acceptable compared to 86% of private clients. Though 93% of public clients and 98% of private clients perceived that the duration of the consultation was sufficient, the average (17 minutes) and median (15 minutes) durations of a consultation for private clients were substantially longer than the average (10 minutes) and median (10 minutes) durations for public facility clients.
- A lack of alternative sources of medical care or courtesy bias may account for the high levels of satisfaction reported by clients on the various quality indicators.

Equity in Use of Services

- Forty-six percent of public facility clients were from the poorest households and 5% were from the wealthiest, while two out of five private facility clients were from the richest households and 1% were from the poorest.
- The relationship between individual income and total payment for health services was small and positive, suggesting that monthly income might not have an effect on the amount paid by clients for health services. In other words, the poor as well as the wealthy paid a similar amount for their health services.

- Ninety-one percent of public facility clients reported that they had no health insurance coverage (social security or private insurance).

Composition of Health Expenditure

- Health expenditures for clients who attended public facilities were relatively low. Public clients who were not charged for their health services reported earning an average income lower than the rest of clients.
- Ninety-eight percent of public clients covered their total health expenses without assistance from a third party. However, 19% of public clients perceived the consultation to be expensive or very expensive.
- Forty-eight percent of medical expenditures was spent on consultation fees, 31% on medical supplies, and 21% on medications. The median expense for a medical consultation was 3,000 Guaraníes (US$1.07).

Client Place of Residence

- Public facilities served primarily individuals who lived in close geographic proximity. More than 91% of clients lived within 10 kilometers of the health center where they sought care, and 92% lived within 30 minutes of care.
- The proportion of clients from municipalities other than the one in which their source of care was based did not exceed 10%, except in three municipalities of Central where between 16 and 27% of clients came from other municipalities.
- In terms of the efficiency in the design of taxes, these findings suggest that people who pay local taxes may be the principal users of the health system supported through this tax revenue.

Patterns of Health Service Utilization

Prenatal Care

- Overall, 97% of pregnant women had at least one prenatal consultation during their last pregnancy.
- There were no substantial differences by level of wealth in the proportion of women who received at least one prenatal visit: 93% of the poorest and 98% of the wealthiest women attended at least one visit. Wealthy women sought care earlier and more frequently during their pregnancy than poor women.
- Overall, 63% of women in the sample received prenatal care at public facilities, which were also the leading source of prenatal care in each department. Wealth and the proportion of women who obtained prenatal care at public facilities were inversely related: 85% of pregnant women in the poorest wealth group received care at public facilities compared to 25% in the wealthiest group. Private medical facilities were the source of prenatal care for almost 20% of pregnant women overall, and the second most important source in Central (25%) after public facilities.
- The poorest women paid higher indirect and direct costs for prenatal care than the wealthiest women did. Overall, the total direct cost of prenatal care was low – roughly 60% of women spent between 0 and 3,000 Guaraníes (US$ 1.07) during their last visit.
- Nevertheless, poor women were less likely to benefit from free care than wealthy women: 50% of pregnant women in the wealthiest group paid no charge for their prenatal care compared to 25% in the poorest group.

Delivery Care

- Overall, a majority (83%) of live births in the five years prior to the survey occurred in public, private, or semi-public institutions. Most (91%) births in Central occurred in medical facilities, compared to 53% in Cordillera and 58% in Misiones. Overall, 12% of births were delivered at home. Cordillera

had the highest rate of home delivery (33%), followed by Misiones (24%) and Central (5%). A traditional midwife (8%) or obstetric nurse (2%) attended one of every ten home births.

- Delivery location was associated with wealth levels. The proportion of institutional births among the poorest women was only 59% compared to 99% among the wealthiest women. Also, 48% of births in the wealthiest households occurred in private facilities compared to 4% of births in the poorest ones.
- Overall, 18% of births took place in an unintended location due primarily to insufficient time to reach the desired facility (24%), referral to another facility (22%) and failure to be attended at planned facility (21%). The poorest women cited lack of time (41%) and referral elsewhere (34%) as key reasons, while 78% of the wealthiest cited "other" reasons.
- Twenty-nine percent of institutional births were by Cesarean section, with little variation by department or level of wealth.
- Overall, one-half of women traveled up to 30 minutes to reach the source of delivery services and paid no charge for their delivery care. Poorer women had both higher indirect and direct delivery care costs. The poorest women paid higher average (10,382 Guaraníes, US$3.69) and median (500 Guaraníes, US$0.18) transportation costs than the wealthiest women who paid an average of 719 Guaraníes (US$0.26) and a median of zero.
- Regarding direct costs, 18% of the poorest women received delivery care free of charge compared to 38% of the wealthiest.

Postnatal Care

- Overall, 96% of children born in the five years preceding the survey received postnatal care, and over one-half of these children received postnatal care within seven to eight days after delivery. Eighty-nine percent of children were reported healthy at their first postnatal visit. About 14% of children from the poorest households were ill at their first postnatal visit compared to 10% of children from the wealthiest ones.
- A higher proportion of the wealthiest children (100%) received postnatal care than the poorest (91%), and wealthier children received care sooner after birth (median of seven days and an average of 12) than the poorest children (median of eight days and an average of 18).
- MSPBS facilities provided postnatal care to 62% of clients overall, and were the main source of postnatal care in all departments and in all but the wealthiest households. Eighty-nine percent of the poorest women attended MSPBS compared to only 18% of the wealthiest, who were most likely to obtain private care (49%).
- Compared to individuals in the wealthiest households, those in the poorest spent more time and money to travel to their source of postnatal care. The poorest clients traveled a median of 30 minutes at a median cost of 650 Guaraníes (US$0.23). In contrast, those in the wealthiest household traveled a median of 15 minutes and 50% incurred no expense for their travel.
- Twenty-four percent of the wealthiest individuals paid no fee or other service charges for their postnatal care visit compared to 27% of the poorest. Though similar proportions of the wealthiest and poorest individuals received free care, 54% of the poorest individuals paid less than 2,000 Guaraníes (US$0.71) and 54% of the wealthiest individuals paid more than 10,000 Guaraníes (US$3.55), reflecting their greater use of private medical facilities for postnatal services.

Diarrhea

- Overall, 15% of children under five years of age experienced at least one episode of diarrhea in the four weeks preceding the survey, 62% for whom it was their most severe health problem. Cordillera had the highest prevalence (20%), while Misiones and Central had a prevalence of 13% each. Diarrhea prevalence was highest among children from the poorest households (21%) and lowest among the wealthiest (13%).

- Overall, 79% of children for whom diarrhea was the most severe health problem sought care outside of the household. This proportion was lowest in Cordillera (56%) and Misiones (64%), and highest in Central (88%). Seventy-three percent of children in the poorest households received care outside of the home compared to 92% among the wealthiest.
- Overall, MSPBS facilities, primarily health centers, were the lead providers of diarrhea care, attending to almost 40% of cases that sought out-of-home care. Private facilities attended 32% of cases.
- A substantial proportion (29%) of persons who sought outside care cited distance to the facility as the leading reason for choosing their site of care. For individuals in the poorest households, distance to a source of care (35%) and the cost of services (12%) were the main determinants of source choice, while cost was not a factor among the wealthiest individuals.
- Both travel time and costs were higher for the wealthiest group than for the poorest: 50% of the wealthiest quintile paid more than 10,000 Guaraníes (US$3.55) for transportation and traveled at least 20 minutes. In contrast, 50% of those in the poorest group paid no charge for travel and reached their care site within ten minutes.
- Thirty-two percent of individuals in the poorest quintile spent less than 2,000 Guaraníes (US$0.71) in service fees compared to 22% among the wealthiest quintile. A sizeable proportion (24%) of cases among the poorest households paid over 40,000 Guaraníes (US$14.21) in service fees, while no case among the wealthiest quintile exceeded 40,000 Guaraníes (US$14.21). Medicine to treat the diarrhea was more expensive for the poor than for the rich.

Acute Respiratory Infection (ARI)

- Fifty-nine percent of children under five years of age were reported to have at least one symptom of ARI in the four weeks preceding the survey. For 84% of these cases, the ARI symptoms were the only ones that they experienced, or they were the most severe among other symptoms. Roughly 19% of symptoms among the latter group were either mild or moderate, and 12% were severe. ARI prevalence ranged between 43% in Cordillera and 53% in Misiones and Central. Prevalence was higher among children in the wealthiest quintile (56%) than in the poorest one (39%). Children in the wealthiest households also had the highest proportion of cases that were severe (19%).
- Not surprisingly, care-seeking behavior was associated with symptom severity: almost 70% of moderate and severe cases sought care outside of the home compared to 35% of mild cases.
- Overall, private medical facilities and commercial outlets were the source of care for 50% of all ARI cases, while 34% of cases were treated in MSPBS facilities. Roughly 54% of cases in Cordillera and Misiones were treated in public facilities compared to only 28% of cases in Central, where the private sector plays a more substantial role in ARI management (56% of ARI cases).
- The most important reasons for choosing a provider were distance to the source of care (28%), past experience (24%) and service cost (22%). Among the poorest individuals, distance to the source of care was cited by 46% compared to 20% among the wealthiest.
- Indirect costs of treating ARI were higher for the poorest individuals than for the wealthiest. Though the direct cost to treat ARI cases from the wealthiest households was higher than from the poorest – a median cost of 40,000 Guaraníes (US$14.21) versus 18,000 Guaraníes (US$6.39) – 19% of those in the wealthiest households received free care compared to 18% in the poorest households.

Family Planning

- The overall contraceptive prevalence in the three departments was 46%: 36% for modern methods and 10% for traditional methods. Modern method prevalence rates ranged from a high of 45% in Misiones to 35% in Cordillera. There was little variation in the use of traditional methods by department or level of wealth.
- In general, modern method prevalence increased with wealth, though the relationship was not strictly linear. Modern method prevalence was highest among the second wealthiest quintile (39%) and only

moderately lower (35%) among the poorest. Traditional method prevalence was higher in Cordillera (11%) and in the poorest households (11%), but there was little variation across economic groups.

- Overall, IUDs were the method of choice for 20% of all methods users, while pills, condoms and injections each accounted for 16% of modern method use. Norplant and vaginal methods were used by less than 1% of contraceptive users; 9% of users reported that they were sterilized, and no respondents reported a reliance on vasectomy.
- Roughly the same proportions of users in Cordillera used pills (20%), IUDs (19%) and injections (20%), and only 10% used condoms. In Misiones, however, there was greater variation in use by method: pills were used by the highest proportion of women (27%), followed by IUDs (17%); and injections and pills each accounted for approximately 11% of users in that department.
- Overall, 17% of modern method users expressed dissatisfaction with their current method. Among dissatisfied users, 62% expressed a desire to switch to the IUD, 11% to pills, 9% to injections and 7% to female sterilization. Method preference among dissatisfied users varies by income level and department.
- Overall, private medical facilities and commercial outlets served a majority (62%) of modern method users, while 24% obtained their methods at an MSPBS facility. In Cordillera and Misiones, however, between 44 and 48% obtained their method at an MSPBS facility, and between 42 and 48% obtained their method at a private facility or commercial outlet. In Central, the private sector played a far greater role in modern method service delivery by meeting the needs of 68% of modern method users.
- MSPBS provision varied from a high of 55% in the poorest quintile to a low of 6% in the wealthiest one. Only 38% of users in the poorest group obtained modern contraceptives at a private facility or commercial outlet, whereas over 71% of the clients in the two wealthiest groups obtained their contraceptives from these sources.
- Overall, more than 90% of public facility clients reported satisfaction with the appearance of the facility and the level of privacy during the consultation, but only three of every four reported that they received information and counseling about their selected method.
- Users reported a median travel expense of 835 Guaraníes (US$0.30) in Cordillera, the highest expense reported, whereas the lowest expense was in Central, at 361 Guaraníes (US$0.13). The longest travel time (30 minutes) and the highest travel expense (616 Guaraníes, US$0.22) were reported by the poorest quintile, and both the shortest travel time (10 minutes) and lowest travel expense (151 Guaraníes, US$0.05) were reported by the wealthiest.
- Overall, almost 14% of modern users were charged no fee for contraception. By department, this proportion ranged from a high of 23% in Misiones to a low of 11% in Central. By level of wealth, 15% of the wealthiest individuals paid no charge for contraceptive services compared to 27% of the poorest.

Health & Care-Seeking Behavior of Individuals Over 5 Years of Age

- Of the more than 1,300 (weight-adjusted) women who were interviewed, 39% reported that a member of their household who was over the age of five had been ill in the four weeks preceding the survey. The most common illness reported was respiratory illness (38%), followed by gastro-intestinal illnesses (11%), dental problems (7%) and "other" illnesses (18%). Though there were few trends by department or wealth group, the wealthiest individuals were more likely to suffer from respiratory (45%) and chronic illnesses (13%), while the leading causes of morbidity among the poorest group were respiratory (31%) and gastro-intestinal infections (18%).
- Fifty-three percent of those who were ill reported that the illness had interrupted their normal activity, and an average of 3.3 days of work were lost to illness.
- Overall, 49% of those who experienced an illness sought care outside of the home; 34% received in-home care; and 17% received no treatment. Public and semi-public facilities served 38% of those who sought outside care, and 35% received care in a private facility or through a commercial outlet. By

level of wealth, there was no consistent trend in care-seeking behavior. The poorest were the most likely to receive in-home care (51%), and the wealthiest were the least likely to forgo care (14%).

- The leading reasons for source choice, overall, were distance (cited by 34% of those who sought outside care), experience with the facility (20%), and insurance status (19%). Prior experience – cited by 40% of those who sought outside care – was the most important reason for source choice among the poorest individuals. Distance was the second most important reason (20%).
- Though the poorest individuals traveled, on average, longer than the wealthiest individuals to reach their source of care – 30 minutes and 15 minutes, respectively – the wealthiest individuals had a higher median travel cost. There was no difference in median waiting time between the two income groups.
- In terms of direct costs of care, 47% of the wealthiest individuals received free care compared to only 19% of the poorest ones. Also, 8% of the wealthiest individuals received medication at no charge compared to 2% among the poorest ones.
- Insurance requirements (29%), the perceived quality of care at the facility (22%) and lack of familiarity with the personnel (19%) were the three most common reasons why individuals bypassed the facility closest to their homes. Wealthier individuals were more likely to use private services and to choose a facility on the basis of their insurance status and requirements (45%). Perceived low quality (39%) and unfamiliarity with the health personnel (30%) were the main reasons why the poorest individuals bypassed the closest facility.

General Findings : Equity in the Utilization and Financing of Health Services

Table 1 summarizes the main findings with respect to the differences in the use of medical services among income groups for all individuals.

- The poorest households had the highest proportions of individuals who utilized MSPBS facilities. For vaccination, postnatal and prenatal care, roughly 80-90% of individuals in the poorest households used MSPBS facilities. For deliveries, family planning and ARI the proportions were lower, between 51 and 61%. Only one of every three individuals five years and older from the poorest households used public facilities for treatment of diarrhea or illness affecting
- The expectation that the wealthiest individuals would seek more private than public care was only partially met. Twenty to twenty-five percent of the wealthiest individuals used public facilities for prenatal, delivery and postnatal services, and 40-50% used these facilities for diarrhea and vaccination care.
- The proportion of the poorest households that received free care exceeded that of the wealthiest households for vaccination (92% versus 66%), diarrhea (32% versus 22%) and family planning (27% versus 15%) services. The proportions of the poorest and wealthiest individuals who received free care was similar for postnatal and ARI care: twenty-seven percent of the poorest and 24% of the wealthiest received free postnatal care; eighteen percent of the poorest and 19% of the wealthiest received free ARI care.
- In striking contrast to the expectation, the study found that, compared to the poorest individuals, a higher proportion of the wealthiest individuals received free prenatal (50% versus 25%), delivery (38% versus 18%) and other health services to treat illnesses affecting those five years and older (47% versus 19%).
- For all basic health services except ARI and family planning, the indirect costs of care (travel time and cost) were higher for the poorest individuals than for the wealthiest.
- There is a sizeable discrepancy by level of wealth in the proportion of individuals who receive care from a physician. It suggests a difference in the quality of care among income groups. Among the poor, physicians attended 50% of deliveries, 33% of diarrhea cases and 70% of ARI cases. Among

the wealthiest individuals, 75% of all deliveries were attended by a physician. A physician provided all diarrhea and ARI services for the wealthiest individuals.

Table 1
Household Patterns of Use and Cost. Some Equity Indicators.

Service	% for whom MSPBS is Source of Care		% receiving free care		Cost for poorest > cost for richest			% physician-attended	
	I	**V**	**I**	**V**	**Indirect**	**Direct**	**Medication**	**I**	**V**
Prenatal	85%	25%	25%	50%	X	X			
Delivery	51%	24%	18%	38%	X	X		50%	76%
Postnatal	89%	18%	27%	24%	X				
Vaccina-tion	77%	53%	92%	66%	X				
Diarrhea	35%	38%	32%[a]	22%[a]		24% of poorest paying ≥40000G compared to 0% for wealthiest	X	37%	100%
ARI	61%	10%	18%	19%	mixed[b]		Higher avg and lower median	70%	100%
Family Planning	55%	6%	27%	15%	X				
Illness among ≥ 5 years	33%	4%	19%	47%	mixed			31%	72%

[a] represents proportion who paid between G1-2,000.
[b] "mixed" indicates that one of two indirect cost measures was lower for the poor

1. Introduction

In an effort to reform the health sector, many developing countries are beginning to decentralize health care services. Decentralization implies the transfer of management responsibilities for the provision of public health services from the central government to the local government. The policy of decentralization has both proponents and critics. Proponents of decentralization argue that by placing policy-making authority and operational control "closer" to the communities, inefficiencies and the lack of responsiveness that are characteristic of a hierarchical and centrally controlled system can be eliminated. Many critics doubt that local governments can improve efficiency, and fear that resources may be shifted from services with greater public health benefits to services producing primarily private benefits. Detailed studies on the impact of decentralization, however, have rarely been done.

In Paraguay, the ongoing decentralization of basic health services management provides a unique opportunity to study the decentralization process and its impact in terms of costs and benefits. There are several reasons why Paraguay's decentralization program presents appropriate conditions for an evaluation of the decentralization processes. First, because an evaluation strategy was developed prior to full implementation of the decentralization, it was possible to collect baseline data that will allow pre- and post-implementation comparisons of the effects of decentralization. Second, the initial decentralization will be partial, meaning that it will be implemented in only a few regions, thus permitting before and after comparisons between decentralized and non-decentralized (control) regions. And third, there is substantial interest in assessing the impact of health care decentralization by both the government of Paraguay (GOP) and the U.S. Agency for International Development (USAID/Paraguay). Information produced by the study will inform decision-makers of their policy options as they implement the decentralization model.

The main purpose of this report is to present the results of the facility, client exit, and household surveys that were carried out in a group of municipalities in the Central, Cordillera and Misiones departments of Paraguay during the second part of 1998. These results describe the status of the health system (in terms of cost, efficiency, basic quality, equity and utilization) prior to the implementation of the decentralization program. The results presented in this report provide the baseline for the evaluation of the health care decentralization in Paraguay.

1.1. Background

During the last decades there has been a trend toward the decentralization of the management and delivery of publicly funded, basic health services. The typical organization of the health system assigns the responsibility for providing basic health services to the national government. The tasks of planning, policy and strategy development, and resource allocation are centralized within the Ministry of Health, and health services are delivered through a hierarchical system of hospitals, health centers and health stations. In recent years, a number of countries have decentralized or “devolved” some or all of these tasks from the central to the lower levels of government.[1] Within decentralized health systems there are different models for allocating resources, but typically they involve the central government providing a block grant or transferring resources to the local level, with the local level assuming direct responsibility for the management of the public health facilities in its jurisdiction.

Health system decentralization provides a number of opportunities for change. First, with some or all of the policy and management decisions in local government hands, changes may occur in the range of services offered, in the quality and efficiency with which they are provided, and in the profile of clients who use the health services. Second, depending on the scope of the decentralization program and the terms of the funding scheme supporting it, local governments may have the authority to re-allocate health service funding to such areas as education or other social services.

[1] Examples include the Philippines, Mexico, Venezuela, Papua New Guinea, Brazil, Chile, Colombia, Argentina, Guatemala and Honduras.

The trend toward the decentralization of health care services has been motivated by the general perception that hierarchical, centralized health care systems are cumbersome, inefficient and unresponsive to local needs. Many believe that placing decision-making authority and operational control in local hands ensures that health services are more responsive to local needs both in terms of the mix and the quality of services. Supporters also argue that a decentralized system is more efficient and less costly to operate because there is closer geographic proximity and less managerial distance between the local authorities and the health facilities they manage and operate.

Critics of decentralization cast doubts on the efficiency gains and the desirability of the resource allocations that may be made by local authorities. Critics challenge the assumption that a decentralized model is more efficient, arguing that no matter how lacking in managerial or technical skills the central government might be, the lack of these skills at the local government levels are likely to be even worse. Regarding the assumption that resource allocation is more efficient under a decentralized health system, critics contend that the reallocation of resources from a public good such as basic health care to the provision of private goods may be accentuated by allowing local officials to make the allocation decisions. There are also certain types of health services that are more efficiently provided on a larger scale that might not correspond with the territory covered by the local governments. Furthermore, local governments might make decisions about health services investment without considering the benefits that might be generated beyond their local boundaries.

Despite the wealth of literature on decentralization and its popularity as a policy option, there has been very little work evaluating the impact of health system decentralization. By examining the effect of decentralization on the efficiency, costs, quality and equity of Paraguay's health system, this study will add to our understanding of the relative merits of an option that is so often proposed as an important component of health sector reform packages in developing countries. At the same time, this study provides detailed data and analysis for use by policymakers at the central and local levels in Paraguay.

1.2. Overview of Evaluation Study

The decentralization of Paraguay's health system will be evaluated in terms of its impact on the cost, efficiency, basic quality, and equity of basic health service provision. The evaluation strategy is based on a pre- and post-decentralization design with a control group. The units of analysis are the public health facilities, their clients, and the population in the municipalities. Data for the baseline indicators were collected during the second part of 1998. Data for these same indicators will be collected from these same facilities and households approximately two years after the decentralization program has been implemented. The follow-up indicators will be compared to the baseline indicators to examine the impact of the decentralization strategy.

1.3. Overview of Baseline Indicators Report

The baseline evaluation report is organized into nine sections. The next section, Section 2, provides geographic, social, demographic and health information in Paraguay. Section 3 describes the main characteristics of the decentralization of health services in Paraguay. The evaluation design and plan are described in Section 4. Sections 5 through 9 present the survey findings, the indicators used, and the specific conceptual and methodological issues associated with their definition. Finally, Annexes A through D include maps, supplementary tables and figures, and technical notes and additional findings associated with the cost and efficiency sections. Annex E contains the survey instruments.

It is important to reiterate that the results presented in this report describe the status of the health system during the latter half of 1998, prior to decentralization. As a result, to maximize their usefulness, the findings are disaggregated primarily by department and type of facility. Depending on the indicator and type of analysis, the results also may be presented by level of household wealth (quintiles) or other types of aggregations.

2. Country Background

2.1. Geographic Characteristics

Paraguay is a landlocked country located in the middle of South America (See Map A.1 in Annex A). The country has a surface area of 406,752 square kilometers, a little smaller than the state of California, and is bordered by Brazil, Bolivia and Argentina. The Paraguay River divides the country into two distinct geographic areas. The western, or Chaco, region accounts for more than 60% of Paraguay's landmass, but only 2.5% of the population. The Chaco region is a relatively arid, plains region. The majority of Paraguay's population (97.5%) and economic activity are in the eastern region, which is primarily wooded hills and grassy plains (PAHO, 1998; Ramírez de Rojas, 1997).

2.2. Socio-Demographic Profile

Paraguay's population of approximately 5.2 million people (mid-1998) is one of the fastest growing among Latin American countries. The population more than tripled between 1950 and 1992, and grew at an annual rate of 3.2% between 1982 and 1992. The population will double in only 26 years if the current annual growth rate (2.7%) is maintained. Continued rapid growth can be expected due to the country’s young age structure; about 40% of the population is less than 15 years of age (PRB, 1998; ENDSR, 1997).

The country's current total fertility rate (TFR) of 4.4 is consistent with the rapid rate of growth. Among South American countries, Paraguay has the second highest TFR after Bolivia (4.8). TFR varies substantially across the geographic regions within Paraguay, ranging from 5.7 in rural areas to 3.3 in urban areas, and 2.9 in Gran Asunción (ENDSR, 1997).

The urban population, estimated at 52% of the total, exceeded the rural population for the first time in 1992. Twelve percent of Paraguay's population lives in Asunción, where the population density is roughly 481.5 inhabitants per square kilometer. The population is relatively homogeneous: 95% are *mestizo* and 93% are Roman Catholic. Paraguayans speak two major languages, Spanish and Guaraní. According to the 1992 census, 57% of households speak Spanish, 87% speak Guaraní, and 50% speak both languages. The rates of both male and female literacy are relatively high, 94% and 91% respectively (ODCI, 1998; PRB, 1998; Flecha, et al., 1991).

2.3. Health Profile

Life expectancy at birth is 69 years overall, 66 years for men and 71 years for women. Among deaths registered by the Ministry of Public Health and Social Welfare in 1995, the leading causes of death among all age groups were diseases of the circulatory system (35%), malignant neoplasm (12%), external causes (12%) and communicable diseases (11%).[2]

In terms of women's health, the level of maternal mortality has been high and stable since 1982. Between 1982 and 1988 the maternal mortality ratio (MMR) was 188 maternal deaths per 100,000 live births, and during 1989-95 the rate increased to 192. While this figure is relatively high, Paraguay's MMR is lower than the rates for such countries as Bolivia, Brazil and Peru. The principal causes of maternal mortality are hemorrhage, complications from induced abortion, toxemia and sepsis. Forty-one percent of women of reproductive age use a modern method of contraception, yet 27% express an unmet need for family planning (UNICEF, 1998; ENDSR, 1997; Ramírez de Rojas, 1997).

Regarding prenatal care, 89% of pregnant women attended one prenatal care visit, more than half (57%) had five or more visits, and 90% received a tetanus shot. Fifty-seven percent of births occurred in medical facilities, and a physician attended 51%. More than two of every five (43%) births occurred at home, and only 4% of home births were attended by a trained midwife (ENDSR, 1997).

The infant mortality rate (IMR) is 27 per 1,000 live births and the under-five mortality rate (U5MR) is 33 per 1,000 live births. Among children under five years of age, pneumonia and diarrhea are the leading

[2] Under-reporting of deaths in Paraguay is estimated at 39% (PAHO, 1998).

causes of mortality, and acute respiratory infections, diarrhea, and parasitic infections are the main reasons for seeking personal health services (PAHO, 1998). In the first three months of life, 7% of infants are breastfed exclusively, 59% receive breastmilk supplemented with liquid or solids, and 8% receive no breastmilk. Only 50% of children 12-23 months are adequately immunized, and 11% have never received any vaccinations. This level of immunization coverage is considered inadequate by UNICEF, which considers a level of 80% complete immunization sufficient for preventing the transmission of vaccine-preventable diseases (ENDSR, 1997).

There are striking differences in the demographic and health conditions by region and residence. Generally speaking, populations in the North and East regions, as well as in rural areas, of Paraguay suffer greater health problems and are more underserved than those living in Gran Asunción and the Central-South region. The inhabitants of Gran Asunción have the most favorable health outcomes, with the notable exception of a high prevalence of ARI in children. Populations living in the North region have the highest TFR, the highest level of unmet need for contraception (33%), the highest infant and under-five child-mortality rate, the lowest level of vaccination coverage, and the lowest percent of births taking place in health institutions. (ENDSR, 1997).

2.4. Economic & Political Profile

Among South American countries, Paraguay is one of the poorest, with a GNP of $10.2 billion and a per capita GNP of $2,010 ($3,870, at PPP values). In fact, Paraguay ranks below Brazil, Colombia, Peru and Ecuador in terms of per capita GNP (PPP). Agriculture, industry and the service sector account for 25%, 22%, and 53%, respectively, of Paraguay's $9.8 billion GDP ($21.9 billion PPP). Between 1987 and 1997, GDP grew at an average annual rate of 3.5%. The annual rate of population growth during this same period was only slightly lower, resulting in a relatively stagnant per capita GDP. Paraguay's primary exports are soy, cotton, oils, meat products and manufactured goods (World Bank, 1998a and 1999).

The country is divided into 17 departments (*Departamentos*) and Asuncion. An elected governor and board govern each department. The departments are divided into 225 municipalities, which are headed by an elected *Intendente* and a municipal board. The department-level governments were established in the early nineties.

After a long period of military rule, Paraguay began its transition to democracy in 1989. An important event in this transition was the election of municipal governments in that year. Other key events marking this transition include the adoption in 1992 of a constitution, presidential elections in 1993, and municipal elections again in 1996. A president, elected for a five-year term, heads the executive branch of the national government.

2.5. Health Care System in Paraguay

2.5.1. Policy

Paraguay's National Constitution (1992) affirms that health is a basic right of all citizens and provides the legal framework for the establishment of a National Health System. The mandate of the National Health System is to plan and to implement health programs and services as a coordinated effort between the public and private sectors. To increase the system's responsiveness to the population's health needs, priority is given to such health initiatives as maternal and child health and nutrition, and control of vaccine-preventable diseases. According to Health Code No. 836/88, the Ministry of Public Health and Social Welfare (*Ministerio de Salud Pública y Bienestar Social*, MSPBS) is the country's "highest public authority in matters of health and social welfare" (PAHO, 1998:408).

In 1996 the Paraguayan Congress adopted the National Health System Law (Law 1032), which is the cornerstone of the current health reform process. The principles embodied in the law include equity of access, quality, efficiency and social participation, and the key implementation strategy involves the decentralization of the health system to the departmental and regional levels. The country is divided into 18 health regions that correspond with the departments (PAHO, 1998).

2.5.2. Organization & Infrastructure

The health sector in Paraguay is organized into three sub-sectors, including the public, semi-public and private. In terms of population coverage and infrastructure, the main institutions in the public and semi-public sub-sectors are the public MSPBS, which serves 63% of the total population, and the semi-public Social Security Institute (*Instituto de Previsión Social*, IPS), which serves 13% of the population. The private sector provides health services to an estimated 15% of the population (PAHO, 1998).

Infrastructure. There are 1,140 health establishments in Paraguay, including hospitals, health centers, health posts, clinics and sanitariums. In terms of infrastructure, the public sub-sector has the most extensive infrastructure (796 facilities, about 70% of the total), followed by the private sub-sector (241 facilities, 21% of total), and the semi-public sub-sector (103 facilities, 9% of total) (PAHO, 1998).

Public Sub-Sector. The MSPBS is responsible for meeting the health needs of Paraguayans, particularly low-income and vulnerable populations without medical coverage from other institutions. Other institutions in the public sub-sector include the military health services (3% of population coverage), police health services, municipal health services, the Sanitation Works Corporation and the teaching hospital at the National University of Asunción (PAHO, 1998).

Public health services are provided at four levels, with the staffing and technological capacity of each facility based on the size of the population served. Health facilities at the first level are health posts staffed by health volunteers, auxiliary nurses and birth attendants. The geographic coverage of these facilities includes small (less than 1,000 inhabitants) and remote communities. Second-level facilities consist of health centers, with between six and 19 beds, which are staffed by a team of providers that include doctors, dentists, nurses, obstetricians and other support staff. They are designed to serve a population of 2,000-20,000 in rural and peri-urban settings. Third-level facilities consist of district and regional hospitals, which are equipped to meet more complex health needs. Health centers and health posts are assigned to a district or regional hospital. The fourth and highest level includes research and specialized facilities (e.g., burns, tropical medicine.)

Semi-Public Sub-Sector. IPS provides health services to government and private sector employees and their dependents. The IPS provides services through a relatively smaller network of facilities located in the main cities. The Paraguayan Red Cross and Our Lady of Asunción Catholic University Hospital are two other institutions in the semi-public sub-sector (PAHO, 1998).

2.5.3. Health Expenditure & Financing

Expenditure. During the period 1990-95, Paraguayans expended 4.3% of GDP on health. This proportion represented a per capita health expenditure of $72 ($161 PPP). Compared to other countries in the region, Paraguay expends the lowest proportion of its GDP on health, and the second lowest per capita amount after Bolivia (World Bank, 1998b).

Financing. In 1996, the MSPBS's budget was financed by the national Treasury (64%), revenues from the Itaipú hydro-electric plant (14%), funds from within the MSPBS (6%), special sources (5%), and other sources (5%) (PAHO, 1998). IPS services are financed through worker contributions (9% of their earnings), employers (14% of salaries), and the State (1.5% of taxable wages). Furthermore, public- and private-sector teachers, university professors, independent contractors and domestic workers contribute 8% of their earnings (PAHO, 1998:412).

3. Health Reform: Decentralization of Basic Health Services

3.1. Background

The historical development of Paraguay led to the formation of a highly centralized government structure. This process restricted the development of local governments and limited the local capacity to make and implement decisions. Since 1989, however, the democratization of the society and reform of the state processes taking place in the country have transformed the relationship between the central and the departmental and municipal governments. This new relationship recognizes the local governments as active participants in the economic, political and social development of the country.

In Paraguay, health reform is part of a broader process of democratization and strengthening of local governments. A centerpiece of this process is the decentralization of the basic health care services provided by the public sector.

3.2. Evolution of Health Reform Initiative

3.2.1. Phase 1: Deconcentration

The process to decentralize the health sector in Paraguay started in 1990 with the transfer of certain administrative responsibilities from the MSPBS central level to its lower levels (i.e., to the health regions or *Regiones Sanitarias*). This first phase is better characterized as a "deconcentration" of public administration since the transfer occurred within the structure of the MSPBS.

The deconcentration of administrative responsibilities and the delegation of decision-making authority to the health regions resulted in the strengthening of the lower levels within the institutional organization of the MSPBS. For example, regional health directors, who are functionaries of the MSPBS, had the authority to nominate health staff at the local level and participate in the planning and budgeting process. The increased decision-making power at the regional level not only altered the flow of operational information between the different managerial and political levels of the health system, but reorganized the health care delivery system on the basis of the health regions. During 1993-95, however, centralist tendencies at the political level of the MSPBS interrupted this phase.

3.2.2. Phase 2: Decentralization

The second phase of health reform, characterized by the progressive adoption of the decentralization model, started at the end of 1995. During 1996, health sector reform gained strength with the adoption of Law No. 1032/96, which created the National Health System and initiated a participatory process to design the health system. Law No. 1032/96 is part of a wider health reform strategy of which health decentralization is a key component. The explicit objective of health service decentralization, as stated in the law, is to

- improve the efficiency and quality of service provision,
- improve the equity of service provision, and
- promote community participation in the planning and delivery of health services.

Health service decentralization, therefore, is expected to produce positive outcomes at the level where basic health services are produced (facilities), and on the clients and populations to which the health services are directed.

The law proposes to create governmental bodies in accordance with their function. The MSPBS was to be reorganized into various executive bodies under the direction of the National Health Advisory Board *(Consejo Nacional de Salud*). The health financing function would be executed by the National Health Fund (*Fondo Nacional de Salud*); the regulatory and normative function would be the responsibility of the National Medical Directorate (*Dirección Médica Nacional*); and the monitoring or auditing function would be executed by the Health Superintendent (*Superintendencia de Salud)*. The purpose of creating these governmental bodies was to separate functions in order to increase the efficiency of the entire sector. The National Medical Directorate and

the Health Superintendent were created through Presidential decrees in August 1998. The National Health Fund is still in the planning stage.

An important aspect of the National Health System Law No. 1032/96 is the explicit role assigned to the community participation in the health sector via the creation of Health Councils (*Consejos de Salud*). These health councils are organized at the local, departmental and national levels. During 1997, MSPBS focused its decentralization activities on forming Local Health Councils in each municipality and Regional Health Councils in each department. Given their legal authority to participate in the planning and management of health services, the establishment of the Health Councils has advanced the decentralization.

In February 1998, Decree No. 19966 operationalized the decentralization aspects of Law No. 1032/96. The name of the decree is illustrative of its intention: "Through which local health decentralization, citizen participation, and self-management are regulated as a strategy for the development the National Health System". The decree allows for the transfer of the administration of public basic health facilities (district hospital, health centers and health posts) to the municipalities. According to the decree, this transfer of administrative responsibilities is formalized through the signature of the agreement between the MSPBS and the respective municipality. The transfer of administrative responsibilities is not mandatory for all of the municipalities, rather, it is offered to the municipalities by the MSPBS and each municipality can choose whether to accept or not. Table 3.1 presents a summary of the legal framework that supports the decentralization in Paraguay.

3.3. Implementing the Decentralization

There are a number of steps that precede the transfer of responsibility to the municipality. First, there must be municipal-level political support and will to assume administrative responsibility for the health facilities. There must also be a functioning Local Health Council. Negotiation and agreement between representatives at the central and municipal levels results in the formalization of the agreement through a contract (*Acuerdo Contractual de Compromiso para la Descentralización Administrativa Local en Salud*), which is signed by representatives of the central government, including the Health Minister, the *Intendente* of the municipality, other local and regional authorities, and the directors of the major public health facilities in the municipality. The agreement sets forth the obligations of the MSPBS, the municipality and Local Health Council with regard to the transfer of services.

The transferred responsibilities pertain to the administration, supervision and monitoring of public facilities that provide basic health services. The facilities subject to decentralization include district hospitals, health centers and health posts. The municipal government, in turn, delegates the responsibility of administering these public facilities to a Local Health Council. Jointly, representatives of the municipal government and members of the Local Health Council prepare and implement a Local Health Plan, control the budget, and supervise the performance and functioning of the public health facilities.

Implementation of the Local Health Plan is funded through a combination of sources, including central government funds, contributions from the municipality and facility revenues (i.e., user fees). The level of funding provided by the central level is determined by both past expenditures and projected expenditures as specified in the Local Health Plan. The municipality contributes at least 5% of its budget to implement the Local Health Plan, and facility revenues are deposited directly into a municipal government account that is earmarked for health activities.

3.3.1 Roles of the Principal Actors

The government organizations involved directly in the transfer of basic health services from the MSPBS to the municipalities include the MSPBS, the municipal governments and the Local Health Councils. The main roles in the process are the following:

MSPBS:

- Temporary transfer of public health facilities (infrastructure and equipment) to the municipal government, as well as the funding and other resources needed for their operation
- Maintain the human resources available in the facilities at the time of transfer. Staff salary payments remain the responsibility of the MSPBS
- Provide training and technical assistance throughout the process

Municipal Government:

- Assign a minimum of 5% of the annual budget to finance the Local Health Plan
- Form the Local Health Council
- Examine the socio-economic characteristics of the population

Local Health Council:

- Prepare the Local Health Plan
- Compliance with the norms of disease surveillance and mandatory disease reporting
- Foster development of information systems to improve resource allocation and increase service productivity
- Administer the financial and economic resources from different funding sources
- Monitor the implementation of the Local Health Plan
- Establish a fee schedule for services provided in the transferred facilities

3.4. Progress of Decentralization Process

By the end of 1998, 23 municipalities (17 in Central, 2 in Cordillera, and 4 in Misiones) had signed decentralization agreements. The first municipalities to sign agreements were Capiatá in May 1998; Ypané, Villa Elisa, Tobatí, Piribebuy, and Ypacaraí in June 1998; and Itaugua in July 1998. The rest of the municipalities signed their agreements between July and November of 1998. In 1999, 17 of the 23 municipalities that had signed decentralization agreements in 1998 renewed them.

Since decentralization is new and unprecedented in Paraguay, the time between the signing of the agreement and real changes to the administrative system at the facility level has varied from a few weeks to several months. A majority of the municipalities have not yet made systemic changes. Among those that have, most have taken several months to create the necessary conditions to assume their new roles.

During 1998, only ten municipalities, all of which were in Central, implemented changes in their administrative systems. The primary change consisted of Local Health Councils and municipal governments administering and reinvesting revenues from service fees to improve the quality and availability of services. Specifically, service revenues have been used to purchase supplies and medicines, facility maintenance and contracting personnel (i.e., health staff for 24-hour services). The majority of municipalities that implemented administrative changes did so during the last months of 1998.

To be effective in their new role, the municipalities and the Local Health Councils are implementing management information systems (MIS) to monitor facility performance, service quality and the effectiveness of the new administrative structure. Currently, the existing monitoring system collects information only on service outputs, expenses and revenues.

The municipality of Itauguá has developed a "performance measurement system", which contains basic production and efficiency indicators. The system will be expanded to include key indicators of quality, cost and output. Service performance reports will be produced quarterly and will be distributed widely in the community. Itauguá has already produced reports containing pre- and post-decentralization measures of service output and cost recovery. Itauguá is also one of the decentralized municipalities that has administered the revenues resulting from service fees.

Following the developments in Itauguá, other municipalities have started to take steps to supervise and monitor health facilities. The performance monitoring system and the wide diffusion of the quarterly report is considered an important means of achieving the goal of increasing community participation, promoting transparency in public administration and achieving greater legitimacy.

The characteristics of the decentralization process in Paraguay and the local interest in examining its impact create appropriate conditions for this research study. Since the process of decentralization is a new and ongoing process, the information and the analysis generated by this study will provide ongoing, timely and important feedback to policymakers on the effectiveness of specific decentralization strategies.

Table 3.1.
Health Sector Reform in Paraguay: Legal Framework for Decentralization

National Constitution 1992		▪ Article 1, "The Republic of Paraguay is...unified, indivisible, and decentralized..." ▪ Article 69, "A National Health System will be promoted...."
Law No 1032/96 December 1996	Creates National Health System	▪ Establishes the administrative decentralization of health services, and the participation of local authorities and community members in the management of services through the local, regional, and national Health Councils. ▪ Promotes the search for consensus and the signing of decentralization agreements and contracts with municipal authorities.
Decree 19966/98 February 1998	Regulates the Local Health Decentralization, Citizen Participation, and Self-Management of Health, as a strategy for the development of the National Health System – Law No. 1032/96.	▪ Regulates Law No. 1032/96 and makes possible the temporary transfer of basic health services (district hospitals, health centers and health posts) to local levels (i.e., municipalities). ▪ It is implemented through the signing of an agreement between the MSPBS and the respective municipality. ▪ The decentralization is an "offer", and the municipality may or may not request the transfer of MSPBS health services. ▪ The soliciting municipality should allocate 5% of its annual budget to health.
	Contractual agreement for the decentralization of the administration of health services.	▪ Instrument through which health services are transferred from the MSPBS to the municipalities. ▪ Signed by the MSPBS and the Municipality. It establishes the responsibilities of the MSPBS, the municipality and the Local Health Council regarding the transfer of the health facilities.

4. Evaluation Plan

This section describes the plan for evaluating the impact of health system decentralization in Paraguay, including the study objectives, study design, sample information and a description of the survey instruments and procedures.

4.1. Study Objectives

The objectives of this study are to identify and to quantify changes in the health care system that result from the transfer of management control for basic health services provision from the central government to municipal governments in Paraguay. The study examines the impact of the decentralization in four areas:

- Cost of providing basic health care services
- Efficiency in the use of resources to provide basic health services
- Basic health service quality at health facilities and from the client's perspective
- Patterns of health service use and equity in the use of health services

4.2. Study Design

Considering the objectives of the decentralization and the areas of performance that this study will examine, the main units of analysis are the public health facilities, their clients and municipality populations. To better assess the impact of the decentralization, the study has a pre- and post-decentralization design with a control group. This evaluation design requires the measurement of baseline performance indicators for each of the four areas of performance before the decentralization was implemented. Then, the measurement of these same performance indicators for the same units will be repeated two years after the implementation of the decentralization. The evaluation of the impact of the decentralization will be based on the comparison and analysis of the baseline and follow-up data. This evaluation design allows for two types of analysis. First, the performance of the health system before decentralization can be compared with performance after decentralization for the municipalities adopting the decentralization model (i.e., decentralization group). Second, this design permits a comparison between the performance of health systems in municipalities where decentralization has been implemented (i.e., decentralized group) and in those municipalities where it has not (i.e., control group).

This study design has several advantages. By having information on the same units at two time points – at baseline and two years after – the study design can track changes over time. Also, by having pre-decentralization information, it will be possible to control for any differences among municipalities that existed prior to decentralization. In a sense, the municipalities act as their own controls. Furthermore, because not all municipalities will adopt the decentralized model, the analysis of a control group will allow the changes in performance to be tracked under the centralized system. The evaluation of the impact will result from the comparison of the baseline (i.e., before) and the follow-up (i.e., after) indicators, and the results from the decentralized and control groups. Data for the study come from a facility survey, a client exit interview and a household survey.

The study focuses on three basic health services areas: family planning, maternal health, and infant and child health. The specific services within each basic health service area are presented in Table 4.1.

4.3. Sample Selection

4.3.1. Municipalities

The municipalities in the study were selected from three departments – Central, Cordillera, and Misiones – in Paraguay's Central and South regions. These departments were selected because they are the focus of most of the decentralization activities and are priority regions for USAID. The original plan was to select 19 municipalities: 13 for the decentralization group and six for the control group. Initial selection of the municipalities was done in May 1998 by Paraguayan researchers before any of the municipalities had been decentralized. Their selection was based on four factors: (1) the likeli-

Table 4.1. Basic Health Services Examined in the Study

Basic Health Services Areas	Services
Family Planning	supply of modern reversible contraceptives (IUD, oral contraceptives, condoms)
Maternal Health	prenatal care (including immunization and nutritional supplements) normal delivery and management of delivery complications post-partum care cervical cancer screening (PAP)
Infant and Child Health	diarrhea management acute respiratory infection (ARI) management perinatal care growth monitoring immunizations: BCG, Polio, DPT, Measles

Table 4.2. Number of Municipalities in Study and Overall, by Department

		MUNICIPALITIES BY DEPARTMENT				
GROUP		Central	Cordillera	Misiones	Asunción	Total
Main Study	Decentralized	9	2	0	0	11
	Control	1	4	4	0	9
Total in Main Study		10	6	4	0	20
Adjacent Group		6	9	3	1	19
Total number in study		16	15	7	1	39
Total number of municipalities in the Department		19	20	10	1	50

hood that the municipality would decentralize, (2) the demographic diversity within the municipality, (3) the economic diversity within the municipality, and (4) the accessibility to the municipality. The likelihood that a municipality would decentralize was based on the declarations of local authorities, the existence of local capacity to assume the new roles, the disposition of the health facility directors towards decentralization, and the presence of technical assistance from NGOs promoting decentralization. Obviously, the final decision to participate in the decentralization process rested solely on the municipal authorities.

By November 1998, after the baseline data had been collected, five municipalities that were expected to sign decentralization agreements had not, and four that had not been expected to sign agreements had. The evaluators re-assigned these municipalities to either the control or decentralized groups, as appropriate. In addition, the municipality of Ita signed a decentralization agreement in December 1998, resulting in its inclusion in the decentralized group. These re-assignments and additions brought the total number of municipalities in the study from 19 to 20: 11 in the decentralized group and nine in the control group. These two groups constitute our “main study group”.

Furthermore, in order to obtain a more complete description of the service supply environment, we included 19 municipalities (including Asunción) that are adjacent to the municipalities in the main study group. We refer to this latter group of municipalities as the "adjacent group".

The final distribution of municipalities by department and by study group is presented in Table 4.2. Over 70% of the total municipalities in each department are included in the study.

The lower right quadrant of Map A.2 in Annex A presents the location of the departments while the locations of the municipalities included in the main study and adjacent groups are also presented in Map A.2.

4.3.2. Public Health Facilities

In the study group of 39 municipalities, all public facilities subject to decentralization (district hospitals, health centers and health posts) were included in the sample.[3] The survey sample frame was a list of public facilities provided by the MSPBS. This list was complemented with the list of facilities used by the MSPBS information system. A total of 56 facilities in the main study group and 81 facilities in the adjacent group were included in the sample. As shown in Table 4.3, a total of 124 public facilities were actually surveyed: 52 in the main study group and 72 in the adjacent group.[4] Facilities located in the main study group received the full set of survey instruments (described below). Facilities located in the adjacent municipalities received a short version of the facility inventory questionnaire (described below). Maps A.3.1-A.3.3 in Annex A present the geographic location of public health facilities from Cordillera, Misiones and Central that were included in the sample.

4.3.3. Private Health Facilities

In addition to the public facilities in the adjacent group, data from a sample of private health facilities from both the main study and adjacent groups were collected as an additional control for the general health supply environment to which people in the municipalities are exposed. A list of private facilities prepared by the MSPBS provided the sample frame. Twenty-five private facilities were identified for the survey. A total of 19 private facilities were actually surveyed.[5] The short version of the facility inventory questionnaire was administered in private facilities. Table 4.4 presents the distribution of the facilities by type, study group and department.

4.3.4. Health Facility Clients

To assess the quality of care from the client's perspective, a sample of 1,261 clients of facilities in the study group – 1,151 from public facilities and 110 from private facilities – were administered a short exit questionnaire.[6] The number of clients to be interviewed at each facility was proportional to the average daily number of clients seeking basic health services in each facility. The average daily client load was determined using the monthly service records reported for July and August of 1997. Given the general practice of providing specific health services on certain days of the week, the exit interviews were conducted in each facility on two consecutive days (both Monday and Tuesday or Thursday and Friday) to ensure that the survey captured clients' views for a large range of services. This sample design generates a representative sample of clients. The client exit interviews were conducted only in the main study group of facilities.

[3] In Asunción only a sample of public facilities was included in the study.

[4] Of the four facilities from the main study group that were not surveyed, one could not be located; one was already included in the sample, but under a different name; one was closed; and it was difficult to obtain access to the fourth. In terms of the facilities in the adjacent group that were not surveyed, access to all of them was difficult.

[5] During the fieldwork there were various problems locating some of the private facilities. Several facilities were hard to find because of incorrect names and addresses. Other facilities were closed or simply could not be found. The private facilities that could not be located were replaced by other private facilities that were identified during interviews with community members.

[6] Originally, we planned to interview 1,300 clients. The difference between the actual sample and the planned sample, 49 clients, corresponds to the number of clients from four public facilities that were not interviewed (see Section 4.3.2).

Table 4.3. Public Facilities by Department, Facility Type, and Study Group

Facility Type by Study Group	Department				Total
	Central	Cordillera	Misiones	Asunción	
Decentralized Group:					
Regional Hospital	0	0	0	0	0
District Hospital	2	0	0	0	2
Health Center	8	2	0	0	10
Health Post	18	2	0	0	20
Total Decentralized Group	28	4	0	0	32
Control Group:					
Regional Hospital	0	0	1	0	1
District Hospital	1	0	0	0	1
Health Center	0	4	3	0	7
Health Post	2	2	7	0	11
Total Control Group	3	6	11	0	20
Total Main Study Group:					
Regional Hospital	0	0	1	0	1
District Hospital	3	0	0	0	3
Health Center	8	6	3	0	17
Health Post	20	4	7	0	31
Total Main Study Group	31	10	11	0	52
Adjacent group:					
Specialized Hospital	0	0	0	6	6
Regional Hospital	1	1	0	0	2
District Hospital	0	0	0	0	0
Health Center	5	7	3	11	26
Health Post	14	4	2	18	38
Total Adjacent Group	20	12	5	35	72
Total Public facilities:					
Specialized Hospital	0	0	0	6	6
Regional Hospital	1	1	1	0	3
District Hospital	3	0	0	0	3
Health Center	13	13	6	11	43
Health Post	34	8	9	18	69
Total Public Facilities	51	22	16	35	124

Table 4.4. Private Facilities by Department, Facility Type, and Study Group

Private Facility Type by Study Group	Department				Total
	Central	Cordillera	Misiones	Asunción	
Decentralized Group:					
Sanatoriums	7	0	0	0	7
Clinics	3	0	0	0	3
Total Decentralized Group	10	0	0	0	10
Control Group:					
Sanatoriums	0	0	1	0	1
Clinics	2	0	0	0	2
Total Control Group	2	0	1	0	3
Main Study Group:					
Sanatoriums	7	0	1	0	8
Clinics	5	0	0	0	5
Total Main Study Group	12	0	1	0	13
Adjacent Study Group:					
Sanatoriums	4	1	0	0	5
Clinics	0	0	0	1	1
Total Adjacent Group	4	1	0	1	6
Total by Facility Type:					
Sanatoriums	11	1	1	0	13
Clinics	5	0	0	1	6

Table 4.5. Facility Questionnaires by Location of Administration

Questionnaire	Main Study Group (20 Municipalities)		Adjacent Group (19 Municipalities)	
	Public (52 Facilities)	Private (13 Facilities)	Public (72 Facilities)	Private (6 Facilities)
Inventory	✔			
Observation	✔			
Time Allocation	✔			
Client Exit Interview	✔	✔ *		
Short-Inventory		✔	✔	✔

*: Only in a sample of 6 private facilities.

4.3.5. Households

In order to obtain information on socioeconomic characteristics, health outcomes and health care seeking behavior of the population in the municipalities, a household survey was needed. Since the proposed fieldwork for this household survey would coincide with the fieldwork of the *Encuesta Nacional de Salud Materno Infantil 1998* (ENSMI 98), it was decided to integrate the household survey with the ENSMI 98. The merging of these two surveys was also appropriate for the following two reasons. First, the ENSMI 98 is a survey of households that yields nationally representative results for households with at least one female of reproductive age (15-49 years); the ENSMI 98 also generates estimates representative for children less than five years of age. Since this study focuses on the supply and utilization of basic maternal and child health services, the design of the ENSMI 98 is appropriate because it uses a representative sample of the target population for these basic health services. Second, the ENSMI 98 generates estimates representative for the population of Central, Cordillera and Misiones departments. MEASURE Evaluation coordinated sample and questionnaire design with the Centro Paraguayo de Estudios de Población (CEPEP) and the Centers for Disease Control (CDC), which were carrying out the ENSMI 98. The sample was augmented for the 19 municipalities in the main study group[7] to obtain 1,200 completed interviews in the main study area. Also, the ENSMI 98 questionnaire was modified to include questions of interest to our study. A total of 2,150 interviews were completed in Central, Cordillera and Misiones.

For more details about the ENSMI 98 design, refer to *Encuesta Nacional de Salud Materno Infantil 1998. Informe Preliminar.*

4.4. Data Collection Instruments

In this study, data were collected at three levels – the facility level, the client level, and the population level – using three different but linked data collection instruments.

4.4.1. Facility Questionnaires

To collect information on facility characteristics, three questionnaires were administered in each of the public facilities in the main study group, and a single, abridged questionnaire (Short-Inventory Questionnaire) was administered in all private facilities and in public facilities of the adjacent group. Table 4.5 presents the list of facility questionnaires and where they were administered, and Table 4.6 presents information on the content and the source of information for each questionnaire.

[7] At the time that the household sample was determined, the municipality of Ita had not been included in the study.

A number of data gathering techniques were used to collect the facility information. Face-to-face interviews with facility directors or other knowledgeable staff members were used to collect information on the availability of services, operational features and procedures of the facility. Direct observation by the interviewer was used to complete the facility inventory of supplies, equipment and physical space. Information on health service output and costs was gathered through a review of facility records. A self-administered time sheet was completed by individual staff members and used to allocate staff time among various activities.[8] The set of questionnaires is presented in Annex E.

4.4.2. Client Exit Questionnaire

The client exit questionnaire was used to gather information from a sample of clients who attended public and private facilities in the main study group. Information collected included the following: client socioeconomic characteristics; reason for visiting the facility that day; the services received during the visit; place of residence, travel time and cost; the amount, if any, that was paid for the services received; waiting time; consultation time; level of satisfaction with services received; and the client's assessment of the service provider's competence. The client exit questionnaire uses the same socioeconomic questions that were used in the household survey, thereby allowing the evaluators to augment the household data with a choice-based sample from the client-exit survey. The questionnaire is presented in Annex E.

4.4.3. Household Survey Questionnaire

The ENSMI 98 survey collected the following types of information:

- Socioeconomic and demographic characteristics of household: household composition, proxy measures of income and wealth, age, education, economic activity, and women's childbearing history

- Health and health-seeking behavior: description of health problems of household members, choices related to health care and factors that may effect such choices, including severity of health problems, whether the person sought care for the problem, source of care, selection of provider, payments to the provider, travel distance and other associated costs of seeking care, and satisfaction with care received.

The respondent was a randomly selected female (15-44 years old), who responded to questions about herself, her children and her household. One of her children (under age five) was randomly selected as the subject of a detailed health questionnaire that included information about where health care was obtained for the child. In addition, the woman was asked health questions about one other person (over age five) in the household, and about availability of health services. This design provided information about a representative sample of household members. Even though we collected information about men in the household, we expected that most of the information would correspond to women and children. For purposes of this evaluation the infor-

[8] A key issue in measuring cost and efficiency in the delivery of health services is the distribution of staff time among the different types of activities in which staff are engaged – health service delivery, administrative responsibilities, and non-productive or "down" time. There has been substantial debate over the best way to measure the use of clinical staff time. Several methods have been tested, including personnel surveys, patient-flow analysis, self-administered time sheets, and time-motion studies performed by a trained observer. A recent study (Bratt, et al., 1998) suggests that while time-motion studies using a trained observer are preferred, the results obtained using the self-administered timesheet are not substantially different from those collected through direct observation. Given that data-collection methods involving direct observation are more costly to administer, we decided to use self-administered timesheets to get estimates of the staff time spent in contact with patients. On the timesheet the staff member records the time that patient contact is initiated and when it ends. This information is collected for a week. Patient-contact time was monitored for the following health services: family planning, prenatal care visits, child immunizations, acute respiratory infection and diarrhea management, postnatal visits, and a category for all other types of health services. In addition, information on the allocation of staff time was also collected from the directors of the health facilities and from other physicians familiar with the standard clinical practices in public health facilities in Paraguay. These two data sources produced similar estimates of the use of staff time.

Table 4.6. Description of Facility Questionnaires

Questionnaire	Sample	Source of information	Content
Inventory	One per facility	Manager or knowledgeable staff	Facility type, ownership, location, availability of services, staff (number, type, salaries), hours of operation, group talks, staff training, client fees, supervision, basic supplies, staff time use
Observation	One per facility	Interviewer observation and facility records	IEC materials, referrals, service statistics, basic medications, basic equipment
Time Allocation	Staff who provide direct health services	Staff	Starting and ending time of staff activity, type of service provided, presence of other staff
Exit Interview	Number surveyed proportional to average daily client load	Clients	Socio-economic characteristics, type of visit, waiting time, duration of consultation, characteristic of consultation, payments, client satisfaction, household characteristics
Short Inventory	One per facility	Manager or knowledgeable staff	Location, services, staff, informational talks, staff training, fees, basic supplies

mation on women and children is particularly useful because the basic health services provided in the types of facilities studied are directed specifically at these two populations.

4.5. Survey Procedures

4.5.1. Facility Survey

The facility survey questionnaires were prepared by MEASURE Evaluation and were reviewed in Asunción by Paraguayan researchers versed in the characteristics of the Paraguayan health system. A special team of interviewers was assembled to conduct the facility survey. Most interviewers were fairly familiar with the characteristics of the health system in Paraguay. A five-day interviewer-training workshop was conducted during June 1998. After training, the interviewers did a pilot test of the instruments in a number of public health facilities. Modifications to the instruments were made after the pilot-test and after extensive consultations with Paraguayan researchers and clinicians. Health authorities in the regions were contacted to discuss the study and obtain the necessary access to the facilities. Cooperation for the survey was enthusiastically provided. Survey fieldwork began on June 29, 1998. A few days after the beginning of fieldwork, however, an unexpected strike was declared by physicians in the public facilities. Considering that the main purpose of the facility survey was to provide a measure of the service supply environment in a given moment in time, it was important that the survey visit be done at a time when typical, or representative, service provision conditions were prevalent. With that in mind, the fieldwork plan was thoroughly reviewed. Since the strike was not nationwide and its intensity varied across regions – Cordillera and Misiones were less affected than Central – we decided to focus first on areas not affected by the strike. We also decided to survey facilities where the short-inventory questionnaire was used. This questionnaire collects information on facility characteristics and inputs, not on facility outputs or processes, therefore the data collected was unlikely to be affected by the strike. The strike lasted for two months. During this time the extension of the strike was closely monitored to minimize any negative influence on the fieldwork operation and the quality of the data. With the end of the strike, fieldwork resumed and it was completed by the end

of October 1998. Data entry and editing were conducted in Asunción.

As explained in the cost and efficiency sections, we selected four facilities to revisit to obtain estimates of the indirect costs of providing services. These four facilities were selected on the basis of facility capacity information provided by the facility survey. The visits to these four facilities were planned for the end of October. A special questionnaire was prepared for that purpose. Fieldwork for these visits, however, was affected by a national vaccination campaign carried out by the MSPBS during November and December 1998. The vaccination campaign was done in community centers and by visiting households, which meant that few personnel were present in the facilities to answer the interviews. Multiple visits to the facilities were necessary to collect the information. The regional and central health offices were also visited to complement the information on indirect costs. Visits to the four facilities continued until December 1998. Collection of information from the central and regional level continued until March 1999. Data cleaning and analysis were done in Asunción and in Chapel Hill, North Carolina.

4.5.2. Client Exit Interview Survey

The client exit interview questionnaire was prepared by MEASURE Evaluation and reviewed in Asunción by Paraguayan researchers. After a search for a local agency, the Instituto de Comunicación y Arte (ICA), a local agency with ample expertise in data collection, was chosen to implement the survey. The questionnaire was translated into Spanish and Guaraní, the local language. Training of interviewers and a pilot test of the exit interview questionnaire were done during June 1998 with MEASURE Evaluation assistance. The questionnaire was revised after the pilot test. Fieldwork was planned to coincide with the facility survey, beginning on July 6, 1998. However, the physicians' strike had a negative effect on fieldwork. Few clients were found in public facilities and it was suspected that some clients might have begun using private health providers. Since under those conditions the client exit survey may not provide information for a representative sample of public facilities clients, it was decided to postpone fieldwork until the end of the strike, or until “normal” facility operations were re-established. The strike ended on September 11, 1998. Fieldwork operations resumed on September 18, 1998 and lasted until the end of October 1998. Data entry and cleaning were done in Asunción. Processing of data and analysis were done in North Carolina. It is necessary to mention that almost no client refused to answer the questionnaire.

4.5.3. Household Data

During June 1998, meetings with CDC and CEPEP researchers were held in Atlanta to revise the questionnaire and to include the questions needed for this study. The sample was also revised to ensure accomplishment of the study objectives. It is important to mention that, in order to facilitate survey operations, the complete set of questions was asked in all households surveyed in Central, Cordillera and Misiones. This means that the household survey provides relevant data on health and health-seeking behavior for a representative sample of the population in each of these three departments.

A survey pre-test was done during August and the questionnaire was revised accordingly. Training of interviewers was held in August and in the beginning of September. CEPEP and CDC conducted all survey operations, and MEASURE Evaluation staff assisted. Fieldwork began in mid-September and ended at the beginning of December 1998. Data entry, editing and cleaning were done in Asunción by CEPEP. The household data were released to MEASURE Evaluation in mid-April 1999.

5. Results: Facility Inventory & Observation Surveys

This section presents the results of the facility inventory and facility observation surveys. It presents key facility characteristics, including services offered, staffing and staff training, pricing patterns and fees, availability of information, communication and education (IEC) materials, supply of contraceptives and medicines, record keeping procedures, and supervisory practices.

A total of 143 health facilities, located in 39 municipalities, were included in the sample. It is important to remember that different instruments were used according to the location of the facility. All public facilities in the 20 municipalities that constitute the main study group received the complete set of facility survey questionnaires (i.e., Inventory, Observation, Time Allocation, and Client-Exit Interviews, Annex E). There were 52 public facilities in this group. In the public facilities located in the 19 adjacent municipalities and in the sample of private facilities, the short-inventory questionnaire was administered. There were 72 public facilities and 19 private facilities in this group.

Considering the different instruments used, as a general organizational principle, in this section we have used the largest number of observations available to estimate each indicator. This will make the results, which are presented by department and by facility type, more representative and more useful from a policy perspective.

In terms of the presentation of the baseline findings, we have made two adjustments. First, to ease comparisons across departments, we used only public facilities to obtain aggregate results by department, and private facilities are presented as a single group. Our reason for doing this is because the majority of the private facilities in our sample are in Asunción or Central, while almost all facilities in Cordillera and Misiones are public. To the extent that private health facilities are fundamentally different from public ones, the results by department would have been skewed without this adjustment. Second, in the facility sample there are six specialized hospitals, all of which are located in Asunción. These hospitals provide specialized care, e.g., cancer treatment and burn management, and are unaffected by the decentralization program, which applies to only public facilities that provide basic health services. Although the information in these six observations is important, we have chosen to exclude them from the analysis.

Finally, from the inception of this study, we have attempted to define the basic outcome measures from the perspective of the facility, i.e., what the facility produces or provides. In other words, we have attempted to include the aspects of the facility and service delivery that are potentially within the control of policymakers and that most influence the quality of, and client's accessibility to, the health services. We considered what services were offered and how they were offered, the competency and efficiency of the staff involved, the opportunities for addressing client doubts and concerns, and so forth. The indicators presented in this section should be viewed in this light.

Additional results from the facility surveys are presented in Annex B.

5.1. Availability of Health Services

A primary interest in this study is to assess the provision of basic health services, specifically family planning and maternal and child health services. The appropriateness of services is relevant to quality, equity, efficiency and cost. The number or type of services offered is generally considered a proxy for quality. The extent to which these services are offered is a question of equity. Finally, the number of services in a particular facility affects both efficiency and cost.

5.1.1. Family Planning Services

Availability. Most of the main family planning methods are available at most public facilities. There are, however, several notable variations in service availability in the sample. As shown in Figure 5.1, almost all hospitals and health centers offer pills, condoms and IUDs. The availability of these three methods is lower in health posts. About 75% of the health posts offer pills and condoms, while IUDs are

offered in only 42% of them. Injections are relatively less available than the other reversible methods. About 76% of health centers and only 58% of health posts offer injections. All methods tend to be less available in private facilities, although more clinical methods (e.g., IUDs and injections) are relatively more available.

Figure 5.2 shows the availability of contraceptive methods in public facilities by department and in all private facilities. Pills and condoms are widely available in Cordillera and Misiones, while lower levels of availability are observed in public facilities in Central and Asunción. Injections are less available in Cordillera, where almost 60% of public facilities in Cordillera do not offer this method. Misiones is the department with the lowest availability of IUDs in public facilities. It is interesting to note that despite the fact that Asunción is the capital and that Central is considered one of the most developed departments, contraceptive availability is lower in these two areas than in other departments. This result did not change even with the inclusion of the specialized hospitals (not presented), and it is a pattern that will emerge often in subsequent analysis. Maps A.4-A.7 in Annex A present information on the availability of pills, condoms, IUDs and injections in the public facilities sampled.

Figure 5.1.
Family Planning Services Available, by Facility Type

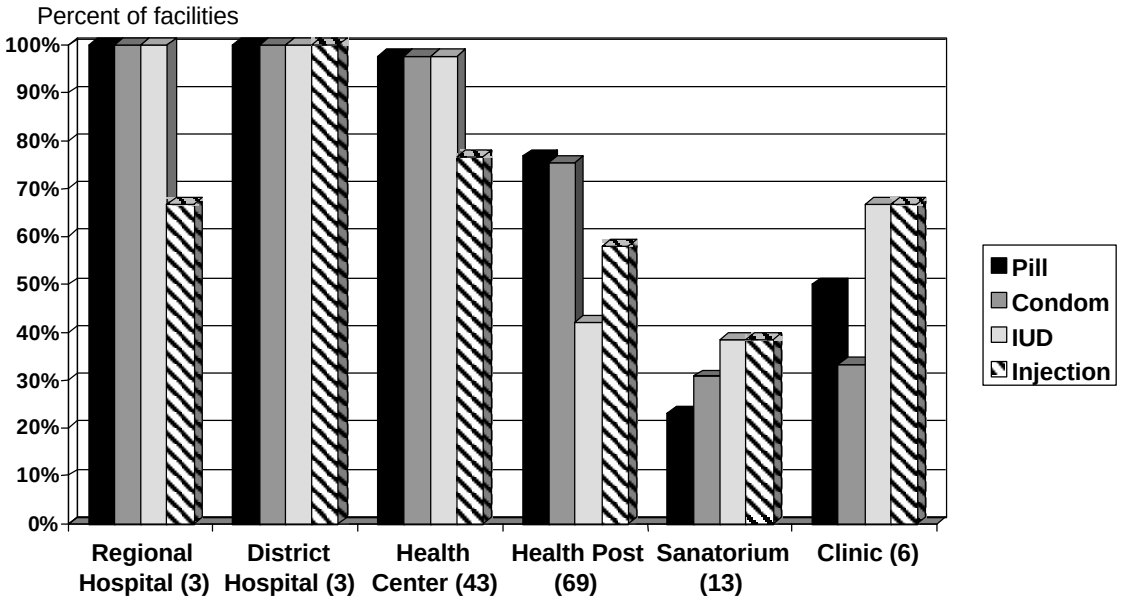
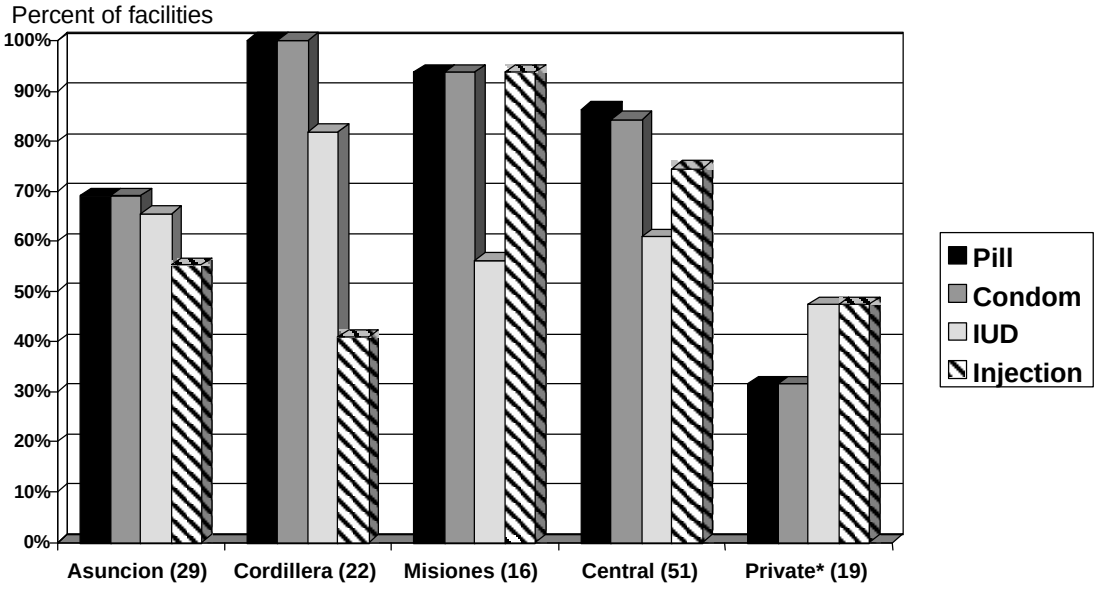


Figure 5.2.
Family Planning Services Available in Public Facilities by Department, and in All Private Facilities



* All Private Facilities in Sample

Method Stock-Outs. According to the quality-of-care framework elaborated by Bruce and colleagues (1990), both the range of contraceptive methods and the availability of the client's preferred method at the time of the client visit are directly responsible for the adoption and continuous use of modern contraceptives. Figures 5.3 and 5.4 present the percentage of facilities that had stock-outs any time in the six months preceding the survey of a specific method that they normally offered. This indicator allows one to identify facilities and areas where there are problems in the supply and provision of contraceptive services. It is important to mention that stock-out conditions could also be related to the demand for a service and are not necessarily an indicator of poor management. However, high levels of stock-outs, and repeated episodes of stock-outs, could indicate that the supply of methods is not responding to the demand for the method.

Method-specific stock-outs are a clear problem in health centers and health posts. As Figure 5.3 shows, of the health centers that offer each type of method, 24% had a stock-out of pills, 40% had stock-outs of condoms, 38% had stock-outs of IUDs, and 57% of health centers had stock-outs of injections. The stock-out problem is particularly severe for injections. Injections were out of stock across all public facility types, including hospitals. Injection stock-outs could reflect the lack of syringes as well as the lack of the hormonal formulation itself. Health posts also reported problems with stock-outs, but the situation was less severe than in health centers. This result could be considered encouraging if we assume that most clients would go initially to a health post when seeking less clinical contraceptive methods.

Figure 5.3.
Stock-Outs of Family Planning Supplies, by Facility Type

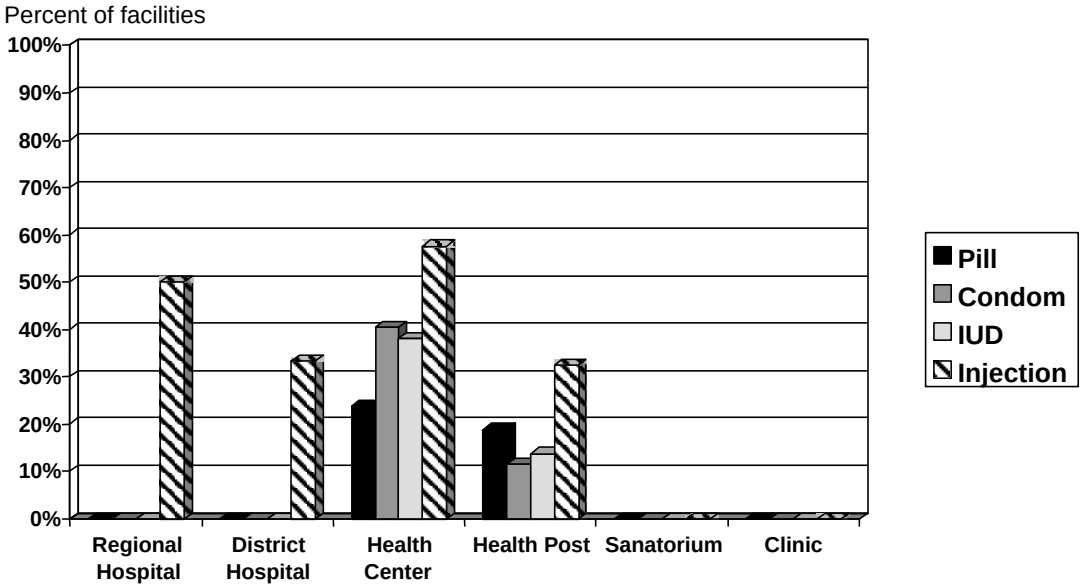
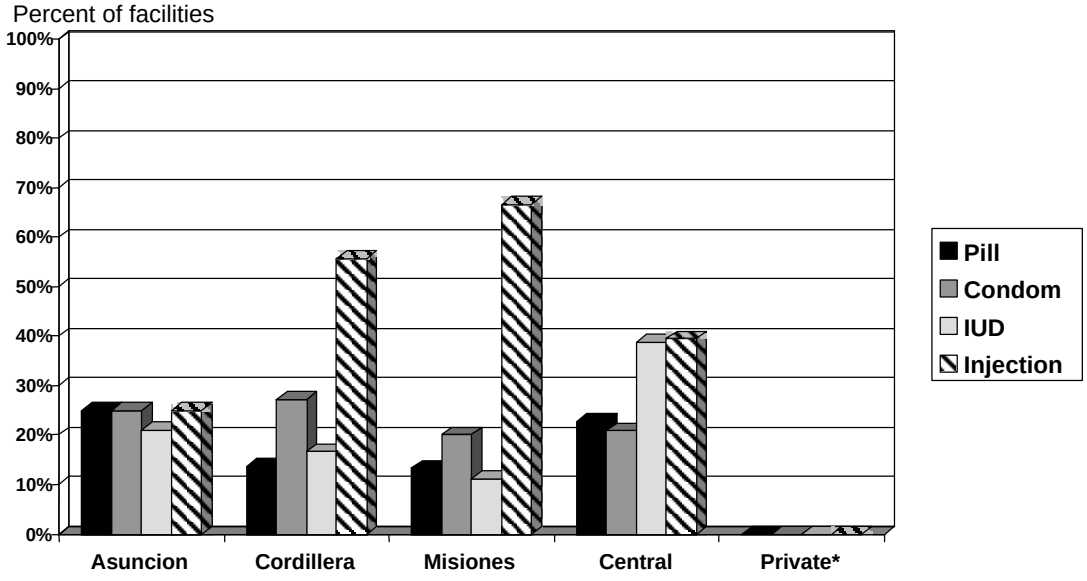


Figure 5.4.
Stock-Outs of Family Planning Supplies in Public Facilities by Department, and in All Private Facilities



*All Private Facilities in Sample That Offer the Service

Figure 5.4 presents the incidence of stock-outs in public facilities by department and in all private facilities. In contrast to the previous measure, no one department had an across-the-board supply problem. Cordillera and Misiones had by far the highest proportion of facilities with injection stock-outs. Around 56% of the public facilities that offered injections in Cordillera and 67% in Misiones had any stock-out in the preceding six months. Asunción and Central had relatively high pill and condom supply problems. Maps A.8-A.11 in Annex A present information on stock-outs of pills, condoms, IUDs and injections in the public facilities in the sample.

5.1.2. Child Health Services

The next series of graphs presents the majority of the maternal and child health services for which we collected information. Figures 5.5 presents the percentage of facilities offering basic child health services, including immunizations. Most child health services are offered in the majority of facilities. Health posts, however, offer fewer child health services than other public facilities, particularly perinatal care, growth monitoring and BCG immunization services. Growth monitoring is the least available service in health centers and posts. As in the family planning figures above, a lower percentage of private facilities offer child health services. The levels of availability of immunizations in private facilities, particularly clinics, are lower than in most public facilities.

By department (see Figure 5.6), in what is by now a familiar result, public facilities in Central lag behind the other departments in the availability of child health services, especially in perinatal care, growth monitoring and BCG immunizations. Asunción has the highest availability levels for diarrhea and Acute Respiratory Infection (ARI) management and Polio and DPT immunizations, but has among the lowest levels for perinatal care, growth monitoring and BCG immunizations.

5.1.3. Maternal Health Services

Figures 5.7 and 5.8 present information on the availability of maternal health services by facility type and department, respectively. When we examine the different maternal health services by facility type (Figure 5.7), the least available services include the management of deliveries with complications and the availability of folic acid and iron supplements for pregnant mothers. Iron supplements were available in only about 48% of health centers and about 44% of health posts, and folic acid supplements were available in less than 30% of both centers and posts. The most available services, according to the facility type breakdown, were general prenatal care and tetanus toxoid vaccinations for pregnant women. In addition, for all services, health posts offered fewer services than health centers, and unlike previous measures, private facilities seemed to offer a wider range of maternal health services than public health posts. Because they have a limited number of staff and equipment, it is not surprising that health posts were found to offer a narrower range of maternal services.

The analysis of maternal services availability by department, presented in Figure 5.8, displays the usual pattern of lower levels of service availability in Asunción and Central. Roughly less than 15% of the public facilities in Asunción managed deliveries with or without complications. Iron and folic acid treatments also were relatively unavailable in all departments. The most common types of maternal services available, as in the previous figure, were prenatal care and tetanus toxoid vaccinations for pregnant women. These services were available in between 80 and 90% of all public facilities.

Figure 5.5.
Child Health Care Available, by Facility Type

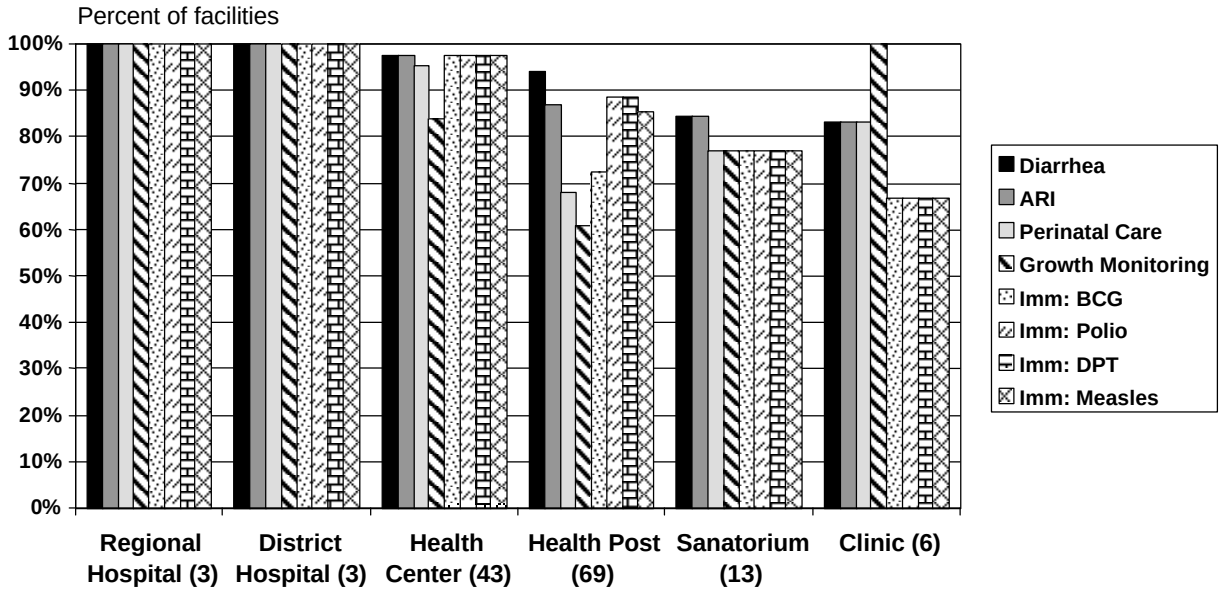
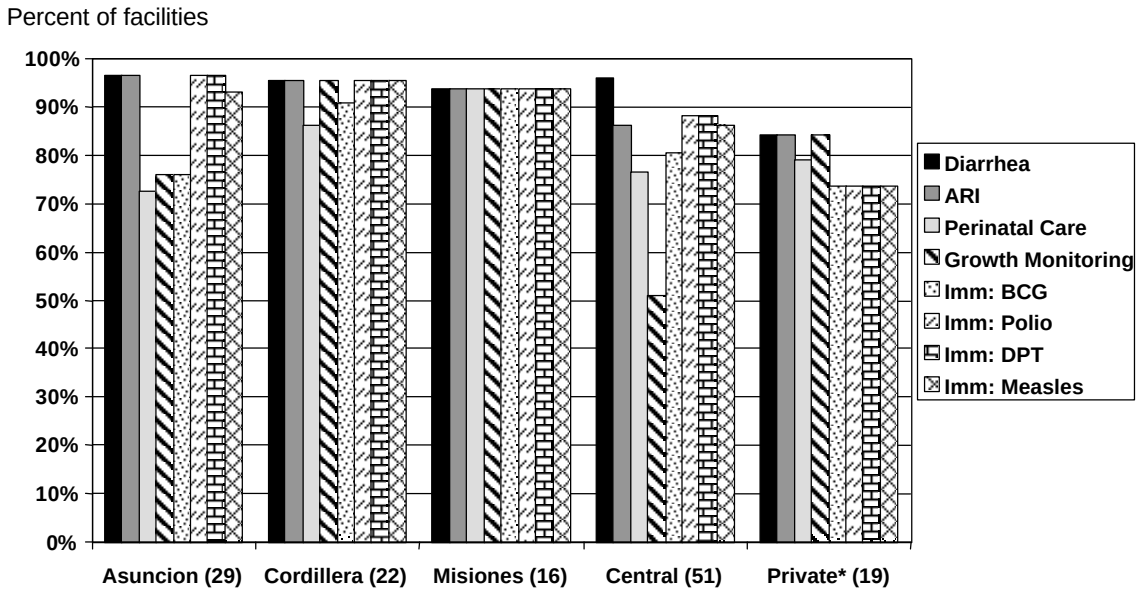


Figure 5.6.
Child Health Services Available in Public Facilities by Department, and in All Private Facilities



*All Private Facilities in Sample

Figure 5.7.
Maternal Health Services Available, by Facility Type

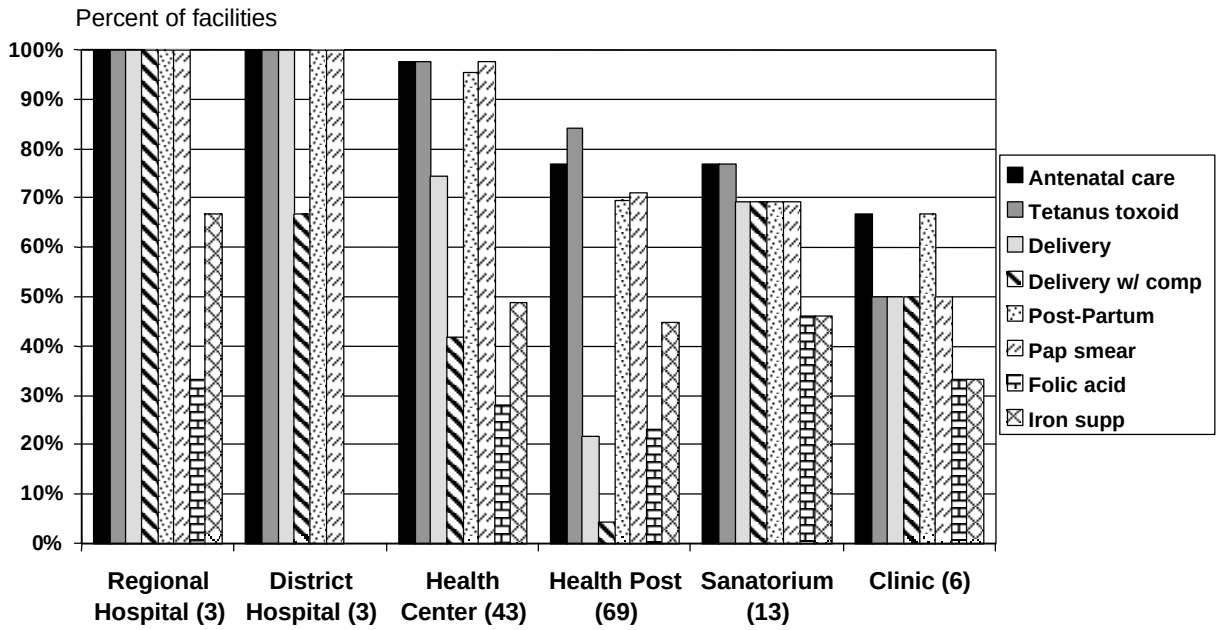
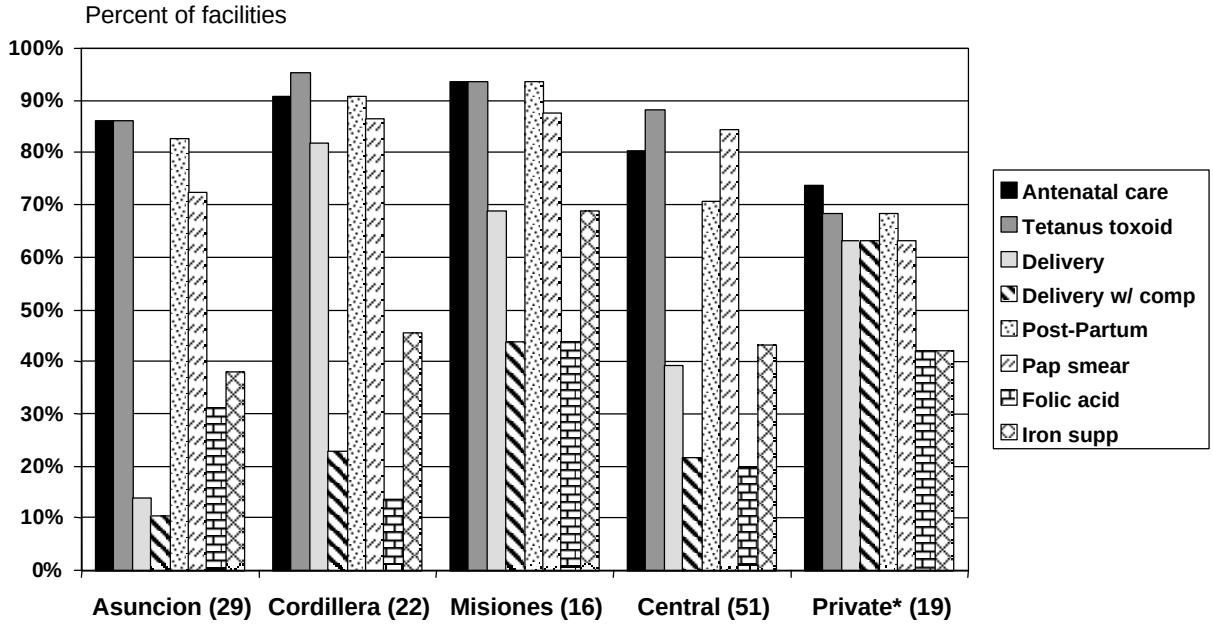


Figure 5.8.
Maternal Health Services Available in Public Facilities by Department, and in All Private



*All Private Facilities in Sample

5.2. Weekly Service Availability

Tables 5.1 and 5.2 present the median number of days that different types of services were offered in facilities that reported offering these services. As presented in Table 5.1, the majority of services were offered five to six days per week in public facilities and six to seven days per week in private facilities. There is little variation by type of facility in the number of days per week that the services are offered. Note that around 90% of public facilities were open either five or six days a week for most services, and there were some facilities that offered most services every day of the week. Delivery and other services for health conditions whose timing cannot be predicted were available seven days a week. Another notable and expected deviation from the base pattern was among the vaccination services, in particular BCG and measles, which frequently were offered just one or two days per week at health centers and health posts. Though offered less frequently during the week, the days that immunizations are offered are usually well known in the community and their reduced availability does not appear to put an undue restriction on access to the service. Among the departments, public facilities located in the Cordillera Department seem to offer a wider range of services more days of the week.

Table 5.1
Median Number of Days Service Offered, by Facility Type

	Public Facilities				Private Facilities	
Health Service	Regional Hospital (n=3)	District Hospital (n=3)	Health Center (n=43)	Health Post (n=69)	Sanatorium (n=13)	Clinic (n=6)
Family Planning						
Oral Contraceptives	5.0	5.0	5.5	5.0	7.0	6.0
Condoms	5.0	5.0	6.0	5.0	5.5	6.0
IUD	5.0	5.0	5.0	5.0	6.5	6.0
Child Health						
Diarrhea	7.0	7.0	7.0	6.0	7.0	6.0
ARI	5.0	7.0	6.0	5.0	7.0	6.0
Perinatal Care	5.0	7.0	6.0	5.0	6.5	6.0
Growth Monitoring	5.0	6.0	5.0	5.0	6.5	6.0
Immun: BCG	3.5	6.0	1.0	1.0	7.0	6.0
Immun: Polio	6.0	6.0	6.0	5.0	6.5	6.0
Immun: DPT	6.0	6.0	6.0	5.0	6.5	6.0
Immun: Measles	3.5	6.0	1.0	1.0	7.0	6.0
Maternal Health						
Antenatal Care	6.0	6.0	5.0	6.5	6.0	--
Tetanus Toxoid	6.0	6.0	5.0	7.0	6.0	--
Delivery Services	7.0	7.0	7.0	7.0	7.0	--
Delivery w/ Comp	7.0	7.0	4.0	7.0	7.0	--
Post-partum	5.0	7.0	6.0	5.0	7.0	6.5
Pap Smear	5.0	6.0	6.0	5.0	6.0	7.0
Folic Acid supplement	5.0	--	6.0	5.0	7.0	6.0
Iron supplement	5.0	--	6.0	5.0	7.0	6.0

Table 5.2
Median Number of Days Service Offered, by Department for Public Facilities and All Private Facilities

Health Service	Public Facilities: Asunción (n=29)	Cordillera (n=22)	Misiones (n=16)	Central (n=51)	All Private* (n=19)
Family Planning					
Oral Contraceptives	5.0	6.0	5.0	5.0	6.0
Condoms	5.0	6.0	5.0	5.0	6.0
IUD	5.0	6.0	5.0	5.0	6.0
Child Health					
Diarrhea	5.0	7.0	7.0	6.0	6.5
ARI	5.0	7.0	7.0	6.0	6.5
Perinatal Care	5.0	6.0	5.0	6.0	6.0
Growth Monitoring	5.0	5.0	5.0	5.5	6.0
Immun: BCG	1.0	1.0	1.0	1.0	7.0
Immun: Polio	5.0	6.0	5.0	6.0	6.0
Immun: DPT	5.0	6.0	5.0	6.0	6.0
Immun: Measles	1.0	1.0	1.0	5.0	6.0
Maternal Health					
Antenatal Care	5.0	6.0	5.0	6.0	6.0
Tetanus Toxoid	5.0	6.0	5.0	6.0	6.0
Delivery Services	6.5	7.0	7.0	7.0	7.0
Delivery w/ Comp	7.0	7.0	7.0	7.0	7.0
Post-partum	5.0	6.0	5.0	6.0	7.0
Pap Smear	5.0	6.0	5.0	6.0	6.5
Folic Acid supplement	6.0	6.0	5.0	6.0	7.0
Iron supplement	6.0	6.0	5.0	6.0	7.0

*All the Private Facilities in the sample from all departments

5.3. User Fees

An important aspect of broad service availability and accessibility is price. Fees charged for services offered are important for two reasons. First, the amount of the fee is directly related to the amount of service utilized through a simple demand relationship, and second, the fee is indirectly important for sustainability reasons through the amount of cost recovery it generates. All else being equal, a lower fee will reduce the monetary cost of the service to the client and increase the population's access to health services. A lower fee, however, will increase the subsidy burden on the operating authority if the cost of the service remains unchanged. Figures 5.9, 5.10, 5.11 and 5.12 present the proportion of facilities that charge a fee by service type, department and for all private facilities.

Figures 5.9 and 5.10 present the percent of facilities that charge any price for family planning and the child health services. In general, almost no public facility charges for immunizations, while almost all the private facilities charge for this service. For other child services, a large percentage of public facilities charge fees.

Figure 5.9.
Family Planning and Child Health Care Pricing,
By Facility Type

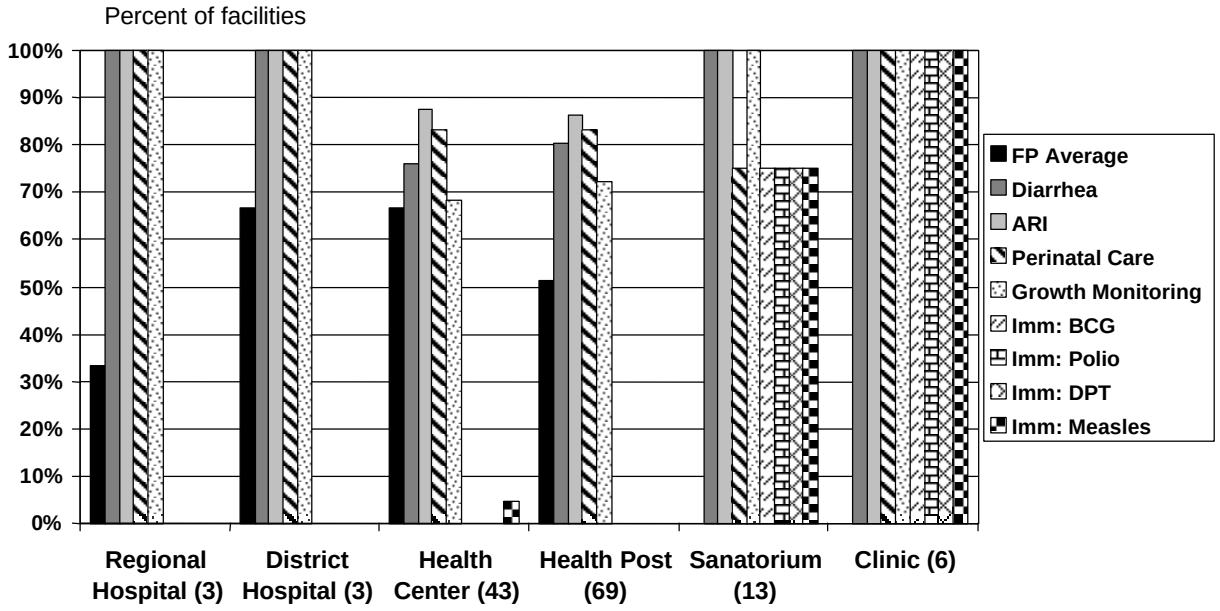
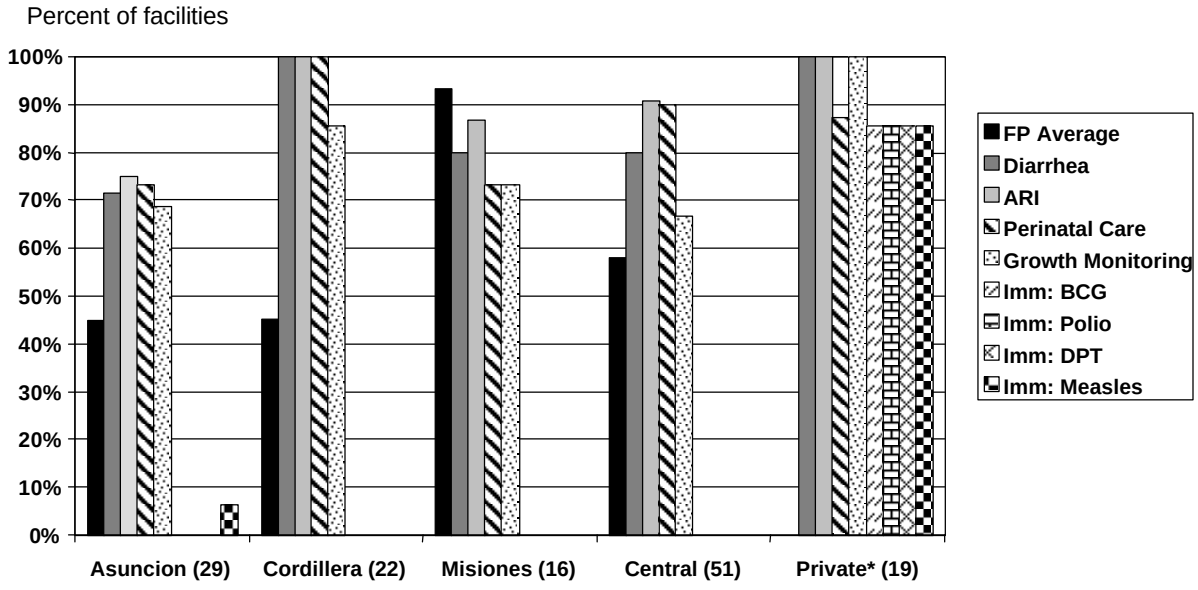


Figure 5.10.
Family Planning and Child Health Care Pricing in Public Facilities by Department, and in All Private



*All Private Facilities in Sample

Slightly less than two-thirds of public facilities charge fees for family planning services. However, around 50% of health posts and 66% of the regional hospitals offer family planning services free of charge. As Figure 5.10 shows, there are regional variations in pricing schemes. Almost all public facilities in Cordillera charge for child health services other than immunizations. In Asunción, around 30% of public facilities offer child health services free of charge. The largest regional variation is for family planning services. More than 90% of public facilities in Misiones charge fees, while more than half of public facilities in Asunción and Cordillera offer family planning services free of charge. As expected, private facilities charge almost everyone for everything.

Tables 5.3 and 5.4 present the actual amount charged (in 1998 Guaranies, with an exchange rate: 1 US$ = 2,815 Guaraníes) for each service by facility type, by department, and for all private facilities. Unfortunately, the private facilities were not as forthcoming with price information as public facilities. Only two of the 19 private facilities in the sample answered any questions about prices for family planning services, and less than half of the facilities answered any of the other service pricing questions. It seems that we have just enough data to construct private pricing averages for child and maternal health services, but not enough for family planning. Of the two private facilities that provided information about family planning prices, both charged for the service.

Table 5.3.
Average Price Charged for Selected Services, by Facility Type (in 1998 Guaranies)

	Public Facilities				Private Facilities	
Health Service	Regional Hospital	District Hospital	Health Center	Health Post	Sanatorium	Clinic
Family Planning						
Oral Contraceptives	3000	3667	2104	2586	--	--
Condoms	3000	3667	2225	2534	--	--
IUD	3000	4500	3751	3179	--	--
Injections	3000	3667	2001	2574		
Child Health						
Diarrhea	2000	3667	2568	2576	30000	26250
ARI	2000	3667	2536	2605	30000	26250
Perinatal Care	2000	3667	2520	2617	30000	26250
Growth Monitoring	2000	5000	2467	2452	30000	26250
Immun: BCG	--	--	--	--	28333	20000
Immun: Polio	--	--	--	--	23333	20000
Immun: DPT	--	--	--	--	23333	20000
Immun: Measles	--	--	--	--	33333	20000
Maternal Health						
Antenatal Care	2000	3667	2516	2703	23750	28333
Tetanus Toxoid	--	--	2500	2125	12875	25000
Delivery Services	20000	43333	30120	25769	900000	262500
Delivery w/ Comp	90000	177500	47750	50000	900000	25000
Post-partum	--	4000	2458	2735	20000	28333
Pap Smear	--	3000	2394	2646	36667	25000
Folic Acid Supps	--	--	2500	3667	--	25000
Iron Supplements	--	--	2750	3167	--	25000

Table 5.4.
Average Price Charged for Selected Health Services: Public Facilities by Department and All Private (in 1998 Guaranies)

Health Service	Public Facilities				All Private*
	Asuncion	Cordillera	Misiones	Central	
Family Planning					
Oral Contraceptives	1885	2545	2001	2834	--
Condoms	1885	2741	2001	2828	--
IUD	1834	4857	1557	4834	--
Injections	1750	2167	2001	2815	
Child Health					
Diarrhea	2300	3000	2000	3000	27857
ARI	2200	2917	2000	2967	27857
Perinatal Care	2227	2900	2000	2926	27857
Growth Monitoring	2318	2833	2000	3100	27857
Immun: BCG	--	--	--	--	24167
Immun: Polio	--	--	--	--	21667
Immun: DPT	--	--	--	--	21667
Immun: Measles	--	--	--	--	26667
Maternal Health					
Antenatal Care	2375	2917	2154	2903	25714
Tetanus Toxoid	1917	3000	--	3000	16917
Delivery Services	77500	17000	19909	31706	581250
Delivery w/ Comp	125000	10000	46800	71750	462500
Post-partum	2267	2900	2333	3000	25000
Pap Smear	2208	2471	2000	2944	32000
Folic Acid Supplements	3000	--	--	3250	25000
Iron Supplements	3000	3000	--	3000	25000

* All the Private Facilities in the sample from all departments

Figures 5.11 and 5.12 present the percent of facilities that charge for maternal health services by facility type, department and for all private facilities. Hospitals and private facilities tend to charge for all maternal health services if the services are available. Health centers and posts show a remarkably similar pattern of pricing. A large percentage of health centers and health posts, over 85%, charge for higher-time-intensity services, such as prenatal care, delivery, delivery with complications, and post-partum services, while a low percentage of these facilities charge for services such as tetanus toxoid immunization and nutritional supplements. Hospitals offer tetanus toxoid injections free, even though it might be included as part of prenatal care. By department (Figure 5.12) there is a similar pattern of pricing across departments. Again, compared to other departments, a higher percentage of public facilities in Cordillera appear to charge a fee for maternal health services.

For facilities that charge for a service, the fees for each service are presented by facility type in Table 5.3, and by department and for all private facilities in Tables 5.4. As noted earlier, no public facility charges for immunizations. Of the services that can be compared, the prices in private facilities are around 10 times higher than those charged by public facilities. Most of the public facilities seem to have a mandated, set price for each service, and they seldom deviate from that price. For example, 91% of the sample of health posts that do charge for growth monitoring services charge either 2000 or 3000 Guaranies, and the patterns are similar across most of the public prices in the sample. Hospitals tend to charge more than health centers or posts, and there is little difference in pricing schemes between health centers and posts. As expected, the most expensive service in all facility types is delivery services. This is also the service with most variation of charge across facility types.

Figure 5.11.
Maternal Health Services Pricing, by Facility Type

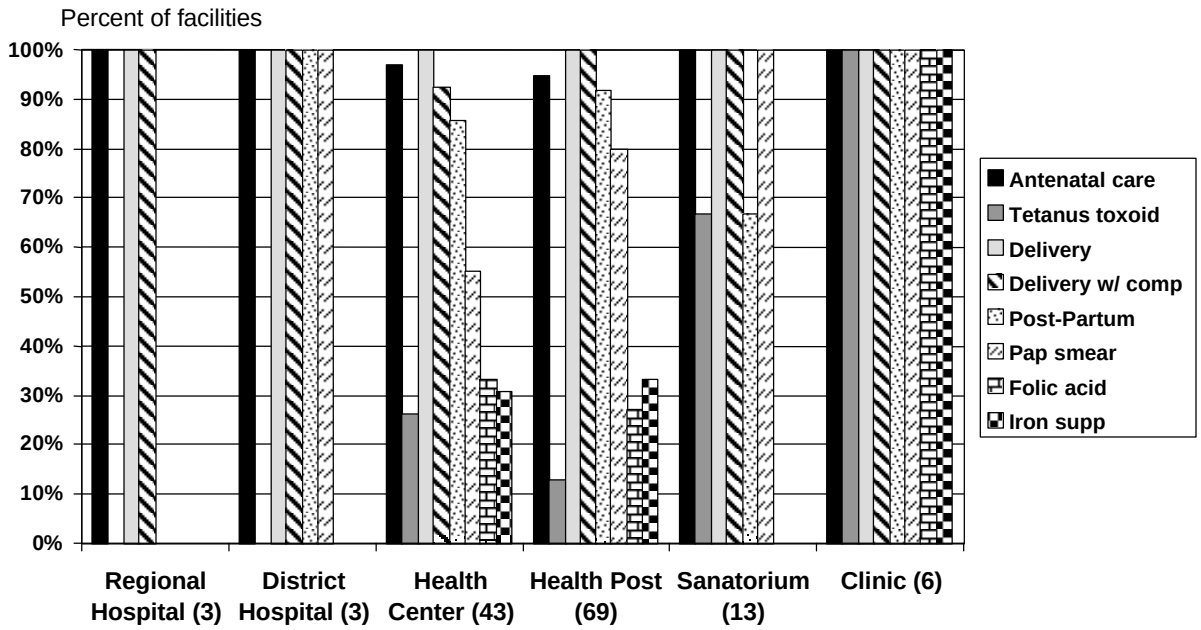
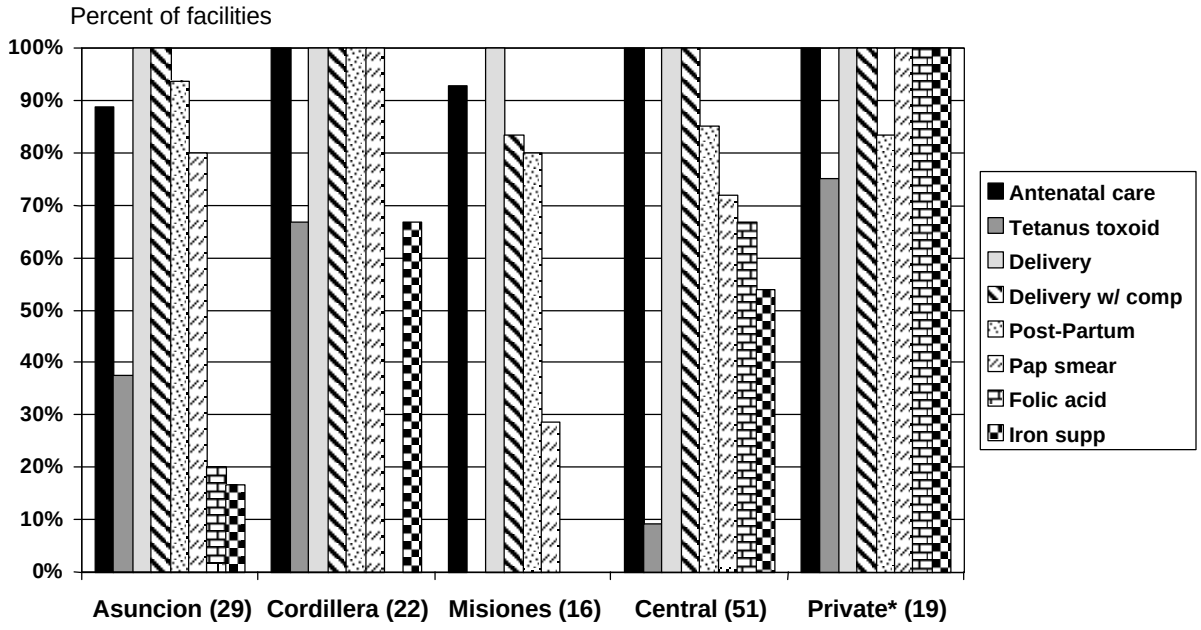


Figure 5.12.
Maternal Health Services: Pricing in Public Facilities by Department, and in All Private



*All Private Facilities in Sample

The pricing of family planning methods follows a pattern similar to that of other services. Prices for contraceptive methods are about 50% higher in hospitals than in health centers or health posts. It is interesting to note that the price of IUDs is remarkably similar to the price of condoms and pills.

In the comparison of prices by department (Table 5.4) few clear trends emerge. Deliveries appear to be a bit more expensive in Asunción, but family planning services appear to be a bit less expensive there. Once again, prices charged in public facilities are significantly lower than those charged in private facilities.

5.4. Staff Availability

Obviously, an important aspect of service provision is the availability of clinical staff and its competence to provide each of the health services offered. The next set of tables (Tables 5.5 and 5.6) summarizes the number of health personnel in the facility and the breadth of their training. The following information was collected in all facilities in the study and surrounding areas, for both full- and part-time staff: the number and type of personnel, the hours they worked, and salary information. Though we will expand on staffing cost and efficiency later in the report, in this section we present the median number of health personnel available (both full-time and part-time) by position, facility type and department.

Table 5.5 presents the median number of staff available by facility type. The differences in the size and capacity of each facility type are clearly represented in this measure of human resources. As expected, the regional and district hospitals have significantly larger staffs than any other facility type. With the exception of health posts, there appears to be at least one or two doctors per facility across all types, even in private sanatoriums and clinics. Half of public hospitals have seven or more doctors on staff, and half of the health centers have at least two

Table 5.5.
Median Number of Staff Available, by Facility Type

	Public Facilities				Private Facilities	
Position	Regional Hospital (n=3)	District Hospital (n=3)	Health Center (n=43)	Health Post (n=69)	Sanatorium (n=13)	Clinic (n=6)
General Doctors	8.0	7.0	2.0	0.0	3.0	1.0
Pediatricians	13.0	10.0	1.0	0.0	2.0	1.5
OB/GYN	16.0	7.0	1.0	0.0	2.0	0.5
Licensed Nurses	5.0	6.0	1.0	0.0	0.0	0.0
Auxiliary Nurses	56.0	32.0	7.0	1.0	4.0	2.0
Technicians	20.0	7.0	1.0	0.0	0.0	0.0

Table 5.6.
Median Number of Staff Available: Public Facilities by Department and All Private

	Public Facilities				
Position	Asuncion (n=29)	Cordillera n=22)	Misiones (n=16)	Central (n=51)	**All Private*** (n=19)
General Doctors	1.0	1.0	0.0	1.0	2.0
Pediatricians	2.0	0.0	0.0	0.0	2.0
OB/GYN	1.0	0.0	0.0	0.0	1.0
Licensed Nurses	1.0	0.5	0.0	1.0	0.0
Auxiliary Nurses	3.0	5.0	2.0	1.0	4.0
Technicians	0.0	0.0	0.0	0.0	0.0

* All the Private Facilities in the sample from all departments

doctors. Health posts are staffed primarily by auxiliary nurses. Half of the health posts have only one auxiliary nurse available, and this nurse is the only health provider at that facility. The auxiliary nurse is the most common type of provider in all types of facilities and represents the majority of the staff at health centers and posts.

By department, the distribution of health personnel by type seems less clear (Table 5.6). Auxiliary nurses are still the most numerous type of health personnel, and public facilities in Asunción appear to be somewhat better staffed than other departments. Public facilities in Misiones have a median number of zero doctors of any type available. To properly interpret the results of this table it should be noted that all department level medians are driven primarily by the large number of health posts in the sample. Since health posts have a median number of zero staff, other than auxiliary nurses, the health post staffing figures drive the whole sample medians downward.

5.5. Staff Training

In addition to the information on the number and type of health personnel in a facility, information was collected also on the training that each staff member received. The distribution of trained personnel has an impact on the equity of health services, and the amount of training that each received should affect the efficiency and quality of service provision. Information on both broad and specific aspects of training received during (in-service) and before the time that the staff members were employed at the facility (educational or vocational) was collected.

Figure 5.13 presents the percent of facilities by facility type that have at least one staff member who received formal training in one of the following specific basic health services: family planning provision, attending deliveries, treating cases of diarrhea and treating cases of Acute Respiratory Infection (ARI) in children.

Figure 5.13.
Trained Personnel, by Facility Type

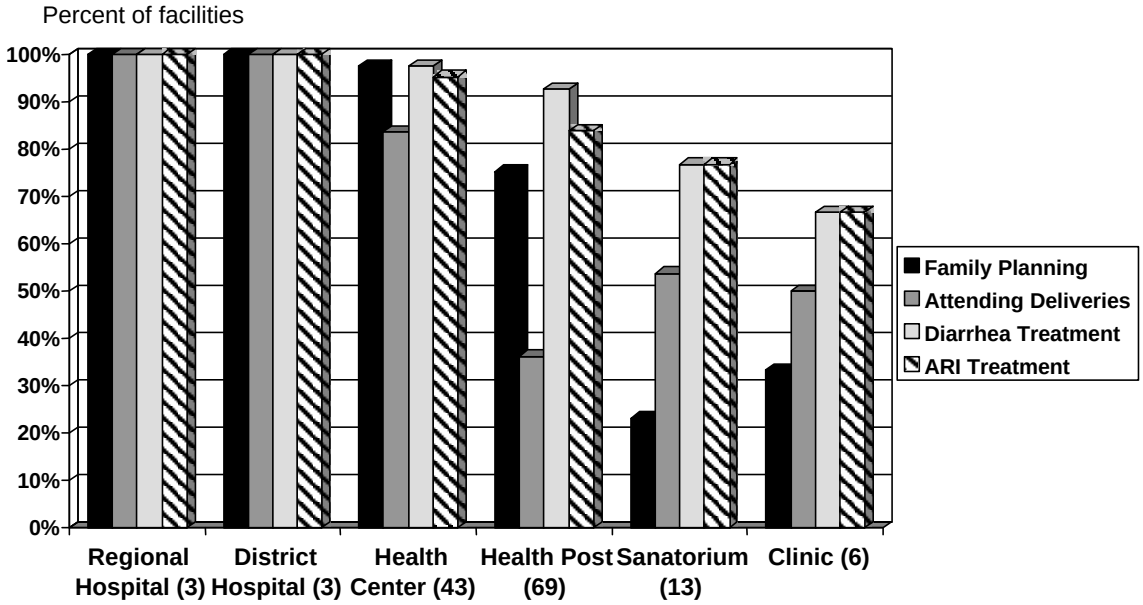
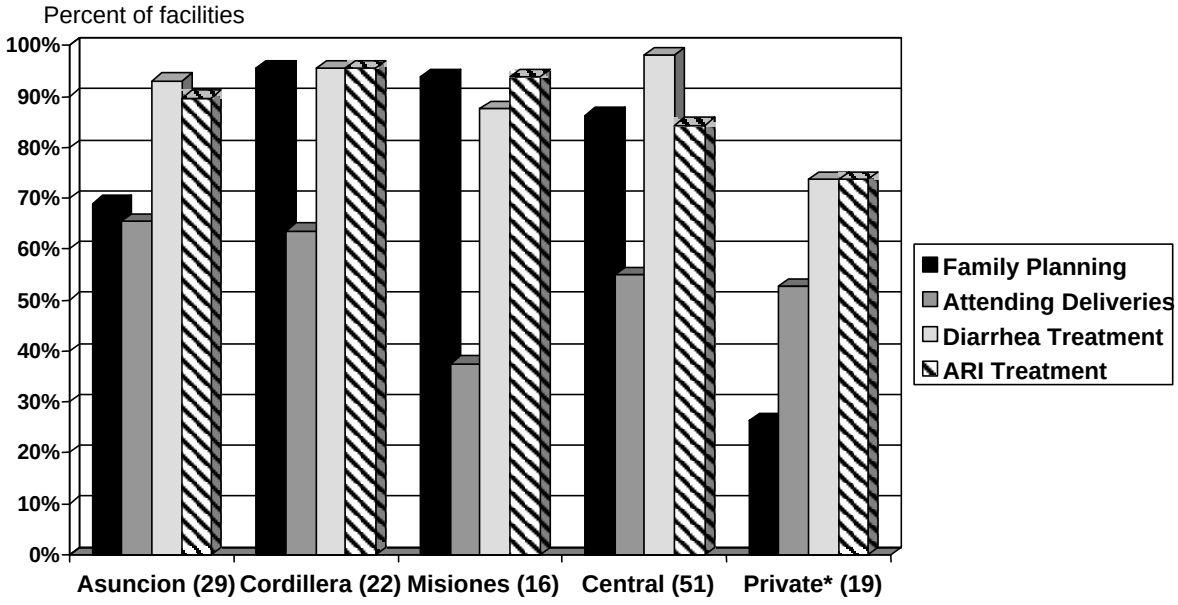


Figure 5.14.
Trained Personnel in Public Facilities by Department, and in All Private



*All Private Facilities in Sample

As Figure 5.13 shows, almost all hospitals and health centers report having at least one staff member trained in family planning service delivery and diarrhea and ARI management. About 17% of health centers, however, have no staff member trained to attend deliveries. It is not surprising that a lower percentage of health posts, only 36%, have a staff member trained in attending deliveries, since fewer health posts offer this service. Around 25% of health posts, however, have no staff member trained on provision of family planning services. This result suggests a lack of training of auxiliary nurses on family planning services. This is the staff type most prevalent, and, in most cases, the only staff member present at health posts.

Of the other training measures for which we collected information, health posts lag behind other types of public facility. Interestingly, private facilities apparently have the lowest number of trained staff overall. The most common type of training is for diarrhea management and the least common is for family planning. When the results by department are examined (Figure 5.14) there are no clear patterns. Over 30% of public facilities in Asunción do not have staff trained in the delivery of family planning services or deliveries. Misiones has the lowest percentage of public facilities with trained staff in deliveries. About 62% of public facilities in Misiones have no staff trained to attend deliveries. The presence of staff trained to manage cases of diarrhea and ARI seems to be high, but not universal, in the public facilities in all departments.

5.6. Group Talks

The next few variables are directly related to the quality of the service and may be just as important to the potential user as the fact that the service exists. An important aspect of service quality is the quality of the information exchanged between health providers and clients. A well-informed consumer of health services is both more likely to benefit immediately and has a higher probability of using the service in the future. To that end, the survey collected information about the availability and content of informational and educational talks intended to

increase a client's awareness of services or health topics offered at the facility. Health facilities in Paraguay offer what can best be described as group talks on different aspects of health. These talks cover many topics, including general family planning issues and maternal health concerns (e.g., health and nutrition needs during and after pregnancy, identification of pregnancy complications and newborn care). Child health topics include infant nutrition, the treatment and prevention of diarrhea and ARI prevention. For our analysis, we combined the separate measures into general family planning group talks, maternal health talks and general child health talks. In the majority of cases, if the facility offered health talks in a particular subject, it included all the topics of that subject mentioned above.

Figure 5.15 presents the percentage of facilities offering group talks by subject. The first characteristic to mention is that if a facility offers one type of talk, it most likely offers all of the other types as well. All regional and district hospitals offer all three types of group talks, as do most of the health centers. About 80% of health posts offer some type of group talk. The second feature to mention is that the offering of information to the population through health talks is a distinctive characteristic of public facilities. A very low percentage of private facilities offer group talks, which is different from other characteristics of service provision as presented above, where they more closely resembled health posts. The most available topics are related to child health, and the least available is family planning.

Figure 5.16 presents the percentage of public facilities that offer groups talks by department and for all private facilities. Once again, Asunción appears to lag behind other departments in terms of the percent of public facilities that offer family planning and maternal health talks. Cordillera has the highest availability of group talks. Over 90% of the facilities offer the three types of talks. Cordillera also is the only region where family planning group talks are available in all facilities in the survey.

Figure 5.15.
Group Talks Offered, by Facility Type

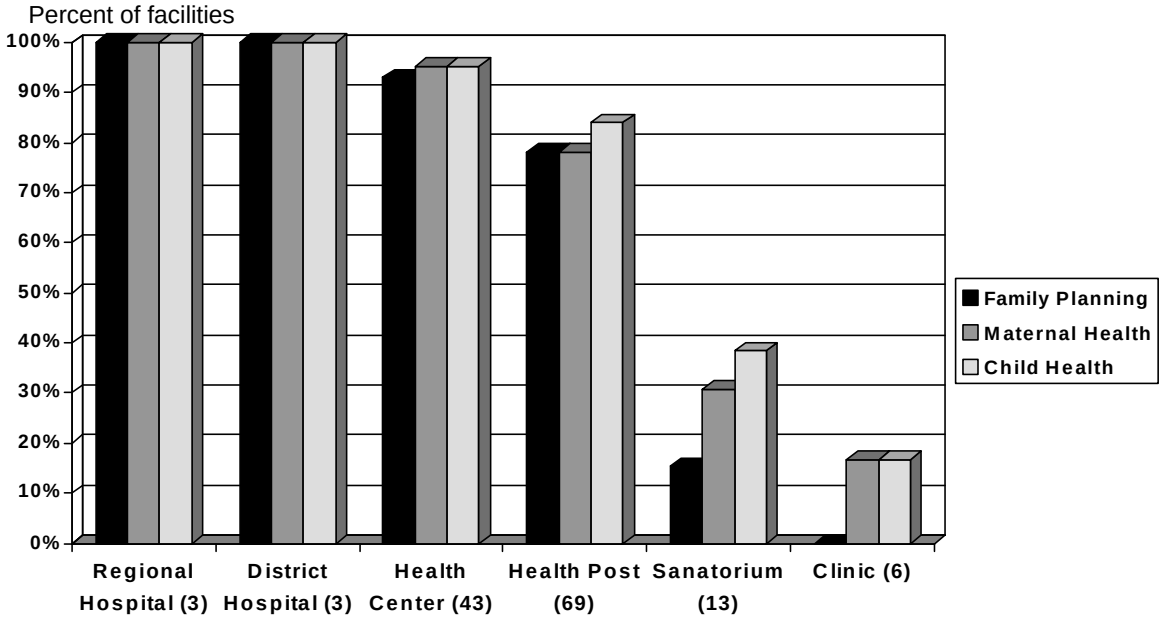
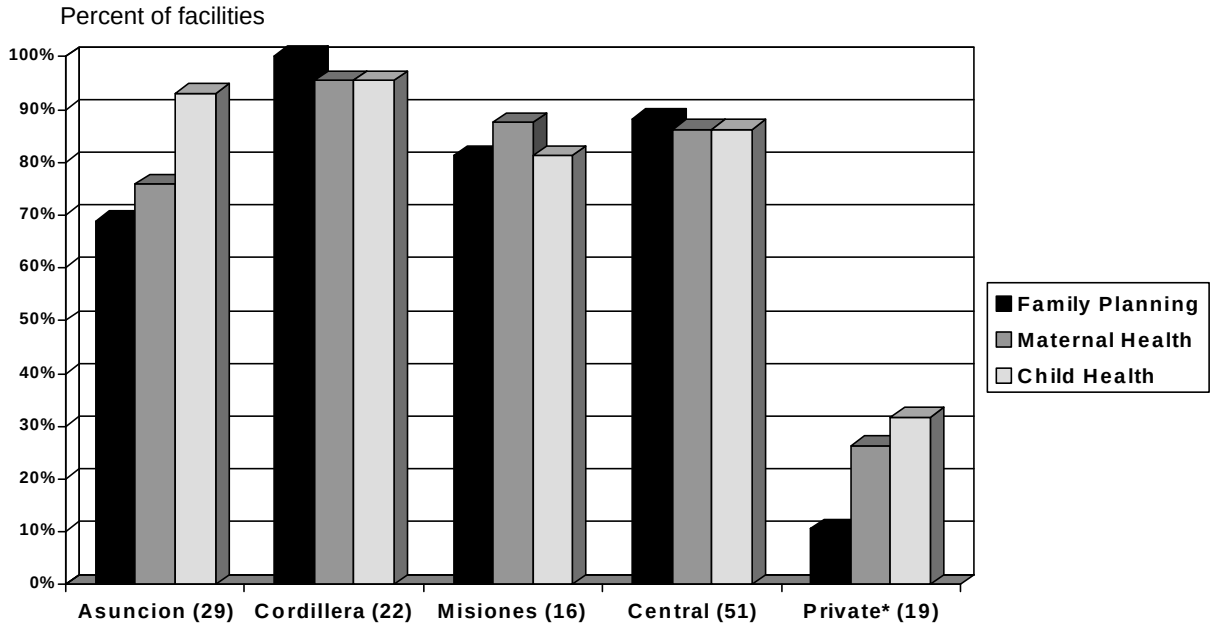


Figure 5.16.
Group Talks Offered in Public Facilities by Department, and in All Private



*All Private Facilities in Sample

5.7. Information, Education, and Communication (IEC), Supply Stock-outs, & Record Keeping

As mentioned in the first paragraph of this chapter, we use the maximum number of observations possible for each facility measure presented, given our study design. Up to this point, every measure has been calculated on the entire sample, including surrounding and private facilities. The next series of indicators can only be calculated from the public facilities in the main study group where the complete set of questionnaires was administered. These indicators are

- presence of IEC materials in the facility,
- expanded list of medicine and supply stock-outs, and
- measures of supervisory practices and record keeping in the facility.

Tables 5.7 to 5.12 present these variables by facility type and department. Note that only one regional hospital is present in this group. While we include the results for this single regional hospital in the tables, we do not claim that they are representative of regional hospitals as a whole. All three of the district hospitals in the larger sample are also in this group.

5.7.1. Information, Education, and Communication (IEC)

The IEC variables are based on the interviewer's observation of the presence and content of posters, signs, and other materials. Only one of the three district hospitals had any material advertising the availability of pre- and post-natal care and deliveries, but this is probably due to the fact that everyone knows that these services are available in hospitals. In general, health centers surpass health posts in the display of all types of IEC posters or signs, and the proportion of centers and posts promoting these services is lower than the proportion that actually offers them. For example:

- about 70% of health posts advertise information about immunizations, though almost all health posts offer these services

- about 70% of health posts advertise family planning, but almost 80% of these facility types offer at least one method of contraception

- 88% of health centers had prenatal care material visible, yet 96% of them offer the service

When broken down by department, public facilities in Cordillera appear to have the highest poster and sign coverage compared to public facilities in the other two departments.

The IEC subject score variable requires some explanation. In the questionnaire, we asked about the content of the IEC material. If it contained information of a certain type, the facility received a score of one, and if not the facility received a zero. The types of information examined included all contraceptive methods, general family planning and small-family-size advocacy, family and female well-being, provider image, infant nutrition and health, and advocating a vaccination calendar. The maximum score was 16.

Surprisingly on this measure, health centers, with an average score of 8.7, out-performed district hospitals, which had an average score of 7.3 points. Health posts had an average IEC score of 5.6 points. The analysis by department indicates that while the public facilities in Misiones have had low values on other measures, though not much lower than the average, this department performs noticeably worse on the IEC score (3.7 points for the average facility). The average facility score for Misiones is less then one-half of Cordillera's score.

Table 5.7.
IEC Availability, by Facility Type (% of facilities)

IEC Posters or Signs Available on	Regional Hospital (n=1)	District Hospital (n=3)	Health Center (n=17)	Health Post (n=31)
Family Planning	100.0%	100.0%	100.0%	74.2%
Antenatal Care	100.0%	33.3%	88.2%	58.1%
Delivery Services	0.0%	33.3%	52.9%	19.4%
Postnatal Care	100.0%	33.3%	82.4%	41.9%
Immunizations	100.0%	100.0%	100.0%	67.7%
IEC Subject Score	5.0	7.3	8.7	5.6

Table 5.8.
IEC Availability, by Department (% of facilities)

IEC Posters or Signs Available on	Cordillera (n=10)	Misiones (n=11)	Central (n=31)
Family Planning	100.0%	90.9%	77.4%
Antenatal Care	90.0%	45.5%	67.7%
Delivery Services	70.0%	0.0%	29.0%
Postnatal Care	100.0%	63.6%	38.7%
Immunizations	90.0%	63.6%	83.9%
IEC Subject Score	8.9	3.7	7.1

5.7.2. Supply Stock-outs

The next set of variables in Tables 5.9 and 5.10 corresponds to some of the basic supplies needed to perform the basic maternal and child health services. Note that the medicine or supply had to be normally available in the facility to be considered out of stock. Among facility types (Table 5.9), health posts had the most problems with vaccine stock-out, and for other medical supplies their supply problems were about the same as those of the health centers.

As shown in Table 5.10, with the exception of the tetanus toxoid and BCG vaccines in Cordillera, all vaccines were continuously in stock for the last six months in 90% or more of the facilities that offered the service. However, syringes and gloves were in considerably shorter supply, which could have easily disrupted the administration of these services. Perhaps this is the driving force behind the large contraceptive injection stock-out problems presented earlier in Figures 5.3 and 5.4, though we attempted to distinguish between the availability of equipment necessary for administration and the availability of the hormonal formulation. Note that 78% of facilities in Misiones ran out of disposable syringes at some point in the last six months. In general, Misiones seemed to experience the fewest problems with vaccine and ORS stock-outs, but the most problems with the availability of syringes and gloves. Facilities in Cordillera experienced more problems with tetanus toxoid and BCG vaccine stock-outs.

Table 5.9.
Supply Stock-Outs, by Facility Type (% of facilities)

Medicine and Supplies	Regional Hospital (n=1)	District Hospital (n=3)	Health Center (n=17)	Health Post (n=31)
Tetanus Toxoid Vaccine	0.0%	0.0%	12.5%	13.8%
BCG Vaccine	0.0%	0.0%	7.1%	20.0%
Polio Vaccine	0.0%	0.0%	0.0%	10.7%
DPT Vaccine	0.0%	0.0%	0.0%	10.7%
Measles Vaccine	0.0%	0.0%	0.0%	11.1%
Oral Re-hydration Packet	100.0%	50.0%	36.4%	24.0%
Syringe	--	--	45.5%	15.4%
Disposable Syringe	100.0%	0.0%	26.7%	34.5%
Gloves	--	--	36.4%	40.0%
Disposable Gloves	100.0%	33.3%	46.2%	36.4%

Table 5.10.
Supply Stock-outs, by Department (% of facilities)

Medicine and Supplies	Cordillera (n=10)	Misiones (n=11)	Central (n=31)
Tetanus Toxoid Vaccine	30.0%	0.0%	10.0%
BCG Vaccine	40.0%	0.0%	7.1%
Polio Vaccine	10.0%	0.0%	6.9%
DPT Vaccine	10.0%	0.0%	6.9%
Measles Vaccine	10.0%	0.0%	6.9%
Oral Re-hydration Packet	28.6%	12.5%	37.5%
Syringe	25.0%	37.5%	25.0%
Disposable Syringe	10.0%	77.8%	24.1%
Gloves	25.0%	100.0%	33.3%
Disposable Gloves	20.0%	60.0%	37.5%

Table 5.11.
Record-Keeping Practices, by Facility Type (% of facilities)

Record Keeping Practices	Regional Hospital (n=1)	District Hospital (n=3)	Health Center (n=17)	Health Post (n=31)
Observation of record maintenance	100.0%	66.7%	100.0%	96.8%
Separate Register for each patient	100.0%	100.0%	94.1%	100.0%
Maintains address of each patient	100.0%	100.0%	82.4%	80.0%

Table 5.12.
Record Keeping Practices, by Department (% of facilities)

Record Keeping Practices	Cordillera (n=10)	Misiones (n=11)	Central (n=31)
Observation of record maintenance	100.0%	90.9%	96.8%
Separate Register for each patient	90.0%	100.0%	100.0%
Maintains address of each patient	100.0%	10.0%	100.0%

5.7.3. Record Keeping

We asked three questions in the facility observation questionnaire regarding the state and content of medical record keeping, the results of which are presented in Tables 5.11 and 5.12. It is important to note that the responses are from the observations of the interviewer, and not those of the facility managers. The first item was a general question on the quality of the medical records. A facility received a score of one if the quality was judged to be very good or good. In general, the results for this indicator are quite positive. Except for district hospitals, 90% of facilities in every department scored a one.

The second item measured whether the facility kept a separate medical record for each patient. Once again, the positive responses were very high – over 90% – by facility type and within departments. However, on this measure health posts slightly outperformed health centers. The guideline question for which we could most differentiate facilities was whether the facility maintained an address database with a record for each patient. We see that most facilities maintain records of addresses, with both the health centers and posts at around 80%. By department, public facilities in Misiones had an extremely low level of address keeping – 10% of public facilities – compared to 100% in the other two departments.

5.8. Facility Supervision

With the final set of variables presented in this section, we attempted to objectively measure supervisory practices. Tables 5.13 and 5.14 present the results of the supervisory frequency questions. Health facilities should be visited by a service supervisor for family planning, for maternal and child health, and for immunizations. We collected information on the period of the last visit.

In the facility type breakdown (Table 5.13), all hospitals had received all types of supervisory visits in the six months preceding the survey, and most had received all supervisory visits within the three months prior to the survey. There seems to be a problem of very infrequent, or a complete lack of, supervision in health centers and health posts. Almost 30% of health centers had had a supervisory visit of some kind more than six months before the survey or they had never had a supervisory visit. The problem is particularly severe in health posts, where 33% had not received a family planning supervisory visit in the six months preceding the survey and 20% had never received one. Weak supervision for maternal and child health and immunization services also was a problem at health posts. While about 50% of health posts had received a supervisory visit for these health services during the six months preceding the survey, about the same proportion had

received a visit more than six months ago or not at all. Notice that 23.3% of health posts reported never having a MCH supervisory visit.

At the department level, 10% or less of the facilities in both Cordillera and Misiones had received any type of supervisory visit in the month prior to the survey, whereas over 35% of the facilities in Central had had a visit. Most commonly, visits in Central occurred in the month prior to the survey, whereas it was in the three months prior to the survey in the other departments. Lack of supervision in Cordillera and Misiones is particularly problematic. Half of the facilities in Cordillera had received a family planning supervisory visit more than six months prior to the survey or never had a visit at all. Infrequent or nonexistent immunization supervision affects about half of the facilities in Cordillera. It is interesting to note that despite the remoteness of the department of Misiones, no facility reported that they had never had a supervisory visit.

Maps A.12, A.13, and A.14 in Annex A present information on the public facilities in the sample that had received a supervisory visit for family planning, maternal and child health, and immunizations during the six months preceding the survey.

Table 5.13.
Frequency of Supervisory Visits, by Facility Type (% of facilities)

Health Service & Frequency of Visit	Regional Hospital (n=1)	District Hospital (n=3)	Health Center (n=17)	Health Post (n=31)
Family Planning Supervisor Visit				
Within Last Week	0.0%	0.0%	11.8%	0.0%
Within Last Month	0.0%	66.7%	23.5%	13.3%
Within Last Three Months	100.0%	0.0%	17.7%	26.7%
Within Last Six Months	0.0%	33.3%	17.7%	6.7%
Greater Than Six Months	0.0%	0.0%	23.5%	33.3%
Has Never Been Visited	0.0%	0.0%	5.9%	20.0%
Maternal and Child Health Supervisor Visit				
Within Last Week	0.0%	0.0%	11.8%	0.0%
Within Last Month	0.0%	33.3%	23.5%	16.7%
Within Last Three Months	100.0%	33.3%	23.5%	30.0%
Within Last Six Months	0.0%	33.3%	11.8%	3.3%
Greater Than Six Months	0.0%	0.0%	23.5%	26.7%
Has Never Been Visited	0.0%	0.0%	5.9%	23.3%
Immunization Supervisor Visit				
Within Last Week	0.0%	0.0%	11.8%	3.3%
Within Last Month	0.0%	66.7%	23.5%	23.3%
Within Last Three Months	100.0%	0.0%	11.8%	23.3%
Within Last Six Months	0.0%	33.3%	23.5%	6.7%
Greater Than Six Months	0.0%	0.0%	29.4%	26.7%
Has Never Been Visited	0.0%	0.0%	0.0%	16.7%

Table 5.14.
Frequency of Supervisory Visits, by Department (% of facilities)

Health Service & Frequency of Visit	Cordillera (n=10)	Misiones (n=11)	Central (n=31)
Family Planning Supervisor Visit			
Within Last Week	0.0%	0.0%	6.5%
Within Last Month	0.0%	0.0%	32.3%
Within Last Three Months	30.0%	50.0%	12.9%
Within Last Six Months	20.0%	10.0%	9.7%
Greater Than Six Months	30.0%	40.0%	22.6%
Has Never Been Visited	20.0%	0.0%	16.1%
Maternal and Child Health Supervisor Visit			
Within Last Week	0.0%	0.0%	6.5%
Within Last Month	0.0%	10.0%	29.0%
Within Last Three Months	40.0%	50.0%	19.4%
Within Last Six Months	20.0%	10.0%	3.2%
Greater Than Six Months	30.0%	30.0%	19.4%
Has Never Been Visited	10.0%	0.0%	22.6%
Immunization Supervisor Visit			
Within Last Week	0.0%	0.0%	9.7%
Within Last Month	10.0%	10.0%	35.5%
Within Last Three Months	20.0%	50.0%	9.7%
Within Last Six Months	20.0%	20.0%	9.7%
Greater Than Six Months	40.0%	20.0%	22.6%
Has Never Been Visited	10.0%	0.0%	12.9%

6. Results: Cost of Basic Health Services

Estimates of total cost provide a single measure of the total amount of resources committed to a particular production activity. Key questions in the decentralization of a health care system include what will happen to the total amount of resources devoted to health care, will the distribution of these resources across various services change as a result of decentralization, and do cost estimates provide an empirical basis on which these changes in resource allocation can be measured. The baseline surveys collected the necessary information to estimate total recurrent service provision cost and the costs of specific services. These will be used as the basis for comparing pre- and post-decentralization service delivery costs. This section outlines the major conceptual issues related to calculating service provision costs, provides a description of the data and estimation procedures used,[9] and presents the baseline results for service provision costs.

6.1. Conceptual Issues and Relevance

At the most basic level, the concept of cost is relatively simple. The production of a good or service requires the use of various scarce resources (e.g., labor time, materials, and supplies). Each of the resources has a "cost" or a price associated with its use (e.g., a wage rate or purchase or rental price). The calculation of the cost of producing a given quantity of good or services involves counting up the quantity of each type of resource used in production over some specified time period, multiplying the quantity of each resources by its unit price and adding up the results to a total. Thus the total cost of producing the quantity of output Q is

$$TC(Q) = \sum_{i=1}^{n} p_i x_i \qquad \textbf{(Equation 6.1)}$$

where $x_1, x_2, ..., x_n$ are the quantities of each of the n inputs used in production over some specified time period and $p_1, p_2, ..., p_n$ are the prices per unit of each input. The conceptual issues surrounding the calculation of cost boil down to which input quantities and prices to use. There are at least six conceptual issues that must be addressed in designing a methodology for measuring service cost. These are discussed below.

6.1.1. Issue 1: Which costs?

Total cost can be viewed as the total expenditure made to purchase the resources that are used in the production of the services.[10] This creates a problem because the expenditures can take place at a number of different levels in the health care system. Some resources may be purchased at a high, centralized level, e.g., a Ministry of Health paying the wages of medical staff or the purchase of supplies. Some resources may be purchased at a low decentralized level, e.g., a facility paying for utility services. Some resources, such as family planning commodities, may be donated by an external organization such as USAID.

Our approach in this study is to measure the quantity of resources used at the point where the services are actually delivered – at the facility level. This is what we call a "bottom-up" approach to cost estimation. The alternative is a "top-down" approach in which all expenditures made by any party supporting the provision of health care service are accumulated, starting with the central government and external

[9] The estimation of service costs is a complicated matter. The text provides an overview for the general reader. A more complete, detailed and technical description of the procedures is contained in Annex C.

[10] At this point we should distinguish between economic cost and what might be called actual cost. In the theoretical framework of economics, the term economic cost refers to a very specific well-defined concept. It represents the minimum cost of producing a given level of output. It assumes both allocative and technical efficiency. That is that the lowest cost mix of inputs consistent with producing the desired level of output is chosen and that these inputs are used without waste. It also typically assumes that resources are either bought at competitive market prices or their opportunity cost. Actual cost refers to the amounts of resources actually purchased to produce the output valued at the prices actually paid for those resources. Though economic cost provides an important benchmark, the questions to be addressed in this study require the use of actual cost.

donors and moving down toward the points of service delivery.

The "bottom-up" approach has the advantage that it makes it much easier to associate costs with particular localities and particular services. The disadvantage of this approach is that it is difficult to observe the cost of administration and other support activities that occur at a high level in the health care delivery system. We will return to this issue later in this section.

6.1.2. Issue 2: Definition of Output

While the total amount of resources devoted to the provision of health care is of interest by itself, cost issues are most relevant when considered in relationship to the quantity of output service produced with those resources. In economic terms this is the average or unit cost, which is the total cost divided by the quantity of services produced. This creates a number of problems for calculating service costs for a health care system.

Summary measures of output, e.g., total number of patients served, provide an incomplete picture of cost because patients receive a range of services and different services require the use of different types and quantities of resources to produce them. For example, at a given facility a patient receiving a polio immunization places an entirely different demand on health care resources than does a patient delivering a child. Costs of service provision will vary not only with the total number of patients served, but also with the types of services provided. For this reason, in this study the cost estimates will be service-specific.

6.1.3. Issue 3: Allocation of Costs to Specific Services:

The most difficult and practical problem for generating either bottom-up or top-down cost estimates, which are disaggregated by program, facility or output level, is that the production of these services often occurs in integrated programs or facilities. Thus, while it is fairly easy to get figures for the total staff cost or the total number of family planning or pre-natal visits performed in a facility, it is more difficult to get information on the proportion of staff time (and thus staff cost) devoted to the delivery of these two services. Such information is crucial, however, if one is to begin addressing the question of appropriate allocation of resources to different service objectives.

For some types of resources the allocation process is very simple, for example if records of the quantities used are available and the resource is used in providing only one service. Examples of this type of resource include contraceptive commodities, which are used only to provide family planning services, or vaccines that are used solely for immunizations.

There are other resources that have multiple uses, but we lack information or records on the distribution of these resources among their various uses. The best example of this is staff time. A method for allocating the cost of staff time and other resources of this type must be used.

The final type of resource is one that supports the provision of various services. An example of this type of resource is administrative support.

6.1.4. Issue 4: Cost and Efficiency

An important aspect of cost is its use as a measure of efficiency. All else being equal, it is preferable to provide a given quantity of a specific service at a lower cost than at a higher cost because resources for health care are scarce. The basic economic tenant of resource scarcity is best observed in the provision of health care services in the less developed world. If it is possible to produce the same level of service at a lower cost, this frees funds and resources to provide more services.

6.1.5. Issue 5: Relationship of Cost and Quality

Using cost as a measure of facility performance is a double-edged sword. On the one hand, lower cost implies a more efficient use of resources if the quantity and quality of services remain unchanged. On the other hand, more and higher quality resources may mean both higher quality services and higher cost. We will return to the issue later.

Table 6.1. Health Services Used in Cost Analysis

Services Areas	Basic Health Care Services
Family Planning	1. supply of modern reversible contraceptives (IUD, oral contraceptives, condoms, injections)
Maternal Health	2. prenatal care
	3. deliveries (normal and caesarian-section)
	4. post-partum care
	5. cervical cancer screening (PAP)
Infant and Child Health	6. diarrhea management
	7. acute respiratory infection (ARI) management
	8. growth monitoring
	9. immunizations: BCG, Polio, DPT, Measles
Other	10. other

6.1.6. Issue 6: Price of Inputs

The selection of prices applied to the quantities of inputs also raises some issues. Some inputs are used as they are purchased, e.g., staff time. Staff members receive a salary for the services they provide during a given period of time. Salary payments are a recurring expense. Other types of resources, such as equipment or buildings, are paid for at one time when they are originally purchased or constructed even though they provide services over a prolonged period. This type of expense is referred to as a capital expense.

For this study, the basic unit of time is one month, and we have estimated the cost of providing the services at the facility for a one-month period. To estimate the cost of staff, supplies, medicines and other inputs, we obtained the quantities used in a one-month period and their unit prices at the time of acquisition.

6.2. Methods

This section provides an overview of the basic approach that was used to calculate the total cost of service provision at the facility level, the total cost of the specific health services, and the average or unit cost of these services. The methods of data collection that were used to obtain the required information and a discussion of the issues addressed in the actual calculation of the cost data are also presented.

6.2.1. Overview of Cost-Calculation Method

This study estimated the direct recurrent cost of service delivery at the facility level. This was accomplished by using a variety of data-collection strategies to identify and to quantify the quantities and cost of the various resources used to produce health care services as observed at each facility. The general approach of this part of the study was to measure the amounts of the various resources that were being used at each facility and to cost these resources at prices that reflected the amount of funds that were being expended in support of service provision.[11]

Health care, by its nature, is a very complicated activity using a large number of different resources in the production of large numbers of very different outputs. The overriding purpose of this research is to set a baseline that will be used to evaluate the decentralization of basic health services in certain Paraguayan municipalities. The services that are of primary interest to policymakers are primarily those for women and children. A list of specific services of interest is presented in Table 6.1.

[11] As noted elsewhere, the issue of who is making these expenditures is an important one. The approach we will employ is based on the total expenditures regardless of who is making them. Thus, donated commodities and supplies are costed based on the donors expenditures; staff costs are based on wages and salaries paid to staff regardless of who actually makes the payment. Under a pure economic concept of cost, resources would be valued at their opportunity costs; our approach is to value resources at their financial cost.

For each of the health services presented in Table 6.1, output measures were gathered and comparable cost estimates of these services calculated. As the cost estimation strategy was designed, the evaluators made a number of decisions related to the basic conceptual issues described above. These decisions were related primarily to choices about which outputs and costs to consider.

Cost estimates were constructed for the 10 *basic health care services* listed in Table 6.1. We refer to the first nine services as *specific health care services*. This has several important implications for the cost estimation strategy. First, the choice to limit the types of services considered in the study helps to identify the inputs to cost. The specific services listed in Table 6.1 are almost always provided by a subset of medical staff. While some facilities may have surgeons, dentists, anesthesiologist and other medical staff, these specialized personnel are rarely, if ever, involved in providing the specific services. Various sources of information were used to identify the staff types or health personnel that provided the specific services.[12] These included several categories of doctors (i.e., general clinical, pediatricians, obstetricians and gynecologists), licensed nurses (including nurse obstetricians), and auxiliary nurses. The staff was divided into three groups (doctors, nurses, auxiliary nurses) based on the similarity of salaries. We refer to the staff that provides specific health care services as the *basic medical staff*. Medical staff that is not typically involved in the provision of the specific services will be referred to as *other medical staff* and non-medical personnel will be referred to as *other staff*.

In addition, while most if not all of the specific health care services were performed by the basic medical staff, these staff members also treated many other kinds of cases not included in our list of specific services. We refer to these encounters as *other services*. Because the category of *other services* covers a wide range of treatments that differed significantly in the time required to provide the service, we used weights, based on the time requirements for the various other services, to construct a visit index for other services. This was done to alleviate problems in making comparisons across facilities where the complexity of the other cases treated varied substantially. A list of other services and the weights that were used in constructing the output measure for other services are presented in Annex C.

The cost estimates that follow are made for basic health care services, including other services performed by the basic medical staff. Because the composition of services provided is an important dimension of the performance of the health care system, total cost of basic health care service provision are disaggregated by type of service.

The timing of service provision introduces another complication into the process of allocating costs by services. Many of the facilities have staff available 24 hours a day to provide services. This staff provides emergency care after normal operating hours. The primary health service provided by this "on-call" staff is delivery, but other services may be provided as well. The facilities offering services around the clock have, in addition to regular staff, a “guardia” or “on-call” team that remains in the facility. The makeup of this team varies by the type of facility. Because the flow of patients during normal operating hours and off-hours is likely to be very different, the availability of on-call services will likely have a substantial impact on the average cost of service provision because the number of patients served per hour of on-call staff time will likely be much lower than the number of patients seen per hour of staff time during normal operating hours. Unfortunately, the service statistics do not allow us to determine which cases were seen during normal hours of operation and which cases were treated after hours. Two analytic approaches were used. On the one hand, the provision of on-call services can be viewed as a part of the general overhead expense of the facility, and as such, should be included in the cost of providing the individual services as described in Table 6.1. The other approach would be to treat on-call service provision as a separate service and

[12] Two sources of information were used to determine which staff performed the specific services. The service statistics collected by the Ministry of Health are broken down by the staff person who provided the services. Thus, it is possible to identify the personnel who provide family planning, prenatal care and other basic health services from these records. Second, the staff logs (discussed below) also provide information on the types of cases staff members are seeing.

calculate the cost of the resources devoted to it.[13] Throughout this section, we will note the effect that different treatments of on- call service provision has on cost and efficiency results.

The second issue addressed was determining the costs of the resources that were used in the estimates. The production of the basic health care service requires five categories of resources whose consumption in the facility can be observed. These resource categories include (1) staff time, (2) supplies, medicines and other consumables, (3) facility level administration and overhead expenses (including such items as utilities and routine maintenance), (4) equipment, and (5) physical space.[14] The results of the use of these resources are the observable production of health care services at the facility level (e.g., number of patients served) and unobservable (at the facility level) health outcomes.

For the first three categories of resources – staff time, supplies and medicines, and administration and overhead – the costs are incurred contemporaneously with the use of the resources and the provision of the services. In other words, there is a relatively direct relationship between the flow of payments for the resources and the flow of services that these resources provide. We will refer to these costs as recurrent costs.

For the last two categories – equipment and physical space – there is a much more indirect relationship between expenditure on these resources and the flow of services they produce. While a building is generally paid for when it is built, it provides a flow of resources over a long period of time. The same is true for medical equipment. For the purposes of this study, we use only the elements of recurrent costs for basic health service.[15]

6.2.2. Data Collection

Data used to estimate the cost of providing basic health services were collected from four sources: (1) facility records and knowledgeable staff, (2) health providers in the facility, (3) detailed cost case studies of a smaller sample of facilities, and (4) administrative levels above the facilities in the organizational hierarchy. We will address each of these in turn.

[13] It should be noted that both of these approaches have some shortcomings. Treating "on-call" service provision as a part of overhead would be correct if we could allocate it to individual services based on the proportion of those services that were provided on an on-call basis. The absence of service statistics disaggregated between on-call and normal hours of operation cases makes this impossible. The only choices are to allocate the cost of "on-call" service in proportion to the direct cost on the individual services or allocate all of the "on-call" cost to specific services such as delivery. Treating "on-call" costs as a separate service results in including one service with no measured output. In fact, cases were handled during on-call hours, but this output will be assigned to one of the other services categories.

[14] An additional category would include resources that are used to support services at the facility, but whose consumption cannot be observed at the facility level. This category includes all resources used to provide administrative support, supervision, logistic support, training and so forth that are provided by levels of the health care system above the facility level.

[15] Including an estimate of the capital cost of building and equipment would introduce a number of complexities and require a number of somewhat arbitrary assumptions. The estimation of capital cost requires that a value be placed on the facility's capital stock. That is, a monetary value would have to be placed on the facility's building and stock of equipment. It would then be necessary to assume a useful service life for each element of the capital stock and assume an interest rate in order to construct a period cost of capital (the cost of using the capital stock for a month). Though very basic information of the facility's building and an inventory of the facilities medical equipment were collected in the facility survey, capital cost estimates were not constructed. In previous cost studies (Cote d'Ivoire and the Philippines), equipment and building cost were found to be a small percentage of total cost. It is expected that in most cases, health care will be provided from the same facilities both before and after the decentralization, thus this component is not expected to change. If new facilities are added or old facilities closed during the period of this study, these changes can be noted. Comparisons of the before and after equipment inventories will allow us to determine whether or not there has been an augmentation or depletion of the equipment stock.

Facility Data Collection. The facility surveys included a number of questions related to the resources available for service provision at the facility level. These include

- A detailed staffing inventory, including the number and type of personnel and their level of effort
- An inventory of family planning commodities and medicines
- An inventory of equipment

This information was used to calculate the total staff expense and the quantity of various medicines used in the delivery of care.

Time-Allocation Log. At each facility, a number of each type of staff (doctors, nurses, and auxiliary nurses) were asked to keep a log of their patient contacts over a period of five to six days. For each patient contact, the starting and ending time of the contact were recorded. The type of contact – whether it was one of the specific services or an "other" health service – was also recorded. As described more fully below, these time-allocation logs were used to provide the information to allocate staff time cost to the various activities for which specific cost estimates were made.

Detailed Facility Case Studies. The provision of health care services involves a very large number of inputs. With the exception of staff time, specific medicines, equipment and building space, most of these other inputs individually represent a very small proportion of total cost. The problems and cost that would have been involved in a complete data collection effort in every facility outweighed the benefits of doing so.

To get information on the many minor expense categories, a few facilities were selected for detailed study. The facilities that were subject to this intensive cost analysis were selected to be representative of the remaining facilities in the sample. The sample of public facilities was divided into four groups based on the characteristics of the facility.[16] A representative facility from each group was chosen and an intensive analysis of the cost of minor medical and other supplies, miscellaneous operating expenses and facility administration expense was conducted. These costs were then used as the basis for estimating these costs to the other facilities in the sample.

Data collection at other levels of the health system. Estimating the cost of medical supplies and overhead expenses required data collection at levels of the health system that were above each of the health facilities. The prices paid for many of the medical supplies used at the facility level are not known by the facility itself. Medical supplies, for example, may not be purchased by the facility itself, but rather by a unit at a higher level in the organizational hierarchy. To cost these components, the purchasing agent or agency was contacted and prices of the various inputs provided to the facilities from that level were obtained.

6.2.3. Cost Calculations

Total Cost Calculations. For each public facility in the sample the total recurrent costs of basic medical services at the facility were calculated by adding the resources costs in four general categories: (1) basic medical staff costs, (2) administrative expenses, (3) specific medical supplies, and (4) other supplies and facility overhead costs.

Basic Medical Staff Cost. The cost of basic medical staff was calculated using basic medical staff information – level of effort, salary and allocation of effort – from facility records and the time-allocation logs. To calculate the total basic medical staff cost for each facility, the wage rate[17] for each category of

[16] A complete description of the method used to define the groups can be found in the Appendix C.2.

[17] There were two data sources for the wage rate. During the facility survey, facility managers were asked the typical wage rate for each category of staff. Additionally central records were used to get actual salaries of staff at the clinic and these were cumulated by staff type and divided by the number of hours the staff worked at the facility. The second approach was deemed more reliable and was used for the cost estimates presented in this report.

staff at a facility was multiplied by the total hours that each were engaged in providing basic medical services. The product of this calculation was then summed for all staff types.

$$Total\ Basic\ Medical\ Staff\ Cost_n = TSC_n = \sum_{j=1}^{J} W_{j,n} Hours_{j,n}$$

(Equation 6.2)

Where

$W_{j,n}$ is the wage rate of staff type *j* (doctors, nurses, and auxiliary nurses) at facility *n*

$Hours_{j,n}$ is the number of monthly staff hours of staff type *j* at facility *n*

Administrative Staff Cost. Administrative cost is an important issue because it is one area of cost that may be affected by decentralization. The calculation of administrative staff cost presents two problems. First, in the smaller facilities, there may be no administrative staff,[18] and medical personnel, usually auxiliary nurses, may perform such administrative tasks as patient registration. Where there is no administrative personnel, estimating the cost of administration requires that the costs associated with personnel who perform both administrative and medical duties be allocated between the two activities. Second, in the larger facilities, services other than the basic medical services are also performed.[19] In such cases it is necessary to allocate the cost of administrative personnel between basic medical services and the other activities of the facility.

Two approaches were taken to address these problems. First, we performed detailed cost studies to identify administrative expenses at four representative facilities. The administrative expense was calculated as a percentage of the expense of basic care medical staff. This percentage was then applied to the other facilities in the same group to estimate administrative personnel expense. The second approach was to take the reported number of hours for administrative personnel, allocate these hours between basic medical services and other medical care, and use the wage rate of administrative personnel to calculate the total administrative expense associated with administration of basic health care services. For facilities with no administrative personnel, the time of auxiliary nurses was allocated between service provision time and administrative time to generate estimates of administration cost. The procedures used are described in detail in Annex C. Due to the substantial variation in the uses of administrative personnel across facilities, the second procedure was used to generate the results reported below.

Cost of Specific Medicines and Supplies. Specific medicines and supplies are those that are used only for one of the specific services. Medicine and supply costs were estimated for family planning commodities, vaccines and deliveries. The prices of each contraceptive commodity and each vaccine were obtained from the sources of supply. The supply cost for each visit was constructed for each type of service based on the amount of that supply used in a single visit as follows:

- Immunization: one dose of the vaccine
- Contraceptive commodities: based on the amount of a method, e.g., cycles of pills, number of condoms, distributed to the client during the visit
- Deliveries: A list of supplies that are typically used in a delivery was compiled and the costs of the items on the list were summed. Separate lists were constructed for normal and Caesarian deliveries. The list of specific medical supplies and the prices used in the estimates are presented in Annex C.

The total specific medical supply cost at each facility was calculated by multiplying the supply cost per visit at the facility by the number of visits and then summing the result across all services for which specific medical supply costs were calculated.

[18] Only seven of the 26 health posts reported having administrative personnel. All health centers and hospital had administrative personnel.

[19] All four of the hospital, 16 of the 17 health centers and 7 of the 26 health posts had medical staff performing duties not included in the basic package of services considered here.

Other Supplies and Facility Overhead Costs. Estimates of the cost for general supplies and miscellaneous expenses were constructed from the four detailed case studies. This category included the cost of various other supplies and recurrent operating expenses, including maintenance and utilities. An estimate of 5% of basic medical staff expense was used for all facilities. Annex C contains a more complete description of the components of this estimation. As shown in Equation 6.3, the total recurrent cost of basic health services for each facility was estimated by summing the component costs.

$$TotCost_{Basic,n} = TSC_n + Adm_{Basic,n} + \sum_{i=1}^{I} Med_i + OtherCost_{Basic}$$

(Equation 6.3)

Where

$TotCost_{Basic,n}$ is the total recurrent costs of basic health services in facility n

TSC_n is total basic medical staff cost at facility n

$Adm_{Basic,n}$ is administration cost allocated to basic medical care at facility n

Med_i is the total cost of medicines and supplies specifically used for service i

$OtherCost_{Basic}$="$_{other}TSC_n$ is the estimate of other overhead expenses

Cost Calculations for Specific Health Services. Cost for specific health services were estimated by allocating the components of cost to each specific activity. The cost components were divided into two categories. The first category was for the costs of resources that are used exclusively for a single service, e.g., the cost of contraceptive commodities were allocated to family planning services. The second category was for costs of resources that were used in the delivery of multiple services, e.g., staff time.

Allocation of basic medical staff cost. The staff time-allocation log was used to allocate staff cost to the various services. This was done for two reasons. First, staff time represents the largest component (62%) of total recurrent cost. Second, for most of the other components of cost, e.g., general supplies and overhead items such as utilities, a persuasive argument can be made that there is a direct and proportional relationship between the amount of labor time consumed and the amount of other resources consumed.

As described above in the data collection section, the time-allocation logs that were completed by a sample of health providers were used to record the amount of patient-contact time a sample of staff at each facility spent on the various categories of service in the list of specific services.[20] Thus in each facility for each of type of staff, we calculated the proportion of total patient-contact they had for each specific health service. The calculation is shown in Equation 6.4.

$$a_{i,j,n} = \frac{t_{i,j,n} Q_{i,j,n}}{\sum_{i=1}^{I} t_{i,j,n} Q_{i,j,n}}$$

(Equation 6.4)

Where

$\alpha_{i,j,n}$ is the proportion of total patient-contact time staff type j spent on service i at facility n

$t_{i,j,n}$ is the time required to see one patient of service i by staff type j at facility n

$Q_{i,j,n}$ is the number of patients for service i seen by staff type j at facility n

[20] Because of the way the staff logs were collected, not all procedures were necessarily observed at all facilities. For example, a facility may provide deliveries, but a delivery may not have occurred at the facility during the period in which staff logs were maintained. Where there were missing data for a particular procedure at a facility, the average time requirements for the procedure from facilities of the same group were used to fill in the missing values. See Annex C for a description of the method used to define the four homogenous facility groupings.

Using the proportion calculated in Equation 6.4, the total basic medical staff time for the *i*-th service is calculated using Equation 6.5.

$$TSC_{i,n} = \sum_{j=1}^{J} a_{i,j,n} TSC_{j,n} \qquad \textbf{(Equation 6.5)}$$

Where

$TSC_{i,n}$ is the total basic medical staff cost for service *i* at facility *n*

$TSC_{j,n}$ is the total basic medical staff cost for staff type *j* at facility *n*

$\alpha_{i,j,n}$ is the proportion of total patient-contact time staff type *j* spent on service *i* at facility *n*

This calculation was done in two different ways depending on the approach to "on-call" service provision. To allocate the cost of on-call service provision across all services, the total hours of each type of staff was used in equation 6.5. To treat on-call service provision as a separate service, the hours of on-call staff time were subtracted from $TSC_{j,n}$ for each type of staff before the calculation in equation 6.5 was made. The hours of on-call staff time for each facility was based on whether or not the facility offered services "on-call" and the specific make up of the "on call" team at that facility. A complete description of the procedure is contained in Annex C.

Estimation of Total Recurrent Cost. As shown in Equation 6.6, the total recurrent cost for each service was estimated by adding the following: basic medical staff time allocated to the service, the administrative staff time allocated to the service,[21] specific medicine or supply cost for that service, and the amount of total overhead allocated on the basis of the percentage of basic medical staff time used by that service.

$$TC_{i,n} = TSC_{i,n} + Adm_{Basic,i,n} + Med_i + b_{i,n} OtherCost_{Basic}$$

(Equation 6.6)

[21] The procedures for allocating administrative cost to specific services are described in Annex C.

Where

$TC_{i,n}$ is the total recurrent cost of service *i* at facility *n*

$TSC_{i,n}$ is the basic medical staff cost allocated to service *i* at facility *n*

$Adm_{Basic,i,n}$ is administrative expense allocated to service *i* at facility *n*

Med_i is the total cost of medicines and supplies specifically used for service *i*

$b_{i,n}$ is the percent of total staff expense devoted to service *i* in facility *n* and is calculated as

$$b_{i,n} = \frac{TSC_{i,n}}{TSC_n}$$

$OtherCost_{Basic}$ is the total amount of other overhead expenses for basic medical services

Staff "Down Time". The staff time not spent in direct contact with patients – "down time" – is a component of labor cost and merits some discussion. Obviously, not all staff time is spent in direct contact with patients. Though a staff member may be paid for working eight hours a day at a facility, every minute of those eight hours is not spent attending patients. Non-contact time may be spent performing administrative or other necessary duties, including record keeping, instrument sterilization and straightening up examination rooms. It is also likely that because patients are unlikely to come to the facility in a constant and continuous stream that some staff time is spent waiting for patients. Finally, there may be some "wasted" time when a staff member engages in personal business or activities other than the business of the facility. As will be discussed in greater detail in the next section, these issues are most important to the issue of efficiency; however, the issue of efficiency is relevant in the analysis of cost, particularly unit cost.

Table 6.2. Public Facilities Subject to Full-Cost Survey (number of facilities with incomplete data shown in parentheses)

	Department			
Facility Type	Cordillera	Misiones	Central	Total
Hospitals	0	1	3	4
Health Centers	6	3	8	17
Health Posts	4	7 (2)	20 (3)	31 (5)
Total	10	11 (2)	31 (3)	52 (5)

Estimates of the percent of staff "down time" were made for each facility based on the time-allocation logs.[22] "Down time" was distributed to the various services on a proportional basis based on patient contacts. Thus, if 75% percent of patient-contact time was for prenatal visits, 75% of the down time was allocated to prenatal services. The total cost calculation for the facility and for individual services at the facility include the cost of "down time" calculated as described. This "down time" is highly relevant to our measures of efficiency and is discussed in greater detail in the next section on efficiency.

6.3. Baseline Results

6.3.1. Facility Sample

All 52 public facilities in the main study group were surveyed using the complete facility questionnaires (Annex E). Of these, responses from 47 of the facilities were sufficiently complete to construct the cost measures described above. Table 6.2 shows the distribution of the responding facilities by department and facility type. Because of the small number of hospitals, Table 6.2 does not distinguish between regional and district hospitals.

6.3.2. Total Recurrent Cost

The total recurrent cost per month was calculated for the 47 facilities with complete data. The 47 facilities had an average total recurrent cost for basic health services of 709.6 million Guaranies (US$252,091) per month. Figure 6.1 shows the total recurrent cost per month broken down by department and facility type. It should be noted that these figures do not cover the entire department. Our survey includes 10 of 19 municipalities in Central covering 50% of the total department population, 6 of 20 municipalities in Cordillera covering 35% of the total department population, and 4 of 10 municipalities in Misiones covering 39% of the total department population.

Central, which is the most populous department, accounted for 78% of the total recurrent cost per month, and Cordillera and Misiones accounted for 10% and 12%, respectively. Central's proportion of total recurrent cost is not surprising given that more than half of the facilities sampled are in this department. Central accounts for 78% of the basic health care costs, but it accounts for 84% of the population in sampled municipalities. Even though Misiones and Cordillera have roughly the same total cost, the sampled municipalities in Cordillera contain roughly twice the population of the sampled municipalities in Misiones, the least populated of the three study departments. On a per capita basis the sampled municipalities in Missiones have the highest spending, averaging 2,281.27 Guaranies (US$0.81) per person per month. Per capita spending in the sampled municipalities of Central and Cordillera are virtually identical at 946.13 Guaranies (US$0.34) and 921.20 Guaranies (US$0.33) per person per month, respectively. (Annex D presents additional tables and figures on the estimated costs.)

[22] The time-allocation logs cover a given number of hours based on the start time of the first patient contact and ending with the end time of the last recorded patient contact. By dividing the total number of patient contact hours by the total number of hours the log was kept, an estimate of the percentage of that staff member's time that involved no contact with patients was obtained. It should be noted that the cause of the "down time" is not known.

Figure 6.1
Distribution of total recurrent cost,
by department and facility type

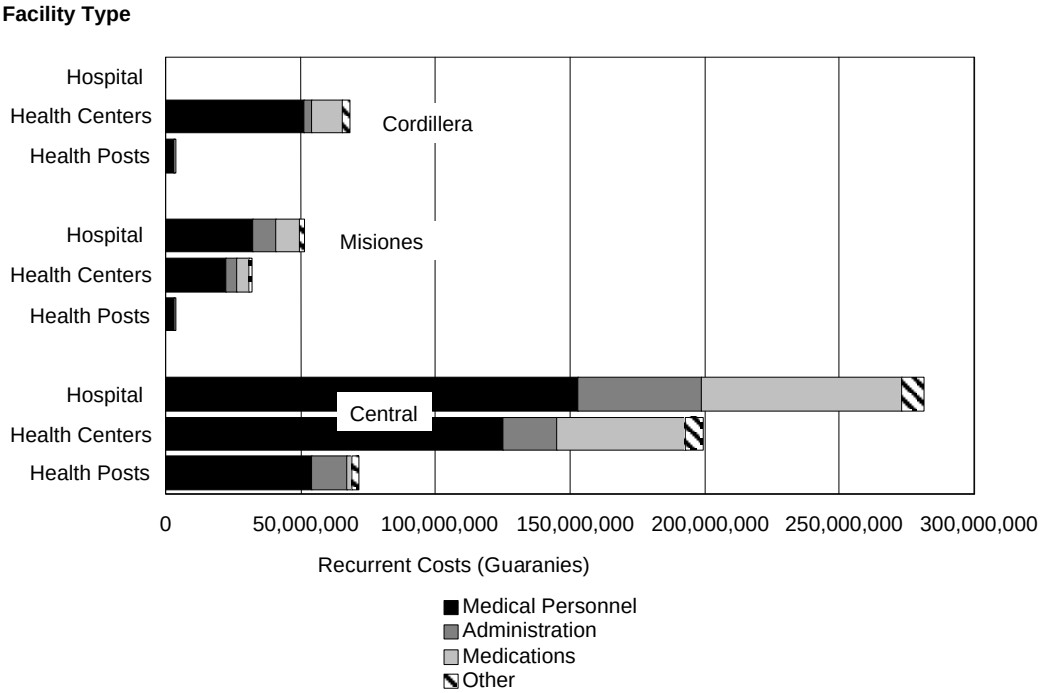
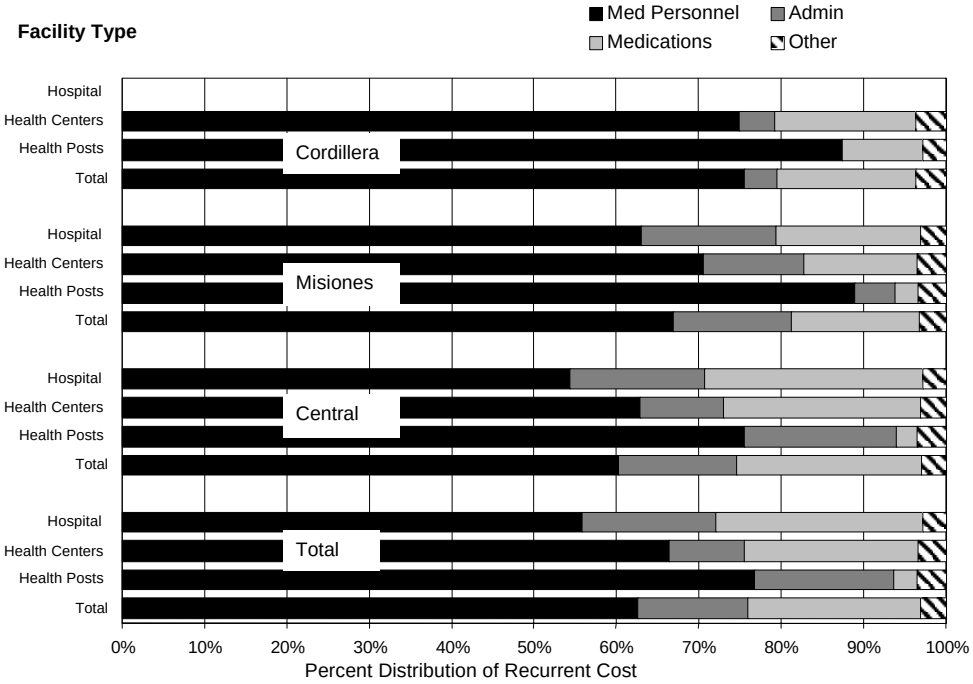


Figure 6.2
Percent distribution of recurrent cost,
by Department and facility type

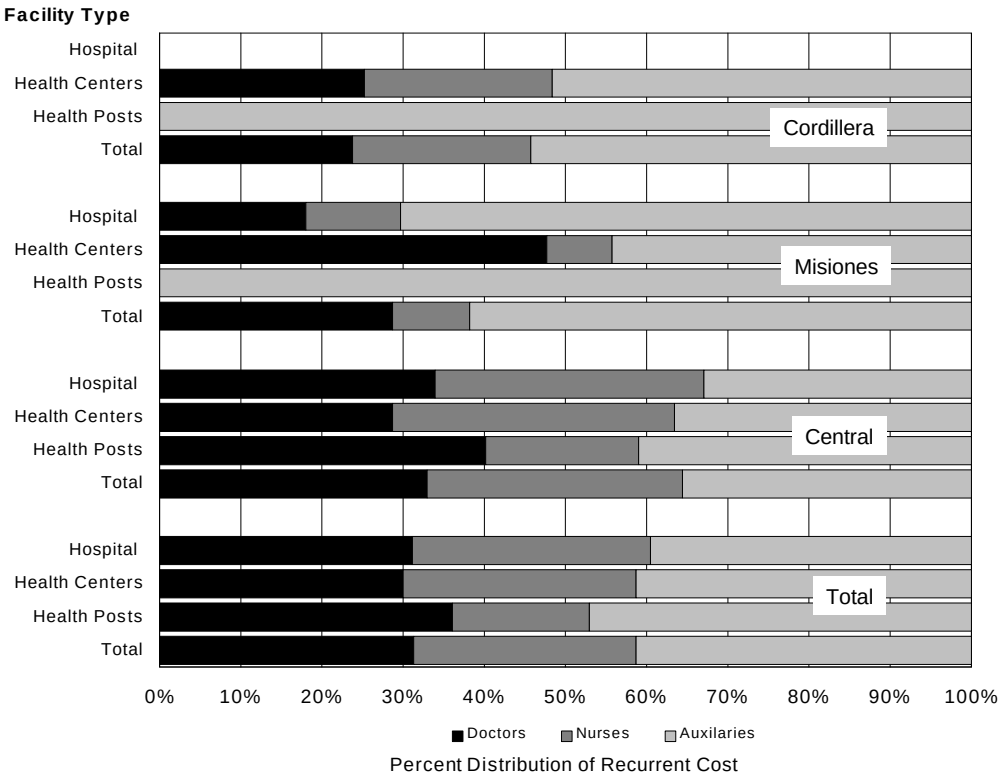


Distribution by Cost Component. Figure 6.2 shows the percentage distribution of recurrent costs by cost component. Medical staff costs constitute 63% of total recurrent costs. Thirteen percent is administrative staff cost; 21% is the cost of specific medicines and supplies; and 3% is for other recurrent overhead expenses. As shown in Figure 6.2, there is some variation in the composition of total recurrent costs by department and facility type.

Figure 6.3 presents the distribution of total monthly recurrent staff costs – 63% of total recurrent costs – by type of staff. Overall, 31% of medical staff costs are for physicians, 27% for nurses, and 41% for auxiliaries. There is a slight variation in the distribution of medical staff costs by facility type and substantially more variation by department. By facility type for all departments, physicians accounted for 31% of medical staff expenses in hospitals compared to 30% in health centers and 36% in health posts. Nurses represented 39% of medical staff expenses in hospitals and health centers, and 17% in health posts, while auxiliaries accounted for 39% of staff expenses in hospitals, 41% in health centers, and roughly 47% in health posts. The distribution of total recurrent staff costs is largely influenced by the distribution pattern of Central. Figure 6.3 shows variation by departments, in particular for health posts. In both Cordillera and Misiones there were only auxiliary nurses in health posts.

Distribution by Services. Costs of individual services were calculated for each of the specific services presented in Table 6.1. Not all facilities offered all services, so the number of observations used in the calculation of the service specific costs will vary. By costing the individual services, it is possible to see how the total resource cost is distributed across different activities. Figure 6.4 shows the distribution of total recurrent cost across the major health service categories – family planning, maternal health, child health, and other services. These data are presented in two ways. In Panel A of the figure,

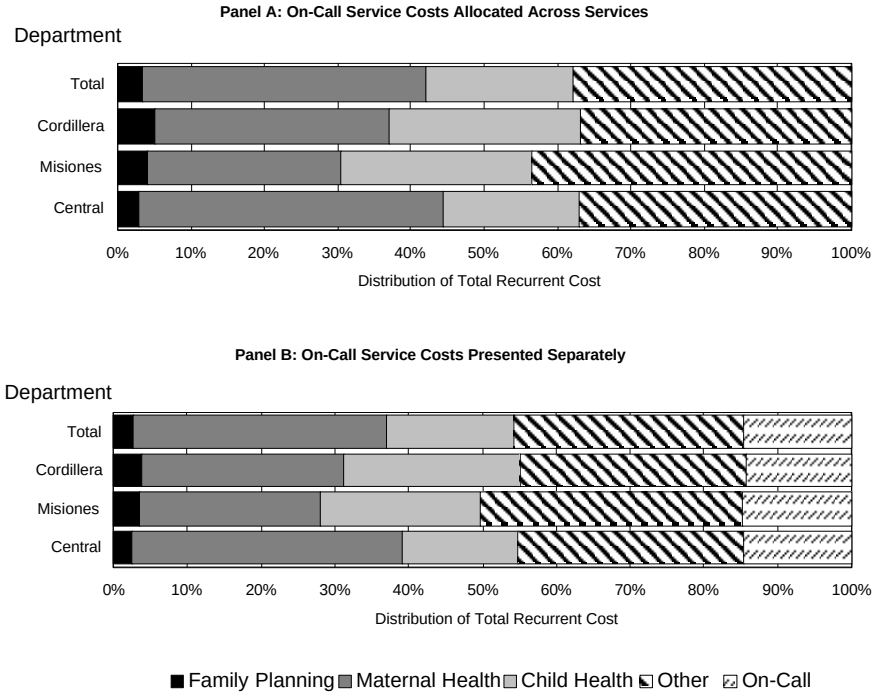
Figure 6.3
Percent distribution of medical staff costs



the cost of "on-call" service provision is allocated across all services. In Panel B, the resources devoted to "on-call" service provision are separated out. The cost of on-call service provision accounts for roughly 14.6% of total costs. Overall, if one allocates the on-call costs proportionately across all services, maternal health services account for the highest proportion of total recurrent costs at 39%, followed closely by other services at 38%, 20% for child health services, and 3% for family planning services (see Panel A). Were one to allocate all on-call costs to deliveries, maternal health would account for 49% of total recurrent costs (see Panel B). There are some variations by department in the service-specific distribution of total recurrent costs. Compared to the other two departments, Central spent a larger percentage of its resources on maternal health and lower percentages on child health and family planning.

Figure 6.5 presents the same information presented in Figure 6.4, though disaggregated by specific basic health service, department and type of facility. The figure includes the cost of "on-call" services as a separate cost category. The largest single use of resources is for the bundled "other services" accounting for 31% of total recurrent costs. Deliveries account for the next largest expenditure of resources. Combined, the cost of normal and complicated deliveries account for 27% of total recurrent costs. If one were to allocate the entire cost of on-call services to deliveries, its share would increase to 42% of total recurrent cost. With the exception of immunizations, which account for slightly less than 11% of recurrent costs, all other services each are less than 5% of the total with the smallest percentage of resources going to treat diarrhea and to provide post-natal care. An examination by department shows a similar pattern, though there is considerable variation in the pattern of resource distribution across

Figure 6.4
Distribution of total recurrent cost, by department and service type



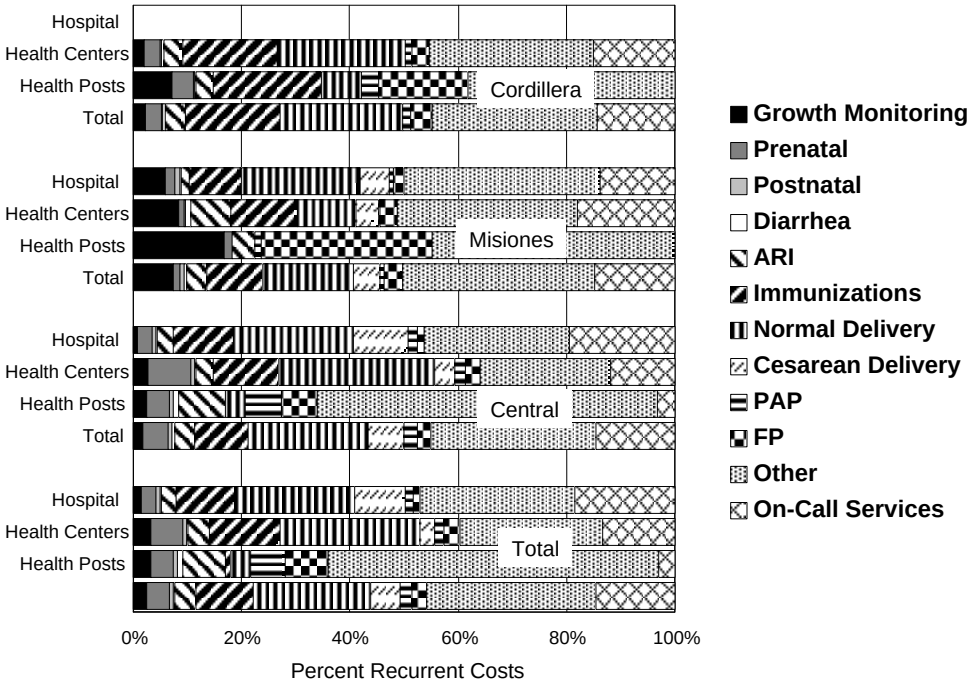
departments. In general, the distribution of resources across facility types generally conforms to expectations. More sophisticated facilities (hospitals and health centers) tend to devote larger proportions of their resources to more complicated medical procedures such as deliveries. The one interesting result here is for health posts in Central where only about 35% of the facility resources go to maternal and child health activities. Figure D in Annex D shows the distribution of resources by service type, facility type and by study group.

6.3.3. Service Cost per Visit

The average cost per unit (or visit) for each specific service was calculated by dividing the total cost allocated to the service by the total number of visits for that service during a one-month period. These results are presented in Figures 6.6 and 6.7. These figures show the average cost of the services without including the cost of staff time used in the provision of on-call services. Had the cost of on-call services been proportionally allocated across all services, average costs of each would have been roughly 15% higher than reported in the figures. The average unit cost of deliveries was several orders of magnitude larger than the unit cost of the other services examined. Immunizations represented the smallest cost on a per unit basis. As a general observation, unit costs for most services appear to be higher when delivered in a hospital or health post setting, though health posts appear to provide family planning, immunizations and growth monitoring at the lowest cost. Unit costs across department, which show a fair amount of variation, are presented in Annex D.

As shown in Figure 6.7, the average cost for a normal delivery is similar in hospitals and health centers, and more expensive in health posts. There is also a small difference in the unit cost of a Cesarean

Figure 6.5
Percentage distribution of recurrent costs, by service and facility type



section procedure, which is not performed in health posts. It is also interesting to note the effect of allocating on-call service provision to the cost of deliveries. One principle reason for making staff available 24 hours a day is so that delivery services can be offered. If all of the cost of providing this on-call staff is allocated to deliveries, the average cost per delivery increases by 54% across the entire sample. It increases the most in health post (81%) and the least in health centers (46%).

The baseline cost estimates provide a part of the picture of health care service provision. They provide a measure of the total amount of resources currently in use by the public sector to provide health care services. In addition they show how those resources are currently distributed across departments, facility types, and types of care provided. The decentralization of health care services, and the possible differences in operating decisions that may result, has the potential to result in changes in the cost structure of the health care system. Specifically we should be able to observe whether the total amount of resources flowing into health service provision changes differentially for decentralized and non-decentralized municipalities. We will also be able to observe whether the distribution of those resources among family planning, maternal health, child health, and other services changes differentially. Control of the public sector health care provision system also includes the authority to make some decisions about the composition of staff and the supervision and incentives that the staff receives. In addition, changes in management may affect patient flow and administrative burdens of staff. All of these factors may result in changes of the average cost of serving patients.

Figure 6.6
Average cost of specific health services, by facility type (weighted by service quantities)

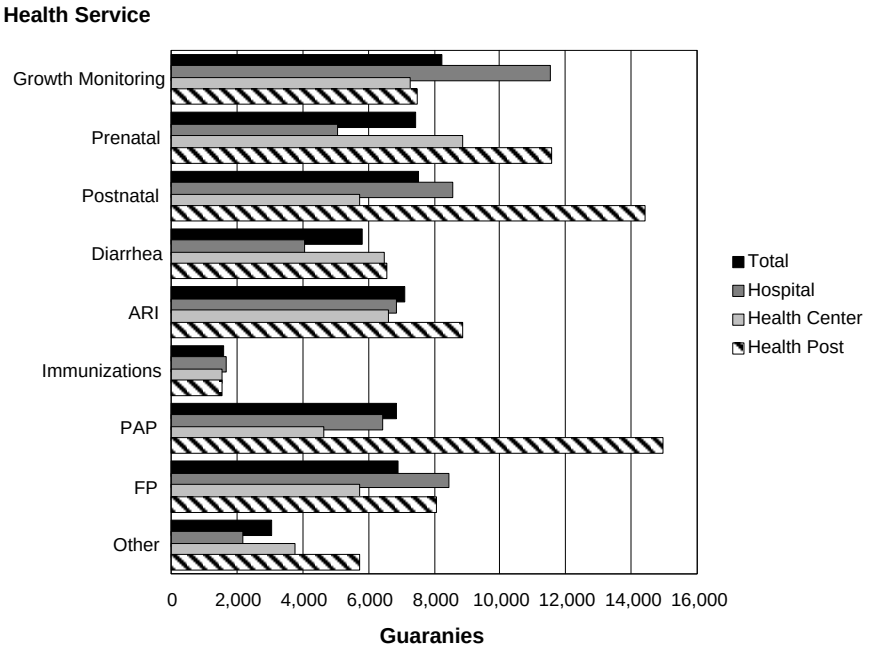
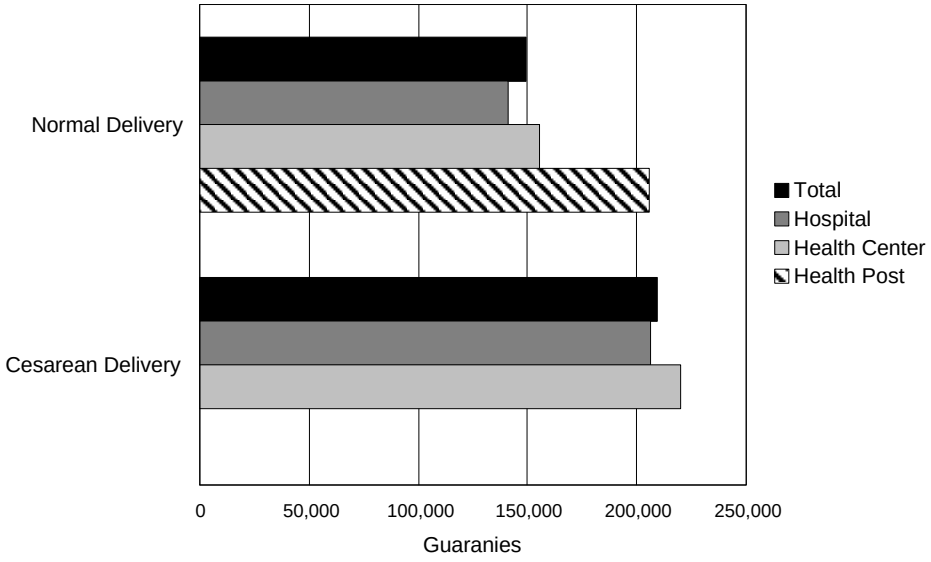


Figure 6.7
Average cost of delivery services, by facility type
(weighted by service quantities)



7. Results: Service Efficiency

7.1. Conceptual Issues

The economic concept of efficiency describes the issue of how well resources are being used in the production of a good or service. The theoretical concept of efficiency involves two parts. The first requires that given a particular bundle of resources (described by the quantity of each type of input) that the maximum quantity of output that is technically possible to produce is, in fact, produced. The second requires that given the price of each type of resource, the bundle of resources that is used is the bundle that would require the minimum total expenditure on resources. These two together constitute technical efficiency in production. Together they are equivalent to cost-minimizing behavior by the facility.[23]

As a practical matter, true economic efficiency in production is an unachievable goal. For the purpose of this study, what is important is relative efficiency. Are some types of facilities more efficient in the production of services than others, or does the efficiency of production improve after decentralization relative to what it was before decentralization?

This study will concentrate on one dimension of production efficiency – the efficiency of staff-time utilization. Efficiency of staff utilization is of critical importance for a number of reasons. First, staff costs represent a major proportion of total service provision cost. As was seen in the findings of the section on cost, 63% of the recurrent cost of basic medical care are medical staff costs. Second, previous research has shown that a major source of variation in relative efficiency across facilities is the result of differences in staff utilization. Finally, staff utilization is the easiest of the efficiency concepts to observe, quantify and analyze.

Variation in staff-utilization efficiency and staff costs can result from a number of factors, including

- over-staffing facilities relative to the demand for services
- excessive demand placed on staff time for administration and other activities unrelated to the production of health services
- differences in staff effort
- unevenness in the time pattern of demand for services, e.g., too many patients at certain times of day or on certain days of the week, too few patients at other times
- inappropriate use of various staff categories, e.g., providing services with higher paid doctors that could be performed by lower paid nurses

Though each of these factors represents different underlying causes of these variations, it is important to recognize that each can be affected by administrative and organizational choices. How staff time is allocated to facilities and activities is a choice the health system can make and those choices can lead to either higher or lower efficiency. The same is true with respect to such organizational decisions as staff supervision, facility location and operating schedules, and types of services provided at various types of facilities. All of these decisions may be different under a decentralized organization of health care service provision.

7.2. Methods

The efficiency measures that will be used in this study are based on two concepts – average staff productivity and staff utilization rates.

[23] Again, it is important to stress that this concept is based on quality of the output being a constant.

7.2.1. Average Staff Productivity

Average productivity measures are simply the total output divided by the total quantity of input used to produce it. So, for example, the average staff productivity during a one-month period could be estimated as follows:

$$\text{Average staff productivity} = \frac{\text{Total patients per month}}{\text{Total staff hours per month}}$$

(Equation 7.1)

In Equation 7.1, average staff productivity is a measure of the average number of patients receiving treatment at the facility per hour of staff time used at the facility. As is the case with cost, resource productivity measures are sensitive to the composition of output produced. Clearly, all else being equal, one would expect that a facility that provides nothing but birthing services, which have the highest per unit cost among the services examined, would have lower observed staff productivity than a facility that provided only immunizations, which have the lowest per unit cost. Here again, the treatment of on-call services is a relevant consideration. A facility with a large proportion of total staff hours devoted to on-call service provision will tend to have low staff productivity. Staff productivity will be calculated using both the total staff hours as the denominator in Equation 7.1 and using total hours minus the time devoted to on-call service provision. The first gives an indication of the average number of patients seen per total staff hour employed while the second gives an indication of the average number of patients seen per staff hour by staff employed during normal hours of facility operation.

7.2.2. Staff Utilization Rate by Type of Staff

Staff utilization rates measure the degree to which staff time is used in the production of services relative to staff "down time". For each of the basic health services, including *other services*, the average time per patient contact was constructed using data obtained from the time-allocation logs. Staff utilization rates were constructed for each type of staff.

An average time requirement (g) was estimated for each type of service (*i*), for each type of staff (*j*), in each facility (*n)* as shown in Equation 7.2.

$$g_{i,j,n} = \text{average time spent on service } i \text{ by staff type } j \text{ at facility } n$$

(Equation 7.2)

By multiplying the average time spent by a staff member providing a certain service $(g_{i,j,n})$ by the total quantity (*Q)* of the service provided, we obtain the total amount of staff time devoted to each type of service. This relationship is presented in Equation 7.3.

$$t_{i,j,n} = g_{i,j,n} Q_{i,j,n} \qquad \textbf{(Equation 7.3)}$$

Where

$t_{i,j,n}$ is the total amount of time spent providing service *i* by staff type *j* at facility *n*

$g_{i,j,n}$ is the average time spent providing service *i* by staff type *j* at facility *n*

$Q_{i,j,n}$ is the total quantity of service *i* provided by staff type *j* at facility *n*

The total amount of staff time (T) for a specific type of staff that is required to produce the entire mix of services at the facility can be obtained by adding up $t_{i,j,n}$ across all the services as follows (Equation 7.4).

$$\mathrm{T}_{j,n} = \sum_{i=1}^{I} t_{i,j,n} \qquad \textbf{(Equation 7.4)}$$

Where $\mathrm{T}_{j,n}$ represents the total amount of time by staff type *j* that is required to provide all the services provided by that staff type at facility *n*.

The staff utilization rate (SUR) is simply the total staff time required to provide the package of services at a facility $(T_{j,n})$ divided by the total amount of time of staff type *j*, which is employed by the facility. This relationship is shown in Equation 7.5.

$$SUR_{j,n} = \frac{T_{j,n}}{S_{j,n}} \qquad \textbf{(Equation 7.5)}$$

Where

$SUR_{j,n}$ is the staff utilization rate for staff type *j* at facility *n*

$T_{j,n}$ is the total amount of time of staff type *j* required to provide all the services provided by that staff type at facility *n*

$S_{j,n}$ is the total amount of staff time for staff type *j* that is employed by facility *n*

The staff utilization rate by staff type serves as a good measure of cross-facility and cross-municipality efficiency. A value of 1 for $SUR_{j,n}$ would indicate that at facility *n*, staff type *j* is spending 100% of their time in patient contact. The difference of 1-$SUR_{j,n}$ is an estimate of the proportion of "down time" by staff type *j*. As discussed above, there are a variety of possible reasons for "down time." One would not expect down time to be zero. As was the case with staff productivity measures, the treatment of on-call services matters in the calculation and interpretation of staff utilization rates. The total amount of staff time used in the calculation $S_{j,i}$ could either be measured as the total hours employed at the facility or the total amount employed during normal hours of operation.

7.2.3. Staff Utilization Rates by Facility

Though one could aggregate staff utilization rates across the different types of staff at the same facility to get an overall rate of staff utilization, this would not take into account the discrepancies in cost of different types of staff. A relatively underutilized doctor is more expensive than an underutilized nurse because the doctor's salary is greater.

The final efficiency measure we employ – the total staff utilization rate – is the ratio of total labor cost to total incremental labor cost. Incremental labor cost is defined as the direct cost of the patient contact ignoring all "down time". Thus, the total incremental cost (TIC) for all services provided at a facility during a specified time period can be written

$$TIC_n = \sum_{i=1}^{I} \sum_{j=1}^{J} w_{j,n} g_{i,j,n} Q_{i,j,n} \qquad \textbf{(Equation 7.6)}$$

Where

TIC_n is the total incremental costs for all services provided at facility *n*

$W_{j,n}$ is the wage rate for staff type *j* at facility *n*

$g_{i,j,n}$ is the average time spent providing service *i* by staff type *j* at facility *n*

$Q_{i,j,n}$ is the total quantity of service *i* provided by staff type *j* at facility *n*

The total staff utilization rate (*SUR)* for each facility, therefore, is

$$SUR_n = \frac{TIC_n}{TSC_n} \qquad \textbf{(Equation 7.7)}$$

Where

TSC_n is the total medical staff cost at facility *n*, which is defined as follows:[24]

$$TSC_n = \sum_{j=1}^{J} W_{j,n} Hours_{j,n}$$

Total staff cost can be calculated either as the total staff cost at the facility or the total cost of staff during normal hours of operation.

[24] See Equation 6.6 in Section 6, Results: Cost of Basic Health Services

7.2.4. Utilization Rates for Inpatient Beds

The inpatient-bed utilization rate was calculated for each inpatient-care facility by dividing the total number of inpatient care days in a month by the total number of bed days in a month (the number of beds multiplied by the number of days per month).

7.3. Baseline Results

7.3.1. Average Staff Productivity

Average staff productivity provides a measure of the number of patients the staff member sees, on average, in a one-hour period. As noted above, it is not a particularly good measure of staff efficiency because it does not take into account the fact that patients seeking different services will place widely different demands on staff time. It should also be noted that the average staff productivity measure is not a direct measure of the length of time that a staff member spends with a patient. It does, however, provide a good descriptive overview of staff-patient contacts. Average staff productivity measures were constructed for each of the three types of basic medical staff (doctors, nurses and nurse auxiliaries). The results are shown in Figure 7.1. Panel A of the figure shows staff productivity when the staff time devoted to on-call services is included in total staff hours. This provides a measure of the average number of patients seen per total hour based on the total number of hours of staff time employed by the facility. Panel B of the figure shows staff productivity when the hours of staff time employed at the facility during its normal hours of operation (total hours minus hours of on-call staff time).

Across the entire sample, doctors attend an average of 4.25 patients per hour that they work at the facility. Nurses attend 2.2 patients per hour and auxiliary nurses see 3.6 patients per hour. These numbers increase to 5.4, 3.0, and 4.4 patients per staff hour, respectively, when on-call staff hours are removed from the calculation. Overall, there do not appear to be large differences in the numbers of patients per hour by each staff type across the different facility types with the exception of auxiliary nurses in hospitals and doctors in health centers. An examination of the output statistics shows that hospital-based auxiliary nurses provide a very large number of vaccinations (which have a low per-patient time requirement) and they see a large number of clients seeking other services.

In this same figure, average staff productivity levels are shown by department. There is substantially greater variation across departments. Central's average staff productivity looks very much like the sample averages, which should not be surprising given that the majority of facilities, staff hours, and patient visits are located in Central. Cordillera shows high physician productivity, but very low productivity for nurses and auxiliary nurses. Misiones also shows an uneven productivity pattern, with nurses seeing a large number of patients per hour, and physicians and auxiliary nurses seeing fewer.

Figure 7.1
Medical staff productivity:
Patients seen per hour, by facility type and department

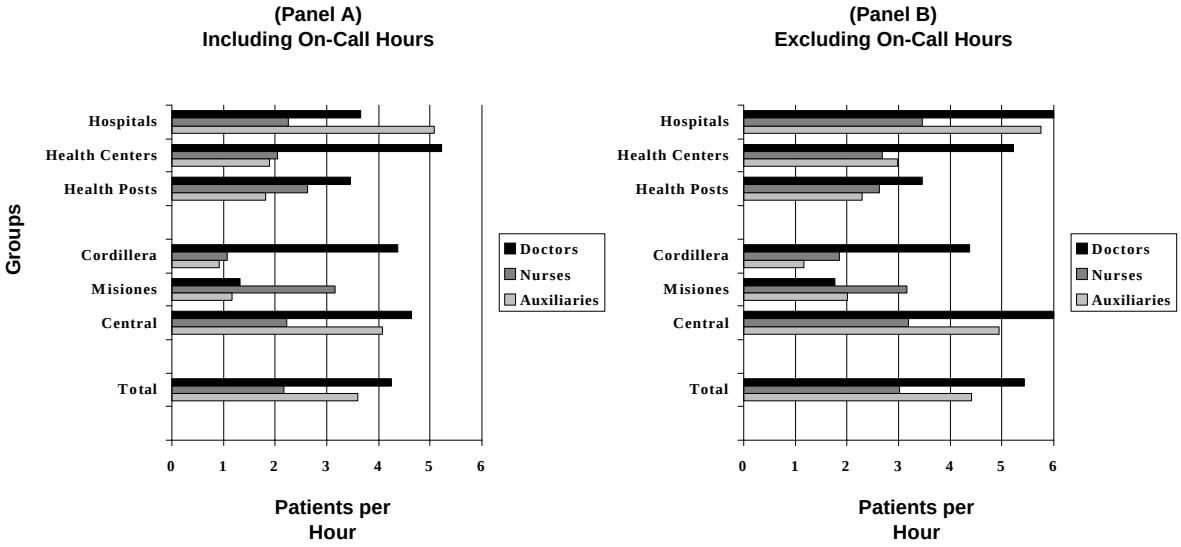


Figure 7.2
Medical staff utilization rates,
by facility type and department

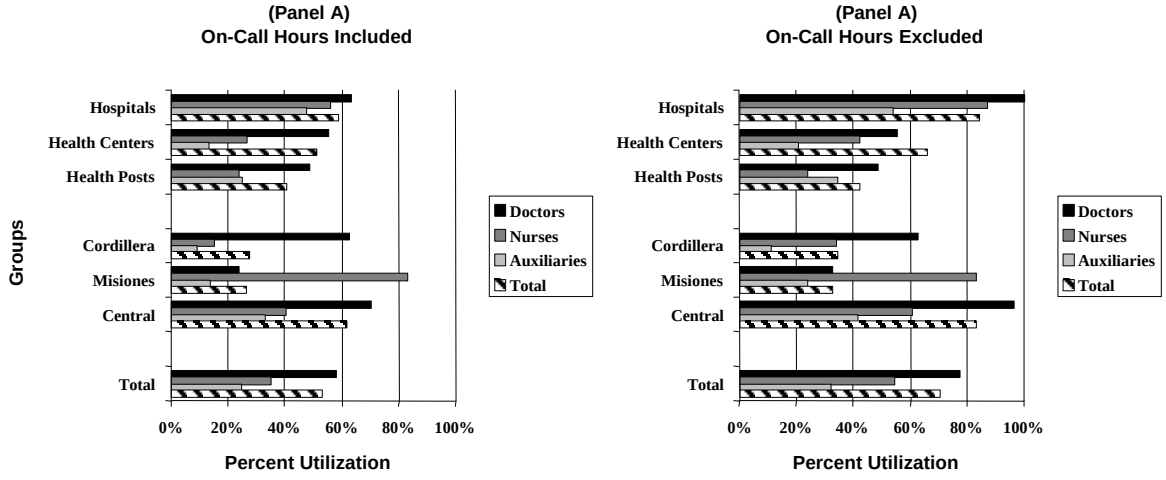


Table 7.1
Average Inpatient-Bed Utilization Rates, by Department and Facility Type
(Averages weighted by number of beds)

Facility Type (number of facilities)	Department			Total
	Cordillera	Misiones	Central	
Hospital	.	42.6% (n=1)	24.7% (n=3)	29.5% (n=4)
Health Center	9.5% (n=6)	15.4% (n=3)	18.7% (n=8)	15.7% (n=17)
Health Post	1.7% (n=1)	0.0% (n=4)	3.6% (n=4))	2.4% (n=9)
Total	8.9% (n=7)	27.0% (n=8)	20.2% (n=15)	20.2% (n=30)

7.3.2. Staff Utilization Rates

Total and staff-specific utilization rates were calculated by facility and are presented for each type of facility and for each department in Figure 7.2. Panel A shows the results when on-call hours are included in the calculation and Panel B shows the results when the on-call hours are removed. A complete table of the staff utilization rates by department and facility type appears in Annex D.

It is important to keep in mind the interpretation of the staff utilization rates. A useful way of thinking about them is as follows: they are a ratio of the total amount that would have been paid to staff if they had been paid only for patient contact[25] hours to the total amount the staff was actually paid. The second thing to keep in mind is that while 100% would, in abstract, represent perfect efficiency, in the real world the rates will be lower for all of the reasons described in Section 7.1.[26] In fact, the total staff utilization rate of 53% (73% with on-call hours excluded) compares favorably with staff utilization rates of family planning staff in the Philippines and West Africa where similar methods have been employed.

The medical staff utilization rates show a pattern very similar to the staff productivity measures. With the exception of Misiones, the utilization rate of doctors' time is relatively high and does not vary tremendously across facility types or departments. Other staff types, though used with roughly equal efficiency in hospitals, show much lower utilization rates in health centers and health posts. The one exception to this generalization is the utilization rate of nurses in Misiones. Interesting enough, the total staff utilization rates for facilities in the group being decentralized and those that will not is almost identical at 53% and 52%, respectively. The corresponding rates when on-call staff time is removed are 72% and 74%. The staff utilization rates for decentralized and control groups are presented in Annex D.

[25] For auxiliary nurses in facilities where there is no administrative staff to handle patient registration, the patient registration time is added to the patient contact time of the auxiliary nurses.

[26] It should be noted that staff-utilization rates may exceed 100% if the actual time spent with a patient is lower than the "required time" per patient visit. This can occur if the time reported on the log overstates the actual amount of time spent with a patient. The utilization rates calculated with on-call hours excluded can also exceed 100% because some of the patients seen were likely seen outside of regular hours of operation. A combination of these factors likely explains the staff utilization rates for doctors that exceed 100%.

There is a crucial relationship between staff utilization rates and cost: The lower the staff utilization rate, the higher the average cost of providing service. As noted previously, variation in staff utilization rates can be the result of management decisions with respect to the placement of staff across facilities and with respect to the incentives and supervision. The current health care system shows a wide variation in staff utilization rates across facilities, staff types and locations. Perhaps the most important question for the efficiency objective of the decentralization will be whether or not it will result in more efficient use of staff resources.

On-call service provision also has a major impact on costs and staff utilization. On-call services are offered at 18 of the 47 facilities in the sample (all of the hospitals, three quarters of the health centers, but only one of the health posts). Across the entire sample, on-call staff account for 20% of total staff costs. This percentage varies only slightly by department: 21% in Central and 19% in Misiones and Cordillera. Across the entire sample, 17% of physician hours, 31% of nurse hours, and 20% of auxiliary hours are devoted to on-call service provision.

7.3.3. Utilization Rate for Inpatient Beds

Thirty of the 47 public health facilities in the sample have beds and provide inpatient care. All hospitals and health centers provide inpatient care and roughly one-third of the health posts also offer inpatient care. The average bed size is 20 per hospital, 5.7 per health center, and two per health post. Maternity patients use the majority (69%) of inpatient bed-days at sample facilities, followed by pediatric patients (18%), and other medical cases (13%).

Table 7.1 presents the average inpatient-bed utilization rates by facility type and department. The averages are weighted by the number of beds at each facility. Overall, bed utilization is low with only an average utilization of one bed for every five that are available. Utilization rates are highest in hospitals (29.5%) and lowest in health posts (2.4%). By department, hospital bed utilization rates are higher in Misiones (42.6%) than in Central (24.7%), and health center bed utilization is higher in Central (18.7%) than in either Misiones (15.4%) or Cordillera (9.5%).

7.3.4. Cost Recovery

Though not a direct measure of efficiency, the recovery of cost by facilities is also an important consideration. Fees may limit access to services but they also can be used as incentive devices and as a source of revenue to reduce the public funding burden of providing health care services. As shown in Section 5 of the report, most public facilities charge fees for the services they provide. The one exception to this is immunization services, where fees are rare. However, at many public facilities, fees are not charged to all patients. Table 7.2 shows the percentage of patients that are excused from paying the fee for a selected set of services for the entire sample.

Cost recovery rates were calculated by taking the nominal fee charged for the service and multiplying the fee by the percent of patients paying the fee and dividing by the average recurrent cost of providing the service. The calculation of the average recurrent cost was described in the previous section. A cost recovery rate of one would imply that the entire recurrent cost was recovered as revenue by the facility. Table 7.3 reports the cost recovery rates for selected services by department. For the entire sample, cost recovery rates are the highest for deliveries with roughly two-thirds of the recurrent cost of this service being recovered in fees. For all other services, fees recover less than a third of the recurrent cost of providing the services.

Table 7.2 Proportion of Patients not Paying Fees for Selected Services

Service	Proportion Not Paying	Number of Facilities
Growth Monitoring	.66	19
Prenatal	.21	42
Postnatal	.74	24
Diarrhea	.51	28
ARI	.42	43
Immun: Polio	1.00	11
Immun: DPT	1.00	10
Immun: BCG	1.00	10
Tetanus Toxiod	.97	10
Delivery	.33	21
Delivery w/ Complications	.21	5
Pap Smear	.55	25
FP: Pills	.30	41
FP: IUD	.38	26
FP: Condoms	.36	33

Table 7.3 Recurrent Cost Recovery Rate for Selected Services by Department
(Facility averages are weighted by total cost of the service)

Service	Cordillera		Misiones		Central		Total	
	Cost Recovery Rate	Number of Facilities	Cost Recovery Rate	Number of Facilities	Cost Recovery Rate	Number of Facilities	Recovery Rate	Number of Facilities
Growth Monitoring	0.16	5	0.03	8	0.11	6	0.08	19
Prenatal	0.34	10	0.13	7	0.29	25	0.29	42
Postnatal	0.37	6	0.04	4	0.07	14	0.08	24
Diarrhea	0.38	4	0.11	4	0.25	20	0.23	28
ARI	0.35	10	0.09	9	0.22	24	0.22	43
Immun: Polio	0.00	1	0.00	3	0.00	7	0.00	11
Immun: DPT	0.00	1	0.00	3	0.00	6	0.00	10
Immun: BCG	0.00	1	0.00	3	0.00	6	0.00	10
Tetanus Toxiod	0.00	1	0.00	3	0.08	6	0.06	10
Delivery		0	0.19	2	0.79	3	0.66	5
Delivery w/ Complications	0.48	4	0.01	5	0.13	16	0.14	25
Pap Smear	0.29	9	0.21	9	0.34	23	0.30	41
FP: Pills	0.48	5	0.15	4	0.23	16	0.25	25
FP: IUD	0.26	6	0.14	8	0.24	18	0.21	32
FP: Condoms	0.41	4	0.13	2	0.35	9	0.33	15

8. Results: Client-Exit Interview & Client Perspectives on Service Quality

This chapter presents the results of the client-exit interview survey. This information was collected through the client-exit questionnaire, shown in Annex E, which was administered to a total of 1,261 clients of public and private facilities located in the main study group of municipalities. The information from the client-exit interviews is most useful when considering both objective and subjective indicators of quality. Most of the questions in the survey involved client description and assessment of aspects of the service that were directly related to the quality in the facilities, e.g., waiting and consultation times. The information and indicators in this chapter present the client's perspective, which can complement the findings of the facility inventory in establishing a better baseline for pre- and post-decentralization comparisons of service quality.

In terms of the sample, of 1,261 clients surveyed, 1,151 were clients at 49 public health facilities and 110 attended seven private facilities. The survey sample was designed to obtain a representative sample of clients of public facilities. With that purpose, the number of clients interviewed by facility was proportional to the average daily number of clients seen in each facility. Information on client volume at public facilities was obtained from monthly data reported to the Ministry of Health (*Ministerio de Salud Pública y Bienestar Social, MSPBS)*. In addition, since all services were not offered every day of the week (BCG vaccinations, for example, are offered only on Tuesdays in some facilities), client interviews were conducted over a period of two consecutive days to ensure that clients seeking a large range of services were surveyed. Also, a number of private facilities were included to provide information to compare with the results from public facilities clients. Table 8.1 presents information on the distribution of public and private sector clients by department and facility type. Fifteen percent of the observations were obtained in the department of Cordilleras, 70% in Central, and 15% in Misiones.

This section is divided into two parts. The first part contains a description of the social and demographic characteristics of public facility clients and their perceptions of quality as measured using a number of different indicators. The results are presented by department and by type of facility. The second section analyzes these same characteristics and perceptions for clients of private medical facilities and compares them with the results on these same indicators for the public sector clients.

Table 8.1
Distribution Of Clients, By Facility And Department

Facility/Sector	Cordillera	Misiones	Central	Total
Public Facilities				
Regional Hospital	0	59	0	59
District Hospital	0	0	254	254
Health Centers	145	57	302	504
Health Posts	40	61	233	334
Total Clients in Public Facilities	185	177	789	1151
Private Facilities	10	10	90	110
Total Number of Clients	195	187	879	1261

8.1. Public Facility Clients: Characteristics

Table 8.2 presents the social and demographic characteristics of clients who attended the public facilities in the sample. This information provides a profile of the typical client of public facilities. Public facility clients were predominantly female (89%), with an average age of 32 years, married or in union (74%), and with two or three children. Two-thirds of clients had attained only an elementary level of education, which was reflected in the generally low levels of reported family income (678,592 Guaraníes monthly or US$241). In addition, only 39% of the clients reported either working or looking for work in the week prior to the survey, and 91% reported having no health insurance (social security or private insurance).

By department, Central clients were younger, with 56.5% below the age of 30, while Misiones and Cordillera reported percentages very similar to one another, around 40%. The highest level of education was reported in Central, where a third of the clients reported having completed a secondary level of education. Only 2.4% of the clients reported never having attended school in Central, while the proportion of clients who reported never having attended school in Cordilleras and Misiones was 8.6% and 11.3%, respectively. As expected, Central clients also possessed the highest average income (743,135 Guaraníes or US$263.99) and the highest proportion of clients with health insurance (10.8%), facts which reflect the urban character of this department.

8.2. Basic Indicators of Quality in Public Facilities

According to the survey results the principle reasons for medical visits were for general medical consultation (20.1%), pediatric consultation (18.9%), and child immunizations (12.6%). Clients for all types of visits were asked to comment on both the general characteristics of the facility and about their experiences during the visit and medical consultation. Among other things, they were asked about the convenience of facility operating hours, waiting times for different services, and their general satisfaction with the services received. It is likely that many of the more subjective responses were affected by courtesy bias, but we tried to minimize this bias by asking about specific aspects of the facility and the visit. Also, in this section and the private-public comparisons later in the chapter, we believe the relative levels of these variables are comparable and valid.

8.2.1. Convenience of Hours of Operation

In all three departments, clients reported a high level of satisfaction with the hours of operation of public health facilities. As shown in Table 8.3, over 90% of the clients in each department stated that the hours of operation were convenient. The highest level of satisfaction with the hours of operation was found in Cordillera, where 97% of the clients reported that the operating hours were convenient. The lowest level of satisfaction was reported in Central, though the proportion of satisfied clients was still very high at 91.9%.

Table 8.3 also presents the levels of satisfaction by facility type. Across facility types, satisfaction with operating hours was high, exceeding 89%. Surprisingly, the clients interviewed in the health posts of Cordillera and Misiones reported universal satisfaction (100%) with the hours of facility operation. This level of satisfaction declined to 89% for the health posts in Central. In general, health center schedules were deemed slightly less satisfactory than those of health posts, though no facility's operating hours appeared to be a large cause of dissatisfaction or a barrier to seeking medical services. These results should be interpreted with caution, however, since by design the client survey did not gather information about those persons who did not come to the facility because of inconvenient operating hours.

Table 8.2
Client Socio-Demographic Characteristics, By Department. Public Facilities

Characteristic	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Age				
10-19	17.9%	14.8%	17.7%	17.3%
20-29	31.0%	27.3%	38.8%	35.8%
30-39	21.2%	31.3%	26.6%	26.5%
40-49	15.2%	9.1%	9.4%	10.3%
50-59	7.1%	6.8%	3.4%	4.5%
>60	7.6%	10.8%	4.1%	5.7%
Sex				
Male	13.0%	13.6%	9.6%	10.8%
Female	87.0%	86.4%	90.4%	89.2%
Education				
None	8.7%	11.3%	2.4%	4.8%
Primary	77.3%	71.8%	62.2%	66.1%
Secondary	14.1%	15.3%	32.8%	27.1%
Post-Secondary	0.0%	1.7%	2.5%	2.0%
Marital Status				
Single	22.2%	26.0%	23.6%	23.7%
Married	41.6%	34.5%	42.0%	40.8%
In union	34.6%	32.2%	33.2%	33.3%
Separated	1.1%	1.7%	0.3%	0.6%
Widowed	0.5%	5.7%	1.0%	1.7%
Number of Children				
Mean	3.1	3.0	2.3	2.6
Median	2.0	2.0	2.0	2.0
Standard Deviation	3.0	2.8	2.1	2.4
Coefficient of Variation	1.0	0.9	0.9	0.9
Employment Status				
Employed	35.7%	38.4%	38.2%	37.8%
Seeking employment	2.2%	0.0%	1.4%	1.3%
Study	3.8%	2.3%	3.8%	3.6%
Household work	58.4%	55.4%	55.6%	56.0%
Other employment	0.0%	4.0%	1.0%	1.3%
Monthly Income				
Mean	573045.2	408037.4	743134.5	678591.7
Median	450000.0	380000.0	600000.0	600000.0
Standard Deviation	405263.6	217711.9	489428.2	467775.6
Coefficient of Variation	0.7	0.5	0.7	0.7
Health Insurance				
Private Insurance	1.6%	0.6%	1.3%	1.2%
Pre-Payment	0.0%	0.0%	0.0%	0.0%
Social Security	3.2%	2.3%	9.5%	7.4%
None	95.1%	97.2%	89.2%	91.4%

Table 8.3
Convenience Of Facility Operating Hours, By Facility And Department. Public Facilities

Indicator	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Percent of clients who reported that facility operating hours were convenient				
By Facility				
Regional Hospital	NA	98.3%	NA	98.3%
District Hospital	NA	NA	93.3%	93.3%
Health Centers	96.6%	89.5%	92.7%	93.4%
Health Posts	100.0%	100.0%	89.3%	92.5%
TOTAL	97.3%	96.1%	91.9%	93.4%

Table 8.4
Waiting Time In Public Facilities, By Facility And Department (In Minutes).

Facility Type	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Total				
Mean	50.4	44.7	61.0	56.8
Median	35.0	30.0	40.0	35.0
Standard Deviation	44.2	38.7	56.7	52.8
Coefficient of Variation	0.9	0.9	0.9	0.9
Regional Hospital				
Mean	NA	45.5	NA	45.5
Median	NA	40.0	NA	40.0
Standard Deviation	NA	32.6	NA	32.6
Coefficient of Variation	NA	0.7	NA	0.7
District Hospital				
Mean	NA	NA	74.4	74.4
Median	NA	NA	60.0	60.0
Standard Deviation	NA	NA	67.2	67.2
Coefficient of Variation	NA	NA	0.9	0.9
Health Center				
Mean	53.1	50.5	67.2	61.3
Median	40.0	30.0	60.0	45.0
Standard Deviation	46.0	52.5	54.8	52.5
Coefficient of Variation	0.9	1.0	0.8	0.9
Health Post				
Mean	40.4	38.4	38.4	38.6
Median	30.0	30.0	30.0	30.0
Standard Deviation	35.6	27.0	36.5	34.8
Coefficient of Variation	0.9	0.7	1.0	0.9

8.2.2. Waiting Times

When seeking medical attention, the total cost that a client must bear is not represented solely by the monetary cost incurred during the visit, especially in publicly subsidized facilities. Equally important are the costs of transportation, and the opportunity cost of the time required to travel to the facility and to wait to be attended. From the point of view of policy options for reducing the total costs that people incur, time-related factors should be taken into account. Reducing waiting times is a viable policy option and an important factor in reducing the total costs that clients incur in seeking medical attention.

Duration. Table 8.4 presents both the mean and median waiting times, by department and facility type. Since some facilities tended to have very long waiting times, the distribution is a bit skewed toward longer periods. The overall mean waiting time for a consultation was 56.8 minutes and the overall median was 35 minutes. Clients in the department of Misiones reported the lowest mean (44.7 minutes) and median (30 minutes) waiting times, while Central clients reported the highest waiting times, with a 61 minute mean and 40 minute median. Also note the relatively high coefficients of variation for all departments, indicating a fairly large dispersion of waiting times.

Figure 8.1 presents the distribution of clients by length of waiting time. Over 50% of the clients waited 30 minutes or more to be attended; roughly 30% waited at least one hour; and 20% waited more than 90 minutes for their consultation. Figure 8.2 presents this distribution by department. Compared to Cordillera and Misiones, clients of public facilities in Central waited more time to receive medical attention. In Central, 32% of the clients waited more than an hour to be attended, compared to 27% in Cordillera and 17% in Misiones.

By facility type (Table 8.4), waiting times varied considerably. Clients who attended district hospitals reported the highest average waiting time (74.4 minutes), while those who attended health posts reported the shortest average waiting time (38.6 minutes). The clients who attended regional hospitals waited an average of 45.5 minutes to be attended. The skewness of the different distributions seems similar with most medians falling about 15-20 minutes below their corresponding mean.

The average waiting time in the health centers in Central was 20% higher than the average waiting time for health center clients in the departments of Cordillera and Misiones. The reported average waiting time for health post clients was similar in all three departments. All health centers reported both a mean and median waiting time higher than the health posts in every department.

Figure 8.1
Waiting Time at Public Facilities
(Percentage of clients waiting)

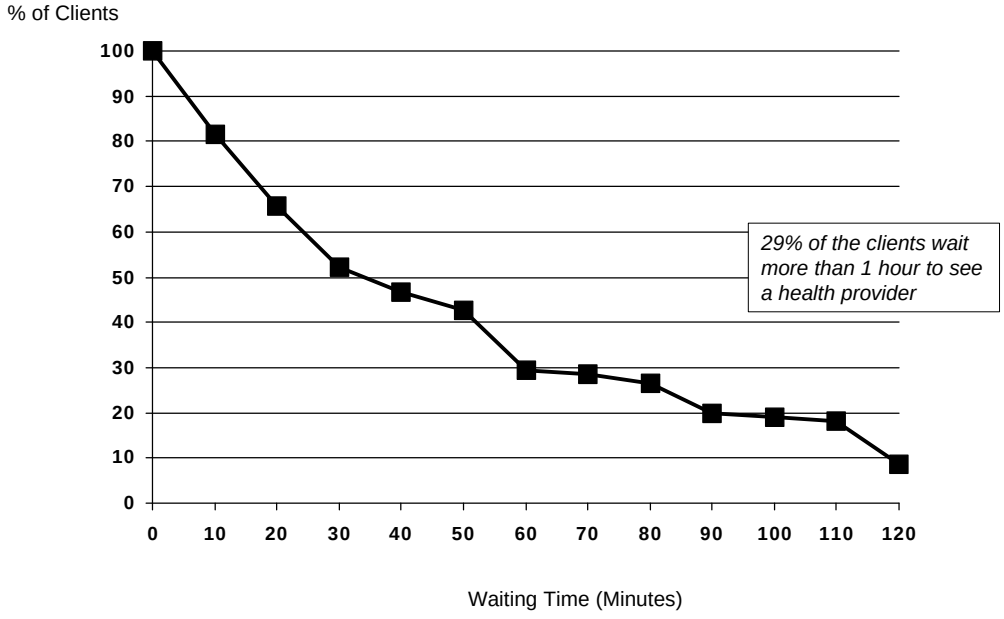
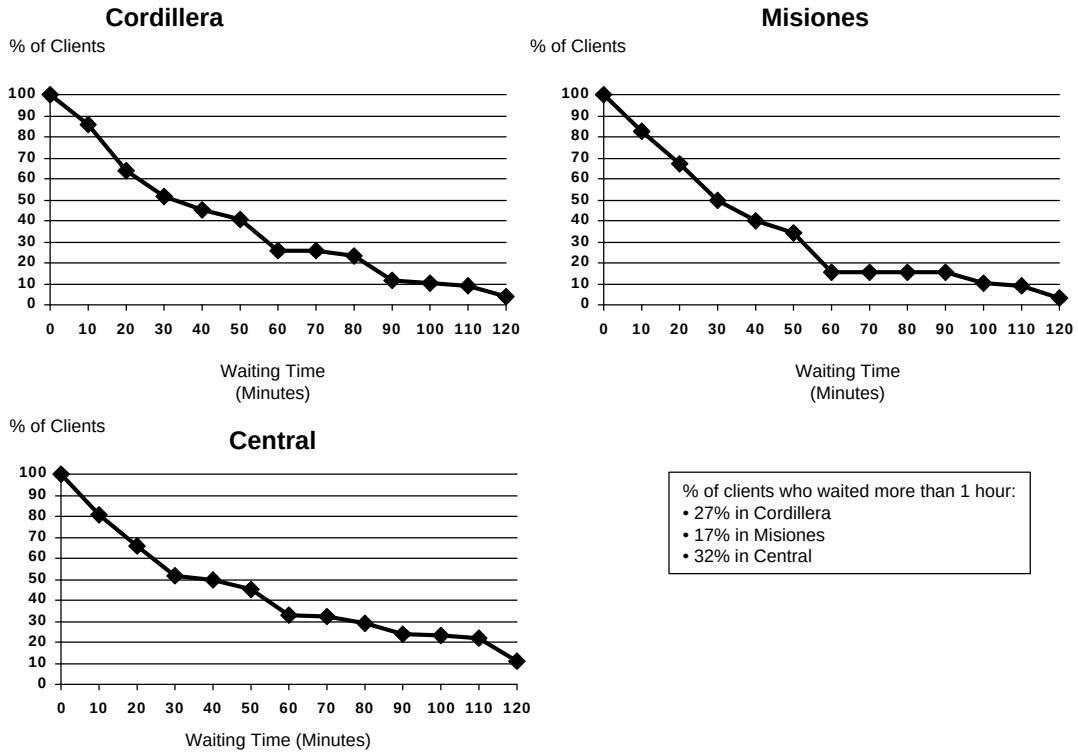


Figure 8.2
Waiting Time at Public Facilities, by Department
(Percentage of clients waiting)



Tables 8.5 and 8.6 present a further breakdown of average and median waiting times by the type of service provided. As shown in both tables, clients who received dental, post-partum and pediatric services reported the highest average and median waiting time, while those obtaining vaccinations reported the shortest waiting time on both measures. For the majority of the services, clients in Central had the highest mean and median waiting times. In Cordillera, the highest average waiting time was reported for post-partum, general medical and prenatal consultations. In Misiones, prenatal, post-partum, and dental required longer waiting times. In Central, the highest average waiting time was reported for dental visits, followed by pediatric and gynecological visits. The most striking difference between the departments is probably in diarrhea management. Central clients reported an average waiting time of 73 minutes and a median of 40; clients in Misiones reported an average time of only 33 minutes and a median of only 20 minutes. Clients in Cordillera reported both a mean and median waiting time of only 15 minutes.

Client Satisfaction with Waiting Time. Given that the typical waiting time for a consultation is long – an average of 56.8 minutes and a median of 35 minutes – a fairly high proportion of clients reported dissatisfaction with the length of the waiting time. As shown in Table 8.7, overall 31% of the clients considered the waiting time to be unacceptable, and the level of disapproval was high in all three departments. The lowest percentage of disapproval was observed among clients in Cordillera, 25% of whom stated that the length was unacceptable. In Misiones and Central, 32% of clients in each department stated their dissatisfaction with the length of the wait.

Table 8.5
Mean Waiting Time In Public Facilities, By Type Of Health Service And Department (Minutes)

Health Service	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Prenatal	58	61	66	63
Tetanus Toxoid Vaccination	NA	13	37	34
General Medical	71	52	68	61
Family Planning	40	32	59	49
Gynecological	47	46	78	64
Post-Partum	90	60	70	72
Growth Monitoring/Development	45	NA	NA	45
Pediatric	57	54	79	69
Diarrhea Treatment	15	33	73	45
ARI Treatment	13	45	45	37
Immunizations	32	18	21	22
Dental	40	55	89	76
Other	29	26	45	36

Table 8.6
Median Waiting Time In Public Facilities, By Type Of Health Service And Department (Minutes)

Health Service	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Prenatal	60	53	60	60
Tetanus Toxoid Vaccination	NA	13	20	20
General Medical	60	38	60	45
Family Planning	30	30	45	30
Gynecological	45	58	75	50
Post-Partum	90	60	90	90
Growth Monitoring/Development	45	NA	NA	45
Pediatric	50	45	60	60
Diarrhea Treatment	15	20	40	20
ARI Treatment	15	45	30	20
Immunizations	30	15	10	15
Dental	40	40	80	60
Other	20	30	26.5	20

Table 8.7
Client Perception Of Waiting Time In Public Facilities, By Facility Type And Department.

Indicator	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Percent of clients who reported that the waiting time was unacceptable	25.0%	32.0%	32.0%	31.0%
By Facility Type				
Regional Hospital	NA	36.0%	NA	36.0%
District Hospital	NA	NA	37.0%	37.0%
Health Centers	23.0%	23.0%	33.0%	29.0%
Health Posts	33.0%	38.0%	25.0%	28.0%

Table 8.8
Percent Of Clients Attending Public Facilities Who Consider The Waiting Time To Be Unacceptable, By Type Of Health Service

Health Service	Total
Prenatal	36%
Tetanus Toxoid Vaccination	12%
General Medical	32%
Family Planning	34%
Gynecological	32%
Post-Partum	60%
Growth Monitoring/Development	NA%
Pediatric	35%
Diarrhea Treatment	33%
ARI Treatment	42%
Immunizations	9%
Dental	45%
Other	20%

By facility (Table 8.7), the highest percentages of clients who were dissatisfied with the length of the waiting time were found in the sole regional hospital in the sample (36%) and in the district hospitals (37%). Overall, clients who attended health posts had the lowest level of dissatisfaction with waiting times (28%), but this result was affected by the dissatisfaction levels for health centers (high) and posts (low) in the Central department. In the other two departments, clients attending health centers were substantially less dissatisfied with waiting times than clients attending health posts.

As shown in Table 8.8, clients who obtained post-partum, dental and acute respiratory infection (ARI) services had the highest levels of dissatisfaction with waiting times. As expected, there is a clear correlation between the higher average waiting times for these services and the low levels of satisfaction with their length.

8.2.3. Medical Consultations

In addition to waiting time, with data from the client survey we can analyze perceptions of other service quality dimensions, including the duration and outcome of the consultation, willingness to return to the same facility for health services, the level of privacy, the quality of the information received, and the availability of medicines to treat the client's condition.

Duration. In addition to waiting times, the duration of the consultation is another time commitment, which has opportunity costs for clients. *A priori*, the actual time spent on a consultation does not necessarily have to be short or long, but merely appropriate for the treatment sought. However, the small amount of time spent on providing some services, as revealed in our survey, may be cause for concern. While clients spent an average of 45-60 minutes waiting to be attended, the time spent on average in the consultation with the health provider was between nine and 11 minutes (see Table 8.9). There was no variation in the median duration of consultations by facility type or department, estimated to be ten minutes. As shown in Figure 8.3, 75% of the clients said they spent ten minutes or less in the consultation.

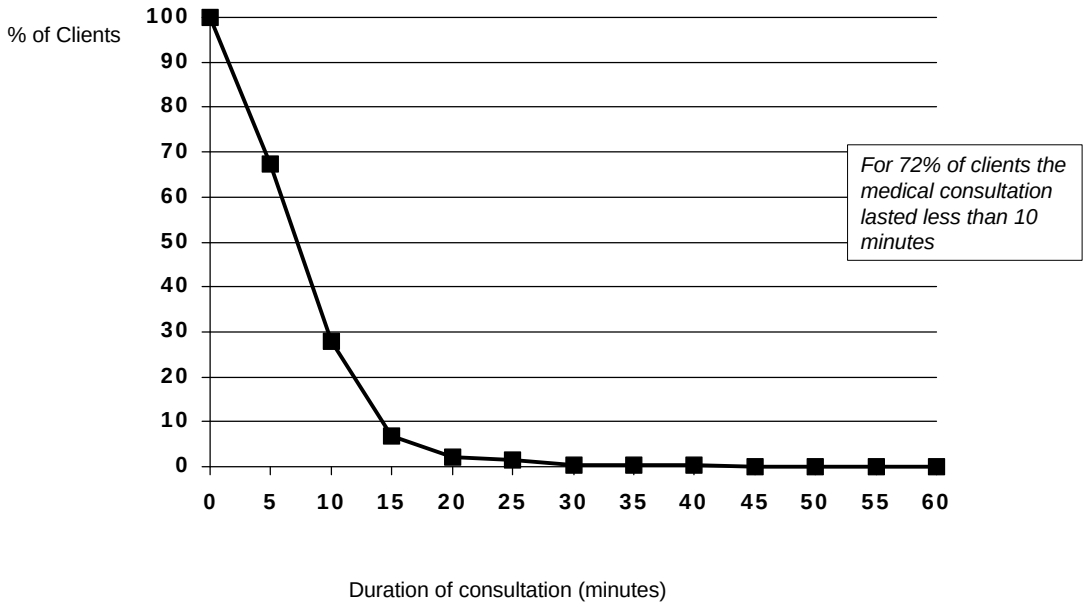
Table 8.9
Duration Of Consultation In Public Facilities, By Department(Minutes)

Facility Type	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Regional Hospital				
Mean	NA	11.5	NA	11.5
Median	NA	10.0	NA	10.0
Standard Deviation	NA	5.3	NA	5.3
Coefficient of Variation	NA	0.5	NA	0.5
District Hospital				
Mean	NA	NA	10.0	10.0
Median	NA	NA	10.0	10.0
Standard Deviation	NA	NA	6.6	6.6
Coefficient of Variation	NA	NA	0.7	0.7
Health Center				
Mean	9.7	10.1	9.0	9.3
Median	10.0	10.0	10.0	10.0
Standard Deviation	5.3	5.6	5.7	5.6
Coefficient of Variation	0.6	0.5	0.6	0.6
Health Post				
Mean	10.8	10.5	10.6	10.6
Median	10.0	10.0	10.0	10.0
Standard Deviation	3.3	3.6	5.7	5.1
Coefficient of Variation	0.3	0.3	0.5	0.5
Total				
Mean	9.91	10.72	9.79	9.95
Median	10	10	10	10
Standard Deviation	4.98	4.89	5.99	5.69
Coefficient of Variation	0.50	0.46	0.61	0.57

Table 8.10
Client Perceptions Of Consultation In Public Facilities, By Department

Indicators	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Percent of clients who reported that the duration of the consultation was sufficient	97.8%	97.7%	91.3%	93.3%
Percent of clients who reported that the condition for which they were seeking services was not resolved or referred	6.5%	17.5%	10.5%	11.0%
Percent of clients who would return to the same health facility for services	98.4%	99.4%	98.6%	98.7%
Percent of clients who reported that the level of privacy during their consultation was sufficient	96.2%	97.7%	93.4%	94.5%
Percent of clients who reported that they had received clear explanations during their consultation	98.4%	98.3%	93.5%	95.0%
Percent of clients who reported that they had sufficient time during the consultation to address their concerns	96.8%	98.9%	92.1%	93.9%

Figure 8.3
Duration of Medial Consultations in Public Facilities
(Percentage of clients by duration time)



The duration of consultation is very similar across the three departments and facility types. For the whole sample, the coefficient of variation was 0.60, which indicates a fairly tight distribution. The little variation in the consultation time may indicate that the complexity of the cases by type of consultation is quite similar in different facility types and across the three departments. In simple terms, it does not appear in any of the departments that one type of facility in particular is attracting the most complicated cases.

Client's Perception of Duration of Consultation. In spite of the fact that the average duration of the consultation appears to be relatively low, the majority of clients (above 90% in the three departments) declared that the length of the consultation was sufficient. As presented in Table 8.10, the clients of Cordillera and Misiones gave the highest levels of satisfaction with the length of the consultation. Similar results are observed when client responses are analyzed by type of center and by type of medical health services received (not shown).

Outcome of the Consultation. Despite the high levels of satisfaction with the length of consultation, when clients were asked whether their conditions were resolved or if they had been referred, between 6 and 18% of clients in the three departments reported that their conditions had not been resolved. As presented in Table 8.10, on average 11% of the clients reported that their conditions were both not resolved during the consultation and that they were not referred to another provider. This situation was especially prevalent in Misiones, where 17.5% of the clients reported that the condition for which they visited the facility was unresolved. More than 10% of clients in Central and only 6.5% of the clients in Cordillera thought that their problems were not resolved by the consultation. The range in values for this indicator is wider than for many of the other measures compared by department.

Privacy and Information Exchange. As indicated in Table 8.10, more than 94% of clients reported that they considered the level of privacy during the consultation to be sufficient. By department, client satisfaction with respect to privacy remained above

90%, with the department of Misiones reporting the highest level of satisfaction (97.7%).

Similarly, high percentages of clients – 94.5% overall – reported that the provider had given them clear explanations during the consultation. In both Cordilleras and Misiones, 98% of the clients considered the explanations to be clear, while the proportion was slightly lower for Central (93.5%). Finally, 94% of clients overall reported that the time allowed for asking questions was sufficient. Almost 97% of the clients in Cordillera, 98.9% in Misiones, and 92.1% in Central responded that they were given sufficient time for questions, clarifications, and to express concerns.

8.2.4. Willingness to Return to Facility

Almost all (98.7%) clients interviewed stated that they would return to the same institution to seek medical care. As presented in Table 8.10, these results are quite similar across departments and facility types (not shown). Nonetheless, it is important to note that such high levels of satisfaction might be explained by the lack of alternatives for medical attention available to the inhabitants of the departments included in the study.

Though not all conditions for which clients sought care were resolved during the consultation, overall nine of every ten clients perceived the length of the consultation to be sufficient, and almost all clients reported that they would return to the same facility for services. Even in Misiones, where the proportion of clients with unresolved cases was highest (17.5%), 98% of clients said that they were satisfied with the duration of the consultation and 99% stated that they would return to the same facility.

8.2.5. Availability of Medicines

In this final section of the analysis of service quality indicators by department and facility type, we examine client views of the adequacy of medicines and facility appearance.

As shown in Table 8.11, 29% of clients overall reported that the necessary medications were not available at the time of their appointment. This finding seems surprising considering the generally high levels of client satisfaction with services. The proportion of clients reporting a lack of medicines was quite similar in the three departments. Cordillera had the highest proportion (36.2%) of clients reporting the lack of medicines.

When we examine the supply of medicine by type of center, as shown in Table 8.12, the proportion of health center clients who reported the lack of medicines (38.5%) was unexpectedly high compared to reports by clients at health posts (9.9%). Perhaps this discrepancy between the health posts and the other facility types exists because health posts generally treat a narrower range of basic conditions that require fewer types of medication. The proportion of clients reporting a lack of medicines was also high for district hospitals (36.6%).

Though not shown, when the availability of medicines was analyzed by the type of medical services sought, the highest proportion of clients reporting inadequate medical supplies were those who sought general medical services, post-partum care and pediatric services. These are also some of the services with the longest reported waiting times, suggesting high demand for these services which may cause the stock-out of medicines.

8.2.6. Facility Appearance

In terms of clients' perceptions of facility appearance, the results presented in Tables 8.13 and 8.14 indicate that 93% of clients overall considered the facilities to be clean or very clean. This favorable perception was consistent across departments and facilities, with the exception of regional hospitals. Central had the lowest proportion of clients, only 4.6%, who viewed the facilities as dirty or very dirty. In Cordillera and Misiones, the proportion of clients who perceived the facilities to be either dirty or very dirty was 10.3% and 11.9%, respectively.

Table 8.11
Client Perceptions Of Medicine Availability In Public Facilities, By Department

Indicator	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Percent of clients who reported that the facility had the medications necessary for their treatment	63.8%	79.4%	70.6%	70.8%
Percent of clients who reported that the facility did not have the medications necessary for their treatment	36.2%	20.6%	29.5%	29.2%
Total	100%	100%	100%	100%

Table 8.12
Client Perceptions Of Medicine Availability In Public Facilities, By Facility Type

Indicator	Regional Hospital (n=59)	District Hospital (n=254)	Health Center (n=504)	Health Post (n=334)	Total (n=1151)
Percent of clients who reported that the facility had the medications necessary for their treatment	71.2%	63.4%	61.5%	90.1%	70.8%
Percent of clients who reported that the facility did not have the medications necessary for their treatment	28.8%	36.6%	38.5%	9.9%	29.2%
Total	100%	100%	100%	100%	100%

Table 8.13
Client Perceptions Of Public Facility Appearance, By Department

Indicator	Cordillera (n=185)	Misiones (n=177)	Central (n=789)	Total (n=1151)
Perception of facility cleanliness				
Very clean	22.2%	45.2%	25.5%	28.0%
Clean	67.6%	42.9%	69.8%	65.3%
Dirty	8.7%	11.9%	4.4%	6.3%
Very dirty	1.6%	0.0%	0.3%	0.4%
Total	100%	100%	100%	100%

Table 8.14
Client Perceptions Of Public Facility Appearance, By Facility Type

Indicator	Regional Hospital (n=59)	District Hospital (n=254)	Health Center (n=504)	Health Post (n=334)	Total (n=1151)
Perception of facility cleanliness					
Very clean	25.4%	26.0%	16.5%	47.3%	28.0%
Clean	52.5%	70.9%	75.0%	48.0%	65.3%
Dirty	22.0%	3.2%	7.7%	4.6%	6.3%
Very dirty	0.0%	0.0%	0.8%	0.1%	0.4%
Total	100.0%	100.0%	100.0%	99.2%	100.0%

As seen in Table 8.14, health posts and district hospitals had the highest proportions of clients reporting that the facilities were either clean or very clean, 95.3% and 96.9%, respectively. In contrast, regional hospitals and health centers had the highest proportions of clients who viewed these facilities as either dirty or very dirty, 22.0% and 8.5%, respectively.

In summary, based on the findings of the client-exit interviews, clients attending the public health facilities in the three departments report a high level of satisfaction with a number of facility and service features. In general, the hours of operation of the facilities seem convenient to the clients, and the majority of the clients perceive the length of the medical consultations to be sufficient. However, clients wait for a long time to receive medical attention, and the percentage of dissatisfaction increases with the length of waiting time. This phenomenon is most notable in the case of the hospitals. One of the basic indicators of quality – the availability of medicines – showed substantial room for improvement that might result from decentralization. Also it should be noted that despite the positive opinion of clients, an important number of clients considered the reason for their visit to be unresolved

8.3. Private-Sector Clients: Indicators of Basic Quality of Health Services

Comparing the public and private sectors using the client-exit survey can provide information useful for designing policies for a more effective distribution of public resources. The client-exit survey permits the comparison of socio-demographic characteristics and perceptions of service quality for the two client groups. If we assume that private health facilities serve as a standard of quality in this setting, then any differences in the measures can serve as references for what public centers might achieve. Public facilities, for example, may strive to reduce the amount of time clients wait to levels similar to those reported in private facilities.

In the first part of this sub-section, we examine and compare the characteristics of private facility clients with those of their public facility counterparts. Clients of both sectors are compared in terms of their age, sex, education, marital status, family size, occupation and levels of income. In the second part, indicators of basic quality will be compared for the two groups.

8.3.1. Private Facility Client Characteristics

In terms of demographic characteristics, the average private sector client is quite similar to clients of public sector facilities. The average private client is female, under 35 years of age, married, and with two or three children. However, clients at private facilities have a higher level of education and report an income that is 152% higher than the average public sector client. This information is presented in Table 8.15.

In terms of age distribution, private sector clients tend to be older than public-sector clients: 53% of the public facility clients are under 30 years of age, whereas only 40% of the private facility clients fall in this age category. Moreover, the average age of private sector clients is 35 years compared to 32 years for public-sector clients. Ten percent of private-sector clients report being over 60, whereas only 5.7% of public sector clients were over the age of 60.

Although the majority of clients at both types of centers were women, more men attended the private facilities: 21% of private sector clients were men compared to only 11% of clients in the public facilities. The majority of clients from both public and private facilities were married, with an average number of 2.2 and 2.6 children, respectively.

Private sector clients reported higher levels of education than public sector clients. The proportion of private sector clients who completed secondary school or higher was twice as high as the proportion for public sector clients. They also have higher labor force participation. At the time of the survey, 52.7% of the private sector reported working in the week prior to the interview, which is much larger than the 37.8% of public sector clients. Furthermore, even though a much larger proportion of private-sector clients was working, the percent of private clients who were students was also almost double the proportion among public sector clientele.

Table 8.15
Client Socio-Demographic Characteristics By Sector

Characteristics	Private Sector (n=110)	Public Sector (n=1151)
Age		
10-19	11.8%	17.3%
20-29	28.2%	35.8%
30-39	32.7%	26.5%
40-49	12.7%	10.3%
50-59	4.6%	4.5%
>60	10.0%	5.7%
Sex		
Male	20.9%	10.8%
Female	79.1%	89.2%
Education		
None	0.9%	4.8%
Primary	22.7%	66.1%
Secondary	57.3%	27.1%
Post-Secondary	19.1%	2.0%
Marital Status		
Single	25.5%	23.7%
Married	56.4%	40.8%
In union	12.7%	33.3%
Separated	1.8%	0.6%
Widowed	3.6%	1.7%
Number of Children		
Mean	2.2	2.6
Median	2.0	2.0
Standard Deviation	2.2	2.4
Coefficient of Variation	1.0	1.0
Employment Status		
Employed	52.7%	37.8%
Seeking employment	0.9%	1.3%
Study	6.4%	3.6%
Household work	34.6%	56.0%
Other employment	5.5%	1.3%
Monthly Income (Guaranies)		
Mean	1712289.3	678591.7
Median	1500000	600000
Standard Deviation	1154133	467775.6
Coefficient of Variation	0.7	0.7
Health Insurance		
Private Insurance	35.5%	1.2%
Pre-Payment	2.7%	0.0%
Social Security	9.1%	7.4%
None	52.7%	91.4%

Table 8.16
Indicators Of Basic Quality From Client Exit Interviews, By Sector

Indicator	Private Sector (n=110)	Public Sector (n=1151)
Convenience of Facility Operating Hours		
Percent of clients who reported that the facility's operating hours were convenient	99.1%	93.4%
Waiting time (minutes)		
Mean	28.23	56.77
Median	20	35
Standard Deviation	27.29	52.77
Coefficient of Variation	0.97	0.93
Percent of clients who reported that the length of the waiting time was acceptable	85.5%	68.9%
Duration of consultation (minutes)		
Mean	17.24	9.95
Median	15	10
Standard Deviation	8.59	5.69
Coefficient of Variation	0.50	0.57
Percent of clients who reported that the duration of the consultation was sufficient	98.1%	93.3%
Percent of clients who reported that the condition for which they were seeking services was resolved or referred	89.1%	84.0%
Percent of clients who would return to the same health facility for services	97.3%	98.7%
Percent of clients who reported that the level of privacy during their consultation was sufficient	99.1%	94.5%
Percent of clients who reported that the health provider provided clear explanations during their consultation	99.1%	95.0%
Percent of clients who reported that the facility did not have the medications necessary for their treatment	45.8%	29.2%

Among private sector clients, higher levels of education and employment were reflected in the higher average monthly incomes. Both the average and median incomes of private facility clients were around 2.5 times higher than for clients attending public facilities. Also, as expected from the income, education and employment results, 35.5% of private-sector clients reported that they had private health insurance and 52.7% reported no health insurance, while among public sector clients only a minority (1.2%) had private insurance and most (91.4%) had no insurance coverage.

In summary, in terms of social and demographic characteristics, the private sector clients were older, more educated, better off economically, and had a higher level of health insurance coverage than public sector clients. Compared to the public sector clients, a slightly higher proportion of private sector clients was male (21% versus 11%). Roughly the same proportion of public- and private-sector clients were married or in union – 74.1% and 69.1%, respectively – but a substantially higher proportion of private sector clients was married (56.4% versus 40.8%). There were no significant differences between the groups in terms of their average number of children. Based on these findings, it appears that private medical facilities cater to a self-selected group of clients, namely those who can afford to and actually do opt out of public provision for at least part of their medical needs.

8.3.2. Private-Sector Client Views on Basic Quality Indicators

Table 8.16 presents clients' perspectives on quality by sector. The differences between the two client groups reveal just what premium this richer and more educated group is choosing by soliciting a private, and therefore much less subsidized, service.

Hours of Operation. Though a high proportion of public sector clients reported that the hours of operation were convenient, almost all private sector clients (99%) reported that the hours were convenient. Assuming some level of courtesy bias, but one that does not differ across public and private facilities, a comparison should be valid. Also, because the client survey only presents information from people who went to the facilities, it is expected that the responses to this question would be high for both groups.

Waiting Time. The median waiting time in the private sector (20 minutes) was 15 minutes shorter than the median time in the public sector (35 minutes), while the average waiting time in the private centers (28 minutes) was approximately half that of the public centers (57 minutes). The shorter waiting time in the private facilities indicates that these clients are incurring a lower opportunity cost in seeking medical attention. Similarly, such differences in waiting time indicate than there is an ample margin for improvement among public facilities. In addition, almost certainly due to the shorter waiting time in the private facilities, a higher proportion of the private sector clients perceived the waiting time to be acceptable, 85.5% compared to 68.9%.

Duration of Consultation. The average length of the consultation was longer in private facilities than in public ones. The mean (17 minutes) and the median (15 minutes) consultation length in the private facilities were 50% longer than the length of the consultation in the public facilities (9 minute mean, and 10 minute median). The private sector clients not only waited less time for their consultation or treatment to start, but once seen, they spent a longer time with the health provider. Therefore, it is not surprising that the relative client judgements on aspects of the consultation are generally higher in the private facilities.

Outcome of the Consultation and Willingness to Return to Facility. Compared to clients at public facilities, only a slightly higher proportion of private sector clients (89% compared to 84%) reported that the condition for which they sought care was resolved or referred. Furthermore, there was only a one-percentage point difference in the proportions that would return to the same facility for care – 97.3% of private sector clients compared to 98.7% of public sector clients. It is interesting to note that the substantially longer length of the consultation in private facilities did not have a corresponding positive effect on the proportion of private cases that were resolved or referred. Additionally, the substantially longer waiting time for public sector clients did not affect their willingness to return to the same facility, but it is also possible that their alternatives for care are limited due to a lack of infrastructure or other barriers to access. Finally, the high proportion of private sector clients who reported that they would return to the facility is interesting given that this group is assumed to have more choices (they chose the private facility over an available public one), resulting in a more elastic demand.

Privacy and Information Exchange. In terms of the level of privacy and quality of the exchange of information between provider and client, almost all (99.1%) private sector clients were highly satisfied with both. For clients in both sectors, more than 90% viewed favorably various aspects of the consultation, e.g., privacy, explanations given during the consultation and time dedicated to questions and explanations. While we anticipated that these measures for both groups would be affected by a courtesy bias, the proportions of private-sector clients are consistently 5% higher than the comparable measures for public clients and all approach 100% satisfaction in the private facilities.

Availability of Medicines. In terms of the availability of medicines, a measure that is perhaps a more accurate and objective indicator of quality, a relatively high percentage (45.8%) of private sector clients responded that the necessary medications were not available at the time of the consultation. In the case of the public sector clients, this percentage was substantially lower at 29.2%. The lack of medicines at the facility, however, did not appear to affect the client's willingness to return to the facility, nor was there a consistent relationship between the availability of medicines and the extent to which the condition was resolved among either client group. Given that the private sector clients were financially better off, it is possible that acquiring their medicines from commercial outlets may have posed no burden to them.

Based on the findings of the client-exit survey, the comparison of the public and private sectors revealed some significant differences between the care-seeking experiences of private and public sector clients. Substantial differences in waiting time and consultation length, and the differences in client views on these indicators, suggest room for improvement on the part of public sector facilities. These indicators could be used as standards for public managers to improve the performance of public facilities. It is interesting that the shorter waiting times and longer consultations do not seem to add a significant marginal gain in the perception of the clients about the distinct aspects of the consultation or in their final opinion of the consultation. Also, some of the subjective indicators might be influenced by courtesy bias. It is important to note, however, that the client-exit survey did not capture the opinion of clients who did not attend the facilities because of long waiting times or short consultation times. Information on potential clients would provide more complete information about the benefits of improving basic indicators of quality in the public sector.

8.4. Findings: Basic Indicators of Equity & Other Client Characteristics

A common government objective in the health sector is to establish a health system in which citizens have easy and equal access on the basis of their needs. Although equity in the health sector may be a desirable social objective, achievement of equity in all its dimensions is complex. This section provides a first approach for an analysis of equity in the public health system in three departments of Paraguay, using findings primarily from the client-exit interviews. This information is complemented by selected findings from the household survey (see Section 9).

This section is divided into four sub-sections. The first sub-section defines and explains the concept of equity. The second sub-section analyzes the determinants of equity in the use of health services provided at public sector facilities. The third sub-section examines the composition of individual total health expense. In the fourth and final sub-section, we analyze the financing and equity implications of a client's place of residence or origin.

8.4.1. Conceptual Issues

Two facets of equity in health should be clearly differentiated: equity in the financing of health services and equity in the use of health resources. Equity in the financing of health implies that wealthier individuals should contribute more to the system than poorer individuals or that an individual's contribution to the system should be consistent with their ability to pay. An additional element in the analysis of equity is to learn whether individuals who pay local taxes, which are then allocated to health services, use the services to which they contribute. For example, it would be inequitable if individuals from a specific community paid local taxes to finance a network of health centers that were utilized primarily by individuals outside of the community. Data from the client-exit interviews permits an analysis of equity of financing.

In terms of equity in the use of health services, we examine whether individuals with similar needs receive equal treatment, independent of such factors as sex, place of residence, level of education, and other socio-demographic determinants of health service use. The fundamental measurement problem pertains to determining individual needs given that the collection and analysis of health status data – individual symptoms experienced and preferences for care – is complex.

Usually, differences in the level of health service use by income level are poorly understood as inequity in the health sector. Income differences involve a different use of resources given that medical care is a normal good in the economic sense (i.e., a person with a higher income level will consume more medical care). An important aspect of equity is to examine whether individuals with similar health needs receive equal treatment after controlling for differences in income.

Another key aspect of equity is the extent to which public resources are directed towards the poorest individuals. For this analysis, it is important to evaluate whether the poorest members of society make intensive use of the public health system when they become ill. If they do not, the problems associated with access, quality of care and economic barriers that impede access should be analyzed.

8.4.2. Equity in the Use of Health Services

In the descriptive analysis of the determinants of health services use among the different client groups, we include the following elements: client income, household economic level, distance to the health facility, transportation costs and travel time to the source of care.

Monthly Income and Client Economic Status. Among public facility clients the distribution of their monthly income was relatively symmetric. As shown in Table 8.2, the average monthly client income was 678,592 Guaraníes (US$241) and the median was quite close to the average at 600,000 Guaraníes (US$213). The variance of the distribution is not very significant since the coefficient of variation of the sample of clients is less than one. Clients in the department of Central had the highest average monthly income (743,135 Guaraníes, US$263.99), while clients in Misiones had the lowest (408,037 Guaraníes, US$144.95). (The socio-demographic characteristics of public facility clients are presented in sub-section 8.1.)

The findings of the household survey – which allowed us to classify households into wealth quintiles (see Section 9.1) – indicate that in the three departments included in the study, 46% of public facility clients were from the poorest households while only 5% were from the wealthiest ones. This information is presented in Figure 8.4. This finding indicates that the poorest individuals used public facilities most intensively. Figure 8.4 also shows the distribution of private facility clients by the level of household wealth. We observe a distribution that is the opposite of the distribution for public facilities: 46% of private facility clients were from the richest households compared to only 1% among the poorest.

In terms of the relationship between individual income and total payment for health services, we observed only a small positive correlation (0.064) between the two variables. This result indicates that the level of monthly income level had no effect on the amount paid by clients for health services. In other words, the poor as well as the wealthy paid a similar amount for their health services. If there were no differences between these groups in terms of the composition of health services demanded, then this result indicates a regressive price structure in the public health system.

Insurance Status. In addition to income level, insurance coverage is another factor that affects health service use. Insurance influences the effective prices and client income level at the moment in which the client seeks care for a medical problem. In the study, 91.4% of clients reported that they had no health insurance coverage (social security or private insurance). A majority of public facilities included in the study were utilized by clients with no insurance coverage. This may indicate that the strategy to recover costs at public facility by charging clients on the basis of their insurance status may not be very effective. Nevertheless, these findings should be interpreted with caution. The low proportion of clients with health insurance (private or social security) can be attributed to the fact that women, who use public health facilities relatively more than men, might not know whether they are included in health coverage maintained by another family member (e.g., husband or father).

Distance to Health Facility. More than 91% of clients reported living within 10 kilometers of the health center where they sought care (Figure 8.5). This proportion was above 90% in each department (see Table 8.17). Public facilities served primarily individuals who lived in close geographic proximity. In terms of efficiency in the design of local taxes, the use of facilities by those who live close by could have advantages given that the individuals who pay local taxes may be the principal users of the public health network, which those taxes support. Using the client-exit survey, however, one cannot conclude that distance was a factor in the use of public facilities. It is plausible that a majority of individuals who became ill and who did not seek care did not because they lived far away from a health center.

Figure 8.4
Distribution of Public and Private Sector Clients by Level of Household Wealth

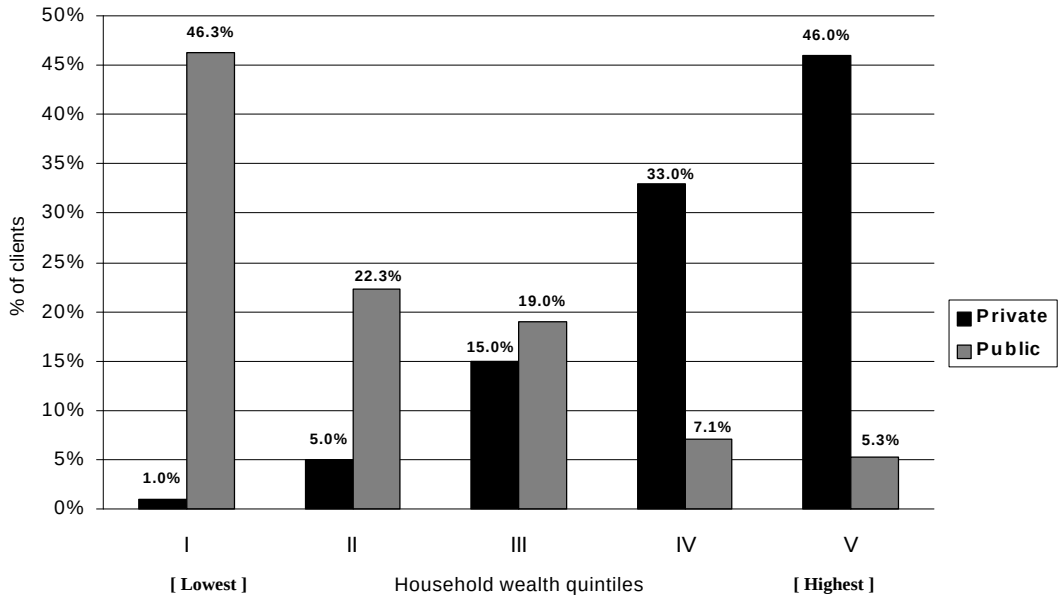


Figure 8.5
Total distance to public health facility (cumulative percentage)

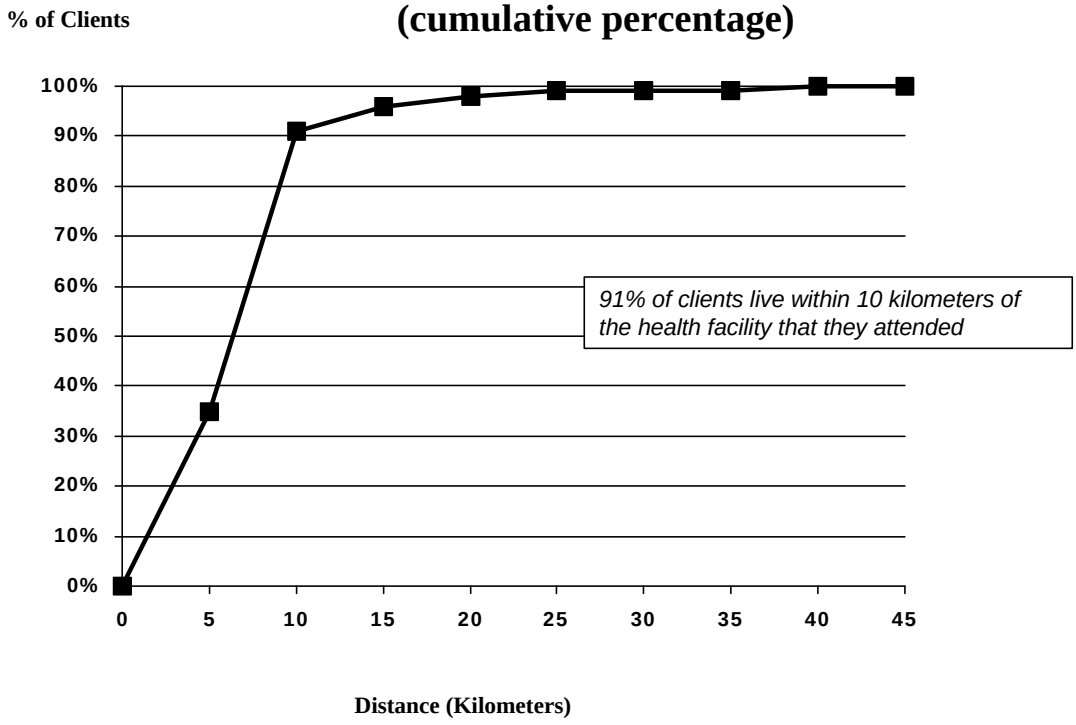


Table 8.17
Distance To Public Source Of Care, Based On Responses To The Client-Exit Interview (Percentage Distribution)

Distance (kms)	Cordillera	Misiones	Central	Total
0 - 5 kms	92.1%	91.0%	90.5%	90.4%
5 - 10 kms	5.1%	3.2%	5.7%	5.5%
10 - 15 kms	0.6%	3.2%	1.5%	1.7%
15-20 kms	1.2%	1.9%	1.4%	1.6%
>20 kms	1.2%	0.7%	0.8%	1.0%
Total	100.2%	100.1%	100.0%	100.0%

Table 8.18
Travel Time To Public Source Of Care, Based On Responses To The Client-Exit Interview (Percentage Distribution)

Travel time (minutes)	Cordillera	Misiones	Central	Total
0 - 15	55.9%	62.1%	65.8%	64.1%
15 - 30	31.3%	29.8%	27.8%	28.0%
30 - 45	5.6%	2.5%	2.6%	3.1%
45 - 60	5.6%	3.1%	2.2%	3.0%
>60	1.7%	2.5%	1.6%	1.7%
Total	100.0%	100.0%	100.0%	100.0%

Roughly 92% of clients reported having to travel less than 30 minutes to reach their source of care. This finding is not surprising given that a majority of clients – about 91% in each department – lived within 10 kilometers of their source of health care (see Table 8.18). The average cost of transportation to the source of care was 643 Guaraníes (US$0.23).

8.4.3. Distribution & composition of health expenditure

Distribution of Total Health Expenditure. Health expenditures for clients who attended public facilities were low and did not vary by the type of service received. As shown in Figure 8.6, 82% of clients spent less than 4,000 Guaraníes (US$1.42) for their medical services, while 21% paid no charge. Clients who were not charged for their health services reported earning an average income lower than the rest of clients. Nevertheless, given the high proportion of clients who were not charged for their health services, the payment structure in public facilities suggests that clients with similar income levels could be paying different amounts for similar medical services.

As shown in Table 8.19, clients who attended public facilities spent an average of 5,551 Guaraníes (US$1.97) for their care, and 50% of clients spent less than 3,000 Guaraníes (US$1.07). Despite the fact that 98% of clients covered their total health expenses without assistance from a third party (see Table 8.20), 81% of clients perceived that the price that they paid for their medical care was inexpensive or normal (i.e., neither inexpensive nor expensive). Roughly 19% of clients perceived the medical consultation to be expensive or very expensive (Figure 8.7).

Figure 8.6
Total Health Expenditure
(Cumulative percentage of clients by expenditure level)

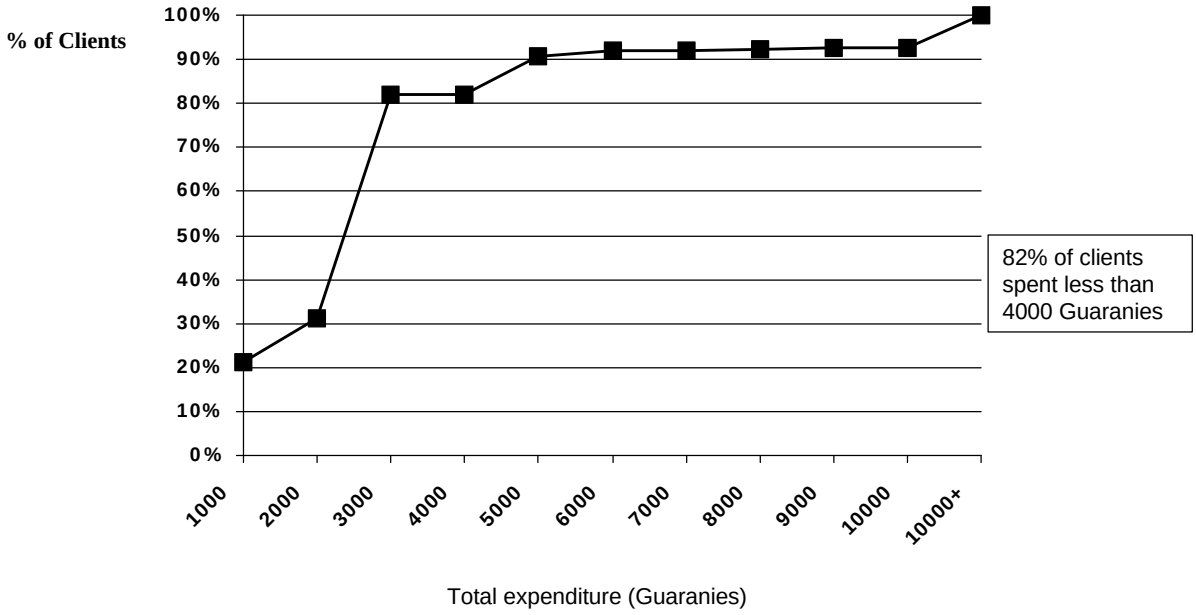


Figure 8.7
Clients' perceptions of service costs
at public facilities

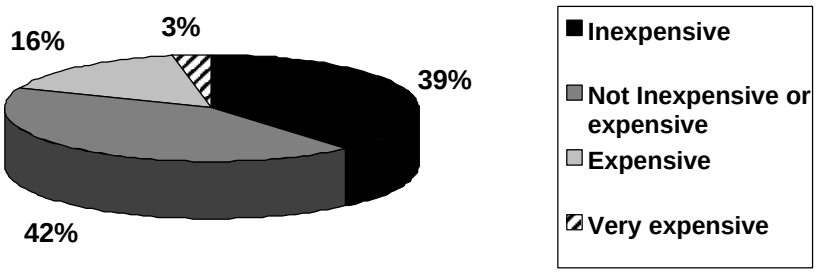
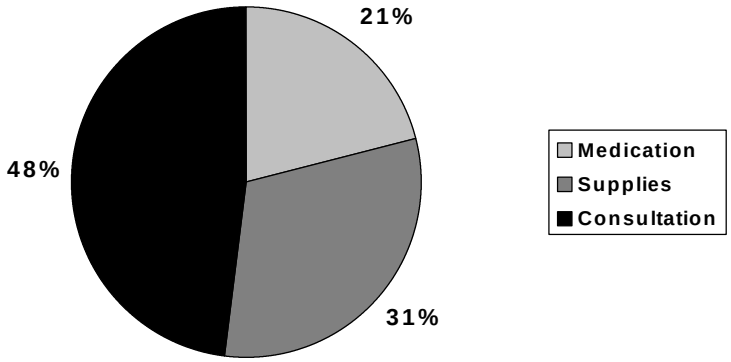


Figure 8.8
Composition of Total Health Costs



Composition of Total Health Expenditure. An analysis of the composition of individual health expenditures reveals that 21% was spent to cover the costs of medications, 31% on medical supplies, and 48% on the costs of the medical consultation (Figure 8.8).

Table 8.19 shows that 50% of clients did not have medication or supply expenses, and that their payment covered only the cost of the medical consultation. On average, medication expenses were 1,139 Guaraníes (US$0.40), and supply expenses were 1,705 Guaraníes (US$0.61). Of clients who had medication expenses, 99% spent less than 2,000 Guaraníes (US$0.71) on their medications, while 90% paid no charge for supplies. The low amount paid by clients for medical supplies can be explained by the low availability of supplies in public facilities. As reported in previous sections of this report, a substantial proportion of clients reported that public health facilities did not have the medical supplies necessary for their care.

Regarding medical consultations, the median expense was 3,000 Guaraníes (US$1.07) and the average expense was 2,691 Guaraníes (US$0.96). The similarity between the median and average expense indicates that the consultation expense structure for public facility clients was more homogeneous than the expense structures for medications or supplies. In effect, Table 8.19 indicates that the variation in consultation expense was less than the expenses in medicines and supplies. The coefficient of variation for this expense category was 1.78 compared to 26.1 and 4.6 for medications and supplies, respectively. This could be attributed to the fixed price structure discussed in Section 5 of this report.

In summary, among clients who attended public facilities, health expenditures were low. One-half of public clients had no medication or supply expenses while the average expense for the medical consultation was 2,691 Guaraníes (US$0.96). A majority of clients reported that they were satisfied with the price that they paid for their care. A sizeable proportion (21%) of clients received their care free of charge, which may indicate an inequality in health service financing (i.e., individuals with the same level of income and same medical condition could be paying different amounts for the same care).

Table 8.19
Total Health Expense By Component: Medications, Supplies, And Consulation (In Guaraníes)

Indicator	Expense
Total health expense	
Average	5551.3
Median	3000
Standard deviation	31254.16
Coefficient of variation	5.63
Total medication expense	
Average	1139.01
Median	0
Standard deviation	29775.45
Coefficient of variation	26.14
Total medical supply expense	
Average	1704.6
Median	0
Standard deviation	7804.9
Coefficient of variation	4.58
Total consultation expense	
Average	2691.13
Median	3000
Standard deviation	4802.8
Coefficient of variation	1.78

Table 8.20
Source Of Payment For Medical Care

Payment	Percentage
Private insurance	0.0%
Relative	1.0%
Other person	1.5%
Self (exclusively)	97.6%

8.4.4. Client Residence or Place of Origin

The objective of this sub-section is to compare the municipality of the client's residence or place of origin and the municipality where medical care was received. If a majority of clients who go to a public facility reside in the same municipality where the facility is located, then the local taxes used to finance the public facility are not being transferred or otherwise benefiting clients from other municipalities. As shown in the previous section, 91% of clients lived within 10 kilometers of the facility, which indicates that a majority of clients lived close to the facility where they received medical care. Nevertheless, the client-exit survey allowed us to do a more detailed analysis of the location of the client's residence.

A majority of public facility clients lived in the same municipality as the facility where they received care. Table 8.21 shows the proportion of clients who lived in municipalities different from their source of care (this proportion is also referred to as the importation coefficient, IC). The table shows notable differences by department.

Table 8.21
Percentage Of Clients From Other Municipalities

Departments/Municipalities	Percentage
Cordillera	
Altos	0.0%
Atyra	2.4%
Isla Pucu	7.1%
Itacurubi de la Cordillera	0.0%
Pirebebuy	1.9%
Tobati	7.1%
Misiones	
Ayolas	4.8%
San Juan Bautista	0.0%
San Miguel	0.0%
Villa Florida	0.0%
Central	
Aregua	1.9%
Capiata	5.1%
Fernando de la Mora	27.0%
Guarambare	16.4%
Ita	0.0%
Lambare	7.5%
Ñemby	6.3%
Villa Elisa	20.7%
Ypacari	1.8%
Ypane	9.1%

All of the municipalities in Central that were included in the study, except Ita, provided services to clients from other municipalities. Public facilities reporting a high proportion of clients from other municipalities included facilities in Fernando de la Mora (27%), Villa Elisa (21%), and Guarambare (16%). In no case did the proportion of clients from other municipalities represent more than 30% of the clients served by the public facilities in that municipality.

In Misiones, three of the four municipalities included in the study reported an IC of zero. Only facilities in the municipality of Ayolas reported serving clients from other municipalities; 5% of clients served in Ayolas came from other municipalities.

In Cordillera the municipalities of Atyra, Isla Pucu, Pirebebuy and Tobati reported an IC greater than zero. Approximately 7% of clients who attended public facilities in the municipalities of Tobati and Isla Pucu were reported to come from other municipalities.

Map A.15 in Annex A provides a better picture of the different regional patterns. The map indicates a strong interrelationship between the supply and demand for health services in the municipalities of Central. It is also clear that public health facilities in Misiones serve primarily the populations in the municipalities where they are located. While these different regional patterns in health service utilization are related to urbanization levels and the transportation available in each department, they have implications for health system financing as well.

8.4.5. Summary

A majority of clients who attended public health facilities were from the poorest sector of the population. Nevertheless, 12% of clients came from households in the two wealthiest quintiles. This finding indicates that public resources for health were not used exclusively for low-income individuals, but also for individuals who had a greater capacity to pay for their own care. A majority of clients paid no, or a small, charge for medical services received at public facilities. Clients from different income levels incurred similar charges for similar health services. This pattern of health expense suggests a level of regressiveness in the allocation of resources in public facilities.

There were no marked differences in the pattern of health expenses by client age or sex. Almost all clients who attended public facilities reported no insurance coverage (private or social security). This finding suggests that charging clients on the basis of their insurance coverage status may not be an effective option for improving the budgetary situation in public facilities.

On the basis of information from the client-exit survey, we observed that distance and travel time to a source of care might affect the use of medical care. This is consistent with the finding that a majority of clients used public facilities that were located in the same municipality where they resided. The use of local public health services by municipality residents indicates that local taxes, which are used to finance the network of public health centers in the municipality, are benefiting primarily those who pay them.

9. Results: Household Survey and Patterns of Service Utilization

A health system's principal purpose is to contribute to the improvement of the health status of a population, especially the health of groups like women and children who are most vulnerable. The health status of women and children depends, at least in part, on the health services they receive during pregnancy and delivery, as well as during post-delivery and the first year of a child's life. Given their health risks, health services for these groups are considered basic and, therefore, are fundamental components of public health programs.

The decisions that people make that affect their health depend on their individual and household characteristics, as well the availability, accessibility and quality of health services in the communities where they live. An individual's economic status is an important factor in decisions about health. It is important, therefore, to examine health status and patterns of health service use by economic group so that the care-seeking behavior of the poorest individuals, and the institutional factors that affect the utilization of basic health services by the most vulnerable populations, can be better understood. This information can be used to identify the aspects of the health system that affect – both positively and negatively – equity in the delivery of care.

In this section we examine service use patterns for preventative and basic curative services for women and for children under five years of age, including prenatal care, delivery services, postnatal care, immunizations and the management of diarrhea and acute respiratory infections (ARI). Likewise, we examine the source of family planning services and the factors that affect the use of these services. We also include a sub-section on the health status and behavior of individuals six years of age and over.

For purposes of obtaining information on the health status and use of basic health services by the population living in the municipalities in this study, data were collected for women and children through the ENSMI 98 household survey. The household survey questionnaire included questions about the incidence of illness. If the respondent reported that they had experienced an illness, they were asked a series of questions about the actions taken to re-gain their health, including seeking care outside of the household, receiving care within the household (self-care), or taking no action. For those cases in which care was sought outside of the household, the respondent was asked questions about the source of care and different economic factors that influenced their choice of a provider, including distance to service site, transportation costs, service fees and medication costs.

The findings contained in this section are presented by department and by level of household economic status. The total sample consists of 2,150 interviews from the departments of Cordillera, Misiones and Central.

9.1. Classification of Households by Economic Status

Information about the characteristics of the dwelling and ownership of durable goods were used to classify households by socioeconomic status (SES). The household survey collected information about the availability of electricity, source of water, type of sanitation service, number of rooms in the dwelling, the availability of telephone service, and the ownership of durable consumer goods, including a radio, television, video, refrigerator, washer, automobile and motorcycle. To classify households based on their economic level, an index summarizing the information contained in these 20 indicators of economic status was developed using the method of principal components. Use of this method results in a summary index, which is developed without the use of arbitrary weights. Rather, the statistical process used to develop the index uses weights that are based on the correlation between the different indicators of household wealth. In this way, the method generates a weighted linear combination of

indicators, which preserves the information provided by the joint use of the indicators.[27]

In addition, this method was chosen because the same information on housing characteristics and ownership of durable goods was collected from facility clients during the client-exit interviews. By combining the weights obtained from the household survey with the data from the client-exit interviews, it is possible to identify the economic strata of the facility clients. This information on economic status is extremely useful in examining patterns of health service utilization among different socioeconomic subgroups of the population. This information is particularly relevant to a public health system that is organized and structured to meet the health needs of its least economically favored members.

The resulting index allows for the ordering of households and the identification of "wealth" quintiles for the households. The poorest 20% of the households were in the first quintile (I) and the wealthiest households were in the fifth quintile (V). In the text we refer to individuals from households in quintile I as "poor" or "poorest" and those from households in quintile V as "wealthy" or "wealthiest".

9.2. Prenatal Care Services

9.2.1. Use of Prenatal Services

In the three departments, a high proportion of women who experienced a pregnancy in the five years preceding the survey reported that they had at least one prenatal care visit during their last birth. As shown in Table 9.1, 96.5% of pregnant women had at least one prenatal consultation during their last pregnancy. The levels of any prenatal care used were high in all three departments, ranging from a low of 94.6% in Misiones to a high of 96.7% in Central.

By level of household wealth, we observed no significant differences between the five economic quintiles in terms of whether some level of prenatal care was received. Table 9.1 indicates that 93% of pregnant women in the poorest group obtained at least one prenatal visit, compared to 98.4% of pregnant women in the wealthiest group.

9.2.2. Source of Prenatal Services

Overall, 62.8% of pregnant women in the three departments received prenatal care at Ministry of Health (*Ministerio de Salud Pública y Bienestar Social*, MSPBS) facilities (see Table 9.1.) MSPBS facilities also were the leading providers of prenatal care in each department. In Cordillera, 82.5% of care was provided in MSPBS facilities, while in Misiones and Central these figures were 67.9% and 57.5%, respectively. Private hospitals and sanitariums, the second most important source of prenatal care overall and in Central, provided services to 19.6% of pregnant women in the three departments and to 24.9% of pregnant women in Central. Private delivery of prenatal care was much more prominent in Central than in the other two departments, while the role of Ministry facilities in Cordillera and Misiones was much more prominent than in Central. As expected, the proportion of pregnant women who received prenatal care services at MSPBS facilities declined as household wealth increased, while the proportion who received care from private facilities increased with wealth. More than 85% of pregnant women in the poorest wealth group received care at MSPBS facilities compared to only 25% in the wealthiest group. This indicates that the direct subsidy to health providers benefits a large proportion of poorer women, as well as a smaller proportion of wealthier women. In contrast only 1.6% of pregnant women in the poorest group used private facilities compared to 44.1% of women in the wealthiest group.

[27] World Bank researchers (Filmer and Pritchett, 1999, 1998) have demonstrated that the index resulting from the use of this methodology produces an ordering of households that is similar to that obtained through measurement of consumer expenditure per person in the household. This measure also is more appropriate for obtaining household orderings that do not make use of the less reliable income component, and it is less affected by the error, which plagues the measurement of consumer expenditure.

9.2.3. Timing and Frequency of Prenatal Services

On average, women went to their first prenatal visit when they were 2.6 months pregnant (see Table 9.1.) In Central, one-half of women waited less than two months before seeking prenatal care, while one-half of women in Cordillera and Misiones waited less than three months. Overall, 84.1% of pregnant women in all three departments obtained five or more check-ups, though this proportion ranged from a low of 72.3% in Misiones to a high of 87.3% in Central. Over 96% of pregnant women in all three departments received a tetanus toxoid vaccination.

While it is true that there were no marked differences in the proportions of wealthy and poor women who received at least one prenatal check-up, the differences were sizeable when we examined the timing and frequency of prenatal care use. On average, poor pregnant women had been pregnant 3.5 months (median of 3 months) before making their first prenatal care visit, compared to 1.9 months (median of 1 month) for women in the wealthiest group. While 93.6% of pregnant women in the wealthiest group made at least five visits for prenatal control, the proportion was only 66.9% for women in the poorest group. It is also noteworthy that 21.2% of pregnant women in the poorest group had fewer than three prenatal care visits – this proportion was only 0.6% among the wealthiest women. There was no relationship between the proportion vaccinated against tetanus and level of household wealth; over 93% of women in all wealth groups were vaccinated.

Table 9.1. Patterns of prenatal care use for the last live birth in the 5 years preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
% who received pre-natal care	96.5%	94.6%	96.7%	93.0%	94.7%	99.1%	100.0%	98.4%	96.5%	700
Source of care										
MSPBS facility	82.5%	67.9%	57.5%	85.9%	78.6%	60.7	47.1%	25.0%	62.8%	425
Private sanato-rium/hospital	4.7%	5.7%	24.9%	1.6%	12.5%	22.6	27.6%	44.1%	19.6%	132
Hospital de Clínicas	0.6%	0.2%	1.2%	1.2%	0.5%	1.3	1.2%	1.0%	1.0%	7
Red Cross	3.5%	0.0%	2.6%	2.5%	1.8%	2.9	5.5%	0.7%	2.6%	17
IPS facility	2.8%	2.8%	5.0%	0.3%	1.7%	7.3	8.1%	7.5%	4.4%	29
Military or police hospital	1.4%	0.3%	1.7%	1.6%	0.0%	0.3	3.1%	3.2%	1.5%	10
CEPEP facility	0.0%	0.0%	0.6%	0.0%	0.6%	0.9	0.0%	0.5%	0.4%	3
Private clinic	0.6%	1.6%	5.3%	0.2%	1.1%	0.0	6.6%	17.2%	4.3%	29
Professional midwife	0.0%	0.8%	0.6%	0.0%	0.0%	1.7	0.5%	0.4%	0.5%	3
Traditional midwife	0.8%	0.5%	0.2%	1.2%	0.0%	0.0	0.0%	0.0%	0.3%	2
Other	3.1%	20.8%	0.3%	5.6%	3.2%	2.2	0.4%	0.4%	2.7%	18
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	675
Months pregnant at time of first visit										
Mean	3.07	3.02	2.47	3.49	2.64	2.29	2.49	1.92	2.63	675
Median	3	3	2	3	2	2	2	1	2	
Number of cases	119	61	495	163	162	132	102	116	675	
Number of visits										
1	2.0%	2.9%	3.3%	5.2%	1.9%	4.4%	2.8%	0.0%	3.0%	20
2-3	10.3%	16.7%	5.4%	16.0%	9.5%	3.6%	2.5%	0.6%	7.3%	49
4	10.6%	8.2%	4.1%	11.9%	4.1%	1.6%	2.8%	5.8%	5.6%	38
≥ 5	77.1%	72.3%	87.3%	66.9%	84.4%	90.4%	91.9%	93.6%	84.1%	568
% women who received a tetanus toxoid injection during pregnancy	96.1%	96.0%	96.3%	95.1%	98.2%	93.7%	93.9%	99.8%	96.2%	698

9.2.4. Economic Determinants of Prenatal Service Use

Table 9.2 presents both the direct (service fees, medication) and indirect (transportation cost, travel time) costs incurred by a client seeking prenatal care. In terms of travel time, in the three departments 50% of pregnant women spent less than 30 minutes traveling to the site where they received care. The average cost of travel for the three departments was 7,216 Guaraníes (US$2.56),[28] ranging from 2,184 Guaraníes (US$0.78) in Misiones to 14,945 Guaraníes (US$5.31) in Cordillera. In Misiones, 50% of women reported that they paid nothing for transportation to the health facility, while in Cordillera and Central the median transportation cost was about 700 Guaraníes (US$0.25).

The indirect costs of seeking prenatal care were substantially higher for women in the poorest households than for those in the wealthiest ones. Fifty percent of poor pregnant women reached their source of care within 30 minutes, and they paid approximately 700 Guaraníes (US$0.25) in transportation costs. In contrast, 50% of pregnant women from the wealthiest households reached their source of care within 20 minutes, and they paid nothing in travel costs. Despite the fact that the opportunity costs of going to the doctor (in terms of unrealized income) were potentially higher for a person from the wealthiest quintile compared to a person from the poorest, the utility of that income is higher for a person from the poorest household. Furthermore, wealthier users probably had a higher travel expense than reported since they were more likely to own their own vehicles, but direct expense per mile was probably lower for them than using public transportation, which is probably more likely to be used and reported by the lower income groups.

Overall, the total direct cost of prenatal care was low – roughly 60% of women spent between 0 and 3,000 Guaraníes (US$ 1.07) during their last visit – because the majority of pregnant women received prenatal care at MSPBS facilities. There was some variation by department in the direct cost of care. Roughly 74% of pregnant women in Cordillera spent between 0 and 3,000 Guaraníes (US$1.07) compared to 53% in Misiones and 58% in Central. Finally, Central had the highest proportion of women (14.9%) who reported paying over 40,000 Guaraníes (US$14.21) for their last prenatal visit. This high proportion was consistent with the high proportion of pregnant women in Central who obtained prenatal care from private sources.

Table 9.2 shows that 73.2% of pregnant women from the poorest households and 54.7% from the wealthiest groups paid less than 3,000 Guaraníes (US$1.07) for their consultation. Nevertheless, 49.6% of pregnant women in the wealthiest group paid no charge compared to only 25.3% in the poorest group.

9.3. Delivery

9.3.1. Utilization Patterns

As presented in Table 9.3, a majority (82.7%) of live births in the five years prior to the survey occurred in public (48.7%), private (19.6%), or semi-public (14.5%) institutions. There were significant variations across departments. In Central 91.4% of live birth in the previous five years occurred in health facilities compared to 57.6% in Misiones. In the three departments, the majority of live births occurred in MSPBS facilities: 47.8% in Central, 45.4% in Cordillera, and 43.6% in Misiones. Central had the highest proportion of births that occurred in private facilities, 23.6%, while in Cordillera and Misiones only 7.5% and 10.5% of births, respectively, occurred in private institutions.

Almost one of every five births (17.3%) occurred at home or in another non-institutional location. There were, however, marked regional variations in the distribution of live births by location of delivery. The highest proportion of home births occurred in Cordillera (33.3%) and Misiones (24.4%). In Central, only 5.4% of deliveries took place at home. Central is more urban than the other two departments, which accounts, in part, for the low proportion of home births.

[28] Note that all U.S. dollar equivalents are based on the 1998 exchange rate of US$1=2,815 Guaraníes.

Table 9.2. Cost of prenatal care for last live birth in the 5 years preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Travel time (minutes)										
Mean	55.4	34.8	43.0	47.5	52.1	56.0	32.3	26.8	44.5	667
Median	30	30	30	30	20	30	20	20	30	
Number of cases	117	61	489	160	161	132	101	113	667	
Transportation cost (Guaraníes)										
Mean	14944.8	2183.6	5876.69	11680	1862.3	15904	1664.41	3181.79	7216.39	641
Median	700	0	650	700	700	650	450	0	650	
Number of cases	119	61	460	160	160	123	85	113	641	
Service cost, including medication, professional fees (honorariums)										
0	26.4%	18.7%	27.8%	25.3%	11.1%	26.0%	26.5%	49.6%	26.7%	173
1-3000	48.8%	34.9%	30.2%	47.9%	49.4%	23.3%	35.5%	5.1%	33.8%	219
3001-6000	1.0%	10.0%	8.2%	8.6%	5.8%	10.8%	7.3%	2.7%	7.2%	46
6001-15000	7.2%	18.5%	5.9%	7.8%	9.8%	9.1%	6.5%	1.8%	7.3%	47
15001-40000	9.5%	9.2%	13.0%	5.6%	12.8%	16.6%	10.3%	16.5%	12.1%	78
>40000	7.2%	8.7%	14.9%	4.9%	11.1%	14.3%	13.9%	24.3%	13.0%	84
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	647

Table 9.3. Delivery site, type of birth attendant, and type of delivery for last live birth in the 5 years preceding the survey, by department and household wealth quintile

	Department			Quintiles						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Institutional Births										
Public/Semi-Public:										
MSPBS facilities	45.4%	43.6%	47.8%	51.3%	56.7%	51.3%	45.0%	23.6%	47.0%	329
Red Cross	3.2%	0.0%	6.4%	2.4%	7.5%	6.7%	8.7%	1.5%	5.2%	37
IPS Hospital	3.0%	3.1%	11.6%	0.9%	2.4%	13.1%	15.5%	22.0%	9.3%	65
Military/ police hospital	1.3%	0.3%	2.0%	0.9%	0.4%	1.2%	3.1%	4.0%	1.7%	12
Subtotal Public/Semi-Public	52.9%	47.1%	67.7%	55.5%	66.9%	72.3%	72.2%	51.0%	63.2%	443
Private Facilities	7.5%	10.5%	23.6%	3.5%	15.0%	19.4%	22.3%	47.9%	19.6%	137
Subtotal: Institutional Births	60.4%	57.6%	91.4%	59.0%	82.0%	91.7%	94.5%	98.9%	82.7%	580
Home Births										
Obstetric nurse	1.8%	4.5%	1.7%	6.0%	0.5%	1.6%	0.7%	0.0%	2.0%	14
Midwife	25.8%	16.6%	2.9%	26.4%	4.8%	1.9%	0.0%	0.4%	8.2%	57
Family Members	2.2%	3.3%	0.3%	2.4%	0.4%	0.0%	1.2%	0.0%	0.9%	6
Unattended	3.5%	0.0%	0.6%	0.9%	2.6%	0.8%	0.0%	0.0%	1.0%	7
Subtotal: Home Births	33.3%	24.4%	5.4%	35.7%	8.3%	4.3%	1.9%	0.4%	12.1%	84
Other locations	6.3%	18.1%	3.2%	5.3%	9.7%	4.1%	3.6%	0.7%	5.2%	36
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	700
Attendant (Institutional Births)										
Physician	46.6%	49.3%	72.2%	49.6%	68.9%	62.5%	79.9%	76.2%	67.4%	391
Obstetric Nurse	49.5%	46.5%	26.7%	45.2%	30.7%	37.5%	16.7%	23.6%	30.9%	179
Nurse	1.9%	4.3%	1.1%	3.5%	0.4%	0.0%	3.5%	0.2%	1.3%	8
Auxiliary Nurse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Don’t know/No response	2.0%	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.3%	2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	580
Percentage Cesarean birth	30.3%	28.0%	28.3%	27.7%	21.8%	35.6%	27.0%	31.0%	28.5%	580

By level of household wealth, the majority of births in all but the wealthiest households occurred in public institutions. With increases in the level of household wealth, the proportion of institutional births increased, the proportion of home births decreased, and the proportion of births in private facilities increased. The proportion of institutional births in the poorest quintile was only 59% compared to 98.9% in the wealthiest quintile. Furthermore, 47.9% of births in the wealthiest quintile occurred in private facilities compared to 3.5% of births in the poorest households. Less than 1% (0.4%) of births in the wealthiest households occurred at home, compared to 35.7% in the poorest households.

9.3.2. Birth Attendants

Overall, among institutional births physicians attended over two-thirds (67.4%), while professional midwives attended slightly less than one-third (30.9%) (See Table 9.3). While in Central physicians attended the majority of institutional births (72.2%), in both Misiones and Cordillera the proportion of physician-attended births was lower, 49.3% and 46.6%, respectively. Furthermore, professional obstetric nurses played a more prominent role in deliveries in Misiones and Cordillera than in Central. In Cordillera and Misiones, obstetric nurses attended almost one-half of institutional births.

Among all household economic levels, the majority of institutional births were physician-attended, though the proportion decreased with levels of household wealth. In the wealthiest quintile, 76.2% of institutional births were physician-attended; while in the poorest quintile this proportion was only 49.6%. Conversely, in the wealthiest quintile obstetric nurses delivered 30.9% of institutional births compared to 45.2% in the poorest quintile.

Traditional midwives attended the majority of home births, which represented 12.1% of total births. Overall, traditional midwives attended 8.2% of all births. By department, however, the proportion of births attended by a traditional midwife ranged from a high of 25.8% in Cordillera to a low of 2.9% in Central. Less than 1% of deliveries by women in the wealthiest quintile and none among those in the second wealthiest quintile were attended by traditional midwives in the home. Traditional midwives attended more than one of every four births (26.4%) among the poorest women. These proportions were 4.8% and 1.9% among the second poorest and middle-income households, respectively.

9.3.3. Cesarean Births

Overall, 28.5% of institutional births were by Cesarean section (see Table 9.3) The proportion of births that were Cesarean varied only slightly by department. There was also almost no variation in the proportion of births by Cesarean section across economic groups.

9.3.4. Determinants of Delivery Location

Of the 700 reported births, 18.3% took place where the mother had not planned to deliver. As shown in Table 9.4, the main reasons why women did not deliver where they originally planned included insufficient time to reach the desired facility (23.8%), referral to another facility (21.5%), and not being attended at their planned facility (21.2%). Facilities operating hours did not appear to be a reason why some women delivered in a site other than the one that they had originally intended. Only 1.4% cited operating hours as a reason.

By department, the analysis indicated that in Central, a large proportion (27.2%) of births that did not take place where originally intended was due to the failure of facility staff to attend to the woman when she arrived. In Cordillera, over 8% of individuals who did not deliver where intended cited lack of staff attention at their planned facility as the reason for not delivering there. In Misiones this proportion was 1.8%. In Cordillera the principal reason that the birth occurred elsewhere was insufficient time to reach the facility (39.4%), while in Misiones the principal reason was referral to another location (33.8%). In Misiones, lack of transportation was cited as a reason that 9.9% of the births occurred elsewhere. This proportion was much higher than in either Cordillera or Central, and is due, perhaps, to the comparatively lower level of urban development in Misiones.

Table 9.4. Reasons why delivery did not occur at the site where intended for last live birth in the 5 years preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Reasons	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Facility would not attend patient	8.4%	1.8%	27.2%	4.0%	39.3%	18.0%	48.3%	0.0%	21.2%	27
Referred elsewhere	28.2%	33.8%	18.2%	33.5%	20.3%	22.6%	40.1%	0.6%	21.5%	28
Facility was closed	2.0%	3.2%	1.1%	2.6%	2.4%	0.0%	0.0%	0.0%	1.4%	2
Insufficient time to reach facility	39.4%	26.9%	18.3%	41.4%	23.3%	25.0%	0.0%	6.3%	23.8%	31
Lack of transportation	1.4%	9.9%	0.3%	3.5%	0.6%	0.0%	0.0%	1.1%	1.1%	2
Very expensive	11.0%	2.7%	6.6%	0.0%	8.9%	8.6%	2.1%	13.9%	7.4%	10
Fear of the health center	0.8%	4.3%	7.3%	1.2%	0.5%	22.9%	0.0%	0.0%	5.6%	7
Other	8.9%	17.4%	21.0%	13.7%	4.6%	3.0%	9.4%	78.2%	18.0%	21
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	128

Table 9.5. Reasons why the closest site was not chosen for delivery of the last live birth in the 5 years preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Birthing site was closest to home										
Yes	31.5%	47.2%	34.4%	32.3%	46.9%	41.7%	31.0%	18.1%	35.1%	245
No	35.0%	30.9%	61.9%	36.8%	44.6%	55.6%	67.3%	81.3%	54.3%	379
Home birth	33.5%	21.9%	3.7%	31.0%	8.5%	2.7%	1.7%	0.6%	10.7%	75
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	699
Why delivery occurred elsewhere										
Poor quality	8.6%	21.1%	20.1%	14.5%	10.4%	19.5%	25.7%	23.0%	18.8%	71
High cost	10.1%	12.1%	7.5%	11.8%	9.2%	5.3%	4.3%	9.4%	8.1%	31
Facility would not admit patient	10.5%	4.0%	8.8%	7.2%	28.5%	8.1%	1.1%	0.0%	8.7%	33
IPS insurance requirement	4.7%	5.8%	15.6%	0.5%	5.4%	20.3%	18.1%	21.4%	13.8%	53
Private insurance requirement	4.4%	3.5%	10.9%	2.6%	13.7%	4.0%	10.8%	15.3%	9.8%	37
Needed Cesarean-section	24.4%	19.1%	8.6%	23.7%	8.9%	16.0%	6.4%	3.3%	10.9%	41
Trust in other provider	12.0%	19.1%	13.7%	17.3%	14.1%	9.6%	20.6%	9.6%	13.8%	52
Other	25.4%	15.4%	14.8%	22.4%	9.9%	17.3%	13.0%	17.9%	16.1%	61
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	379

As shown in Table 9.4, the main reasons that women in the poorest quintile gave for not delivering where they desired were insufficient time to reach the desired site (41.4%) and referral to another facility (33.5%). For women in the wealthiest quintile, the most frequently given reasons were cost (13.9%) and insufficient time to reach the site (6.3%). Women in the wealthiest quintile did not report that facility related factors – not being attended, being referred, or encountering a closed facility – were important reasons for not giving birth where they intended. Among the poorest women, however, 40% of births that did not occur where planned were the result of such institutional factors.

As shown in Table 9.5, 54.3% of births did not occur at the facility closest to a woman's home. About 35.1% occurred at the closest facility, and the remaining 10.7% took place at home. Misiones had the highest proportion of births that occurred at the

closest site (47.2%), followed by Central (34.4%) and Cordillera (31.5%). Central had the highest proportion of births that did not occur at the closest site (61.9%), compared to 35% in Cordillera, and 30.9% in Misiones. By level of household wealth, 32.3% of births to women in the poorest quintile occurred in facilities closest to their homes compared to 18.1% for women in the wealthiest group. Wealthy women appeared to have more alternatives at the time of site selection, and distance to the facility did not appear to be a major factor in their choice.

The main reasons that women did not deliver at the facility closest to their home included perceived poor quality, cited by 18.8% of women, trust in the birth attendant at another facility (13.8%), social security health insurance requirements (13.8%), and the need for a Cesarean section (10.9%). These reasons differed across departments. In Cordillera, Cesarean section (24.4%) was the most common reason. In Misiones and Central, poor quality was the main reason.

By level of household wealth, Table 9.5 showed that among the wealthiest women, poor quality (23%) and insurance status (36.7%) were the main reasons why the closest facility was not selected for delivery. The poorest women, in contrast, cited the need for a Cesarean (23.7%) and trust in the attendant (17.3%) as the most important reasons. It is important to observe that women in the two lower economic quintiles mentioned that facilities would not admit them. No women in the wealthiest quintile reported that they were refused delivery care.

9.3.5. Economic Determinants of Delivery Care Use

As shown in Table 9.6, overall 50% of women traveled up to 30 minutes to reach the source of delivery services. Misiones reported the shortest median travel time (15 minutes) while in Cordillera 50% of women traveled up to three times the average travel time reported in Misiones. In Central, 50% of women traveled up to 30 minutes to reach the delivery site. One-half of women in the three departments reported that they did not pay any transportation costs. As expected, Cordillera had the highest average travel cost, 7,439 Guaraníes (US$2.64), which corresponded with the long distances reported in the department. The wealthiest women reported low indirect costs associated with seeking delivery care: women in the wealthiest quintile traveled less and paid less for transportation than women in the poorest quintile.

Table 9.6. Cost of delivery care for the last live birth in the 5 years preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Travel time (minutes)										
Mean	285.8	31	35	79	130	38	35	28	67	619
Median	45	15	30	30	30	30	30	30	30	
Number of cases	79	51	489	116	155	129	101	118	619	
Travel cost (Guaraníes)										
Mean	7,439.4	3,606.4	4,324.0	10,382.4	4,354.8	4,783.3	2,844.5	718.5	4,688.1	619
Median	0	0	0	500	0	700	0	0	0	
Number of cases	79	51	489	116	155	129	101	118	619	
Service cost (fees, medication) (Guaraníes)										
0	21.6%	13.4%	21.4%	17.6%	12.3%	17.2%	28.0%	37.6%	20.7%	137
1-30,000	24.1%	29.6%	9.5%	24.4%	13.4%	3.0%	17.4%	8.0%	14.1%	94
30,001-80,000	24.3%	29.3%	10.4%	24.5%	22.2%	9.5%	4.1%	2.8%	14.8%	99
80,001-200,000	11.1%	13.5%	27.2%	18.9%	29.1%	32.0%	18.7%	11.7%	22.9%	153
200,001-400,000	6.0%	7.3%	10.3%	5.3%	8.7%	16.6%	11.0%	5.5%	9.2%	62
>400,000	12.9%	6.9%	21.2%	9.3%	14.3%	21.7%	20.9%	34.5%	18.3%	122
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	667

For one in every five (20.7%) births, women paid no charge for delivery services. In Cordillera as well as Central, there was no charge for about 20% of births. In Misiones, however, only 13.4% of births were free of charge. Central, the department with the most physician-attended births, had the highest proportion of births in the higher cost ranges (58.7% over 80,000 Guaraníes, US$28.42).

In terms of direct costs, wealthier women paid more than poorer women. Nevertheless, a sizeable proportion (37.6%) of deliveries by women in the wealthiest quintile were free of charge, compared to only 17.6% of births to the poorest women. These figures reflect a pattern of inequity in the use of public resources that finance institutional deliveries.

9.4. Post-Natal Care

9.4.1. Use of Post-Natal Care

In the three departments (see Table 9.7), over 96% of children born in the five years preceding the survey received post-natal care, and over one-half of these children received post-natal care within seven to eight days after delivery. Overall, 89.4% of children were reported healthy at their first post-natal visit. In Cordillera, however, 16.7% children were reported to be ill at the first checkup.

Among all household economic levels, more than 91% of children received post-natal care. Among children in the poorest wealth quintile, roughly 9% received no post-natal care while almost all children in the wealthiest quintile received care. Children from the wealthiest quintile received post-natal care sooner than children from the poorest quintile: 12 days versus 18 days. About 14% of children from the poorest households were ill at their first post-natal visit compared to 10% of children from the wealthiest ones.

Overall, a majority (71.1%) of children received post-natal care at public or semi-public facilities. In Central, however, only 66.9% attended public or semi-public facilities while in Misiones and Cordillera the proportions were 75.5% and 87.2%, respectively. These figures are consistent with the fact that, of the three departments, Central is the most urban, has the highest per capita income, and has more private-sector health care options.

A majority of women in the two poorest quintiles made intense use of MSPBS facilities for their post-natal care; between 82.7% and 89.3% of children born in the last five years received their post-natal care in these facilities. Among children in the wealthiest households, only 17.9% used MSPBS facilities while a larger proportion used private (48.8%) or other sources (20.9%).

9.4.2. Economic Determinants of the Use of Post-Natal Care

Overall, for over one-half of individuals their source of post-natal care was within 30 minutes travelling time (see Table 9.8.) Individuals in Cordillera reported the longest average travel time (46 minutes), while in Misiones and Central the average was 29 minutes. Average transportation costs ranged from 1,500 to 2,600 Guaraníes (US$0.53-0.92), and the median transportation cost was 600 Guaraníes (US$0.21). In Misiones, however, 50% paid no transportation costs to reach their source of post-natal care.

Compared to individuals in the wealthiest quintile, those in the poorest spent more time and money to travel to their source of post-natal care. To reach their source of care, those in the poorest quintile traveled a median time of 30 minutes at a median cost of 650 Guaraníes (US$0.23). In contrast, those in the wealthiest household traveled a median of 15 minutes and 50% incurred no expense for their travel.

In terms of the direct cost of post-natal care, Table 9.8 shows that 25% of individuals paid no charge for the services that they received. We observed a similar percentage for each department. In Central, 29% of women paid more than 10,000 Guaraníes (US$3.55) for post-natal care, while in Cordillera and Misiones the proportions were 18.2% and 14.2%, respectively.

Table 9.7. Use of postnatal care services for children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
% receiving post-natal care	96.4%	91.3%	97.1%	91.3%	96.7%	97.3%	99.4%	99.9%	96.4%	701
Time between birth and first visit										
Mean (days)	17	16	13	18	16	13	11	12	14	671
Median	8	8	7	8	8	8	7	7	8	
Number of cases	120	59	492	160	165	130	101	115	671	
Infant's health status at visit										
Sick	16.7%	8.6%	9.4%	14.0%	11.5%	8.2%	8.0%	10.0%	10.6%	72
Healthy	83.3%	91.4%	90.6%	86.0%	88.6%	91.8%	92.0%	90.0%	89.4%	603
Source of Care										
Public Facilities										
MSPBS	81.8%	73.2%	55.7%	89.3%	82.7%	54.2%	46.4%	17.9%	61.7%	413
Red Cross	2.9%	0.0%	3.9%	2.3%	2.9%	8.8%	2.9%	0.0%	3.4%	23
IPS	1.1%	2.0%	5.9%	0.3%	2.4%	4.8%	10.8%	8.3%	4.7%	32
Military/Police hospital	1.4%	0.3%	1.5%	1.1%	0.0%	0.3%	2.2%	4.0%	1.3%	9
Subtotal: Public/Semi-Public	87.2%	75.5%	66.9%	92.9%	88.0%	68.1%	62.3%	30.3%	71.1%	476
Private	9.0%	21.0%	21.3%	5.9%	9.8%	25.9%	22.7%	48.8%	19.2%	122
Midwife/Other/Don't know	3.9%	3.5%	11.7%	1.2%	2.2%	6.0%	15.0%	20.9%	9.7%	72
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	670

Table 9.8. Cost of postnatal care services for children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Travel time (minutes)										
Mean	46	29	29	41	28	32	35	23	32	669
Median	30	20	20	30	20	30	30	15	30	
Number of cases	119	59	491	159	165	130	99	116	669	
Travel cost (Guaraníes)										
Mean	1593.9	1551.8	2594.09	915.5	2152.6	7291.9	762	652.8	2302.4	669
Median	650	0	600	650	700	600	650	0	600	
Number of cases	119	59	491	159	165	130	99	116	669	
Service cost (including medication)										
0 (Guaraníes)	25.9%	20.9%	25.0%	26.5%	18.1%	25.6%	32.9%	23.5%	24.8%	161
1-2,000	26.8%	34.5%	10.6%	27.4%	26.4%	8.3%	4.4%	3.4%	15.6%	101
2,001-5,000	25.5%	18.6%	33.4%	28.9%	40.8%	33.1%	32.5%	15.9%	30.7%	199
5,001-10,000	3.6%	11.8%	2.2%	6.2%	3.1%	2.1%	1.0%	2.8%	3.3%	21
>10,000	18.2%	14.2%	28.9%	11.1%	11.5%	31.0%	29.2%	54.4%	25.7%	167
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	648

Among the wealthiest quintile, 23.5% paid no fee or other service charges for their post-natal care visit compared to 26.5% of those in the poorest quintile. Despite the fact that a similar proportion of the wealthiest and poorest individuals received their post-natal services at no charge, a majority (53.9%) of the poorest individuals paid less than 2,000 Guaraníes (US$0.71). In contrast, 54% of the wealthiest individuals paid more than 10,000 Guaraníes (US$3.55), which reflected their greater use of private medical facilities for post-natal services.

9.5. Vaccination

The findings in this sub-section should be interpreted with caution. The vaccination question refers to vaccination of children under five years of age during the six-month period preceding the survey. The inclusion criteria may result in an overestimation of the number of negative responses. For example, a four-year-old child who received all of his vaccinations two years before the survey would not have received any vaccinations in the preceding six months.

9.5.1. Utilization Patterns

Over 27% of children under five years of age received no vaccination during the six months preceding the survey (see Table 9.9). The proportion of children who received a vaccination, as well as the proportions by type of vaccine, were similar across the three departments. By level of wealth, there was a small difference in the proportion (18.5%) of wealthy children who received no vaccines and the proportion of the poorest (23.2%) who did not. By type of vaccine, there were no striking differences or trends in the proportions by wealth level.

Overall, the majority (69.7%) of children obtained their vaccinations in MSPBS facilities. This proportion was highest in Misiones (80.4%), and roughly 69% in both Cordillera and Central. The household vaccination campaign covered 9% of the population, while non-household campaign activities reached 4%. As shown in Table 9.9, 18.5% of children vaccinated in Cordillera received their vaccinations through the household campaign. In Misiones, campaign vaccine coverage was about the same (3%) for both household and non-household activities. The household vaccination campaign in Central covered twice the proportion of children (7.5%) as the non-household campaign (2.9%).

For all wealth groups, MSPBS facilities were the major source of vaccination services. In the poorest households, 77% of children under five obtained their vaccinations at MSPBS facilities compared to 53.3% of children in the wealthiest households. The proportion of children from the poorest households (13.9%) that relied on vaccination campaigns for their coverage was almost double the proportion for the wealthiest households (7%).

9.5.2. Economic Determinants of Vaccination Use

As shown in Table 9.10, the overall average travel time to reach a vaccination site was 23 minutes, and one-half of individuals reached a source within 15 minutes. Travel times in Misiones and Central were similar to the overall figures. They were substantially longer in Cordillera where the average travel time was 35 minutes and where 50% of individuals traveled over 30 minutes. The higher median cost of travel in Cordillera was consistent with the longer travel time. An individual in Cordillera paid an average of 574 Guaraníes (US$0.20) in travel cost, and 50% of individuals paid over 500 Guaraníes (US$0.18).

Between 85 and 90% of individuals in Cordillera and Misiones, and 80.8% in Central, paid no charge for their children's vaccinations. Among the poorest households, 91.9% paid no charge for vaccinations compared to 66.3% among the wealthiest households. Given that a higher proportion of the wealthiest individuals obtained their vaccinations from private medical facilities, a higher proportion (27.4%) of those in the wealthiest households paid over 10,000 Guaraníes (US$3.55).

Table 9.9. Vaccination activities in the 6 months preceding the survey among children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
% children who received no vaccine	27.6%	24.4%	27.7%	23.2%	40.4%	24.0%	28.7%	18.5%	27.4%	184
Vaccinations received in last 6 months										
BCG	49.4%	51.9%	51.7%	46.7%	62.8%	48.6%	53.2%	47.5%	51.3%	250
DPT	48.4%	56.0%	61.5%	50.4%	70.6%	65.8%	44.1%	61.3%	58.7%	286
Polio	54.3%	58.5%	60.6%	59.1%	70.0%	54.3%	47.8%	62.4%	59.3%	289
Measles	79.7%	84.4%	80.0%	83.8%	76.2%	79.9%	69.9%	87.7%	80.4%	392
Others	2.7%	2.3%	0.9%	2.2%	0.6%	1.0%	0.8%	1.8%	1.4%	7
Source of vaccination										
MSPBS facility	69.3%	80.4%	68.3%	77.00%	81.5%	60.5%	75.3%	53.3%	69.7%	339
Private facility	2.6%	11.7%	10.3%	1.70%	4.4%	18.3%	10.4%	13.3%	9.1%	44
Clínicas Hospital	0.0%	0.0%	0.3%	0.00%	0.0%	0.0%	1.4%	0.0%	0.2%	2
Red Cross	0.0%	0.0%	0.9%	0.60%	0.6%	1.7%	0.4%	0.0%	0.7%	3
IPS facility	0.0%	1.2%	1.6%	0.00%	0.3%	2.4%	2.4%	2.0%	1.2%	6
Military/Police hospital	0.0%	0.0%	0.4%	0.00%	0.0%	0.0%	0.0%	1.6%	0.3%	2
Private clinic	0.0%	0.0%	7.2%	0.00%	0.3%	2.5%	3.0%	21.8%	5.3%	26
Non-household campaign	8.8%	3.5%	2.9%	6.30%	5.9%	1.8%	4.4%	1.0%	4.0%	19
Household campaign	18.5%	3.2%	7.5%	13.90%	5.1%	12.8%	2.7%	7.0%	9.0%	44
Others	0.8%	0.0%	0.5%	0.50%	1.9%	0.0%	0.0%	0.0%	0.5%	2
Total	100.0%	100.0%	100.0%	100.00%	100.0%	100.0%	100.0%	100.0%	100.0%	487

Table 9.10. Vaccination costs for children under 5 years of age who received a vaccination in the 6 months preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Travel time (minutes)										
Mean	35	23	20	29.3	21	24	20	17	23	440
Median	30	15	15	20	15	15	20	15	15	
Number of cases	71	44	325	112	90	86	65	87	440	
Travel costs (Guaraníes)										
Mean	573.8	451.8	779.2	618.18	1123.06	658.4	640.8	517.6	712.3	438
Median	500	0	0	720	0	0	0	0	0	
Number of cases	71	45	322	112	89	85	64	88	438	
Service cost (including medication)										
0	85.4%	90.7%	80.8%	91.9%	87.0%	78.8%	84.6%	66.3%	82.5%	460
1-1,000	0.0%	0.0%	0.2%	0.0%	0.2%	0.3%	0.3%	0.0%	0.2%	1
1,001-2,000	5.6%	1.9%	0.5%	2.3%	3.8%	0.1%	0.7%	0.0%	1.5%	8
2,001-10,000	6.7%	4.8%	6.3%	5.6%	5.6%	4.3%	10.9%	6.3%	6.3%	35
>10,000	2.3%	2.7%	12.3%	0.2%	3.5%	16.4%	3.6%	27.4%	9.6%	53
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	557

9.6. Diarrhea

9.6.1. Prevalence of diarrhea

Overall, 14.5% of children under five years of age experienced at least one episode of diarrhea in the four weeks preceding the survey (see Table 9.11.) Cordillera had the highest prevalence (19.9%), while Misiones and Central had a prevalence of 12.5% and 13.4%, respectively. Overall, 62.2% of diarrhea cases stated that this condition was the most severe health problem that they had experienced, but this proportion ranged from a low of 38% in Misiones to 62.9% in Cordillera and 64.6% in Central.

Diarrhea prevalence was highest among children from the poorest households (20.8%), and lowest among the wealthiest children (13.4%). Those in the poorest households reported not only the highest prevalence, but also the highest proportion (75.2%) reporting that the diarrhea was the most serious health problem that the child had experienced in the four weeks preceding the survey. Forty-one percent of children in the wealthiest quintile reported that the episode of diarrhea was the most severe health problem.

Among children for whom diarrhea was their worst health problem, 50.1% reported that they also vomited and 50% reported that the problem first occurred within the last seven days. Those in the poorest quintile experienced diarrhea for the first time an average of ten days (median of seven days) preceding the survey compared to an average of four days (median of two days) among those in the wealthiest quintile. These results should be interpreted with caution because they are based on a small number of observations.

9.6.2. Care-Seeking Behavior

Overall, almost 79.4% children for whom diarrhea was the most severe health problem sought care outside of the household (see Table 9.12.) The proportions that sought care outside of the household were lowest in Cordillera (56.1%) and Misiones (63.5%), and highest in Central (88.7%). There was a substantial difference in care-seeking behavior between the poorest and wealthiest income groups; 92.4% of the diarrhea cases in the wealthiest quintile sought attention outside of the home, compared to only 72.9% among those in the poorest quintile.

Overall, 39.5% of those who sought outside care went to MSPBS facilities, primarily health centers (30.6%), while 31.6% went to private medical facilities. The source of care varied by department. In Cordillera and Misiones, MSPBS facilities attended the majority of diarrhea cases that sought outside care, 53.4% and 87.7%, respectively. In Central, however, almost the same proportion who sought care in MSPBS facilities (34.1%) went to private facilities (39.8%). Among cases from the wealthiest households, 38.1% sought care at MSPBS facilities compared to 35.4% of cases in the poorest households. Among the poorest households, no cases were attended in private facilities while a majority (64.6%) went to “other” sources, which were primarily traditional healers (e.g., *curanderos*).

As shown in Table 9.12, individuals who sought outside care cited the cost of services (34.0%) and distance to the facility (29.2%) as key factors in their choice of a provider. Across departments there were some variations in the determinants of source choice, but given the small number of observations in Cordillera and Misiones these findings should be interpreted with caution. Distance was the main reason cited in all departments and the only reason cited in Misiones. In Central and Cordillera the reputation of the facility and cost of care were also important. For the poorest quintile, distance (34.8%) and personal recommendation (44.7%) were the most important factors in their choice of a source. The cost of services was mentioned by 12.2% of those in the poorest quintile, while no one in the wealthiest quintile mentioned cost as a factor.

Overall, physicians treated 74.9% of diarrhea cases, followed by traditional healers (16.5%), and nurses (8.6%). In Central the proportion of physician-treated cases was 82.3%, while in Cordillera it was 50.2% and only 33.6% in Misiones. Nurses attended 35.1% of cases in Cordillera and 66.4% in Misiones. When the type of provider was analyzed by household economic status, we observed that for the poorest quintile of the population traditional healers were the most important service providers, treating 40.6% of cases in this sub-group. Physicians treated 37.0% of cases from the poorest households, and

nurses treated the remaining 21.6%. Physicians treated every case of diarrhea in the other wealth quintiles.

Finally, among those who sought outside care, 97.4% of the cases reported that their state of health improved. The proportions who reported less than universal improvement were in Cordillera, where 85.3% of the cases reported that their health had improved, and among the poorest households, where 95.3% of the cases improved.

9.6.3. Economic Determinants of Diarrhea Care

The household survey indicates that the indirect costs (travel time and travel costs) for seeking diarrhea treatment were relatively low. One-half of those who sought treatment for diarrhea outside of their home reached their source of care within 15 minutes (see Table 9.13). The median travel time by department was between ten and 15 minutes. Additionally, 50% of the cases seeking outside care paid no charge for transportation to the site. As shown in Table 9.13, both travel time and costs were higher for the wealthiest group than for the poorest: 50% of the wealthiest quintile paid more than 10,000 Guaraníes (US$3.55) for transportation and traveled at least 20 minutes. In contrast, 50% of those in the poorest group paid no charge for travel and reached their care site within ten minutes.

The majority (52.4%) of cases that sought outside care paid between 0 and 5,000 Guaraníes (US$1.78) in service fees (see Table 9.13). Among the departments, roughly one-half of diarrhea cases in all departments spent less than 5,000 Guaraníes (US$1.78) in service fees, while in Central a higher proportion of cases (26.8%) paid more than 40,000 Guaraníes (US$14.21). By level of household wealth, 31.5% of individuals in the poorest quintile spent less than 2,000 Guaraníes (US$0.71) in service fees compared to 21.6% among the wealthiest quintile. A sizeable proportion (23.7%) of cases among the poorest households paid over 40,000 Guaraníes (US$14.21) in service fees, while no case among the wealthiest quintile exceeded 40,000 Guaraníes (US$14.21).

On average, an individual spent 91,777 Guaraníes (US$32.60) for medicine to treat diarrhea, but 50% spent 45,000 (US$15.99) or less. The average and median costs for medication were higher among the poorest households than the wealthiest ones.

9.7. Acute Respiratory Infection (ARI)

As shown in Table 9.14, among children under five years of age, 58.6% were reported to have had at least one symptom of acute respiratory infection (ARI) during the four weeks preceding the survey. The analysis of prevalence, care-seeking behavior, and economic determinants of source choice pertains only to two types of cases: (1) children who experienced only ARI symptoms (41.7%) and (2) children who had ARI symptoms as well as signs of other illness, but for whom the ARI symptoms were the most severe (7.6%). These two types of ARI cases represented 84.1% of the total cases of children with ARI symptoms.

9.7.1. ARI Prevalence

The prevalence of ARI for the two types of cases defined above was 50.9%. ARI prevalence was the same in Misiones and Central (52.5%) and a bit lower in Cordillera (43.2%). As shown in Table 9.15, the prevalence of mild and moderate ARI was about the same (about 19%), and severe cases represented about 12.1%. By department, the composition of cases by level of severity was roughly the same, except that Misiones reported a higher proportion of moderate cases (27.8%) and a lower proportion of severe ones (9.7%).

Children in the wealthiest quintile had a higher ARI prevalence (56%) than children in the poorest quintile (38.6%). Children in the wealthiest quintile reported a larger proportion of severe cases (18.8%) while only 9.4% of cases in the poorest group were considered severe. The differences in ARI incidence by wealth group may be related to residence patterns. The wealthiest groups tend to live in urban areas where ARI incidence is higher, while those in the poorest groups live in both urban and rural settings.

Table 9.11. Diarrhea prevalence and symptoms in the 4 weeks preceding the survey among children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Children w/diarrhea symptoms (%)	19.9%	12.5%	13.4%	20.8%	12.1%	14.2%	9.0%	13.4%	14.5%	670
Number of cases	24	8	65	35	19	18	9	16	97	
Diarrhea most severe health problem (%)	62.9%	38.0%	64.6%	75.2%	61.5%	58.5%	57.4%	41.0%	62.2%	97
Number of cases	15	3	42	26	12	11	5	6	60	
Diarrhea Symptoms										
Mucous or blood	24.5%	44.3%	23.8%	24.6%	44.3%	30.9%	0.0%	0.0%	24.9%	60
Dry or wrinkled skin	21.6%	11.2%	10.8%	22.4%	0.0%	0.0%	0.0%	35.2%	13.5%	60
Sunken eyes and/or no tears	26.0%	35.7%	26.7%	28.1%	0.0%	60.2%	0.0%	37.2%	27.0%	60
Dry lips	22.8%	32.3%	34.5%	22.3%	1.8%	64.5%	0.0%	92.4%	31.5%	60
Vomiting	22.1%	57.8%	60.5%	20.0%	46.8%	100.0%	97.3%	64.8%	50.1%	60
Duration of symptoms (days)										
Mean	10	3	10	10	8	16	1	4	9	60
Median	5	3	7	7	5	21	1	2	7	
Number of cases	15	3	42	26	12	11	5	6	60	

Table 9.12. Care-seeking behavior for diarrhea among children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Treatment action										
Out-of-home treatment	56.1%	63.5%	88.7%	72.9%	60.2%	100.0%	97.3%	92.4%	79.4%	48
In-home treatment	20.9%	19.5%	11.3%	22.9%	17.0%	0.0%	0.0%	7.6%	14.1%	8
No treatment	23.0%	17.0%	0.0%	4.2%	22.8%	0.0%	2.7%	0.0%	6.5%	4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	60
Source of Care										
MSPBS Facility										
Specialized Hospital	0.0%	0.0%	3.4%	6.7%	0.0%	0.0%	0.0%	0.0%	2.7%	1
Health Center	20.4%	87.7%	30.3%	13.3%	30.0%	69.1%	4.9%	38.1%	30.6%	15
Health Post	33.1%	0.0%	0.4%	15.4%	0.0%	0.0%	0.0%	0.0%	6.1%	3
Subtotal: Public	53.4%	87.7%	34.1%	35.4%	30.0%	69.1%	4.9%	38.1%	39.5%	19
Private Facility	1.9%	0.0%	39.8%	0.0%	67.0%	30.9%	95.1%	40.3%	31.6%	15
Other	44.7%	12.3%	26.1%	64.6%	3.0%	0.0%	0.0%	21.6%	28.9%	14
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	48
Reason for source choice										
Distance	42.4%	100.0%	25.2%	34.8%	30.0%	0.0%	0.0%	78.4%	29.3%	14
Recommended	24.0%	0.0%	17.3%	44.7%	0.0%	0.0%	0.0%	0.0%	17.8%	8
Cost of service	24.0%	0.0%	17.3%	12.2%	0.0%	60.0%	0.0%	0.0%	18.9%	9
Other	9.6%	0.0%	40.2%	8.3%	70.0%	40.0%	100.0%	21.6%	34.0%	17
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	48
% Hospitalized for diarrhea	22.4%	0.0%	5.5%	18.2%	0.0%	0.0%	0.0%	0.0%	8.3%	48
Number of cases	2	0	2	4	0	0	0	0	4	
Provider Type										
Physician	50.2%	33.6%	82.3%	37.0%	100.0%	100.0%	100.0%	100.0%	74.9%	36
Nurse	35.1%	66.4%	0.0%	21.6%	0.0%	0.0%	0.0%	0.0%	8.6%	4
Traditional Healer (*curandero)*	14.7%	0.0%	17.7%	40.6%	0.0%	0.0%	0.0%	0.0%	16.5%	8
Total	100.0%	100.0%	100.0%	99.2%	100.0%	100.0%	100.0%	100.0%	100.0%	48
Improvement in condition	85.3%	100.0%	100.0%	95.3%	100.0%	100.0%	100.0%	100.0%	97.4%	48

Table 9.13. Cost of diarrhea care among children under 5 years of age, by department and household wealth quintile

Indicator	Department			Quintiles					Total	Weighted Observations
	Cordillera	Misiones	Central	I	II	III	IV	V		
Travel time to source (minutes)										
Mean	35	15	17	23	23	22	5	18	20	48
Median	15	10	15	10	30	30	5	20	15	
Number of cases	8	2	38	19	7	11	5	6	48	
Travel costs (Guaraníes)										
Mean	505.9	352.9	8,121.2	1,655.5	37.6	70.6	772.2	42,418.5	6,377.3	45
Median	0.0	0.0	0.0	0.0	0.0	0.0	850.0	10,000.0	0.0	
Number of cases	9	2	34	19	7	11	2	6	45	
Service fees										
0-2000	37.0%	48.8%	29.4%	31.5%	0.0%	0.0%	60.4%	21.6%	31.5%	15
2001-5000	16.8%	12.3%	22.3%	20.9%	8.8%	60.2%	4.9%	0.0%	20.9%	10
5001-20000	27.1%	26.2%	10.0%	13.8%	0.0%	4.6%	31.6%	38.1%	13.8%	7
20001-40000	3.7%	12.7%	11.5%	10.1%	26.8%	0.0%	0.0%	40.3%	10.1%	5
> 40000	15.4%	0.0%	26.8%	23.7%	64.4%	35.2%	3.1%	0.0%	23.7%	11
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	48
Cost of medication										
Mean	297,034.3	11,813.8	55,107.9	91,777.4	41,630.2	39,409.7	126,629.3	22,567.8	91,777.4	36
Median	35,000.0	8,500.0	30,000.0	30,000.0	50,000.0	30,000.0	138,976.0	25,000.0	45,000.0	
Number of cases	6	2	28	36	7	11	3	5	36	

The length of time during which children experienced ARI symptoms increased with the severity of their case. One-half of children with mild ARI experienced symptoms for four or fewer days. This median length of time was similar in all departments. For those with moderate ARI, the median duration of symptoms was five days, and for those with severe ARI the median duration was seven days. There were no marked differences in the duration of symptoms by department.

The median duration of symptoms among those with mild and severe ARI was longer among the wealthiest children than the poorest. The opposite was true for moderate cases where those in the wealthiest quintile reported a median of three days compared to five days among those in the poorest quintile.

As shown in Table 9.15, more than 95% of individuals who reported a mild or moderate case of ARI regained their health. The proportion reporting a recovery diminished with the severity of the ARI, but even 94.1% of those with a severe case improved. The relationship between the severity of ARI and the proportion recovering was consistent in all departments. In Cordillera and Misiones, however, the proportion of severe cases that recovered was smaller than in Central. Only 72.3% of severe ARI cases in Misiones were reported to get better, while in Cordillera 84.6% of severe cases improved. The proportion of mild and moderate cases of ARI that recovered was similar across household wealth levels. In the case of severe ARI, however, between 90 and 100% of cases recovered in all quintiles except the poorest, where only 77.1% got better.

9.7.2. Care-Seeking Behavior

As one would expect, care-seeking behavior was related to the severity of the case. A large proportion (68.1%) of severe ARI cases sought treatment for their ARI outside the home (see Table 9.16.) This proportion was 66.8% for those with moderate cases and 35.4% among those with mild cases. Twelve percent of severe ARI cases did not obtain treatment compared to 13% with moderate ARI and 31.4% with mild ARI. This pattern was similar across departments.

Compared to cases in the poorest quintile, at all levels of ARI severity a majority of those in the wealthiest quintile sought care outside of the home. For severe ARI, 94.4% of cases in the wealthiest group sought outside care compared to 60.3% in the poorest quintile. In all wealth groups, the proportion that sought outside care generally increased with the severity of the ARI, except for in wealth quintiles II and III.

Among those who sought outside care, 34.3% went to an MSPBS facility; 49.7% went to a private facility; and 16.0% sought care at other sites. More than one-half of those who sought care in Cordillera and Misiones went to an MSPBS facility. In Central, however, the proportion seeking care at an MSPBS facility was only 27.6%, while 56.3% went to a private facility.

Table 9.14. Description of the ARI cases relevant to the analysis (unweighted)

Indicator	Total	Percentage
1. Children with no ARI symptoms	422	41.4%
2. Children with at least one ARI symptom:	597	58.6%
a. Children with *only* ARI symptoms and no other symptoms	425	41.7%
b. Children with symptoms of ARI *and* another illness	172	16.9%
c. Children for whom ARI *was* the most severe health problem	77	7.6%
d. Children for whom ARI *was not* the most severe health problem	95	9.3%
Total number of cases	1019	100.0%
Total number of cases relevant to the analysis (2a+2c)	502	
Percentage with respect to total ARI cases	84.1%	

Table 9.15. ARI prevalence and severity among children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicator	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
No ARI symptoms	56.8%	47.5%	47.5%	61.4%	40.8%	47.2%	50.0%	44.0%	49.1%	329
With ARI symptoms	43.2%	52.5%	52.5%	38.6%	59.2%	52.8%	50.0%	56.0%	50.9%	341
Severity of symptoms										
Mild	16.5%	15.0%	21.1%	13.7%	20.3%	16.8%	27.9%	24.1%	19.7%	132
Moderate	14.6%	27.8%	19.0%	15.5%	33.0%	19.8%	8.7%	13.1%	19.1%	128
Severe	12.1%	9.7%	12.4%	9.4%	5.9%	16.2%	13.5%	18.8%	12.1%	81
Duration of symptoms (days)										
Mild ARI										
Mean	7	5	6	7	5	6	6	7	6	132
Median	5	5	4	4	3	4	3	7	4	
Number of cases	20	9	103	23	32	22	27	28	132	
Moderate ARI										
Mean	6	7	6	6	5	8	10	5	6	128
Median	4	4	5	5	5	7	8	3	5	
Number of cases	18	17	93	26	52	26	8	15	128	
Severe ARI										
Mean	6	12	8	8	7	8	8	7	8	81
Median	7	7	7	4	7	7	5	7	7	
Number of cases	14	6	61	15	9	21	13	22	81	
Post-ARI health improvement										
% mild ARI	96.1%	100.0%	97.5%	100.0%	100.0%	90.5%	97.8%	99.2%	97.7%	47
% moderate ARI	98.4%	94.0%	96.9%	97.5%	98.6%	93.5%	93.4%	100.0%	96.8%	85
% severe ARI	84.6%	72.3%	97.4%	77.1%	100.0%	90.3%	100.0%	100.0%	94.1%	55
Total	25	19	143	33	38	42	28	45	187	187

Table 9.16. Care-seeking behavior for ARI among children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
	Cordillera	Misiones	Central	I	II	III	IV	V	Total	Observations
Action Taken										
Mild ARI										
Treated away from home	27.3%	61.6%	34.6%	40.1%	21.7%	38.2%	34.8%	45.6%	35.4%	47
Treated at home	51.6%	18.8%	31.1%	36.7%	51.0%	31.2%	9.2%	34.6%	33.3%	44
Not treated	21.1%	19.6%	34.4%	23.2%	27.4%	30.7%	55.9%	19.8%	31.4%	41
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	132
Moderate ARI										
Treated away from home	66.1%	57.8%	68.6%	55.3%	56.0%	88.2%	90.6%	74.8%	66.8%	85
Treated at home	29.6%	27.7%	17.0%	34.9%	20.8%	10.9%	9.4%	14.0%	20.2%	26
Not treated	4.3%	14.5%	14.4%	9.8%	23.2%	0.9%	0.0%	11.2%	13.0%	17
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	128
Severe ARI										
Treated away from home	52.6%	62.8%	72.2%	60.3%	20.6%	54.8%	88.3%	94.4%	68.1%	55
Treated at home	36.9%	28.2%	15.2%	25.0%	54.2%	24.7%	11.7%	2.2%	20.0%	16
Not treated	10.5%	9.0%	12.6%	14.7%	25.2%	20.5%	0.0%	3.4%	12.0%	10
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	81
Source of Care										
Public facilities										
Regional Hospital	4.9%	0.0%	3.9%	0.0%	0.0%	13.1%	0.0%	2.7%	3.6%	7
Health Center	51.5%	51.9%	23.5%	58.2%	37.0%	31.2%	21.9%	7.7%	30.1%	56
Health Post	0.0%	4.3%	0.3%	2.6%	0.6%	0.3%	0.0%	0.0%	0.6%	1
Subtotal: Public Facilities	56.4%	56.2%	27.6%	60.8%	37.5%	44.5%	21.9%	10.4%	34.3%	64
Private facilities/ Commercial outlets	30.7%	24.2%	56.3%	23.1%	44.6%	36.8%	59.4%	79.9%	49.7%	93
Other Facilities	12.9%	19.6%	16.1%	16.1%	17.9%	18.7%	18.7%	9.7%	16.0%	30
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	187
Reason for choosing site										
Distance	52.9%	40.7%	21.8%	46.0%	30.0%	33.0%	9.0%	20.0%	27.8%	52
Reputation	1.3%	11.1%	11.7%	3.0%	28.0%	6.0%	12.0%	3.0%	10.3%	19
Past experience	22.5%	6.5%	27.1%	17.0%	9.0%	31.0%	37.0%	28.0%	24.4%	46
Recommendation	9.0%	0.7%	5.4%	7.0%	13.0%	2.0%	7.0%	0.0%	5.4%	10
Cost	5.7%	17.5%	9.5%	16.0%	13.0%	6.0%	10.0%	6.0%	9.8%	18
Other	8.6%	23.5%	24.6%	11.0%	7.0%	22.0%	26.0%	42.0%	22.3%	42
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	187
Care Provider										
Physician	76.8%	80.1%	94.3%	70.0%	85.0%	98.0%	96.0%	100.0%	90.6%	169
Pharmacist	5.5%	2.9%	3.5%	7.0%	10.0%	2.0%	0.0%	0.0%	3.7%	7
Nurse	16.9%	16.0%	1.4%	21.0%	5.0%	0.0%	0.0%	0.0%	4.9%	9
Other	0.8%	1.0%	0.9%	1.0%	0.0%	0.0%	4.0%	0.0%	0.8%	2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	187

Table 9.17. Cost of ARI care for children under 5 years of age, by department and household wealth quintile

	Department			Quintile						Weighted
Indicators	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Travel time (minutes)										
Mean	56	21	18	47	20	26	18	16	24	185
Median	40	15	12	37	18	17	10	13	13	
Number of cases	25	19	142	33	38	42	27	45	185	
Travel cost (Guaraníes)										
Mean	2,061	12,385	10,620	1,284	1,055	806	769	28,349	8,480	185
Median	700	0	0	617	700	850	300	0	0	
Number of cases	25	19	142	33	38	42	27	45	185	
Service fees										
0-2000	17.8%	47.0%	11.5%	17.9%	12.5%	13.6%	17.1%	19.2%	16.0%	30
2001-5000	18.0%	9.1%	4.9%	17.5%	10.6%	6.3%	2.3%	0.0%	7.0%	13
5001-20000	20.8%	14.8%	16.7%	29.6%	7.7%	35.5%	5.2%	5.8%	17.1%	32
20001-40000	13.8%	14.9%	18.9%	16.5%	28.6%	15.6%	24.2%	7.8%	17.8%	33
>40000	29.7%	14.2%	47.9%	18.6%	40.5%	29.0%	51.2%	67.3%	42.1%	79
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	187
Medication cost										
Mean	33,027	35,773	54,994	52,379	29,126	69,292	71,223	37,140	50,792	154
Median	25,000	26,000	35,000	18,000	22,000	30,000	57,000	40,000	30,000	
Number of cases	19	13	123	26	32	35	25	36	154	

Public facilities serve a higher proportion of ARI cases among the poorest quintile (60.8%) compared to 10.4% in the wealthiest quintile. Conversely, private facilities were a more important source of ARI care for the wealthy than they were for the poor. Among the wealthy who sought care outside of the home, 79.9% obtained care at a private facility compared to 23.1% among the poor.

Overall, the main reasons individuals gave for choosing a site were distance (27.8%) and past experience (24.4%). In all three departments, distance was an important factor in selecting a provider. In Misiones and Cordillera, 40.7% and 52.9% of individuals, respectively, cited distance as the main reason for choosing a provider. In Central, however, past experience was the main reason, cited by 27.1% of individuals. Cost was a key factor in Misiones, where 17.5% cited it as a reason for choosing a provider.

In the poorest and wealthiest quintiles, the reasons for choosing a provider differ. The wealthiest individuals cited past experience (28%) and distance (20%) as the main reasons, while the poorest cited distance (46%), past experience (17%), and the cost of care (16%). Only 6% of individuals in the wealthiest group cited the cost of care as a factor in provider choice.

Overall, physicians treated 90.6% of ARI cases that sought outside care. The distribution of cases by type of provider was similar in Cordillera and Misiones, but in Central physicians played a greater role and nurses a smaller role than in the other departments. In Cordillera and Misiones the most important provider after physicians were nurses, who attended to approximately 16% of cases in each department. Physicians attended almost all ARI cases in the three highest wealth quintiles compared to 70% in the poorest quintile and 85% in the second poorest quintile. In the poorest quintile nurses treated 21% of ARI cases.

9.7.3. Economic Determinants of ARI Care

Overall, 50% of children traveled 13 minutes or less to reach the care site. ARI cases in Cordillera required more time than cases in either Central or Misiones (see Table 9.17.) This longer travel time accounted for the higher median travel costs in Cordillera. An analysis of indirect costs by house-

hold economic status reveals that median travel time and costs were higher for the poorest quintile than for the wealthiest. One-half of individuals in the wealthiest quintile traveled less than 13 minutes to reach a provider while those in the poorest quintile traveled 37 minutes. In terms of travel costs to the care site, 50% of those in the poorest quintile paid at least 617 Guaraníes (US$0.23) while 50% of those in the wealthiest quintile paid no charge.

Overall, 77% of ARI cases treated outside of the home paid more than 5,000 Guaraníes (US$1.78) in service fees to treat the condition and 42.1% paid over 40,000 Guaraníes (US$14.21). Central had the largest proportion (47.9%) of ARI cases that paid over 40,000 Guaraníes (US$14.21). This high amount was consistent with the preponderance of moderate and severe ARI cases. In contrast, in Misiones 47% paid up to 2,000 Guaraníes (US$0.71) for ARI treatment. In Cordillera, 35.8% of ARI cases that sought care outside of the home paid less than 5,000 Guaraníes (US$1.78). The low cost of treating ARI in Cordillera was due, perhaps, to the higher level of mild ARI cases.

Table 9.17 also shows the relationship between the expenditure on ARI treatment and household economic status. As expected, the wealthiest individuals spent more than the poorest for ARI treatment. Three of every four individuals in the wealthiest quintile paid more than 20,000 Guaraníes (US$7.10) for ARI treatment compared to 35.1% among those in the poorest quintile. Despite the greater expenditure among the wealthiest quintile, 19.2% of individuals in this quintile paid nothing for their ARI care. Among the poorest quintile, however, just 17.9% paid no charge for ARI medical services.

For medication to treat ARI, 50% of individuals paid less than 30,000 Guaraníes (US$10.66). Cordillera had the smallest median cost at 25,000 Guaraníes (US$8.88), while Central had the highest median cost at 35,000 Guaraníes (US$12.43). Central's large proportion of ARI cases combined with its relatively higher incomes account for this high median cost for medication.

Expenditure on medication was positively correlated with household income levels. The median medication expense among the wealthiest quintile was 1.7 times higher than the median expense among the poorest quintile.

9.8. Family Planning

The survey collected information for several classes of family planning users, including current users, those who had used a method at some time in the past, and those who had never used contraception, but might in the future. The majority of the results for this section are presented for those interviewed who were currently using modern contraception. Furthermore, in some cases the sample was restricted to a subset of these users; this is stated in the text when it occurs.

9.8.1. Contraceptive Prevalence

The most common indicator of contraceptive use in a population is the contraceptive prevalence rate (CPR). CPR is the percent of the relevant population – women of reproductive age in the three departments in our study – who were currently using some form of contraception. Table 9.18 presents prevalence and method-mix distribution figures for both modern and traditional methods by department and household wealth quintile.

The overall prevalence for all methods in the three departments was 46.3% – 36.5% for modern methods and 9.8% for traditional methods. All method prevalence rates ranged from a high of 44.6% in Misiones to 34.5% in Cordillera. This was a bit surprising, since Misiones is less urban than the other two departments and generally CPR is positively associated with urbanization levels. There was little variation by department in the use of traditional methods.

By household economic status, the use of modern methods generally behaved as expected; while use of modern methods increased with wealth, the relationship was not strictly linear. The highest use of modern methods was found among the second wealthiest quintile, which had a modern method CPR of 39.2%. The wealthiest group only had the third highest modern method CPR at 37.1%. The CPR for traditional methods was higher in Cordillera (10.5%) and for the poorest quintile (11.2%), but there was little variation across economic groups.

Table 9.18. Contraceptive prevalence: Distribution by method and source of supply, by department and household wealth quintile

Indicators	Department			Quintile					Total	Weighted Observations
	Cordillera	Misiones	Central	I	II	III	IV	V		
Contraceptive Prevalence										1310
Modern Methods	34.5%	44.6%	36.1%	34.7%	32.6%	38.2%	39.2%	37.1%	36.5%	478
Traditional Methods	10.5%	9.4%	9.7%	11.2%	7.1%	10.3%	9.4%	11.0%	9.8%	128
Any Method	45.0%	54.0%	45.8%	45.9%	39.7%	48.5%	48.6%	48.1%	46.3%	606
Method Mix Distribution										
Modern Methods										
Pills	19.5%	27.4%	14.6%	23.2%	21.4%	18.9%	12.9%	8.8%	16.5%	100
IUD	19.1%	17.2%	20.3%	19.9%	13.7%	19.8%	24.5%	19.8%	19.8%	120
Condom	9.8%	11.4%	18.0%	13.3%	8.7%	9.9%	17.3%	29.0%	16.3%	98
Injection	20.1%	11.5%	16.3%	11.3%	23.4%	20.2%	22.1%	6.2%	16.4%	99
Vaginal Methods	1.9%	1.4%	0.5%	0.6%	0.5%	0.3%	0.5%	1.9%	0.8%	5
Norplant or Implant	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	1
Female sterilization	5.7%	13.7%	9.1%	7.3%	14.5%	9.5%	3.4%	11.2%	9.0%	55
Vasectomy	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0
Subtotal Modern Methods	76.7%	82.6%	78.8%	75.6%	82.2%	78.7%	80.7%	77.2%	78.9%	478
Traditional methods										
Billings Method	1.8%	4.2%	4.7%	0.2%	5.6%	2.4%	7.1%	5.2%	4.2%	25
Rhythm	1.9%	2.2%	6.6%	2.3%	1.2%	9.3%	5.4%	8.1%	5.5%	33
Withdrawal	5.0%	4.2%	6.0%	8.0%	4.4%	5.1%	4.0%	7.1%	5.7%	35
Yuyos or herbs	14.6%	6.8%	3.9%	13.9%	6.6%	4.5%	2.8%	2.4%	5.7%	35
Subtotal Traditional Methods	23.3%	17.4%	21.2%	24.4%	17.8%	21.3%	19.3%	22.8%	21.1%	128
Total All Methods	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	606
Source of Supply										
Public/Semi-Public Sources										
MSPBS facility	47.8%	43.9%	16.7%	54.7%	35.1%	19.8%	12.7%	5.7%	23.6%	113
IPS facility	2.0%	2.1%	1.1%	0.0%	2.4%	2.4%	0.7%	1.4%	1.4%	7
Red Cross/Military	0.0%	0.8%	1.9%	0.6%	1.6%	3.4%	1.2%	0.9%	1.5%	7
Public/Semi-Public Subtotal	49.8%	46.8%	19.7%	55.3%	39.1%	25.6%	14.6%	8.0%	26.5%	127
Private Sources										
CEPEP	1.3%	0.0%	8.2%	1.1%	2.6%	11.7%	4.7%	10.6%	6.5%	31
Private facility/ commercial outlet	42.1%	48.4%	67.8%	38.3%	54.3%	61.3%	78.6%	71.4%	62.4%	298
Private Subtotal	43.4%	48.4%	76.0%	39.4%	56.9%	73.0%	83.3%	82.0%	68.9%	329
Individual (*curandero*, relative)	2.6%	2.5%	4.0%	2.2%	2.9%	0.9%	2.0%	9.8%	3.6%	17
Other	4.2%	2.2%	0.2%	3.1%	1.1%	0.6%	0.2%	0.4%	1.0%	5
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	478

9.8.2. Method Mix

Among contraceptive users, the most commonly used methods varied substantially by both department and SES status. As shown in Table 9.18, the method used by most (19.8%) contraceptive users was the IUD. Pills, condoms and injections were equally popular with each method accounting for roughly 16% of users in the three departments. Norplant and vaginal methods were used by only a very small proportion (0.9%) of contraceptive users. Nine percent of users reported that they were sterilized; no respondents reported vasectomy as a contraceptive method.

Roughly the same proportions of users in Cordillera used pills (19.5%), IUDs (19.1%) and injections (20.1%), and only 9.8% used condoms. In Misiones, however, there was greater variation in use by method: pills were used by the highest proportion of women (27.4%), followed by IUDs (17.2%), and injections and pills each accounted for approximately 11.0% of users in that department. Among the three departments, Central had the highest

proportion who used IUDs (20.3%) and condoms (18.0%), and the lowest proportion using pills (14.6%). Cordillera had the highest proportion of users relying on herbal formulations (14.6%) and Central had the highest proportion of users who relied on non-herbal traditional methods (17.3%).

IUDs, pills and injections are popular among users in all wealth quintiles. Condoms were particularly popular among the wealthiest quintile. Pills were popular among the poorer quintiles, and injections were used by higher proportions of women in the middle-income quintiles. The poorest quintile had the highest proportion of users who relied on herbal remedies (13.9%), while the wealthiest quintile had the highest proportion of women who used non-herbal traditional methods (20.4%).

9.8.3. Sources of Contraceptive Supply

The source of contraceptive supply or service is presented in the third section of Table 9.18. Source choice and subsequent results are only presented for current modern method users, since these women should be much more sensitive to the medical care environment, which is of interest in this analysis. Of the women who used a modern method, including sterilization, the majority received their service at either an MSPBS facility (23.6%), or from a private medical facility or a commercial outlet (62.4%).

The distribution of users by source type was similar in Cordillera and Misiones, where the proportions who received their supply from MSPBS facilities – 47.8% and 43.9%, respectively – were quite similar to the proportions receiving services at private and commercial sites – 43.4% and 48.4%, respectively. In Central, public and semi-public facilities provided only 19.7% of contraceptive services, whereas 67.8% of users obtained their method from private or commercial sites. Central's distribution of contraceptive users by source probably reflects the greater availability of private providers and the greater wealth of the population in that department. Both of these factors increase the viability of the private sector as a channel for distributing contraceptive methods.

The effect of wealth on source choice was clear. Only 39.4% of users in the poorest group used private sources, whereas over 82% of the clients in the two wealthiest groups obtained their contraceptives from a private source. In direct contrast, MSPBS provision varied from a high of 54.7% in the poorest quintile to a low of 5.7% in the wealthiest one.

CEPEP, an IPPF-affiliate, provided services to 6.5% of modern users in two (Cordillera and Central) of the three departments. In Central, CEPEP facilities provided services to 8.2% of the department's modern method clients. CEPEP's role in contraceptive supply differed markedly by economic group. Among the middle and highest income groups, CEPEP provided services to more than one of every ten users.

9.8.4. Quality of Family Planning Services

Table 9.19 presents information on the perceptions of quality among public and private facility clients, as well as information on the costs – direct and indirect – of obtaining contraceptives by department and economic status. While a higher price alone would probably lower the quantity demanded of any particular method, there is evidence that a higher price signals higher quality, especially if the price is set by a mechanism other than the price which clears the market for contraception.

The information on perceived quality was collected to assess the relative quality of services in MSPBS facilities and private clinics. Quality indicators included waiting time, whether the client received information and counseling about the selected method, the physical appearance (cleanliness) of the facility, and the adequacy of privacy during the consultation. Overall, among family planning clients the median waiting time was 15 minutes in both public and private facilities. By department, in MSPBS facilities, waiting times ranged from a median of 30 minutes in Cordillera to ten minutes in Central. In private facilities the wait was between 15 minutes in Cordillera and Central, and ten minutes in Misiones. In both Cordillera and Misiones median waiting times were longer in MSPBS facilities than in private ones, while in Misiones the opposite was true.

The analysis of median waiting time by income group reveals that waiting times were generally shorter for wealthier clients. The exception to this pattern, the waiting time for quintile V, is likely due to two factors: the increased proportion of wealthy clients in Central who used MSPBS facilities and the relatively small number of observations at this level of the analysis. In MSPBS facilities the shortest reported waiting times were for the middle income and second wealthiest groups (10 minutes). In private facilities, the second wealthiest group had the shortest waiting time (10 minutes), though the waiting times for the other quintiles were not much longer (15 minutes). Finally, there was a trend toward longer median waiting times among clients in the lower quintiles (30 and 20 minutes for the two poorest) who attended public facilities.

Although perceptions of quality seemed to be positive across departments, there were some interesting trends. Overall, more than 90% of public facility clients reported satisfaction with the appearance of the facility and the level of privacy during the consultation, but only three of every four reported that they received information and counseling about their selected method. Among clients of private facilities, satisfaction was universal (100%) for both facility appearance and levels of privacy. Like the clients in public facilities, however, a substantially lower proportion of clients (63.6%) stated that they received information and counseling about their selected method.

It is noteworthy that the only quality indicator in which MSPBS facilities outscored private facilities was on the indicator for provision of information to clients on their selected method: 75.3% of clients in MSPBS facilities compared to 63.6% in private facilities. By department, the highest proportion of public facility clients who reported receiving information and advice about their method were in Misiones (81%) and Cordillera (78.9%). By income group, 95.8% of clients in the second highest income group reported receiving such information compared to only 60.5% among the poorest group. This lower figure for private facilities is attributed to the comparatively low proportion (59.6%) of private facility clients in Central who reported that they received information or advice for their selected method. This seemingly unusual finding for Central is not surprising given that many private facilities are probably relatively small and focus on selling the commodity without counseling on its use. Among private facilities in the other two departments, the level of client satisfaction with this indicator was 100%. The perceptions of the quality of information seemed to be negatively associated with wealth. Individuals from the wealthiest group were much less likely (25.4%) to receive information from a private facility than individuals from the poorest group, all of whom reported receiving counseling and information.

Over 90% of public facility clients reported that both the cleanliness and adequacy of privacy at the facilities were satisfactory. This was the case for almost all income groups, except among clients from the poorest group. Among departments, MSPBS facilities in Misiones had the highest proportion (98.1%) of clients reporting that they were clean, while Central had the lowest at 85.3%. More than most other variables, the cleanliness variable in MSPBS facilities seemed to be associated with wealth, as well. Almost 82% of clients in the lowest income group reported that the facility was clean compared to 100% in the wealthiest group. Over 94% of clients from all income groups, except the second highest where the proportion was only 82.7%, reported that the level of privacy in the MSPBS facilities was adequate. All private-facility family planning clients, regardless of department or wealth level, reported that the facilities were clean and comfortable, and that the privacy level was adequate.

Table 9.19. Quality and cost of contraceptive care in MSPBS facilities, by department and household wealth quintile

Indicators	Department			Quintile					Total	Weighted Observations
	Cordillera	Misiones	Central	I	II	III	IV	V		
For MSPBS clients:										
Median waiting time (minutes)	30	15	10	20	30	10	10	120	15	95
Received counseling and information	78.9%	81.0%	71.0%	60.5%	88.1%	74.7%	95.8%	87.3%	75.3%	94
Facility was clean and comfortable	94.4%	98.1%	85.3%	81.7%	94.4%	96.9%	99.3%	100.0%	90.5%	95
Adequate level of privacy	97.9%	97.8%	92.4%	96.5%	96.9%	100.0%	82.7%	93.9%	95.1%	95
For private facilities clients:										
Median waiting time (minutes)	15	10	15	10	15	15	10	15	15	21
Received counseling and information	100.0%	100.0%	59.6%	100.0%	100.0%	90.8%	91.2%	25.4%	63.6%	21
Facility was clean and comfortable	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	21
Adequate level of privacy	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	21
For all modern method users:										
Median travel time (minutes)	30	15	10	30	15	15	10	10	15	378
Median travel cost (Guaraníes)	835	445	361	616	489	584	379	151	439	393
Cost of method, including sterilization (Guaraníes)										
0	18.4%	22.8%	11.4%	26.7%	10.6%	12.7%	6.1%	14.5%	13.5%	58
1-3000	28.5%	30.9%	16.0%	38.0%	15.5%	15.9%	9.7%	21.6%	19.3%	83
3001-5000	9.1%	8.6%	8.2%	7.4%	10.3%	10.0%	9.7%	3.5%	8.3%	36
5001-10000	17.3%	13.4%	17.5%	13.2%	22.0%	23.8%	14.9%	11.4%	17.1%	74
10001-19000	16.8%	9.2%	19.5%	9.7%	26.1%	14.7%	26.0%	12.6%	18.2%	78
>19000	9.9%	15.1%	27.4%	5.0%	15.5%	22.9%	33.6%	36.4%	23.6%	101
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	430
Cost of method, excluding sterilization (Guaraníes)										
0	17.1%	21.2%	8.2%	25.0%	8.3%	8.5%	5.9%	8.1%	10.7%	42
1-3000	30.7%	35.8%	17.5%	41.1%	17.8%	17.5%	9.9%	24.8%	21.2%	83
3001-5000	9.7%	9.9%	9.0%	8.0%	12.1%	11.1%	10.1%	4.0%	9.2%	36
5001-10000	18.6%	14.6%	19.2%	14.2%	25.3%	26.2%	15.5%	13.0%	18.8%	73
10001-19000	18.0%	10.6%	21.4%	10.2%	30.6%	16.1%	27.1%	14.4%	19.9%	78
>19000	5.9%	7.9%	24.7%	1.5%	5.9%	20.6%	31.5%	35.7%	20.2%	79
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	390

9.8.5. Economic Determinants of Contraceptive Use

Indirect measures of contraceptive cost (length and cost of travel to a source) may be important determinants of use, especially in rural areas where longer travel times are probably more common. As shown in Table 9.19, Cordillera had the longest median travel time (30 minutes) and Central the shortest (10 minutes). As seen with other health services, poor women reported a longer travel time than wealthier women. Users reported a median travel expense of 835 Guaraníes (US$0.30) in Cordillera, the highest expense reported, whereas the lowest expense was in Central, at 361 Guaraníes (US$0.13). The same relationship between travel time and expense held true among the wealth groups. There was a negative association between wealth and both travel time and expense. The longest travel time (30 minutes) and the highest expense (616 Guaraníes, US$0.22) were reported by the poorest quintile, and both the shortest travel time (10 minutes) and lowest travel expense (151 Guaraníes, US$0.05) were reported by the wealthiest. As mentioned earlier, wealthier users probably had a higher travel expense since they were more likely to own their vehicles, but direct expense per mile was probably lower for them than using public transportation, which is probably more likely to be used and reported by the lower income groups.

Information about the price paid for contraception is presented in the last two sections of Table 9.19. The first set of prices is for all modern methods combined, and the second set of prices excludes sterilizations, which are more expensive since they are surgical procedures. There were so few sterilizations reported that in practice the percentages were not very different, and no trends changed due to the inclusion or exclusion of sterilizations. A sizeable portion of modern contraceptive users (13.5%) was charged nothing for contraception. By department, this figure ranged from a high of 22.8% in Misiones to a low of 11.4% Central. Also, most users in both Cordillera (56%) and Misiones (62.3%) paid less than 5,000 Guaraníes (US$1.78) for contraceptive services, whereas in Central a markedly larger proportion (64.4%) were paying much more for the service. Much of this difference in the cost of care in Central was likely due to greater private provision of contraceptives and the slightly higher proportion of individuals using IUDs in the department. Roughly 30% of clients in both Cordillera and Misiones paid between 1 and 3,000 Guaraníes (US$1.07), both with and without sterilizations included, while in Central a similar proportion (27.4%) paid more than 19,000 Guaraníes (US$6.75).

The trend in the price paid for contraception was less clear in the income group breakdown. By far, the highest proportion of users who paid nothing (around 25.5%) was in the poorest group, but among wealthier individuals there was little correlation between wealth and the proportion who received free contraception. The largest proportions of clients who paid more than 19,000 Guaraníes (US$6.75) were in the second wealthiest (33.6%) and wealthiest (36.4%) quintiles. In general, the distribution, except for the poorest group, appears to have two peaks: one at around 3,000 Guaraníes (US$1.07) and the other at 19,000 Guaraníes (US$6.75), which was probably due to the price difference between IUDs and less invasive methods. Unfortunately, due to the number of observations, we were not able to satisfactorily separate the price structure for contraceptive type by either department or wealth group.

9.8.6. User Characteristics, Reasons for Use, and Method Preference

Table 9.20 presents a set of statistics designed to measure the characteristics of the users that affects their demand for contraception, their preference for their current method, and their method preference under different circumstances. In terms of user characteristics at the time contraception was initiated, modern method users in Central adopted contraception at a younger average age (21.1 years) and lower parity (0.9 children) than women in Misiones and Cordillera. Users in Cordillera had both the highest average age and parity at the time of initial contraceptive adoption, 24.6 years and 2.1 children.

Women in the poorest income group initially adopted contraception at an older average age (23.7 years) and higher parity (2.3) than women in wealthier quintiles. Women in the two wealthiest quintiles initiated contraception at roughly 21 years of age, and with an average of about 0.7 children.

Another important issue is a woman's rationale for using contraception. Although at first glance the

reasons for contraceptive use seem obvious, the difference between using contraception for child spacing or disease prevention, as opposed to simply not wanting more children, has important policy implications. For example, if women primarily want to space children, then the demand for permanent or invasive methods may be relatively low. In fact, in four of the five wealth categories and in all departments, a higher proportion of women used contraception to delay or space rather than to limit births. In all cases, however, the percentages were relatively close, and both accounted for over 90% of the reason for using contraception. There was little relationship between the rationale for contraceptive use and levels of wealth. Between 50% and 54% of women in all departments wanted to space or postpone childbearing, whereas between 35% and 42% did not want any more children. The largest spacing/avoiding difference among wealth quintiles was in the second wealthiest group, where only 28.1% of women wanted to limit childbearing and 66.2% were motivated by the desire to delay or space.

A sizeable proportion of users (17%) expressed dissatisfaction with their current method, stating that they would prefer using another method. This proportion ranged from 13.3% in Misiones to 17.9% in Central, and between 10% and 24% in the wealth groups. Among methods, the majority of women who expressed a desire to switch wanted to switch to the IUD. The IUD was also the most popular method in the three departments as a whole and in Central in particular. Not only was the IUD the most popular method in Central, but it also had by far the highest percentage of women (66.9% of those wanting to switch) who wanted to use it. IUD preference did not seem to be purely an effect of wealth. In the poorest group 15% expressed a desire to switch, and 63.6% of those who wanted to switch preferred the IUD. Among the wealthiest group 9.9% wanted to switch, and of those, 54.9% preferred the IUD. While poor women may have felt that they could not afford the IUD, the high proportions among the other wealth groups who preferred this method suggests that other non-wealth barriers to IUD access may exist.

In general, the populations of these three departments behaved as expected – wealthier individuals and those with greater access tended to use contraception at a higher rate and to get that contraception from private sources. However, the effect of wealth was small, and many counter-intuitive results emerged from this survey. IUDs were both the most popular method and the preferred method among women who were dissatisfied with their current choice. IUD use and preference were not associated with wealth or geographic location. Most facilities were perceived as clean and private, and most women of all social classes used contraceptives to space and postpone pregnancy, as opposed to limiting births. There were both inexpensive and expensive contraceptive options widely available, and these could be purchased easily in the private sector. In fact, the private sector served the highest proportion of modern method users, though the proportion served by public facilities was also sizeable, particularly among the lower-income groups. Finally, traditional methods were still widely used, but the CPR for modern methods was quite a bit larger than the CPR for traditional methods in all departments and wealth groups, even among the poorest.

Table 9.20. User characteristics, reason for using contraception, and method preference, by department and household wealth quintile

Indicators	Department			Quintile					Total	Weighted Observations
	Cordillera	Misiones	Central	I	II	III	IV	V		
User Characteristics										
Duration of contraceptive use (years)	3.6	3.5	4.5	3	3.7	6	4	4.4	4.2	415
Age when initiated contraception	24.6	22	21.1	23.7	21.4	21.5	20.9	21.2	21.7	472
No. children when started contraception	2.1	1.6	0.9	2.3	1.1	1.2	0.6	0.7	1.1	477
Reason for contraceptive use										
Wants no more children	41.3%	35.6%	42.2%	37.4%	43.9%	46.6%	28.1%	51.5%	41.5%	197
Space or delay births	50.0%	53.9%	52.7%	53.3%	52.2%	46.6%	66.2%	43.1%	52.4%	249
AID/STD protection	0.0%	1.8%	1.0%	1.0%	0.7%	0.5%	1.8%	0.4%	0.9%	4
Other health reasons	8.7%	8.7%	4.1%	8.3%	3.2%	6.3%	3.9%	5.0%	5.2%	25
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	475
Would prefer another method	14.8%	13.3%	17.9%	15.0%	24.1%	20.4%	17.0%	9.9%	17.0%	81
Preferred method										
Pill	13.0%	10.8%	11.2%	9.0%	24.2%	4.4%	7.4%	10.6%	11.3%	8
IUD	39.8%	33.3%	66.9%	63.6%	57.2%	47.8%	84.1%	54.9%	61.8%	43
Condom	10.0%	3.0%	0.2%	3.8%	2.5%	0.7%	0.0%	0.0%	1.4%	1
Injection	29.2%	17.7%	5.7%	19.3%	3.4%	4.4%	3.8%	20.2%	8.9%	6
Vaginal methods	0.0%	0.0%	1.7%	0.0%	0.0%	4.8%	0.0%	2.4%	1.4%	1
Female sterilization	8.0%	21.6%	5.2%	4.3%	8.4%	14.7%	2.2%	1.0%	6.7%	5
Vasectomy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Billings Method	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.8%	4.9%	0.9%	1
Rhythm	0.0%	8.6%	6.9%	0.0%	3.7%	22.4%	1.7%	0.0%	6.4%	4
Withdrawal	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	6.0%	0.9%	1
Yuyos or herbs	0.0%	5.0%	0.0%	0.0%	0.6%	0.8%	0.0%	0.0%	0.3%	0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	69

9.9. Health and Sickness Among Household Members Over Five Years of Age

9.9.1 Sample Characteristics and Loss of Income Due to Illness or Injury

For a single member of the household who was over five years of age and who had experienced a health problem or sickness in the four weeks preceding the survey, data were collected on the characteristics of the individual, the nature of the health problem, care-seeking behavior, and the cost and quality of the health services received for the condition. For the purposes of this survey, we were less interested in the medical characteristics of the treatment, and instead chose to focus on the extent of the financial burden imposed by a serious illness or injury. The person experiencing the health problem could have been any person in the household over the age of five. If the respondent herself was the one experiencing a health problem, a slightly different series of questions was asked, which were designed to clarify the reference point of the questions. In other words, the questions were more direct when the person who was sick was also the woman who was being interviewed.

Tables 9.21 presents the results for the health and illness characteristics of households in the three departments and by wealth group. Of the more than 1,300 (weight adjusted) women who were interviewed for this section of the survey, 505 reported that a member of their household who was over the age of five had been ill in the four weeks preceding the survey. Around 75% of the sample was from Central region, about 18% from Cordillera, and 7% from Misiones. Roughly 20% of the sample was in each of the five wealth groups, although the highest wealth quintile reported the lowest number of illnesses in the sample (37.8% or 89 cases) compared to over 100 cases for each of the other groups.

Table 9.21. Individual characteristics and health conditions among individuals 6 years of age and older who experienced an illness or injury in the 4 weeks preceding the survey, by department and quintile of wealth

	Department			Quintile						Weighted
Indicators	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Number who are ill	90	39	376	105	100	101	110	89	505	505
Specific health problem										
Respiratory infections	33.6%	30.2%	39.6%	31.1%	30.9%	39.2%	43.4%	45.0%	37.8%	190
Intestinal/Stomach infections	9.4%	15.6%	11.5%	18.4%	4.2%	11.9%	15.2%	6.3%	11.4%	57
Diseases of the heart	5.6%	5.7%	7.0%	4.9%	8.5%	9.5%	2.3%	8.7%	6.6%	33
Accidents or poisonings	2.9%	4.0%	4.5%	4.4%	8.1%	6.9%	1.1%	0.3%	4.2%	21
Dental problems	11.9%	10.4%	5.7%	7.6%	16.4%	6.4%	2.4%	2.9%	7.2%	36
Chronic illnesses	9.1%	8.0%	12.0%	12.2%	10.4%	5.1%	14.7%	13.4%	11.2%	56
Gynecologic problems	2.8%	5.1%	3.4%	2.0%	4.3%	4.0%	4.7%	1.8%	3.4%	17
Others	24.7%	21.0%	16.3%	19.4%	17.2%	17.0%	16.2%	21.6%	18.2%	91
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	502
Activities interrupted due to illness (%)	40.9%	46.8%	56.7%	43.0%	60.5%	52.8%	60.0%	48.9%	53.2%	269
Number of days lost due to illness	2.7	2.4	3.5	2.6	4.9	3.3	3.1	2.4	3.3	502
Lost income due to care-taking (%)	17.4%	4.5%	9.5%	15.0%	8.5%	22.4%	6.0%	2.1%	10.4%	42
Mean income lost (Guaraníes)	50,143	137,947	136,649	46,740	60,295	263,433	69,131	148,692	114,192	30
Lost income due to illness (%)	14.7%	15.0%	18.9%	27.3%	17.7%	22.3%	8.7%	13.0%	17.8%	89
Mean income lost (Guaraníes)	180,464	153,487	197,906	126,299	230,553	188,597	305,733	226,695	192,942	80

The most common illness was respiratory illness (38% of whole sample), followed by intestinal or stomach illnesses, dental problems, and "other" illness. This table shows little trend by department or wealth group. Persons in Central were slightly more likely to suffer from a respiratory illness (39.6%) or chronic illness (12%) but were less likely to have dental problems (5.7% vs. over 10% for the other two departments). Wealthier groups were also relatively more likely to suffer from respiratory illnesses (45%) and chronic illnesses (13.4%), while the leading causes of morbidity among the poorest group were respiratory infection (31.1%) and intestinal infections (18.4%).

Table 9.20 also presents the effects of illness on normal activity and income. Individuals were asked if the sick or injured party was prevented from engaging in normal activities, and if so, the duration of inactivity. The financial impact due to the inability to engage in normal activities (e.g., work) was also assessed. Although around half of the sample reported a diminished capacity to function normally for an average of 3.3 days, only a few cases reported a specific financial loss. The effect of illness on income is discussed in more detail below.

Both the average number of days of work lost due to illness and the percent reporting a drop in normal activity were highest in Central, 3.5 days and 56.7%. Compared to Misiones, individuals in Cordillera reported a lower percent of lost activity (40.9% vs. 46.8%), but a higher number of days lost (2.7 vs. 2.4). There was no apparent wealth trend in these indicators. Interestingly, individuals in the wealthiest and poorest income groups experience both the lowest percentage of sick individuals who reduced their level of activity (48.9% and 43.0%, respectively) and the fewest days lost due to illness (2.4 and 2.6, respectively).

As mentioned above, although the level of activity lost to illness seems large, relatively few people reported a direct financial loss due to the health problem. There were only 30 cases where the caregiver in the household reported a financial loss, and 80 cases where the sick person him or herself was reported to have a financial loss. When the caregiver was also the person who was sick or injured, the financial loss was included in the sick person category. There appeared to be a large financial burden associated with illness. Misiones and Central had an average caregiver loss of about 137,000 Guaraníes (US$48.67), which was about twice the average of Cordillera's. Cordillera, how-

ever, had a much higher percent of caretakers (17.4%) who reported a loss (even if the subsequent amount variable was blank) than Misiones, at only 4.5%. When asked whether the sick person suffered a loss, Central had both the highest percentage (18.9%) and the highest average amount lost (198,000 Guaraníes, US$70.34).

9.9.2. Care-Seeking Behavior

Table 9.22 presents indicators of health-seeking behavior. Overall, 49.2% of those who experienced an illness sought care outside of the home; 34.2% received in-home care; and 16.6% received no treatment. In Central, individuals who were ill were most likely to get formal medical attention outside of the home (53.4%), the least likely to have formal attention within the home (31.3%), and the least likely to forgo attention (15.3%). Sick individuals in Cordillera were the least likely to obtain outside care (33.9%) and the most likely to forgo attention (21.3%). Rates for those who were ill in Misiones were between those for the other departments on all care-seeking indicators.

By level of wealth, there was no consistent trend in care-seeking behavior. Individuals most likely to seek attention outside of the home were in the middle and low-middle wealth groups (approximately 57%), and those least likely were in the poorest wealth group (32.4%). The poorest were the most likely to receive in-home care (50.9%) and the wealthiest were the least likely to forgo care (14.3%).

The two main reasons why sick individuals did not seek care were that they considered it unnecessary (53.6%) or they could not afford it (34.4%). About half of the sample in Cordillera and Misiones said that they could not afford care, a reason cited by only 27.8% of individuals in Central. This was probably due to the greater concentration of wealth and availability of a large number of MSPBS facilities in Central. Conversely, of the people who did not seek medical attention, Central had the highest proportion (61.4%) of sick individuals who did not consider it necessary.

As expected, the proportion of individuals who cited a lack of money decreased with rising wealth levels, except among individuals in the highest wealth group, 50.4% of whom stated that they did not obtain care due to the lack of money. This inconsistency is almost certainly due to a few outliers in the only 83 cases that did not seek attention. There was no trend by level of wealth among individuals who considered that medical attention was not necessary for their condition.

9.9.3. Source of Care

If an individual sought formal medical care outside of their household, as 248 people did, we asked them a series of questions about the location, quality and price of care.

Source of Care. As shown in Table 9.22, among individuals who sought care outside of their home, 38.4% went to a public or semi-public facility; 35% went to a private medical facility or commercial outlet; 13.8% went to a private provider (trained or traditional); and 12.8% went to other locations (e.g., hospitals of indeterminate description, facilities identified by name but not location). As in the case of family planning services, individuals were most likely to use an MSPBS facility in Cordillera (39%) and were least likely to use one in Central (17.4%). Unlike the source of care for family planning services, a substantial percentage of patients in both Misiones (14.7%) and Central (18.7%) used an Instituto de Previsión Social (IPS) facility. Although Cordillera was the department where individuals were most likely to use an MSPBS facility (39%), it was also the department where a person was most likely (30.9%) to solicit care from another trained or traditional provider, e.g., *curandero*, home of a physician.

By level of wealth, individuals in the wealthiest group were the least likely to use an MSPBS facility (4.4%), and the most likely to use either an IPS facility (22.7%) or a private medical facility (49.4%). What was most surprising is that although a high proportion of sick individuals in the poorest group sought care at an MSPBS facility (33%), only slightly lower proportions sought treatment at a private medical facility (28%) or other private (e.g., traditional healer, home of physician) source (26.3%).

Table 9.22. Care-seeking behavior among individuals 6 years of age and older who experienced an illness or injury in the 4 weeks preceding the survey, by department and quintile of wealth

	Department			Quintile						Weighted
Indicators	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Treatment action										
Out-of-home treatment	33.9%	43.6%	53.4%	32.4%	57.3%	57.2%	46.1%	54.5%	49.2%	248
In-home treatment	44.8%	37.7%	31.3%	50.9%	26.2%	26.8%	34.5%	31.2%	34.2%	173
No treatment	21.3%	18.7%	15.3%	16.7%	16.5%	16.0%	19.4%	14.3%	16.6%	84
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	505
Reasons for not treating the illness										
Considered unnecessary	33.7%	42.7%	61.4%	33.1%	15.6%	64.8%	92.3%	49.6%	53.6%	45
Too far	1.8%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.4%	0
Poor quality services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Carelessness	6.5%	2.0%	5.5%	3.0%	10.0%	5.2%	7.2%	0.0%	5.4%	5
Lack of money	49.3%	49.2%	27.8%	53.9%	54.5%	26.9%	0.0%	50.4%	34.4%	29
Too busy	3.0%	0.0%	0.7%	0.0%	3.6%	3.1%	0.0%	0.0%	1.3%	1
Lack of transportation	0.0%	4.5%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.4%	0
Lack of childcare	5.7%	0.0%	4.6%	6.2%	16.3%	0.0%	0.0%	0.0%	4.4%	4
Spouse/parental opposition	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Other	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.1%	0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	84
Source of Outside Care										
Public/Semi-Public Facilities										
MSPBS	39.0%	23.3%	17.4%	33.0%	19.2%	34.6%	12.4%	4.4%	20.4%	51
IPS	3.5%	14.7%	18.7%	8.0%	16.7%	16.4%	16.4%	22.7%	16.5%	41
Red Cross/Military health facilities	0.0%	0.7%	1.7%	0.0%	2.5%	0.0%	1.0%	3.4%	1.4%	3
Public/Semi-Public subtotal	42.5%	38.6%	37.8%	41.0%	38.4%	51.1%	29.8%	30.5%	38.4%	95
Private facilities or commercial outlets	13.9%	39.0%	37.9%	28.0%	35.1%	30.4%	31.1%	49.4%	35.0%	87
Other Private (*curandero*, physician home)	30.9%	15.6%	11.0%	26.3%	20.7%	12.2%	3.6%	9.2%	13.8%	34
Other sources	12.7%	6.8%	13.4%	4.6%	5.7%	6.4%	35.6%	10.9%	12.8%	32
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	248
Reasons for source choice										
Distance	29.6%	25.0%	34.9%	19.9%	35.4%	39.6%	39.7%	27.7%	33.6%	82
Reputation	6.2%	9.4%	5.7%	5.0%	2.4%	2.2%	3.1%	18.4%	6.0%	15
Past experience	28.6%	16.8%	19.0%	40.2%	10.6%	19.0%	20.9%	17.0%	20.0%	49
Recommendation	7.2%	7.4%	2.8%	6.9%	2.4%	3.0%	5.0%	2.4%	3.7%	9
Search for best facility	13.3%	9.2%	6.8%	8.1%	10.2%	11.7%	2.9%	4.7%	7.7%	19
Cost	7.1%	13.4%	6.0%	14.0%	14.9%	4.7%	0.6%	0.0%	6.6%	16
Availability	2.7%	2.6%	2.8%	0.4%	8.3%	0.9%	2.1%	0.6%	2.7%	7
Insurance requirement	4.3%	15.4%	20.9%	5.1%	15.3%	18.0%	22.0%	29.0%	18.5%	45
Other	1.0%	0.8%	1.1%	0.4%	0.5%	0.9%	3.7%	0.2%	1.2%	3
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	245
Provider type										
Physician	35.1%	46.0%	58.4%	30.5%	55.0%	56.2%	57.5%	71.5%	53.6%	225
Nurse	1.9%	2.2%	3.4%	2.5%	6.0%	4.8%	1.6%	0.0%	3.0%	13
Auxiliary Nurse	0.0%	0.4%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0
Pharmacist	1.9%	6.2%	3.7%	2.0%	5.7%	6.0%	1.0%	3.2%	3.6%	15
Curandero(a)	8.7%	3.6%	1.3%	9.0%	2.6%	1.6%	0.0%	0.0%	2.7%	11
Ill person	11.7%	10.9%	4.8%	8.8%	7.2%	5.8%	6.0%	3.9%	6.4%	27
Relative	40.7%	30.4%	27.4%	47.2%	23.3%	25.6%	33.9%	16.7%	29.8%	125
Other	0.0%	0.3%	1.0%	0.0%	0.1%	0.0%	0.0%	4.7%	0.9%	4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	420

Determinants of Facility Choice. In addition to care-seeking behavior and source of care, individuals were asked about their reasons for choosing a facility. Overall, by department, and by wealth group, distance and past experience were the most important factors in facility choice (see Table 9.22). Distance was cited as the most important factor in all three departments, but prior experience with the provider was ranked almost as high as distance in Cordillera (29.6% vs. 28.6%). Other important factors included the price of services in Misiones (13.4%), the search for a better facility in Cordillera (13.3%), and insurance status in both Central (20.9%) and Misiones (15.4%).

In terms of the effects of wealth, among the poorest individuals, past experience was the most important factor in source choice and was cited by 40.2%. Distance and the cost of services were the next most important factors in source choice selection among the poorest individuals, cited by 19.9% and 14%, respectively. In contrast, among those in the wealthiest group, insurance status was the most frequently cited (29%), followed by distance (27.7%), reputation (18.4%), and past experience (17%). Although we see clear and expected trends between wealth groups, if a reason for choosing a facility was important in one group, then odds are that it was important for all wealth classes, except for cost of care and insurance status considerations.

Provider Type. The type of formal or informal health provider is an indicator of the quality of care received either at home or in a facility. As shown in Table 9.22, all else being equal, one would expect sick individuals to prefer care from a doctor, though nurses are also competent caregivers for most types of non-complicated illness and injury, and may be preferred in some instances. Also, if an individual saw more than one type of provider, including a physician, we assumed that the physician would be identified as the key provider of care more often than other designations.

Overall, a majority of sick individuals received care from a physician (53.6%) or from a family member (29.8%). By department, the highest proportion of sick individuals who saw a doctor was in Central (58%), compared to 46% in Misiones and 35% in Cordillera. In Misiones and Central the proportion who received care from a doctor was greater than the proportion who were treated by a family member. The reverse was true in Cordillera, where 30.5% received care from a physician and 47.2% were treated by a family member. Sick or injured individuals in Cordillera also were more likely to self-treat (11.7%) or to receive care from a traditional healer (8.7%) than the sick or injured in other departments.

In terms of wealth, the proportion of sick or injured treated by a physician increased with the level of wealth: 30.5% of the poorest compared to 71.5% of the wealthiest. Whether a person self-treated or was treated by an informal caregiver were functions of wealth, as well. Sixty-five percent of sick or injured people in the poorest group self-treated or obtained care from informal caregivers, e.g., family member or traditional healer, compared to 20.6% of the wealthiest individuals. These were among the strongest wealth effects that were found in the survey, and could potentially have implications for the relative morbidity of the population.

9.9.4. Economic Determinants of Health Services Use

Table 9.23 summarizes the indirect and direct costs of obtaining medical care, whether or not the individual received financial assistance to cover the expenses.

Overall, one-half of individuals who sought care outside of the household traveled 20 minutes or less to reach a site. By department, median travel times ranged from a high of 30 minutes in Cordillera to 20 minutes in Misiones and Central. Average transportation cost, however, was much higher in Misiones (19,150 Guaraníes, US$6.80) than in Cordillera (3,749 Guaraníes, US$1.33) or Central (1,069 Guaraníes, US$0.38). This discrepancy in travel cost may reflect a relatively few number of very long and expensive trips in the more rural areas of Misiones, something that would not affect the median time very much but would affect average travel expenditure. Both travel time and travel costs tended to decline with increases in wealth, with the exception of the wealthiest group that had one of the shortest travel times, but the highest travel costs (6,010 Guaraníes, US$2.13).

Table 9.23. Cost of obtaining health care among individuals 6 years of age and older who experienced an illness or injury in the 4 weeks preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicators	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Mean travel time (minutes)	30	20	20	30	30	30	15	15	20	232
Median travel costs (Guaraníes)	3,749	19,150	1,069	3,558	1,911	1,784	450	6,010	2,632	238
Median waiting time (minutes)	15	15	10	5	20	20	10	5	10	211
Service fees (Guaraníes)										
0	9.4%	27.4%	40.9%	19.0%	39.7%	44.3%	24.7%	47.3%	36.1%	90
1-10,000	20.2%	21.3%	8.2%	14.7%	16.3%	11.9%	5.7%	6.0%	10.5%	26
10,001-20,000	21.2%	16.6%	6.5%	28.0%	10.0%	6.3%	6.8%	0.4%	9.0%	22
20,001-45,000	23.3%	6.6%	11.9%	8.5%	10.2%	8.5%	16.2%	19.1%	13.0%	32
45,001-100,000	18.9%	16.5%	13.7%	9.3%	14.5%	19.5%	19.4%	9.5%	14.6%	36
>100,000	7.0%	11.6%	18.8%	20.5%	9.3%	9.5%	27.2%	17.7%	16.8%	42
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	249
Received assistance for cost of care from source other than immediate family (%)	13.0%	8.4%	17.5%	35.3%	26.6%	4.8%	4.6%	14.1%	16.1%	188
Amount paid by others for your care	1,720,002	1,095,583	1,221,472	361,683	3,207,146	124,185	65,053	683,010	1,282,186	30
Medication purchased (%)	65.9%	60.7%	65.0%	57.7%	64.5%	76.1%	62.3%	64.3%	64.8%	501
Cost of medication										
0	1.1%	8.6%	6.1%	1.8%	3.2%	1.3%	13.0%	7.5%	5.4%	15
1-8,000	32.5%	29.0%	16.4%	41.5%	9.1%	23.6%	10.9%	13.2%	20.0%	55
8,001-15,000	23.0%	18.6%	18.6%	18.9%	47.4%	20.5%	5.4%	6.2%	19.4%	53
15,001-30,000	23.6%	15.7%	14.3%	11.4%	12.5%	9.7%	27.5%	18.6%	16.0%	44
30,001-52,000	9.8%	15.5%	16.9%	9.8%	18.0%	12.4%	16.8%	22.3%	15.6%	43
> 52,000	10.0%	12.6%	27.7%	16.6%	9.8%	32.5%	26.4%	32.2%	23.6%	65
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	275

The length of time that a client has to wait to be attended represents an opportunity cost of obtaining medical treatment. The median waiting time was almost identical in the three departments, although the five-minute difference in Central drives the whole sample median down to ten minutes since there were so many more cases in this department. The median waiting time for wealthier individuals was shorter than for poorer individuals, though surprisingly the poorest and wealthiest groups had the same short median waiting time of only five minutes.

Among those who received formal care, 36.1% received free care while 16.8% paid over 100,000 Guaraníes (US$35.52) The cost of care included medication if it was included in the service fee. The largest percentage of sick or injured individuals who sought formal care and who received free care was in Central (40.9%), followed by Misiones (27.4%) and Cordillera (9.4%). If people were charged a price in Central, however, they tended to pay a higher price. A plausible reason for this is that a large number of clients in Central region could afford to go to private facilities.

The most common service-fee category in Central was 100,000 Guaraníes (US$35.52) or more, which was paid by 18.8% of the sick or injured in Central who sought formal care. The most common service-fee category in Cordillera was 20,001-45,000 Guaraníes (US$7.11-15.99) (23.3%), and between 1-10,000 Guaraníes (US$3.55) in Misiones (21.3%).

Surprisingly, there appeared to be no trend in either the proportion receiving free care or the service fee distribution by wealth level. Nevertheless, among income groups the poorest had the lowest proportion (19%) of sick or injured who paid no charge, as well as the second highest proportion (20.5%) who paid over 100,000 Guaraníes (US$35.52). Except for these extreme cases, among the wealthier groups there was a slight tendency toward paying more, but again this was very small. In short, the demand for medical services seems to be inelastic, and since distance is the most reported reason for choosing a service site, people seem to be choosing the closest facility and paying whatever price is charged at that facility.

Assistance Paying Medical Expenses. Overall, 16.1% of sick individuals received assistance from sources other than the immediate family to help pay for their care. Very few cases explicitly identified insurance as a payment source. Among departments, Central had the highest proportion (17.5%) of sick or injured who received financial assistance to pay for their medical services, as well as the highest average amount paid by another party. Of the people who received outside assistance, the average amount was substantial at over 1.2 million Guaraníes (US$426.29), though we refrain from making any generalizations about this result given the low number of non-missing cases (30).

Medication. Between 61 and 66% of sick or injured persons in the three departments purchased some form of medication. Only 57.7% of sick or injured in the poorest group bought medication, which is a percentage somewhat lower that the 62 to 76% among the wealthier classes (quintiles 3-5). The expenses on medication were highest in Central, where the largest proportion (27.7%) of those who paid for medication spent over 52,000 Guaraníes (US$18.47). In contrast, in Cordillera, the largest proportion (33.6%) of those who paid for medications spent less than 8,000 Guaraníes (US$2.84). Unlike medical service fees charged by the facility, the cost of medication appeared to be a function of wealth. Sick or injured in the poorest group were more than three times as likely to buy medication for less than 8,000 Guaraníes (US$2.84) than were those in the wealthiest groups, and the most common expense category for the three highest wealth groups was over 52,000 Guaraníes (US$18.47). While this may reflect rationing or bargain hunting by the poorer groups, it could be cause for concern if the price charged for medication had a large effect on the amount purchased, even when the medication was essential for recovery.

9.10. Availability & Use of Health Facilities

Finally, in Table 9.24 we present information on the choice of a health facility, by department and wealth group. Specifically, we collected information on an individual's preferred facility and whether that facility was the closest geographically to the individual's home. If the preferred facility was not the closest, they were asked to identify the closest, and to give their reason(s) for not seeking care at the closer facility.

9.10.1. Facility of Choice

Overall, 51.8% of individuals sought care at an MSPBS facility; 23.1% went to a private medical facility or pharmacy; and 9.9% used an IPS facility. By department, the proportion of individuals who used an MSPBS facility was highest in Cordillera (73%) and lowest in Central (46.5%). The proportion using IPS facilities was highest in Central (11.6%) and lowest in Cordillera (2.7%). The largest proportions of individuals using private facilities or pharmacies were in Misiones and Central (>25%). The proportion using private facilities was lowest in Cordillera (9.7%).

There was a clear relationship between facility choice and individual wealth. As expected, the proportion of individuals who used MSPBS facilities was inversely related to wealth, while the proportion using private medical and IPS facilities was positively associated with wealth.

9.10.2. Facility Geographic Proximity

Since distance was a key factor in facility choice, one would expect individuals to choose the facility closest home. Overall, almost three of every five people chose the facility closest to home. Utilization of the closest facility ranged from a high of 85.6% in Cordillera to only 53.2% in Central. Using the closest facility was also a direct function of wealth:

73.8% of persons in the poorest group used the closest facility, whereas only 50% of the richest group went to the facility closest to home. This was consistent with the expectation that wealthier groups might choose private facilities located farther away.

In all departments, a large proportion of individuals who did not go to the nearest facility reported that the facility that was closest, but not the one utilized, was a MSPBS facility. This proportion was highest in Cordillera (80.7%) and Misiones (78%), and lowest in Central (65.3%). Combined with the increased use of private facilities, it appears that people in Central chose private, semi-public, or other facilities that were not as convenient as the public alternatives.

In Misiones and Central the second most likely facility type to be bypassed was a private facility or pharmacy, which was cited by 15.7% and 17.4%, respectively, of those who did not use the closest facility. This proportion was only 5.8% in Cordillera, a low proportion that was attributed to the relatively fewer private options in the department. This variable tends to be influenced as much by the distribution of facilities as the preferences of the individuals. As a consequence, MSPBS facilities were both the most used and the most avoided facilities in all of the departments.

The same holds true for wealth categories. The wealthiest group, which tended to have private alternatives available, was actually the least likely to bypass a MSPBS facility. Whereas the poorest group was the most likely, although they probably were passing one MSPBS facility and going to another that they preferred. This is discussed below.

9.10.3. Reasons for Bypassing Closest Facility

The final set of indicators in Table 9.24 reveals why individuals in these departments did not use the closest facility, but instead sought care at a more distant alternative. The three leading reasons were health insurance requirements (28.5%), poor treatment or low quality of care (21.7%), and lack of familiarity with health providers at the facility (18.8%). There was some variation across departments, particularly in Central where insurance status, e.g., social security or private insurance, was cited by 30.5% of those who did not go to the closest facility as the reason why they did not. The non-availability of services was relatively important in Cordillera (18.7%) and Misiones (17.3%), and cost (16.5%) was also an important factor in Misiones.

Cost was expected to be important in the poorer wealth groups. While it was relatively more important among the poorest group (11.4%) when compared to the wealthier ones, both quality of services (39%) and the attitude of the staff (30.3%) were both much more important than cost of care among the poorest group. Since many in the poorest group were choosing one MSPBS facility over another, perhaps this is evidence of a disparity in the quality of service provision among different public providers. Again, having insurance increased in importance as wealth increased, but in general the reasons why one facility was chosen over another did not vary as much by household socioeconomic status as other variables in the study.

Table 9.24. Availability and use of health care services by individuals 6 years of age and older who experienced an illness or injury in the 4 weeks preceding the survey, by department and household wealth quintile

	Department			Quintile						Weighted
Indicators	**Cordillera**	**Misiones**	**Central**	**I**	**II**	**III**	**IV**	**V**	**Total**	**Observations**
Most frequently used health facility										1309
Public/Semi-Public facilities										
MSPBS facility	73.0%	63.7%	46.5%	79.1%	70.1%	46.4%	40.9%	28.5%	51.8%	678
IPS facility	2.7%	6.5%	11.6%	2.6%	7.0%	13.5%	11.9%	13.0%	9.9%	128
Red Cross/Military health facility	0.0%	0.0%	2.2%	0.5%	0.8%	1.3%	0.3%	5.1%	1.7%	22
Subtotal Public/Semi-Public	75.7%	70.2%	60.3%	82.2%	77.9%	61.2%	53.1%	46.6%	63.4%	829
Private facilities or commercial outlets	9.7%	25.1%	25.5%	5.7%	14.5%	25.5%	26.6%	39.6%	23.1%	302
Other Private (*curandero*, physician's home)	5.0%	1.8%	2.5%	4.3%	1.1%	2.4%	1.9%	4.5%	2.8%	37
Others	9.6%	2.9%	11.7%	7.8%	6.5%	10.9%	18.4%	9.3%	10.7%	141
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	1309
Facility used is the closest to your home (%)	85.6%	75.5%	53.2%	73.8%	69.5%	57.1%	51.6%	50.0%	59.8%	1306
Characteristics of the closest facility if it is not the one most frequently used										
Public/Semi-Public facilities										
MSPBS facility	80.7%	78.0%	65.3%	86.7%	74.8%	67.6%	72.7%	47.2%	66.7%	353
IPS facility	0.0%	4.9%	4.6%	0.0%	3.5%	6.6%	0.9%	8.2%	4.4%	23
Red Cross/Military health facility	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Subtotal Public/Semi-Public	80.7%	82.9%	69.9%	86.7%	78.2%	74.1%	73.6%	55.5%	71.0%	376
Private facilities or commercial outlets	5.8%	15.7%	17.4%	9.1%	6.5%	8.3%	21.0%	28.1%	16.7%	88
Other Private (*curandero*, physician's home)	2.2%	0.0%	1.9%	1.2%	1.1%	0.0%	0.0%	5.6%	1.8%	10
Others	11.3%	1.4%	10.9%	3.0%	14.2%	17.6%	5.4%	10.9%	10.5%	56
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	529
Reason for not using the closest facility										
Inconvenient hours	1.8%	0.5%	6.1%	0.2%	1.6%	7.8%	12.1%	2.2%	5.6%	30
Services unavailable	18.7%	17.3%	6.6%	6.6%	7.4%	11.1%	6.4%	7.2%	7.8%	41
Poor treatment/Low quality of care	33.9%	25.7%	20.8%	39.1%	15.5%	33.3%	9.1%	20.2%	21.7%	114
Lack of supplies	8.4%	3.7%	2.7%	3.4%	7.1%	1.8%	2.9%	1.7%	3.0%	16
Unfamiliarity with health providers	13.9%	16.1%	19.2%	30.3%	30.0%	16.8%	17.1%	11.0%	18.8%	99
Too expensive	5.5%	16.5%	7.2%	11.4%	7.9%	5.7%	6.2%	8.3%	7.5%	40
Insurance requirement	10.0%	10.4%	30.5%	7.0%	23.8%	18.0%	32.1%	45.3%	28.5%	150
Others	7.8%	9.8%	6.9%	2.0%	6.7%	5.5%	14.1%	4.1%	7.1%	37
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	527

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ANNEX A

MAPS

ANNEX B

SUPPLEMENTARY TABLES:
SELECTED HEALTH FACILITY CHARACTERISTICS

Table B.1.
Distribution of health facilities, by department

Department	Public				Private		
	Regional Hospital	District Hospital	Health Center	Health Post	Sanatorium	Clinic	Total
Asunción	0	0	11	18	0	1	30
Cordillera	1	0	13	8	1	0	23
Misiones	1	0	6	9	1	0	17
Central	1	3	13	34	11	5	67
Total	3	3	43	69	13	6	137

Table B.2.
Percentage of health facilities that offer family planning services, by facility type and department

	Pill	Condom	IUD	Injection
Asunción				
Health Center	90.9	90.9	90.9	81.8
Health Post	55.6	55.6	50.0	38.9
Clinic	100.0	100.0	100.0	100.0
Total	70.0	70.0	66.7	56.7
Cordillera				
Regional Hospital	100.0	100.0	100.0	0.0
Health Center	100.0	100.0	100.0	53.9
Health Post	100.0	100.0	50.0	25.0
Sanatorium	100.0	100.0	100.0	100.0
Total	100.0	100.0	82.6	43.5
Misiones				
Regional Hospital	100.0	100.0	100.0	100.0
Health Center	100.0	100.0	100.0	100.0
Health Post	88.9	88.9	22.2	88.9
Sanatorium	0.0	0.0	0.0	0.0
Total	88.2	88.2	52.9	88.2
Central				
Regional Hospital	100.0	100.0	100.0	100.0
District Hospital	100.0	100.0	100.0	100.0
Health Center	100.0	100.0	100.0	84.6
Health Post	79.4	76.5	41.2	67.7
Sanatorium	18.2	27.3	36.4	36.4
Clinic	40.0	20.0	60.0	60.0
Total	71.6	70.2	56.7	67.2

Table B.3.
Percentage of health facilities that experienced a stock-out in the 6 months preceding the survey, by facility type and department

	Pill	Condom	IUD	Injection
Asunción				
Health Center	10.0	30.0	30.0	11.1
Health Post	40.0	20.0	11.1	42.9
Clinic	0.0	0.0	0.0	0.0
Total	23.8	23.8	20.0	23.5
Cordillera				
Regional Hospital	0.0	0.0	0.0	--
Health Center	7.7	23.1	15.4	71.4
Health Post	25.0	37.5	25.0	0.0
Sanatorium	0.0	0.0	0.0	0.0
Total	13.0	26.1	15.8	50.0
Misiones				
Regional Hospital	0.0	0.0	0.0	100.0
Health Center	16.7	50.0	16.7	83.3
Health Post	12.5	0.0	0.0	50.0
Sanatorium	--	--	--	--
Total	13.3	20.0	11.1	66.7
Central				
Regional Hospital	0.0	0.0	0.0	0.0
District Hospital	0.0	0.0	0.0	33.3
Health Center	53.9	61.5	76.9	72.7
Health Post	11.1	3.9	14.3	26.1
Sanatorium	0.0	0.0	0.0	0.0
Clinic	0.0	0.0	0.0	0.0
Total	20.8	19.2	31.6	33.3

Table B.4.
Percentage of health facilities that provide infant and child health services, by facility type and department

	Diarrhea	ARI	Post-Natal Care	Growth/ Development Monitoring	BCG Vac-cine	Polio Vaccine	DPT Vaccine	Measles Vac-cine
Asunción								
Health Center	100.0	100.0	90.9	81.8	100.0	100.0	100.0	100.0
Health Post	94.4	94.4	61.1	72.2	61.1	94.4	94.4	88.9
Clinic	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	96.7	96.7	73.3	76.7	76.7	96.7	96.7	93.3
Cordillera								
Regional Hospital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Center	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Post	87.5	87.5	62.5	87.5	75.0	87.5	87.5	87.5
Sanatorium	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	95.7	95.7	87.0	95.7	91.3	95.7	95.7	95.7
Misiones								
Regional Hospital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Center	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Post	88.9	88.9	88.9	88.9	88.9	88.9	88.9	88.9
Sanatorium	0.0	0.0	100.0	0.0	100.0	100.0	100.0	100.0
Total	88.2	88.2	94.1	88.2	94.1	94.1	94.1	94.1
Central								
Regional Hospital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
District Hospital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Center	92.3	92.3	92.3	61.5	92.3	92.3	92.3	92.3
Health Post	97.1	82.4	67.7	41.2	73.5	85.3	85.3	82.4
Sanatorium	90.9	90.9	72.7	81.8	72.7	72.7	72.7	72.7
Clinic	80.0	80.0	80.0	100.0	60.0	60.0	60.0	60.0
Total	94.0	86.6	76.1	59.7	77.6	83.6	83.6	82.1

Table B.5.
Percentage of health facilities that offer maternal health services, by facility type and department

	Prenatal Care	Tetanus Vaccine	Delivery Services	Delivery w/Complications	Postpartum Care	Cervical Cancer Screening (PAP)	Folic Acid Supplements	Iron Supplements
Asunción								
Health Center	100.0	100.0	27.3	18.2	90.9	100.0	27.3	45.5
Health Post	77.8	77.8	5.6	5.6	77.8	55.6	33.3	33.3
Clinic	100.0	100.0	0.0	0.0	100.0	0.0	100.0	100.0
Total	86.7	86.7	13.3	10.0	83.3	70.0	33.3	40.0
Cordillera								
Regional Hospital	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
Health Center	100.0	100.0	92.3	30.8	100.0	100.0	23.1	38.5
Health Post	75.0	87.5	62.5	0.0	75.0	62.5	0.0	50.0
Sanatorium	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	91.3	95.7	82.6	26.1	91.3	87.0	17.4	47.8
Misiones								
Regional Hospital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Center	100.0	100.0	100.0	100.0	100.0	100.0	50.0	66.7
Health Post	88.9	88.9	44.4	0.0	88.9	77.8	33.3	66.7
Sanatorium	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0
Total	94.1	94.1	70.6	47.1	94.1	88.2	41.2	64.7
Central								
Regional Hospital	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0
District Hospital	100.0	100.0	100.0	66.7	100.0	100.0	0.0	0.0
Health Center	92.3	92.3	84.6	46.2	92.3	92.3	23.1	53.9
Health Post	73.5	85.3	14.7	5.9	58.8	79.4	20.6	44.1
Sanatorium	72.7	72.7	63.6	63.6	63.6	63.6	45.5	45.5
Clinic	60.0	40.0	60.0	60.0	60.0	60.0	20.0	20.0
Total	77.6	82.1	44.8	31.3	68.7	79.1	23.9	41.8

Table B.6.
Median number of days per week that selected family planning services are offered, by facility type and department

	Pill	Condom	IUD
Asunción			
Health Center	5.5	6.0	6.0
Health Post	5.0	5.0	5.0
Clinic	6.0	--	6.0
Total	5.0	5.0	5.0
Cordillera			
Regional Hospital	5.0	5.0	--
Health Center	6.0	6.0	6.0
Health Post	6.0	6.0	6.0
Sanatorium	4.0	4.0	4.0
Total	6.0	6.0	6.0
Misiones			
Regional Hospital	5.0	5.0	5.0
Health Center	5.0	5.0	5.0
Health Post	5.0	5.0	5.0
Sanatorium	--	--	--
Total	5.0	5.0	5.0
Central			
Regional Hospital	5.0	5.0	5.0
District Hospital	5.0	5.0	5.0
Health Center	5.0	5.0	5.0
Health Post	5.5	5.5	5.5
Sanatorium	7.0	7.0	7.0
Clinic	6.0	6.0	6.0
Total	5.0	5.0	6.0

Table B.7.
Median number of days per week that infant and child health services are offered, by facility type and department

	Diarrhea	ARI	Post-Natal Care	Growth/ Development Monitoring	BCG Vaccine	Polio Vaccine	DPT Vaccine	Measles Vaccine
Asunción								
Health Center	5.0	5.0	5.0	6.0	1.0	6.0	6.0	1.0
Health Post	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0
Clinic	6.0	6.0	6.0	6.0	--	6.0	6.0	6.0
Total	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0
Cordillera								
Regional Hospital	7.0	5.0	5.0	5.0	1.0	6.0	6.0	1.0
Health Center	7.0	7.0	6.0	5.0	1.0	6.0	6.0	1.0
Health Post	7.0	6.0	5.0	5.0	1.0	6.0	6.0	1.0
Sanatorium	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Total	7.0	7.0	6.0	5.0	1.0	6.0	6.0	1.0
Misiones								
Regional Hospital	5.0	5.0	5.0	5.0	--	5.0	5.0	--
Health Center	7.0	7.0	5.0	5.0	1.0	7.0	7.0	1.0
Health Post	6.0	6.0	5.0	5.0	--	5.0	5.0	--
Sanatorium	--	--	5.0	--	--	5.0	5.0	--
Total	7.0	7.0	5.0	5.0	1.0	5.0	5.0	1.0
Central								
Regional Hospital	7.0	7.0	7.0	5.0	6.0	6.0	6.0	6.0
District Hospital	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0
Health Center	6.5	6.0	6.0	5.0	1.0	6.0	6.0	6.0
Health Post	6.0	6.0	5.0	6.0	2.0	6.0	6.0	5.0
Sanatorium	6.5	6.5	6.5	6.0	7.0	6.5	6.5	6.5
Clinic	6.0	--	--	--	6.0	6.0	6.0	6.0
Total	6.0	6.0	6.0	6.0	3.0	6.0	6.0	6.0

Table B.8.
Median number of days that maternal health services are offered, by type of facility and department

	Prenatal Care	Tetanus Vaccine	Delivery Services	Delivery w/Compli-cations	Post-Partum Care	Cervical Cancer Screening (PAP)	Folic Acid Supplements	Iron Sup-plements
Asunción								
Health Center	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Health Post	4.5	5.0	7.0	7.0	5.0	5.0	5.0	5.0
Clinic	6.0	6.0	--	--	6.0	--	6.0	6.0
Total	5.0	5.0	6.5	7.0	5.0	5.0	6.0	6.0
Cordillera								
Regional Hospital	5.0	6.0	7.0	7.0	5.0	5.0	--	5.0
Health Center	6.0	6.0	7.0	7.0	6.0	6.0	6.0	6.0
Health Post	5.5	6.0	7.0	--	5.5	5.0	--	6.0
Sanatorium	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Total	6.0	6.0	7.0	7.0	6.0	6.0	6.0	6.0
Misiones								
Regional Hospital	5.0	5.0	7.0	7.0	5.0	5.0	5.0	5.0
Health Center	5.0	5.0	7.0	7.0	6.0	5.0	5.0	5.0
Health Post	5.0	5.0	7.0	--	5.0	5.0	5.0	5.0
Sanatorium	5.0	5.0	7.0	7.0	5.0	5.0	--	--
Total	5.0	5.0	7.0	7.0	5.0	5.0	5.0	5.0
Central								
Regional Hospital	6.0	6.0	7.0	7.0	7.0	6.0	--	--
District Hospital	6.0	6.0	7.0	7.0	7.0	6.0	--	--
Health Center	6.0	6.0	7.0	7.0	6.5	6.0	6.0	6.0
Health Post	5.0	6.0	6.0	1.0	5.0	5.0	6.0	6.0
Sanatorium	6.5	7.0	7.0	7.0	7.0	6.0	7.0	7.0
Clinic	6.0	6.0	7.0	7.0	7.0	7.0	6.0	6.0
Total	6.0	6.0	7.0	7.0	6.0	6.0	6.0	6.0

Table B.9.
Percentage of health facilities that charge fees for family planning and infant and child health services, by facility type and department

	Family Planning	Diarrhea	ARI	Post-Natal Care	Growth/ Development Monitoring	BCG Vaccine	Polio Vaccine	DPT Vaccine	Measles Vaccine
Asunción									
Health Center	63.6	70.0	77.8	75.0	71.4	0.0	0.0	0.0	25.0
Health Post	33.3	72.7	72.7	71.4	66.7	0.0	0.0	0.0	0.0
Clinic	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	43.3	72.7	76.2	75.0	70.6	7.1	5.6	5.6	11.8
Cordillera									
Regional Hospital	0.0	--	--	--	--	--	--	--	--
Health Center	41.7	100.0	100.0	100.0	75.0	0.0	0.0	0.0	0.0
Health Post	57.1	100.0	100.0	100.0	100.0	--	--	--	--
Sanatorium	0.0	--	--	--	--	--	--	--	--
Total	42.9	100.0	100.0	100.0	85.7	0.0	0.0	0.0	0.0
Misiones									
Regional Hospital	100.0	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0
Health Center	100.0	83.3	83.3	66.7	66.7	0.0	0.0	0.0	0.0
Health Post	87.5	75.0	87.5	75.0	75.0	0.0	0.0	0.0	0.0
Sanatorium	0.0	--	--	0.0	--	0.0	0.0	0.0	0.0
Total	87.5	80.0	86.7	68.8	73.3	0.0	0.0	0.0	0.0
Central									
Regional Hospital	0.0	--	--	--	--	--	--	--	--
District Hospital	66.7	100.0	100.0	100.0	100.0	--	--	--	--
Health Center	76.9	66.7	90.0	90.0	60.0	0.0	0.0	0.0	0.0
Health Post	51.5	83.3	90.0	88.2	66.7	0.0	0.0	0.0	0.0
Sanatorium	9.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Clinic	20.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	47.0	83.3	92.3	91.7	76.2	17.9	17.9	17.9	17.9

Table B.10.
Percentage of health facilities that charge fees for maternal health services, by type of facility and department

	Prenatal Care	Tetanus Vaccine	Delivery Services	Delivery w/Compli-cations	Post-Partum Care	Cervical Cancer Screening (PAP)	Folic Acid Supplements	Iron Supplements
Asunción								
Health Center	88.9	66.7	100.0	100.0	100.0	77.8	0.0	0.0
Health Post	88.9	20.0	100.0	100.0	88.9	83.3	25.0	25.0
Clinic	100.0	--	--	--	100.0	--	--	--
Total	89.5	37.5	100.0	100.0	94.1	80.0	20.0	16.7
Cordillera								
Regional Hospital	--	--	--	--	--	--	--	--
Health Center	100.0	50.0	100.0	100.0	100.0	100.0	--	50.0
Health Post	100.0	100.0	100.0	--	100.0	100.0	--	100.0
Sanatorium	--	--	--	--	--	--	--	--
Total	100.0	66.7	100.0	100.0	100.0	100.0	--	66.7
Misiones								
Regional Hospital	100.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0
Health Center	100.0	0.0	100.0	80.0	83.3	0.0	0.0	0.0
Health Post	85.7	0.0	100.0	--	87.5	57.1	0.0	0.0
Sanatorium	100.0	0.0	100.0	100.0	0.0	100.0	--	--
Total	93.3	0.0	100.0	85.7	75.0	33.3	0.0	0.0
Central								
Regional Hospital	--	--	--	--	--	--	--	--
District Hospital	100.0	--	100.0	100.0	100.0	100.0	--	--
Health Center	100.0	11.1	100.0	100.0	66.7	44.4	100.0	60.0
Health Post	100.0	7.7	100.0	--	93.8	86.7	50.0	50.0
Sanatorium	100.0	100.0	100.0	--	100.0	100.0	--	--
Clinic	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	100.0	20.0	100.0	100.0	87.1	75.9	71.4	57.1

Table B.11.
Average price (in Guaraníes) of different contraceptive methods, by facility type and department

	Pill	Condom	IUD	Injection
Asunción				
Health Center	2286	2286	2500	2500
Health Post	1418	1418	502	1376
Clinic	--	--	--	--
Total	1885	1885	1834	1750
Cordillera				
Regional Hospital	--	--	--	--
Health Center	2167	2750	4583	2000
Health Post	3000	2730	6500	3000
Sanatorium	--	--	--	--
Total	2545	2741	4857	2167
Misiones				
Regional Hospital	3000	3000	3000	3000
Health Center	1335	1335	1335	1335
Health Post	2429	2429	1502	2429
Sanatorium	--	--	--	--
Total	2001	2001	1557	2001
Central				
Regional Hospital	--	--	--	--
District Hospital	3667	3667	4500	3667
Health Center	2401	2401	5451	2334
Health Post	2941	2938	4188	2933
Sanatorium	--	--	--	--
Clinic	--	--	--	--
Total	2743	2734	4501	2691

Table B.12.
Average price (in Guaraníes) for infant and child health services, by facility type and department

	Diarrhea	ARI	Post-Natal Care	Growth/ Development Monitoring	BCG Vaccine	Polio Vaccine	DPT Vaccine	Measles Vaccine
Asunción								
Health Center	2357	2143	2000	2400	--	--	--	--
Health Post	2250	2250	2500	2250	--	--	--	--
Clinic	35000	35000	35000	35000	10000	10000	10000	10000
Total	4344	4250	4958	5042	10000	10000	10000	5000.0
Cordillera								
Regional Hospital	--	--	--	--	--	--	--	--
Health Center	3000	2857	2833	2667	--	--	--	--
Health Post	3000	3000	3000	3000	--	--	--	--
Sanatorium	--	--	--	--	--	--	--	--
Total	3000	2917	2900	2833	--	--	--	--
Misiones								
Regional Hospital	2000	2000	2000	2000	--	--	--	--
Health Center	2000	2000	2000	2000	--	--	--	--
Health Post	2000	2000	2000	2000	--	--	--	--
Sanatorium	--	--	--	--	--	--	--	--
Total	2000	2000	2000	2000	--	--	--	--
Central								
Regional Hospital	--	--	--	--	--	--	--	--
District Hospital	3667	3667	3667	5000	--	--	--	--
Health Center	3000	2889	2889	3000	--	--	--	--
Health Post	2867	2889	2800	2833	--	--	--	--
Sanatorium	30000	30000	30000	30000	28333	23333	23333	33333
Clinic	23333	23333	23333	23333	25000	25000	25000	25000
Total	7733	6917	7242	11938	27000	24000	24000	30000

Table B.13.
Average price (in Guaraníes) for maternal health services, by facility type and department

	Prenatal Care	Tetanus Vaccine	Delivery Services	Delivery w/Compli-cations	Post-Partum Care	Cervical Cancer Screening (PAP)	Folic Acid Supplements	Iron Sup-plements
Asunción								
Health Center	2250	2250	86667	200000	2000	2143	--	--
Health Post	2500	1250	50000	50000	2500	2300	3000	3000
Clinic	35000	--	--	--	35000	--	--	--
Total	4294	1917	77500	125000	4312	2208	3000	3000
Cordillera								
Regional Hospital	--	--	--	--	--	--	--	--
Health Center	2857	3000	17000	10000	2833	2260	--	3000
Health Post	3000	3000	17000	--	3000	3000	--	3000
Sanatorium	--	--	--	--	--	--	--	--
Total	2917	3000	17000	10000	2900	2471	--	3000
Misiones								
Regional Hospital	2000	--	20000	90000	--	--	--	--
Health Center	2000	--	20667	36000	2200	--	--	--
Health Post	2333	--	18750	--	2429	2000	--	--
Sanatorium	30000	--	600000	900000	--	30000	--	--
Total	4143	--	68250	189000	2333	7600	--	--
Central								
Regional Hospital	--	--	--	--	--	--	--	--
District Hospital	3667	--	43333	177500	4000	3000	--	--
Health Center	2800	3000	26700	36500	2833	3000	2500	2667
Health Post	2833	3000	35500	--	2933	2923	4000	3250
Sanatorium	21667	12875	120000	--	20000	40000	--	--
Clinic	25000	25000	262500	25000	25000	25000	25000	25000
Total	5694	11350	113200	66556	5889	8318	7600	5750

Table B.14.
Median number of health personnel, by facility type and department

	Physician	Pediatrician	Midwife	Licensed Nurse	Auxiliary Nurse	Technician
Asunción						
Health Center	2.0	2.0	2.0	1.0	5.0	1.0
Health Post	1.0	1.0	1.0	0.0	1.0	0.0
Clinic	1.0	1.0	1.0	0.0	0.0	0.0
Total	1.0	2.0	1.0	1.0	3.0	0.0
Cordillera						
Regional Hospital	17.0	13.0	16.0	10.0	58.0	20.0
Health Center	1.0	0.0	0.0	1.0	8.0	1.0
Health Post	0.0	0.0	0.0	0.0	1.0	0.0
Sanatorium	4.0	1.0	2.0	0.0	5.0	0.0
Total	1.0	0.0	0.0	0.0	5.0	0.0
Misiones						
Regional Hospital	4.0	2.0	1.0	2.0	30.0	2.0
Health Center	1.0	0.5	0.0	0.0	3.5	0.0
Health Post	0.0	0.0	0.0	0.0	1.0	0.0
Sanatorium	0.0	2.0	1.0	0.0	4.0	0.0
Total	0.0	0.0	0.0	0.0	2.0	0.0
Central						
Regional Hospital	8.0	21.0	22.0	5.0	56.0	22.0
District Hospital	7.0	10.0	7.0	6.0	32.0	7.0
Health Center	2.0	2.0	1.0	3.0	9.0	2.0
Health Post	0.0	0.0	0.0	0.0	1.0	0.0
Sanatorium	3.0	2.0	2.0	0.0	3.0	0.0
Clinic	1.0	2.0	0.0	0.0	4.0	0.0
Total	1.0	1.0	0.0	1.0	2.0	0.0

Table B.15.
Percentage of health facilities with at least one staff member trained to provide selected health services, by facility type and department

	Family Planning	Delivery Services	Diarrhea Treatment	ARI Treatment
Asunción				
Health Center	90.9	81.8	100.0	100.0
Health Post	55.6	55.6	88.9	83.3
Clinic	100.0	100.0	100.0	100.0
Total	70.0	66.7	93.3	90.0
Cordillera				
Regional Hospital	100.0	100.0	100.0	100.0
Health Center	100.0	92.3	100.0	100.0
Health Post	87.5	12.5	87.5	87.5
Sanatorium	100.0	100.0	100.0	100.0
Total	95.7	65.2	95.7	95.7
Misiones				
Regional Hospital	100.0	100.0	100.0	100.0
Health Center	100.0	66.7	100.0	100.0
Health Post	88.9	11.1	77.8	88.9
Sanatorium	0.0	100.0	0.0	0.0
Total	88.2	41.2	82.4	88.2
Central				
Regional Hospital	100.0	100.0	100.0	100.0
District Hospital	100.0	100.0	100.0	100.0
Health Center	100.0	84.6	92.3	84.6
Health Post	79.4	38.2	100.0	82.4
Sanatorium	18.2	45.5	81.8	81.8
Clinic	20.0	40.0	60.0	60.0
Total	70.2	52.2	92.5	82.1

Table B.16.
Percentage of health facilities that offer group educational/informational talks on selected topics, by facility type and department

	Topics		
	Family Planning	Maternal Health	Infant and Child Health
Asunción			
Health Center	81.8	90.9	90.9
Health Post	61.1	66.7	94.4
Clinic	0.0	0.0	0.0
Total	66.7	73.3	90.0
Cordillera			
Regional Hospital	100.0	100.0	100.0
Health Center	100.0	100.0	100.0
Health Post	100.0	87.5	87.5
Sanatorium	100.0	100.0	100.0
Total	100.0	95.7	95.7
Misiones			
Regional Hospital	100.0	100.0	100.0
Health Center	83.3	83.3	83.3
Health Post	77.8	88.9	77.8
Sanatorium	0.0	0.0	0.0
Total	76.5	82.4	76.5
Central			
Regional Hospital	100.0	100.0	100.0
District Hospital	100.0	100.0	100.0
Health Center	100.0	100.0	100.0
Health Post	82.4	79.4	79.4
Sanatorium	9.1	27.3	36.4
Clinic	0.0	20.0	20.0
Total	68.7	71.6	73.1

Table B.17.
Percentage of health facilities that have IEC material available, by facility type and department

	Family Planning	Prenatal Care	Delivery Care	Post-Partum Care	Immunizations	IEC Points
Cordillera						
Health Center	100.0	100.0	83.3	100.0	100.0	9.50
Health Post	100.0	75.0	50.0	100.0	75.0	8.00
Total	100.0	90.0	70.0	100.0	90.0	8.90
Misiones						
Regional Hospital	100.0	100.0	0.0	100.0	100.0	5.00
Health Center	100.0	66.7	0.0	66.7	100.0	6.33
Health Post	85.7	28.6	0.0	57.1	42.9	2.43
Total	90.9	45.5	0.0	63.6	63.6	3.73
Central						
District Hospital	100.0	33.3	33.3	33.3	100.0	7.33
Health Center	100.0	87.5	50.0	75.0	100.0	9.00
Health Post	65.0	65.0	20.0	25.0	75.0	6.30
Total	77.4	67.7	29.0	38.7	83.9	7.10

Table B.18.
Percentage of health facilities that experienced a stock-out of medical supplies or vaccines in the 6 months preceding the survey, by facility type and department

	Tetanus Vaccine	BCG Vaccine	Polio Vaccine	DPT Vaccine	Measles Vaccine	Oral Rehydration Salts
Cordillera						
Health Center	33.3	16.7	0.0	0.0	0.0	33.3
Health Post	25.0	75.0	25.0	25.0	25.0	25.0
Total	30.0	40.0	10.0	10.0	10.0	28.6
Misiones						
Regional Hospital	0.0	0.0	0.0	0.0	0.0	100.0
Health Center	0.0	0.0	0.0	0.0	0.0	0.0
Health Post	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0	0.0	0.0	0.0	12.5
Central						
District Hospital	0.0	0.0	0.0	0.0	0.0	50.0
Health Center	0.0	0.0	0.0	0.0	0.0	50.0
Health Post	15.0	11.1	10.5	10.5	10.5	31.3
Total	10.0	7.1	6.9	6.9	6.9	37.5

Table B.19.
Percentage of health facilities that experienced a stock-out of syringes and gloves in the 6 months preceding the survey, by facility type and department

	Syringes	Disposable Syringes	Gloves	Disposable Gloves
Cordillera				
Health Center	40.0	16.7	0.0	20.0
Health Post	0.0	0.0	100.0	--
Total	25.0	10.0	25.0	20.0
Misiones				
Regional Hospital	--	100.0	--	100.0
Health Center	66.7	100.0	100.0	66.7
Health Post	20.0	66.7	--	50.0
Total	37.5	77.8	100.0	60.0
Central				
District Hospital	--	0.0	--	33.3
Health Center	33.3	14.3	66.7	60.0
Health Post	20.0	31.6	0.0	31.3
Total	25.0	24.1	33.3	37.5

Table B.20.
Quality of client health records, by facility type and department

	Good maintenance	Maintains a separate file for each client	Records client address
Cordillera			
Health Center	100.0	83.3	100.0
Health Post	100.0	100.0	100.0
Total	100.0	90.0	100.0
Misiones			
Regional Hospital	100.0	100.0	100.0
Health Center	100.0	100.0	0.0
Health Post	85.7	100.0	0.0
Total	90.9	100.0	10.0
Central			
District Hospital	66.7	100.0	100.0
Health Center	100.0	100.0	100.0
Health Post	100.0	100.0	100.0
Total	96.8	100.0	100.0

Table B.21.
Percentage of health facilities that received a supervisory visit in the 6 months preceding the survey, by type of supervisory visit, facility type, and department

	Type of Supervision		
	Family Planning	Maternal/Child Health	Immunization
Cordillera			
Health Center	50.0	66.7	50.0
Health Post	50.0	50.0	50.0
Total	50.0	60.0	50.0
Misiones			
Regional Hospital	100.0	100.0	100.0
Health Center	33.3	33.3	66.7
Health Post	66.7	83.3	83.3
Total	60.0	70.0	80.0
Central			
District Hospital	100.0	100.0	100.0
Health Center	100.0	87.5	87.5
Health Post	40.0	40.0	50.0
Total	61.3	58.1	64.5

ANNEX C

TECHNICAL NOTES FOR THE COST AND EFFICIENCY SECTIONS

Annex C contains a detailed explanation of the technical issues involved in generating the cost and efficiency measures reported in Sections 6 and 7 of this report.

The health statistics information system of the *Ministerio de Salud Pública y Bienestar Social* (MSPBS) was designed to provide information on health services offered by the public health facilities. Even though it provides information on output levels for specific health services, this information is not sufficiently disaggregated to calculate unit costs for each type of service. The output data used for this study was obtained from the September 1998 Report on Services Provided for the Cordillera, Central, and Misiones health regions. A special worksheet was designed to calculate the output level for each basic health service provided by each facility. For each basic health service, the worksheet recorded output levels by type of staff (physicians, licensed nurses or obstetric nurses, and auxiliary nurses). Output levels for other types of services for each facility were also calculated.

C.1. Production of Other Services

In order to include in the analysis the output of health services that are not considered basic health services we created an "other" service category. To standardize the different outputs we used weights that were based on production time equivalents. This standardization allowed us to convert the outputs of different services to a single unit of measurement, which could then be aggregated. The types of health services that are included in the "other" service category are presented in Table C.1.

The service base used for constructing the time equivalents is the "other clinics consultation" category, which requires an average of 10 minutes. The service equivalence factors are calculated according to the time required for each service relative to the time required for the service base. For example, a diabetes consultation requires an average of 20 minutes, which is the equivalent of two "other clinic consultations". Therefore, the equivalence factor for a diabetes consultation is 2. The average time required for each service was obtained by interviewing public facility medical staff experienced in the delivery of these services.

Table C.2 presents the calculated service equivalencies for a variety of health services. For purposes of standardizing the measurement unit, we multiplied the equivalence factor for each service by the output level for that service. The standardized output measures for each service were then added to obtain a single measure, which constitutes the "other" services category.

Table C.1: List of Other Services

Leprosy consultation	Minor surgery
AIDS and TB consultations	Casting
Sexually Transmitted Disease consultation	Nebulization
Cardiovascular disease management	Dental services
Diabetes consultation	Dental health talks
Cancer consultation	Sample collection (for facilities without laboratory)
Accidents	Home visits
Other clinics consultations	Interviews
Cures	Clubs
Injectables	Talks

Table C.2.
Equivalence Factors for Other Types of Health Services

Health Service	Average time required to provide service (in minutes)	Equivalence factor
Leprosy consultation	20	2.00
AIDS and TB consultation	20	2.00
STD consultation	20	2.00
Cardiovascular disease	20	2.00
Diabetes consultation	20	2.00
Cancer consultation	20	2.00
Accidents	20	2.00
Other clinics consultation	10	1.00
Cures	15	1.50
Injectables	5	0.50
Minor surgery	20	2.00
Casting	0	0.00
Nebulization	8	0.80
Dentist interventions and emergencies	20	2.00
Dental health talks	20	2.00
Sample collection (for facilities without laboratory)	15	1.50
Home visits	20	2.00
Interviews	10	1.00
Clubs	30	3.00
Talks	20	2.00

C.2. Method Used to Group Facilities and to Select a Representative Facility from Each Group for the Analysis of Indirect Costs

In order to estimate total cost, it is necessary to estimate both the direct and indirect costs of providing each service. Unlike the collection and estimation of direct costs, the collection of data to estimate indirect costs is substantially more involved and for this study would have required an in-depth study of service operation in each facility. Considering the high cost of conducting such in-depth facility cost studies, a representative facility was selected from each of four internally homogeneous public facility groups for an in-depth cost study. The estimated indirect costs resulting from the in-depth cost studies in the four facilities were considered representative of the group from which the facility was selected. The composition of indirect costs for the representative facilities was assumed to be the same for the other facilities in their respective groups.

A set of criteria was determined to identify facility groups. The criteria were based on staff availability and facility operating capacity. Three facility characteristics were used to characterize the facilities: (l) Number of medical staff; (2) Technical level of staff (availability of physicians, obstetricians, etc.); and (3) physical infrastructure. These indicators received different weights for the composition of a summary index that will enable to rank the facilities. Table C.3 presents the main indicators and their respective weights.

Table C.3
Facility characteristics and their weight factors

Indicator	Weight Factor
Number of staff	20
Staff technical level	55
Physical infrastructure	25
TOTAL	100

Table C.4.

Indicator	Points	Weight Factor
Number and organization of staff	**100**	**20.00**
0 – 5	30	6.00
6 – 10	50	10.00
11 – 15	70	14.00
16 or more	80	16.00
24-hour "on-call" service	20	4.00
Staff technical level	**100**	**55.00**
Physician	25	14.00
Licensed Nurse/Obstetric Nurse	20	11.00
Obstetrician	20	11.00
Auxiliary nurse	20	11.00
Technician	15	8.00
Physical Infrastructure	**100**	**25.00**
Beds	15	3.75
1 to 5	10	2.50
More than 5	15	3.75
Delivery room	20	5.00
Sterilization equipment	10	2.50
Cold chain equipment	20	5.00
Electricity	10	2.50
Water	15	3.75
Communication equipment	10	2.50
TOTAL		**100**

The above main criteria are further dissagregated into a number of indicators. Table C.4 presents the indicators and the weighs used.

Information was obtained from Sections P ("Equipment and units") and C ("Human Resources") of the facility survey questionnaire. Table C.5 presents facility specific information for each characteristic; while Table C.6 presents the score, based on the sum of points, for each facility. The scores ranged from 24.5 to 96 points.[1] On the basis of these scores, four facility groupings were defined according to their level of technological sophistication and infrastructure.

1. Group 1 (Facilities type 1): 0 – 33.25 points
2. Group 2 (Facilities type 2): 33.25 – 57.25 points
3. Group 3 (Facilities type 3): 57.25 - 76 points
4. Group 4 (Facilities type 4): > 76 points

[1] Excluding P.S. Corcuere, which did not have data available at the moment the index was calculated.

Table C.5.
Clinical Staff, Technical Level, and Infrastructure by Facility

Facilities	Facility characteristics													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
C.S. ALTOS	11	1	0	0	4	2	3	1	1	1	1	1	1	1
C.S. ATYRA	13	1	2	2	5	0	2	1	1	1	1	1	1	1
P.S. BERNARDINO CABA	1	0	0	0	1	0	0	1	1	1	0	0	0	0
P.S. CORONEL DUARTE	2	0	0	0	1	0	0	1	1	1	1	0	1	1
C.S. ISLA PUCU	12	2	2	0	4	1	4	1	1	1	1	1	1	1
C.S. ITACURUBI	16	2	2	0	7	1	6	1	1	1	1	1	1	1
C.S. PIRIBEBUY	25	2	1	4	10	2	6	1	1	1	1	1		1
P.S. COL. PIRARETA	1	0	0	0	1	0	2	1	1	1	0	0	1	0
P.S. CORDILLERA	2	0	0	0	2	0	0	1	1	1	0	0	1	0
C.S. TOBATI	22	2	2	0	12	0	4	1	1	1	1	1	1	1
C.S. AYOLAS	40	2	2	0	8	4	8	1	1	1	1	1	1	1
P.S. CORATEI	2	0	0	0	1	0	1	1	1	1	0	0	1	0
H.R. SAN JUAN	78	4	2	1	30	2	22	1	1	1	1	1	1	1
P.S. COCUERE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P.S. GRAL. YBANEZ RO	3	0	0	0	2	0	0	1	1	1	0	0	0	0
P.S. SAN ROQUE	1	0	0	0	1	0	1	1	1	1	0	0	1	0
P.S. SAN PEDRO	4	0	0	0	1	0	2	1	1	1	0	0	1	0
C.S. SAN MIGUEL	11	1	0	0	3	0	4	1	1	1	1	1	1	1
P.S. ITA YURU	3	0	0	0	1	0	1	1	1	1	0	0	1	0
P.S. ARAZAPE	2	0	0	0	1	0	0	1	1	1	0	0	1	0
C.S. VILLA FLORIDA	11	1	0	0	3	0	6	1	1	1	1	1	1	1
C.S. AREGUA	33	3	0	6	9	3	6	1	1	1	1	1	1	1
P.S. ISLA VALLE	1	0	0	0	1	0	0	1	1	1	1	0	0	0
P.S. VALLE PUCU	4	1	0	0	3	0	0	1	1	1	1	0	1	0
P.S. YUKIRY	2	0	0	0	2	0	0	1	1	1	1	0	0	0
P.S. VILLA SALVADOR	1	0	0	0	1	0	0	1	1	1	1	0	0	0
H.D.. CAPIATA	72	4	5	7	15	8	20	1	1	1	1	1	1	1
P.S. POSTA YBYCUA	15	2	1	1	8	0	2	1	1	1	1	0	0	0
P.S. ROJAS CAñADA	4	0	0	1	1	1	1	1	1	1	0	0	0	0
P.S. VILLA CONSTITUC	3	0	1	0	1	0	0	1	1	1	1	0	0	0
HOSP. DIST. FDO. DE	67	7	7	2	32	1	5	1	1	1	1	1	1	1
C.S. JOSé MARIA GODO	35	4	3	1	8	2	2	1	1	1	1	1	1	1
P.S. SANTA TERESA	24	4	2	1	5	1	6	1	1	1	1	1	1	1
P.S. CAACUPEMI	2	1	0	0	1	0	0	1	1	1	1	0	0	0
P.S. CAACUPEMI	3	1	0	0	2	0	0	0	0	0	0	0	0	0
C.S. GUARAMBARE	31	1	2	1	9	6	9	1	1	1	1	1	1	1
P.S. TYPYCHATY	1	0	0	0	1	0	0	1	1	1	0	0	0	0
P.S. NUEVA ESPERANZA	1	0	1	0	0	0	0	1	1	1	1	0	0	0
C.S. ITA	35	1	3	2	11	7	20	1	1	1	0	1	1	1
P.S. LAS PIEDRAS	3	0	0	0	3	0	2	1	1	1	1	0	1	0
P.S. SAN BLAS	10	3	0	0	4	1	0	1	1	1	1	0	1	0
H.D. LAMBARE	18	14	6	17	39	7	34	1	1	1	1	1	1	1
P.S. SANTO DOMINGO	18	3	0	0	3	1	0	1	1	1	1	0	1	1
P.S. SANTA ROSA	6	2	1	0	1	0	0	1	1	1	1	0	0	0
C.S. ÑEMBY	43	2	4	1	16	2	4	1	1	1	1	1	1	1
P.S. MBOCAYATY	3	1	1	0	1	0	0	1	1	1	1	0	0	0
C.S. VILLA ELISA	38	4	9	0	9	0	2	1	1	1	1	1	1	0
C.S. YPACARAI	35	1	1	2	9	8	6	1	1	1	1	1	1	1
P.S. JHUGUAJHU	3	0	1	0	1	1	0	1	1	1	0	0	1	0
P.S. PEDROZO	4	0	0	0	1	1	0	1	1	1	0	0	0	0
C.S. YPANE	16	3	3	1	1	2	0	0	0	0	0	1	0	0
P.S. COLONIA THOMPSO	5	1	2	0	0	0	0	0	0	0	0	0	0	0

Characteristics:

A: Number of staff
B: Number of physicians
C: Number of licensed nurses or licensed obstetric nurses
D: Number of midwives
E: Number of auxiliary nurses
F: Number of technicians
G: Number of beds
H: Electricity
I: Refrigerator/ thermos (cold chain
J: Thermos
K: Water
L: Delivery room
M: Sterilization equipment
N: Communication equipment

Table C.6
Table of Scores by Facility

Facility	A	B	C	D	E	F	G	H	I	J	N	M	L	Total
P.S. COCUERE	0													0
P.S. BERNARDINO CABA	6				11			2.5	5					24.5
P.S. TYPYCHATY	6				11			2.5	5					24.5
P.S. GRAL. YBANEZ RO	6				11			2.5	5					24.5
P.S. ARAZAPE	6				11			2.5	5			2.5		27
P.S. CORDILLERA	6				11			2.5	5			2.5		27
P.S. NUEVA ESPERANZA	6		11					2.5	5	3.75				28.25
P.S. ISLA VALLE	6				11			2.5	5	3.75				28.25
P.S. VILLA SALVADOR	6				11			2.5	5	3.75				28.25
P.S. YUKIRY	6				11			2.5	5	3.75				28.25
P.S. CORATEI	6				11		2.5	2.5	5			2.5		29.5
P.S. SAN ROQUE	6				11		2.5	2.5	5			2.5		29.5
P.S. ITA YURU	6				11		2.5	2.5	5			2.5		29.5
P.S. COL. PIRARETA	6				11		2.5	2.5	5			2.5		29.5
P.S. SAN PEDRO	6				11		2.5	2.5	5			2.5		29.5
P.S. COLONIA THOMPSO	6	14	11											31
P.S. CAACUPEMI	6	14			11									31
P.S. PEDROZO	6				11	8		2.5	5					32.5
P.S. LAS PIEDRAS	6				11		2.5	2.5	5	3.75		2.5		33.25
P.S. CORONEL DUARTE	6				11			2.5	5	3.75	2.5	2.5		33.25
P.S. VILLA CONSTITUC	6		11		11			2.5	5	3.75				39.25
P.S. CAACUPEMI	6	14			11			2.5	5	3.75				42.25
P.S. VALLE PUCU	6	14			11			2.5	5	3.75		2.5		44.75
P.S. ROJAS CAÑADA	6			11	11	8	2.5	2.5	5					46
P.S. JHUGUAJHU	6		11		11	8		2.5	5			2.5		46
P.S. MBOCAYATY	6	14	11		11			2.5	5	3.75				53.25
P.S. SAN BLAS	10	14			11	8		2.5	5	3.75		2.5		56.75
P.S. SANTA ROSA	10	14	11		11			2.5	5	3.75				57.25
C.S. SAN MIGUEL	14	14			11		2.5	2.5	5	3.75	2.5	2.5	5	62.75
C.S. VILLA FLORIDA	14	14			11		3.75	2.5	5	3.75	2.5	2.5	5	64
P.S. SANTO DOMINGO	16	14			11	8		2.5	5	3.75	2.5	2.5		65.25
C.S. ALTOS	14	14			11	8	2.5	2.5	5	3.75	2.5	2.5	5	70.75
C.S. VILLA ELISA	16	14	11		11		2.5	2.5	5	3.75		2.5	5	73.25
P.S. POSTA YBYCUA	14	14	11	11	11		2.5	2.5	5	3.75				74.75
C.S. TOBATI	16	14	11		11		2.5	2.5	5	3.75	2.5	2.5	5	75.75
C.S. YPANE	16	14	11	11	11	8							5	76
C.S. ISLA PUCU	14	14	11		11	8	2.5	2.5	5	3.75	2.5	2.5	5	81.75
C.S. ATYRA	14	14	11	11	11		2.5	2.5	5	3.75	2.5	2.5	5	84.75
C.S. ITACURUBI	16	14	11		11	8	3.75	2.5	5	3.75	2.5	2.5	5	85
C.S. AREGUA	16	14		11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	85
C.S. AYOLAS	16	14	11		11	8	3.75	2.5	5	3.75	2.5	2.5	5	85
C.S. ITA	16	14	11	11	11	8	3.75	2.5	5		2.5	2.5	5	92.25
C.S. PIRIBEBUY	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5		5	93.5
C.S. JOSÉ MARIA GODO	16	14	11	11	11	8	2.5	2.5	5	3.75	2.5	2.5	5	94.75
C.S. ÑEMBY	16	14	11	11	11	8	2.5	2.5	5	3.75	2.5	2.5	5	94.75
HOSP. DIST. FDO. DE	16	14	11	11	11	8	2.5	2.5	5	3.75	2.5	2.5	5	94.75
P.S. SANTA TERESA	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	96
C.S. YPACARAI	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	96
C.S. GUARAMBARE	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	96
H.D.. CAPIATA	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	96
H.R. SAN JUAN	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	96
H.D. LAMBARE	16	14	11	11	11	8	3.75	2.5	5	3.75	2.5	2.5	5	96

C.3. Estimating Administrative Staff Cost

As noted in the text, estimating administrative expense creates two problems. The first of these occurs mainly at small facilities where there is no administrative staff, but rather only medical staff who must perform the necessary administrative duties. This was the case in 19 of the 26 health posts in the sample. The second problem occurs in facilities that have administrative staff and that offer services that were not included in our output measures of basic health care.

C.3.1. Time dedicated to patient registration

A major administrative function is the registering of each patient at the facility. This process occurs for each patient visit. Using data from the staff logs we determined that in facilities with no administrative staff patient registration was done, almost universally, by an auxiliary nurse. The average time spent registering each patient was five minutes. Thus the total amount of auxiliary nurse time required for patient registration can be estimated as

$$t_{reg} = \frac{5}{60} \times Q_{tot} \qquad \textbf{(Equation C.1)}$$

Where

t_{reg} is the number of hours per month required for patient registration

Q_{tot} is the total number of patients per month

C.3.2. Total administrative staff costs in facilities without administrative staff

The total time of the staff member will be divided between providing patient care, administrative duties (including patient registration) and some time where none of these tasks are being performed (referred to as down time). As described in the efficiency section of the text, down time was allocated across activities in proportion to the time spent in each activity. For auxiliary nurses who performed administrative duties in the small clinics, patient registration was included as one of the activities and down time was allocated to the administrative staff cost category as described. Thus for these facilities total administrative staff cost is estimated by

$$Total\ administrative\ staff\ cost = \frac{(t_{reg} \times Wage_{aux})}{(1 - proportion\ of\ auxiliary\ nurse\ downtime)}$$

(Equation C.2)

Where

$Wage_{aux}$ is the hourly wage rate for auxiliary nurses

C.3.3. Total administrative staff costs in facilities with administrative staff

For facilities with administrative staff, the total administrative expense was estimated by multiplying the total hours of administrative staff by the wage rate of administrative staff. The problem here is that many of these facilities produced services that were not included in our output measures of basic health care. It was necessary to allocate the cost of administrative staff between the services covered by this study and other services. This was done by examining the relationship between the total number of administrative hours employed at the facility, the number of medical staff hours for staff members who provided the basic health care services and the number of staff hours providing services not covered by this study. The regression results, presented in Table C.7, indicate a positive relationship between the number of medical staff hours and the number of administrative staff hours. Increasing the number of staff hours of staff that provide basic medical care, however, has a substantially smaller effect on administrative staff hours than increasing the staff hours of more specialized staff. The coefficients of this regression where used to allocate the staff expense between basic care and other care.

Table C.7.
Results of Regressing Administrative Staff Hours on Basic and Other Medical Staff Hours in Health Facilities with Administrative Staff

Variables	Coefficient	Standard Error	*p*-value
Basic Medical Staff Hours	.275	.062	.000
Other Medical Staff Hours	.967	.389	.020

Notes: n=28, Adjusted-R^2=.767

Thus administrative staff expense was estimated by

$$Adm_{Basic} = Wage_{Adm} Hours_{Adm} \left[\frac{.28 Hours_{Basic}}{.28 Hours_{Basic} + .97 Hours_{OMed}} \right]$$

(Equation C.3)

Where

Adm_{Basic} is the estimated administrative staff cost for basic health care

$Wage_{Adm}$ is the hourly wage rate for administrative staff

$Hours_{Basic}$ is the total number of staff hours per month for medical staff providing basic care

$Hours_{OMed}$ is the total number of staff hours per month for other medical staff

C.3.4. Allocating administration cost to specific services

As noted above, patient registration is the one specific administration function we consider explicitly. For each patient receiving a particular service we estimated a five-minute time requirement for administrative personnel to register the patient. The remaining administrative time was allocated across services in proportion to the total cost of basic medical staff allocated to that service.

$$Adm_{Basic,i} = (Wage_{Adm} Q_i \frac{5}{60}) + a_i (Adm_{Basic} - \sum_{i=1}^{I} Wage_{Adm} Q_i \frac{5}{60})$$

(Equation C.4)

Where

$Adm_{Basic,i}$ is the estimated administrative staff cost for service *i*

Adm_{Basic} is the total estimated administrative staff cost as defined in Equation C.3

$Wage_{Adm}$ is the hourly wage rate for administrative staff

Q_i is the total number of patients per month for service *i*

a_i is the proportion of basic medical staff cost allocated to service *i*

C.4. Accounting for "On-Call" or "*Guardia*" Services

Several health facilities offer services 24 hours per day. The main service provided during the on-call or *guardia* hours is delivery. The availability of this service was used to identify facilities offering *guardia* services.

Regarding the type of staff available during those hours, three cases were considered:

1. Large facilities, like the San Juan Regional hospital, and the District Hospitals of Capiata and Lambare, had *guardia* services provided by one physician, one licensed nurse and one auxiliary nurse.
2. For most of the remaining facilities *guardia* services were provided by one licensed nurse and one auxiliary nurse.
3. In some facilities, *guardia* services were provided by two auxiliary nurses. This was the case at health centers in Ayolas, Guarambare, Ita and Ñemby.

Health posts in Pirareta, Coratei, San Pedro, Ita and Yuru had only one auxiliary nurse, which reduced the likelihood that they offered *guardia* services despite that they reported offering delivery services.

C.5. Expenditures on Medicines and Inputs

C.5.1. Vaccinations

The expenditure on vaccines was obtained for each type of vaccine by multiplying the number of doses used by the price per dose. The dose price for each vaccine was the actual procurement price incurred by the MSPBS. This information was obtained from the PAHO/WHO offices in Paraguay. The original data were provided in U.S. dollars and converted to Guaraníes using the September 1998 exchange rate (US$1 = 2,815 Guaraníes), which is used by the Inter-American Development Bank for its operations in Paraguay. Table C.8 shows the price of each vaccine.

Table C.8
Vaccine Prices

Vaccine	Number of Doses	Price US$	Price Guaraníes
BCG	10	0.09	266.86
	20	0.05	126.68
DPT	10	0.06	182.13
	20	0.05	139.34
DT (ADULT)	10	0.05	138.78
	20	0.04	104.16
DT (PEDIATRIC)	10	0.05	139.34
	20	0.04	104.16
Measles (Edmonston)	1	0.60	1689.00
Measles (Schwarz)	10	0.10	287.69
Measles (Edmonston)	10	0.10	287.69
Measles/Mumps/Rubella	1	0.82	2308.30
	10	0.49	1377.94
Polio (Glass Vial)	10	0.08	225.20
	20	0.05	137.79
Polio (Plastic dispenser)	10	0.08	215.35
	20	0.07	185.79
Tetanus Toxoid	10	0.04	98.53
	20	0.02	66.15
Hepatitis B Recombinant DNA 20 MCG	10	0.82	2308.30

C.5.2. Family Planning Commodities

The prices for contraceptive supplies were obtained from the USAID/Paraguay suppliers. The original price data were provided in U.S. dollars and converted to Guaraníes using the September 1998 exchange rate (US$1 = 2,815 Guaraníes), which is used by the Inter-American Development Bank for its operations in Paraguay. Table C.9 shows the price for each contraceptive method.

C.5.3. Medicines and supplies for normal delivery

The list of medicines and supplies used for normal deliveries was obtained directly from the health facilities. Health facilities in Paraguay have a list of basic medicines and inputs. The monetary values were calculated at current market prices. The list of medicines and supplies is presented in Table C.10.

C.5.4. Medicines and Supplies for Cesarean delivery

The list of medicines and inputs used for Cesarean deliveries was obtained directly from the health facilities. Health facilities in Paraguay have a list of basic medicines and inputs. The monetary values were calculated at current market prices. The list of medicines and inputs is presented in Table C.10.

Table C.9
Contraceptive Supply Prices

	Price	
Method	US$	Guaraníes
DepoProvera	0.058	163.27
Condoms	0.950	2,674.25
Copper-T (IUD)	1.187	3,341.41
Oral Contraceptive Pills	0.216	608.04
Vaginal Tablets	0.121	340.62

Table C.10
List of Medicines and Supplies for Normal Delivery

Amount Required	Description	Unit Price	Total Price
1	Suero glucosado 1000 cc	5,000	5,000
1	Macrodropper equipment	4,000	4,000
1	Punzocat No. 2 corto	5,500	5,500
3	Gloves Size 7 ½	2,500	7,500
3	Gloves Size 7	2,500	7,500
2	Catgut cromado No. 1	7,000	14,000
1	Xilocaina 2% S/ Epinephrine	1,000	1,000
1	S Ringer bactato 1000 cc	5,000	5,000
20	Gauze (1000 C/ mt)	1,000	20,000
1	Razor	500	500
4	Diaper for adults	2,000	8,000
1	Alcohol (1 lt)	4,000	4,000
3	5 cc Syringe	500	1,500
3	10 cc Syringe	1,000	3,000
1	1 cc Syringe	1,000	1,000
1	Inaflex biotic compressed	14,820	14,820
1	Catheter K 33	2,000	2,000
	TOTAL		104,320

Table C.11
List of Medicines and Supplies for Cesarean Delivery

Amount	Description	Unit Price	Total
2	Fisiologico	4,000	8,000
2	Lactato Ringer 1000 cc	5,000	10,000
1	Macrodropper equipment	4,000	4,000
1	Punzocat No. 20	5,000	5,000
3	Gloves 1 ½	2,500	7,500
3	Uterovin	2,500	7,500
10	(mts) Gauze	1,000	10,000
5	Sintosinon	2,000	10,000
1	Cotton 500 Gr.	9,000	9,000
5	5 cc Syringe	500	2,500
2	Razor	500	1,000
4	Diaper for adults	2,000	8,000
1	Triformol TBL Fronco	13,600	13,600
1	Catheter vesical No. 14	5,000	5,000
1	Vicril No. 1	10,000	10,000
3	Gloves No. 8	2,500	7,500
1	Urine collector	6,000	6,000
1	Leukoplas medium	6,000	6,000
2	Scalpel No. 24	1,000	2,000
1	Catgut simple No. 0	10,000	10,000
3	Catgut cromado No. 1	7,000	21,000
1	Vitamin K	2,000	2,000
1	Umbilical Clamp	2,000	2,000
1	1 cc Syinge	1,000	1,000
1	10 cc Syringe	1,000	1,000
	Total		169,600

C.5. Indirect Costs

The indirect costs are composed of the administration staff labor cost and expenditures that are incurred to provide health services, but that are not directly involved in the production of a specific service. The administrative staff labor cost is composed of the number of working hours worked and salaries of administrative staff, including statisticians, secretaries, administrative auxiliaries, maintenance personnel, cleaners and cooks. Other expenditures are composed of food, office supplies, general maintenance, etc.

In order to estimate the indirect costs, in-depth studies were conducted in four facilities. Each of the four facilities was representative of a group of facilities (see section C.2 in this Annex). Each facility was visited for a second time; interviews were conducted; and records were examined. The indirect costs were estimated as a percentage of medical labor cost. Each of the four sets of estimates was then applied to the facilities in the respective groups. The representative facilities from each group where in-depth, indirect cost studies were conducted were

1. Group 1: Health Post of Cordillera
2. Group 2: Health Post of Mbocayaty
3. Group 3: Health Center of Altos
4. Group 4: Health Center of Itá

As a result of the in-depth studies, the category "Other Expenditures" was estimated at 5% of the sum of total labor costs and medicines.

ANNEX D

ADDITIONAL COST AND EFFICIENCY RESULTS

Table D.1.
Total Recurrent Costs
by Department and Facility Type (in Guaraníes)

Department and Staff Type		Hospital	Health Centers	Health Posts	Total
Cordillera					
Doctors		-	12,890,604.00	-	12,890,604.00
Nurses		-	11,864,760.00	-	11,864,760.00
Auxiliary Nurses		-	26,369,442.00	3,000,211.20	29,369,653.20
Medications		-	2,882,359.80	-	2,882,359.80
Administration		-	11,683,818.00	339,702.00	12,023,520.00
Other		-	2,556,240.00	95,565.76	2,651,805.76
	TOTAL	-	68,247,223.80	3,435,478.96	71,682,702.76
Misiones					
Doctors		5,841,942.00	10,711,260.00	-	16,553,202.00
Nurses		3,710,287.00	1,799,499.90	-	5,509,786.90
Auxiliary Nurses		22,700,000.00	9,929,808.00	3,168,223.50	35,798,031.50
Medications		8,300,641.00	3,865,113.00	178,533.20	12,344,287.20
Administration		8,989,140.00	4,360,776.00	95,210.00	13,445,126.00
Other		1,610,153.00	1,122,028.50	121,820.95	2,854,002.45
	TOTAL	51,152,163.00	31,788,485.40	3,563,787.65	86,504,436.05
Central					
Doctors		51,900,000.00	35,850,256.00	21,717,466.00	109,467,722.00
Nurses		50,700,000.00	43,484,040.00	10,210,808.60	104,394,848.60
Auxiliary Nurses		50,400,000.00	45,682,328.00	22,150,354.00	118,232,682.00
Medications		45,900,000.00	20,250,704.00	13,140,966.00	79,291,670.00
Administration		74,400,000.00	47,421,496.00	1,791,104.70	123,612,600.70
Other		7,644,972.00	6,250,831.20	2,554,428.50	16,450,231.70
	TOTAL	280,944,972.00	198,939,655.20	71,565,127.80	551,449,755.00
Group and Staff Type		Hospital	Health Centers	Health Posts	Total
Decentralized					
Doctors		30,800,000.00	41,639,230.00	14,117,468.10	86,556,698.10
Nurses		24,400,000.00	49,750,080.00	8,909,133.90	83,059,213.90
Auxiliary Nurses		30,400,000.00	61,080,410.00	21,300,473.00	112,780,883.00
Medications		22,800,000.00	21,451,860.00	8,324,469.90	52,576,329.90
Administration		32,800,000.00	54,438,810.00	2,004,675.70	89,243,485.70
Other		4,285,338.00	7,623,486.00	2,048,714.20	13,957,538.20
	TOTAL	145,485,338.00	235,983,876.00	56,704,934.80	438,174,148.80
Control					
Doctors		27,041,942.00	17,812,886.00	7,600,002.30	52,454,830.30
Nurses		29,810,287.00	7,398,223.00	1,301,675.40	38,510,185.40
Auxiliary Nurses		42,500,000.00	20,901,167.00	7,018,319.70	70,419,486.70
Medications		31,300,641.00	5,546,317.70	4,995,029.70	41,841,988.40
Administration		50,489,140.00	9,027,284.00	221,339.97	59,737,763.97
Other		4,969,788.00	2,305,613.80	723,100.41	7,998,502.21
	TOTAL	186,111,798.00	62,991,491.50	21,859,467.48	270,962,756.98

Table D.2.a.
Staff Utilization Rates (including "on-call" hours)

Facility Type		Cordillera	Misiones	Central	Total
Hospitals	Doctors	-	0.2206	0.8211	0.6315
	Nurses	-	0.8057	0.5330	0.5566
	Auxiliaries	-	0.1337	0.5710	0.4720
	Total	-	0.2269	0.6599	0.5846
Health Centers	Doctors	0.6271	0.2569	0.6555	0.5518
	Nurses	0.1508	0.8798	0.3282	0.2643
	Auxiliaries	0.0723	0.1381	0.1718	0.1315
	Total	0.2645	0.3153	0.6489	0.5122
Health Posts	Doctors	-	-	0.4853	0.4853
	Nurses	-	-	0.2380	0.2380
	Auxiliaries	0.3083	0.1394	0.2659	0.2477
	Total	0.5164	0.2117	0.4116	0.4064
All Facilities	Doctors	0.6271	0.2357	0.7017	0.5798
	Nurses	0.1508	0.8284	0.4009	0.3502
	Auxiliaries	0.0899	0.1366	0.3291	0.2459
	Total	0.2736	0.2610	0.6171	0.5294
Group					
Decentralized	Doctors				0.7099
	Nurses				0.3333
	Auxiliaries				0.1942
	Total				0.5342
Control	Doctors				0.4389
	Nurses				0.3832
	Auxiliaries				0.3252
	Total				0.5209

Table D.2.b.
Staff Utilization Rates (excluding "on-call" hours)

Facility Type		Cordillera	Misiones	Central	Total
Hospitals	Doctors		0.3708	1.3725	1.0561
	Nurses		0.8057	0.8737	0.8678
	Auxiliaries		0.1581	0.6502	0.5388
	Total		0.4089	0.9597	0.8638
Health Centers	Doctors	0.6271	0.2569	0.6555	0.5518
	Nurses	0.3396	0.8798	0.4648	0.4202
	Auxiliaries	0.0947	0.3586	0.2468	0.2042
	Total	0.4589	0.5366	0.8154	0.6921
Health Posts	Doctors			0.4853	0.4853
	Nurses			0.2380	0.2380
	Auxiliaries	0.3083	0.1394	0.3969	0.3417
	Total	0.5164	0.2117	0.4515	0.4432
All Facilities	Doctors	0.6271	0.3233	0.9621	0.7730
	Nurses	0.3396	0.8284	0.6058	0.5432
	Auxiliaries	0.1105	0.2378	0.4158	0.3204
	Total	0.4609	0.4507	0.8259	0.7331
Group					
Decentralized	Doctors				0.8743
	Nurses				0.5190
	Auxiliaries				0.2704
	Total				0.7247
Control	Doctors				0.6633
	Nurses				0.5905
	Auxiliaries				0.3969
	Total				0.7476

Figure D.1
Average cost for specific services: Cordillera

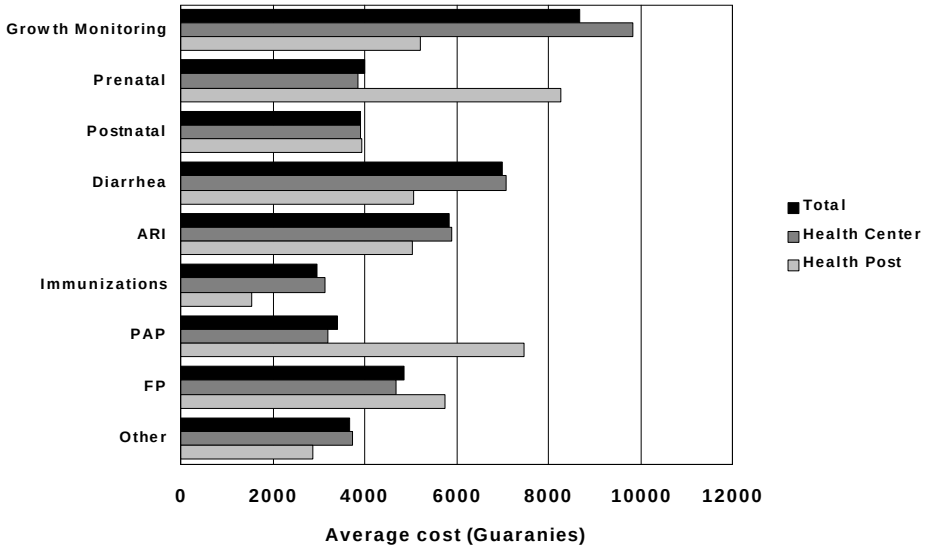


Figure D.2
Average costs for delivery services: Cordillera

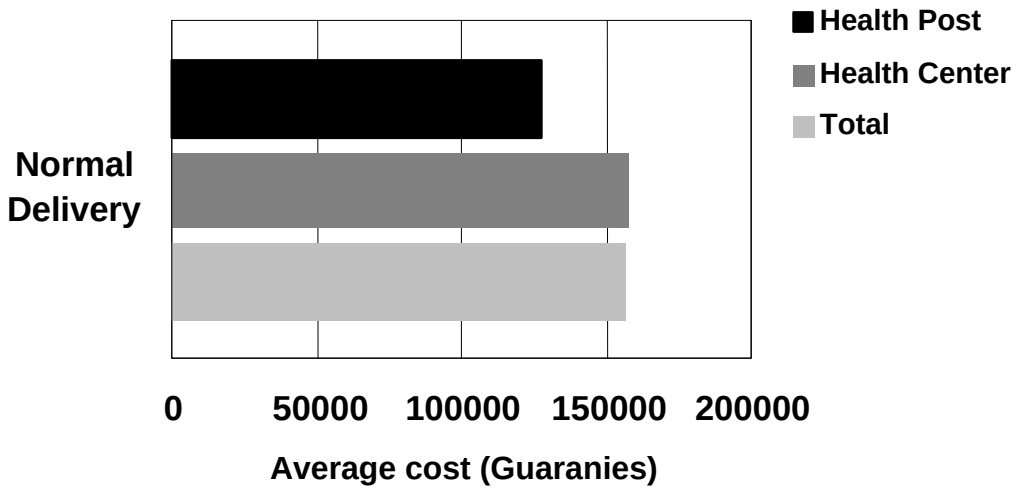


Figure D.3
Average cost for specific services: Misiones

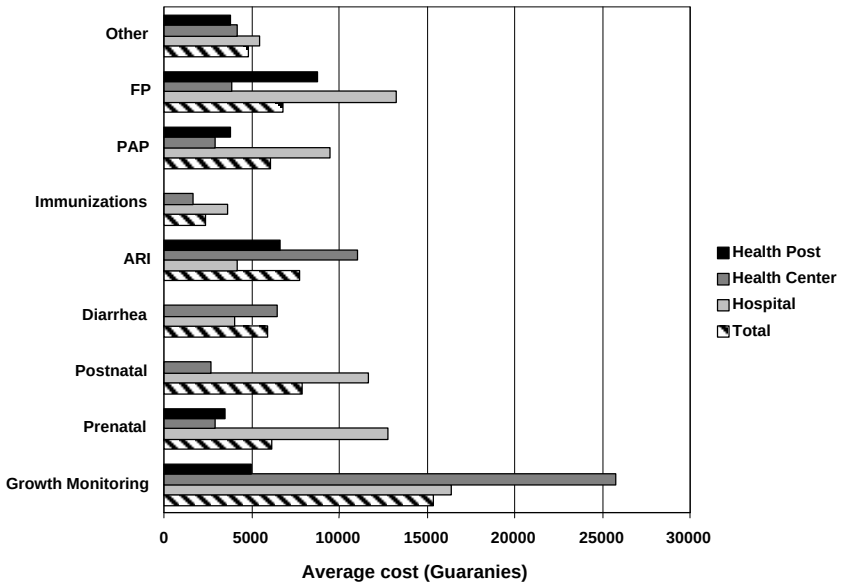


Figure D.4
Average costs for delivery services: Misiones

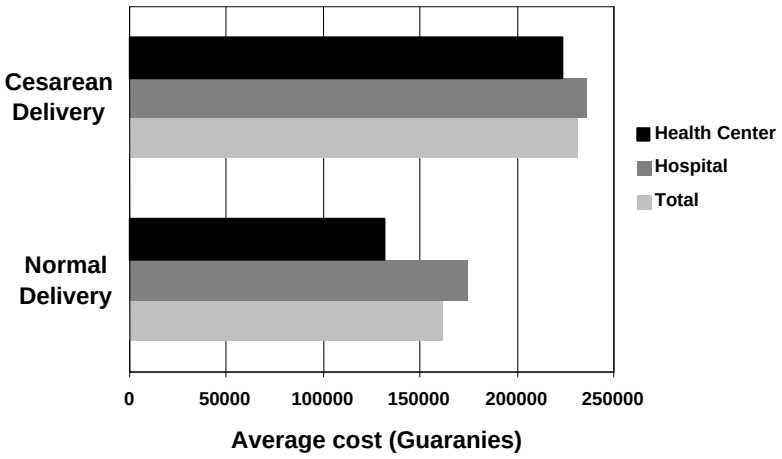


Figure D.5
Average cost for specific services: Central

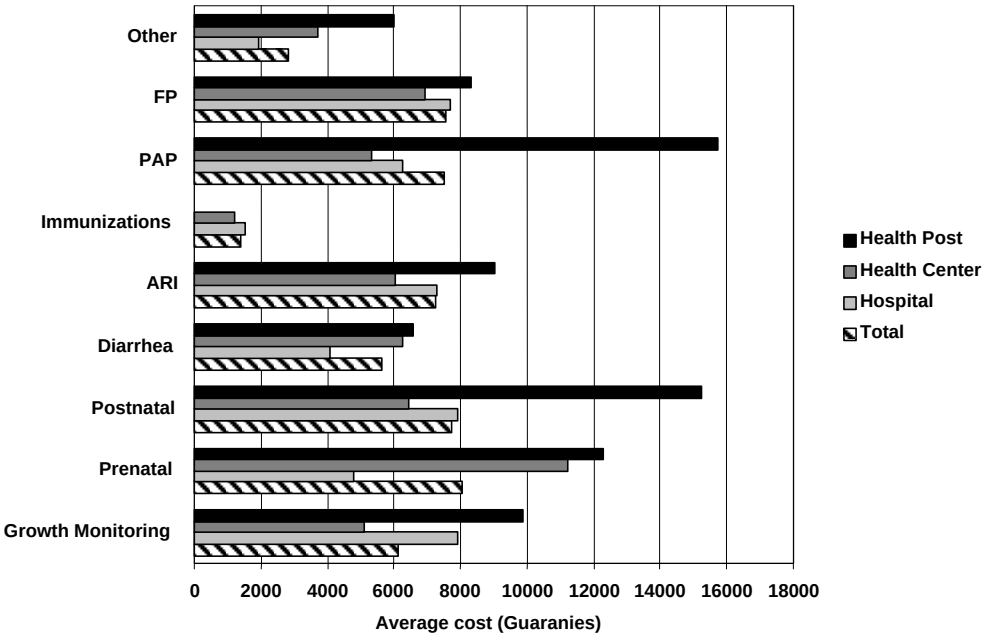


Figure D.6
Average costs for delivery services: Central

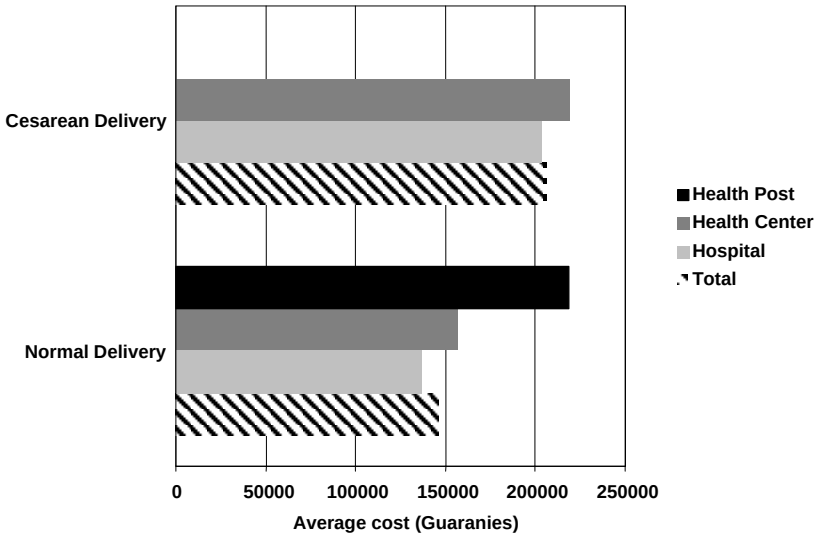
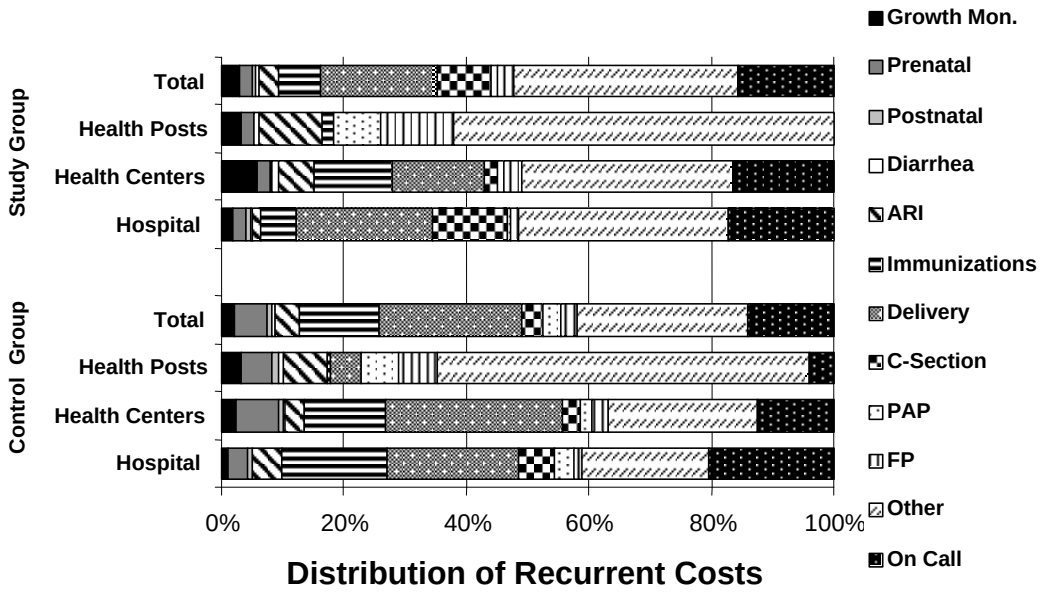


Figure D.7
Percentage distribution of recurrent costs, by study group



ANNEX E

QUESTIONNAIRES