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*Rapid Feedback for Family Planning Improvement*

# **FAMILY PLANNING IMPROVEMENT THROUGH EVALUATION**

*A Manual of Basic Principles*

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*Director, Community and Family Study Center*

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R.F.F.P.I. FAMILY PLANNING EVALUATION MANUALS

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**FOREWORD:**

**INTRODUCTION TO THE DISCIPLINE OF FAMILY PLANNING RESEARCH AND EVALUATION**

This is the first in a series of "Family Planning Research and Evaluation Manuals," prepared for use by family planning organizations and social researchers. Throughout the world there is now a great flurry of research activity under the general categories of "family planning research" and "family planning evaluation." Much, if not most, of this activity does not fall within the scope of any single discipline. The goal of these manuals is to take this amorphous body of writing and activity and shape it into a distinctive professional branch of learning with an organized content that can be taught and researched. The major characteristic of this new branch is that it is interdisciplinary. Instead of falling within the province of medicine, sociology, psychology, demography, anthropology, public health, education, economics or political science, the new discipline of Family Planning Research and Evaluation makes use of the research procedures and the theoretical formulations of all of them.

Each manual in this series, except the first, deals with a particular topic. The first is intended to be a general introduction to the field. This manual takes inventory of the problems, suggests courses of evaluative action, and describes the viewpoint and organization that may be most profitably followed. In the manuals which follow in the series, emphasis will be placed on the research methodology and techniques needed to accomplish the tasks specified here. Although these succeeding manuals are technical, each seeks to spell out the evaluative procedures in easy-to-understand steps.

Because this is a first effort, the editor does not expect this original organization of materials to survive for more than a few years, at best. Some of the work will survive; some will be quickly replaced. It is this realization that has led to the release of the materials in the form of a series of paperback manuals. Perhaps, after a few years of additional research and teaching, a specialist in this new field may undertake a more formal systematization.

Donald J. Bogue  
Chicago, May 1970

## PREFACE

### EXCERPT FROM THE WELCOME ADDRESS FOR THE OPENING CEREMONY OF THE WORKSHOP ON FAMILY PLANNING EVALUATION

Seoul, Korea  
February 20, 1970

by

Taek Il Kim, M. D., Director  
Bureau of Public Health  
Ministry of Health and Social Affairs

## ACKNOWLEDGMENTS

Under a contract with the United States Agency for International Development, the Community and Family Study Center has undertaken to collaborate in the holding of a series of "workshops" or seminars on family planning evaluation. Each workshop or seminar is scheduled to last three to four weeks, and each is to be held in one of the developing nations of Asia, Latin America, or Africa. These manuals have been prepared as training materials for these workshops.

The manuals are partly based on research and experimentation (primarily under the financial sponsorship of the Ford Foundation) that has been underway at the Community and Family Study Center for nearly a decade. Also incorporated in the compilation of the manuals are the findings of many researchers from all over the world. Although the contract with the Agency for International Development has borne a substantial portion of the technical, clerical, secretarial and other costs of producing these manuals, the sustaining grant from the Ford Foundation has financed the major cost of preparation and has subsidized manual distribution to a list of organizations engaged in fertility research and family planning evaluation in developing nations.

Manual 1 incorporates much of the material prepared for the "executive sessions" of the first workshop, which was held in Seoul, Korea, during January and February of 1970. To all of the participants in this workshop, and especially to the family planning professionals of Korea who helped to arrange the program, who led most of the discussions, and who reacted critically to a first draft of these materials, the editor is deeply indebted. His colleague, Dr. Lee-Jay Cho, co-director of the Seoul workshop, also contributed much through many discussions concerning the content of the curriculum.

The editing, typing, and layout work involved in preparing this manual for offset printing was done by Mr. John Alterman, Miss Mary Teahan, Mrs. Norma Dutter, and Mrs. Carmen Fernandez.

As I understand, this is the first of a series of workshops on family planning evaluation. We are honored to be selected as a pilot for this kind of venture. I feel that this may be attributed to the fact that Korea has for several years worked on its family planning program vigorously. I feel honored and thankful to greet those participants from overseas. As the representative of the Korean Government, I bring you official greetings. Also to the Korean participants I welcome you to this opportunity to study so that you may increase the effectiveness with which you work for the development of this nation.

All of you are probably aware of the fact that when Korea started in 1962 with an official family planning policy that we had a high growth rate. It was about 2.9 percent a year. Fortunately, we know that this has fallen to something approximately 2.3 percent a year. This is due to many factors, but important among these factors is the national family planning program with its network of fieldworkers. There are 1,473 of them with around 898 nurses to assist them at the health centers and to recruit women in the cities. And these people are supported by over 1,500 doctors who provide direct services for IUD insertions and vasectomies. It is due to the hard labors of these people that Korea has made a significant impact on its fertility rate.

The results of this falling of our birth rate are already beginning to show in our school system. We are finding that in the elementary schools we do not have to build as many new classrooms as before. We are now able to spend more education budget in improving the content of the program and in extending educational opportunities to older age children.

## PREFACE

In other social goals of a nation, such as health, agriculture, transportation, housing, and job opportunities, this same impact of the falling birth rate will soon be felt. We are glad that we will look forward to increasing improvement in our population structure in the years to come so that we may meet our national goals.

I consider this workshop important for three reasons. First, as an administrator, I understand the need for good information about the program. I must make decisions about what to do next. If I do not have good information, it is hard to make good decisions; so my request to you as an evaluator is to improve the quality of the information that you provide to the administrators. Also I would urge you to learn how to bring it to their attention speedily and clearly so that they may understand the implications for their program at the time that this information is needed.

The second reason I feel this workshop is important is the chance for Korea to learn from those of you from other nations. To the faculty I ask that you give your best ideas so that we in Korea may benefit from them. And those of you from other nations, I ask that you speak freely to us of the strength of your own programs and things you have learned so that we may benefit from your experience. There is no reason for us to repeat mistakes that you have already made. We need to learn what these mistakes are so that we may avoid them.

The third reason I welcome this workshop is that it is international in nature. We are truly facing an international problem. We need as much international cooperation as possible to learn from one another. I ask that you who are from other nations ask questions of us so that you may learn of the Korean experience and profit from your visit here. And I ask that you make firm friendship with us in Korea so that in the future we may continue this exchange of information.

## Chapter One

### SPECIFICATIONS FOR A NATIONAL FAMILY PLANNING EVALUATION SYSTEM

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#### I

#### Introduction: Goals of Fertility Measurement and Family Planning Evaluation

Simultaneously with the launching of a national family planning program, each nation needs to establish a long-range and integrated program of evaluation and review which will:

- (a) measure the level of fertility and changes in the level of fertility; and
- (b) provide a prompt and steady flow of information with which to develop and improve the national family planning program.

This essay is devoted to outlining such a system, the "R. F. F. P. I. System," which signifies "Rapid Feedback for Family Planning improvement." This system undertakes to review every phase of the family planning program to determine how well it is accomplishing its intended goals, for the purpose of expanding the area of successes and correcting the mistakes. With rapid feedback on each part of the program, the foundation is laid for rapid improvement. It cannot be over-emphasized that evaluation is not an end in itself; the goal is improvement in the efficacy and efficiency of the program.

If a national family planning program has been established without such a comprehensive fertility measurement and evaluation system, it should be regarded as a matter of the greatest urgency to establish one. Success in family planning may not come easily and will not be clearly visible at first. It may be several months or even years before the actions taken will have an impact on the birth rate. Moreover, in its

early stages, the trend of the birth rate may be one of the least important items of information needed to evaluate a family planning program. Information about progress being made in increasing awareness, in teaching the facts of contraception, and in gaining social acceptance may provide much more sensitive indicators of progress and of improvements needed in the program than information about fertility.

As the national family planning program progresses, unforeseen difficulties and problems may be expected to develop. Corrective action should be taken immediately. This evaluation program must be capable of detecting these problems as soon as they appear and of providing information needed to resolve them. It is poor strategy to plan a national family planning program in five-year cycles inflexibly, with no provision for learning and improving as the program unfolds and as experience is gained. The evaluation system is intended to provide a foundation for this flexibility.

Evaluation is also an essential ingredient in absorbing new ideas. Proposals are continuously being made for new methods of contraception, for new ways of informing the public, and for new ways of organizing a program. It is unwise to accept these proposals uncritically or to reject them arbitrarily; the most plausible of them should be tried out on a limited scale, evaluated, and absorbed into the larger program if they show good results. This "pilot testing" of innovations is one of the duties which a well-planned and well-organized evaluation unit should perform.

The system proposed here is intended to provide a steady flow of information for stimulating new ideas concerning improvement of the program and to offer a facility for testing out on a limited basis proposals for change before committing a whole program to them.

## II

### Scope of an Evaluation System

In order to be truly effective, the evaluation program must be nationwide in scope. Yet it must meet the needs of individual localities and local action groups. The plan described below is intended to satisfy both of these needs. The system is a national system which has standardized procedures so that data for each metropolitan area, region, or local community is comparable with the data from every other metropolitan area, region or local community. All parts of the nation must support and participate in the working of this system, and agree to follow faithfully the standard procedures. These standardized procedures, however, are to be worked out jointly with the participating agencies and will represent an integration of the needs of all. More-

over, at every point the system is made sufficiently flexible that local units will have the power to study and evaluate their own unique problems and to take initiative in developing and testing new ideas. The plan seeks to preserve the gains of nationwide standardization without sacrificing the creative thinking of the many individuals working at the local level.

All over the world there is a tendency to exaggerate the uniqueness of the problems being encountered in promoting family planning in particular places. This has the effect of fragmenting the evaluation effort; each state or each province feels that its problems are unique and insists as a first priority upon having data concerning itself. The larger and more complex the nation, the more insistent this demand becomes. When carried to its logical conclusion, the result is a system whereby the primary focus of attention becomes the individual provinces or states, with the national picture, obtained by combining the results, being of secondary importance to the individual parts. We believe this to be a major strategic error. The first priority must be to get an overall picture of the national situation--rapidly and fully. This calls for a central national evaluation unit with autonomy to collect data for the nation as a unit. It regards the various states or provinces as only variants of a total national situation.

Fortunately, by the system proposed here, it is possible for each country to provide detail both at the national and provincial level. This is made possible by heavy emphasis on sampling. First priority is given to establishing a national sample covering the nation as a whole. The reason for this is simple: the size of samples needed for the nation is no larger than that needed to provide data for any one state. If a national sample is taken, data that present a realistic picture of the total national situation will be available within a very short time. If, however, data for the nation must be built up laboriously from data for many individual states, the delay will be one of several years. The data that are accumulated in this way are unnecessarily bulky and unwieldy. States vary widely in their capacity to take major research responsibility, and weak performances will delay and dilute the evaluation effort. There is probably no saving in money to be had by compiling the national picture from state samples. In fact, this procedure probably costs more in the long run than having a separate national sample survey. Moreover, the practice of building up the national picture from the results for individual states places undue restrictions upon the states. Where states are required to collect data that are to be compiled into national totals, their freedom to study their particular local problems is restricted. Many topics that may be of concern at the national level need not be of concern at every state or local level. Each state should be free to study the problems that concern it most

and to collect the data their particular administrators need most urgently for planning and improvement.

In making this argument for a strong national evaluation unit with power to make national sample studies independently and with priority ahead of the states, it must be emphasized that the size of the unit and the size of the samples needed will not be large. As will be described below, simplicity and minimum necessary effort are urged. If conducted properly and speedily, the national sample will provide enough information to solve the most serious problems and separate additional samples will be found necessary for only a few of the states.

### III

#### Characteristics of a Good R. F. F. P. I. System

A system that purports to provide feedback for improvement of family planning should, if possible, possess certain characteristics which would heighten its desirability:

- (a) It should interfere as little as possible with the family planning action program. In the clinics, in the field work, and in administration, the need for collecting and reporting information should place the smallest possible burden upon the staff and take the least possible time of individual clients coming for service.
- (b) It should cost as little as possible. Budgets for family planning are often very small, and the evaluation phase should not place an undue drain on scarce financial resources.
- (c) It should be as simple as possible. The system should be one that can be readily understood by all. As few persons of extraordinary skill should be required as possible, and the operations that must be done in remote places must be capable of being performed by the personnel posted there.
- (d) It should be practical. The information collected, the tabulation made, and the procedures specified should all be possible with the equipment and personnel available, and should refer to the actual problems being encountered.
- (e) It should give results fast, so that action for improvement can begin at the earliest possible time.
- (f) It should be effective. From it should flow a steady stream of helpful information that leads directly to program improvement.
- (g) It should be efficient. It should collect only data it needs and uses and should not undertake research that could be

### R.F.F.P.I. SPECIFICATIONS

- better done by universities or other groups.
- (h) The various components of the system must be integrated. Data obtained in one type of operation must be comparable with data obtained in other ways, so that the resources of the entire system may be marshalled in order to deal with complex questions.

### IV

#### Evaluation Tasks

The tasks that must be undertaken by the national evaluation unit are not difficult to enumerate. They may be classified by the following set of categories:

- A. Fertility measurement and target-setting. The fertility rate must be measured for the nation as a whole and for each of the larger subdivisions of the nation. The measurement should be made for each of the recent censuses. For each new census, the measurement must be repeated to learn what change, if any, has taken place in fertility levels. Each set of demographic goals that are adopted by the family planning program must be transplanted into targets--the amount of increased use in contraception that will be required to achieve the goal.
- B. Inventories of the general public and special groups. At intervals of two or three years, a measurement should be taken for the nation as a whole (and, if desired, for metropolitan and nonmetropolitan areas) of certain items of key information that reveal the potential for family planning and the areas of problems and resistance. This should include the following types of information:
  1. the motives favoring and opposing the adoption of family planning
  2. the attitudes of the adult population toward the practice of family planning and toward each of the methods currently available for use
  3. the amount and content of the knowledge which the population has concerning reproduction and the methods of family planning, and the relationship which knowledge has to family planning practice
  4. the explanatory factors or the factors which explain why some couples adopt and others do not, or why there is rapid progress in family planning or why there is little.

In the R. F. F. P. I. system we classify these explana-

tory factors into two groups:

(a) mutable factors--factors that can be changed by a family planning program. These refer to the factors the family planner "can do something about" in order to reduce fertility.

(b) immutable factors--factors that are beyond the power of family planners to alter or change.

Heavy emphasis is placed upon study and planning that focus upon the mutable factors. The more we know, the better our program planning should become.

5. the extent of use of contraception of each type and the effectiveness and duration of such use

6. the rate of pregnancy and births and changes in pregnancy and birth rates

C. Study of performance of family planning services. At least once each year, the unit should measure, for the nation as a whole and for each state, district, and local level, the adequacy of family planning services. This study should encompass two aspects:

(a) the effectiveness of family planning service--how well it is meeting the needs of the public, and how completely it is performing its intended task; and

(b) the efficiency of family planning service--how productive the various units of the system are in comparison with the expenditure of personnel and money.

To the degree that services are found to lack effectiveness or efficiency, the factors underlying this situation should be isolated in order that plans for improvement may be developed.

D. Study of behavior of family planning adopters. At intervals of two or three years, a measurement should be taken, for the nation as a whole, of the behavior of clients who come to family planning clinics. This includes not only the "use effectiveness" of the methods they choose, but also the extent to which they persevere in the use of contraception. Where discontinuation rates are high, the reasons for such discontinuation should be learned, in order that plans to improve continuation rates may be made.

#### V Components of the System

The system proposed here is comprised of the following four com-

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ponents:

1. Demographic Analysis
2. National Family Planning Sample Inventory
3. National Evaluation of Family Planning Services
4. Special Studies

A description of each of these components and a more detailed statement of the duties it is to perform are the subjects of this section. Later monographs in this series deal with each of these components in more detail.

#### A. Demographic Analysis

The task of this component is to extract from censuses, vital statistics, and special surveys a maximum of information about fertility and changes in fertility. It has two tasks of outstanding importance:

- (a) to measure the fertility level at each census date of the smallest units of area (individual cities if possible) which available data permit; and
- (b) to estimate for each current and future year the "target population" for the family planning program for each of these same areas and the quota of family planning that must be achieved if demographic goals of lowered fertility are to be achieved.

When there is a lack of reliable vital statistics, the age distributions of the national census can be used to estimate the fertility rates of local populations through use of demographic techniques. Adjustment of the census data for known biases can be made to increase the precision of these estimates. At very little additional cost, changes can be instituted in future censuses so as to provide much more refined estimates and much greater detailed information about the fertility of the various socioeconomic groups. Manual 2 is devoted to the methodology of fertility measurement by demographic analysis.

The "target population," which should be used as a base for computing family planning adoption rates, is fertile couples living together with the wife not pregnant. This population needs to be estimated, by age and by parity, for each year for which the family planning program is to be evaluated in each of the geographic subdivisions of the country that is of importance for family planning administration. Using information from the census, from population models, and from the sample surveys, it is possible by demographic analysis to prepare these estimates of target population. Even though the estimates may have an error of 5 or 10 percent, they will provide a highly valuable basis for evaluating the performance of the family planning program. Manual 6

explains a procedure for estimating these target populations. It also presents equations which estimate how much additional contraception is needed to attain particular demographic goals.

### B. The National Family Planning Sample Inventory

It is proposed that a national probability sample of 2,000 to 5,000 (depending upon the area or other detailed tabulations desired) households be drawn and its members of childbearing age interviewed to obtain special family planning information that cannot be obtained in any other way. Specifically, information is needed to measure changes in birth rates between censuses, and information about the attitudes, knowledge, motives, and use of contraception among the population. Data are needed about persons who do not come to family planning centers as well as about those who do, and a sample survey of the general population is the only possible procedure for obtaining this information.

Manual 3 proposes a "Model Interview" which can be used to design the family planning inventory for a particular country. This model interview is intended to cover all of the possible topics that might be made the subject of study, and to furnish ready-made questions, codes, and specifications for constructing scales and indexes to convert the responses into meaningful statistical data. It is only necessary for the user to select the items of interest to him, to adapt the model interview to his particular language and situation, to draw his sample, and to begin field work. Several manuals are devoted to various aspects of the analysis of data provided by the National Family Planning Sample Inventory.

To date there have been isolated "KAP" surveys, but usually they have referred only to particular communities and have contained only a small fraction of the variables needed for evaluation work. A national family planning program demands nationwide data that are comparable from place to place and over time. As conditions change, this information needs to be taken at periodic intervals. It is recommended that after the first cycle of data collection, it be repeated after two or three years. This will give an opportunity to measure change brought about by the family planning action program.

The content of this National Family Planning Sample Inventory should be determined by a working group representing all interested agencies in the nation. The items should be formulated with the hope of making international as well as intranational comparisons. It would have built into it provision for measuring birth rates and changes in birth rates via the pregnancy history technique. This procedure has been validated with data for nine Latin American cities and with data

from Indonesia and Pakistan; it is believed to be superior to any alternative method of measuring levels of fertility by survey procedures.

The sample size should be established in such a way that there are enough cases to present valid statistics for each geographic area for which it is desired to report separate statistics. A sample of 2,500 is of adequate size to provide basic parameters for a nation of any size, and to permit basic cross-tabulations. A sample of 1,000 to 2,000 is needed for each unit of geographic area for which separate statistics are needed. It is suggested that there be a sample of about 2,000 from metropolitan areas of 1 million or more inhabitants for which separate data are required, a sample of 1,500 for every other metropolitan area, and a sample of 1,250 to 2,000 for each other nonmetropolitan region, depending upon the degree of its heterogeneity.

It is believed that samples of this size can provide reliable totals for each of the tabulation areas, with simple cross-tabulations of two and three variables and highly reliable cross-tabulations of a detailed nature at the metropolitan-nonmetropolitan level and at the national level. Yet the total size of the sample is sufficiently small that it is not prohibitively expensive.

It is anticipated that the supervision of data collection will be done through some arrangement that will assure the highest quality of interviewer selection, training, and supervision.

The selection of the sample, the pretesting of questionnaires, and the preparation of instructions for training and supervising interviewers and the coding and tabulating plans would be developed at the central office, working in cooperation with the provincial research committees.

This program will provide a great wealth of data that will be highly valuable not only to the family planning program but to other programs. In order to take full advantage of these data, they should be processed by electronic computer, so that details for each of the regions and metropolitan areas can be produced as well as for the nation. The electronic computer is capable not only of making the basic tabulations but also can be programmed to recode, compute a wide variety of percentages and averages, calculate tests of statistical significance, perform computations for multiple correlation and regression analysis and do analysis of variance calculations as desired.

It cannot be emphasized too strongly that the analysis of these inventory data should take place in two phases: In a "family planning feedback" phase, frequency distributions and high priority, but cross-tabulations are prepared and interpreted speedily, in order to give information about the program that can be useful in guiding the family planners. A later phase can make a more thorough digest of the information and the testing of more complex hypotheses. The articles in this manual are devoted primarily to this first phase, and how it can

be made more effective.

When the tabulations are made, they would be run in such a way that data would be printed out for each of the individual parts of the nation for which the sample is capable of supplying information, as well as for the nation as a whole. The various groups which participate in the program would be given copies of these tabulations. Also, they would be given copies of the basic computer tapes or tabulation cards, to make whatever additional or special tabulations they desire.

**Technical Help.** Conducting this National Family Planning Sample Inventory will require highly skilled technicians which may not be available in the nation desiring the information. It is recommended that, as a temporary expedient, the international agencies with fertility programs be asked to furnish technicians especially trained for this type of work. Meanwhile, it is essential that the country arrange to have special training for taking fertility surveys conducted in the country or else send its own representatives to a center where specialized training in taking sample surveys is given.

**Special Longitudinal Sample Including Males.** It is strongly recommended that a subsample of the national sample (perhaps every tenth or twentieth household in the sample) be identified for both of two special types of treatment:

- (a) interview with both husband and wife; and
- (b) follow-up and reinterview at the time of the next round, 3 years later. In preparation for this follow-up, additional information that will help locate the person in case he moves will be collected at the first interview.

### C. The National Analysis of Family Planning Services (NAFPS)

Each family planning service agency keeps records of its operation. A record is made of each new patient who comes to the clinics. Each time a patient returns for medical visits, supplies, or for any other reason, this fact is recorded. Records are maintained of personnel employed, expenses incurred and paid, field work accomplished, materials published, and other activities. From these materials, it is possible to compile some very valuable indices of performance, efficiency, and accomplishments. Doing so, however, requires the establishment of a regular reporting routine and an organized system for analysis and interpretation. At the present moment, most family planning services are collecting masses of information that is only being partially utilized for the improvement of the program. The procedure for collecting this information, compiling it, and analyzing it is cumbersome, slow, and produces only a small fraction of what needs

to be produced--and at a substantial cost. One major component of the R. F. F. P. I. system is the establishment of a unit at the national level called the National Analysts of Family Planning Services to perform this function. (It will also have another important function, as described below.) The duty of this service will be to:

- (a) simplify, organize, and integrate the service-reporting activities of the family planning system. The goal will be to eliminate needless work and collect only essential data, on a sample basis;
- (b) receive data from the various service units and prepare monthly, quarterly, and annual reports of services performed;
- (c) estimate the consumption of oral pills and use of other methods of family planning outside the national family planning program. Manufacturers sales reports, sales records of sample of pharmacies, and the data from the National Family Planning Inventory may be used to do this. This will permit the preparation of national estimates of total family planning activity by all methods;
- (d) analyze and interpret the reports of services performed, comparing them with expenditures of manpower and funds, in the light of the demographic targets and the information yielded by the National Family Planning Inventory. This will yield data concerning progress, efficiency, relative costs, and wasteful or ineffective activities.

The National Analysts of Family Planning Services unit would maintain four separate but related (and comparable) sets of statistics:

1. Sample of new patients
2. Summaries of clinic services to old and new patients
3. Summaries of effort: personnel at work and expenditures of funds
4. Periodic follow-up of clinic patients

The following is a brief description of each of these four activities.

1--**Sample of New Patients.** Each new patient who enters a clinic is registered. The registration card contains information concerning the characteristics of the client--age, parity, educational attainment, occupation of husband, previous use of contraception, etc. In order for the national and the state programs to know how successfully they are achieving their targets, a sample of the records for new patients should be forwarded to the NAFPS unit each month. A comparatively small sample is adequate. It is therefore proposed that all clinic cases whose numbers end in specified digits will fall in the sample.

A very simple card requiring very little effort to complete must be filled out for each new patient whose serial number ends in these digits and forwarded to the NAFPS headquarters, due to arrive not later than 14 days after the end of the reporting period. An IBM card will be punched for each sample case received. Using conventional IBM machines or a small computer, a periodic summary of new patients will be tabulated, showing the number of patients and their characteristics. The report could be prepared monthly, quarterly, or annually as desired. This tabulation will report data for the individual clinics, the districts, the state, and the nation. The report will be printed out by machine and printed by photo-offset, to be released within the shortest possible time after receipt of the data. The cards will be saved from period to period in order to obtain annual tabulations. At the end of the year, rates of adoption will be calculated for each district, state and the nation, making use of information provided by the Demographic Analysis unit to obtain denominators and the tabulations of new patients to obtain numerators. Also, detailed cross-tabulations at the national and state levels will be made annually. Once established, this system can function smoothly, promptly, at low cost and with a minimum of work at the clinic level.

2--Summaries of Clinic Services to Patients. As new clients arrive and as old clients return to the clinic for medical or supply visits, a record is maintained of this. The National Evaluation Unit should design a very simple form by which the clinic would make a daily summary of its activities, separating services to new patients from services to old ones. These would then be summarized monthly. The monthly summary would be forwarded to the district or state headquarters, with a copy also going to the central Family Planning Evaluation Unit for analysis. The forms are pre-coded for punching. They are scheduled to arrive not later than 14 days after the end of the month. An IBM card would be punched for each clinic. Using conventional IBM machines or a small computer, a monthly summary of clinic services will be tabulated. This tabulation will show data for the individual clinics, the districts, the state, and the nation. The report would be distributed within 3 weeks of receipt of the reports. The cards will be saved for all months in order to obtain annual tabulations. Detailed cross-tabulations at the state and national levels will be made annually. At the end of the year, rates of family planning service will be calculated for each district, state and the nation, making use of information provided by the demographic analysis unit, the summaries for new patients, and the National Family Planning Inventory. Once established, this system can provide rapid information, at all levels, about services being rendered.

3--Summaries of Effort: Personnel and Expenditures. The administration of each district or clinic maintains financial and personnel records which can provide valuable information about the quantity and types of effort being expended. The NAFPS unit would design a very simple form by which each administrative officer would report basic facts about the expenditure of manpower and money during each month. This would simply be the number of man-days of work expended by physicians, family planning educators, nurses, drivers, and other employees in tasks associated with clinic service and field work in the communities. Data for the performance of duties such as number of radio announcements sponsored, etc. would also be recorded. The report would also include data concerning expenditures of funds for major categories of activity. Every effort would be made to keep this report short, easy to compile, and restricted to items essential for evaluation. This summary would then be forwarded to the evaluation unit for processing once each month, scheduled to arrive not later than 14 days after the end of the month. An IBM card will be punched for this summary of effort at each clinic. Using conventional IBM machines or a small computer, a monthly summary of efforts in behalf of family planning will be tabulated. This tabulation will give information for the individual clinics, the districts, the state, and the nation. Certain ratios showing patients per 100 person-days of field work in education, number of medical visits per 100 physician-days of service, average cost of obtaining a new patient, and average cost of providing follow-up service are the types that will be computed for each.

More elaborate tabulations would be prepared annually. At the end of the year, a clinic-by-clinic and state-by-state evaluation would be prepared, using the information concerning new patients, services, and efforts-expenditures.

4--Periodic Follow-up of Sample of Clinic Patients. Once every two or three years, the National Analysts of Family Planning Services unit will draw a sample of patients who have attended the family planning clinics at any time during the preceding three or four years. This sample may be drawn in its own office, from the sample cards of new patients that have been received during the year and the two preceding years. This may be a small sample of only 2,500 cases, or it may be larger, depending upon the amount of geographic detail desired. (In general, it should be of roughly the same magnitude as the National Family Planning Inventory, and should report sample statistics for the same geographic areas. Getting national totals should be the first objective.) The names and serial numbers of the patients who comprise this sample would be forwarded to the field offices in the various states and districts, with data-collection forms. For each sample case a representative of the evaluation unit must:

- (a) extract from clinic files a complete record of medical and other services given to the patient since the time of first visit, including any information about medical complications, etc.; and
- (b) interview the woman in her own home with a schedule of questions requesting detailed information about the use of contraception since her last pregnancy. This would include questions concerning discontinuance, change of methods, and attitudes toward methods used. It would also include questions inventorying the motivation, attitudes, knowledge, and explanatory variables, to match the information from the national Family Planning Inventory.

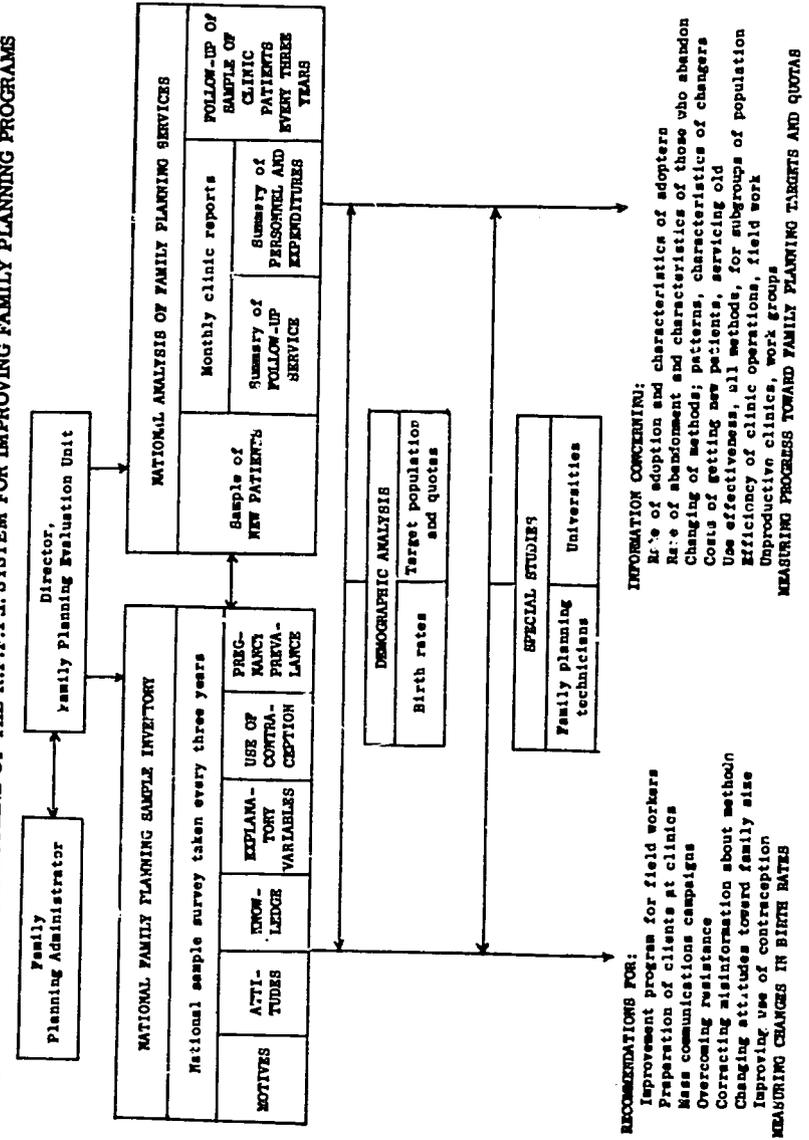
This follow-up work would be done by a special evaluation interviewer assigned to the district. In this way, the individual clinic would not be required to evaluate itself; the danger of substituting inactive patients for those who had dropped out of the program will be averted.

Using methods developed by Robert Potter and Christopher Tietze, the data will be used to calculate national use-effectiveness rates for each method of contraception. Moreover, it will be possible to know the characteristics of the successful and unsuccessful users, and the reasons for failure and discontinuance. It will provide a periodic "reading" of the attitudes which patients have toward the services being given them.

**D. Special Studies Program**

It is recommended that a portion of the evaluation funds be set aside for grants to individual persons and institutions for particular projects that do not fall neatly into the national system described above. Urgent problems will arise that cannot wait until the next round of the national sample inventory for exploration. Individuals will want to test out new programs and procedures. Some scientists may wish to undertake theoretical or abstract research that may have important long-range implications but which fits rather poorly with the other units of the system at the data-collection stage. In this category will be all the highly important experiments to persuade "hard core resisters" and "apathetic cases" to adopt family planning. Also of importance will be special projects to inventory institutions and groups and their policy with respect to family planning.

Figure 1. --SCHEMATIC OUTLINE OF THE R.F.F.P.I. SYSTEM FOR IMPROVING FAMILY PLANNING PROGRAMS



## MANUAL 1

## VI

Organization and Scheduling of Work

Figure 1 illustrates the way in which the four components of the R. F. F. P. I. system are related to each other and how they may be organized under a Director of Family Planning Evaluation to comprise separate unit in the central staff of the family planning administrator.

The size of staff needed to carry out the functions outlined above is not great. It could be as small as two professional persons (a survey statistician and a director of field interviewing) plus as few as five employees each, for a total of 12 employees in the total evaluation unit.

It would be a mistake to undertake to carry out all of the tasks simultaneously. Instead, there should be a scheduling of work, with the unit working in cycles of about three years. A suggested cycle could be:

- First year--National Family Planning Sample Inventory
- Second year--Follow-up of clinic patients
- Third year--Inventory of special groups, and intensive review of efficiency, ability, and costs of individual clinics and personnel

The complete analysis, interpretation and translation into improved action of each year's report would, of necessity, continue into the following year. This system, however, would schedule a major project to be undertaken each year. By this schedule, a permanent staff of field interviewers can be kept busy. As quickly as one set of data-collection is completed, the next study would be ready to be launched. In this way, a comparatively small staff of high quality interviewers can be recruited, trained, and given permanent employment. The load of coding, data processing, and analysis is spread evenly over the cycle. This will assure full analytical attention to each survey as it is completed and will allow the focus of attention to shift from one set of problems to another, covering the entire gamut at comparatively short intervals. The above schedule presupposes that the receipt and tabulation of monthly reports from the clinics will be maintained continuously, with annual summary and analysis.

If desired, the cycle may be shortened to two years or extended to four or five. A cycle of three years is suggested only for purposes of illustration. It is believed that if a cycle of about this length is planned, the total cost of evaluation will be small, the amount of manpower needed will be modest, and the flow of information to the executives will be steady and at about the pace needed.

VII  
Conclusion

It is believed that in many nations of the world much more money is being spent now on family planning research than would be required to set up the national R. F. F. P. I. system described above. Yet because this money is being spent in an unsystematic way on isolated surveys that are uncoordinated and unrepresentative either of the national population or of the family planning action being undertaken, the results tend to be irrelevant for the problems being encountered and do not provide a clear picture of where the program stands, what its unresolved problems are, and what progress is being made, if any. Some of the recommendations for evaluation now being made are focused too narrowly on only one aspect of the program, and fail completely to collect information about areas that may be seriously deficient. (One of the most flagrant is the tendency to concentrate on data for family planning clients, neglecting the masses who are not being reached by the program.) Moreover, this situation will continue until a nationwide system covering the entire program is launched. The "cure" for this chaos is not as drastic as one may think. In many nations, many of the essential components for the system already exist. They need only to be organized, integrated, and forced to face up to the task of providing feedback for improvement.

## Chapter Two

WHAT ARE THE MOST SERIOUS PROBLEMS FACING  
FAMILY PLANNING PROGRAMS TODAY?Outline for a Discussion Group Session

Editor's note. The Executive Sessions at the first Workshop on Family Planning Evaluation, held in Seoul, Korea, January 26 - February 20, 1970, opened by asking the family planning administrators to inventory their problems. If the problems are clearly identified, the evaluator can better orient and organize his efforts. The following outline incorporates the discussion of the executives at the Seoul workshop.

Plan of the Discussion Sessions

The executives and the technical participants will be asked to join one of the five discussion groups, each meeting to discuss a particular aspect of the topic. Each group should select a chairman and a reporter (secretary). Each group will discuss its topic for one hour. There will then be a 30 minute coffee break while the reporter and the chairman prepare a report to the full group. There will then be a plenary session at which the five reports are given. Each reporter will get 15 minutes. The group reports will be distributed next day for use throughout the rest of the workshop.

Below are listed the five groups and a list of topics that will be given to each group to stimulate its discussion.

Group A. What are the most important problems facing family planning program with respect to INFORMING THE PUBLIC ?

1. How to increase knowledge of all reliable methods of contraception

## FAMILY PLANNING PROBLEMS

2. How to increase knowledge of reproduction
3. How to combat rumors and misinformation about contraception
4. Motivation to space as well as limit children
5. Motivation to have equal preference for daughters and sons
6. Need to reduce ideal size of family wanted
7. Need to promote awareness that a majority of the public approves of family planning and practices it at some time in its life
8. Need to stimulate a positive attitude toward several different reliable methods and willingness to change if one method is not acceptable
9. Is home visiting wearing out? Need to revitalize home visiting
10. Is full use being made of possibilities for small group discussion?
11. Is full use being made of possibilities of mass media (newspapers, magazines, radio, movies, television, posters, booklets, etc.)?
12. Is sufficient encouragement being given to distribution of information through private channels--information programs by manufacturers and distributors, especially of nonmedical methods?

Group B. What are the most important problems facing family planning programs with respect to PROVISION OF MEDICAL SERVICES?

1. Adequate instruction at the clinic and preparation of patients for side effects by explanations at the clinic
2. Training physicians for better patient retention
3. Lowering rates of discontinuance for "personal" reasons
4. Deciding how much emphasis to give to IUCD, pills, sterilization, spermicidal compounds. How to sponsor all methods
5. Provision of medical services to patients with adverse side effects
6. Choosing a method for a particular patient
7. Spacing clinics so that they are accessible to patients, yet with enough patients for each to operate efficiently
8. Maintaining an adequate flow of fresh contraceptive supplies
9. Eliminating or rehabilitating clinics or clinic personnel who are not effective
10. Work load of keeping records and making reports
11. Need to retrain many clinic workers
12. Integrating family planning into other medical and health activities

13. Providing medical service to remote rural sparsely settled areas

Group C. What are the most important problems facing family planning programs with respect to TRAINING OF WORKERS AND PERSONNEL PROBLEMS?

1. What are the qualifications of successful and productive family planning workers (home visitors, clinic assistants, physicians, etc.)?
2. What are the advantages and disadvantages of indigeneous versus "professional" field workers?
3. Where and how should new workers be trained?
4. How well does the present curriculum for training new workers fit the needs they actually experience on the job?
5. How good are the present training facilities? Is the staff qualified?
6. How do the family planning workers evaluate the preservice training they received? What deficiencies do they see in it?
7. What dissatisfactions do family planning workers have with respect to pay, hours, professional status, working conditions, other matters?
8. How well trained are family planning workers now?
9. Is there a need to retrain all family planning workers on a prearranged schedule? If so, what areas need to be covered?
10. How good is the quality of supervision in clinics? In field work?
11. What is the explanation for high rates of personnel turnover in some categories of workers, and in some districts?
12. Are promotions and raises given to the most productive and hardest working, or is there favoritism and discrimination?
13. How easy is it for employees to make suggestions to their superiors for improving the program? Is the employee with fresh ideas encouraged and rewarded? Is there a system for encouraging suggestions?
14. What are the unmet needs of the workers for more frequent staff discussions, district or other meetings, or opportunities to learn the results of their work?
15. How effectively is the program of recruitment working? Are good young workers being recruited or is the program losing out in competition with other programs to get the best workers?

Group D. What are the most important problems facing family planning programs with respect to IMPROVING PRODUCTIVITY AND REDUCING COSTS?

1. How much variation is there among workers in cost of re-

- cruiting a new adopter? What are the most important "acceptable" factors that account for this variation? How much of the variation in costs per adopter is due to low productivity?
2. How can one take into account the "acceptable" factors and identify unproductive workers?
  3. How much can be spent on rating individual workers without paying more than you save?
  4. Is it more efficient to pay private physicians for medical services to family planning than to try to run clinics? Under what conditions?
  5. Is the cost of recruiting a new patient rising? What are the causes?
  6. How much does it cost to plan, organize, and conduct group discussions per new acceptor? How does this compare with individual home visiting?
  7. Are movies worth what it costs to make a good one? If so, under what conditions? How much use is actually made of movies?
  8. How can the transportation costs for family planning be kept to a minimum? How can an administrator know when they are too high?
  9. What should be done about incentive payments? Should they be abandoned or increased? Do they cause sloppy work and cheating?
  10. What about incentive to adopting couples? Can they reduce costs of motivating people? What size incentive payments are needed?
  11. Can use of mass communication reduce costs per patient recruited?
  12. At what point is it no longer economical to try to convert reluctant adopters by continued home visiting efforts?
- Group E. What are the most important problems facing family planning programs with respect to IMPROVING ADMINISTRATION?
1. How can there be better coordination and integration of activities:
    - (a) Within Ministries of Health
    - (b) Between Ministries of Health and other Ministries
    - (c) Between public and private family planning organizations
    - (d) Between in-country and international organizations
  2. How can family planning programs maintain vigor and a sense of urgency (with live authority to get action) while being integrated with other health programs?
  3. How great is the need for additional administrative talent in

the national family planning program? What will be the needs in the future?

4. What are the administrative skills that are in most short supply in the national family planning program?
5. What are the greatest administrative problems with respect to provision of medical services?
6. What are the greatest administrative problems with respect to the field staff of home visitors and family planning educators?
7. What are the greatest administrative problems with respect to mass communication and public information?
8. What are the greatest administrative problems with respect to budgeting and planning future programs?
9. What are the greatest administrative problems with respect to keeping staff at all levels properly informed of policy, changes in program, and new instructions?
10. What are the greatest administrative problems with respect to getting staff to prepare reports and other necessary documents?
11. What are the greatest administrative problems with respect to misreporting patients served, other work performed?
12. What are the greatest administrative problems with respect to misuse of funds and diversion of funds to personal use?
13. What are the greatest administrative problems with respect to evaluating the capacity of each level of administration, and the need for special training, retraining, or replacement?
14. What are the difficulties of growing "bureaucracy" and "dehumanization" of family planning work at all levels as the program grows older and more institutionalized? How can this "bureaucratization" be neutralized?

### Chapter Three

#### SUGGESTIONS FOR ESTABLISHING A NATIONAL FAMILY PLANNING EVALUATION PROGRAM: NOTES FOR DISCUSSION

Editor's note. At the first Workshop on Family Planning Evaluation, held in Seoul, Korea, January 26 to February 20, 1970, eight sessions were devoted to "Suggestions for Establishing a National Family Planning Evaluation Program." For each of these sessions, a set of notes was distributed in advance. A discussion leader then made a critical review of these materials. Following his presentation, the participants held a general discussion of the topics. Below are presented the eight sets of notes upon which these discussions were based. They do not represent conclusions or recommendations of the participants. Instead, they are issues and ideas to be considered and discussed, before final approval of the evaluation program in each country.

The eight sessions covered the following topics:

- Session 1. Suggestions for Taking a National Family Planning Inventory
- Session 2. Suggestions for a System of Collecting Service Statistics from Family Planning Clinics on a Nationwide Basis
- Session 3. Suggestions for Measuring Birth Rates and Changes in Birth Rates
- Session 4. Suggestions for a National System of Follow-up for Measurement of Use-Effectiveness of Contraception, Impact of the Program on the Birth Rates, and Patient Reaction to the Family Planning Program
- Session 5. Suggestions for Use of Electronic Computers for Processing the Results of Evaluation Surveys and Reports of Service Statistics

- Session 6. Suggestions for Improving Cost-Effectiveness of Family Planning Programs
- Session 7. Suggestions Concerning Techniques to Use in Measuring Use-Effectiveness and Impact of the Family Planning Program on the Birth Rate
- Session 8. Suggestions for a National Communication Program for Family Planning

Each of the eight sets of notes is presented below as a separate section.

## I

Suggestions for Taking The National Family Planning Inventory

1. Top priority should be given to obtaining national statistics for every topic that is needed to make important family planning decisions or to plan future programs. The survey should be repeated at regular intervals, to permit measurement of change and progress (or lack of it). It should be taken with high quality interviewers, coded carefully, and analyzed quickly but fully. Instead of waiting for a single total report, a rapid series of "working papers" should be released for administrative use as the analysis proceeds.
2. The size of sample needed is small--2,000 to 5,000 cases (the larger number would permit separate analysis for urban and rural areas). Larger samples slow down the process of data collection, tabulation, and analysis and drive up costs. Rapid Feedback demands a small national sample with work of the highest quality. The desire of individual states or districts to have their own sample should not interfere with the taking of the national inventory.
3. The content of these surveys should be determined primarily by the needs of the family planning program for information required to improve its operation, make good decisions, and plan the future. Highly specialized and "theoretical" topics with no relevance to the program should be excluded and instead researched as special studies.
4. The national inventory of family planning should be exploited to the fullest to provide information about topics for which no other source can provide data. Among these topics are:
  - (a) What kinds of people are refusing to come to family planning clinics, and what are their reasons for not adopting?
  - (b) What kinds of people use nonclinical methods of family planning, and what are their reasons for preferring these

- methods to IUCD, pill or other clinical methods?
- (c) What is the general level of basic family planning factors in the general population?
    - (1) Knowledge of contraception
    - (2) Approval of family planning
    - (3) Impact of family planning efforts upon the general public
    - (4) Social acceptability of family planning
    - (5) Resistances to family planning
  5. The Model Interview (R. F. F. P. I. Manual 3) suggests items that may be of importance in taking national surveys. It is recommended that this Model Interview be studied carefully, to locate items that may be of importance. It is especially recommended that attention be given to:
    - (a) Motivation for high and low fertility
    - (b) Pregnancy history (for measuring birth rate changes)
    - (c) Detailed attitudes of people to the methods being prescribed by the program, and reasons for dislike, fear, or nonuse of each method
    - (d) Knowledge, use and reaction of people to the available family planning services in their area
    - (e) Desire to learn more about family planning and the preferred media for learning
    - (f) Desire for additional local family planning services and willingness and ability to pay for such service
    - (g) Contraceptive history (for measuring use-effectiveness)
 There are items which do not usually appear on the typical "KAP" survey.
  6. Much more attention needs to be given to collecting information for variables that explain family planning adoption or failure to adopt. The Model Interview (Part II) deals with a great variety of such variables. It is recommended that this Model Interview be studied carefully to locate items that may be of explanatory importance. It is especially recommended that attention be given to:
    - (a) Psychological variables that directly influence or retard adoption of family planning (Group I variables of Part II of Model Interview)
    - (b) Social variables that condition or influence indirectly the adoption of family planning, but which can be changed by special programs (Group II variables of Part II of Model Interview).
    - (c) Programmatic variables that refer to action taken by the family planning program itself, and the reaction people

have to this action. (Group III variables of Part II of Model Interview)

7. Too much of fertility analysis in the past has consisted of cross-tabulation of simple question responses. Much more attention needs to be given to "quantification of basic concepts." This calls for the construction of special indexes, scales, scores, ratios that express fundamental family planning variables in a quantitative form. Examples of items of this type needed are:
  - (a) Scale of attitude toward family planning
  - (b) Indexes of contraceptive knowledge
  - (c) Indexes of motivation to adopt family planning
  - (d) Index of couple desire for more children
  - (e) Index of social acceptability of family planning
  - (f) Index of self-referral for family planning
  - (g) Pattern of previous contraceptive use by the couple
8. The comment of (6) applies also to the explanatory variables. Needed are:
  - (a) Index of traditionalism
  - (b) Index of contact with mass media
  - (c) Index of religiosity
  - (d) Index of educational attainment of the couple
  - (e) Index of companionship in marriage
  - (f) Index of belief in women's rights
  - (g) Index of empathy in the couple
  - (h) Social mobility index
  - (i) Difference between actual and ideal size of family
  - (j) Authority structure of the family
  - (k) Index of communication with others about family planning
9. A worksheet of basic facts needed for family planning evaluation should be drawn up before each national inventory is taken. This worksheet should be filled out and distributed widely within the shortest possible time after the survey is completed. A draft of such a worksheet is presented in a later section of this manual.
10. In order to answer the evaluation questions that are asked, the analysis and interpretation of national family planning inventories requires multiple-variable analysis. The use of multiple-cross tabulation analysis, multiple regression analysis, and analysis of variance should be well understood and readily used in interpreting the survey results. Computer facilities for performing these complex statistical operations should be available locally. This can now be done by means of packaged programs.

11. As quickly as the first cycle of tabulations becomes available, the national family planning organization should convene a three-day convention to discuss the findings of the national inventory and their implications for improving the national program. In order to accomplish this quickly and in order to get the fullest national participation, researchers from universities and other organizations should be asked to take on special assignments of data-analysis and data-reporting for this meeting. The papers they write should be distributed in advance, so that the participants will have studied them and be ready for discussion.

## II

### Suggestions for a System of Collecting Service Statistics from Family Planning Clinics on a Nationwide Basis

1. For purposes of evaluation, certain information is required about the services performed for family planning. Data are required for:
  - A. Monthly Reports
    - (a) Numbers of patients served and number of patient-visits
    - (b) Volume of services performed for old and new patients
    - (c) Educational, motivational, administrative other activities
    - (d) Expenditures of funds for service and other activity
  - B. Quarterly or Annual Reports
    - (e) Characteristics of new and old patients.

In order to obtain this information, each clinic must be required to keep a standard set of records from which needed information can be summarized. The evaluation data collected must be kept to an absolute minimum. Otherwise, evaluation will interfere with service. Patients will be annoyed and clinic workers will rebel at the undue amount of "paper-work." Only data that will be used should be collected. All over the world today family planning clinics are collecting mountains of statistical data for research that is never done.
2. It should be noted that in the above listing, a sharp distinction is made between numbers of patients and characteristics of patients. Data for numbers should be collected monthly, and reported and analyzed promptly. Data concerning characteristics need be reported much less frequently--annually is probably sufficient. The number of patients should be based on a complete count; the characteristics of patients need be

based on no more than a small sample.

3. Before asking to have an item of information collected it should pass two tests:
  - (a) Is this item useful in making important administrative decisions, in planning future programs, or in measuring progress of the program?
  - (b) Is this item so important that it must be collected from every clinic for the foreseeable future?

If the answer to either the first or the second question is "No," the item should be excluded from routine collection at the clinic, unless needed for medical purposes.

#### Section One: Monthly Reports of Services Performed

4. Clinic Services. A simple set of records should be kept of the services performed for patients at the clinic. Once each month the clinic should summarize these services and send a statement of the amount of each service performed to the central evaluation unit. This should include the following items of information:
  - a. NEW PATIENTS: number of patients
  - b. IUCD: first insertions, reinsertions, removals (number of each)
  - c. PILL: first acceptors, women returning or resupply, number of cycles
  - d. STERILIZATION: number of tubal ligations and vasectomies
  - e. OTHER METHODS: condom, foam tablets, jelly, aerosol foam (number of persons and total amount distributed) (It is suggested that no records be kept of persons coming for nonmedical supplies--condom, etc.--but that they be handled just as in a pharmacy.)
  - f. TOTAL VISITS FOR COMPLAINTS: old patients: number of cases for IUCD side effects, pill side effects, other problems
  - g. OTHER MEDICAL SERVICES PROVIDED: cancer detection tests, etc.
  - h. HOURS OF CLINIC OPERATION AND MAN-HOURS EXPENDED: clinic, doctor, nurses, other
5. Educational-Motivational Services. A simple record of the field program to inform and motivate the public or special groups should be kept. Once each month the clinic (or other unit supervising their work) should summarize these activities

- and send a statement of the amount of each service to the central evaluation unit. This should include the following items: public lectures, group meetings, home visits to solicit new patients, home visits to follow-up discontinued patients, post partum contacts, displays shown, movies shown, radio programs aired, newspaper ads run, etc. For each (where possible) an estimate of the number of persons attending should also be given.
6. Summary of Expenditures. The total expenditure of funds, summarized in a few categories, should be collected monthly from each smallest operating unit. For details of the items needed, see Section VI, below. These data should be collected in such a way that they can be correlated with data coming from the clinics. In this way, analysis of costs, and efficiency can be made.
  7. Instructions that are clear and complete need to be prepared for keeping the record system, and for taking off the sample of records for forwarding for processing. Every person at each clinic who is responsible for keeping these records must be trained. Simply mailing out the instructions is not enough.
  8. The Central Evaluation Unit must be set up to process the monthly report promptly. Computer programs that will perform the task on small computers can easily be written. These will print out the reports exactly as they should appear in final form, with multiple copies. One copy can be forwarded to the clinic, one to the district office, and one to the central administration; and the evaluation unit can keep one. Packaged programs can also be used to program the monthly printout.
  9. The monthly reports of services, efforts, and expenditures should be given top priority in processing. These should be processed in such a way that totals for each district, city, and state are available. The computer program should compare actual monthly performance with target or expected performance, and cases of major discrepancy should be identified. Indexes of productivity and efficiency may also be computed. In this way, a monthly rating of every clinic and every larger administrative unit may be had.
  10. At the end of each year, the data for all months of the year should be pooled and submitted to a much more detailed analysis. Cross-tabulations, correlations and regressions, and comparisons with similar data for previous years (or for other countries) should be presented. In this way, the infor-

mation that is available may be fully exploited.

Section Two: Data for New Patients at the Clinic

11. Data for new Patients. Data concerning the characteristics of new patients coming to the clinics should be obtained by tabulating a sample of the records filled out for each patient as she enters the clinic. The needs of evaluation can be met fully in most instances if no more than 5 to 8 items of information are asked. The following items are suggested:
  - (a) Age
  - (b) Number of living children: sons and daughters
  - (c) Educational attainment of woman and her husband
  - (d) Previous use of a method: method last used
  - (e) By whom influenced to come to clinic
  - (f) Number of additional children desired sometime in future
  - (g) Time since termination of last pregnancy
  - (h) Exposure to family planning education-motivation program
  - (i) ADDRESS OF SOMEONE WHO WILL ALWAYS KNOW WHERE THE PATIENT LIVES IF SHE MOVES
12. Reports Showing Characteristics of New Patients. The characteristics of new patients coming to family planning clinics do not change very quickly over time and they are not of critical importance in making month-to-month policy decisions. Therefore, little urgency should be attached to reporting monthly or even quarterly these characteristics. Instead, an annual report, well interpreted, is superior to a series of monthly reports all showing essentially the same information. Shifting to an annual instead of a monthly report permits a much smaller sampling fraction to be used in assembling clinic data on new patients. It also permits greater emphasis upon the items discussed under points 4-10 above, which are of greater importance for improvement of the program.
13. Sampling of Clinic Records. Patients are too numerous and the task much too great to tabulate clinic records for every new patient coming to the clinic. Instead, only a sample of these records is needed. If the report is to be made annually only, as recommended in the point above, the size of sample needed is quite small (0.5 to 5 percent).
14. Because only a sample is needed, it is suggested that it is wasteful to prepare a copy of every patient's record and forward it to the central processing office. Instead, a copy

- needs to be made at some convenient time for every Xth case. If desired, the information can be coded onto a regular statistical form and coded as it is transcribed, so that it is ready for card punching.
15. The sample of cases for new patients should always be kept on file at the central evaluation unit, because it can provide a frame for drawing samples for follow-up surveys of patients. It can also be used as a guide when checking the quality of record-keeping of individual clinics at a later date.

Section Three: Analysis and Interpretation of Evaluation Results

16. Interpretation of reports. Every report that is released should have at least a few notes of interpretation. This should include a noting of the major trends, the changes since the last report was released, and the meaning or implications of these changes. For the monthly reports, these interpretations can be quite brief; for the annual reports they should be more complete and detailed.
17. Immediately after each annual report is published, a one-day conference should be held to discuss the implications of the year's clinic work for the family planning program. This should be attended by researchers, administrators, and planners. At these conferences the administrators should stress the questions they need to have answered. If the annual report does not answer these questions, the researchers should be sent back to make additional tabulations and analysis to produce a supplement to the annual report.

III

Suggestions for Measuring Birth Rates and Changes in Birth Rates

1. When vital statistics are inadequate, birth rates and changes in birth rates can be measured only from census data or from sample survey data. They cannot be estimated from clinic data or from data on family planning services. Therefore, the family planning evaluation program must place great emphasis upon:
  - (a) Working to see that each decennial census provides as much data as possible for measuring fertility and fertility change.

(b) Taking periodic sample surveys to obtain data on fertility and fertility change.

Because of sampling error, the sample surveys will be able to give only approximate estimates of the amount of fertility change. The census will always be the final "authority" about fertility change in most developing countries. Therefore, it must not be neglected as a part of the evaluation program.

2. The following data from census will be found useful for measuring fertility and fertility change.

- (a) Age distributions
- (b) Own children
- (c) Children ever born

Manual 2 in this series describes and illustrates the procedure for deriving fertility measures from each of these three types of data. An additional item, "children born last year" is used in one system of estimation. Our work thus far indicates that this method is less reliable for measuring fertility change than the other methods proposed. The "children born last year" is useful in those situations (found primarily in Africa) where all data from previous sources are defective. It is good for making an "educated guess" at fertility level, but is not very sensitive for measuring fertility change.

3. For the 1970 and 1971 cycle of censuses, great improvements in resources for fertility measurement will be accomplished if the following goals are accomplished:

- (a) "Own children" analysis is made an important and fundamental part of every national census. It requires no more questions on the census schedule and hence is inexpensive.
- (b) Great care in preparing instructions and instructing interviewers is given to correct enumeration of age, and especially the ages of children under 10, and of women 15 to 45 years of age.
- (c) Great emphasis is placed upon complete enumeration of children.
- (d) Great emphasis is placed upon correct enumeration of children ever born, and especially the recording of data for childless women.

These four improvements cost very little, require no additional questions on the census schedule, and will do much to establish a solid baseline for measuring future fertility change.

4. For intercensal periods and for measuring the impact of family planning upon the birth rate, sample surveys should

contain questions which permit a measurement of birth rate and changes in birth rates. There are two alternative systems:

- (a) Population Growth Estimation (PGE)
- (b) Pregnancy History (PH)

Every evaluation unit should experiment with both systems and make use of the system that best meets its evaluation needs.

5. For evaluating the impact of family planning upon birth rates, special analysis should be undertaken that:

- (a) Links changes in contraceptive activity directly to changes in the birth rate.
- (b) Identifies couples who control their fertility and links their changed fertility behavior to the amount of contact and influence they have experienced from the national family planning program, and whether or not they obtain their contraceptive service through the national family planning program.

At present no system or "package" has been firmly established as superior to all others for this purpose. Three systems have been proposed:

- (a) Potter "births averted" system
- (b) CFSC "fertility components" system
- (c) Birth Interval analysis

Each evaluation unit should experiment with all of these systems, and seek to develop and improve upon others.

6. Although all potential measures of fertility and fertility changes should be explored, the present evidence is that when birth rates have recently begun a descent, several of the techniques proposed are less sensitive in measuring the magnitude of fertility change than the ones proposed above. Among the techniques of this group are:

- (a) Quasi-stable population models
- (b) Numerator analysis
- (c) Brass CEB/BLY procedure

Another procedure which has been suggested, which is difficult to calibrate and standardize is "prevalance of pregnancy." Experimentation with this method, perhaps for women more than 3 months pregnant, should continue.

7. The family planning movement should lend its strongest support to the drive to improve vital registration. Family planning workers should encourage parents to register their babies as one act of "responsible parenthood." They should work with local officials to promote support for the local

registration systems. They should work to gain strengthening of vital registration laws, for improvement of administrative organization for vital registration, and for careful collection, processing and publishing of vital statistics.

#### IV

#### Suggestions for a National System of Follow-up for Measurement of Use-Effectiveness of Contraception, Impact of the Program on the Birth Rate, and Client Reaction to the Family Planning Program

1. Every 1-5 years a systematic effort should be made to measure the use-effectiveness of contraception by the clinic population, and the impact which the national family planning program is having on the birth rate. This effort should be nationwide. It should be based on a sample of the clinic patients. These persons should be followed up in their homes to obtain information that can be used to improve family planning services.
2. When samples of clients are followed up, this opportunity should be taken to get their reaction as patients, in order to find out what needs to be done to improve the program. In addition, data for explanatory variables that will explain why some patients have continued and others have dropped out should be collected. Especially important if this connection are the psychological variables and the programmatic variables presented in Part II of the Model Interview (Manual 3).
3. The sample size for the national follow-up should be about the same as for the national inventory: 2,000 to 5,000, depending upon whether or not separate sets of data are desired for urban and rural (or metropolitan and nonmetropolitan) areas. The sampling plan should be worked out with sampling experts. It will probably be found desirable to take a sample of clinics after stratifying the clinics by size and type. Within the sample clinics it may be found necessary to stratify the records, although taking every Xth case may be found to meet sampling needs fully.
4. The interviewers selected to collect the data should not be family planning service personnel or home visitors whose duty it is to serve the clients. Many of the questions will refer to the patient's reaction to the work of these people, and having them as interviewers will bias the results. Instead, the interviewers who take the national sample inven-

- tory could also do the follow-up interviewing in years when the national inventory is not being taken. The qualifications for the interviewers are the same as for regular national sample fertility surveys, except that special training must be given concerning the medical aspects of side effects associated with the various methods.
- the medical aspects of side effects associated with the various methods.
5. A major problem in the follow-up of clinic patients is "loss to follow-up"--not being able to find the person in the sample whose name appears on the clinic records as a patient. At the time that the patient is registered, the name and address of another person who will always know where to find her should she move needs to be taken. This will assist in identifying and locating the correct person. Special intensive efforts must be made to follow up the maximum possible proportion of the sample. If they have moved to other districts, arrangements should be made to have them interviewed at their new address.
  6. After the survey is over, a subsample of the loss-to-follow-up persons should be taken and an absolutely exhaustive effort made to locate them. The characteristics of the persons found in this way can be used to help interpret the biases in the statistics that are due to loss to follow-up. Also, all family planning programs where payment for service is involved have a certain amount of falsification of records in order to meet quotas, get payment, etc. The amount of this falsification can be estimated from the proportion of the subsample of names that seem never to have existed.
  7. There are two "packages" for measuring use-effectiveness and impact of the program on birth rates. These are:
    - (a) "Potter-Tietze package" which measures use-effectiveness and extended use-effectiveness for first segments of contraception (Manual 8).
    - (b) "CFSC package" which measures demographic impact plus use-effectiveness via the Potter life table approach on a multiple-segment, fixed time interval basis (Manual 5).
 Each evaluation center should explore both of these packages and use one or both, depending upon their needs.
  8. When the data for a national follow-up of patients is coded and tabulated, a multiple-organization approach should be taken toward its analysis, as was suggested for the national sample survey. Individual teams or persons at universities or other organizations should be asked to take on the task of making an

intensive analysis for particular topics or problems. The evaluation unit should provide these teams with the tabulations they need. A deadline should be set by which all teams should have finished their work.

9. As quickly as the teams and the evaluation unit have been able to complete a fairly complete analysis, a national meeting should be convened to discuss the findings of the follow-up survey, and its implications for changing and improving the program. This should cover all aspects--use-effectiveness, rates of discontinuance, reasons for discontinuance, criticisms which patients express of family planning services, and the extent to which the service program is meeting its targets. In this way, the findings of the survey will quickly find their way into the program.
10. Throughout the entire cycle of follow-up research, the major goal should be to study failure, to explain failure, and to try to devise ways to reduce failure. Each case of discontinuance of contraception should be attributed as a failure with some identifiable cause--insufficient instruction at the clinic, insufficient after-care, insufficient insight into the special problems of the patient, etc. Simply to blame failure on the method or on the client cannot lead to improvement of the program. Every failure should be attributed to the family planning program, especially if the patient did not wish to have another child at the time she stopped coming to the clinic and did not change to another method of contraception.

#### V

#### Suggestions for Use of Electronic Computers for Processing the Results of Evaluation Surveys and Reports of Service Statistics

1. Modern family planning evaluation surveys are among the most complex social investigations yet undertaken anywhere in the world. The number of variables is large; the concepts involved are not simple; many of the statistical operations that must be performed if the analysis is to be precise require comparing, selecting, recoding, and mathematical calculations that conventional data processing equipment cannot do. Conventional equipment (such as IBM 101) is hopelessly inadequate to face this task. Even more important, speed is essential for evaluation. If survey data cannot be processed quickly, they are of little use for improving family planning

- programs. For all of these reasons, it is of top importance that modern computer technology be brought to the family planning evaluation process.
2. The simplest and fastest method of getting survey data through the computer is the use of "packaged programs." These are programs written by experts which require that the user fill out only a few "control cards" in order to use. Thus, dozens of researchers can use the computer to do highly technical work after only about 10 hours of training with a packaged program. Therefore, every evaluation unit should train some of its specialists to use packaged programs for processing data by computer.
  3. The best of these packaged programs are written for the larger computers. It is much preferable for the family planning evaluator to have access for a few hours each month to a major computer installation with a large computer and skilled staff of computer technicians than to have sole or major proprietorship over a small computer.
  4. Packaged programs for processing sample survey and family planning service statistics data are now available everywhere in the world. MINI-TAB, written by the Community and Family Study Center (Manual 7), can perform this task on the IBM 1620, 1401, or other small computers. For the IBM 360-40 and larger machines a more elaborate "packaged program" is SPSS. For the still larger machines, DATA-TEXT and special programs are available. A packaged program that fits the computers that are locally available can be installed, and the evaluation technicians taught how to use it, within one week.
  5. In the light of the above, it is suggested that every family planning program go through a "crash program" to:
    - (a) Get a packaged cross-tabulation program operational at the largest computer that is accessible.
    - (b) Get its leading researchers to undergo training in the use of this program.
    - (c) Add to its research budget the funds for computer time. The saving in other tabulation costs and in lessened clerical work will be sufficient to pay most, if not all, of the computer costs.
    - (d) Encourage its researchers to undertake expanded reporting and analysis with the increased capability thus acquired.
  6. In addition to the packaged programs for cross-tabulation, the Community and Family Study Center has prepared special

packaged programs for processing:

- (a) Pregnancy history data
- (b) Contraceptive history data
- (c) Projections of target populations and local family planning quotas
- (d) Calculating rates and processing children-ever-born data
- (e) Multiple-decrement life table measures of use-effectiveness

These programs are all available if the local computer can be adapted to them. If only occasional needs for use of these programs is experienced, the Community and Family Study Center is equipped to process the data in Chicago and air-mail the data and the results to the research unit. Other packaged programs are now in preparation for evaluation work.

7. Processing clinic statistics by computer. Clinic statistics need to be summarized at several different levels: clinic, district, state, national. They need to be summarized in abbreviated form each month, in a somewhat more detailed way each quarter and in a fully detailed way once each year. If carried out manually by accumulating reports from the local to the national level, it is impossible to meet the full needs of the evaluation program. However, the task can be made manageable by use of electronic computers.
  - (a) The "packaged programs" of MINI-TAB or SPSS can be used for making the monthly, quarterly, and annual computer tabulations. However, it is possible to write special programs that will print each report exactly as it should appear in final form. Once written, these programs can be used repeatedly.
  - (b) The computer will offer an opportunity to digest clinic data, in addition to summarizing it. Percentages, rates, ratios, differences, changes, and comparisons with other programs or with targets and quotas can be calculated and printed out. This will greatly improve the interpretation of the data.
  - (c) The above notes refer not only to clinic data for volume of services performed, hours worked, and data on expenditures and supplies, but also to data for new patients.
8. Keeping track of patient status by computer. It is possible to maintain, in the memory of a computer, all of the facts about each family planning patient in the program, and to make the computer able to manipulate this information in various ways desired. Several family planning evaluation units have experi-

mented with this idea. In general, most specialists feel it is too cumbersome, too costly, and demands too much "paper-work" from clinic personnel to be practical. It has been used in other medical programs also, with similar reaction. Major problems occur when patients move, marry, change clinics, lose their clinic number, misspell their names, and hide their identities. (The system has been found good when patients are "captives" as in a hospital.) Also, there are simple, inexpensive ways of performing the most essential operations which the computerized patient file is able to do. For example, the manual "tickler file" is able to give precise data about patients due at the clinic each day or each month, and costs almost nothing to maintain.

## VI

### Suggestions for Improving Cost-Effectiveness of Family Planning Programs

1. There is increasing pressure to accomplish more family planning within a limited budget, with the result that cost is becoming steadily more important. Until now, effectiveness has been the major criterion--getting the job done, at any reasonable cost. In the future, efficiency--getting the job done well at the most reasonable cost possible will get more emphasis.
2. The basic measure of cost-effectiveness is the input/output ratio. This is the amount of effort that must be expended to achieve one unit of output. When reduced to financial terms, this becomes the average cost of accomplishing one unit of work, such as causing one person to adopt family planning. The common denominator of input is money; therefore cost/output ratios are the fundamental measures of efficiency.
3. Every family planning program should organize its budgeting and bookkeeping systems to furnish data for computing cost/output ratios. If the system is planned in advance and books are kept in accordance with such a plan, cost-analysis is not difficult or expensive. However, if records are not kept in a way that facilitates cost/output analysis, only very expensive tabulations and reworking of accounting records can produce the information needed.
4. To comply with point 3, the budgets for all family planning programs should be kept in terms of a few "program action"

categories. The accounting of expenditures should be done in terms of these same categories. Only a few broad categories should be used for this purpose, because of the burden of accounting work that would be involved and the difficulty of assigning a cost or an output to categories when they are highly specific. A possible set of action categories would be:

- (a) Administration
  - (b) Clinic and medical services
  - (c) Field work and community organization work
  - (d) Public information and mass communication
  - (e) Training of personnel
  - (f) Research and evaluation
5. Each of these major categories should be subdivided into a few subcategories that specify the principal types of expenditures. For example, clinic services might be subdivided into:
- (a) Personnel
    1. Physicians
    2. Other medical
    3. Nonmedical
  - (b) Space, maintenance and equipment
    1. Rent, heat, light, taxes, etc.
    2. Equipment and fixtures
  - (c) Contraceptive and medical supplies
  - (d) Office supplies, other clinic costs not classified above
6. The accounting records should be kept in terms of these major categories and subcategories. This will provide information about the inputs (costs) for each major phase of the action program, by type of cost. A summary of actual expenditure in terms of these "action categories" should be prepared at least quarterly or annually, and monthly if possible.
7. The "output" of each of the "action categories" should be measured monthly or quarterly. These data should be reported on forms prepared especially for each of the action categories. The forms should be simple and easy to fill out. For example, the clinic would report on clinic services performed; the field unit would report on numbers of home visits made, number of group meetings held, number of persons attending group and public meetings, etc.
8. The information of item (6) can be used as numerators and the information of item (7) can be used as denominators to measure the cost of performing each unit of output. By using the subcomponents, it is possible to subdivide this cost into its principal parts. For example, the average cost of each clinic visit, the average cost of delivering a message to a

- household via radio, the average cost of a home visit can be broken into subcategories of personnel, facilities, etc.
9. Accounting expert. Each evaluation unit should have on its staff a person trained in cost accounting who would be charged with making the cost-effectiveness analysis. A person with these skills often is able to make estimates and adjustments for incompleteness or inadequacies of reporting to arrive at more precise measures. Also, such a person will be in a position to make recommendations for lowering costs and improving the efficiency of the family planning operation.
  10. The reports of expenditures and accomplishments (monthly or quarterly) should be prepared for each of the smallest units of the program for which financial records are kept. This may be the individual clinic or the individual district. A copy of these records should be forwarded to the central evaluation unit. A computer program should be prepared which digests and summarizes the data for each unit and computes the cost/output ratios. In this way, a set of cost/output ratios are made available not only for each local unit for each month, but also for districts, provinces, and the nation. Trends over time, and variations from place-to-place in cost/output can then be observed and analyzed. By accumulating the monthly cards for an entire year, more detailed annual analysis can be made.
  11. If the system outlined in item (10) is established, special studies should be undertaken to account for unusually high (bad) and unusually low (good) cost-output ratios. Units which are producing little in comparison with the costs they are incurring can be eliminated or reorganized, while units that are unusually efficient can be rewarded.
  12. Survey of workers. Once each 1-5 years, the Evaluation Unit should undertake a confidential "Staff Survey." This would consist of a private interview with a representative sample of the family planning employees at each operation category, and subcategory. This interview would concentrate on worker satisfactions and dissatisfactions and on soliciting recommendations for change and improvement. Each person interviewed should be given a rating by his immediate supervisor and a summary of his productivity should be taken from local records. This information should be forwarded to the central evaluation unit, which should prepare analytical report on the survey results.
  13. Merit System for Promotion and Pay Raises. A "merit system" should be inaugurated which would require the passing

of an examination to attain each type of family planning position, an annual review of performance for each person, and establishment of a regular "grievance resolution" system. In other words, the practices that have come to be called a "civil service system" should be adopted and made a part of the personnel system of family planning. This will help to keep incompetent workers from rising in the system and will help to control favoritism and political influence in hiring and promoting. The records of this merit system should be available to the evaluation unit for analysis.

14. Personnel Review. The evaluation unit should work with the training unit to conduct a screening of all employees at least once each decade, to determine whether or not the employee is properly trained and qualified for the position he is filling. This review may be a system of examinations or other personnel review. Ideally, the process should be continuous, with about 10 percent being performed each year. Persons not found qualified should be scheduled for retraining, reclassification, or discharge--as the findings may indicate. Regular retraining classes may be held to retrain those screened out by the system. Such a continuous flow of review and training is a healthful stimulus to the entire system. The evaluation unit should help to design the examination system and should tabulate and analyze the results.
15. Special Studies. The evaluation unit should undertake special cost-effectiveness studies into particular topics that emerge as being important. This may be cost-effectiveness studies of new procedures that are proposed. It may involve the assembling of special records to study some particular part of a program, such as mobile teams, using private doctors instead of public clinics for medical service, measuring the impact of particular mass communication experiments, etc.
16. Annual Cost-effectiveness report. Once each year, the accountant member of the evaluation unit should prepare a comprehensive analysis of the cost effectiveness of the program for the year, in comparison with previous years, and submit it to the administration for consideration and discussion.

## VII

Suggestions Concerning Techniques to be Used in Measuring Use-Effectiveness and Impact of the Family Planning Program on the Birth Rate

1. Use-effectiveness of contraceptives should be measured in two ways:
  - (a) For the total national population (from National Inventory)
  - (b) For the family planning clinic population (from follow-up of patients)

It is not valid to do it for only one and assume it applies to both.
2. Use-effectiveness of contraceptives should be established for every method in use in the population--even the unreliable ones such as douche, rhythm, or withdrawal. Almost everywhere in the world, a great deal of fertility decline is accomplished by the nonclinical methods. Until their use-effectiveness is understood for each country, it will be difficult to understand changes in the birth rate.
3. Use-effectiveness and "demographic effect" are different but related problems. The evaluation unit should place top priority in studying use-effectiveness, but should strive to measure "demographic effect" also.
4. The following techniques are available for measurement of use-effectiveness and demographic effect:
  - (a) Potter multiple decrement life table
  - (b) CFSC "components of fertility" analysis
  - (c) "Birth Averted" analysis
  - (d) Birth interval analysis
  - (e) "Couple years of protection" estimates
5. The Potter life table method is widely understood and is standard throughout the world. Every evaluation unit should take it as a matter of urgent priority to prepare for each major method of contraception in use, a multiple decrement life table with
  - (a) pregnancy rate and
  - (b) discontinuation rate

both for clinic and total populations. The Potter-Tietze package (Manual 8) gives full and complete instructions for doing this, both for conventional and extended use-effectiveness, but for clinic populations only. This procedure should also be adapted for measuring use-effectiveness in the general population.
6. The "CFSC components of fertility" method makes use of

measures derived from the pearl pregnancy rates for measuring demographic impact of contraception upon the birth rate. It relies on retrospective contraceptive histories for data. This is a new model, not yet tested in developing countries. Experiments with this method need to be made to find out how well it works in the individual countries.

7. Birth interval analysis is a somewhat controversial method at present. Freedman and Takeshita found it useful in their Taiwan monograph. Also, it is a fundamental concept in the mathematical models of Mindel Sheps, R. Potter, and others. Researchers should be encouraged to continue to experiment with this method. The "pregnancy history" method (Manual 5) provides raw data for such experimentation.
8. "Births Averted" analysis seeks to convert contraceptive activity into births prevented by contraception. Although some of the measures developed by this line of research are complicated, and require information not available in many programs, the concept is a sound one and needs to be explored further. The "components of fertility" method provides measures of births averted also, and its use in this connection needs to be explored.
9. The "couple years of protection" concept converts contraceptives into months of complete protection from pregnancy. Although these estimates are highly approximate, they have provided a way of combining the impact of all methods of contraception, from IUCD to condom and sterilization, into single summary measures. Intensive studies need to be made into the details of contraceptive use and the frequency of sex relations in each country before the validity of these measures can be improved.
10. By whatever method computed, use-effectiveness measures should be computed for different classes of family planning adopters: for age groups, for parity groups, for districts or states of the nation, for urban and rural areas, and for major ethnic or religious groups.
11. Use-effectiveness studies should always collect data for explanatory variables. These are variables that can account for high or low use-effectiveness. It does little good to establish that use-effectiveness is high or low if it is impossible to explain why this is the case or if there is no research to find out what might be done to improve use-effectiveness.
12. One of the most neglected aspects of use-effectiveness is couple-to-couple variation in use-effectiveness. Broad average measures are useful, but improvement of family

planning demands information about couples who fail, and how and why they fail at using contraception. Great urgency should be placed upon research in this area. Research on individual couples requires:

- (a) Developing valid measures of couple-effectiveness in using contraception
- (b) Obtaining data for explanatory variables that account for variations in couple effectiveness.

In making such studies, it will be necessary to control such obvious factors as age, parity, and educational attainment while getting at deeper underlying factors.

13. Special use-effectiveness studies should be undertaken in problem areas where high birth rates persist, where adoption rates are low, and where defection from the program is prevalent.
14. Experiments to improve use-effectiveness should be undertaken. Discontinuation rates for both IUCD and pill may be greatly lowered by special intensive programs. These experiments should include nonmedical reliable methods, such as condom.

### VIII

#### Suggestions for a National Communication Program for Family Planning

1. As family planning programs become "mature" after several years of operation, it is not valid to assume that methods of recruiting new adopters that worked splendidly early in the program will continue to work equally effectively after several years. The public may become "tired" or "accustomed" to them and begin reacting in a neutral or negative way. Therefore, there is urgent need to evaluate fully the present education-communication program in each country.
2. Moreover, methods of communication that may have been regarded as too "daring" or "immodest" at the start of the program may now be much more appropriate because the public has become accustomed to family planning as a part of everyday life. For this reason also, there is need to reevaluate the program of education-communication.
3. The ability of the family planning program to recruit new adopters, and to keep old ones, in comparison with the national targets should be evaluated. If the program is lagging be-

- hind--not bringing in the number of new adopters required to attain the targets--there is need to revise the education-communication program.
4. It is suggested that the time is now appropriate to make much greater use of mass communication in behalf of family planning than has been done in the past. Moreover, it is believed that it will be necessary to use more mass communication in the future if the national targets and goals are to be attained within the time desired.
  5. It is suggested that every national family planning program establish a "Communication Committee" to explore the possibilities for expanding the use of all types of communication, but especially mass communication in its future family planning programs. Members of the evaluation unit and other researchers should belong to this committee.
  6. The first task of this committee is to estimate how much communication, of all types, is needed to accomplish the national goals. This is then compared with what is currently being done, to determine how adequate the present communication program is.
  7. The next step is to compare the total need for communication with the current resources, to see how adequate the resources are. Among the resources to be considered are the commercial systems: newspaper, radio, television, movie, etc.
  8. With the need estimated, the resources inventoried, the next step is to plan an adequate communication organization. The talent of the private communications industries should be tapped in making this plan.
  9. A "crash" program to train additional communication specialists, to meet the national need and the revised plan should be undertaken.
  10. A strong "communications research" unit should be set up within the family planning program, preferably as a part of the evaluation unit.
  11. International assistance should be sought in revising the national communication program for family planning.

## Chapter Four

HOW CAN WE MAKE EVALUATION STATISTICS  
MORE USEFUL TO EXECUTIVES AND TEACH EXECUTIVES  
HOW TO USE EVALUATION STATISTICS ?

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## I

The Communication Gap Between Evaluator and Executive

Because they have had very different courses of training, because they have had very different work experience, and because they tend to be concerned about very different problems, the family planning executive and the family planning evaluator often find it difficult to talk meaningfully to each other. Almost everywhere there are difficulties in communication that hamper the free exchange of ideas between them. If we are to improve family planning programs through increased use of evaluation, it will not be enough simply to step up the flow of statistical information. We must, in addition, mend the "communication gap" between executive and evaluator.

How can we go about closing this gap? Some thoughts and tentative suggestions are presented in this paper in an effort to get the process started. It is hoped that they may stimulate further thinking and discussion of the problem and lead to closer teamwork and mutual understanding between research evaluators and the person they are supposed to be helping--the executive.

## II

Causes of Misunderstanding

What underlies the communication gap described above? Although the following explanation is impressionistic, it appears that at least five

factors are working to bring it about:

1. Some executives lack the statistical skills to understand in detail the steps which the researcher must perform in order to prepare reliable statistical information. Often the executive dislikes or fears statistics and is defensive about his lack of training in this area.

2. Some evaluators prepare their reports as if they were to be read only by other researchers; they make no effort to make them readable or comprehensible for the nontechnical person. They delight in displaying their research sophistication by using highly specialized jargon and feel no obligation to communicate with those who will try to make practical use of their work. Often social researchers compound this by adding to research jargon the equally incomprehensible jargon of sociology and psychology.

3. Sometimes the evaluator does not understand the executive's problems and hence does not know what questions he needs to have answered. He assumes that he knows what data need to be collected and goes ahead unilaterally, without finding out in detail what he should be furnishing to his boss if he is to help him.

4. Sometimes the executive is not accustomed to having special information to help in solving problems. He is used to making decisions quickly on the basis of hearsay information and quick impressions. He has not realized that he could make better decisions if he had more information. Therefore, he is not aware of what is possible. The executive may not realize that he needs more information, or he may be unable to say exactly what information it is that he needs. Because the executive is uncertain about the data for which he should ask, the evaluator is powerless to give him help.

5. In some cases, even though he may understand what the executive wants and needs, the evaluator may be disinterested in providing it. Because he is a researcher he may be fascinated by a particular topic that has just been uncovered. In order to pursue his special research interests, the evaluator may neglect to furnish the executive with what he wants. The executive may be forced to wait for his data, or he may receive data which the evaluator, anxious to get back to the work which interests him most, has prepared hastily, carelessly, and incompletely.

### III

#### Mending the Misunderstandings

If we may accept the above as an approximate diagnosis of the situation, it would appear that the first step in closing the communication gap would be for both sides to recognize these five factors and discuss them openly and frankly with each other, seeking a solution.

None of these problems is insoluble. In fact, all but one of them are things that can be cleared up in a few weeks of patient interaction. Here are some steps that can be taken to resolve the problems:

(a) The executive can request that the researcher give him a few short briefing sessions in the procedures he uses in preparing his data. The executive should try to learn more basic statistics and to understand the researcher's problems.

(b) In turn, the executive can hold briefing sessions to inform the researcher about the kinds of problems he is facing, the topics upon which he needs information, and the types of decisions which he must make.

(c) The researcher can "change his ways" and begin writing clearer, more readable, and less technical interpretations of the data he presents, so that their meaning is quickly grasped by all who read them.

(d) The researcher can also "mend his ways" by giving top priority to the information needs of the executive and postponing work on his particular research interests until he has discharged his obligation to the program.

The one really serious problem, and the problem most difficult to resolve, in the above list is the lack of awareness on the part of the administrator of how evaluation could help him. It is our hypothesis that this is the most important of the five causes of the communication gap. Neither the executive nor the evaluator is aware of what the evaluator should be doing; hence, both are floundering for a solution and they are unable to help each other. Discussions between the executive and his evaluator will not necessarily lead to a solution. External help is needed. How can we contribute to the resolution of this problem? This paper considers this question.

One way out of this dilemma is to draw up a rough preliminary plan of what an executive should be asking his evaluator to do. This plan should then be submitted to executives and thoroughly discussed and revised. In the light of their reaction, it can become a blueprint from which both evaluator and executive can plan their future work.

### IV

#### A Worksheet of Needed Evaluation Information

In order to stimulate both executives and evaluators to explore the great potential for improving family planning programs through expansion of evaluation work, we have drawn up a discussion draft of what we call a "Worksheet of Needed Evaluation Information." This worksheet should be a catalyst in getting the executive and the evaluator to

see more clearly the nature of their problem and in helping them to expand the scope of the evaluation operation to the dimensions needed for modern family planning operations. It is intended to be checklist of information which, if possessed, could be used by the executive in improving his decision and policy making and in planning for the future. Each item on the list can be satisfied by a single statistic or by a simple statistical table. It is intended to be a catalogue of top-priority facts and principles which evaluators should be producing, if requested by the executives.

The Worksheet is divided into five sections:

- Section I Items from the National Family Planning Inventory
- Section II Items from the National Service Statistics
- Section III Items from the Sample of Clinic Records of New Patients
- Section IV Items from the Follow-up of Clinic Patients
- Section V Items from Financial, Personnel, and Work Report Records

We will take up each section separately.

## V

### Targets for Executives

One of the aids which executives need is a point of comparison from which to judge the statistics which evaluators give them. Many times this is a number or relationship that should exist if the program were working perfectly or if it had achieved all that could be hoped for. In these cases, we have tried to indicate a "target statistic" for the item to give the executive a comparison point. Many times these target numbers will vary from country to country or from year to year. In such cases we have simply inserted the notation "VAR" to indicate that the target varies but should be set by or for the executive.

Many family planning programs assign quotas and targets which individual clinics or individual field workers are expected to attain if they are "doing their jobs." We propose that top executives be given the same treatment. They should rate themselves and the entire program in terms of these targets.

## VI

### Section I. What Can Executives Gain from a National Inventory?

The following is a worksheet designed to extract from a National Family Planning Inventory the items of information that should be of

greatest interest to an evaluator. The evaluator who possesses these data for a representative sample of the general public should have a clear idea of where his program stands in comparison with where he would like it to stand. It should be taken as a matter of the greatest urgency that such data be distilled for the executive at the earliest possible moment after the data have been assembled, without waiting for more elaborate analysis.

Particular attention should be paid to the last section of the worksheet. This section refers to items that can help explain to the executive why his program may not be meeting the targets.

**Summary:** We have, in this worksheet, a device for "cutting through" the maze of confusing detail that becomes possible when we take a major survey. By studying this "capsule" and asking first for the information suggested here, the executive can get the "essence" of the survey quickly, get the basic explanations he needs, and arrange to have them fed to him promptly.

### A WORKSHEET OF NEEDED FAMILY PLANNING EVALUATION INFORMATION FROM THE NATIONAL FAMILY PLANNING INVENTORY

Item	Survey result	Target ideal (percent)	Percent of target achieved
<b>A. BIRTH RATES</b>			
1. Age-specific birth rates.....	_____	Var	_____
2. General fertility rate.....	_____	Var	_____
3. Total fertility rate.....	_____	Var	_____
4. Age-standardized nuptial fertility rate.....	_____	Var	_____
<b>B. KNOWLEDGE OF CONTRACEPTION</b>			
1. Percent knowing 3 or more reliable methods.....	_____	100	_____
2. Percent knowing basic facts of human reproduction.....	_____	100	_____
3. Percent having correct knowledge of reliability of IUCD.....	_____	100	_____
4. Percent having correct knowledge of reliability of Pill.....	_____	100	_____
5. Percent having correct knowledge of reliability of condom.....	_____	100	_____
6. Percent having correct understanding of vasectomy.....	_____	100	_____
7. Percent aware side effects IUCD diminish within 3 months.....	_____	100	_____
8. Percent aware side effects pill diminish within 3 months.....	_____	100	_____
9. Percent knowing location of two nearest clinics.....	_____	100	_____
10. Percent knowing days and hours of at least one clinic.....	_____	100	_____
11. Percent knowing methods offered at nearest clinic.....	_____	100	_____

12. Percent knowing cost family planning service at that nearest clinic.....	100	
13. Percent having correct understanding of population growth rate in their country.....	100	
14. Percent having correct understanding lowered infant mortality.....	100	
15. Percent knowing that douche, withdrawal rhythm are not reliable.....	100	
<b>C. MOTIVATION</b>		
1. Percent of couples desiring 2 children or less.....	75	
2. Percent wishing interval 2+ years between marriage and birth of first child.....	100	
3. Percent wishing interval 3+ years between children.....	100	
4. Percent who want the population of their nation to grow slowly.....	100	
5. Percent with no sex preference for children.....	100	
6. Percent who link FP to future welfare of children.....	100	
7. Percent who link FP to health of mother and child.....	100	
8. Percent who link family economic wellbeing to FP.....	100	
9. Percent with two children who desire no more.....	75	
<b>D. SOCIAL LEGITIMACY OF FAMILY PLANNING</b>		
1. Percent believing that a majority of couples in the community approve of FP	100	
2. Percent believing that most doctors advocate FP.....	100	
3. Percent believing that most community leaders approve of FP.....	100	
4. Percent believing that practicing FP is not against religious principles or immoral.....	100	
5. Percent believing that national FP program need not corrupt morals of the young.....	100	
<b>E. CREDIBILITY OF FAMILY PLANNING</b>		
1. Percent believing that FP information given at clinics is dependable.....	100	
2. Percent believing FP information given by home visitors is correct.....	100	
3. Percent believing FP information via mass media is dependable.....	100	
4. Percent believing that an FP program is good for the country.....	100	
<b>F. ATTITUDES TOWARD FAMILY PLANNING</b>		
1. Percent of women approving of FP in principle.....	100	
2. Percent of men approving of FP in principle.....	100	
3. Percent of couples approving of FP in principle.....	100	
4. Percent of woman with a positive attitude toward the use of IUCD.....	70	

5. Percent of women with a positive attitude toward the use of Pill.....	70	
6. Percent of men with a positive attitude toward use of condom.....	75	
7. Percent of men with a positive attitude toward vasectomy.....	75	
8. Percent of women with a positive attitude toward female sterilization..	75	
9. Percent of women with a positive attitude toward at least three reliable methods of contraception.....	100	
10. Percent of women with favorable attitude toward abortion.....	Var	
<b>G. SELF-REFERRAL FOR FAMILY PLANNING</b>		
1. Percent of couples who have discussed ideal family size.....	100	
2. Percent of couples who have discussed FP.....	100	
3. Percent of couples who intend to use contraception in future, if not now using.....	100	
4. Women who have thought about using contraception, if not now using.....	100	
<b>H. COMPETENCE TO USE CONTRACEPTION</b>		
1. Percent believing that God or Fate determines family size.....	0	
2. Percent confident in their ability to use pill regularly.....	100	
3. Percent confident in their ability to use condom regularly.....	100	
4. Percent willing to use IUCD.....	50	
<b>I. USE OF CONTRACEPTION</b>		
1. Percent of couples who have ever used a reliable method to space or limit births.....	0	
2. Percent of not pregnant couples currently practicing reliable contraception.....	Var	
3. Percent of not pregnant couples currently practicing contraceptive using unreliable methods.....	0	
4. Percent of couples who have had an induced abortion.....	Var	
5. Percent of all current contraception that takes place within the national program.....	Var	
6. Percent of all reliable current contraception that takes place within the national program.....	Var	
7. Percent of current contraception by IUCD	Var	
8. Percent of current contraception by pill, injection.....	Var	
9. Percent of current contraception by condom.....	Var	
10. Percent of current contraception by vaginal compounds.....	Var	
11. Percent of current contraception by withdrawal, douche, rhythm.....	Var	
12. Percent of informed people who do not use reliable method.....	0	

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Contraceptive jelly, tubes.....	_____	_____	_____	_____	_____
Foaming tablets, vials.....	_____	_____	_____	_____	_____
Other (specify).....	_____	_____	_____	_____	_____
6. Other services performed					
Cancer detection tests.....	_____	_____	_____	_____	_____
Visits, infertility patients.....	_____	_____	_____	_____	_____
Student-days of in-clinic training, personnel outside FP.....	_____	_____	_____	_____	_____
<b>B. REPORT OF CLINIC MANPOWER EXPENDED</b>					
1. Total hours clinics were open.....	_____	_____	_____	_____	_____
2. Physician-hours spent in clinics...	_____	_____	_____	_____	_____
3. Nurse-hours spend in clinics.....	_____	_____	_____	_____	_____
4. Person-hours, other personnel, spent in clinics.....	_____	_____	_____	_____	_____
5. Total person-hours spend in clinics	_____	_____	_____	_____	_____
<b>C. REPORT OF MANPOWER EXPENDED IN FIELD   WORK</b>					
1. Total, all field work (man hours expended).....	_____	_____	_____	_____	_____
2. Number persons contacted by field work.....	_____	_____	_____	_____	_____
3. Man-hours expended in home visiting	_____	_____	_____	_____	_____
4. Number persons contacted by home visiting.....	_____	_____	_____	_____	_____
5. Man-hours expended in group discussion meetings.....	_____	_____	_____	_____	_____
6. Number persons contacted by group discussions.....	_____	_____	_____	_____	_____
7. Man-hours expended in working with community agencies.....	_____	_____	_____	_____	_____
8. Number persons contacted on community agencies.....	_____	_____	_____	_____	_____
<b>D. REPORT OF MASS COMMUNICATION ACTIVITY</b>					
1. Public lectures given					
(a) Number.....	_____	_____	_____	_____	_____
(b) Estimated audience.....	_____	_____	_____	_____	_____
2. Family planning programs on radio, television					
(a) Number.....	_____	_____	_____	_____	_____
(b) Total minutes.....	_____	_____	_____	_____	_____
3. Spot announcements for FP on radio, television					
(a) Number.....	_____	_____	_____	_____	_____
(b) Total minutes.....	_____	_____	_____	_____	_____
(c) Estimated audience.....	_____	_____	_____	_____	_____
4. Showings of family planning movies					
(a) Number of showings.....	_____	_____	_____	_____	_____
(b) Estimated audience.....	_____	_____	_____	_____	_____
5. Notices inserted in newspapers for family planning					
(a) Number.....	_____	_____	_____	_____	_____
(b) Inches.....	_____	_____	_____	_____	_____
(c) Estimated audience.....	_____	_____	_____	_____	_____
6. Notices for FP run in public cinema					
(a) Number.....	_____	_____	_____	_____	_____
(b) Estimated audience.....	_____	_____	_____	_____	_____
7. Posters put on display, number.....	_____	_____	_____	_____	_____
8. New signboards for family planning erected, number.....	_____	_____	_____	_____	_____

<b>E. MEASURES OF ACCOMPLISHMENT</b>					
1. Adoption rate (new patients per 1000 eligible women), total and each method.....	_____	_____	_____	_____	_____
2. New patients per 1000 clinics hours	_____	_____	_____	_____	_____
3. New patients per 1000 hours of field work.....	_____	_____	_____	_____	_____
4. New patients per 100 minutes of radio, TV, movie time.....	_____	_____	_____	_____	_____
5. New patients per 1000 persons contacted in field work.....	_____	_____	_____	_____	_____
6. New patients per 1000 persons contacted by mass media.....	_____	_____	_____	_____	_____
7. Patient visits per 1000 clinic hours.....	_____	_____	_____	_____	_____
8. Patient visits per 1000 physician hours.....	_____	_____	_____	_____	_____
9. Patient visits per 1000 total clinic man(s) hours.....	_____	_____	_____	_____	_____
10. Ratio of number of visits for complaints to number of new patients.....	_____	_____	_____	_____	_____
11. Ratio of visits for complaints to new patients for this method during previous three months (by method).....	_____	_____	_____	_____	_____
12. Net balance of IUCD's inserted (excess or deficiency of insertions over removals for the examination period).....	_____	_____	_____	_____	_____
13. Estimate of couple-years of protection provided by clinic activity-					
IUCD.....	_____	_____	_____	_____	_____
Pill.....	_____	_____	_____	_____	_____
Condom.....	_____	_____	_____	_____	_____
Foam.....	_____	_____	_____	_____	_____
Jelly and creme.....	_____	_____	_____	_____	_____
Other.....	_____	_____	_____	_____	_____
Total.....	_____	_____	_____	_____	_____
14. Persons contacted per 1000 hours of field work					
Total.....	_____	_____	_____	_____	_____
Home visiting.....	_____	_____	_____	_____	_____
Group discussions.....	_____	_____	_____	_____	_____
Community agencies.....	_____	_____	_____	_____	_____
15. Ratio of persons contacted to number eligible women					
Home visiting.....	_____	_____	_____	_____	_____
Group discussions.....	_____	_____	_____	_____	_____
Radio, television.....	_____	_____	_____	_____	_____
Newspapers.....	_____	_____	_____	_____	_____
Public cinemas.....	_____	_____	_____	_____	_____
Public lectures.....	_____	_____	_____	_____	_____
Total.....	_____	_____	_____	_____	_____

VIII

Section III. What Can Executives Gain from Records of New Patients?

If once each quarter or once each year each clinic in the entire country sends a copy of a sample (every Xth record) of the records for new patients received during the period, certain tabulations can give the executive information concerning the characteristics of persons who are being attracted to the family planning clinics. By comparing the characteristics of these persons with the adult population of child-bearing age, he can know what kinds of persons he is not attracting to

A WORKSHEET OF NEEDED FAMILY PLANNING EVALUATION INFORMATION FROM PERIODIC TABULATIONS OF SAMPLES OF RECORDS OF NEW PATIENTS

Item	Actual performance		Target ideal		Percent of target achieved	
	This month	Cumulative this year	This month	Cumulative this year	This month	Cumulative this year
1. New patients, by method.....	—	—	—	—	—	—
2. New patients, by age.....	—	—	—	—	—	—
3. New patients, by parity.....	—	—	—	—	—	—
4. New patients, by type of clinic....	—	—	—	—	—	—
5. New patients, by type of residence.	—	—	—	—	—	—
6. New patients, by time since last pregnancy.....	—	—	—	—	—	—
7. New patients, by source of referral	—	—	—	—	—	—
8. New patients, by method used before	—	—	—	—	—	—
9. New patients, by education of husband and wife.....	—	—	—	—	—	—
10. New patients, by desire for additional children.....	—	—	—	—	—	—
11. New patients, by exposure to education-motivation program of FP.....	—	—	—	—	—	—
12. New patients, by income level of client.....	—	—	—	—	—	—

the clinics. Below is a worksheet designed to extract from these reports the items of information that should be of greatest use. The worksheet is "schematic" in that it only lists the topics, without giving detailed categories. This is done to conserve space; the categories are standard and will vary somewhat from country to country.

IX

Section IV. What Can Executives Gain from Follow-up of Clinic Patients?

The follow-up of clinic patients, performed at periodic intervals, has as its objective the gaining of information that can promote continuation of contraception and reduce "dropping out." The following worksheet is a suggested list of items that can be helpful in this regard. The list, however, will vary from nation to nation to match the particular problems encountered there.

The interview for this follow-up should be quite comprehensive covering many topics that are also on the National Family Planning Inventory. Wherever possible, the questions asked in the follow-up should be identical with those asked in the National Family Planning Inventory, so that the adopters and dropouts may be compared with the population.

A WORKSHEET OF NEEDED FAMILY PLANNING EVALUATION INFORMATION FROM FOLLOW-UP SURVEYS OF CLINIC PATIENTS

Item	All patients	Continuing patients	Drop-out patients	General population (National Inventory)
<b>A. BIRTH RATES</b>				
1. Age specific birth rates.....	—	—	—	—
2. General fertility rate.....	—	—	—	—
3. Total fertility rate.....	—	—	—	—
4. Age-standardized nuptial fertility rate.....	—	—	—	—
<b>B. COMPONENTS OF BIRTH RATE</b>				
Using the procedure described in Manual 6, compute "unreliability rate" and "prevalence-of-use" proportion of each method, and express the general fertility rate of adopters in terms of the components of contraception and noncontraception. Compare the components for clinic patients with those for the general population. Compare the components for clinic dropouts with those for continuing adopters.				
<b>C. LIFE TABLE MEASURES OF USE RELIABILITY</b>				
Calculate 12-month continuation rate for:				
1. Total contraception.....	—	—	—	—

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2. Pill.....	_____	_____	_____	_____
3. IUCD.....	_____	_____	_____	_____
4. Condom.....	_____	_____	_____	_____
5. Vaginal compounds.....	_____	_____	_____	_____
6. Withdrawal.....	_____	_____	_____	_____
7. Rhythm.....	_____	_____	_____	_____
8. Douche.....	_____	_____	_____	_____
9. Total reliable clinic methods (IUCD and Pill).....	_____	_____	_____	_____
<b>D. EVALUATION OF CLINIC SERVICES AND METHODS</b>				
(For details see Manual 3, Part I, Section XI and XII.)				
1. Criticisms of medical service provided.....	_____	_____	_____	_____
2. Criticisms of instruction given at clinic.....	_____	_____	_____	_____
3. Criticisms of accessibility, convenience of clinic.....	_____	_____	_____	_____
4. Attitude toward individual methods of contraception (with special emphasis on fears and dislikes)....	_____	_____	_____	_____
<b>E. KNOWLEDGE OF CONTRACEPTION</b>				
(See items from Section I)				
<b>F. MOTIVATION</b>				
(See items from Section I)				
<b>G. SOCIAL LEGITIMACY OF FAMILY PLANNING</b>				
(See items from Section I)				
<b>H. CREDIBILITY OF FAMILY PLANNING</b>				
(See items from Section I)				
<b>I. ATTITUDE TOWARD FAMILY PLANNING</b>				
(See items from Section I)				
<b>J. SELF-REFERRAL FOR FAMILY PLANNING</b>				
(See items from Section I)				
<b>K. COMPETENCE TO USE CONTRACEPTION</b>				
(See items from Section I)				
<b>L. USE OF CONTRACEPTION</b>				
(See items from Section I)				

X

**Section V. What Can Executives Gain from Analysis of Financial, Personnel, and Work Report Records ?**

If financial, personnel, and work records are kept in terms of categories recommended in Chapter 3, Section II, the executive can arrange to have some splendid measures of cost-effectiveness computed. By combining these records with other records of data obtained from the monthly clinic reports and the tabulations of new

patient records, he can evaluate the efficiency of his total operation and of each state, district, and even clinic.

The worksheet below lists and describes some of the measures that can be compiled for this purpose. The list is not exhaustive. It is purposely kept simple in the interest of minimizing paperwork and reporting load on clinic and other field personnel. It is, however, capable of considerable refinement if more detail is needed and desired.

**A WORKSHEET OF NEEDED FAMILY PLANNING EVALUATION INFORMATION FROM PERIODIC TABULATIONS OF SAMPLES OF RECORDS OF EXPENDITURES AND PERSONNEL**

Item	Actual performance		Target ideal
	This month	Year to date	
<b>A. DISTRIBUTION OF COSTS</b>			
1. Administration.....	_____	_____	_____
2. Clinical and medical.....	_____	_____	_____
3. Field work and community organization....	_____	_____	_____
4. Public information and mass communication	_____	_____	_____
5. Training of personnel.....	_____	_____	_____
6. Research and evaluation.....	_____	_____	_____
<b>B. DISTRIBUTION OF CLINIC COSTS</b>			
1. Personnel.....	_____	_____	_____
a. Physicians.....	_____	_____	_____
b. Nurses, other medical.....	_____	_____	_____
c. Nonmedical personnel.....	_____	_____	_____
2. Space, equipment, clinic maintenance.....	_____	_____	_____
3. Contraceptive supplies.....	_____	_____	_____
4. Other expenses.....	_____	_____	_____
<b>C. DISTRIBUTION OF FIELD COSTS</b>			
1. Home visiting.....	_____	_____	_____
2. Group discussions.....	_____	_____	_____
3. Working with community organizations.....	_____	_____	_____
<b>D. DISTRIBUTION OF COSTS FOR MASS MEDIA</b>			
1. Radio and television.....	_____	_____	_____
2. Newspaper and magazines.....	_____	_____	_____
3. Public cinema.....	_____	_____	_____
4. Signs, public displays, posters.....	_____	_____	_____
5. Public lectures.....	_____	_____	_____
6. Booklets, leaflets, mass mailing.....	_____	_____	_____
7. Technical communications staff.....	_____	_____	_____
8. Other costs of preparing communications..	_____	_____	_____
<b>E. DISTRIBUTION OF COSTS FOR TRAINING</b>			
1. Personnel: instructors, etc.....	_____	_____	_____
2. Transportation.....	_____	_____	_____
3. Space, training facilities.....	_____	_____	_____
4. Training materials.....	_____	_____	_____

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**F. DISTRIBUTION OF ADMINISTRATIVE COSTS**

- 1. Executives' salaries.....
- 2. Support personnel.....
- 3. Space, equipment central office.....

**G. DISTRIBUTION OF COSTS OF RESEARCH AND EVALUATION**

- 1. Cost of collecting data; interviewers, postage, etc.....
- 2. Cost of processing data; computer, etc....
- 3. Cost of analysis and report preparation..
  - a. Personnel.....
  - b. Other costs.....
- 4. Space, materials, equipment in office....

**H. COSTS PER PATIENT**

- 1. Total costs per patient per year.....
- 2. Cost of education-motivation per patient.
- 3. Medical costs per patient per year.....
- 4. Cost of obtaining one new adopter.....
- 5. Costs per patient per year for medical service, each method.....

**I. COST PER VISIT**

- 1. Medical costs per patient visit to clinic
  - a. Personnel.....
  - b. Other.....
- 2. Costs per home visit
  - a. Personnel.....
  - b. Other.....
- 3. Costs per person per group discussion
  - a. Personnel.....
  - b. Other.....

**J. COSTS PER UNIT OF MASS MEDIA (per 1000 audience)**

- 1. Total costs per 1000
- 2. Radio.....
- 3. Television.....
- 4. Public cinema.....
- 5. Newspapers.....
- 6. Mass mailings.....
- 7. Public displays.....
- 8. Public lectures.....

**K. TOTAL COST PER COUPLE YEAR OF PROTECTION**

- 1. IUCD.....
- 2. Pill.....
- 3. Condom.....
- 4. Aerosol foam.....
- 5. Other vaginal compounds.....
- 6. Rhythm method.....
- 7. Other methods.....

**L. TRAINING COSTS**

- 1. Cost of training one field worker.....
- 2. Cost of training one nonmedical clinic worker.....
- 3. Cost of training one physician or nurse..
- 4. Cost of indoctrinating one social worker, other person outside family planning....

**M. RATIOS**

- 1. Ratio of medical to education-motivation-communication costs.....
- 2. Ratio of administration, training, research to clinical and education.....
- 3. Ratio of "service" to "nonservice" activity.....
- 4. Ratio of physician costs to all clinic costs.....
- 5. Ratio of transportation costs to all field costs.....
- 6. Ratio of mass communication costs to field work costs.....
- 7. Ratio of costs of contraceptive to all clinic costs.....
- 8. Ratio of costs of pill patient per year to IUCD patient per year.....
- 9. Ratio of costs of home visit per person to group discussion per person.....
- 10. Ratio of costs of central administration to field operations and clinics.....

**XI  
Conclusion**

It is recommended that executives and their research staffs carefully review the illustrative worksheets proposed here, discussing the items one by one. For each item, the question should be asked: "If we obtained this information, how could it help improve the program?" For all items selected as worthy of obtaining, a plan can then be devised for assembling the necessary information. The strategy should be to

- (a) use the minimum size sample needed to supply the data needed;
- (b) compute the data for the proper units--states, provinces, districts, individual clinics--as necessary;
- (c) make use of electronic computers to cumulate data from month to month, to compute ratios, rates and differences for each reporting unit; and
- (d) give top priority to tabulating the items specified on the worksheets.

As each body of data is made available, the researchers and the executives should follow a standard pattern for digesting it:

- (a) The researcher should interpret the worksheet, preferably in writing.
- (b) The executives and researchers should discuss jointly the implications of the report, to assure maximum and correct use

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is made of the research and evaluation effort.

Without pretending that the procedures outlined here will eliminate completely all problems of communication and understanding between them, it is suggested that the worksheets submitted here can do much to "make evaluation statistics more useful to executives and teach executives how to use evaluation statistics." After he has generated this minimum body of data, the researcher should be encouraged to delve more deeply into the body of information that has been assembled, to deal with special problems with which the organization is concerned.

### Chapter Five

#### FAMILY PLANNING AND THE DEMOGRAPHIC AGNOSTIC\*

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#### I

#### Introducing the Demographic Agnostic

It is now well established that birth rates in Korea are falling. The family planning workers who have toiled with enthusiasm and devotion would like to be able to say that the fall in the birth rate has been caused by the national family planning program. If they make this claim, however, they are certain to be challenged by a Demographic Agnostic. This Demographic Agnostic will say that the fall in the birth rate would have happened anyway and that the family planners get very little credit, if any, for the fertility decline that has taken place. He demands proof that the family planning action program has affected the birth rate.

Please allow me to pause long enough to introduce you to the Demographic Agnostic. He is a demographer (often a very famous one) who has predicted a "population explosion" in the developing countries of Asia, Latin America and Africa. He is a person who has remained aloof from family planning "action programs" and who predicted the failure of these programs even before they began. Usually he has a strong dislike for social psychology and has very little faith in the ability of family planners to persuade rural, illiterate people to change their habits quickly. Because he has predicted the failure of family planning, he has a vested interest in disputing all claims that family

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planning is doing any good. He has faith in Malthus and in the inevitability of overpopulation, but he has no faith in psychological theories of attitude change when applied to anyone with less than a grammar school education. He believes that birth rates are lowered by urbanization, rising educational level and absorption of workers into a modern money economy. These changes take place slowly; for this reason he believes that birth rates cannot possibly fall fast enough to prevent massive overpopulation. Therefore, he predicts famines and other serious manifestations of drastic overpopulation for the very near future. Some of these Agnostics say that famines will almost certainly begin in Asia by mid-1970 and continue for the remainder of this century.

Not all demographers are agnostic about the efficacy of family planning. And not all of the persons who have doubts about the power of family planning to reduce fertility are demographers. It can truthfully be said, however, that the major center of organized skepticism concerning family planning programs is a certain group of demographers who have the strong "population explosion" view outlined above.

Please do not despise the Demographic Agnostic. He performs a very useful function. If he challenges us for proof that our program is doing some good, we should be able to provide it. If we think that he is prejudiced just because he will lose face if there is no population explosion, he reminds us that as family planners we may be prejudiced in the opposite way. We want so badly to believe that our efforts are worthwhile that we may be uncritical of evidence that does not support this view. Maybe we are not doing as well as we think we are and are claiming too much. If we are not doing the job, we should stop deceiving ourselves in order that we may adjust our program. The Demographic Agnostic helps to keep us honest and cautious.

In undertaking the measurement of the impact of family planning upon population growth, we must recognize, family planner and Demographic Agnostic alike, that there is no objective and impartial evaluator of family planning programs. The Agnostic is prejudiced against family planning success and the family planning actionist is prejudiced in favor of it. The only way to reconcile their biases is to specify a procedure which both will accept as constituting a fair and impartial way to carry out the measurement of the impact of family planning upon birth rates. This must include a set of rules or principles that will guide the interpretation of the results of the measurement. If both will agree upon a research plan, we can do the research and arrive at a conclusion both will accept.

The present paper attempts to map out such a research plan. The goal is to propose some research designs that both the family planner and the Demographic Agnostic will accept as fair and unbiased. It is hoped that these plans may be discussed by both sides. If they are found

deficient, perhaps they can lead to other plans that both will agree upon. Until we can get the two sides to agree to a common research plan, the question will remain unsolved.

## II

### "What Would Have Happened If . . ."

The question that must be answered is as follows: "Is what actually happened to the birth rate in Korea different from what would have happened if there had been no national family planning program?" It is very easy to describe the experiment needed to answer this question completely. All we need to do is to set up and experiment with two Koreas as the country was in 1962. In one Korea we would have a national family planning program and in the other we would not. After ten years we would compare the birth rates of the two Koreas. If the Korea with a national family planning program has a lower birth rate than the Korea without a national family planning program, then we can measure the difference between the two and state precisely what effect the national family planning program has had upon Korean fertility.

Obviously, the above experiment is absurd. We have only one Korea and this is the year 1970. We cannot go back to 1962 nor can we make a nation simultaneously undergo two sets of experiences independently. Yet it is this absurdly impossible experiment that needs to be performed in order to answer the question. What can we do in this situation? We must begin by admitting to the family planner and the Demographic Agnostic alike that there is absolutely no way to answer directly the question, "What would have happened if there had been no family planning program in Korea?" Instead, we must set up some indirect (and therefore approximate) procedure as a substitute. Because the procedure is indirect, the answer will always be in doubt. For this reason, if there is to be a reconciliation of the family planner and the Demographic Agnostic, both must agree in advance upon what indirect measures they will accept, and how they will interpret the meaning of these measures.

Because we can use only indirect and approximate measures, it is doubtful whether we can get agreement on the basis of only one measurement. However, if several different indirect measures are developed, and all of them are applied, perhaps we can build up a convincing case that both will accept. That is the strategy followed in the present paper. It will undertake to outline five different models for measuring the impact of a family planning program on the birth rate. Each model is presented with a set of rules for interpreting the results. It is hoped that family planners and agnostics alike will examine these models, discuss them as possibly acceptable methods of making the needed tests,

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and accept them (perhaps with modifications) as a common meeting ground upon which to plan research for measuring the impact of family planning programs upon the birth rate.

We do not think that any one of these models is capable of making an absolutely exact test of the question. However, it is our thesis that if similar indications are given by all five models, then the evidence should convince both the family planner and the Demographic Agnostic. If some of the models indicate an effect and other models indicate no effect, the evidence will be ambiguous. In order to be conservative, we will adopt the principle that family planners should not claim that their programs have reduced fertility until at least four of the five models presented here indicate that such a thing has happened, and the fifth model must give at least ambiguous results. In other words, confidence should come when all five models indicate that a change has been brought about by family planning. We hope in this way to gain the assent of the Demographic Agnostic.

We do not pretend originality in development of these models. Each has been suggested in some form by others. Our task has been only to assemble them in one place and organize them into a system. In doing this, we have reviewed other models but have rejected them as not being rigorous enough. In particular, we have rejected all models which assume that all family planning accomplished by the national program represents a net gain in impact upon the birth rate. An example is the concept "couple years of protection" calculated by adding up all contraceptive services provided by the program and reporting this as an accomplishment of the program. We must always remember that if there had been no national program, many of the couples would have practiced contraception anyway. This is the basic criticism of the Demographic Agnostic. Therefore, if we are to convince him, we must use only models that admit this as a basic assumption.

We will now present these five models in quick succession. No effort will be made to discuss fine technical details or to make use of statistical data. The task we have undertaken is primarily a methodological one of research design. To future research and researchers we will leave the task of making the actual tests, both for Korea and (we hope) many other nations.

### III

#### Model I: Population Projections of Fertility Trends

One solution to our problem is to make an estimate of what would have happened to the birth rate had there been no family planning program. We can compare this estimate with what actually did happen.

This is the basic logic of Model I.

In order to avoid bias, the estimate of what would have happened to the birth rate should:

- (a) have been made before the national family planning program began;
- (b) have been made by some authority that is widely known and respected.

Fortunately, a very valuable body of information of exactly this type exists, and for every nation of the world. These are the population projections that have been made by demographers.<sup>1</sup> During the 1950's, the United Nations assembled some of the most powerful demographic talent in the world and formed a team to make population projections, by five-year intervals, from 1955 to 1975 for every nation on earth.<sup>2</sup> These projections were revised in 1963 and extended to the year 1980.<sup>3</sup> In making both sets of projections, it was assumed for most countries that family planning programs would have little influence upon birth rates before 1975 at the earliest. It was thought that the anticipated changes would result from rising levels of living, increased urbanization, improved literacy, etc. Therefore, we have in these United Nations projections an estimate of what would have happened to fertility throughout the world if there had been no family planning programs during the 1960's. When making these projections, the United Nations demographers had no foreknowledge of the tremendous family planning efforts that would be made, and hence could not be biased beforehand in their judgments.

Model I, therefore, proposes to compare what actually has happened to fertility trends between 1950 and 1970 with what was predicted would happen during these years by demographers in the 1950's and early 1960's, before the family planning programs really got underway. In many cases, high-ranking demographers in the respective countries also made population projections during these years, and their work can also be used to estimate what would have happened in the absence of family planning efforts.

In using these projections, we should not make use of the actual numbers of population anticipated, but should go directly to the underlying assumptions about trends in the birth rate, using 1960 as a base index of 100. The reason for this is that changes in the death rate also influence population numbers. Since we seek only to measure fertility change, we must not let mortality change enter into the analysis.

For several nations the United Nations was forced to work with inadequate data. Errors of census count and errors of measurement of fertility level at the time of the base date were made. Later, after the 1960 census, some of these errors were corrected or have been corrected since. All such adjustments must be incorporated into the ori-

ginal UN projections before using them. The easiest way to do this correctly is to allow the estimated birth rate for 1960 to equal an index of 100, and then to express the birth rates that were projected for 1965, 1970, and 1975 as index numbers with respect to this base. A similar set of indexes should be calculated for actual birth rates. The indexes for projected birth trends can then be compared with indexes for actual birth trends. Since the base index of 100 is identical for both actual and projected, differences between the two measures can be interpreted to measure deviation of the actual course of history from what was predicted by the demographers. Figure 1 illustrates the procedure graphically.

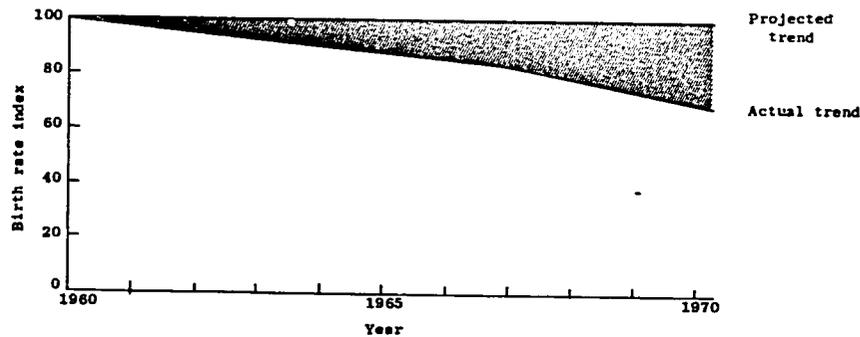


Figure 1. MODEL I: CONTRAST BETWEEN PROJECTED AND ACTUAL FERTILITY TRENDS

In proposing this model, we suggest the following rules of interpretation:

- (a) If the ratios of what actually happened fall below the ratios which measure projected fertility, it may be taken as evidence in favor of the effect of family planning, unless other even more plausible explanations can be produced.
- (b) If the ratios of what actually happened are not significantly different from those projected (or if they fall above what was predicted), then the family planning program cannot claim any effect upon the birth rate.
- (c) In making this test, the "medium" estimates of the United Nations should be used, although for information, the UN "high" and "low" estimates should also be examined in the light of the assumptions on which they are based.
- (d) The assumptions that were made by the demographers who developed the projections should be explored. Some

of the demographers may not have been "agnostic" and were anticipating prompt changes in fertility as a result of hoped-for family planning programs. These expectations may have been made for India and other nations whose sizable family planning programs were already underway or proposed.

Although this test is meaningful for individual nations, ultimately it should be done for several different nations, perhaps classified into four groups as follows:

- (a) nations which have had a very intensive national family planning program for five years or more (begun in 1965 or before);
- (b) nations which have had a very intensive national family planning program for 3-5 years (begun after 1965);
- (c) nations which have had a family planning program on a substantial but not necessarily nationwide or intensive basis for at least 3 years;
- (d) nations which have had only small family planning programs, no family planning program at all, or programs that are too new to influence fertility in 1970.

If we find the trend of the birth rate for the first group has been to decline faster than predicted, with the decline beginning after the onset of the national program, and if we find the trend of the birth rate in the last group is essentially that predicted by the United Nations (or other projections), with the groups (b) and (c) occupying intermediate positions, we will have isolated one item of evidence that indicates that family planning has had an impact. The difference between the actual birth rate and the projected birth rate (adjusted for revisions) may be taken as a first approximation of the magnitude of the impact.

#### IV

##### Model II: "The Bend in the Trend"

If birth rates are influenced by urbanization, industrialization, and modernization, we should expect them to show only a very gradual change. This change may be expected to follow a straight line. This could be a flat (unchanging) line of high fertility, or it may be a gradual downward trend, according to the impact of the changing socioeconomic conditions of the country on the birth rate. However, the argument that the change will be linear is a strong one.

If, in a nation for which there has been a family planning program, we succeed in measuring the trend of the birth rate in the ten years preceding the program, we have an opportunity to analyze the curve of

change to find out whether or not it has been linear, or whether there has been a "downward bend" in the fertility curve since the onset of the family planning program. This is the basic argument of Model II.<sup>4</sup>

In order to make use of this model, we need to establish the birth rate as of about the time of the start of the family planning program (1960) and for a date about 10 years earlier (1950). These dates could be 1955 and 1965. We would not make a serious error if we were to assume that in the absence of family planning this trend would have continued along about the same path for another 10 years, assuming that only urbanization and modernization were offsetting fertility. Under these assumptions we could calculate an "expected" birth rate for 1965 and 1970 based on the pre-1960 trend. By comparing this expected birth rate with the actual birth rate in these years, we can determine whether or not there has been a tendency to bend downward (show a more precipitous decline) since the onset of family planning. To be genuinely causal, this "bend in the trend" should occur at least one year after the national family planning program had reached major proportions.

Before this model can be used, birth rates must be calculated for dates somewhat remote in the past. How is this to be accomplished without good vital statistics? The task is less difficult than it may appear; a number of techniques have been developed for inferring birth rates from census data. Among these are the "reverse survival method of age distributions," the "multiple regression method," and the "own children method." Moreover, if good census data are collected in 1970, these methods may be used retrospectively to help calculate more precise fertility measures for 1960 and 1950. All of these techniques are part of standard demographic methodology and can be used in any nation that has taken a reasonably accurate census in 1950 or since and will take another in 1970-71.<sup>5</sup>

This model may be refined by graphing a curve of family planning achievement against the curve of the birth rate, with a "lag" of 9-12 months to allow for gestation of infants conceived and delay in response to the motivation appeals of the program.

Figure 2 illustrates the argument of Model II. Ideally, this model should be calculated for many different nations, with a specific year designated as the first year at which the family planning program may have been expected to have begun its impact. If the model works for all of the nations that have had large, sustained and intensive programs but not for other nations that have had no program or only weak programs, the argument will gain additional strength.

A most important qualification needs to be made for this model. The analyst must make certain that other factors do not account for the downward bend in the fertility curve. Many developing nations are ex-

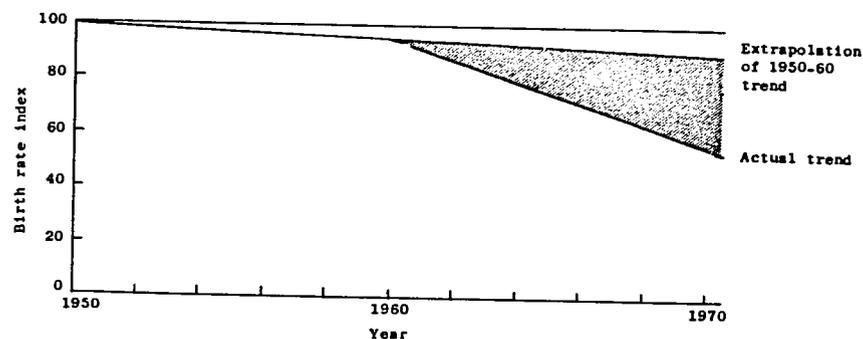


Figure 2. MODEL II: CONTRAST BETWEEN EXTRAPOLATED AND ACTUAL FERTILITY TRENDS

periencing a postponement on the age at first marriage, and some of them have undergone changes in age composition that could have the indirect effect of causing a greater-than-trend change in fertility decline. The fertility curve must be computed carefully, holding constant both changes in age composition and changes in age at marriage. If there is still a downward bend in the trend after these adjustments have been made, if there is no other more powerful explanation, and if the timing of the bend coincides with the lagged onset of the family planning program, we have an additional line of presumptive evidence that the family planning program exerted an impact. The difference between the initial trend and the actual trend can be used to measure the extent of this impact.

## V

### Model III: The Ecological Scattergram and Regression Line

Suppose we subdivide Korea into many districts of roughly equal size, with each district representing a cluster of similar family planning activities. For each of these districts we obtain two items of information:

- an index of family planning accomplishment--this could be the ratio of all new patients ever enrolled in family planning clinics since 1962 in the district to all married women aged 20-44 at the last census.
- a measure of the change in the birth rate between some date before the program began (1960) and another date several years after the program had been in operation (1966 or 1970).

Using each district as one set of observations, we plot the two items of information on a conventional graph, using the vertical axis to represent change in the birth rate and the horizontal axis to represent level of family planning accomplishment. The result is an "ecological scattergram," which is merely a regular statistical scattergram where units of territory have become the units of observation.

Next, we fit a curve through these points, using the statistical principle of least squares. We expect that this curve will be a straight line. If it slopes downward, to show lower birth rates with increased family planning achievement, this may be taken as evidence that the family planning program has had an impact upon fertility. This is the basic argument of Model III. In this model, we seek to account for internal variation in fertility change within the nation, and to relate this variation to variations in the accomplishments of the family planning program. Figure 3 illustrates the model.

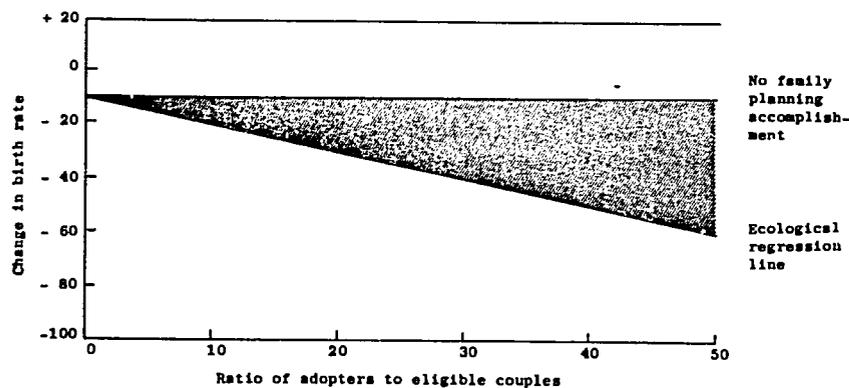


Figure 3. MODEL III: CONTRAST BETWEEN REGRESSION OF FERTILITY CHANGE ON FAMILY PLANNING ACCOMPLISHMENT AND ESTIMATED FERTILITY CHANGE WITHOUT FAMILY PLANNING ACCOMPLISHMENT

The point where the regression line touches the line of zero family planning achievement is especially interesting. This is an estimate of what the fertility change would have been in the absence of any family planning accomplishment by the national program. We may use this as a reference point for estimating how much change in the birth rate of each area has been due to family planning.

The procedure of Model III may be refined if we conduct it separately for rural and urban districts. This would tend to "hold constant" the differential effects of modernization and increasing urbanization. Also, as discussed in Model III, the estimates of fertility could be corrected for changes in age composition and marital status if possible,

although this is less essential for Model III than for Model II.

An alternative procedure for refining Model III is to use a multiple regression equation for expressing the regression line. In addition to family planning accomplishment, we may introduce several additional variables that are also thought to have influenced fertility change. Among these could be average age at marriage, age composition, and others. If the variable of "family planning accomplishment" continues to have a significant explanatory force upon changes in birth rates when these additional variables are included in the regression equation, the evidence that family planning achievement has been a force in lowering fertility is made even more convincing. We can use this multiple regression equation to estimate the amount of change in the birth rate that has been accomplished by the family planning achievement in each district simply by calculating the additional change in birth rate predicted when the level of family planning accomplishment is substituted into the regression equation instead of allowing it to be zero.<sup>6</sup>

One of the virtues of this model is that it takes into account some of the possible indirect effects of the family planning program. Where family planning achievement is large, there is often a great deal of communication and interpersonal influence for family planning among neighbors and friends. This may stimulate many people to use non-clinical methods. Thus, the program may generate contraception in addition to that accomplished in official family planning clinics. The regression equation permits this secondary effect to enter into the equation, if indeed it does occur.

The question can again be raised, "How can we measure change in the birth rate for local areas, such as districts, when vital statistics are not valid?" The same techniques that were suggested for Model II are applicable here. Census tabulation, proposed for these local districts, can provide the necessary information. The measures computed from these data can be standardized for age and marital status of the women of childbearing age. These procedures are described in detail in RFFPI Manual Number 2.

## VI

### Model IV: Clients Versus Nonclients

Those who maintain that family planning is having no impact upon birth rates are asserting the truth of one or more of the following propositions:

- (a) The total volume of family planning service being performed by the national family planning program is too small to make much of an impact on the birth rate.

- (b) The persons coming to family planning clinics for family planning services are persons who were already highly motivated and would have practiced contraception anyway. They are simply persons who were ready to practice contraception who happened to choose the facilities of the national family planning clinic instead of other facilities. Even if there had been no national family planning facilities for clinic service, the number of contraceptors would have remained the same.
- (c) Since national family planning clinics have no special impact on the birth rate, the persons who come here for service are not different in their fertility and other characteristics from other contraceptors who do not use these facilities.

All three of these propositions are subject to empirical test. Model IV is comprised of two approaches for making such tests:

- A. The "Fertility Components" Comparison; and
- B. The "Socioeconomic Characteristics" Comparison.

Some researchers would be inclined to treat these as two separate models. However, since both are built upon one single principle, the comparison of adopters who come to family planning clinics with other contraceptors in the population, we treat them as variates of a single model.

#### A. The "Fertility Components" Comparison

In RFFPI Manual Number 5, a direct linkage between fertility and contraception is worked out in the following equation:

$$\text{General Fertility Rate (GFR)} = E(AB + CD)S \cdot 1000, \quad (1)$$

where

- A = accidental pregnancy rate of fecund women practicing contraception (Pearl pregnancy rate),  
 B = proportion of all fecund and currently exposed women practicing contraception,  
 C = pregnancy rate of fecund women who are exposed but not practicing contraception,  
 D = proportion of all fecund and currently exposed women who do not practice contraception,  
 E = proportion of all women of childbearing age who are fecund and exposed to the possibility of getting pregnant,  
 and S = proportion of all pregnancies that terminate in a live birth.
- Let us concentrate simply on the components A and B in this equation, assuming that in the short run of less than 10 years all of the other items will either remain constant or are functions of A and B.

(This assumption is not necessary; it is made here only to simplify the presentation.)

The utility of this formula is that it expresses a well-known fertility rate, GFR, in terms of contraceptive and noncontraceptive activity. We call these the "components of fertility." Two of these components, A and B, we call the contraceptive components:

- (a) Component A refers to unreliability of contraception.
- (b) Component B refers to the prevalence of contraception.

If we measure these two components, we can specify exactly how much impact contraception is having upon the birth rate:

$$\text{Impact of contraception} = E(CB - AB)S \cdot 1000 \quad (2)$$

This equation compares what the fertility of group B would be if it had the pregnancy rate of the group that does not practice contraception.

Now let us divide the entities A and B into two components. One of these refers to contraception done under the national family planning program, and the other part refers to contraception done outside the national family planning program. We may write equation (1) in short-hand form as follows:

$$\text{GFR} = (A'B' + A*B* + CD)K, \quad (3)$$

where

- A' = accidental pregnancy rate of persons practicing contraception under the national family planning program during a particular year,  
 B' = proportion of all fecund and exposed women who are practicing contraception under the national program,  
 A\* = accidental pregnancy rate of persons practicing contraception outside the national program,  
 B\* = proportion of all fecund and exposed women who are practicing contraception outside the national program,  
 and K = a constant combining the variables E, S, and the constant 1000.

We have now divided the GFR into two sets of components of contraception--a set of components that refers to contraception within the national family planning program and a different set that refers to contraception outside the national family planning program. This places us in a position to test the first two propositions presented at the beginning of this section:

- (a) If A' is less than A\*, we can say that patients who are in the national program are practicing family planning at a higher level of reliability (have a lower accidental pregnancy rate) than other contracepting persons. The extent of this difference can be used to measure the impact of the family planning program on the birth rate:

$$\text{Reliability impact of family planning} = (A'B' - A*B')K \quad (4)$$

This formula measures the difference in birth rates that would exist if family planning clients had the same accidental pregnancy rate as contraceptors outside the program. The impact measured by equation (4) is unequivocally attributable to the family planning program. This is the minimum claim that the family planner can make for his program, and it is a claim that even the most agnostic observer should admit as valid, for equation (4) attributes none of the increased adoption to the family planning program.

(b) If  $B'$  is negligible in comparison with  $B$ , then the assumption that the national family planning program is having very little impact upon the birth rate is justified. However, if  $B'$  is a substantial share of all contraception, we must examine very carefully the claim of the Demographic Agnostic that this contraception would have occurred anyway, even without a national program. If the family planning program is having no impact, then we must assume that the persons coming to family planning clinics are just a manifestation of a general rising number of contraceptors. It would be a conservative expectation that in such a case, the value of  $B'$  would have been matched by an equal or even greater increase in  $B^*$ . If this is justified, then we may claim the whole of  $B'$  as a credit for the family planning program, and the following equation estimates the impact of the family planning program due to increased prevalence:

$$\text{Impact due to increased prevalence} = (CB' - A*B')K \quad (5)$$

[The reader will recall that  $C$  is the pregnancy rate experienced by women who are exposed but practice no contraception; it is defined in connection with equation (1).] Under some circumstances the Demographic Agnostic may not be willing to admit this argument. Suppose, for example, there has been no increase in the overall use of contraception at all. If a national family planning program opens up clinics under these conditions, all patients they get are simply serving people who otherwise would go somewhere else for service. Under these circumstances, we must fall back on a more conservative estimate.

If we know the GFR for a date before the family planning program began (say 1960) and assume that  $C$ ,  $S$  and  $E$  have remained unchanged since then, we can estimate a value of  $B$  for the earlier period.

$$\text{GFR}(1960) = (A*B_{\text{est}} + CD)K \quad (6)$$

where  $B_{\text{est}}$  is the estimated value of  $B$  for the year 1960. Since there was no family planning program in this earlier year,  $B_{\text{est}}$  is also equal to an estimate of  $B^*$  in 1960. Therefore,  $(B^* - B_{\text{est}})$  is an estimate of the change in contraception that has taken place outside the national pro-

gram. If this is a negative quantity, we assume that the family planning clinics have been used, to some extent, as a substitute source of service. In this case, we must subtract the amount  $(B^* - B_{\text{est}})$  from  $B'$  before we make the calculation of equation 5. Where  $B^*$  has increased over the period of the family planning program, we assume that there has been no substitution but that all of  $B'$  can be attributed to family planning. This assumes that the overall rate of growth in contraception outside of the national program is the rate of increase that would have taken place had there been no family planning program.

If the above argument is accepted, then an estimate of the total independent effect of the family planning program upon the birth rate would be the sum of equations (4) and (5).

The reader who wishes to learn, in greater detail, how to obtain data for substituting into equations (1) to (6) should consult Manual 5.

#### B. The "Socioeconomic Characteristics Comparison"

The theory upon which the Demographic Agnostic bases his claim is that rising urbanization, literacy, income, etc., are the major factors in accounting for increased contraception. The family planner, on the other hand, asserts that by special programs he can induce couples to adopt family planning despite the fact that they are rural, illiterate, and poor. A very simple test of the two propositions may be made merely by comparing the socioeconomic characteristics of the clients in the family planning program with persons outside the program who are practicing contraception. If the family planning clients are disproportionately drawn from the lower socioeconomic strata of society (and especially from the bottom classes where modernization theory should lead to the expectation of very little contraception) then the factor of family planning has been supported by one additional bit of evidence.

## VII

### Model V: "Faces in the Crowd"

Model IV treats the people who are inside and those who are outside the national program as aggregates, or two great pools of individuals. This procedure is highly valuable for assessing overall changes in fertility due to the national family planning program and for testing the modernization theory. It neglects, however, the ultimate unit of impact of family planning and adoption--the individual couple. Model V brings the analysis down from the level of massive aggregates to the level of individual couple behavior.

If we take the hypothesis of the Demographic Agnostic literally, we interpret him to claim that the messages and other influences

attempted by family planners do not influence people; they simply go ahead and do what they would have done anyway. Persons who are visited in their homes are no more likely to attend a family planning clinic than are persons who are not visited; persons who hear radio announcements for family planning are not thereby stimulated to go to clinics, etc. This also is a proposition that is capable of test, and this is the task of Model V. To simplify the argument, we will assume that we can express all of the factors as continuous variables. This permits us to write regression equations for the model.

We begin by assuming we have a measure of fertility of the individual couple. We call this our dependent variable, Y.

Next, we measure the amount of effort that has been expended upon the couple by the family planning program, in an effort to induce adoption.

- $X_1$  is a variable that measures the amount of contact the couple has had with family planning field workers (home visits, mass meetings, public meetings, etc.).
- $X_2$  is a variable that measures the amount of contact the couple has had with mass communication for family planning (radio, television, newspaper, reading booklets, etc.).
- $X_k$  is a series of variables that could "interfere with" or "explain" a part of the couple's fertility. Among these are age, age at marriage, educational attainment, etc.

Model V may be written as

$$Y = B_1X_1 + B_2X_2 + B_kX_k + A$$

where  $B_1$ ,  $B_2$ ,  $B_k$  are regression coefficients measuring the impact of  $X_1$ ,  $X_2$ ,  $X_k$  for individual couples on their fertility. If both  $B_1$  and  $B_2$  are zero or so small that they could easily be zero as a result of sampling variability, no claim can be made for the impact of the family planning program. If, however, they are significantly greater than zero, we can analyze the equation to estimate the independent effect of each and of both combined.

What would be a good procedure for measuring Y? We cannot calculate a fertility rate for each couple. Several measures may be used. The one we propose is as follows: the proportion of months of exposure (woman exposed to sex relations, fertile, not pregnant) which the couple has contracepted. This yields an index varying between 0 and 100.

The above analysis can be refined by fixing a date at which each couple began its exposure to the family planning program (first home visit, first group meeting, first reading of family planning booklet, etc.). Its behavior before and after this date can be compared with the behavior before and after of similar people who did not have contact with the

family planning program.

The analysis permits us to explore the modernization theory on the individual level. If we find that illiterate persons who have had contact with the family planning program tend to be adopters, while illiterate persons who have had no contact with the family planning program tend not to use contraception, we have evidence at this individual level that the modernization hypothesis is not able to account for all fertility reduction.

## VIII

### Conclusion

We began by agreeing that in order to convince the Demographic Agnostic of the influence of family planning programs on the birth rate, we must make at least five different tests, and get an affirmative outcome from all, or certainly no negative outcome for any. These tests lead us through a tortuous maze of estimates, assumptions, and data assembly, because it is logically impossible to perform the simple test that would give us an unambiguous answer. Although a great deal of work is required to make these tests, and new efforts must be made to collect the data needed to use these models, we believe that it is worth the effort. Only when these models, or variates of them, have been tested for a program, can the family planners know with some confidence whether as they hope, they are lowering birth rates by their efforts or whether, as the Demographic Agnostic claims, they are simply indulging in wishful thinking.

## FOOTNOTES

<sup>1</sup>The idea of comparing birth rate trends with population projections has been described in some detail by William Seltzer of the Population Council in an article, "On the Measurement of Accomplishment--with Special Reference to the Evaluation of Family Planning Efforts," which was read at the annual meeting of the American Association for the Advancement of Science, Boston, Massachusetts, December 29, 1969. Dr. Seltzer points out that because demographers do not have a record of accuracy in making projections, we must accept the results of this test with great caution until supported by other evidence.

<sup>2</sup>United Nations. The Future Growth of World Population. New York: United Nations, 1958.

<sup>3</sup>United Nations. World Population Prospects as Assessed in 1963. New York: United Nations, 1966.

<sup>4</sup>This approach was suggested by John Ross of Population Council in a 1964 article entitled "On Measuring the Effectiveness of Family Planning Programs," in Donald J. Bogue (ed.), Mass Communication and Motivation for Birth Control: Proceedings of the Summer Workshops at the University of Chicago, Chicago: Community and Family Study Center, 1967; pp. 511-520. It has recently been used by Lee-Jay Cho and Man Jun Hahn in their article, "Recent Change in Fertility Rates of the Korean Population," Demography, Vol. 5 (1968), pp. 690-698.

<sup>5</sup>These methods are described and illustrated in Manual 2 of this series.

<sup>6</sup>This model has been used by Ronald Freedman and George Takeshita in their monograph, Family Planning in Taiwan, Princeton University Press, 1969.