Cost of Public Family Planning Services and Scope of Private Sector Provisions

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PREFACE

This is a report for Phase I of a research project on "Costing of Public Family Planning and Scope of Private Sector Provision." The research was jointly conducted by research teams from the Human Resources and Social Development Program, Thailand Development Research Institute (TDRI), and from the Institute for Population and Social Research, Mahidol University.

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We would also like to thank the many individuals and organizations of health and medical services of the Bangkok Metropolis and of 20 sample provinces that worked with us in collecting data and information on costs of family planning. Without their assistance, effort and attention, those complicated, lengthy and time consuming questionnaires would have never been accurately and completely filled up. Finally, our thanks are due to our own research staff whose unfailing hard work contributed much to the completion of the report.

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EXECUTIVE SUMMARY

1. INTRODUCTION

The report presents findings of the phase one of the study on cost of public family planning services and scope of private sector provisions. The specific objectives of the phases one study are to determine the supply cost of public family planning services by method of contraception and type of service units and to assess the capacity of private providers in order to explore the possibility of enhancing their role.

Data used for calculating the cost were collected from four different types of family planning service delivery unit: provincial public health center; provincial hospital; district hospital; and, subdistrict public health center in 20 sample provinces and, from the Bangkok Metropolitan Administration's general hospital and public health centers. Since the data collected by the study were comprehensive and complicated, requiring not only a great deal of skills and experience but also a high degree of patience, the sample provinces and family planning service delivery units within each sample province were selected purposively to ensure cooperation and reliability of data. In view of the fact that nearly half of family planning new acceptors or active users are from these 20 sample provinces and Bangkok Metropolis, the aggregate data, especially the averages obtained in this study could be considered as representing the national or regional averages. Finally, it is worthwhile to mention here that it is the first study on cost of family planning services in Thailand which takes into account of all types of cost: labor costs; capital costs; material costs (cost of supplies included) and equipment costs.

2. SUMMARY OF FINDINGS

2.1 The average public cost of providing contraceptive service per an acceptor was baht 360 for all regions except Bangkok, baht 234 for Bangkok and baht 343 for the country as a whole. Cost of one method or all methods of contraception varied among different regions. The average cost of all methods

of contraception per acceptor, for example, was baht 319 in the North, baht 359 in the Northeast, 445 in the Central and 421 in the South, (for details see Table 1).

2.2 Cost of all methods or of each method of contraception per acceptor also varried by type of service units in each region. For example, the average cost of providing injectable per acceptor was baht 472 at provincial public health center, baht 285 at provincial hospital, baht 271 at district hospital, baht 243 at subdistrict public health center, baht 351 at Bangkok general hospital and baht 158 at Bangkok public health center, (for details see Tables 2 and 3).

2.3 The average cost per couple-year of protection also varied by method of contraception, region and type of service units. Since the method mix provided by each region and by each type of service unit varied, the average cost per couple-year of protection also varied. In this study, for example, the average cost per couple- year of protection was baht 183 at the national level, baht 275 in the South and only baht 143 in Bangkok. Excluding service units in Bangkok, subdistrict public health is still the service delivery unit which provided services at the lowest cost, i.e. baht 172 per couple- years of protection for all methods of contraception, (for details see Tables 4-6).

2.4 When measured in terms of the average cost per birth averted, the cost patterns are similar to those averages cost per couple-year of protection because the number of births averted is derived from couple-year of protection. For example, the average cost per couple-year of protection of female sterilization at the national level is the lowest at baht 135, the national average cost per birth averted is also the lowest at baht 474, (see details in Tables 7-9).

2.5 Three types of indicator for measuring cost effectives, i.e. cost per acceptor, cost per couple-year of protection and cost per birth averted by methods of contraception at the national level and by type of service units excluding units in Bangkok were summarized and presented in Tables 10 and 11. For all temporary methods, subdistrict public health center is the most cost effective unit measured in terms of three cost effectiveness indicators. By method, although the average cost per acceptor of pills is the lowest, it is not so when measured in terms of cost per couple-year of protection and per birth

averted. Female sterilization with the highest cost per acceptor is the most cost effective when measured in terms of cost per couple-year of protection and cost per birth averted. Male sterilization, although being second highest average cost per acceptor is also the second lowest in terms of average cost per couple-years of protection and per birth averted.

2.6 Labor cost is the major cost item in the provision of service at different types of service unit, ranging from 34 to 48 percent of the total cost.

2.7 According to the national sample surveys conducted in different years, the role of private sector in providing contraceptive services has been declining from 23 percent in 1978 to about 18 percent in 1987. The decline is due primarily to the substantive increase in the number of district hospitals and subdistrict health centers. Percentage of urban residents accepting contraceptive services from private outlet is about 2.3 times higher than that of rural residents. Among contraceptive acceptors receiving services from private outlets, about two-fifths are in Bangkok, one-fifth in the Central, one-sixth in the North and approximate one-eight in the Northeast and the South.

2.8 Drugstore is the major sources of two temporary methods, pills and condom, accounting for about 75 percent and 94 percent of acceptors of these two methods from private outlets. For female sterilization acceptors, private clinic and private hospital are the two major sources, about 47 and 51 percent respectively. For male sterilization acceptors, private clinics account for nearly half of acceptors while slightly over one-third receiving services from private nonprofit organizations.

2.9 By comparing the average price charged by private outlets and the average cost of public outlets in the provision of contraceptive services, it is found that only the average price of pills provided by private clinic and average prices of condom provided by drugstore and clinic are higher than the public average cost of the same methods of contraceptions. As elaborated in section 7.3.3, even when the public average cost is at the same level as or slighly lower than the average price charged by private outlets, it could still be considered that the provision of contraceptive services of private sector is quite cost effective, (see Table 24).

3. CONCLUSION AND RECOMMENDATION

Although the National Family Planning Program (NFPP) has the policy of providing free family planning services or charging the nominal fee since its inception in 1970, it has nevertheless found that the cost of such practice and policy has been rising over time. Problems in seeking funding for the program were not recognized at the time when international or bilateral aid was easily and widely available although a majority of funding for family planning activities has been supplied from the national budgetary source. Taking into account of the fact that family planning services has been integrated with health services from the beginning, the public cost of providing family planning services tended to be underestimated in the past. Therefore, it is not a matter of surprise to find that family planning services are heavily subsidized when we compare the total cost borne by the public sector and the price reported as being paid by acceptors. Although slighly less than one-fifth of contraceptive users reported that they received services from private sector in 1987*, it is still worthwhile and very interesting to experiment with the idea of privatization of family planning services. This may be viewed as the first recommendation of the study. Other recommendations are:

1. More and more drugstore in Bangkok and urban area should be motivated to participate in the experiment program for privision of pills and condom by means of providing necessary and appropriate technical and management support. In some experimental provinces, general stores or drug cooperatives may also be used for provision of services is rural areas. Although the price of condom charged by drugstore and private clinic is higher than the public cost because the procured cost of condom in the public sector is only baht 0.93 per piece, prices could be reduced by providing supplies through bulk purchase. Another positive side effects of promoting condom usage is its contribution to the preventions of AIDS virus.

2. Private clinics and hospitals throughout the country, or initially in designated experimental provinces, should be motivated to participate more

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* According to program statistics, the percent of acceptors receiving services from private sector is much lower, i.e. about 8.9 percent in 1989, due primarily to the fact the majority of private outlet, especially drugstores and private clinics do not send report to the National Family Planning Program.

and more in the provisions of family planning services, especially the doctor-provided or medically- supervised methods such as, IUD, norplant, female and male sterilization by means of the provision of technical and management support. The pilot project of giving nonprofit organizations to provide vasectomy services to a specified number of acceptor at the fee determined by the NFPP is the first step in this direction.

1. INTRODUCTION

Today, the Thai national family planning program promotes the use of a variety of contraceptive methods. In addition to a range of methods, new and innovative public sector systems of contraceptive delivery utilizing city public health center, provincial hospitals, district hospitals and rural health centers have grown up. Furthermore, the existing private providers of family planning services such as private organizations, hospitals, clinics and drugstores play an important role in providing services. The private sector is more involved in the provision of services, in urban centres mostly for those who are able to pay.

It is also clear that, while national program is increasing in magnitude and in cost, donor assistance is not keeping pace with expanding program needs. The financing of family planning program has become a matter of national concern as national budget for social services has been reduced while demand for those services have increased. Cost pressure has grown with the economic crises and foreign aid from developed countries has declined in real value. Family planning program managers or policy makers, faced with limited resources, rising costs, and intensifying pressure to increase the contraceptive, need to know what they are buying, where the emphasis of their programs lies, and how these might be altered to produce more effective results.

However, where public family planning is concerned, issues other than cost of public provisions are involved. The trend of decreasing population growth is still continuing in Thailand. Cost is, of course, a concern in making decision about which contraceptive mix should be made available and through which delivery systems. However, because the use-effectiveness of any contraceptive is linked to its cost-effectiveness, cost-effectiveness will be used as a tool to aid decision makers in choosing which method and type of public service delivery agent works best for the amount of money expended within a given period of time. This study analytically asseses the relative cost, in terms of output of mix of contraceptive methods within delivery system.

This project will explore the possibility of enhancing the role of private providers, which leads to cost saving for the Thai government, given the constraints of maintaining or increasing current national contraceptive prevalence. Thus, it will attempt to determine the costs and output of public family planning provisions by contraceptive method and sources of delivery service as well as the capacity (in terms of relative share, price and expenditure) of private providers. Cost saving for the Thai Government Ministry of Public Health (MOPH) may occur by selective public sector departure from areas where the availability of unsubsidized private services and selectively

subsidized private family planning services (including those which cooperate with the existing private provider) is sufficient to reach the target groups.

This collaborative project was undertaken by project advisors from the Planning Division of the Ministry of Public Health, a research team from the Institute for Population and Social Research (Mahidol University) and a research team from Human Resources and Social Development Program (Thailand Development Research Institute). This research project was funded by USAID through the Enterprise Program, John Snow Inc. and was designed to collecting detailed data on various aspects of the costs of public and prices charged by private family planning provisions at a range of government and private facilities located in a sample of 20 provinces and Bangkok. In addition, the research team was assisted by advisory boards of experts from the sample provinces, including provincial level health officials and other provincial leaders, in collecting data and identifying private providers. This project has two phases; phase one is to collect data and make estimates of unit cost of public family planning provisions including an assesment of private provision. Phase two will not be defined until the phase one is completed.

2. OBJECTIVES OF THE STUDY

The principal objective of the study is to increase the efficiency of use of the Ministry of Public Health budgetary resources by various strategies. The specific tasks carried out in this phase one are as follows:

1. Determining the supply cost of public family planning services by method and type of service units.
2. Assesing the capacity of private providers in order to explore the possibility of enhancing their role.

3. METHOD OF DATA ANALYSIS

The research is designed to encompass both micro- and macro- level analyses to carry out the two specific tasks mentioned above. However, micro-analysis is the focus of the research, supplemented by macro-analysis, because the former will give more detailed analysis of the two specific tasks. That is, to utilize detailed data on the costs (labor, material, equipment and capital costs) and output (acceptance rates) of public family planning provisions by contraceptive method as well as those on the capacity (relative share, price, and expansion potential) of private

providers. Such micro data are collected from various sources of public delivery services (e.g., provincial public-health centers, provincial/district hospitals, and subdistrict public health centers) and private outlets (e.g., private clinics and drugstores) in the 20 sample provinces, together with various sections of Bangkok. The unit of analysis at the micro level is, therefore, type of service units. The sample provinces and type of service units are drawn on the basis of purposive sampling in order to ensure cooperation and reliability of data as well as to cover a broad spectrum of the extent of private sector provision.

The macro-level analysis of the cost of public provisions, which is used to supplement the micro-level analysis, is based on aggregate data at the provincial level. These data provide the overall picture on the family-planning budget allocation to the sample provinces and on the costs of public provisions in those provinces by method and type of service units. The data will be gathered from both the Ministry of Public Health and provincial public-health centers.

As for the macro-level analysis of the capacity of private providers, an inventory at the provincial level is built up by first searching through registration records for each of the sample provinces and Bangkok. A computerized database will then developed. These will be used with existing data (e.g., CPS1, CPS2, CPS3, and CUPS), which account for trend in private provisions by method, region, and relative price, so as to supplement the micro-level analysis outlined earlier.

4. METHODOLOGY FOR CALCULATING INPUT AND OUTPUT INDICATORS

The methodology of this research is designed to tackle the measurement problems involved in the determination of the costs of public family planning provisions at the micro level. Costs are not only comprised of various components (e.g.,labour, material, equipment and capital costs) incurred to several divisions involved in family planning activities (e.g., Family Planning, Pharmaceutical and Administrative Division) in each outlet but they are also incurred in the form of joint costs, which render measurement difficult. Taking these problems into account the methodology outlined below describes the measures of various components of the costs of public family planning provisions by contraceptive method for the past fiscal year (October 1, 1988 to September 30, 1989).

4.1. Input Variables (Costs)

4.1.1 Labor Costs : These costs are the summation of effective salaries of those involved in providing family planning services from the divisions concerned (e.g. Administrative, Family Planning, Pharmaceutical and Transportation Divisions).

a. Administrative Division : Labor costs are the summation of the product of the salary of each worker and the proportion of his/her total working time spent doing administrative work weighted by family planning personnel expenditures as a proportion of total personnel expenditures (because these workers are involved in family planning activities only indirectly in terms of overhead costs).

b. Family Planning Division : Labor costs are the summation of the product of the salary of each worker and the proportion of his/her total working time spent on family plannings activities, such as services, campaigns, promotions, and training (because these workers do not spend all of their working time on family planning activities).

c. Pharmaceutical Division : Labor costs are the summation of the product of the salary of each worker and the proportion of his/her total working time spent doing pharmaceutical work weighted by the proportion of total drug items (handed over by them to patients) that are family planning items (because these workers are involved in providing family planning services only indirectly by handing over the prescribed family planning items to patients and not all drug items handed over are family planning items).

d. Transportation Division : Labor costs are the summation of the product of the salary of each worker and the proportion of his/her total working time spent driving for family planning-related activities (e.g., mobile family planning services and other activities, such as campaigns, promotions, training, and transporting famiy planning items). If family planning items are not transported separately, rather they are transported with other drug items, the product mentioned above will have to be weighted by the proportion of total drug items that are family planning items (so as to separate out family planning items).

4.1.2 Capital Costs : These costs are the summation of the current values plus the maintenance costs of the building areas incurred to Administrative, Family Planning, and Pharmaceutical Divisions. The current values plus the maintenance costs of vehicles used for family planning activities by Transportation Division are also included.

a. Administrative Division : Capital costs are the product of the depreciation values plus the maintenance costs of the building within which this division is located

and the proportion of total areas of the building used as the Administrative Division (because the whole building is not used for administrative activities) and the proportion of total working time the areas are used solely for administrative activities (because the said areas are used for some other activities as well) weighted by family planning personnel expenditures as a proportion of total personnel expenditures (because the capital costs of this division as related to family planning activities are incurred only indirectly in the form of overhead costs).

b. Family Planning Division : Capital costs are the product of the depreciation values plus the maintenance costs of the building within which this division is located and the proportion of total areas of the building used as Family Planning Divişion (because not the whole building is used for family planning activities) and the proportion of total working time the areas are used only for family planning activities (because the said areas are used for some other activities as well).

c. Pharmaceutical Division : Capital costs are the product of the depreciation values plus the maintenance costs of the building within which this division is located and the proportion of total area of the building used as Pharmaceutical Division (because not the whole building is used for pharmaceutical activities) and the proportion of total working time the areas are used solely for pharmaceutical activities (because the said areas are used for some other activities as well) weighted by the proportion of total drug items that are family planning items (because the capital costs of this division as related to family planning activities are incurred only indirectly as measured by that part of total drug items handed over to patients that are family planning items).

d. Transportation Division : Capital costs are the summation of the product of the depreciation values plus the maintenance costs of each vehicle used in family planning-related activities (e.g., mobile family planning services and other activities, such as campaigns, promotions, training and transporting family planning items) and the proportion of the total working time each vehicle is spent on family planning related activities. If family Planning items are not transported separately, rather they are transported with other drug items, the product mentioned above will have to be weighted by the proportion of total drug items that are family planning items (so as to separate out family planning items).

4.1.3 Material Costs : These costs are the summation of the values of materials used up in family planning activities incurred to the Family Planning Division (e.g., the values of cotton ball, gloves, etc.) and to the Transportation Division. For the latter division, the material costs incurred will be the summation of the product of the values of gas used by each

vehicle involved in family planning-related activities. (e.g. mobile family planning services and other activities, such as campaigns, promotions, training, and transporting family planning items) and the proportion of the total working time each vehicle is spent on family planning-related activities. If family planning items are not transported separately, rather they are transported with other drug items, the product mentioned above will have to be weighted by the proportion of total drug items that are family planning items (so as to separate out family planning items).

4.1.4 Equipment Costs : These costs are the summation of the depreciation values of the equipments used in family planning services incurred to Administrative, Family Planning, and Pharmaceutical Divisions.

a. Administrative Division : Equipment costs are the depreciation values of all equipment used in this division weighted by family planning personnel expenditures as a proportion of total personnel expenditures (because the equipment costs of this division as related to family planning activities are incurred only indirectly in the form of overhead costs).

b. Family Planning Division : Equipment costs are the depreciation values of all equipment used in this division weighted by family planning office hours as a proportion of total office hours (because only part of the total working time is allocated to providing family planning services).

c. Pharmaceutical Division : Equipment costs are the depreciation values of all equipment used in this division weighted by family planning items as a proportion of total drug items (because the equipment costs of this division as related to family planning activities are incurred only indirectly as measured by part of total drug items handed over to patients that are family planning items).

4.2 Output Variables

The success of any family planning program depends on the reduction of births and the cost effectiveness. It is, however, necessary to estimate various intermediate outputs in order to measure the reduction of births and cost effectiveness. The following descriptions are the measures of intermediate outputs.

4.2.1 Number of acceptors

Number of acceptors is determined by type of methods-pills, IUD, injectable and condom. It is useful to know whether acceptors are new and continuing acceptors.

For the pill and the injectable, continuing acceptors will be included with new acceptors in each year.

4.2.2 Couple-years of protection (CYP)

Couple-years of protection are derived as an intermediate output. The effect of adopting a temporary birth control method, (e.g., pill, injectable) by a couple depends on how much protection various methods provide in a year. It assumes, for example, that 13 cycles of the pill distributed in a year will protect one female (or couple) against the risk of conception in that year, and we allow the duration of use as the conversion factors for IUDS, and sterilization. The CYP conversion factor denotes the average length of protection per one application of a method conferred. Since this may vary from district to district, the CYP provided a way of comparing and summing the contraceptive protection offered by different methods in terms of total time. The formula of the CYP can be seen in Appendix I.

4.2.3 Births Averted

Calculation of births averted requires the conversion of CYP number to the number of births averted. Essentially we need to know the potential fertility as averted by the continuation of contraceptive use. Births averted over a period of years after acceptance is determined by multiplying CYP by potential fertility.

4.3 Cost-Effectiveness Index

Cost effectiveness measures cost per various unit of output e.g., cost per acceptor, cost per CYP and cost per birth averted, classified by type of contraceptive method and by type of service derivery unit. For purposes of program management and policy making, we may then simply choose the lowest cost per output as the most preferable choice for delivery, assuming that cost incurred will produce CYP and births averted in an acceptable range and the output of each service delivery agent has the same quality. (For detailed formula of calculating each item of cost and output see Appendix I).

4.4 Private Price of Contraception

For private sector, price by method of contraception will be used instead of cost. Although the questions about cost of contraception are also included in the questionnaire, only few private outlets answered these questions. Therefore, the average price of each type of

contraception charged by private sector is estimated. This average price will be compared with the cost of each type of contraception in public sector to evaluate the efficiency of each sector. As it is known that there are varieties of brand name available for each type of contraception, each brand has its own price and popularity which also varies from place to place. Therefore, the estimated average price by method is weighted by the number of acceptors of each brand.

5. QUESTIONNAIRE DESIGN

The questionnaire is designed to obtain detailed data on the costs of public family planning services, comprising labor, material, equipment, and capital costs. Since the costs will be examined not only by method of family planning, but also by type of delivery services, four forms of questionnaire are prepared accordingly. These are Form-A (for Provincial Public-Health Centers). Form-B (for Provincial/District Hospitals and for Bangkok Public-Health Centers), Form-C (for Local Health/Midwife Centers), and Form-D (for the Ministry of Public Health)

Although Form-A is designed to collect macro data from provincial public-health centers, it differs from Form-C only in the questions designed to get more macro data, such as:

1. the total number of acceptors by contraceptive method and by type of delivery services in each of the 20 sample provinces as well as in each district of the sample provinces,
2. family planning budget and allocations of the budget in each of the sample provinces, and,
3. the total number of women in child-bearing age (aged 15-49) in each of the sample provinces.

The rest of the questions in Form-A will generate micro data, which are more or less the same as those in Form-C, because provincial public health centers also act as individual health centers by providing some family planning services except vasectomy/tubectomy.

Since vasectomy/tubectomy are performed only at provincial/ district hospitals and at some Bangkok public-health centers, the difference between Form-B and C lies in the fact that the former allows for the following questions about vasectomy/tubectomy:

1. The time (hours per week) that each family planning worker, nurse, and doctor spend on these purposes, classified by type of tubectomy,
2. The time that the operation room is used for these purposes (if there is no separate operation room), classified by type of tubectomy,

3. The area (square meters) of the operation room (if there is no separate operation room for these purposes) or the area of the separate operation room for these purposes (if any), and

4. Materials (values in baht) used for these purposes, classified by type of tubectomy.

For vasectomy/tubectomy, discussions with Ministry of Public Health doctors indicate that the operating method and costs will vary considerably depending on the techniques that each doctor in the various provinces are most comfortable with, and also with the particular patient. Therefore we will actually ask the various district hospitals to collect information on the material costs and time used in performing these operations over a period of 1-2 months (rather than ask retrospective questions).

Form-D differs from the others slightly in format, because it is designed to collect information about the various provinces in one form. Such things as budget allocation and contraceptive materials sent to the various provinces are collected. However, in terms of the costing of personnel time devoted to family planning, the associated material costs, and the imputation of capital cost, the format of Form-D is similar to Form-A.

Data collection in private sector used three forms. Form-A is designed for provincial committee, Form-B is for drugstore and Form-C is for private clinic. The overall information of private outlets situation in each province will be asked using Form-A. The information will include the total number of private health providers (i.e. drugstore, clinic, hopsital, association) in each district; the number of private health providers which are popular in terms of family planning services; and the name of private providers which would cooperate in the survey.

Using Form-B, drugstore will be asked about the cost and price of available contraceptive method by brand name. These are pills and condom. For each brand of contraception, the numbers sold during the survey month are also asked.

Form-C, for private clinic, has the same information as Form-B in the section on pills and condom. In adition, Form-C has included questions on prices charged for sterilization, IUD and injectables as well as the number of patients in the survey month.

6. SAMPLE OF THE STUDY

Data used in this study are collected from six types of service delivery unit: general hospitals and public health centers in Bangkok, provincial public health centers, provincial hospitals, district hospitals and sub-district health centers in 20 provinces. These types of service delivery unit are selected by purposive sampling based upon suggestions of experts from the Ministry of Public Health. The sample comprises 2 hospitals and 6 public health centers in Bangkok, 20 provincial public health centers, 20 provincial hospitals, 40 district hospitals and 80 sub-district (Tambol) health centers from the same sample provinces. In each province the cost data was collected by using Forms-A, B and C.

For the private sector, the data are collected from ten drugstores and five private clinics in each of 20 sample provinces and each district served by the 2 public health centers in Bangkok. These private outlets are approached by the provincial health personnel for cooperation in the survey. Data were collected from 260 drugstores and 125 private clinics (the survey was conducted between February - May 1990).

7. RESULTS OF THE STUDY

Results of the study will be presented in three parts. The first part is the cost effectiveness of each contraceptive method and of each type of service units of public sector by geographic region of the country. Cost effectiveness here is measured in terms of cost per acceptor, cost per couple-year of protection and cost per birth averted. In principle, when an average is presented, the number of cases (or N) used in deriving different averages should be presented to assist readers in making an objective assessment of the data. To follow such conventional practice would make each table very cumbersome and Ns are omitted. Interested readers may find the number of acceptors classified by type of service unit and method of contraception and by method of contraception and region in Appendix II. The second part is the macro-level analysis of private providers. The role of private sector will be discussed in terms of its share in providing contraceptive services by types of outlet, methods of contraception, and region. The third part is the contraceptive pricing in private sector. This part will utilise the data collected from study areas. Although data on the general characteristics of private outlet were briefly discussed and analysed, two main objectives of this section are to estimate the price charged by private outlets for contraceptive services by method and to compare the price with the cost of services provided by the public sector.

7.1 Cost of Family Planning Services in Public Sector

7.1.1 Average Cost per Acceptor

As seen in Table 1 presented below, the average cost per acceptor of pills at the national level which is baht 198 is the lowest, followed by condom, injectables, IUD, male sterilization, female sterilization and norplant respectively.

When we consider the average cost per acceptor of each method by region, the patterns of cost in the North and the Northeast are similar to that of the national patterns. In the Central region, the average cost of baht 298 per acceptor of condom is the lowest, followed by injectables, pills, IUD, vasectomy, female sterilization and norplant. For the South, the average cost of baht 203 per acceptor of condom is the lowest, followed by injectables, pills, IUD, norplant, male and female sterilization. For all methods of contraception, the lowest average cost per acceptor is in Bangkok (baht 234), followed by the North (baht 319), the Northeast (baht 359), the South (baht 421) and the Central (baht 445) respectively. The lowest average cost per acceptor for two temporary methods (pills and injectables) and permanent methods(male and female sterilization) are in Bangkok.

Table 1 : Average cost per acceptor by method of contraception and region.

Method of Contraception	North	North-east	Central	South	All Regions	Bangkok	Total
Pills	170	184	360	300	205	151	198
Injectables	234	282	327	316	274	202	263
IUD	595	410	641	716	480	418	474
Norplant	1,602	1,341	s.n.a.	1,292	1,528	s.n.a.	1,528
Condom	219	204	298	203	221	278	228
Male Ster.	1,366	1,102	1,255	1,443	1,270	572	1,177
Female Ster.	1,769	1,076	1,269	2,276	1,332	589	1,253
All methods	319	359	445	421	360	234	343

s.n.a. = service not available or the number of cases is too small for calculation.

In terms of type of service units, the average cost per acceptor at the subdistrict public health center for all regions is the lowest, being baht 192 as compared to bath

289 at the provincial public health center, baht 400 at district hospital and baht 479 at the provincial hospital. The patterns of the average cost per acceptor by type of service units in each region may be slightly different from the all region patterns. The average cost per acceptor of all methods in the Central and the South have the same patterns. Subdistrict public health centers in each of the four regions provide contraceptive services at a lowest cost compared with other family planning service units. However, the average cost per acceptor at the provincial public health center and at the district hospital in the South are higher than the similar service units in other regions, (Table 2).

Table 2 : Average cost per acceptor of all methods by type of service units and region*.

Type of Service Units	North	Northeast	Central	South	All Regions
Provincial PH Center	261	236	490	576	289
Provincial Hospital	847	397	514	400	479
District Hospital	300	446	532	739	400
Subdistrict PH Center	173	189	246	219	192

Note: * excluding Bangkok.

In terms of the average cost per acceptor of each method by type of service units except the service units in Bangkok, the data showed that the average cost per acceptor of pill and injectables is the lowest at the subdistrict public health center, whereas the average cost per acceptor of condom is the lowest at the provincial public health center. The average cost per acceptor of norplant, male sterilization and female sterilization is lower at the district hospital. It should be noted that, however, only the district and provincial hospitals provide contraceptive methods with the higher cost per acceptor, namely norplant, male and female sterilization. Therefore, the higher average cost per acceptor of all contraceptive methods at the district and provincial hospitals may be partly due to different method mix, (Table 3).

Table 3 : Average cost per acceptor of each methods by type of service units of All Regions and Bangkok.

Type of Service Unit	Pill	Inject.	IUD	Norp.	Condom Ster.	Male Ster.	Female
Provincial PH Center	204	472	952	s.n.a.	186	s.n.a.	s.n.a.
Provincial Hospital	256	285	495	1,581	239	1,301	1,343
District Hospital	238	271	456	1,500	223	1,250	1,323
Subdistrict PH Center	150	243	570	s.n.a.	219	s.n.a.	s.n.a.
Bangkok Hospital	228	351	279	s.n.a.	158	572	589
Bangkok PH Center	124	158	777	s.n.a.	391	s.n.a.	s.n.a.
All	198	263	474	1,528	228	1,177	1,253

s.n.a. = service not available

7.1.2 Average Cost per Couple-year of Protection

Except for the North and the South, the average cost per couple-year of protection for female and male sterilization is the lowest and next-to-lowest. For Bangkok, the average cost per couple-year of protection for male and female sterilization is only baht 73 and baht 63 respectively. In the Northeast, the average cost per couple-year of protection for male and female sterilization is baht 141 and bath 115. In the Central, the corresponding cost is baht 161 and 136. In the North, the average cost per couple-year of protection for pills is the lowest.

For all methods of contraception, the lowest average cost per couple-year of protection is in the Bangkok (baht 143), followed by the Northeast (baht 159), the North (baht 195), the Central (baht 239) and the South (baht 275). The average cost per couple-year of protection at the national level is baht 183, being higher than the corresponding cost in the Northeast and Bangkok but lower than other regions, (Table 4).

Table 4 : Average cost per couple-year of protection by method of contraception and region.

Method of Contraception	North	North-east	Central	South	All Regions	Bangkok	Total
Pills	144	156	305	254	174	128	168
Injectables	244	294	341	330	285	213	275
IUD	254	175	274	306	205	311	212
Norplant	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Condom	238	222	324	221	240	302	248
Male Ster.	175	141	161	185	163	73	151
Female Ster.	190	115	136	245	143	63	135
All methods	195	159	239	275	188	143	183

n.a. = not applicable

When classified by type of service units, the average cost per couple-year of protection at the subdistrict public health centre is the lowest only for all regions and in each region except the Central. For the Central region, the average cost per couple-year of protection is the lowest at the provincial hospital, followed by the subdistrict public health center and the district hospital, respectively. Unlike the average cost per acceptor by type of service units as shown in Table 2, the average cost per couple- year of protection at district hospital and provincial hospital may not necessarily be the two highest. Only in the North, where the average cost per couple-year of protection at provincial hospital is the highest, (Table 5).

Table 5 : Average cost per couple-year of protection of all methods by type of service units and region.

Type of Service Units	North	Northeast	Central	South	All Regions
Provincial PH Center	252	196	468	540	258
Provincial Hospital	309	139	165	255	187
District Hospital	173	171	253	370	190
Subdistrict PH Center	156	164	230	197	172

Note: * excluding Bangkok.

When classified by the average cost per couple-year of protection of each method by type of service units except the service units in Bangkok (see Table 6), the pattern of the average cost per couple-year of protection for each method is the same as the average cost per acceptor which is the lowest at subdistrict health center for pills and injectables. The patterns of the average costs per couple-year of protection of condom and IUD also are similar to the patterns of cost per acceptor for IUD and condom. For condom, the lowest cost is at the provincial public health center, followed by subdistrict public health center, district hospital and provincial hospital respectively. The patterns of the average cost per couple-year of protection for male and female sterilization are also the same as the patterns of the average cost per acceptor. However, it should be noted that the average cost per couple-year of protection for permanent methods (male and female sterilization in the district and provincial hospital), is lower than other methods. The reason for this is that contraceptive protection provided by permanent methods, although initially relatively costly, involves small expenditures over time.

Table 6 : Average cost per couple-year of protection of each method by type of service units of All Regions and Bangkok.

Type of Service Unit	Pill	Inject.	IUD	Norp.	Condom Ster.	Male Ster.	Female
Provincial PH Center	173	492	407	s.n.a.	202	s.n.a.	s.n.a.
Provincial Hospital	217	297	211	n.a.	261	167	144
District Hospital	202	282	195	n.a.	242	160	142
Subdistrict PH Center	128	253	244	n.a.	238	s.n.a.	s.n.a.
Bangkok Hospital	193	381	291	s.n.a.	172	73	63
Bangkok PH Center	105	164	332	s.n.a.	33	s.n.a.	s.n.a.
Total	168	275	212	n.a.	248	151	135

s.n.a. = service not available.
n.a. = not applicable.

7.1.3 Average Cost per Birth Averted

Since the average cost per birth averted is derived by equations 20 and 23 in Appendix I, the patterns are similar to those of the average cost per couple-year of protection. As seen from data presented in Table 7 below, the average cost per birth averted of female sterilization is the lowest, followed by male sterilization, pill, IUD or injectable and condom

for the nation and all regions. In each of the five the regions, the average cost per birth averted for female sterilization is the lowest, followed by male sterilization except for the North. In the North, the average cost per birth averted of pill is the lowest, followed by male sterilization, female sterilization, IUD, injectables, and condom respectively. It is noted that, the average costs per birth averted for pill, male and female sterilization for all regions are not much different. For all methods of contraception, the national average cost per birth averted is baht 685 and the cost in Bangkok is the lowest (baht 540), followed by the Northeast (baht 587), the North (baht 740), the Central (baht 894) and the South (baht 1,053), (Table 7).

Table 7 : Average cost per birth averted by method of contraception and region.

Method of Contraception	North	North-east	Central	South	All Regions	Bangkok	Total
Pills	564	612	1,195	994	679	501	656
Injectables	955	1,149	1,333	1,290	1,116	833	1,075
IUD	943	649	1,015	1,133	761	1,152	786
Norplant	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Condom	1,199	1,119	1,631	1,112	1,209	1,521	1,249
Male Ster.	617	497	566	651	573	258	531
Female Ster.	669	407	480	861	504	223	474
All methods	740	587	894	1,053	703	540	685

n.a. = not applicable.

In terms of type of service units, for all regions, the average cost per birth averted at the subdistrict public health centre is the lowest (baht 676), followed by provincial hospital (baht 685), district hospital (baht 704) and provincial public health centre (baht 1,047). The patterns are similar to those of average cost per couple-year of protection, (Table 8).

Table 8 : Average cost per birth averted by type of service units and region.

Type of Service Units	North	Northeast	Central	South	All Regions
Provincial PH Center	1,055	780	1,908	2,140	1,047
Provincial Hospital 309	1,129	508	599	976	685
District Hospital	649	630	939	1,377	704
Subdistrict PH Center	611	646	912	778	676

Note: * excluding Bangkok.

The patterns of the average cost per birth averted of each method by type of service units are similar to those of the average cost per couple-year of protection. As seen from data presented in Table 9 below, the average cost per birth averted for temporary methods, pills, and injectables is the lowest at subdistrict public health center. For permanent methods of contraception, the average cost per birth averted provided by district hospital is slightly lower than the average cost per birth averted provided by provincial hospitals.

Table 9 : Average cost per birth averted of each method by type of service units of All Regions and Bangkok.

Type of Service Unit	Pill	Inject.	IUD	Norp.	Condom Ster.	Male Ster.	Female
Provincial PH Center	675	1,924	1,597	s.n.a	1,091	s.n.a.	s.n.a.
Provincial Hospital	850	1,163	784	n.a.	1,310	587	508
District Hospital	789	1,104	722	n.a.	1,217	564	501
Subdistrict PH Center	499	991	903	n.a.	1,197	s.n.a.	s.n.a.
Bangkok Hospital	757	1,490	1,078	s.n.a.	864	258	223
Bangkok PH Center	412	643	1,230	s.n.a.	1,682	s.n.a.	s.n.a.
Total	656	1,075	786	n.a.	1,249	531	474

s.n.a. = service not available
n.a. = not applicable

7.1.4 Comparison of Cost Effectiveness Indicators

At the national level, i.e. all regions including Bangkok Metropolis, although the average cost per acceptor of female sterilization is the highest with baht 1,253 , its average cost per couple-year of protection and per birth averted are lowest, baht 135 and baht 474, respectively. When effectiveness is measured in terms of per couple-year of protection and per birth averted, male sterilization is also another cost effective contraceptive method at baht 151 and baht 531. Pill is the third the cost-effectiveness method in terms of cost per couple-year of protection and cost per birth averted and, in terms of cost per acceptor is also the lowest, baht 168. Condom and injectables with a relatively low average cost per acceptor of baht 228 and 263 become the two least effective contraceptive methods in terms of average cost per couple-year of protection and cost per bith averted. The relative degree of effectiveness of each contraceptive method measured by three cost effectiveness indicators are in Table 10 below.

Table 10 : Average cost per acceptor, per couple-year of contraception of All Regions and Bangkok (National Level).

Method of Contraception	Average cost (in baht) per		
	Acceptor	Couple-year of protection	Birth Averted
Pill	198	168	656
Injectables	263	275	1,075
IUD	474	212	786
Norplant	1,528	n.a.	n.a.
Condom	228	248	1,249
Male Sterilization	1,177	151	531
Female Sterilization	1,253	135	474
All methods	343	183	703

n.a. = not applicable

Excluding Bangkok Metropolis, the subdistrict public health centre is the most cost effective type of service unit when measured by all three cost effectiveness indicators. Although the average cost per acceptor at the district hospital (baht 400) and at the provincial hospital (baht 475) are much higher than the average cost per acceptor at provincial

health center, the average cost per couple-year of protection and per birth averted are lower, (Table 11).

Table 11 : Average cost per acceptor, couple year of protection and birth averted by type of service unit : All Region*.

Type of Service Units	Acceptor	Average cost (in baht) per	
		Couple-year of protection	Birth Averted
Provincial PH Center	289	258	1,047
Provincial Hospital	479	187	685
District Hospital	400	190	704
Subdistrict PH Center	192	172	676

Note: * excluding Bangkok

7.1.5 Public Average Cost of Contraceptive Service

The three cost effectiveness indicators which were measured in terms of type of service unit and type method of contraception are useful for policy decision making and planning of public family planning service. If the objective is to explore or to determine which method of contraception could efficiently be or should be substituted by private family planning service providers, the public average cost per one service (such as per one injection per one IUD insertion) and per one item of contraceptive supplies (such as per one cycle of pills, per one condom) would be more appropriate.

As may be seen from data in Table 12 below, the overall public average cost for providing one cycle of pills was baht 28, for one injection of DMPA was baht 85 and for one condom was baht 5. For other termporary- or permanant-methods of contraception e.g. IUD, norplant, male and female sterilization, since the public average cost per one item of service is the same as the public average cost per acceptor which has already discussed in 7.1.1, it will not be elaborated here. For the public average cost of each of the three temporary methods, namely, pills, injectables and condom, it may be noted there is a high degree of variation among type of service unit and among region.

Table 12 : Public average cost per one item of service or supplies of each contraceptive method by type of service unit and region.

Type of Service Unit and Region	Average cost (in baht)						
	Pill	Inject.	IUD	Norp.	Condom	Male Ster.	Female Ster.
Provincial PH Center	29	167	952	s.n.a.	4	s.n.a.	s.n.a.
Provincial Hospital	34	87	495	1,581	5	1,301	1,343
District Hospital	33	84	456	1,500	5	1,250	1,323
Subdistrict PH Center	22	85	570	s.n.a.	5	s.n.a.	s.n.a.
Bangkok Hospital	17	110	279	s.n.a.	3	572	589
Bangkok PH Center	31	55	777	s.n.a.	10	s.n.a.	s.n.a.
All	28	85	474	1,528	5	1,177	1,253
North	24	75	595	1,602	5	1,366	1,769
Northeast	26	91	410	1,341	5	1,102	1,076
Central	51	92	641	s.n.a.	7	1,255	1,269
South	43	102	716	1,292	5	1,443	2,276
All Regions	29	88	480	1,528	5	1,270	572
Bangkok	21	68	418	s.n.a.	6	572	589
Total	28	85	474	1,528	5	1,117	1,253

s.n.a. = service not available

7.1.6 Percentage Share of Cost Components

As seen from data presented in Table 13, labor cost was the major cost item in the provision of contraceptive services at different types of service unit. The material costs which include the cost of contraceptive supplies accounted for about one- fifth to one-third of the total cost,depending on the type of service unit.

Table 13 : Percentage share of cost component of all methods of contraception by type of service unit and for Bangkok Metropolis.

Type of Service Unit	Labour Costs	Capital Costs	Material Costs	Equipment Costs	Total
Provincial PH Center	38.2	19.6	28.8	13.4	100.0
Provincial Hospital	47.7	21.5	19.8	11.0	100.0
District Hospital	33.7	28.6	23.8	13.9	100.0
Subdistrict PH Center	36.4	25.5	32.2	5.8	100.0
Bangkok Metropolis	42.7	23.8	20.5	13.0	100.0

7.1.7 Conclusion

The cost-effectiveness of public sector is measured in terms of cost per acceptor, cost per couple-year of protection and cost per birth averted. The average of these three cost effectiveness indicators of all methods at the national level (all regions plus Bangkok) are baht 343, baht 183 and baht 685, respectively. It is noted that the average cost per acceptor of norplant is the highest, followed by female and male sterilization. In terms of the average cost per couple-year of protection and cost per birth averted, however, female and male sterilization are the two cost effective method.[1] For pill, the average cost per couple-year of protection and per birth averted are slightly higher than those of male and female sterilization. We can also conclude that pill is still the one of the most cost-effective methods provided by public sector. In terms of type of service units, the subdistrict public health center is the most cost-effective service delivery unit when measured by all three indicators.

For the average cost of each service delivery unit by method, subdistrict public health center provided pills and injectables at the lowest cost in terms of the three cost effectiveness indicators. District hospital provided IUD, male and female sterilization at the lowest cost in terms of the three cost effectiveness indicators. For all methods of contraceptions, subdistrict public health center also provided services at the lowest cost in terms of three cost effectiveness indicator.

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1 Since norplant has been introduced recently, it is not possible to calculate cost per couple-year of protection and per birth averted for this method at present

7.2 Role of Private Sector

This section is the overview of the role of private sector in Thailand. The data are mainly from the four national surveys which were conducted between 1978 to 1987. These surveys are the first Contraceptive Prevalence Survey (CPS1), conducted in 1978 by the Research Center of the National Institute of Development Administration (NIDA); the second survey (CPS2), conducted in 1981 by NIDA; the CPS3, conducted in 1984 by NIDA and the Institute for Population and Social Research (IPSR) of Mahidol University; and the most recent, the Determinants and Consequences of Contraceptive Use Patterns in Thailand (CUPS), conducted in 1987 by IPSR.

7.2.1 Trend

Although the successful story of family planning in Thailand in the last decades is due to the widespread availability of government contraceptive outlets throughout the country, the private sector has also contributed to the increase of contraceptive acceptance. Through this period, two out of ten current users reported that they received services from the private outlets. However, as the trend of contraceptive prevalence rate (CPR) has risen since 1978, from 53.4 to 70.5 in 1987, the share of private sector in the service delivery has declined, from 23.1 percent in 1978 to 17.8 in 1987, (Table 14).

Table 14 : Percent distribution of current users by source and contraceptive prevalence rate, 1978-1987.

Source	1978 CPS1	1981 CPS2	1984 CPS3	1987 CUPS
Government	76.9	78.2	79.6	82.2
Private	23.1	21.8	20.4	17.8
Total	100%	100%	100%	100%
Contraceptive prevalence rate	53.4	59.0	64.6	70.5

Sources: CPS1-CPS3 from Kamnuansilpa and Chamratrithirong (1985), Tables 6.1 and 5.6. CUPS from Leoprapai and Thongthai (1989b), Tables 7 and 4.

Considering the market share of private sector by contraceptive methods, condom was first in the list. In 1987, more than half of the condom was supplied through private drugstore. Nearly one-third of pill users also obtained contraceptive pill from private sector, mostly from drugstore. Injectables and male sterilization were also provided by

private sector, through private clinic and private hospital. The least provided service from private sector were female sterilization and IUD insertion, (Table 15).

Table 15 : Percent of private share by method, 1978-1987.

Source	1978 CPS1	1981 CPS2	1984 CPS3	1987 CUPS
Female sterilization	4.5	4.4	10.9	8.6
Male sterilization	43.3	27.2	26.5	21.1
Pills	26.2	34.8	28.1	30.4
IUD	19.3	3.9	7.2	3.2
Injectables	23.5	26.6	27.1	17.8
Condom	70.1	76.9	63.4	56.1
All methods	23.1	21.8	20.4	17.8

Sources: CPS1-CPS3 from Kamnuansilpa and Chamratrithirong (1985), Table 6.1.
CUPS from Leoprapai and Thongthai (1989b), Table 8.

As mentioned above, the role of private sector had been declining, the declining trend occurred to every contraceptive method except female sterilization and pills. The largest dip of private role in providing contraception was IUD which shared nearly 20 percent of the market in 1978. In 1987, the role of private sector in providing IUD was negligible (3 percent). The share of male sterilization in 1987 also shrinked to only half the size of 1978 (from 43 percent to 21 percent). Although the private sector's role in providing condom was decreasing, the private sector was still the major source of condom acceptors (see Table 15).

7.2.2 Accessibility

The accessibility of private outlets was more than double in the urban areas as compared to the rural areas. The largest share of private sector was in Bangkok where every two out of five contraceptive users relied on private sources. In 1987, the Central had the highest proportion of private acceptors, followed by the North, the South, and the Northeast (see Table 16). This accessibility pattern was similar to the 1984 pattern, however, the role of private sector was declining in every region. The decline was mainly in the rural areas. It is noticeable that market share of private sector was less in the South and the Northeast where the contraceptive prevalence rates were low, (Table 16).

Table 16 : Percent of private share and contraceptive prevalence rate by residence and region,1984-1987.

	Residence		Region					Total
	Urban	Rural	Bangkok	Central	North	Northeast	South	
Percent of private share								
1984*	30.4	17.0	41.2	24.3	18.7	13.6	17.3	20.4
1987**	31.6	13.8	40.7	19.8	16.0	11.6	11.7	17.8
Contraceptive prevalence rate***								
1984	64.7	63.7	71.8	68.8	71.4	60.8	50.4	64.6
1987	69.5	70.4	71.9	77.0	76.2	68.2	55.4	70.5

Sources: * Kamnuansilpa and Chamratrithirong (1985), Table 6.2.
** Leoprapai and Thongthai (1989b), Table 7.
*** Leoprapai and Thongthai (1989a), Table 5.3.

7.2.3 Source

Drugstore was the most accessible private source. Nearly half of private users received service from drugstore, one- third mentioned private clinic as their source of contraception and one-tenth stated private hospital. Drugstore was the major supplier of condom and pills. On the other hand, private clinic and hospital provided injectables, IUD, and sterilizations besides condom and pills (Table 17).

Table 17 : Percent distribution of private outlets by source and method, 1987.

Source	Method						Total
	Female ster.	Male ster.	Pills	IUD	Inject.	Condom	
Drugstore	-	-	75.0	-	-	94.5	44.9
Private clinic	47.1	47.4	12.2	84.4	88.2	2.9	33.1
Private hospital	50.6	15.6	1.6	15.6	4.5	2.7	12.4
Others	2.4	37.0	11.2	-	7.2	-	9.5
Total	100%	100%	100%	100%	100%	100%	100%

Source: Calculated from Leoprapai and Thongthai (1989b), Table 8.

In terms of area coverage, drugstore was accessible in both urban and rural rural areas. Regionwise, drugstore was highly accessible in Bangkok, the Central, and the Northeast (see Table 18). Private clinic, on the other hand, was more popular in urban areas and the South, whereas, private hospital had major contribution in Bangkok and the North.

Table 18 : Percentage distribution of private outlets by source, residence and region, 1987.

	Residence		Region					Total
	Urban	Rural	Bangkok	Central	North	Northeast	South	
Drugstore	43.4	42.6	52.3	44.9	38.5	44.8	34.5	44.9
Private clinic	47.5	39.7	11.7	42.4	36.5	37.1	58.0	33.1
Private hospital	5.7	8.8	23.8	6.1	20.5	2.6	5.9	12.4
Other	3.4	8.9	12.2	6.5	4.5	15.6	1.7	9.5
Total	100%	100%	100%	100%	100%	100%	100%	100%

Source: Calculated from Leoprapai and Thongthai (1989b), Table 7.

7.2.4 Conclusion

The role of private sector in family planning in Thailand was not large and was declining during the last decade. The decline was more pronounced in the rural areas. In 1978, private sector was the major distributor of condom and provider of male sterilization, but its roles were declining. In 1987, private outlets provided only 56 percent of condom and 21 percent of male sterilization. However, the share of private sector in providing pills was increasing from 26 percent in 1978 to 30 percent in 1987.

Drugstore was the most popular private outlets, especially in Bangkok, the Central, and the Northeast. It was the major provider of condom and pills. Private clinic which concentrated more on providing injectables, IUD, and sterilizations, was more accessible in urban areas as well as in the South. Private hospital was popular in Bangkok and the North, although it mainly provided female sterilization.

7.3 Contraceptive Pricing in Private Sector

7.3.1 General Characteristics

There were about 4,605 private outlets in the study area which consisted of 20 provinces and six areas in Bangkok (for details see Appendix II). Of these outlets, more than half were drugstores, and one-third were clinics. Both drugstore and clinic consisted of 94 percent of all private outlets. Private hospitals consisted only 2 percent and the rest were private associations, general stores, and health volunteers (see Table 19.)

Table 19 : Number, and percentage distribution of private outlets in the study area, 1990.

	Drugstore	Clinic	Hospital	Association	Others	Total
Number	2,783	1,547	120	26	129	4,605
Percent	60.4	33.6	2.6	0.6	2.8	100.0

The popularity is the measurement of potential of private sector in providing contraceptive services. It shows that only 18 percent of private outlets were mentioned as a popular place of contraceptive services. The popularity of drugstore was a little higher than average, while the popularity of clinic was a little lower (see Table 20). The most popular place was hospital as one out of every five hospital was mentioned as the most preferred place in providing contraceptive services. However, the number of hospitals was rather small compared to clinic and drugstore.

Table 20 : Percentage of popularity by type of private outlet, 1990.

	Drugstore	Clinic	Hospital	Association	Others	Total
Percent	19.6	14.6	38.6	-	5.5	17.5

Besides the number of drugstores which was twice the number of clinics, the volume of services provided by drugstore was also larger than clinic. The average number of acceptors per month in drugstore was three folds of the number in the clinic. All contraceptive methods available in public sector were also available in private sector with the exception of

norplant. Female sterilization, male sterilization, pills, IUD, injectables and condom were available in private clinic. Drugstore however provided pills and condom only. They were the major supplier of pills and condom, especially condom. The number of condom sold in drugstore per month was twice the number of pills sold. Moreover, the average number of condom acceptors per month who received service from the drugstore was five and a half times of those who received from clinic. The number of pills sold in drugstore was also more than three times the number sold in clinic. In clinic, besides condom and pills, injectable was also popular as the average number of acceptors per month was just a little lower than pills acceptors, (Table 21).

Table 21 : Average number of acceptors and/or items sold per month by outlet and type of contraception, 1990.

Outlet	Female ster.	Male ster.	Pills	IUD	Inject.	Condom
Drugstore	-	-	118	-	-	263
Clinic	3	2	31	3	25	47

Overall, although drugstore provided only pills and condom it played an important part in providing contraception in private sector. Not only there was twice the number of drugstores than the number of clinics, but also the average number of acceptors per month of the drugstore was also three times of the clinic. In private sector, condom was the most popular method, followed by pills, and injectables.

These findings were similar to the findings in the 1987 national survey. As discussed earlier, nearly half of private acceptors received their services from drugstore, one-third from clinic and one-tenth from hospital. Condom was the most popular method provided in private sector, followed by pills, male sterilization, and injectables.

7.3.2 Contraceptive Price

Table 22 shows the average price per unit or acceptor of each contraceptive method by region and source. For pills, the price charged in clinic was higher than the price in the drugstore in every region. For condom, the reverse was the case except in the North. The price for permanent contraceptive methods was higher than the price for temporary methods. For permanant mothods, prices charged by clinics in the South and in Bangkok were

higher than those charged by clinics in the remaining three regions. The average price ranged from 942.30 bahts for female sterilization to only 6.70 bahts for condom.

Table 22 : Private contraceptive average price by method and outlet, 1990.

Outlet	Female ster.	Male ster.	Pills	IUD	Inject.	Condom
North						
Drugstore	-	-	19.45	-	-	7.30
Clinic	786.0	466.70	31.10	297.50	52.50	8.30
Northeast						
Drugstore	-	-	25.03	-	-	8.57
Clinic	-	-	26.00	89.10	57.70	3.50
Central						
Drugstore	-	-	19.25	-	-	9.53
Clinic	991.10	314.30	31.20	296.90	53.60	9.00
South						
Drugstore	-	-	23.97	-	-	10.22
Clinic	1000.00	600.00	35.80	300.00	59.70	7.90
Bangkok						
Drugstore	-	-	20.96	-	-	9.41
Clinic	1500.00	473.00	31.50	250.00	80.90	3.30
Total						
Drugstore	-	-	21.65	-	-	9.07
Clinic	942.30	391.00	30.70	222.10	63.70	6.60

Note : Price per one service or one item.

There was some price difference in 1987 and 1990. As shown in Table 23, the average price paid by acceptor ranged from 1,385 bahts for female sterilization to seven bahts for condom in 1987. In 1990, the price of permanent contraceptive methods was lower while the price of temporary methods was higher with the exception of condom. Such difference is largely due to the fact that the price data were collected by two different studies, using different methodology and covering different sample areas and enumeration units. Although there were observed price differences between 1987 and 1990, there should be no doubt on the estimation of 1990 price since it was well within the expected range.

Table 23 : Average price paid by acceptor by method between private and public sector, 1987.

Sector	Female ster.	Male ster.	Pills	IUD	Inject.	Condom
Private	1385	436	17	168	57	7
Public	318	201	6	28	21	10

Source: Leunanonchai (1989) Table 11.

7.3.3 Comparison with Public Sector

In the public's and particularly acceptors' perspective, it costs more to receive service from private outlets than public outlets. Table 23 presents the price paid by acceptors for services in public sector. It can be seen that public services were heavily subsidized as the price of each method as reported by interviewees was much lower in public outlets, with the exception of condom. The least subsidized methods costed only half the price in private outlets, i.e. male sterilization and injectables. For pill users, acceptors had to pay three times as much for private service as compared to public service. It would cost them four times for female sterilization and five times for IUD.

The subsidy in public sector was to some extent confirmed when we looked at its cost. Table 24 shows the average cost of contraception in public sector. The cost of contraception in public sector ranged from five bahts for condom to 1,253 bahts for female sterilization. By comparing with the service charged in 1987 (Table 24), it can be seen that all contraceptive methods, with the exception of condom, were reported by interviewees that they were charged below cost. Pills, injectables and female sterilization were charged about one-fourth of the estimated cost per one service or one cycle of pills. While male sterilization was one-sixth, and IUD was one-seventeenth. (If it was assumed that there was no change in the price charged by public sector during 1987 and 1990). It could be observed that methods which were performed by doctor had higher cost, on the contrary, the methods which could be distributed by other health personals had lower cost.

Table 24 : Public average cost, average price charged by private sector, and average price charged by private sector as percentage of public average cost by method of contraception 1990.

	Female ster.	Male ster.	Pills	IUD	Inject.	Condom
Public average cost	1,253	1,177	28	474	85	5
Average price charged by private sector						
Drugstore	-	-	21	-	-	9
Clinic	942	391	31	222	64	7
Average price charged by private sector as percentage of public average cost						
Drugstore	-	-	75.0	-	-	180.0
Clinic	75.2	33.2	110.7	46.8	75.3	140.7

Note: Cost or price is per one service or one item.

In order to compare the efficiency of services between private and public sectors, the cost of each method of private sector should be compared with its counterpart in public sector. Since the cost of contraception in private sector was not available, the price charged was used instead. Although, the price and the cost were two different things, they could be derived from each other. As it is known that price is equivalent to cost plus profit, therefore, price should be higher than cost in the normal situation. In this case, private price should be higher than private cost, as it was not possible that private provider would operate with loss.

If the private cost is compared with public cost, the value of 100 would mean that there is no different in efficiency between private and public sectors. If the value is less than 100, it means that private sector is more efficient than public sector as its cost is lower than public cost. On the other hand, if the value is more than 100, it shows the efficiency of public sector as its cost is lower than private cost. However in this study, the private price was compared with public cost, therefore, even when the value is slightly more than 100, it could still be interpreted that the private sector is more efficient, because prices charged as reported by drug store and clinic operators should, in principle, comprise cost plus profit. Table 24 shows the average price charged by private sector as percentage of public average cost. With the exception of condom provided by drugstore and clinic and pills provided by clinic, all values are less than 100 which means that private sector was more efficient than public sector in providing

contraception. The prices charged by private sector (clinic) in providing female sterilization and injectables were about three-fourths of the cost in public sector while, prices charged by clinics in providing IUD and male sterilization were 47 and 33 percent of the corresponding cost respectively. Drugstore was more efficient in providing pills than clinic.

7.3.4 Conclusion

Drugstore was the major supply of contraceptive methods in private sector. There was twice the number of drugstores than clinics. Both the drugstore and clinic accounted for more than 90% of private outlets. Although the drugstore provided only pills and condom, the average number of acceptors was three folds of the acceptors in the clinic. Condom was the most popular method, followed by pills and injectables.

By comparing private price with public cost, it could be said that private sector was very efficient in providing all methods of contraceptive, especially male sterilization, IUD, injectables, female sterilization and pills (provided at drugstore).

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APPENDIX I
FORMULA FOR COST ESTIMATION

1. LABOR COSTS

Admin. Division :

$$LC_a = \sum_i \left[(\text{Salary})_{ai} \times \left(\frac{\text{Admin. Hours}}{\text{Total Working Hours}} \right) \times \left(\frac{\text{FP Personnel Expenditures}}{\text{Total Personnel Expenditures}} \right) \right]$$

Family Planning Division :

$$LC_f = \sum_i \left[(\text{Salary})_{fi} \times \left(\frac{\text{FP Hours}}{\text{Total Working Hours}} \right)_{fi} \right]$$

Pharmaceutical Division :

$$LC_p = \sum_i \left[(\text{Salary})_{pi} \times \left(\frac{\text{Pharmacy Hours}}{\text{Total Working Hours}} \right)_{pi} \times \left(\frac{\text{FP Items}}{\text{Total Drug Items}} \right) \right]$$

Transportation Division :

$$LC_t = \sum_i \left\{ (\text{Salary})_{ti} \times \left[\left(\frac{\text{FP Driving Hours Including Hours Transporting FP Items Separately}}{\text{Total Working Hours}} \right)_{ti} + \left\langle \left(\frac{\text{Hours Transporting All Drugs Including FP Items}}{\text{Total Working Hours}} \right)_{ti} \times \left(\frac{\text{FP Items}}{\text{Total Drug Items}} \right) \right\rangle \right] \right\}$$

Male Sterilization Division :

$$LC_m = \sum_i \left[(\text{Salary})_{mi} \times \left(\frac{\text{Hours Doing Male Sterilization}}{\text{Total Working Hours}} \right)_{mi} \right]$$

Female Sterilization Division :

$$LC_w = \sum_i \left[(Salary)_{wi} \times \left(\frac{\text{Hours Doing Female Sterilization}}{\text{Total Working Hours}} \right) \right]_{wi}$$

Total Labor Costs :

$$LC = (LC_a + LC_f + LC_p + LC_t + LC_m + LC_w) \times 12$$

Notes:

a	=	Admin. Division	f	=	Family Planning Division
p	=	Pharmaceutical Division	t	=	Transportation Division
i	=	Individual	k	=	Method of FP
w	=	Female Sterilization	m	=	Male Sterilization
j	=	Vehicle			

2. CAPITAL COSTS

Admin. Division :

$$CC_a = (\text{Depreciation Values and Maintenance Costs of the Building in which Admin. Division is Located})$$

$$\times \left(\frac{\text{Areas Allocated to Admin. Division}}{\text{Total Building Areas}} \right)$$

$$\times \left(\frac{\text{Hours the Areas Are Used for Admin. Activities}}{\text{Hours the Areas Are Used for All Activities}} \right)$$

$$\times \left(\frac{\text{FP Personnel Expenditures}}{\text{Total Personnel Expenditures}} \right)$$

Family Planning Division :

$$CC_f = (\text{Depreciation Values and Maintanance Costs of the Building in which Admin. Division is Located})$$

$$\times \left(\frac{\text{Areas Allocated to FP Division}}{\text{Total Building Areas}} \right)$$

$$\times \left(\frac{\text{Hours the Areas Are Used for FP Activities}}{\text{Hours the Areas Are Used for All Activities}} \right)$$

Pharmaceutical Division :

$$CC_p = \left(\text{Depreciation Values and Maintanance Costs of the Building in Which Pharmaceutical Division is Located}\right) \times \left(\frac{\text{Areas Allocated to Pharmaceutical Division}}{\text{Total Building Areas}}\right) \times \left(\frac{\text{Hours the Areas Are Used for Pharmacy Activities}}{\text{Hours the Areas Are Used for All Activities}}\right) \times \left(\frac{\text{FP Items}}{\text{Total Drug Items}}\right)$$

Transportation Division :

$$CC_t = \sum_j \left\{ \left(\text{Depreciation Values and Maintenance Costs of the Vehicle}\right) \times \left[\left(\frac{\text{Hours Spent on FP Including Hours Transporting FP Items Separately}}{\text{Total Hours Spent}} \right)_{ti} + \left\langle \left(\frac{\text{Hours Transporting All Drugs Including FP Items}}{\text{Total Hours Spent}} \right)_{ti} \times \left(\frac{\text{FP Items}}{\text{Total Drug Items}} \right) \right\rangle \right] \right\}$$

Male Sterilization Division :

$$CC_m = \left(\text{Depreciation Values and Maintenance Costs of the Building in which Male Sterilization Division is Located}\right) \times \left(\frac{\text{Areas Allocated in Providing Male Sterilization}}{\text{Total Building Areas}}\right) \times \left(\frac{\text{Hours the Areas are Used for Male Sterilization}}{\text{Hours the Areas are Used for All Activities}}\right)$$

Female Sterilization Division :

$$CC_w = \left(\text{Depreciation Values and Maintenance Costs of the Building in which Female Sterilization Division is Located}\right) \times \left(\frac{\text{Areas Allocated in Providing Female Sterilization}}{\text{Total Building Areas}}\right) \times \left(\frac{\text{Hours the Areas Are Used for Female Sterilization}}{\text{Hours the Areas Are Used for All Activities}}\right)$$

Total Capital Costs :

$$CC = (CC_a + CC_f + CC_p + CC_t + CC_m + CC_w) \times 12$$

3. MATERIAL COSTS

Family Planning Division :

MC_f = Values of All Materials Used in FP Activities + Value of all FP supplies.

Transportation Division :

$$MC_t = \sum_j \left\{ \left(\text{Values of Gas Used}\right)_{tj} \times \left[\left(\frac{\text{HoursSpent on FP Including Hours Transporting FP Items Separately}}{\text{Total Hours Spent}} \right)_{tj} + < \left(\frac{\text{Hours Transporting All Drugs Including FP Items}}{\text{Total Hours Spent}} \right)_{tj} \times \left(\frac{\text{FP Items}}{\text{Total Drug Items}} \right) \right] \right\}$$

Male Sterilization Division :

MC_m = Values of All Materials Used

Female Sterilization Division :

MC_w = Values of All Materials Used

Total Material Cost :

$$MC = (MC_f + MC_t + MC_m + MC_w) \times 12$$

4. EQUIPMENT COSTS

Admin. Division :

$$EC_a = (\text{Current Values of All Equipments Used}) \times \left(\frac{\text{FP Personnel Expenditures}}{\text{Total Personnel Expenditures}} \right)$$

Family Planning Division :

$$EC_f = (\text{Current Values of All Equipments Used}) \times \left(\frac{\text{FP Office Hours}}{\text{Total Office Hours}} \right)$$

Pharmaceutical Division :

$$EC_p = (\text{Current Values of All Equipments Used}) \times \left(\frac{\text{FP Items}}{\text{Total Drug Items}} \right)$$

Male Sterilization Division :

$$EC_m = (\text{Current Values of All Equipments Used}) \times \left(\frac{\text{\# of Patients Admitted for Male Sterilization}}{\text{Total \# of Patients Admitted for All Operations}} \right)$$

Female Sterilization Division :

$$EC_w = (\text{Current Values of All Equipment Used}) \times \left(\frac{\text{\# of Patients Admitted for Female Sterilization}}{\text{Total \# of Patients}} \right)$$

Total Equipment Costs :

$$EC = (EC_a + EC_f + EC_p + EC_w) \times 12$$

Notes:

k	=	Method of FP	p	=	Pills
j	=	Injectables	i	=	IUD
c	=	Condom	m	=	Male Sterilization
s	=	Supplies of FP	f	=	Female Sterilization
a	=	Acceptors of FP			

5. TOTAL COSTS OF PROVIDING FP

$$TC = (LC + CC + MC + EC)$$

6. LABOUR COSTS BY METHOD

$$LCM_K = LC \times \left(\frac{\text{Average Hours FP Personnels Spent Providing Method K}}{\text{Total Average HoursFP Personnels Spent Providing All Methods}} \right)$$

7. CAPITAL COSTS BY METHOD

$$CCM_K = CC \times \left(\frac{\text{\# of Acceptors for Method k}}{\text{Total \# of Acceptors for All Methods}} \right)$$

8. MATERIALS COSTS BY METHOD

$$MCM_K = MC \times \left(\frac{\text{Values of Materials Used for Method k}}{\text{Total Values of Materials Used for All Methods}} \right)$$

9. EQUIPMENT COSTS BY METHOD

$$ECM_K = EC \times \left(\frac{\text{\# of Times Equipments are Used for Method k}}{\text{Total \# of Times Equipments are Used for All Methods}} \right)$$

10. TOTAL COSTS BY METHOD

$$TCM_K = (LCM_K + CCM_K + MCM_K + ECM_K)$$

11. TOTAL COSTS BY METHOD PER UNIT OF FAMILY PLANNING SUPPLIES OF THAT METHOD

$$TCMU_K = TCM_K / \text{FP Supplies of Method k}$$

12. TOTAL COSTS BY METHOD PER # OF ACCEPTORS OF THAT METHOD

$TCMA_a$ = TCM_k / # of Acceptors of Method k

13. COUPLE - YEARS OF PROTECTION BY METHOD (Based on Family Planning Supplies)

Pills	:	CYP_{pa}	=	Supplies of Pills Distributed x (1/13)
Injec.	:	CYP_{js}	=	Supplies of Injectables Used x (1/4)
Condoms	:	CYP_{cs}	=	Supplies of Condoms Used x (1/100)

14. COUPLE - YEAR OF PROTECTION BY METHOD (Based on Acceptors)

Pills	:	CYP_{pa}	=	# of Acceptors of Pills x 1.18
Injec.	:	CYP_{ja}	=	# of Acceptors of Injectables x 0.96
IUD	:	CYP_{ia}	=	# of Acceptors of IUD x 2.34
Condoms	:	CYP_{ca}	=	Supplies of Condoms Used x 0.92
Male Ster.	:	CYP_{ma}	=	# of Patients for Male Sterilization x 7.8
Female Ster.	:	CYP_{wa}	=	# of Patients for Female Sterilization x 9.3

15. TOTAL COUPLE - YEARS OF PROTECTION

CYP = $(CYP_{pa} + CYP_{ja} + CYP_{ia} + CYP_{ca} + CYP_{ma} + CYP_{wa})$

16. TOTAL COSTS BY METHOD PERCOUPLE - YEAR OF PROTECTION OF THAT METHOD (Based on Family - Planning Supplies)

Pills	:	$TCMC_{ps}$	=	TCM_p / CYP_{ps}
Injec.	:	$TCMC_{js}$	=	TCM_j / CYP_{js}
Condoms	:	$TCMC_{cs}$	=	TCM_c / CYP_{cs}

17. TOTAL COSTS BY METHOD PER COUPLE - YEAR OF PROTECTION OF THAT, METHOD (Based on # of Acceptors)

Pills	:	$TCMC_{pa}$	=	TCM_p / CYP_{pa}
Injec.	:	$TCMC_{ja}$	=	TCM_j / CYP_{ja}
IUD	:	$TCMC_{ia}$	=	TCM_i / CYP_{ia}
Condoms	:	$TCMC_{ca}$	=	TCM_c / CYP_{ca}
Male Ster.	:	$TCMC_{ma}$	=	TCM_m / CYP_{ma}
Female Ster.	:	$TCMC_{wa}$	=	TCM_w / CYP_{wa}

18. TOTAL COSTS BY METHOD PER COUPLE - MONTH OF PROTECTION OF THAT METHOD (Based on Family - Planning Supplies)

Pill	:	$TCMM_{ps}$	=	$TCMC_{ps} / 12$
Injec.	:	$TCMM_{js}$	=	$TCMC_{js} / 12$
Condoms	:	$TCMM_{cs}$	=	$TCMC_{cs} / 12$

19. TOTAL COSTS BY METHOD PER COUPLE - MONTH OF PROTECTION OF THAT METHOD (Based on # of Acceptors)

Pills	:	$TCMM_{pa}$	=	$TCMC_{pa} / 12$
Injec.	:	$TCMM_{ja}$	=	$TCMC_{ja} / 12$
IUD	:	$TCMM_{ia}$	=	$TCMC_{ia} / 12$
Condoms	:	$TCMM_{ca}$	=	$TCMC_{ca} / 12$
Male Ster.	:	$TCMM_{ma}$	=	$TCMC_{ma} / 12$
Female Ster.	:	$TCMM_{wa}$	=	$TCMC_{wa}/12$

20. NUMBER OF BIRTHS AVERTED

BA = CYP x (1/3.52*) x Use effectiveness**

	Use effectiveness
Sterilization	1.0
Pill	.9
IUD	.95
Injectables	.9
Condom	.7

Notes:

* Fertility prevention rate = 1/3.52 or 284 births per 1,000 women years of protection calculated from "Determinants and Consequences of Contraceptive Use Patterns in Thailand" 1987.

** Use-Effectiveness quoted from "Fertility in Thailand", 1982, p.127

21. COST PER ACCEPTOR

CA = TC/Total # of Acceptors for all Methods

22. COST PER COUPLE - YEAR OF PROTECTION

CC = TC/TCYP

23. COST PER BIRTH AVERTED

= TC/BA

APPENDIX II
NUMBER OF FAMILY PLANNING ACCEPTORS IN SAMPLE PROVINCES AND REGION

Type of Service Unit and Region	Pill	Inject.	IUD	Norp.	Condom	Male Ster.	Female Ster.	All Method
Provincial PH Center	7,054	3,021	538	s.n.a.	2,959	s.n.a.	s.n.a.	13,572
Provincial Hospital	19,165	18,607	9,678	192	5,306	564	9,664	63,176
District Hospital	39,870	41,317	21,516	367	7,566	830	11,731	123,197
Subdistrict								
PH Center	43,392	22,315	1,466	s.n.a.	3,094	s.n.a.	s.n.a.	69,267
Bangkok								
PH Center	12,294	11,409	2,923	s.n.a.	1,005	s.n.a.	s.n.a.	27,631
Hospital	4,285	3,429	1,129	–	1,780	216	2,543	13,382
TOTAL	125,060	100,098	37,250	559	21,710	1,610	23,938	310,225
North	48,528	33,559	5,860	416	6,549	576	5,494	100,982
Northeast	40,293	29,185	22,556	37	7,245	474	12,357	112,147
Central	10,628	13,313	2,845	--	2,337	183	2,558	31,864
South	9,132	9,203	1,937	106	2,794	161	986	24,219
All Regions	108,481	85,260	33,198	559	2,785	1,394	21,395	269,212
Bangkok	16,579	14,838	4,052	--	2,785	216	2,543	41,013
Total	125,060	100,098	37,250	559	21,710	1,610	41,013	310,225

s.n.a. = service not available

-- = number of reported acceptors is too small

APPENDIX III
INVENTORY OF PRIVATE PROVIDERS

A. Number of private clinics by province, 1987

Province	Number of clinics
Bangkok	3,775
Krabi	19
Kanchanaburi	81
Kalasin	39
Kamphangphet	114
Khon Kaen	280
Chanthaburi	84
Chachoengsau	70
Chanburi	277
Chainat	34
Chaiyaphum	67
Chumphon	32
Chiangmai	327
Chiangrai	119
Trang	74
Trat	32
Tak	28
Nakhon Nayok	27
Nakhon Pathom	122
Nakhon Phanom	38
Nakhon Ratchasima	203
Nakhon Srithammarat	111
Nakhon Sawan	150
Nonthaburi	165
Narathiwat	31
Nongkhai	34
Nan	19
Burirum	33
Pathumthani	67
Prachuab Khirikhan	28
Prachin Buri	69
Pattani	28
Phayao	32
Phranakhon Si Ayuthaya	77
Phangnga	37
Phattalung	23
Phichit	89
Phitsanulok	93
Phetchaburi	37
Phet Chaburi	90
Phrae	40
Phuket	55
Mukdaharn	5
Maha Sarakham	53
Mae Hongson	4
Yasothon	18
Yala	51
Roi Et	35
Ranong	26
Rayong	76
Ratchaburi	121
Lob Buri	65

Province	Number of clinics
Lampang	78
Lamphun	37
Loei	26
Sisaket	44
Sakon Nakhon	46
Songkhla	153
Satun	7
Saraburi	92
Samut Prakan	198
Samut Songkhram	36
Samut Sakhon	76
Singburi	32
Sukhothai	42
Suphanburi	83
Surat thani	56
Surin	36
Angthong	28
Udonthani	116
Uttaradit	46
Uthai Thani	43
Ubon Ratchathani	165
TOTAL	9,044

Source: Ministry of Public Health, 1987.

B. Number of pharmacies and drugstores in Bangkok by dirstrict, 1990.

District	Number
Prathumwan	39
Yanawa	29
Phranakhon	18
Nongkhaem	1
Bangkhunthien	9
Bangkhaen	29
Pomprab	34
Samphanthawong	31
Huikhwang	22
Ladkrabang	2
Bangkok Yai	6
Bangkok Noi	9
Bangkapi	36
Ratburana	9
Phasi Chareon	6
Khlongsan	10
Thonburi	7
Phrakhanong	94
Prayathai	47
Bangrak	52
Meanburi	2
TOTAL	492

C. Number of private outlets in the study areas by province and type of provider, 1990.

Province	Type					
	Hospital	Clinic	Drugstore	Association	Others	Total
Bangkok	11	213	252	8	1	485
Nan	-	28	31	-	-	59
Kamphangphet	4	24	73	1	-	102
Tak	-	29	48	-	-	77
Chiangmai	9	225	125	-	9	368
Nakhonsawan	11	58	354	-	-	423
Phitsanulok	2	79	112	1	-	194
Lampang	3	66	74	-	-	143
Udonthani	4	97	250	-	-	351
Ubonratchathani	2	44	146	-	-	192
Nakhonratchasima	7	100	266	-	92	465
Nongkhai	-	45	107	-	-	152
Khon Kaen	5	215	186	1	-	407
Yasothon	-	5	10	-	-	15
Surin	2	40	73	1	-	116
Chanthaburi	2	21	70	-	27	120
Saraburi*	-	-	-	-	-	-
Ratchaburi	7	77	177	2	-	263
Suphanburi	2	69	143	11	-	225
Songkhla	45	53	169	1	-	268
Surathani	4	59	117	-	-	180
TOTAL	120	1,547	2,783	26	129	4,605

Note: * Data not available.