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PROFAMILIA

A COMPARISON OF THE COST-EFFECTIVENESS  
OF PROFAMILIA'S SERVICE PROGRAMS,  
1977 - 1980

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## I. INTRODUCTION

The purpose of this study is to formulate and demonstrate the use of a methodology for estimating the cost-effectiveness of various programs within a family planning organization. The proposed method involves calculating couple-years of protection for different family planning programs which can be compared across years of service and ranked in terms of cost-effectiveness.

The methodology is applied to data from the four basic family planning programs of the Colombian Family Planning Association, PROFAMILIA. The programs which are compared in terms of cost-effectiveness are the following:

1. Clinical program;
2. Voluntary sterilization program;
3. Community-based program (urban and rural); and
4. Social marketing program

Data for each of these programs is calculated on a yearly basis for the period 1977 to 1980.

In the early and mid 1970's when donor agencies such as the International Planned Parenthood Federation (IPPF) had almost unlimited resources, family planning programs were often undertaken without a thorough consideration of costs and program effectiveness. Because of the reduced availability of funds from donor agencies in recent years coupled with increased costs, it has become increasingly important that family planning associations evaluate the cost-effectiveness of programs under their jurisdiction and that policy decisions be directed toward maximizing their effectiveness.

The methodology proposed in this study is simple to implement and of low cost to the family planning association. The data necessary for estimating the effectiveness of family planning programs are:

1. Program expenditures;
2. The cost of contraceptives;
3. Income per program; and
4. The distribution support program of costs, among service delivery activities for the years under consideration.

A single summary index, couple-years of protection, is used to quantify the annual accomplishments of family planning programs. Hence couple-years of protection is calculated for each family planning activity in order to summarize the total output of a program in a single measure which can be compared across years of service as well as among various programs. Couple-years of protection thus constitutes the basis (i.e. the denominator) against which program costs are divided in order to derive the net cost of a couple-year of protection.

The cost per couple-years of protection in this study reflects Profamilia's actual cost and does not include the total cost incurred by supporting donor agencies. Since the primary objective of this analysis is to develop an evaluative tool which increases the effectiveness of family planning associations, the cost of in-kind donations such as contraceptive methods have been excluded. The total cost of couple-years of protection is considered to be of minor assistance in guiding policy decision-making. Equipment costs are only considered as an expense at the time of initial purchasing. Therefore, equipment is not depreciated across the years under consideration. Program costs are calculated and compared for the period 1977 to 1980. In order to derive

comparable program costs and income for the years under consideration, a dollar index based on changes in exchange rates and consumer prices was developed; this index allows 1977 to 1979 dollars to be standardized to 1980 dollars.

## II. PROFAMILIA'S FOUR BASIC FAMILY PLANNING SERVICE AND SUPPORT PROGRAMS

The basic objective of Profamilia is to defend the human right to family planning in Colombia and offer information and services, particularly to families with low economic resources. Profamilia's family planning services are divided into four basic programs. A description of each follows:

### Clinical Program

The primary objective of Profamilia clinics is to furnish the lower economic strata of the urban population with information on effective contraceptive methods and efficient clinical services at a low cost. These clinics also serve as training centers for family planning activities, including both national and international organizations as well as Profamilia personnel. Clinics also offer cytologies for the early detection of cervical uterine cancer, infertility services, and pregnancy tests. Moreover, Profamilia clinics serve as organizational centers for the Voluntary Sterilization Program, the Community-Based Distribution Program, and the Over-the-Counter Sales Program which sells contraceptives in Profamilia clinics.

The Clinical Program was initiated in 1965; by 1972 the number of clinics had grown to 42. In 1973 the number of clinics began to

decrease as funds were cut back from the Clinical Program to allow for the expansion of the Community-Based Distribution and the Social Marketing Programs. Hence by 1981, the number of clinics had fallen to 33. Table 1 shows the number of new acceptors between 1977 and 1980.

TABLE 1 NEW ACCEPTORS TO THE CLINICAL PROGRAM BY CONTRACEPTIVE METHOD 1977-1980.

METHOD	1977	1978	1979	1980
IUD	30,871	32,202	35,440	37,803
Pills	22,504	17,278	16,002	11,411
Female Sterilization	16,672	21,739	26,799	22,681
Male Sterilization	687	628	554	566
Other Methods	6,103	5,416	5,716	4,942
Total	76,837	77,263	84,511	77,403

Except for 1979, with 84,511 new users, the remaining years show approximately 77,000 users per year. In 1977 insertion of IUDs was most important (30,871), followed by the pill (22,504) and female sterilization (16,672). By 1980, the IUD still remained the most important (37,803), but female sterilization was now second (22,681) and the pill fell to third place (11,411). The decrease in pill use within the Clinical Program was accompanied, at the same time, by an increase in sales from other distribution sources such as the Community Based Distribution and the Social Marketing Programs. Clinical data demonstrate a marked increase in IUD use and female sterilization (both requiring specialized medical attention) and a decrease in pill use.

A component of the Clinical Program is the Over-the-Counter Sales Program which refers to the direct sale of contraceptives to users in clinics. Although the number of sales has decreased from 415,339 to 177,968 for pills and from 462,025 to 225,546 for condoms, the income

generated from sales has risen due to increases in the price of contraceptive methods (Table 2).

TABLE 2 OVER-THE-COUNTER SALES OF CONTRACEPTIVES, 1977-1980

METHOD	1977	1978	1979	1980
Pills	415,339	316,179	248,707	177,968
Condoms	462,025	356,840	266,898	225,546
Emko	4,826	264,863	1,328	113
Neo-Sampon	16,405	212,142	12,294	5,853
Total	898,595	1,150,024	529,227	409,480

#### Voluntary Sterilization Program

Perhaps the most successful program within Profamilia in recent years has been the Voluntary Sterilization Program. The principal objective of the Voluntary Sterilization Program is to provide effective irreversible contraceptive methods to users who because of their age or number of living children, desire to limit additional births and would probably not abandon contraception in the future. The basic requirements for voluntary sterilization are:

1. A minimum age of 25 years of age for the wife;
2. 30 years of age for the husband; and
3. A minimum of 3 surviving children.

Profamilia's sterilization program began in 1971 with a vasectomy program which met with resistance from the beginning. This resistance came not only from political and religious sectors, but from a majority of physicians as well. Although Profamilia promoted the vasectomy

program, the peak year of vasectomies was 1974 with only 1,104 operations. By the end of 1980, only 7,745 vasectomies had been performed.

The female sterilization program has been considerably more successful. This program started in 1972 when Profamilia adopted the new techniques of Laparoscopy and Minilaparotomy which permitted the development of ambulatory surgical units characterized by low risks to the patient and high effectiveness. By the end of 1980, Profamilia had performed 189,744 female sterilizations (Table 3). The number of sterilizations per year rose from 1977 to 1979, and then dropped in 1980 owing to budget constraints that resulted in a reduction of sterilization services.

Four different administrative programs developed by Profamilia to provide female sterilization services are described below.

1. Profamilia Clinics. Female sterilization services are provided in Profamilia clinics in which an operating room exists on the premises or is available in a nearby hospital or clinic. Basic surgical equipment is made available according to local needs. In places where laparoscopy equipment is available, sterilizations are performed using a laparoscopic technique; but where such equipment is not available, surgery consists of a minilaparotomy. In larger urban centers, female sterilizations are performed by medical personnel employed on a physician/hour basis. In medium and smaller cities, medical personnel are employed on the basis of surgeries performed since the number of operations does not justify payment on a physician/hour basis.

TABLE 3 VOLUNTARY STERILIZATION PROGRAM: FEMALE STERILIZATION, 1972-1980.

METHOD	1972	1973	1974	1975	1976	1977	1978	1979	1980	TOTAL
Laparoscopy	-	338	1,922	5,090	9,455	15,499	17,158	22,854	21,354	93,670
Mini-laparotomy	31	84	549	3,097	8,292	21,296	21,656	23,263	13,033	91,301
Postpartum	-	-	23	74	93	148	1,538	1,529	687	4,092
Soonawala*	-	60	134	136	204	147	-	-	-	681
TOTAL	31	482	2,628	8,397	18,044	37,090	40,352	47,646	35,074	187,744
Variation %	-	-	445.2	219.5	114.9	105.6	8.8	18.1	-26.4	-

\*Vaginal route tubal ligation.

2. Contract Programs. Where Profamilia does not have a clinic, contracts are made with local hospitals and physicians who, under Profamilia supervision, administer the local program. Payment is either made to the local institution which, in turn, distributes funds for medical services, operating room, etc.; or funds are directly allocated to the program's members (i.e., the surgeon, the anaesthetist and other medical personnel). Profamilia strives to make sure that the cost per sterilization is more or less the same throughout the program.
  
3. Rural Program. In an effort to achieve maximum national coverage, Profamilia established rural Community-Based posts. In this program, surgery is performed in a small local hospital or a neighborhood health center, and payment is made on a per case basis. Usually, the surgeon is also the anaesthetist and director of the surgical unit. Support for this program is provided by the personnel of the Community-Based Distribution Program. Due to Profamilia's budget problems in 1980, sterilization services were reduced in early 1980.
  
4. Mobile Program. In an effort to expand the sterilization program, mobile medical teams were developed to provide services in areas not accessible to the foregoing sterilization programs. These surgical teams make periodic trips to localities and perform operations on patients preselected by a social worker and local physician.

### Community-Based Program

The objective of this program is to provide family planning information and services to local communities. This program is designed to function without clinical services. When a patient requires medical attention not offered by the Community-Based Program, they are subsequently referred to a Profamilia clinic. Hence the contraceptives offered by Community-Based posts do not require strict medical supervision. Included are pills, condoms and spermaticides.

Profamilia was a pioneer in developing community level family planning posts designed to function without clinical services. In 1971, a rural program of community distribution was initiated. The program was expanded to marginal areas of urban centers in 1974. Finally in 1976, the Postal Community-Based Program was established in order to supply by mail family planning distributors not served by other distribution systems. Contraceptives are distributed at subsidized prices and local distributors receive a small remuneration for their services. Although the Community-Based Program was initially divided into rural and urban components, both parts were combined into a single program in 1981 in an effort to provide better national planning and reduce administrative costs.

The Community-Based Program is designed to take advantage of local community facilities and members. Therefore existing community infrastructure is utilized in this program. Moreover, the distribution of contraceptives is administered by voluntary personnel appointed by the local community.

Three types of field personnel are involved in the Community-Based Program:

1. Distributors;
2. Instructors; and,
3. Supervisors

The primary function of the instructors is to inform and educate distributors as well as the general community on aspects of family planning. Distributors receive training regarding the different contraceptive methods that they provide to the community.

Currently, Community-Based posts provide more than one-half of Profamilia's family planning services and are considered to be one of its most successful activities. From 1977 to 1980, the number of urban posts rose from 1,707 to 2,744 (Table 4). Likewise, the number of rural posts increased from 571 to 1,020.

#### Social Marketing Program

Initiated in 1973, the objective of this program is to place contraceptives in commercial channels at low subsidized prices. Initially contraceptives were distributed to "pension funds" and cooperatives providing pharmaceutical services. Because of the program's success, distribution was extended to drugstores and supermarkets. Presently, the Social Marketing Program is estimated to cover approximately one-half of Colombia's pharmaceutical outlets. The ability to distribute contraceptives at a low cost to the consumer is related to three factors:

1. The utilization of pre-existing clinics as distribution centers;
2. Some of the contraceptives are donated by international organizations; and,

TABLE 4 RURAL AND URBAN COMMUNITY-BASED DISTRIBUTION PROGRAM BY NUMBER OF DISTRIBUTION POSTS AND CONTRACEPTIVE METHODS, 1977-1980

POSTS AND METHODS	1 9 7 7		1 9 7 8		1 9 7 9		1 9 8 0	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
# of Distribution Posts	1,707	571	2,223	719	2,533	877	2,764	1,020
Pills (cycles)	1,170,228	408,346	1,339,911	396,977	1,355,053	1,352,227	381,053	413,338
Condoms (units)	428,524	162,198	516,563	213,310	325,823	124,191	413,195	155,166
Neo-sampooon (tubes)	14,610	6,780	11,322	3,064	154	314	-	8
Emko (tubes)	103	107	28	148	-	111	-	65

3. Other products are purchased in large quantities resulting in lower costs to Profamilia.

Distribution is carried out by salesmen who cover all of the principal urban centers in Colombia. This program utilizes mass media advertising as well as advertising within salesposts.

The two most important contraceptives distributed through the Social Marketing Program are the pill and condom. Table 5 shows the growth in sales of these two methods between 1977 and 1980. For example, sale of pills more than doubled from 1,189,354 to 2,769,207 while condoms increased from 4,328,462 to 5,380,875.

TABLE 5 SOCIAL MARKETING PROGRAM BY SALES OF CONTRACEPTIVES 1977-1980.

METHOD	1977	1978	1979	1980
Pills (cycles)	1,189,354	1,548,482	1,862,926	2,769,207
Condoms (units)	4,328,462	4,188,130	5,665,613	5,380,875
Norforms (boxes)	20,958	65,677	114,023	246,076
Emko (tubes)	9,453	9,291	1,829	404
Neosampoon (tubes)	44,193	61,903	76,489	32,989

#### Support Programs

Five support programs have been developed to coordinate the activities of the aforementioned family planning service programs.

These support programs have the following functions:

1. Information, education and communication;
2. Accounting;
3. General services which include local purchases;
4. Industrial relations; and,
5. Evaluation and investigation.

### III. METHODOLOGY

#### Estimation of Couple-Years of Protection

Since Profamilia has various family planning programs aimed at contacting and serving family planning acceptors, the utilization of a standard index was necessary. The index known as couple-years of protection was chosen since it permits combining long-term contraceptive methods with short-term methods into a single measure. Moreover, the couple-year of protection index uses information which is easily available to a family planning organization while also providing a straightforward estimation of program achievements that program managers can readily interpret. Initial calculations were made in couple-months of protection and then transformed into couple-years of protection.

To calculate couple-years of protection, months of protection must first be assigned to different contraceptive methods. Months of protection are based upon discontinuation rates obtained through follow-up studies of family planning acceptors. Continuation rates provide a means of quantifying and comparing different program efforts as well as contraceptive methods. These indices can not be translated directly to other family planning associations since the rates are specific to Profamilia users and subject to change as the orientation of family planning programs is modified. The following coverage or continuation rates were adopted for Profamilia acceptors:

1. Thirty (30) months of average protection are accepted for each first time visit to a clinic when an IUD is inserted.
2. Thirteen (13) months of average protection are accepted for each first time visit to a clinic when the user is prescribed pills.

3. Six (6) months of average protection are accepted for each first time visit to a clinic when the user is prescribed other methods (condoms, jellies, foams, tablets, etc.).

4. One hundred and fifty (150) months or 12.5 years of average protection are accepted for each female or male sterilization.

For female sterilizations, this period represents the number of years between the average age of sterilization (32.5 years) and the age of menopause (45 years). Since the average age of female spouses among men receiving vasectomies is also 32.5 years, the average period of protection for both female and male sterilization is equivalent.

5. Thirteen (13) cycles, equivalent to one year of protection, are accepted for the distribution of pills (Over-the-Counter Sales at clinics, Community-Based Distribution and Social marketing Programs), since women have approximately 13 menstrual cycles per year.

6. For the distribution of condoms (Over-the-Counter Sales at Clinics, Community-Based Distribution and Social Marketing Programs), one year was accepted for every 100 units of condoms distributed.

7. In the case of Emko, an average protection of one year was accepted for every two units of 90 grams each.

8. For Neosampon, an average protection of one year was accepted for every 100 units of the product.

The distribution of Norforms was not included since this method is regarded as a relatively ineffective contraceptive method.

#### Determination of Operational Costs Among Support Services

Support program expenditures were distributed among the four different service programs. In order to distribute support program

expenditures, interviews were held with directors of all support programs to determine the time allocated to each service program. Administrative personnel costs were also proportionally distributed; this distribution was based on the number of employees in each program. Other administrative expenditures were distributed proportionally according to the size of each program's budget, taking into consideration the degree of administrative complexity of each program. A major problem was that expenditure data were not available for 1977 to 1979. Therefore, the distribution of time and costs calculated for 1980 and 1981 were assigned to the 1977-79 period.

#### Contraceptive Costs

Profamilia either purchases contraceptives directly or through IPPF; consequently, contraceptives purchased by Profamilia itself or from IPPF are considered to have a real cost. Additionally, custom duties and importation expenses must be added to the cost of the contraceptives. In the case of in-kind donations of contraceptives, only duties and importation expenses were considered in calculating contraceptive costs (e.g. Noriday pills). The foregoing purchase, custom and import costs do not include incidental administrative expenses incurred in maintaining an inventory and distributing contraceptives since these expenses have already been distributed proportionally among service programs. In Table 6, the cost in U.S. dollars to Profamilia of different contraceptive methods is presented. When the various contraceptive units in each program is multiplied by their respective cost and summed across all methods, the total cost of contraceptives per program is obtained.

TABLE 6 COSTS OF CONTRACEPTIVES TO PROFAMILIA 1977-1980

METHOD	1977	1978	1979	1980
Condoms/per gross	.40	2.87	2.55	2.79
Norinyl/per cycle	.006	.006	.006	.009
Emko/per tube	1.37	1.37	1.37	1.37
<u>Pills:</u>				
Wyeth	-	-	-	.24
Schering	.9	.19	.19	.19
Norforms	-	-	.54	.51
Neosampoon	1.10	.75	.75	.75

#### Income per Family Planning Program

Profamilia income is generated from family planning services rendered to program acceptors. Only income received from family planning activities was considered in computing program income. For example, income from Pap Smears and pregnancy tests provided by Profamilia clinics is not included. Likewise, the cost of family planning programs not directly related to family planning were excluded where data were available. In those cases in which costs could not be calculated and eliminated, it is estimated that the increase in cost per couple-years of protection is nominal. When income is subtracted from costs and divided by couple years of protection (i.e., cost - income/couple-years of protection), the net cost per couple-years of protection can be estimated.

#### Adjustment of Costs According to Rates of Inflation and Exchange

In order to calculate comparable family planning program costs and income, it was necessary to adjust costs and income to 1980 dollars. Thus all costs and income presented in Tables 8 through 12 for the years

1977 through 1979 have been inflated using the dollar index in Table 7.

TABLE 7 DOLLAR INDEX, 1977-1980

Economic Index	1977	1978	1979	1980
Price Index	.518	.660	.791	100.0
Average rate of exchange	35.89	37.60	40.00	44.32
Dollar index	.640	.778	.876	100.0

Source: Price Index, DANE (Departamento Administrativo Nacional de Estadística).  
Rate of Exchange, PROFAMILIA.

This index was calculated by dividing the average rate of exchange in 1980 by the rate for the year being calculated. The result is then multiplied by the price index of the same year. For example, the following computation was utilized to derive the 1977 dollar index:

$$.64 = (44.32/39.89) * .518 \quad (1)$$

Finally, all costs and income for the various years being considered were divided by their respective dollar indices in order to arrive at comparable standardized costs and income.

#### Computation of Cost per Couple-Year of Protection

In order to calculate the costs per couple-year of protection, all costs involved in providing family planning services must be added together. The principal costs (Table 8 through 12) are the following:

1. Program operational costs;
2. Program personnel costs;
3. Support program personnel expenses;
4. Support program operational expenses; and
5. Evaluation program expenses.

Program operational costs include such items as maintenance, travel, rent, fees and other expenses incurred in the provision of family planning services. Personnel costs include salaries paid to the family planning staff. Once direct and support program costs have been combined, it is possible to derive the cost per couple-year of protection by dividing the total gross cost of the program by the total couple-years of protection provided by the program.

Finally, the net cost per couple-year of protection is obtained by first subtracting income generated from family planning services and sales from the total gross cost of the program. The net cost is then divided by the couple-years of protection in order to determine the net cost of a couple-year of protection. As noted, program income and costs have been adjusted to 1980 dollars. Tables 8 through 12 provide detailed information on costs, income and the net cost per couple-year of protection for each of Profamilia's family planning programs.

#### IV. SUBSTANTIVE FINDINGS

##### Clinical Program

The net cost per couple-year protection increased from \$12.89 in 1977 to \$16.47 in 1979, and then dropped to \$15.27 in 1980 for a decline of 7.29% (Table 8). The reasons for the reduction in costs between 1979 and 1980 are two-fold.

1. an increase in the number of patients and therefore improved efficiency of operation; and
2. increased income from over-the-counter sales.

The total net cost of the Clinical Program also increased from \$1,894,891 in 1977 to \$2,205,685 in 1979 and a decline to \$1,934,243 in

1980. Between 1977 and 1980, the couple-years of protection provided by the Clinical Program declined from 147,247 to 126,705.

Of the various family planning programs being considered, the cost per couple-year of protection within the Clinical Program is one of the highest. Nevertheless, clinics perform a vital role in the functioning of the other service programs. Not only are clinics the administrative centers of the Voluntary Sterilization and Community-Based Programs, but they also serve as the only source of medical support for the other family planning programs.

TABLE 8 COST PER COUPLE-YEAR OF PROTECTION, CLINICAL PROGRAM,  
1977-1980<sup>1</sup>

Program Costs, Income and Services	1977	1978	1979	1980
Program operational costs	794,894	522,819	742,151	595,076
Program personnel costs	1,251,972	1,485,323	1,630,712	1,481,094
Support program personnel costs	144,242	131,775	143,474	184,827
Support program operat- ional costs	141,477	77,848	70,965	114,638
Evaluation program expenses	36,413	37,436	37,854	40,385
Sub-total	2,368,998	2,255,201	2,625,156	2,416,020
Less:				
Clinical rental expenses redistributed by program	(35,233)	(35,373)	(47,394)	(45,842)
Income: family planning consultations	(154,236) <sup>2</sup>	(162,889) <sup>2</sup>	(180,715) <sup>2</sup>	(242,396) <sup>2</sup>
Distributor sales	(284,567)	(204,761)	(191,362)	(193,539)
TOTAL	1,894,962	1,852,178	2,205,685	1,934,243
1980 Cost	147,247	134,969	133,983	126,705
CYP <sup>3</sup>	\$12.87	\$13.72	\$16.46	\$15.27
Dif. % <sup>4</sup>		+6.5%	+20.0%	-7.3%

<sup>1</sup>All costs and income are presented in 1980 dollars.

<sup>2</sup>Based on income for the first quarter of 1981

<sup>3</sup>Couple-years of protection for the clinical and Over-the-Counter Sales Program

<sup>4</sup>Percentage change from the preceding year.

Voluntary Sterilization Program

Sterilization is one of the most cost-effective programs owing to the long duration of protection provided. Overall, the cost of a couple-year of protection decreased 50% between 1977 and 1980 from \$4.32 to \$2.18 (Table 9).

TABLE 9 COST PER COUPLE-YEAR OF PROTECTION, VOLUNTARY STERILIZATION PROGRAM, 1977-1980<sup>1</sup>

Program Costs, Income and Services	1977	1978	1979	1980
Program operational costs	1,670,302	1,300,184	1,449,918	858,450
Program personnel costs	397,819	275,539	316,446	332,962
Support program personnel costs	29,388	26,847	29,231	37,656
Support program operational costs	104,027	57,242	52,179	84,292
Evaluation program expenses	30,345	31,197	31,546	33,654
Sub-total	2,231,881	1,691,009	1,879,320	1,347,014
Less: Income from surgery	(193,100)	(203,932)	(226,249)	(375,014)
Total	2,038,781	1,487,077	1,653,071	972,000
1980 Cost CYP <sup>2</sup>	472,550 \$4.31	512,625 \$2.90	602,813 \$2.74	445,500 \$2.18
DIF. % <sup>3</sup>		-32.6%	-5.8%	-20.4%

<sup>1</sup>All costs and income are presented in 1980 dollars

<sup>2</sup>Based on income for the first quarter of 1981

<sup>3</sup>Couple-years of protection for the clinical and Over-the-Counter Sales Program

Two major declines are apparent from the data: the first drop in cost from \$4.32 to \$2.91 between 1977 and 1978, and the second reduction from \$2.74 to \$2.18 between 1979 and 1980. During the 1977 to 1980

period, the number of couple years of protection increased from 472,550 to 602,813 in 1979, but, then decreased to only 445,500 in 1980 owing to a cutback of services. Although the overall number of sterilizations decreased, the cost per couple year of protection declined since the fee for sterilization was increased resulting in added income to the program. (The initial cost of laparoscopies and their depreciation have not been included in the calculation of sterilization costs since this equipment is donated to Profamilia. If equipment costs were included, the increase in cost per couple-year of protection would be minimal.)

#### Community-Based Program

Since the urban and rural components of the Community-Based Program were not combined until 1981, and costs per couple-year of protection are considerably different, urban and rural components are analyzed separately. Examining first the urban component, the cost per couple-year of protection underwent a major decline between 1977 and 1978, from \$4.09 to \$3.20 and then rose slightly to \$3.42 in 1980 (Table 10). In contrast, the cost per couple-year of protection was much higher in rural Community-Based Programs. The data show a gradual uniform decrease in costs from \$22.78 in 1977 to \$18.70 in 1980, for an overall reduction of 18% (Table 11). Comparing urban and rural areas, the cost per couple-year of protection was 5.5 times greater in rural areas than urban areas. There are several reasons for this large differential in urban-rural cost.

TABLE 10 COST PER COUPLE-YEAR OF PROTECTION, URBAN COMMUNITY-BASED  
DISTRIBUTION PROGRAM, 1977-1980<sup>1</sup>

Program Costs, Income and Services	1977	1978	1979	1980
Program operational costs	377,944	377,549	364,014	286,356
Program personnel costs	271,613	258,512	285,602	383,289
Support program personnel costs	39,633	36,207	39,421	50,784
Support program operational costs	32,364	17,808	16,234	26,224
Rent	8,381	8,397	11,251	10,883
Evaluation program expenses	12,138	12,478	18,325	13,462
Sub-total	742,073	710,951	734,847	770,998
Less: sales income	(344,223)	(357,416)	(406,655)	(388,709)
TOTAL	397,850	353,535	328,192	382,289
1980 cost	97,277	110,514	107,551	111,781
CYP <sup>2</sup>	\$4.09	\$3.20	\$3.05	\$3.42
DIF. % <sup>3</sup>		-21.8%	-4.6%	+12.0%

<sup>1</sup>All costs and income are presented in 1980 dollars

<sup>2</sup>Couple-years of protection.

<sup>3</sup>Percentage change from the preceding year.

TABLE 11 COST PER COUPLE-YEAR OF PROTECTION, RURAL COMMUNITY-BASED DISTRIBUTION PROGRAM, 1977-1980<sup>1</sup>

Program Costs, Income and Services	1977	1978	1979	1980
Program operational costs	287,708	257,834	256,957	199,483
Program personnel costs	485,538	460,806	402,516	449,776
Support program personnel costs	32,084	26,740	31,913	41,111
Support program operational costs	42,536	23,405	21,313	34,466
Evaluation program expenses	24,277	24,956	25,236	26,923
Sub-total	872,143	793,741	737,935	751,759
Less: sales income	(88,533)	(105,472)	(115,817)	(127,460)
Total	783,610	688,269	622,118	624,299
1980 Cost CYP <sup>2</sup>	34,443	33,357	30,673	33,382
DIF % <sup>3</sup>	\$22.75	\$20.63	\$20.28	\$18.70
		-9.4%	-1.7%	-7.8%

<sup>1</sup>All costs and income are presented in 1980 dollars

<sup>2</sup>Couple-years of protection.

<sup>3</sup>Percentage change from the preceding year.

The cost of providing family planning services in less densely populated areas characterized by poor transportation facilities are greater than in urban areas. Because of the low literacy level in rural areas, it was necessary to develop an educational component within the rural Community-Based Program; this added to the program's cost.

#### Social Marketing Program

Unlike the other family planning programs, the Social Marketing Program provided a net income to Profamilia. No definite income pattern

exists across the years being analyzed. The income per couple-year of protection dropped from \$.72 in 1977 to \$.09 in the following year, then increased to \$1.80 in 1979 only to decrease again in 1980 to \$1.30 (Table 12). Overall, the income from the Social Marketing Program rose 43% between 1977 and 1980.

TABLE 12 COST PER COUPLE-YEAR OF PROTECTION, SOCIAL MARKETING PROGRAM, 1977-1980<sup>1</sup>

Program Costs, Income and Services	1977	1978	1979	1980
Program operational costs	460,145	743,465	753,357	787,162
Program personnel costs	38,017	40,129	62,686	182,923
Support program personnel costs	8,628	7,882	8,581	11,055
Support program operational costs	95,705	52,662	48,005	77,549
Rental of Clinics	4,820	4,830	6,471	6,260
Evaluation program expenses	18,206	18,717	18,927	20,192
Sub-total	625,521	867,685	898,027	1,085,141
Less: sales income	(733,000)	(882,982)	(1,287,425)	(1,367,100)
Total	-107,479	-15,297	-389,398	-381,959
1980 Cost CYP <sup>2</sup>	148,340 (0.719)	178,022 (0.09)	216,167 (1.80)	273,625 (1.03)
DIF % <sup>3</sup>		-87.5%	+2.0%	-42.8%

<sup>1</sup>All costs and income are presented in 1980 dollars

<sup>2</sup>Couple-years of protection.

<sup>3</sup>Percentage change from the preceding year.

## V. SUMMARY

The purpose of this study has been to develop a managerial tool and demonstrate its application with readily available family planning data. Through the calculation of program specific costs per couple-year of protection, the approach serves as a guide to family planning administrators desiring to invest scarce resources in the most cost-effective activities. Moreover, it has become increasingly important for family planning programs to demonstrate to donors that available programs represent a nearly optimal allocation of resources while maintaining the quality of services provided to users.

Using data from Profamilia to demonstrate the calculation of costs per couple-year of protection, it was discovered that despite budget constraints and cutbacks of family planning services, the cost per couple-year of protection across all four programs has declined. This decline in cost reflects:

1. Improved organizational efficiency; and
2. In the case of sterilization, increased service fees.

Results from this type of analysis can aid family planning organizers to make administrative decisions which will reduce costs and increase operational efficiency. In the case of Profamilia, the urban and rural components of the Community-Based Program were combined in an effort to decrease administrative redundancy and costs. Also the educational program within the rural Community-Based Program was restructured. Instead of directing the educational program toward individual community members through house-to-house visitations, it was decided that the program should be directed to larger groups of potential family planning users. Hence the number of personnel needed

to contact and educate members of the community was reduced, resulting in lower personnel costs.