

Understanding How Family Planning Programs Work

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Findings from Five Years of Evaluation Research

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Amy Ong Tsui
EVALUATION Project Director
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EXECUTIVE SUMMARY

Nearly half a century of public effort has been devoted to organizing and delivering family planning services to women and men interested in protecting their social health and economic well-being. This period has witnessed marked expansion in the range of contraceptive method choices, service provision through public, private, non-profit and commercial channels, diffusion of family planning information, ideas and messages, and demographic and programmatic measurement, research and evaluation. Evaluating the effectiveness and various impacts of organized family planning programs on contraceptive, pregnancy, and related health outcomes has been a continuing interest of professionals in the population and health fields. The findings of earlier studies have, on the whole, provided evidence that family planning effort can raise contraceptive practice, lower fertility, and deliver maternal and child health benefits.

The estimated number of women and men who have ever practiced modern contraception exceeds one billion and in the developing world today, nearly 400 million couples of childbearing age now actively use contraception to delay or avoid unwanted births. Demand for contraception continues to increase as information about the availability of family planning services diffuses to remaining under-served areas. Meeting future demand is likely to increase service costs, but program resources are increasingly limited and constrained. Moreover, it is difficult to determine if scarce resources are being allocated in the most efficient and effective manner without systematic evaluation. Despite supporting evidence of the impact of family planning program interventions and effort, how programs work to produce these results is less well known.

The EVALUATION (Evaluation of Family Planning Program Impact) Project supported a broad, yet focused and rigorous evaluation research agenda designed to improve the understanding of how family planning program inputs contribute to contraceptive and fertility changes and to test improved ways of measuring this contribution. The results highlighted below offer new insights into the types and extent of influence of various programmatic interventions on outcomes of interest.

Expansion of Service Provision

Family planning programs have broadened the composition of service providers. Among those studied here, **community-based outreach** offered continuous interpersonal contact that explained a rise in contraceptive use from 13 to 40 percent between 1984 and 1993 and prevented discontinuation by 43 percent in the mid-1980s and by 65 percent in the late 1980s in Bangladesh. Conversely, Indonesian clients supplied with modern contraceptives by public clinics were more likely to avoid pregnancies successfully than those supplied by private providers. Pregnant women's **exposure to prenatal care** increased the likelihood of postpartum adoption of modern contraception in Tunisia and Morocco, suggesting integrated maternal and child health and family planning care can be beneficial.

Improvement of Family Planning Quality of Care

Does improving the quality of care increase contraceptive prevalence? In Peru, one study finds that prevalence can rise by as much as 16 percent if all women had **access to high quality**



care A second study in the Philippines suggests that increasing the **number of methods available** in public clinics by one can raise the likelihood of using these facilities by almost six percent, while the same increase at private clinics and hospitals will raise the probability of use by 10 percent. Operationalizing and measuring the concept of quality care remains a challenge as it does for **unmet need**. A Philippines-based study of factors defining unmet need for family planning finds the concept rooted in traditional concerns about husbands' pronatalist attitudes, contraceptive side effects, perceived risk of pregnancy and strength of fertility preferences, but not in problems with access to family planning services.

Promotion of Family Planning

Some of the strongest effects of family planning program operations on contraceptive behavior may be derived from mass media and other promotional activities. A three-year follow-up of Nigerian women finds that 34 percent of women who saw a **family planning media message** in 1990 were using modern contraception in 1993 compared to 18 percent who were not exposed. If the women **discussed family planning with others**, 44 percent of those not contracepting expressed an intention to adopt modern contraception in the future compared to 26 percent of those who did not discuss family planning. In studying how women **informally discuss** family planning and diffuse family planning information, one pair of investigators found that current users in Kenya had an average of 4.1 conversations with friends and relatives about family planning compared to 2.8 for non-users.

Gains in Program and Service Capacity

Two key studies focused on measuring family planning program capacity and effort over time at the cross-national and national levels. A new round of **family planning effort scores** shows large increases in program strength since 1972 but overall modest rises since 1989. Of 77 countries with four rounds of data, 40 showed effort beyond 50 percent of the maximum score in 1994 compared to 20 in 1972. A **follow-up of Tanzanian health and family planning facilities** between 1991 and 1994 demonstrated anticipated gains in contraceptive logistics support and higher volumes of new and returning clients but no increase in trained staff.

A study of six countries found the magnitude of **service availability** effects to be highest when contraceptive use was initially low and fertility high. For example in Tanzania, where family planning service availability had only recently expanded, a simulated analysis shows that the total fertility rate to age 34 would be lower by 4% to 7% based on the fully expanded availability of services in hospitals and dispensaries and by 26% based on availability through health centers. Finally, **trends in use of contraception and abortion** showed the former outpacing the later in lowering fertility between the mid-1970s and mid-1980s in Colombia and Mexico.

Details on the results of many other sponsored studies, particularly those addressing improvements in measurement not highlighted here, are contained in this report. These, together with the ones related above, clarify how the current effectiveness of family planning program service provision, quality of care, and promotion is obtained. The "black box" of family planning programs can thus be gradually disassembled and the internal dynamics of program structure and performance better understood to improve their efficiency and assure their continued effectiveness. The cumulative result of sustained effort will then be the desired achievement and completion of the fertility transition in many places.

The EVALUATION Project will separately report findings on the fertility impact of family planning programs, a study effort that followed a systematic study design. This enables additional statements of cross-national comparability to be made beyond those possi-



ble here To ensure high-quality evaluations are repeated in the future—strengthening the efficient use of available and limited resources—the following improvements promoted by the Project need continued emphasis (1) expanding the direct measurement of program resource inputs, including expenditures, (2) increasing the use of longitudinal measurement of programmatic and demographic behavioral changes, (3) adopting controlled experimental designs to evaluate piloted service interventions, and (4) developing data systems for monitoring that include smaller-scaled survey strategies to speed the feedback of information to program administrators



I. OVERVIEW

Purpose

Nearly half a century of public effort has been devoted to organizing and delivering family planning services to women and men interested in protecting their reproductive health and social well-being. This period has witnessed expansion in the range of contraceptive method choices, provision through public, private voluntary and commercial institutions, mass communication approaches to informing, educating and motivating potential adopters, strategies for community-based outreach, integration with traditional maternal and child health as well as HIV/AIDS prevention services, and active partnership with survey taking, operations research, and evaluation efforts to increase the use- and cost-effectiveness of contraceptive provision and practice. The estimated number of women and men who have ever practiced a modern method of birth control over the last three decades exceeds one billion. In the developing world, nearly 400 million couples of childbearing age are now actively using contraception to delay or avoid unwanted births.

Evaluating the impact of family planning programs on fertility and other reproductive health outcomes has been a longstanding commitment of professionals in the population and related health fields. The findings of many scientific studies provide supporting evidence of the direct influence family planning programs ultimately have on lowering fertility levels, as well as intermediately on contraceptive demand and practice. Individual demand for contraception continues to increase as the notion of family planning diffuses into the remaining under-served or underexposed areas of the developing world. Meeting the projected demand may increase service costs, but without systematic evaluation of program design, functions, and delivery strategies, it is difficult to determine if the most efficient and effective allocation of scarce program resources is occurring. International donor agencies that have given substantial support to family planning programs are keen to learn of impact evaluation results and to strengthen ongoing program performance through more effective monitoring.

Since its inception in late 1991, The EVALUATION (Evaluation of Family Planning Program Impact) Project has supported a broad, yet focused research agenda designed to improve the understanding of how family planning program inputs contribute to fertility change and to test improved ways of measuring this contribution. In order to present the range of findings in a unified and coherent piece, this synthesis has been prepared with the expectation that the compilation of results will answer a number of questions regarding program impacts and measurement challenges. The document will also sharpen our appreciation of family planning programs' operational, structural and national diversity and their emergent capacity to deliver services that affect a fundamental aspect of human life—reproduction.

Background

Studies were sponsored by The EVALUATION Project if they addressed one or more of the following three questions:

- How do family planning program inputs—national and international, public and pri-



vate—affect the delivery of family planning services especially with regard to accessibility, quality and acceptability of services?

- What is the effect of the organized delivery of family planning services on the demand for contraception level and effectiveness of its use and fertility?
- What improvements in data collection measurement and analytic techniques are needed to strengthen performance and impact evaluation given the current range and diversity of family planning programs?

The Project identified priority areas of study to be pursued through internal and commissioned research. These areas originated from the Project's conceptual framework which traced the outstanding knowledge gaps regarding influences of family planning program demand and service supply on service utilization, contraceptive practice, and fertility behaviors. The Project was particularly interested in assessing the relative importance of program components and dynamics, such as the impact of information-education-communication activities, service delivery strategies, training, private sector family planning effort and political and policy support, on the availability, quality, image and utilization of contraceptive services. It was also interested in factors affecting the level of contraceptive demand, such as psychosocial barriers to use. Since a major objective of The EVALUATION Project was to inform the programs of national governments and donors, it was important, too, that studies be driven by policy concerns and the results relevant to national and international dialogue.

The EVALUATION Project supported impact and methodological studies in two ways. The first was through successful competitive review of fully developed proposals by the Project's 11-member Technical Advisory Group (TAG, see Appendix 1). Proposals were received from researchers at institutions outside of and internal to The EVALUATION Project contract. The second basis for providing Project support was in response to requests from U.S. Agency for International Development (USAID) central and field offices. These requests, which were limited in number, were jointly reviewed by Project and Agency staff.

The majority of the studies were undertaken at the country level, although a number also involved cross-national analyses that synthesized multi-country data. Most country studies were undertaken collaboratively with host-country evaluation researchers and occasionally with other population project researchers. A desired outcome was to enhance local evaluation capabilities through this technical input of the Project.

Organization of This Report

This report reviews all relevant research study reports available by July 1996 and is organized as follows. Section II describes The EVALUATION Project's conceptual framework, used to frame the research agenda. Specific research questions identified to be in need of investigation are detailed. Section III covers results from Project-supported research on program impact issues (addressing questions 1 and 2 posed earlier). Section IV reports on findings from Project-supported methodological studies in relation to question 3, grouped by their focus on evaluation design, measurement, and data collection issues. Section V provides a summary of the findings from the project's research agenda. The appendices contain a summary of study report findings presented in tabular form. A complete bibliography of study reports is also provided.



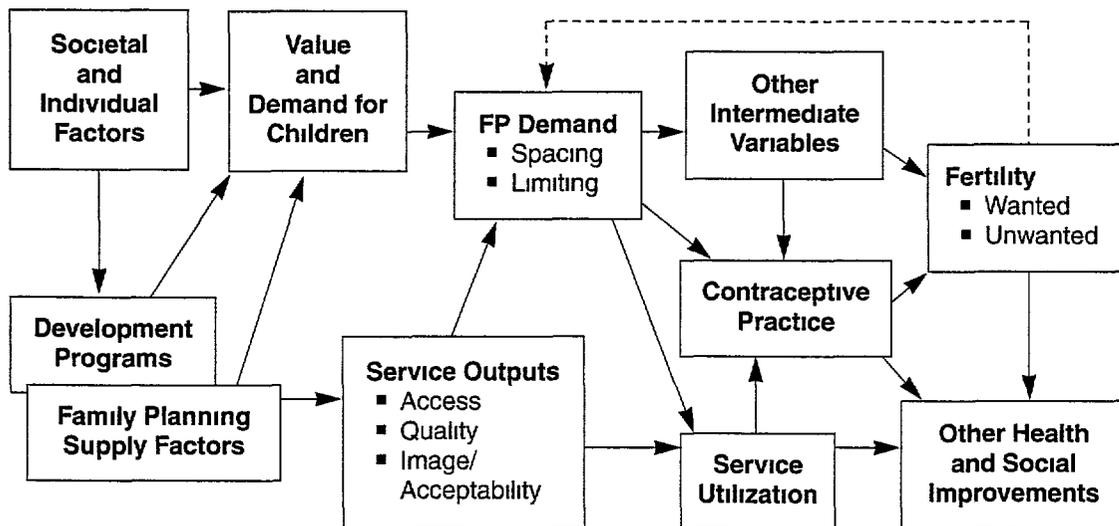
II. FRAMING THE RESEARCH QUESTIONS

Project Conceptual Framework

The Project's conceptual framework (see Figures 1 and 2) guided the study of the family planning supply and demand factors as these first influence contraceptive practice and ultimately affect fertility. This framework borrows substantially from various fertility and family planning models available in the research literature and targets gaps in the knowledge base as to how family planning **program-level** inputs and **population-level** outcomes are related. Investigating these interrelationships and linkages can potentially lead to identification of leading indicators and needed improvements in measurement.

At the top left of Figure 1 the exogenous role of societal and individual factors, such as level of development, household income, and religion, is depicted as influencing the value placed on children and level of fertility demand. Another way of viewing this component is that it represents the social and psychic benefits, as well as costs, of childbearing. Conditions of society and households also influence the types of developmental programs, both specific to and beyond family planning, that exist in a country as shown at the bottom left. While it is tempting to think of family planning programs as singular efforts to improve the public welfare, they are usually part of a larger fabric of development initiatives and often embedded in those relating to health.

Figure 1
Conceptual Framework of Family Planning Demand and Program Impact on Fertility

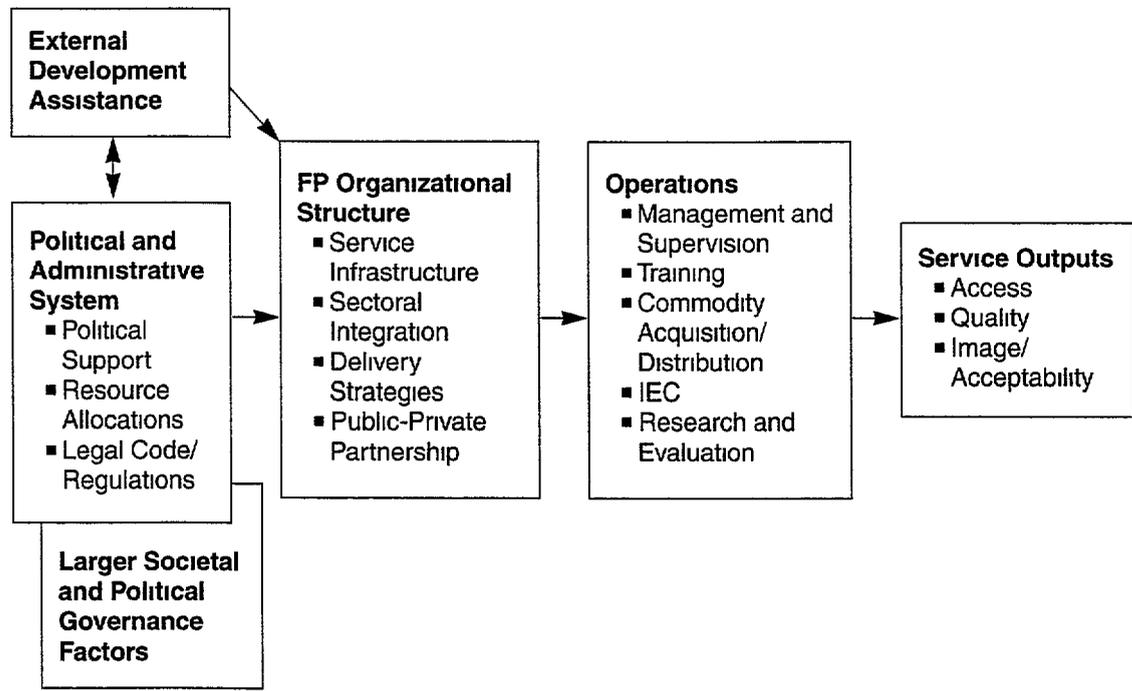


Efforts to provide family planning services, whether public or private, are aimed at reducing the market costs associated with contraceptive acceptance. In particular, program or supply



efforts have three primary outputs—improved access, quality and image or acceptability. The latter involves the legitimization and promotion of the family planning concept and can itself act on the demand for fertility by modifying family size norms. Both fertility demand and family planning program outputs in turn influence the level of spacing or terminating motives for family planning demand. Family planning demand then translates at some level into program service use and to contraceptive practice. Effective practice eventually leads to the desired management of fertility and to other health and socioeconomic improvements. From this figure a number of key questions, as noted subsequently, arise.

Figure 2
Conceptual Framework of Family Planning Supply Environment



Until recently, the research base on the components of and interaction among program operational systems has been weak. The EVALUATION Project sought to support promising studies of determinants of family planning program effectiveness. Studying factors at the **organization** or **program** level was considered a necessary first step in bringing the level of process, or program-based, evaluation effort up to par with the strong standards established for demographic impact evaluation. The decomposition of the process or the “black box,” was considered essential and served another primary purpose of evaluation, that is, improving program management and planning.

The Project’s research agenda therefore aimed at strengthening the understanding of the program-level relationships reflected in Figure 2. This figure identifies four principal determinants: (a) political-administrative elements, (b) the organization structure of family planning effort, (c) key operations and functions, and (d) external development assistance. The three principal outputs are the same as in Figure 1. These are physical access to services, the quality of those services, and a public image or acceptability of the program and its services.



Key Questions for Evaluation Research

The conceptual framework allowed the specification of the questions noted below to plan and organize the sponsored research projects and studies (A list of twenty TAG-approved and technical assistance-driven impact and methodological studies is given in Table 1 at the end of this chapter) Questions addressed by studies are classified below by investigator names in boldfaced type, with technical assistance studies denoted in italics Details on results from these studies will be found in Sections III and IV Note that the studies do not necessarily answer the general question but usually address it for one or more given countries

Linkages of Program Inputs and Outputs

What are the effects of family planning program inputs, such as policy, organization, operations and external assistance on service accessibility, quality, and image or acceptability? In particular

- What is the importance of policy and political commitment for family planning on the outputs? (This was not addressed specifically by any study, but see **Ross and Mauldin**)
- What are the relative effects of different program functions on outputs, for example, how do training inputs relate with those of management or I-E-C to influence service accessibility or quality? See **Phillips et al**
- How does the strategy input of integration between family planning and other sector development efforts, especially maternal and child health, influence service outputs? See **Aghajanian, Magnani et al**, to be reported later in **Adewuyi et al**
- What role does external donor organization assistance play in improving the performance or impact of country-level family planning effort? To be reported later, in **Tsui et al**

Linkages Between Family Planning Outputs and Contraceptive Practice

What are the effects of family planning outputs on population-based contraceptive behaviors, such as unmet need and the nature and effectiveness of practice? In particular

- How do family planning program factors influence the nature of provider-client interactions, such as service utilization? See **Phillips et al**
- How well do family planning programs address the reduction of unmet contraceptive need either for birth spacing or limiting? See **Casterline et al**
- Does contraceptive practice vary with the quality of services and under what conditions? See **Mensch and Jain** and **Bertrand and Brown**
- What role do private sector family planning inputs play and at what level of efficiency and effectiveness? See **Akin et al**
- What is the impact of community-based distribution, relative to other types of service delivery, on contraceptive use? See **Phillips et al**
- What formal and informal channels of information diffusion facilitate the promotion and acceptability of family planning, both as a norm and as a behavior? See **Westoff et al** and **Watkins and Rutenberg**



Linkages Between Family Planning Program Factors, Effects and Impacts

How do family planning program factors net of other conditions in a study population impact on fertility? Are there other important non-fertility impacts? In particular

- Does improved contraceptive availability reduce the level of induced abortion? See **Singh et al**
- Does improved program-induced contraceptive practice reduce the level of unwanted fertility or enhance the management of wanted fertility? See **Ngallaba et al** and **Jensen**

Methodological Issues

Data and measurement systems for family planning program evaluation, outside of national sample surveys, remain underdeveloped and weak. There is a simultaneous need to explore more efficient and less resource-intensive measurement and evaluation approaches in order to obtain timely answers to questions that arise in the course of program implementation. Some key questions are

- How can the conversion factors for a key process indicator, “couple-years of protection,” be improved, as well as other indicators developed empirically? See **Stover et al** and **Suchindran et al**
- How can family planning effort measures, particularly of service quality, be improved obtained objectively and established on a more permanent basis? See **Mauldin and Ross**
- What are the comparative advantages of such evaluation techniques as sample surveillance systems, experimental design, multilevel or areal regression analysis, meta analysis, or rapid assessment, for answering questions about program performance and impact? See **Entwisle et al**, **Bauman and Suchindran**, **Bilsborrow and Macintyre**, and **Lacey et al**
- What modifications can be made to existing data sources, such as national sample surveys or service statistics systems, and their collection procedures, to enhance their utility for family planning program evaluation? See **Hermahn and Entwisle**, **Ngallaba et al**, **Magnani and Rutenberg**, **Gulkey et al**

Given limitations of time and resources for study support, the Project was not able to address all the extant gaps in current understanding about the impact of various program components on population-based behaviors. It encouraged investigators from other population projects and organizations to pursue some of these topics within their own scope of activities, and when mutually feasible, through collaboration with EVALUATION Project staff.



Table 1 Research Studies Supported by The EVALUATION Project

Research Institution	Investigators	Title
TAG-Approved		
The Population Council	Parker Mauldin and John Ross	<i>Objective Measures of Family Planning Program Inputs</i>
The Population Council	James Phillips John Haaga and David Leon	<i>Assessing the Impact of Community Based Distribution of Contraceptives on the Prevalence of Contraceptive Use A Field Study in Bangladesh</i>
The Population Council	Barbara Mensch and Anrudh Jam	<i>Assessing the Impact of Quality of Family Planning Services on Contraceptive Use and Fertility on Peru</i>
Brown University	John Casterline	<i>In Depth Study of Unmet Need for Family Planning in the Philippines</i>
Princeton University	Charles Westoff German Rodriguez, and Akin Bankole	<i>Mass Media and Reproductive Behavior</i>
Internal	David Guilkey, Kenneth Bollen and Thomas A Mroz	<i>The Development of Methods to Evaluate the Impact of Family Planning Programs</i>
Internal	John Akin Linda Lacey Karen Foreit, and James Knowles	<i>Measuring the Effectiveness of USAID Private Sector Projects</i>
Internal	Albert Hermalin, and Barbara Entwisle	<i>Measuring Availability and Quality of Family Planning Program Services and Factors Affecting Placement</i>
Internal	John Stover Jane Bertrand C Suchindran Sharon Kumeyer and Susan Smith	<i>Deriving Empirical Based Conversion Factors for Calculating Couple Years of Protection A Two Part Study</i>
College of William and Mary	Eric Jensen	<i>Evaluating the Fertility of Alternative Family Planning Distribution Channels A Pilot Project in Indonesia</i>
Internal	Susan Watkins and Naomi Rutenberg	<i>Do Informal Personal Conversations Amplify Family Planning Program Impact?</i>
Fayetteville State University	Akbar Aghajanian	<i>Prenatal Care and Adoption of Family Planning in the Middle East (A Pilot Study)</i>
Alan Guttmacher Institute	Susheela Singh Kathryn Kost Jacqueline Forrest and Deirdre Wulf	<i>Abortion and Contraceptive Use in Latin America</i>



Research Institution	Investigators	Title
TAG-approved		
Internal	Ronald Rindfuss and Barbara Entwisle	<i>Incorporating Geographic Information Systems into Evaluation Studies</i>
Internal	Karl Bauman and C. Suchindran	<i>A True Experiment to Determine Family Planning Program Effects</i>
Internal	Richard Bilborrow and Kate Macintyre	<i>Rapid Assessment Method of Data Collection for Family Planning Program Evaluation</i>
Internal (+)	Kenneth A. Bollen, Thomas A. Mroz, Ilene Speizer and S. Ngallaba	<i>Accessibility to Family Planning Services in Rural Tanzania</i>
Internal	Linda Lacey, Victoria Adeyemi, and Joseph DeGraft-Johnson	<i>A Family Planning Monitoring Tool Applied in Nigeria</i>
Internal	Jane Bertrand and Lisanne Brown	<i>The Moroccan Quality of Care Study: Linking Quality to Outcome</i>
Internal	C. Suchindran, Ronald Rindfuss, and Robert Magnani	<i>Alternative Measures as Leading Indicators of Fertility Change</i>
Internal	John Ross and W. Parker Mauldin	<i>Thirty Effort Indices for Family Planning Programs: 1994 Cycle</i>
Requested through technical assistance		
Internal (*)	David Guilkey, Alejandro Herrin, Barbara Janowitz, John Stewart, Andrew Thompson, and Amy Ong Tsui	<i>Family Planning Costing Methodology</i>
Internal (*)	Amy Ong Tsui, David Guilkey, Albert Hermalin, Ronald Freedman, Thomas Mroz, and Gustavo Angeles	<i>Family Planning Program Impact Study</i>
Internal	Robert Magnani, David Hotchkiss, Thomas Mroz, Jeffrey Rous, Erin Eckert, and Kathleen McDavid	<i>Influence of MCH Service Utilization on Subsequent Contraceptive Use in Morocco</i>
Internal	Sylvester Ngallaba, Phil Bardsley, David Guilkey, and Regina Riphahn	<i>Family Planning Service Environment in Tanzania: 1991-1994</i>
Internal (*)	Alfred Adewuyi, John Stewart, and David Guilkey	<i>Program Structure and Performance: Comparing Vertical and Integrated Approaches</i>

(+) Ongoing and not reviewed in this report

III. FINDINGS FROM FAMILY PLANNING PROGRAM EFFECTIVENESS STUDIES

The Role of Community-Based Family Planning in Bangladesh

Bangladesh draws considerable attention in the international family planning community mainly as a success story. At the time of independence, the prevalence of contraceptive practice was about 3 percent and many doubted whether family planning initiatives could succeed amidst the country's pervasive poverty and continuing traditionalism. Yet they did. Today contraceptive prevalence is nearly 45 percent and many analysts credit outreach programs for this achievement.

Established in 1978, The Family Welfare Assistants (FWA) Program recruited, hired and trained nearly 12,000 village women in family planning and related health issues. Now numbering nearly 24,000, these assistants visit women in their homes, explain contraceptive methods, and support ongoing use with resupply, information and referral services. Survey data reveal the program's widespread influence. Nearly all women have been contacted at least once by an FWA, and more than a third have been visited at home within the past six months. Virtually all Bangladeshi women know about modern contraception, 49 percent have tried a method, and 40 percent currently use a modern method (Mitra et al., 1992).



As contraceptive use increases, evaluators must begin to redirect their focus from ‘first generation’ issues, such as whether or not program services are working to second generation issues concerning the cost, sustainability and efficiency of programs. In Bangladesh where fixed supply points are ubiquitous planners now question the country’s need to maintain costly, large scale community-based distribution (CBD). Are these efforts really necessary to prevent the discontinuation of contraceptive use and to sustain the pace of reproductive change over time? Do household contacts achieve anything more than substituting expensive outreach supply for less expensive static service supply?

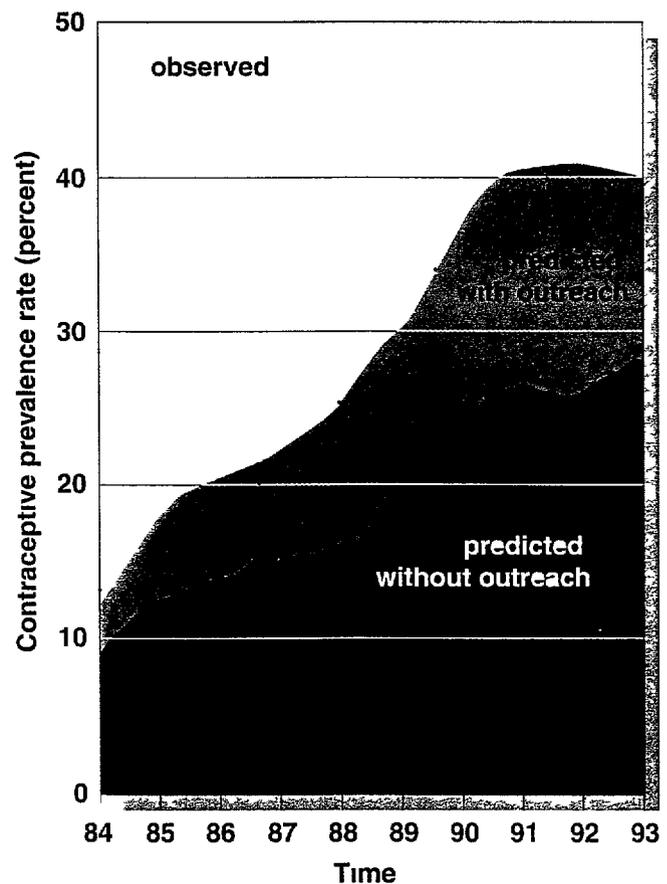
Three reports from a study commissioned by The EVALUATION Project address these ‘second-generation’ questions. Phillips and Zimmerman (1993) focus on the long-term demographic influence of CBD. Hossain and Phillips (1996) explore the effect of CBD on contraceptive continuation, and Hossain, Barkat-e-Khuda, and Phillips (1995) investigate its influence on clients’ perceptions of service quality. Data for these studies come from the Maternal and Child Health Family Planning (MCH-FP) Extension Project, a field research program of the International Centre for Diarrhoeal Disease Research. The MCH-FP Extension Project maintains a system of longitudinal surveillance dating back to 1982 and administers reproductive preference surveys at three year intervals. Field sites of the project are located in the rural subdistricts of Sirajgonj in Central Bangladesh and Abhoynagar Thana in western Bangladesh.

Does Outreach Promote Contraceptive Use in the Long Run?

Phillips, Hossain, and Arends-Kuenning (1996) outline three hypotheses concerning the impact of CBD on contraceptive use. The latent demand hypothesis asserts that CBD influences reproductive behavior by fulfilling latent demand (demand, from this perspective, is determined by social and economic factors). This hypothesis predicts that outreach effects are initially pronounced, but diminish with time. The second hypothesis asserts that outreach workers mobilize demand by fostering new preferences, norms and beliefs about fertility regulation. The third hypothesis maintains that outreach is necessary to sustain contraceptive behavior even as contraceptive prevalence rises because of the ‘fragile demand’ for contraception in contexts where family planning is associated with social, psychological and monetary costs that cannot be sustained by individuals.

The analyses performed by Phillips and colleagues indicate that FWA outreach is the single most important component of program

Figure 3
Contraceptive Prevalence Rate



Source: Phillips et al. 1996



exposure surpassing services provided at fixed locations. Moreover, the impact of CBD exceeds merely meeting existing demand. CBD mitigates constraints to contraceptive use and mobilizes demand for fertility regulation. CBD also exerts a small effect on reproductive preferences, but the impact is weak and unrelated to the gender of the child desired.

To illustrate the significant impact of CBD on contraceptive use, Phillips et al. (1996) compare observed trends in contraceptive prevalence to estimates of what contraceptive prevalence rates would have been in the absence of domiciliary outreach. Presented in Figure 3, their results portray both the pronounced role of outreach on contraceptive prevalence and the increasing impact of outreach activity on contraceptive use over time. Contraceptive prevalence increased from around 13 percent in 1984 to 40 percent in 1993. In the absence of domiciliary outreach, they estimate that contraceptive prevalence would not have exceeded 25 percent by 1993, a full 15 percentage points below the observed prevalence rate.

Does Outreach Prevent Discontinuation?

Hossain and Phillips (1996) report that continuity of use relates strongly to the frequency of outreach encounters even after controlling for the effects of preferences, age, social and economic status. During the mid-1980s, the 90-day probability of discontinuation was 43 percent lower if a user was visited by an outreach worker than if she had no contact, controlling for other socio-demographic characteristics of the client. From the late 1980s to 1991, the effect was somewhat stronger (the 90-day probability of discontinuation was 65 percent lower) indicating that the role of outreach in sustaining use actually increased over time.

Do Outreach Worker Visits Enhance Clients' Perceptions of Service Quality?

Hossain et al. (1995) hypothesize that family planning outreach worker visits to rural women's homes build rapport and mutual understanding. In turn, these clients are more likely to express favorable opinions about the quality of care they receive. Analysis results indicate that exposure to outreach services enhances perceived service quality, and that the average woman would be highly satisfied with the quality of outreach services if all women were visited at intervals of 90 days or less. Nonetheless, the results also show that perceived quality depends, in part, upon outreach workers' characteristics. The most effective outreach worker is a relatively young woman who has had several children early in her reproductive career and who currently practices family planning. "Such a worker presumably has an experience with childbearing, the need for contraception, and the practice of methods that contribute to her skills as empathetic and caring service providers" (Hossain et al. 1995: 11). Interestingly, outreach workers' educational attainment and religion do not appear to influence clients' perceptions of quality. Hossain et al. (1995) conclude that domiciliary outreach provides support that individual women view as being important to service quality.

In summary, the impact evaluations of the effect of CBD suggest that the extensive investment in deploying FWA workers in Bangladesh continues to be a sound policy. The outreach component of the family planning program is by far the largest single contributor to overall impact. It promotes contraceptive use over the long term, prevents discontinuation, and heightens clients' perceptions of the quality of services they obtain. Together, these studies imply that program effectiveness would be jeopardized by converting the household CBD program into a depot program.



The Impact of Alternative Distribution Channels in Indonesia

As contraceptive prevalence rates increase and the momentum of past rapid population growth generates large numbers of women of childbearing age the resources needed to provide family planning in the developing world will increase dramatically. In response, family planning agencies and donors must critically examine current forms of distribution. In Bangladesh this has involved analyzing the need to maintain large-scale CBD programs. In contrast, evaluators in Indonesia question whether the family planning program should continue to emphasize traditional, clinic-based modes of distribution.

As in Bangladesh, these decisions concerning alternative distribution schemes require evaluation. Jensen (1996) proposes addressing two basic questions in order to facilitate resource-allocation decisions. First, do users supplied by innovative distribution schemes enjoy different levels of success in employing contraception than their peers at conventional clinics? Second, if systematic channel-specific differences in subsequent fertility exist, can we attribute them to the contraceptive suppliers or do they merely reflect the indirect effects of users' characteristics?

To answer these questions, Jensen analyzes data from the 1991 Indonesian Demographic and Health Survey to determine whether users of alternative channels are more successful at averting births than clinic-supplied users. Jensen introduces three hypotheses concerning the relationship between distribution channels and fertility. According to the first hypothesis, fertility does not differ significantly according to distribution channel. Second, users of different channels exhibit significant differences in actual fertility, but this variation results from users' self-selection into divergent channels. Finally, the third hypothesis asserts that there *are* significant differences in actual fertility between users of different channels *and* these differences are not the product of clients' self-selection into different delivery channels.

Jensen's analysis of the Indonesian data reveals marked differences in the subsequent fertility of users supplied with modern methods (i.e., pill, IUD, and injection) from different sources. Users supplied through public clinics have the most success at averting pregnancy. Within the private sector, women supplied with modern methods by midwives are much worse at averting pregnancy than women who obtain modern methods from any other type of provider, either public or private. Customers of non-midwife, private supply sources do somewhat worse at averting pregnancy than users supplied by public clinics, but do better than users supplied by private midwives.

According to Jensen, these differences cannot be attributed to variation in method mix, to the characteristics of clients, or to the attributes of the locations where these women live. Contraceptive pills account for about 43 percent of method use among clients of public clinics, while no more than 20 percent of users supplied by private sources are provided with pills. For these method mix differentials to explain user-outcome differentials, the method-specific conception rate would have to be dramatically higher for injectables and IUDs than clinical evidence suggests.

Aside from their choice of contraceptive methods, clients of public clinics possess few characteristics that differentiate them from users supplied by private midwives, and those differences that exist would lead us to predict that those supplied by public clinics would be *less* successful contraceptive users. The clients of public clinics are slightly below average in educational attainment, and are less likely to live in areas where knowledge of family planning is widespread than users of other supply channels. Furthermore, relative to users supplied by private channels, users supplied by public clinics are most likely to be using pills, IUD or injection.



to space births (rather than to limit family size) Consequently, the finding that women supplied by public clinics are so successful in averting pregnancy in spite of their socioeconomic characteristics strongly suggests that supply channels have an independent effect on fertility

Unfortunately Jensen's analysis could not extend to uncovering what it is about public clinics that promotes more effective client use of contraception because the data are not measured at the supply level This is perhaps the most interesting question from a service provision standpoint and one that deserves further exploration Moreover until data on quality characteristics at facilities are available this question can not be satisfactorily answered and we may continue to question whether the observed differences in contraceptive success are really the result of differences in delivery channels or whether they are due to unmeasured attributes of the clients Yet regardless of which factors underlie the observed differences in fertility, whether service delivery channels or the unmeasured characteristics of clients, or both, Jensen's analysis reminds us to exercise extreme caution when using standardized intermediate output measures such as couple-years of protection or acceptor counts to assess the relative performance of differing programs Ultimately, if contraceptive effectiveness depends on key factors that evaluators are not taking into account in their measures of program performance, conclusions based on standardized intermediate output measures are likely to mislead program planners

Contraception and Abortion in Latin America

To assess the aggregate impact of contraceptive use on fertility at the national or regional level, ideally researchers should take into account the prevalence of induced abortion In many instances, failure to do so will lead to overestimating the impact of contraceptive use on fertility Yet in many countries, particularly those in which abortion is illegal, statistics on levels of induced abortion are not available Consequently, researchers must develop indirect methods for estimating induced abortion

In their study of contraception and abortion in Latin America Singh and Sedgh (1996) demonstrate one method for estimating induced abortion They perform estimates for Brazil, Colombia, and Mexico for three separate time periods the late-1970s the mid-1980s, and the early 1990s Thereafter, they use these estimates to assess the relative impact of abortion and contraceptive use on fertility

The investigators build on a methodology for making indirect estimates of abortion incidence that utilizes data on women hospitalized for abortion complications Such data have been collected for each country under investigation and within each country, by region and state The steps for estimating levels of induced abortion involve adjusting the number of women hospitalized for abortion complications for under reporting and misreporting of cases eliminating cases of spontaneous abortion and multiplying the resulting number of hospitalized induced abortion cases by a factor that represents the estimated number of abortions performed for every one abortion that results in hospitalization These calculations produce estimates of the total number of induced abortions

According to their calculations the estimated annual abortion rates during the 1970s (the annual number of abortions per 1 000 women aged 15–49) ranged from about 22 in Brazil and Mexico to over 31 in Colombia Rates increased slightly from the late 1970s to the mid-1980s in all three countries From the mid-1980s to the early 1990s, the rate of abortion continued to rise in Brazil reaching 39 by the early 1990s, whereas in Mexico and Colombia the rates declined slightly to levels previously reported for the late 1970s



Table 2
Estimates of the Bongaarts Indices of Abortion (Ca), Contraception (Cc), Marriage (Cm), and Breast-feeding (Ci) for Brazil Colombia and Mexico in the Mid-1970s and Mid-1980s, and the Impact of Abortion on Fertility

Country	Bongaarts Indices				With Abortion Est TFR	Without Abortion Est TFR	Percent Effect of Abortion	Observed TFR
	Ca	Cc	Cm	Ci				
Brazil								
1986	0.853	0.430	0.580	0.840	2.73	3.21	17.3	3.50
Colombia								
1976	0.875	0.633	0.564	0.846	4.04	4.62	14.2	4.40
Colombia								
1986	0.808	0.440	0.530	0.810	2.34	2.89	23.7	3.30
Mexico								
1977	0.938	0.730	0.657	0.842	5.80	6.18	6.6	6.10
Mexico								
1987	0.888	0.520	0.620	0.810	3.55	4.00	12.6	4.00

Note: Value for indices range between 0 and 1 with those closer to 0 exerting a stronger depressive effect on fertility
 Source: Singh and Sedgh 1996

To examine the relative impact of abortion and contraception on fertility, Singh and Sedgh utilize Bongaarts' model of proximate determinants. According to this model, the four main proximate determinants of fertility are marriage, postpartum infecundity, contraception and abortion. The fertility effect of each of the four variables is measured by an index of that variable; the value of the index ranges from 0 to 1. If the variable has no fertility-inhibiting effect, it takes the value of 1, and thus, the lower the value of the index, the greater the effect of that determinant on the fertility rate.

Singh and Sedgh report that in each of the three countries, during the time periods for which data are available, contraception had a greater impact on fertility than abortion. (See Table 2) During the mid-1980s, the index for abortion in all three countries ranged from .81 to .89. In contrast, the index for contraception ranged from .43 to .52, suggesting a considerably greater impact of contraception on fertility. Interestingly, in Colombia and Mexico, where data are available for two time periods (the mid-1970s and mid-1980s) both the relative effects of abortion and contraception increased over time, but the effect of contraception grew at a faster pace than that of abortion. The investigators conclude that the impact of contraception has been much stronger than the effect of abortion, but that abortion plays a subsidiary role in determining the level of fertility in these countries.

Service Delivery Operations: The Role of Mass Media in Nigeria

Advocates of using mass media in family planning programs maintain that well-designed media campaigns create a positive social environment for family planning behavior by bringing about shifts in popular opinion. Moreover, these efforts contribute to family planning use by creat-



ing awareness about contraceptive technology, stimulating people's desires for more information about family planning and facilitating their efforts to apply the information to their own lives

One of the recent developments in family planning media campaign strategies—enter-educate—involves using the entertainment component of mass media such as songs and dramas to transmit family planning messages. The assumption underlying this approach is that people are more likely to adopt a behavior if they receive motivation from those whom they view as role models. Such an enter-educate program was launched in Nigeria during the late 1980s using two music videos produced by Nigerian popular artists King Sunny Ade and Onyeka Onwenu. Extensive publicity and public relations activities by the musicians accompanied television broadcasts of the videos. During the same period, Nigerians introduced short radio and television dramas about family planning issues and a video documentary entitled “Our Destiny is in Our Hands” the intent of which was to educate people about the socioeconomic consequences of rapid population growth. These events culminated in the 1991 unveiling of an official family planning logo that was subsequently exhibited on billboards, danglers, and car stickers.

According to data from the Nigerian Demographic and Health Survey, these family planning media campaigns are reaching their audience. Twenty-three percent of the women surveyed report having heard or seen a family planning message on radio or television. Moreover, evaluation studies of some of the family planning media campaigns indicate significant changes in people's contraceptive attitudes and behavior attributable to media promotion of family planning (Bankole et al. 1996). However, researchers have conducted most of these evaluations on a relatively small scale.

The EVALUATION Project commissioned several studies that address several key questions about media promotion of family planning. First, who listens to these messages? Second, do family planning media campaigns affect actual or intended contraceptive use? Third, does sharing information from mass media campaigns about family planning with others enhance or attenuate the effects of the campaigns on contraceptive behavior?



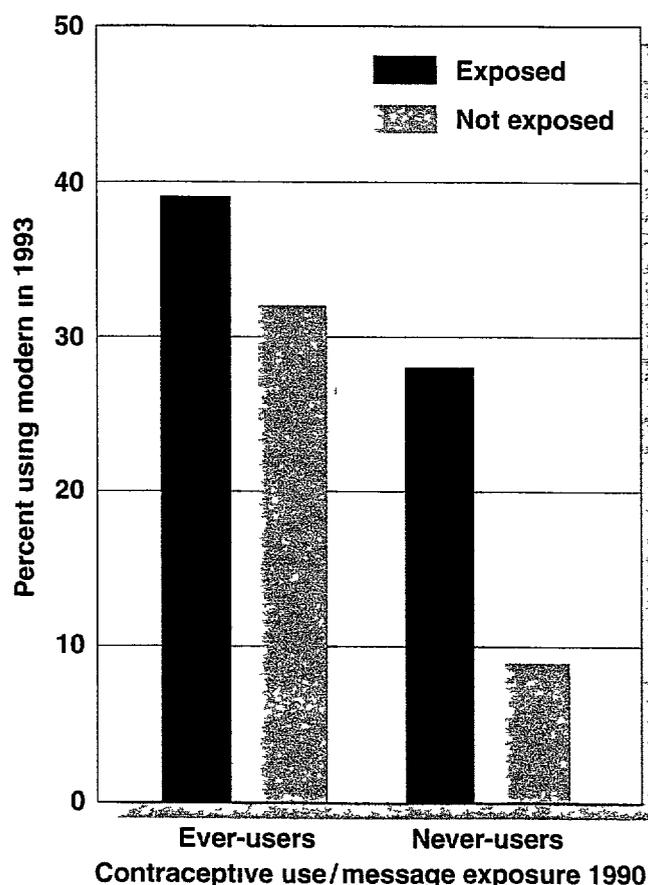
Who Listens to Family Planning Messages?

Bankole and colleagues (1994–1996) report that in Nigeria age is negatively associated with exposure to family planning in the media—as women age their likelihood of exposure to family planning in the media decreases. Educated women exhibit a greater propensity toward media exposure: those with secondary or more education have a 2.5 times greater chance of being exposed than those with no formal education. Similarly, urban women are 53 percent more likely to have heard or seen family planning messages on the radio or television than those who live in rural areas. Consistent with the above findings, exposure is greatest among women whose husbands are in professional or technical employment and among women who live in a household with a television, car, bicycle/motorcycle, or electricity. When these socioeconomic variables are controlled, Christians are less likely than Muslims to have heard or seen family planning messages in the media but have greater exposure to these messages than affiliates of traditional religions.

Does Media Exposure to Family Planning Messages Influence Actual or Intended Contraceptive Use?

According to Bankole and colleagues' analysis of cross-sectional data, exposure to family planning messages is positively associated with actual and intended contraceptive use. Controlling for age, number of living children, education, religion, place of residence, husband's number of wives, husband's occupation and some household possessions, expo-

Figure 4
Effect of Mass Media Messages on
Contraceptive Use, Nigeria 1993



Source: Bankole, Rodriguez, and Westoff (1996)

sure to media promotion of family planning is positively associated with having ever used a contraceptive method and with current use of any method. Ever use of contraception is 8.2 percentage points higher among women who have heard or seen family planning messages on the radio or television (20.3 percent versus 12.1 percent). Moreover, current users who have heard or seen family planning messages are more likely to be using a modern method than current users without media exposure (63.6 percent versus 53.5 percent). Bankole et al. (1996) also find a strong positive relationship between exposure to media messages and the intention to use contraception. Nearly 37 percent of women who have seen or heard media messages about family planning intend to use contraception in the future, compared to only 19 percent of those who have not been exposed to media messages.



These findings suggest a link between media exposure and reproduction-related behavior. Nonetheless, the cross-sectional nature of the Nigerian DHS data precludes clear-cut inference about the causal direction of the relationship. For instance, women who feel positive about contraceptive practice and who desire fewer children may be more likely to recall having heard or seen family planning messages, and they may be more disposed to actually listening to or watching the messages. This problem of a selection bias can be mitigated by longitudinal study of behavioral change among those exposed or unexposed to earlier communications campaigns. Consequently, Bankole, Rodriguez, and Westoff (1996) have conducted a follow-up study in southwest Nigeria involving re-interviews of a sub-sample of women from the original DHS sample. Their survey asks detailed questions about the time sequence of media exposure and contraceptive use in order to establish the temporal order of events. Bankole et al. (1996) relate women's exposure to media messages measured in 1990 to their subsequent contraceptive behavior as measured in 1993. In this way, they resolve the problem of reverse causation that obscures causal inferences from cross-sectional analysis.

They find that exposure to media has a positive effect on current use of any method and current use of modern methods when other variables are controlled. Figure 4 shows that about 34 percent of the women who listened to or saw a media message in 1990 were using a modern method three years later, compared to only 18.3 percent of those who did not. Mass media messages also appear to have a greater influence on contraceptive adoption than on resumption or continuation. Among ever-users of contraception in 1990, 39 percent of those who viewed or heard media messages were using a modern method in 1993, compared with 32 percent of ever-users who were not exposed to media messages. Among never-users of contraception in 1990, 28 percent of those who heard or had seen media messages were currently using modern methods in 1993, versus only 9 percent of the never-users in 1990 who had not heard or seen any media message.

Does Sharing Information from Mass Media Campaigns about Family Planning Enhance or Attenuate the Effects of the Campaigns on Contraceptive Behavior?

Bankole and Adewuyi (1994) analyze exposure to three mass media campaigns undertaken in Nigeria between 1989 and 1992 on the contraceptive behavior of women in the southwest region of the country. Basing their analysis on a survey of 770 women of reproductive age, they report that close to 30 percent of the women who were exposed to a campaign and talked about it with other people were current users of modern contraceptive methods, compared to 21 percent of those who were exposed but did not discuss the campaign with others. Regarding the intention to use a method in the future, women who were exposed to a campaign and who talked about it with other people reported being more likely to intend to use a method sometime in the future. After controlling for background socioeconomic characteristics, 44 percent of the women who were exposed to and conversed about the campaign with others intended to use a method, compared to 26 percent of women who were exposed to but did not discuss the campaign with anyone. These findings suggest that talking about the campaigns with other people promotes the objectives of the media messages; women who discuss the campaigns with other people tend to receive additional motivation to practice or to intend to practice family planning.

In summary, both cross-sectional and longitudinal studies in Nigeria confirm reports that mass media messages have a positive impact on contraceptive use. Additional research by Westoff et al. (1994) on the effect of media messages on contraceptive use in Peru suggests that relatively comprehensive campaigns may be most effective. In Peru, where media messages took the form of 30-second informational 'spots' targeting men and women from lower socioeconomic strata, they found only a small impact on ever use and current use of contraception associated with exposure to media messages. In contrast, the Nigerian program has been far more comprehensive.



Combined with its greater effectiveness this suggests that well-designed media campaigns may help produce the best family planning outcomes. Additionally, the findings of Bankole and Adewuyi (1994) emphasize that the effect of mass media campaigns can be enhanced by spontaneous interpersonal contacts that extend the sharing of information and reinforce acquisition of knowledge of family planning.

Program Effects on Reproductive and Contraceptive Demand

Media Exposure and Desired Fertility

Media messages appear to be associated with fertility limitation but not birth spacing in Nigeria (Bankole et al. 1996). Women who are exposed to family planning messages are slightly more likely to desire no more children. But among women who want more children, their intention to wait or to have another child within two years is independent of exposure to media messages. Regarding ideal family size, women who have heard or seen family planning messages in the media are more likely to have a definite idea of their ideal number of children, and exposure to media promotion of family planning is negatively related to the ideal number of children desired. The ideal number of children averages 5.65 for respondents with media exposure, and 6.07 for women without exposure to family planning messages.

Informal Conversations and Contraceptive Use

Do women discuss family planning with friends and family? If so, what do they talk about? Do these discussions influence their contraceptive use? These are among the questions Rutenberg and Watkins (1995) address in their study of informal communication about family planning in western Kenya.

Using a combination of semi-structured interviews, focus groups, and household surveys, Rutenberg and Watkins collected data on women's conversations about family planning and reproductive behavior in four sub-locations in Nyanza Province. They conducted semi-structured interviews with 10 women in each of the four communities along with at least two focus groups, one with women ages 20–29 and another with women ages 30–39. The investigators also administered a household survey to approximately 800 women in the same communities in December 1994 and January 1995. In addition to inquiring about the respondent's socio-economic characteristics and social interactions through work, participation in community groups, and travel, the questionnaire asked women to recall their conversations about family planning. For up to four conversations, respondents provided information about when each conversation had occurred, the setting of the conversation, and basic information concerning the characteristics of the person with whom they had spoken.

Analyses of the data indicate that the majority of women discuss family planning with others. Three-quarters of the respondents in the household survey talked to one or more people about family planning, and half reported three or more different people with whom they had discussed family planning. Ninety-four percent of the conversations about family planning occurred with other women, about half of whom respondents believed to be family planning users themselves. Moreover, the majority of these conversations took place within the past month.



Half of the conversations were with confidants, 38 percent with friends and 12 percent with acquaintances

Rutenberg and Watkins' analysis of the content of these conversations reveals that women in the study areas do not merely talk about family planning but actively debate issues concerning family size and family planning. Women who have few children and who are not (or not yet) using modern methods of family planning compare the lives of people with small families to those with large families. Moreover, these non-users converse with modern method users and with other non-users who have second-hand information about experiences with modern contraception. Meanwhile, current users of modern contraception appear to periodically reconsider their decision as they monitor their bodies and continue to collect information about contraceptive use from other women. Their discussions indicate particular concern about the impact of contraceptive use on their own health and the possibility that contraceptive use will produce an abnormal child. Women also talk about obstacles to contraceptive use such as the opposition of husbands and parents-in-law.

Preliminary analyses of the data suggest an association between informal conversations and contraceptive use. Current users report an average of 4.1 conversations with friends and relatives about family planning compared with 2.8 for non-users. Users also report an average of 2.2 conversations with network partners who approve of family planning, non-users report only 1.5 conversations with friends or relatives who approve. Finally, users report an average of 2.0 conversations with friends or relatives who they believe use a method of family planning, while non-users report 0.9. Unfortunately, Rutenberg and Watkins' methodology prevents us from ruling out the effect of reverse causation, i.e., that contraceptive use influences a woman's propensity to engage in discussions about family planning. Consequently, further analyses and longitudinal studies are needed before we can conclude that interpersonal conversations amplify contraceptive use.

Unmet Need

"Unmet need" refers to the discrepancy between a woman's expressed fertility goals and her contraceptive practice, the most fundamental involving a preference to limit or space births unaccompanied by contraceptive use. Westoff and Ochoa (1991) estimate that in many developing countries, from 11 to 40 percent of reproductive-aged women exhibit this type of unmet need for family planning.

Sponsored in part by The EVALUATION Project, Casterline, Perez and associates have undertaken the most intensive research to date on the causes of unmet need (Casterline, Perez, and Biddlecom 1996, Casterline and Perez 1995). They examine the factors underlying unmet need in the Philippines, a country where health officials and population policy-makers admit to a sense of urgency about reducing unmet need (World Bank 1991). In 1990 the Philippines had a total fertility rate of 4.9 and, according to estimates from national surveys in 1986, 1988 and 1993, roughly one-quarter of currently married women ages 15 to 49 have unmet need for family planning.

Casterline and associates examine two general sets of explanations for the large percentage of women exhibiting unmet need for family planning. The first posits that unmet need is an artifact of survey measurement: levels of unmet need are either under-estimated or over-estimated by the relatively crude measurement of fertility preferences and/or contraceptive behavior. According to the second set of explanations, certain factors serve as disincentives or obstacles to the use of contraception by women who desire to space or limit births. These include their weakly-held fertility preferences, their self-perceptions of being at low risk of conceiving, their beliefs that contraception is socially and culturally unacceptable, their husbands'



opposition to contraceptive use their fear of health side effects and the inadequacy of family planning services

The investigators collected extensive qualitative and quantitative data during 1993 from currently married women and their husbands in eight rural barangays in Nueva Ecija province about four hours drive from Manila and five urban barangays in metropolitan Manila. Data collection involved conducting eight focus groups (20 semi-structured and 1980 survey interviews) all specifically designed to elicit information about fertility preferences and views regarding contraception. In an important departure from standard reproductive health and fertility surveys that address detailed questions about contraception only to women who have used a contraceptive method, Casterline and colleagues sought information from both contraceptive and non-contraceptors.

Analyses of these data indicate that unmet need is not an artifact of inaccurate measurement of fertility preferences or contraceptive practice. Most women expressed the same fertility preferences six weeks after the main survey and during the in-depth interviews. Moreover, the investigators find little support for the assertion that unmet need is the result of inaccuracies in measuring contraceptive use. Specifically, women who were classified as having unmet need at the time of the main survey were much less likely than women categorized as not having unmet need to report having practiced contraception in the past, less likely to anticipate using contraception in the future, and less likely to have used contraception over the six-week period prior to follow-up interviews.

Analyses of these data indicate that unmet need is not an artifact of inaccurate measurement of fertility preferences or contraceptive practice

Husbands' fertility preferences and husbands' power within the household sphere constitute key factors underlying unmet need in the Philippines. Two excerpts from the in-depth interviews with women provide insight into the combined influence of husbands' pro-natalist desires and male dominance in marital relationships.

Personally I want to have two. I wanted to be ligated but he said 'not yet.' And since he is my husband, his decision prevails. It isn't that if you insist on what you like he might start doing things you don't like. Both of you should decide on that matter. Tell him what you like, but in the end of course his decision dominates.

As much as possible I don't want to have one [baby] anymore but he still wants to have [one]. But if he really wants one it [baby] will just come.

The quantitative data confirm the influence of husbands' preferences on their wives' contraceptive use. Fifty-four percent of women who desire to postpone their next birth, and who do not use contraception, have a husband who wants a next birth relatively soon. In contrast, only 25 percent of women who desire to postpone their next birth and who use contraception have husbands who want a birth soon.

In addition to husbands' pro-natalism, other factors that contribute to unmet need are the strength of women's fertility preferences, their views about the acceptability of contracepting, the extent to which they perceive themselves as being at risk of conceiving, and their own concerns about the damaging health consequences of contraceptive use. Regarding attachment to preferences, Casterline and colleagues report that weak attachments to preferences make a relatively minor direct impact on unmet need. Nonetheless, the relatively weak attachments to fertility preferences exhibited by Philippine women in general render their contraceptive behavior more susceptible to other influences. In addition to the husbands' desires discussed earlier, both quantitative and qualitative data suggest that women with unmet need are more likely to perceive themselves as being at low risk of pregnancy. For example, among 47% of women who



reported a desire to space births and who believed themselves to be at low risk of conceiving because of low fecundity and/or infrequent sexual intercourse only 6% were using contraception. Social disapproval also contributes to unmet need. While the differentials are not large and appear only in the quantitative data, a relatively consistent pattern emerges of those with unmet need reporting lower approval for contraception on the part of their friends and relatives. Finally, Casterline and colleagues report that women with unmet need are more likely to regard the pill and ligature as being equally or more harmful to health than pregnancy. But, in general, fear of health side effects does not distinguish women with unmet need from their peers; rather, many women have fears about modern contraceptives that far exceed their true health risks.

Although Casterline and associates report that access to family planning services has little impact on unmet need in the Philippines, they stress that a number of the factors that emerge as important influences on unmet need are amenable to programmatic interventions. The obstacles presented by husbands—for example, could be addressed by well-designed family planning efforts. Moreover, program efforts and special training of family planning workers could be geared toward allaying women's and their partners' negative perceptions of contraceptive use and providing a balanced picture of the actual health risks that accompany the use of specific contraceptive methods.

Family Planning Service Outputs

Accessibility

Bertrand et al. (1995) define "access" to family planning services as "the degree to which family planning services and supplies may be obtained at a level of effort and cost that is both acceptable to and within the means of a large majority of the population." Access may be defined operationally in terms of the presence or absence of family planning services, of specific contraceptive methods, or a package of services and methods that is likely to satisfy the needs and preferences of a large majority of the target population.

The EVALUATION Project sponsored two studies that address whether access to family planning services influences contraceptive use, and one study that examines the impact of family planning availability on fertility. Phillips and Zimmerman (1994) assess the demographic role of family planning accessibility and the intensity of program activity on contraceptive use in six developing countries. Entwisle and colleagues (1995) examine how the placement of family planning facilities affects couples' contraceptive choices in Nang Rong, Thailand, and Angeles. Mroz and Guilkey (1995) analyze whether the availability of family planning facilities influences fertility in rural areas of Tanzania.

Phillips and colleagues investigate the impact of service accessibility in rural areas of Uganda, Guatemala, Ecuador, the Dominican Republic, Colombia, and Thailand. These six countries span the low to the high end of the contraceptive prevalence continuum from 6.1 to 65.0 percent. To determine the impact of supply-side factors on contraceptive use, Phillips and Zimmerman (1994) utilize data from the Service Availability Module of each country's Demographic and Health Survey. The supply-side indicators include geographic diversity of services, travel time to the closest site, method availability, service cost, presence of a family planning promoter, and presence of a community-based distribution system.

Phillips and Zimmerman (1994) report that in five of the six countries under investigation—Thailand, the Dominican Republic, Ecuador, Guatemala, and Uganda—the availability of family



planning services influences the likelihood of contraceptive use. Accessibility appears to play no role in Colombia. The effects of service accessibility are greatest in the countries with low contraceptive prevalence rates and in countries at their early stages of the demographic transitions. Where prevalence is low, a woman residing in a locality with strong supply-side effort has a much higher likelihood of using contraception than a corresponding woman residing in a weak accessibility/intensity area. In high contraceptive prevalence countries that have also achieved relatively low levels of fertility, such as Thailand and Colombia, variation in program accessibility makes little difference because most women are already contraceptive users.

In each country, increasing values for program accessibility and intensity raises mean predicted prevalence rates. Figure 5 illustrates the change in prevalence expected as the accessibility and intensity of the program is either diminished or intensified. This figure makes clear that prevalence rates depend upon program availability. However, this effect appears to be conditional on the climate of unmet need and stage of the demographic transition. As a result, we can identify three basic patterns of program impact: 1) passive response settings where demand is low and exceedingly intensive programs are necessary to produce demographic results, 2) active-response, mid-range prevalence settings where modest investments interact with unmet need to induce major demographic effects, and 3) saturated response settings where prevalence is high and demand for services is so extensive that increased program intensity is not associated with appreciable increments in contraceptive use.

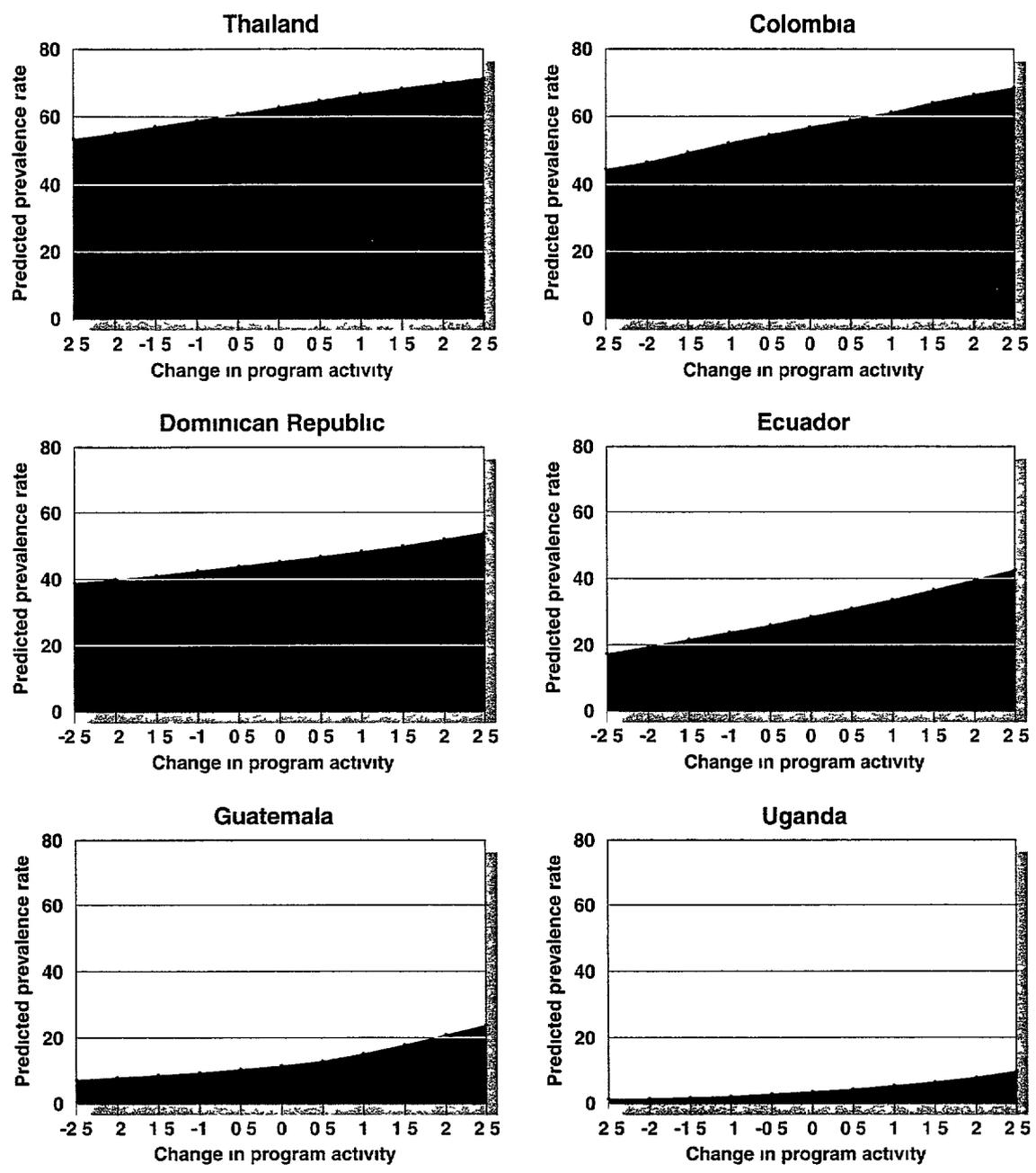
Figure 5 shows the change in prevalence implied by increasing or decreasing the intensity of program activity from minimum observed levels to the maximum (plus or minus 2.5 standard deviations). The mean contraceptive prevalence predictions shown in Figure 5 are based on simulated changes in program effects. Figure 5 shows that prevalence rates are dependent on program availability in all six countries, but the degree of program influence (steepness of the curve) is conditioned by the context in which it is assessed.

In demonstrating the application of Geographic Information Systems to family planning evaluation (See "Geographic Information Systems" under *Methodological Advances*), Entwisle and colleagues (1997) report several interesting findings pertaining to the impact of family planning access on contraceptive use in Nang Rong, Thailand. In particular, they find marked thresholds in the effects of accessibility on choice of contraceptive method (i.e., choosing the pill, IUD, or injection over no method). Whether travel time to a local outlet is less than six minutes is decisive. Moreover, road composition exerts an effect that is independent of travel time. Substantively, this means that even if a family planning outlet is located close to a village, villagers will not necessarily use it if the roads leading to the outlet are of poor quality or washed out during part of the year. Entwisle and colleagues also find that conveniently located sources encourage the use of methods that they offer, while discouraging couples' use of alternative methods and sources. Finally, their investigation suggests that in spite of important changes in the family planning environment during the past decade, whether services were available during the early years of the family planning program continues to influence couples' contraceptive choices today.

In the third accessibility study sponsored by The EVALUATION Project, Angeles Guilkey and Mroz (1996) examine whether the presence of family planning clinics in rural communities in Tanzania influences the fertility of women living in these communities (see also "Modeling joint decisions" under *Methodological Innovations*). They examine data concerning when and where family planning providers were established in conjunction with data from the 1991/1992 Tanzanian Demographic and Health Survey on the timing and spacing of births. (For background information on family planning services in Tanzania, see Figure 9 under *Longitudinal Facility Surveys*.) Angeles and colleagues report that the presence of hospitals, health clinics, and dispensaries reduces fertility. Health Centers have the greatest impact, followed by modest impact from hospitals and dispensaries.



Figure 5
Simulated Prevalence Rates Implied by a Range of Program Activity in Six Countries



Source Phillips Zimmerman and Li (1994)

The investigators calculate annual age-specific birth probabilities and model these as a function of demographic social economic and programmatic (FP service availability) factors. In a simulation analysis (see Table 3), they show that the number of children born to a woman by age 34 predicted from current values is 4.63, a figure that would be 11 percent larger at 5.14 if no family planning services had been available over this woman's reproductive lifetime (since age 12). Assessing the relative importance of different types of family planning facilities, they find that if only hospitals or dispensaries (within 5 kms) were available over her lifetime, the woman's total fertility to age 34 would be 7 and 4 percent lower respectively (4.31 and 4.44), whereas it would be 26 percent lower at 3.43 if family planning services at health centers had been available over time. Careful statistical analysis of this type helps us avoid over- or

Table 3
Simulated Impacts of Family Planning Facilities within 5 Kilometers on
the Total Fertility Rate for a Woman by Age 34

Fertility Impact Model Evaluated At					
	Mean Values of FP Available	No FP Available	Only Hospital Available (5km)	Only Health Center Available (5km)	Only Dispensary Available (5km)
Simulated Total Fertility Rate by Age 34	4.63	5.14			
Fertility Impact Relative to no FP Facility Available			- 7%	- 26%	- 4%

Note: The simulation uses the observed 1991 mean values of the FP variables for both contemporaneous and the early life cycle measures. Source: Angeles et al. (1996)

under-estimating the impact of family planning programs as well as disaggregate that impact by type of facility. In the future, more frequent collection of longitudinal data will be able to provide similar answers on service effects, without requiring assumptions about the duration of service availability.

Quality of Care

In our view, access plays a key role in determining whether an interested individual makes contact with the family planning service and is able to obtain services. Once that individual moves 'inside the door,' quality of care will greatly affect his or her decision to adopt a method and motivation to continue using it. (Bertrand et al. 1995: 65)

Perhaps the paramount question in family planning for the 1990s and beyond is "does quality matter?" In general, family planning specialists believe that improvements in the quality of services in family planning will lead to the greater acceptance and sustained use of contraception. However, explicit consideration of quality of care is missing from most supply-side research (Mensch et al. 1996). In response, The EVALUATION Project has commissioned five studies that investigate the relationship between quality of care and the demand for family planning, contraceptive use, and continuation. Together, the results of these analyses provide strong evidence that quality matters.

Mensch and colleagues (1996) investigated the relationship between the quality of care and contraceptive use in Peru. By linking DHS and Situation Analysis surveys, they are able to address quality of service issues that otherwise go unmeasured. According to their research, contraceptive prevalence would increase dramatically if Peruvian family planning programs met the quality standards currently exhibited by those service delivery points in Peru with the highest quality services. According to one simulation, prevalence would increase by 16 percent if all women lived in areas with the highest quality care compared to the lowest.

Two Middle Eastern studies focus on one particular component of quality of care, that pertaining to the availability and utilization of maternal and child health (MCH) services. Re-



searchers outline several reasons for the anticipated association between MCH service utilization and postpartum contraceptive use. According to one explanation, the utilization of prenatal care fosters interaction between pregnant women and medical and health personnel, thereby increasing the possibility of communication with family planning practitioners. Prenatal care participation may also lower the costs of access to information about contraception and reduce the likelihood of receiving misinformation about the side effects of contraceptives. Finally, the relationship between utilization of maternal and child health services and contraceptive use may be more direct as doctors, nurses, and midwives dispense family planning information while providing prenatal care services.

Aghajanian (1995) examines whether women's use of prenatal care services in Morocco and Tunisia influences their postpartum contraceptive use. These two countries represent an interesting contrast. In Tunisia about 62 percent of pregnant women receive some kind of prenatal care compared to only 29 percent of Moroccan women. Examining the impact of women's use of prenatal care services on their postpartum contraceptive use within a multivariate model, Aghajanian reports that use of prenatal care services exerts a positive effect on contraceptive use in both countries, even after controlling for the effects of parity, educational attainment, current and childhood places of residence, and husband's educational attainment.

The relative impact of prenatal care use varies by country and type of service provider. In Morocco both prenatal care dispensed by midwives/nurses and that given by doctors increases women's likelihood of using contraceptive methods after birth. Moreover, the magnitude of the effect does not differ substantially depending on whether services are provided by nurses/midwives or by doctors. In contrast, the effect of prenatal care on contraceptive use in Tunisia depends largely on who provides these services: prenatal care given by midwives and nurses has the largest impact on postpartum contraceptive use.

In a separate analysis, Magnani and colleagues (1995) also assess the impact of maternal and child health service utilization on contraceptive use in Morocco. Their model acknowledges that bi-directional pathways may be at work, that is, past MCH utilization may influence family planning utilization and/or past experience with contraceptives may determine MCH utilization. In addition to acknowledging the possibility of reciprocal relationships, their analysis differs from Aghajanian's because they employ a more refined measure of exposure to MCH services. Whereas Aghajanian uses a dichotomous measure indicating use or non-use of prenatal care services, Magnani and colleagues measure the intensity of exposure to MCH services on a 24 point scale.

In spite of their different methodologies, Magnani and colleagues arrive at the same conclusion as Aghajanian: MCH service use is an important determinant of subsequent use of modern contraception in Morocco. Women who use MCH services intensively are significantly more likely to go on to adopt a modern contraceptive method than women with lower service utilization intensities when the effects of other individual- and household-level variables, characteristics of the supply environment, and unobserved factors that jointly influence both 'choice' variables are controlled statistically. The intensity of MCH service use is, in turn, to a significant degree determined by the accessibility of MCH services. The authors note that although an unequivocal answer to the question regarding the direction of causation between MCH service and contraceptive use may be obtainable only from a carefully conducted prospective study, their results provide relatively strong support for the proposition that MCH service contact leads to increased levels of subsequent contraceptive use.

Approaching quality from a slightly different perspective, Akin and Rous (1994) pose the question: which characteristics do clients find most desirable in family planning providers? The

Perhaps the paramount question in family planning for the 1990s and beyond is "does quality matter?"

1 The Role of Non-Government Organizations in Family Planning Service Delivery

In recognition of the increasing role of non-government organizations in family planning service provision Lacey and Carba (1996) have undertaken a case study of non-government provision of family planning in Metropolitan Cebu, the Philippines The investigators compare the services and the client populations served by three types of non-government organizations that provide clinical and non-clinical family planning services grassroots community development organizations, religious organizations, and private volunteer organizations They also contrast the profiles of these non-profit volunteer organizations with those of employer-based programs and private physician clinics

Lacey and Carba report that among the non-profit volunteer organizations, family planning and health organizations show the greatest capacity to provide both clinical and non-clinical methods of family planning They offer a wider variety of modern methods, maintain more hours of service provision, and report the highest volume of clients using modern contraceptives In contrast religious organizations specialize in offering family life education and natural family planning Grassroots organizations serve far fewer clients and offer fewer choices of methods than health and family planning organizations, but they do fill an important role by providing non-clinical methods and referring clients to clinics and hospitals where they can receive long-term and permanent family planning methods In general, development and religious organizations cater to the needs of poor communities, whereas health and family planning organizations strive to serve all citizens desiring their services In comparison to employer-based programs and private physician clinics, non-profit volunteer organizations reach the largest number of clients, offer the broadest method mix, and have the longest hours of operation

Each type of provider fills a separate niche Non-profit organizations offer the best means of reaching a large number of clients with a broad method mix Employer-based clinics serve the needs of the working poor and middle and upper income households and appear to facilitate contraceptive use by providing on-site clinics Work-based programs serve far fewer clients than volunteer organizations and condoms, pills, and natural family planning dominate the method mix of their clients Private physician clinics meet the needs of families and individuals wanting long-term and permanent methods They are more likely to offer female sterilization, IUD insertions and injectables than volunteer organizations and work-based programs Lacey and Carba conclude that because each type of non-profit organization examined caters to a specific group of clients, concurrent strategies may be needed to expand the private sector's role in family planning service delivery in Cebu

underlying assumption of their investigation is that the features that attract users are indicative of higher quality services Based on their analysis of household and facility data from the Cebu Longitudinal Health and Nutrition Survey conducted on the island of Cebu Philippines they report that women who use modern/non surgical methods prefer small proximate local clinics



that provide a wide variety of methods, have pre- and post-natal care and infant delivery services and have a physician on staff. For example, their simulations indicate that reducing the distance to public clinics by half, from an average of 1.2 kilometers to 0.6 kilometers, increases the probability of using a public clinic by 12 percent. Similarly, expanding the number of methods available at public clinics by one method increases the predicted probability that someone will use a public clinic by 5.5 percent, while the same increase in methods available at private clinics and hospitals is associated with a 10.3 percent increase in the probability of using these facilities. They also find that adding a doctor to each public clinic that does not have one would lead to a 5.6 percent rise in the use of public clinics. Combined, these simulations indicate that provider characteristics (i.e., quality) do make a difference.

Only one of the studies that includes quality factors fails to find that service quality influences contraceptive behavior. Taking advantage of the fact that a DHS and a Situation Analysis were conducted in the same municipalities in Ceara State in Northeast Brazil during the period 1991–93, Hotchkiss et al. (1995) investigate the impact of service access and quality on contraceptive use. Their measures of services include indices for overall service quality in each sample municipality and separate components of quality. These components include contraceptive method availability, infrastructure and equipment, supervision and management mechanisms to promote continuous contraceptive use, and information provided to clients. They also include variables representing the mean number of facilities offering family planning services within the respondent's municipality and a dichotomous variable capturing the presence of a private sector facility among the family planning facilities in the respondent's municipality. Interestingly, only the variable measuring the presence of a private sector facility among the facilities in the "choice set" of respondents exhibits the predicted positive effect on contraceptive use. Although it may be the case that women in Ceara State are truly unresponsive to variations in the supply environment for family planning services, a more plausible explanation is that methodological flaws underlie the study's failure to observe stronger supply environment effects. In particular, the Situation Analysis data provide only a rough approximation of the level of family planning service quality in the state because they include information only on public sector facilities and private sector facilities offering family planning services under government contract. This is particularly problematic because other private sector providers, employer-based services, and pharmacies are apparently important elements of the supply environment that were missed.

In summary, four of the five studies conclude that service quality is important. In particular, prenatal care stands out as an alternative or supplementary conduit to traditional family planning clinics for increasing contraceptive use. In the future, it may be worthwhile to further investigate which aspects of MCH service use are primarily responsible for these effects on contraceptive behavior.

IV. FINDINGS FROM STUDIES ON METHODOLOGICAL INNOVATIONS

In order to assess family planning programs accurately, evaluators must weigh the advantages and disadvantages of various research designs, select appropriate measures of program inputs and outputs, devise means of collecting data, and be familiar with statistical methods. Effective evaluation also requires an ongoing commitment to improving these dimensions of evaluation methodology and keeping abreast of methodological developments. One primary aim of The EVALUATION Project has been to undertake a series of internal and commissioned studies designed to strengthen family planning program evaluation and to make the findings available to the international family planning community. We present here the highlights of these methodological studies.

Evaluation Design

“Program effects can be accurately measured only if an appropriate research design is used” (Bauman et al 1994: 108)

Every evaluation begins with the selection of an appropriate research design. Regarding this process, two conclusions emerge from The EVALUATION Project’s methodological studies. First, true experiments should play a more prominent role in family planning program evaluation. Second, the multilevel research design—particularly when applied to longitudinal data, constitutes a promising approach for evaluating the effect of family planning environment on individuals’ reproduction-related behavior.

True Experiments

The distinguishing feature of the “true experiment” is that the units for study—such as individuals, clinics, or geographical areas—are randomly assigned groups exposed to different treatment conditions. For example, in an actual experiment of IUD use and satisfaction in Sri Lanka (Vidyasagara et al 1985), women were randomly divided into two groups, the first of which was exposed to a midwife and satisfied IUD acceptor team and the second (“control group”), to a midwife working *without* a satisfied IUD acceptor. The virtue of the true experimental design is that when enough units are randomly allocated to each treatment condition, the groups to be compared can be considered equivalent on nearly all measured and unmeasured variables except their treatment. Consequently, any association between the program and the behavior of interest is likely to be the result of the program rather than confounding variables. True experiments permit strong inferences about cause and effect. Moreover, many agree that the properly implemented true experimental design provides the strongest evidence for assessing program effects (Bauman, in press,¹ Bauman et al 1994).

¹ This paper is scheduled for publication in the May 1997 or June 1997 issue of the *American Journal of Public Health*. The press is requested to honor the embargo on using information from the paper until it is published by the journal.



2. How Effective are Family Planning Interventions? The Evidence from True Experiments

Researchers rarely use true experiments to evaluate family planning program interventions. However, in the few instances in which they have utilized the true experimental design, what have they found? To address this question, Bauman (in press) identified all family planning program or project evaluations prior to 1993 that employed a true experimental design and reported findings on outcomes. Among the 16 studies, the units analyzed ranged from individuals to provinces and included acceptors, villages, districts, clinics, clinic days, and supermarkets. The outcome variables typically were clinic attendance and contraceptive use. In 13 of the studies, the author concludes that program effects were positive. In two studies, no significant program effects were found and in one study, only unintended program effects were found.

Using meta-analysis—a research design in which study findings are the units of analysis—Bauman reported a measure of association, the Pearson r , between program and outcome variables ranging from -0.08 to 0.19 , and averaging 0.08 (r -square 0.0064) for the 14 studies for which it was possible to calculate this value. On average, the programs or projects accounted for less than one percent of the variation in the outcome variables—clinic visits, contraceptive use, and contraceptive continuation.

The results of the meta-analysis suggest that special family planning program interventions may have weaker effects than is assumed. The factors actually influencing contraceptive use may be different from the types of family planning components and variations that have been evaluated using true experimental designs. Nonetheless, this analysis does not mean family planning programs have no impact on reproduction-related behavior. Aside from having few studies on which to base the meta-analysis, not all types of programs or projects, particularly large-scale ones, have been evaluated with true experiments.

In spite of several highly desirable features—such as combining scientific rigor with easily interpreted results—the true experiment is rarely adopted for family planning program evaluation. Numerous family planning programs have been studied since the 1960s, but an extensive review of the published and unpublished literature at the end of 1992 revealed that only 16 projects or programs had been evaluated using the true experimental design (see Box 2). Moreover, none of these studies evaluated a comprehensive national-level family planning program—rather they evaluated smaller scale projects or more narrowly focused interventions.

Bauman and colleagues identify and critically examine numerous problems attributed to the true experiment that have prevented evaluators from making greater use of this research design. The most commonly cited reasons for not adopting a true experimental design fall into three general categories: methodological, financial, and ethical.

Methodological problems attributed to true experimental designs range from fear about program contamination across treatment groups (i.e., that members of the non-treatment group will inadvertently receive the treatment) to concern about measurement bias if program per-



sonnel collect data. Yet, in most cases, these perceived problems can be minimized by taking them into account at the design stage. In fact, a detailed examination of the family planning evaluations that used experimental designs revealed that nearly all of the studies had managed to avoid the problems cited in the literature. Overall, the only objection that stands up to close scrutiny is that the true experiment is not an expedient method of evaluation: on average, true experiments introduced to detect program effects for contraceptive prevalence and fertility take two to three years if the individual is the unit of analysis and up to five years if communities are the units of analysis.

Concerning financial barriers, some evaluators claim that experimental research designs are simply too expensive. Yet upon closer inspection of the literature, we find that actual costs are rarely documented. Hence, there is insufficient evidence to claim that the true experimental design is more costly than other research designs.

Ethical arguments against experiments tend to stress that their use will cause family planning services to be withheld from some people who might otherwise have benefitted from them. This position is based both on misconception and faulty logic. First, adoption of an experimental design does *not* require that the control group receive no treatment whatsoever, only that their treatment differ from that received by the "treatment" group. In this respect, true experiments are no different from quasi-experimental and non-experimental designs, all involve comparisons of subjects who do not receive services or for whom the type or magnitude of services vary. Second, if the benefits of a program are unknown, it is premature to claim that important services are being withheld. This is the question being addressed by the experiment. Conversely, if a program is known to be beneficial, program managers should proceed with dissemination. Finally, it is untenable to claim that services are being withheld if they would not otherwise have been available.

Bauman and colleagues' review of the problems attributed to the true experimental design suggests that they are rarely unique to the experimental design and that, more often than not, they can be avoided by advance planning. Nonetheless, one should be aware that experiments cannot be used to answer many evaluation questions. For example, we may want to know whether a program that has already saturated a country influences the fertility or fertility-related behavior of its inhabitants. This question could be more effectively addressed with a non-experimental design. True experiments are not useful for identifying all of the major determinants of contraceptive behavior and fertility, and other evaluation designs will be more efficient for describing programs, monitoring their progress or documenting client characteristics (Bauman et al. 1994).

Multilevel Analysis

Under circumstances in which it is not practical to adopt a true experimental design, researchers must use more advanced statistical techniques to isolate the relationship of interest, such as the effect of program quality on contraceptive use. In addition, such research requires a multilevel evaluation design. For example, Hotchkiss et al. (1995) investigate whether accessibility and quality of family planning services at the community level influence the contraceptive use of individual women living in the community. They argue that in order to model contraceptive outcomes for individual women as a function of the family planning supply environment, a multilevel research design is needed. Hence, they identify both communities and women as the units in the analysis, and measure variables at both levels. The data set produced by merging community- and individual-level data is commonly referred to as "hierarchical" or "multilevel" because the micro units (e.g., individual women) are nested within the macro units (e.g., communities). In another multilevel study commissioned by The EVALUATION Project, Mensch et al. (1996) investigate whether, net of the effect of household-level variables, current contraceptive use is affected by the family planning service environment in



which a woman resides. This research includes variables measured at three levels—the community (sample cluster), the household, and the individual.

Typically, the “micro” unit in family planning program evaluation is the individual. In contrast, the “macro” units may range from households, neighborhoods, clinics, and service distribution areas, to communities and countries. Hence, the multilevel research design is well-suited to addressing a wide range of family planning evaluation questions pertaining to influence of social context—including family planning program environment—on reproduction-related behavior.

A multilevel research design places two primary demands on the evaluator. First, the evaluator must collect, or have access to, data for both the micro and macro units. Moreover, the investigator must be able to combine these data. For example, to examine the effect of contraceptive availability at the community level on whether individual women adopt modern contraceptives, one must be able to link each woman in the analysis with the relevant attributes of the community in which she resides. Second, when analyzing these data, evaluators must utilize methods that explicitly take into account the hierarchical nature of the data. Failure to do so can result in erroneous conclusions about the impact of family planning programs.²

Measurement

In the context of family planning program assessment, measurement involves specifying clearly observable referents of the terms contained in one’s evaluations. For example, if we are concerned with the impact of service quality on contraceptive use or continuation, we must define what we mean by “service quality,” select indicators of the concept, and delineate the procedures for assigning values to the units. In turn, we must do the same for contraceptive use before we can proceed with the evaluation.

Yet some indicators or variables are more difficult to measure than others. The EVALUATION Project placed special emphasis on investigating five indicators that have, for a variety of reasons, proven more problematic. Three are typically regarded as program “outputs”—service accessibility, service quality, and program acceptability or image. Some consider the cumulative form of these three to constitute “family planning program effort” (Ross and Mauldin, 1996). A fourth indicator, measuring program productivity, is couple years of protection, and a fifth, measuring outcome, is the use of fertility control among older women (36+ years).

Measuring Service Accessibility

Entwisle et al. (1997) demonstrate a new approach to measuring service accessibility in family planning program evaluation—spatial network analysis. Having selected Nang Rong, Thailand, as the site for their study, the investigators obtained a high-quality composite map of the Nang Rong area whereupon they digitized roads, trails, and foot paths, as well as village centers and incorporated these data into a geographic information system (GIS) referenced to the

² Several software packages are currently available for estimating multilevel models. In addition, The EVALUATION Project supported the development of QAQISH (Leon 1994), a program for fitting multivariate binary regression, clustered data models that allow more than one class of sampled units in each cluster. The QAQISH software, which runs under Microsoft Windows, was extensively used in several Project-sponsored impact studies.





Universal Transverse Mercator (UTM) spatial coordinate system. Additionally, they collected the coordinates of subdistrict health centers using global positioning devices and added these data to the GIS. Borrowed from geography, Geographic Information Systems enable data input, storage, management, retrieval, analysis and display of spatial data. Moreover, they allow analysts to link spatial data such as the distance to a particular clinic with non-locational attributes of geographic features, for example, the contraceptive methods available at the clinic and the composition of the roads (e.g. dirt, paved, seasonal) that clients must travel to reach the clinic.

Spatial network analysis, taking into account the location of each village and health center and the average travel time associated with different road surfaces, allows evaluators to calculate such variables as the travel time between a village and the nearest subdistrict health center, the next nearest health center, and so forth. Entwisle and colleagues show that once having collected these alternative measures of family planning accessibility, they may be successfully incorporated into multilevel models of contraceptive choice (for discussion of analysis results, see "Accessibility" under *Impact Studies*). Many features of the Nang Rong study greatly facilitated the collection of spatial network data and their analysis, the most important being the availability of spatial and socio-demographic data for the same locations and time period. Nevertheless, their absence would not preclude the creation of a GIS or its use in family planning evaluation. Entwisle and colleagues conclude that spatial analytic tools hold considerable promise for family planning program evaluation.

Measuring Service Quality

During the 1970s and early 1980s, family planning research centered on the issue of access to family planning services, the hypothesis being that greater access would increase utilization of services. More recently, the international population community has also begun to address more systematically the need to improve the quality of care, both as a reproductive right of clients and as a means of increasing contraceptive use and continuation (Bertrand et al. 1995). For example, the 1994 Cairo Conference on Population and Development called for policies and programs that

orient family planning services to the needs and preferences of individuals. Moreover, as contraceptive prevalence increases, the demographic importance of preventing discontinuation grows and, with this, an interest in what service providers can do to enhance the quality of services in order to sustain the pace of reproductive change over time (Hossain et al. 1995).

This shift in emphasis requires new conceptual and methodological approaches. At a minimum, the international family planning community must reach a certain degree of consensus concerning the meaning of 'quality' and identify suitable measures of the concept. Only after these prerequisites have been satisfied can we evaluate the impact of service quality on contraceptive use and continuity.

The work of Judith Bruce and Anrudh Jain (Bruce 1990, Jain 1989, Jain et al. 1992) has been instrumental in conceptualizing "quality of care." According to their theoretical framework, quality is comprised of six components: availability of a choice of methods, technical competence of service providers, information provided to clients, cordial interpersonal relations, mechanisms to ensure follow-up and continuity, and an appropriate constellation of services. At present, this framework forms the conceptual paradigm for quality in international family planning. In contrast, there is less consensus about how to operationalize quality, i.e., how to translate the Bruce-Jain framework into actual measures of program quality for use by program evaluators. With few exceptions (e.g., Jain 1989), this has prevented the much-needed empirical investigation of the link between service quality and contraceptive adoption and continuation.

Researchers who wish to develop quantitative measures of service quality confront an interesting methodological issue, namely, that service quality has both an objective and a subjective dimension. Service standards are a function of inputs from the family planning program, which are controlled primarily by policy makers and program management. These may differ from clients' perceptions that are, by definition, subjective. The two are linked in that better services should result in more positive attitudes among users, but researchers must recognize that they are conceptually distinct. Consequently, evaluators need measures of both (Brown et al. 1996).

To demonstrate the feasibility of collecting both types of quality data, Brown and colleagues utilize a new methodology developed by the Population Council called "situation analysis" to gather data on the quality of family planning services in Morocco. Situation analysis is a methodology for assessing service delivery facilities, including the quality of care dimension, in a given country.³ This method of data collection has been enthusiastically received by the international population community as a means of obtaining data on two levels of quality: service preparedness—which refers to the adequacy of the infrastructure or subsystems to provide services—and the interaction between the provider and the client. Situation analyses enable researchers to gather data both on objectively measured standards of service and clients' perceptions of the quality of care. For example, in order to determine whether clients of a clinic receive their method of choice in Morocco, Brown et al. (1995) use mystery client observation and exit interviews with actual clients.

In the EVALUATION Project-sponsored Moroccan study, the evaluators computed scores for the various dimensions of service quality in order to monitor a given facility over time and to compare facilities within a system where the inputs throughout the system were

3 The situation analysis methodology (see Fisher et al. 1992) involves collecting data at a random sample of service delivery points using a series of at least four modules: (1) an inventory of personnel, basic equipment, and supplies for family planning/maternal child health (FP/MCH) services; (2) observation of provider-client transactions during a family planning visit; (3) exit interviews with users of FP/MCH services after they complete their visit; and (4) interviews with the providers of FP/MCH services at the selected facilities.



fairly constant and the characteristics of the target population were similar across service delivery points. Researchers were able to create a single quality index by combining the detailed indicator scores. The advantage of a single score is the reduction of data. This may be important under circumstances in which only a few summary numbers can be presented. However, the interpretation of a single score requires caution: a single score cannot provide guidance regarding how or where to improve services. Moreover, comparisons of programs across countries should not be based upon a single index score.

Family Planning Program Effort

Family planning management and evaluation require valid measures of family planning program strength or “effort.” Such measures are needed by managers to guide program improvements, by donors who desire information about the state of the programs they are funding, and by evaluators interested in assessing the impact of population programs on contraceptive prevalence and fertility. At present, the most widely used national-level measures of family planning effort are based on the work of Lapham and Mauldin (1972, 1984) and Ross and Mauldin (1996). They have identified measures based on subjective ratings of 30 key components of effort provided by four types of knowledgeable persons in the family planning field—program personnel, donor personnel, knowledgeable local residents, and knowledgeable foreigners (see Box 3). Although widely used, investigators have called into question the subjective nature of these scores on the grounds that they may reflect bias introduced by respondents’ prior knowledge of the performance or outputs of the programs. Instead, they recommend replacing the subjective measures with objective measures of family planning program effort.

At least two questions arise concerning the obtainment of objective measures. First, is it feasible to acquire these measures? Second, are they more valid and reliable than subjective measures? To address these questions, Mauldin et al. (1994) set out to compare “direct” and “judgmental” scores, and to compare the judgmental scores from 1989 with those collected in 1993. To perform these comparisons, they collected data in 1993 on as many direct measures of the original 30 items as possible, and updated the 1989 subjective values in order to facilitate comparisons of the subjective and objective measures. They selected two countries for this study: Kenya and Bangladesh.

Mauldin and colleagues demonstrate that it is feasible to obtain “direct” measures for 18 of the original 30 items. However, for several of the remaining 12 items, direct measures could be developed only with the expenditure of relatively large sums of money over a long time period. Out of these 18 variables deemed “feasible,” they were able to obtain 13 for Bangladesh and 15 for Kenya. A comparison of the objective and subjective scores revealed trivial differences. In Bangladesh, the total score, for all variables included in the study, varied marginally between the direct and judgmental—72 and 71 percent of maximum. The scores for Kenya were less close but still within range—61 and 52 percent, with the total objective score being substantially higher than the judgmental score.

The authors conclude that in Kenya and Bangladesh—two countries with moderately strong to strong family planning programs—knowledgeable persons possess considerable information about the strengths and weaknesses of programs and are able to provide fairly accurate assessments of program strength, as judged by more direct measures of the same items. The differences in the scores based on direct evidence and those based on judgmental responses are relatively small. Although this does not tell us about the judgments of very weak or weak programs, Mauldin and colleagues tentatively conclude that it is not worth investing substantial funds to carry out additional studies that develop scores based on direct measures. It is worth



3. Family Planning Program Effort, 1972–1994

The measures of family planning program effort developed by Lapham and Mauldin (1972, 1984) and Ross and Mauldin (1989, 1996) are important for monitoring family planning programs in developing countries. Under The EVALUATION Project, 94 countries were recently rated by Ross and Mauldin according to the strength of their family planning programs. These data provide us with a new round of family planning effort scores and enable us to gauge improvements over time among 77 countries that were rated in previous surveys (1972, 1982, and 1989).

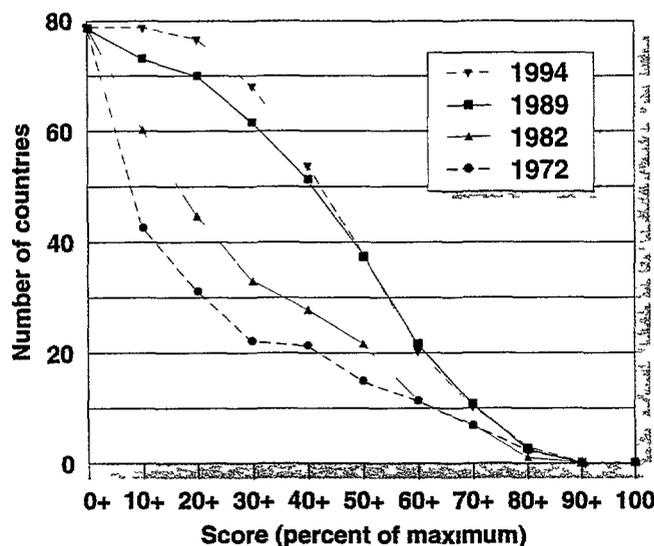
According to the 1994 data, nine of the 14 strongest programs are in Asia (Bangladesh, China, India, Indonesia, Republic of Korea, Sri Lanka, Taiwan, Thailand, Vietnam), one in North Africa (Tunisia), two in Latin America (the Dominican Republic and Mexico), and two in sub-Saharan Africa (Zimbabwe and Mauritius). Nine-

teen sub-Saharan African countries are rated as having weak programs (21 to 45 percent of the maximum score), and 10 others are rated as having moderately strong programs (46 to 66 percent of maximum). In Latin America seven countries are scored as weak, and 15 as moderate. In Asia six are rated as weak and eight as moderate. In North Africa and the Middle East nine are rated as weak, and four as moderate. Three in

Central Asia are included. Uzbekistan, rated as moderate, and Kazakhstan and Kyrgystan each rated as weak. Regarding trends over time, large increases were found in the strength of family planning programs over the past 22 years. Shown in Figure 6, in 1972 fewer than 20 out of 77 countries were at or above 50 percent of the maximum program strength score. By 1989 nearly 40 countries had reached or exceeded this level of program strength.

During the 1970s and 1980s, countries made large gains in effort components in each region except East Asia, where scores were already relatively high (see Figure 7). However, during the past five years (1989 to 1994), overall program

Figure 6
Number of Countries at or Above Each Percent-of-Effort Score, 1972, 1982, 1989, and 1994

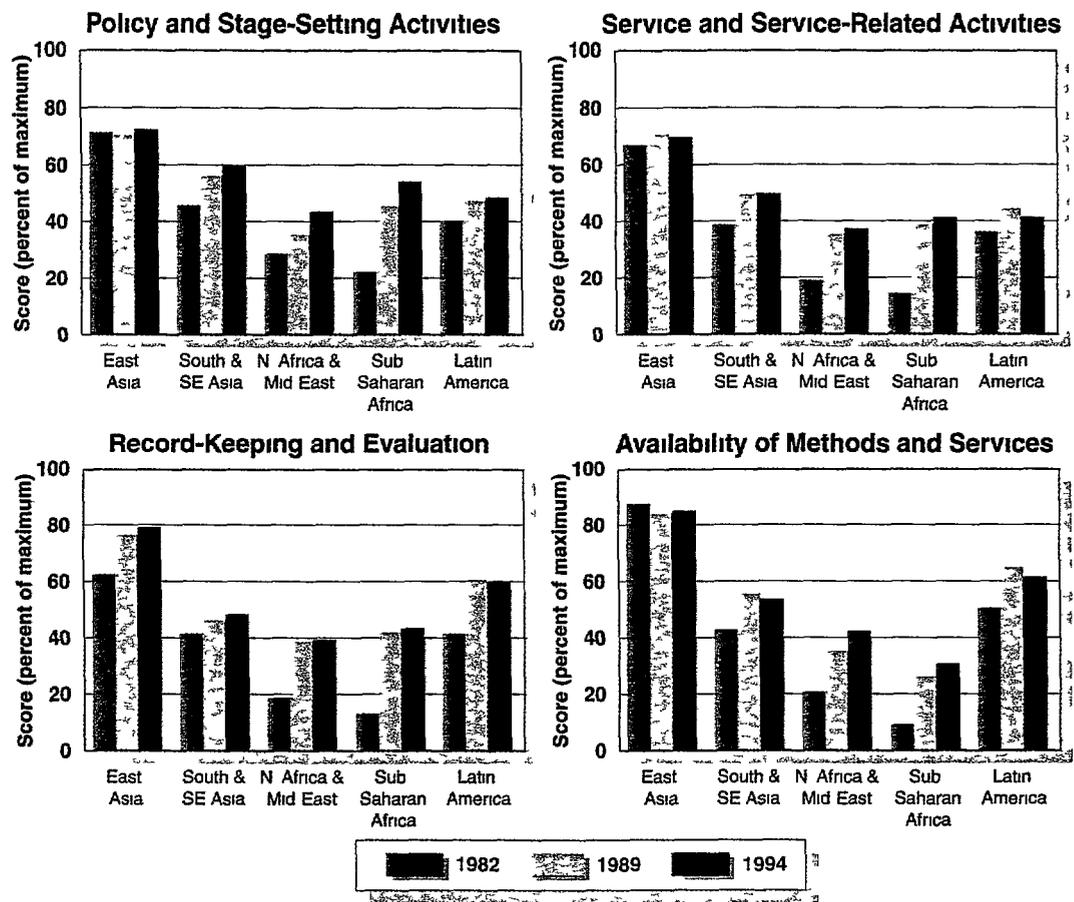


Source: Ross and Mauldin 1996



effort rose only modestly in the developing world. East Asia showed the smallest increase from 1989 to 1994. Total scores for Southeast and Southern Asia and Latin America changed little from 1989 to 1994. North Africa and the Middle East exhibited modest improvements. Nonetheless, even with these gains, their total scores remain far below those of the East Asia, Southeast/Southern Asia, and Latin America.

Figure 7
Program-Effort Scores by Score Component



Source: Ross and Mauldin 1996

Ross and Mauldin posit several possible reasons for the slowed pace. First, donor contributions have not kept pace with the rise in numbers of reproductive aged men and women. Second, ideological shifts in both the developed and developing world have softened the earlier emphasis upon family planning in its narrower definition as a policy intervention to slow population growth. Furthermore, some governments have been affected by domestic instability and growing budget pressures, and some have slackened their efforts after many years of intensive effort. Finally, some sense of complacency may have resulted from the past rapid increases in contraceptive prevalence and declines in fertility.



noting that this study, in some ways a self-validating exercise did not address the broader need to institutionalize a performance monitoring system for family planning effort worldwide

Couple-Years of Protection

Couple-years of protection, or “CYP, is the most widely used indicator of family planning program performance in USAID-funded programs CYP estimates the total protection from pregnancy provided by family planning services sold or provided free of charge to clients during a one-year period

While agreeing on CYP’s utility, evaluators have not reached a consensus on how to define it In particular, they have disagreed over the meaning of “protection” Are practitioners providing “protection” if their services are not used in their intended fashion, or if their services are unneeded? In the first case, for example a woman receives a packet of pills from a provider but, upon returning home, decides that she does not want to take them Or she takes them sporadically Should the pills she received count as pregnancy protection in calculations of CYP? In the second case, a clinic provides sterilization for 80 women in their late 40s Should this clinic receive as much “credit” for its sterilization efforts as a clinic that sterilizes the same number of women, all in their mid-30s?

Evaluators cannot ignore such issues, they are central to calculating CYP One computes CYP by multiplying the quantities of commodities or services provided by what are known as “conversion factors” A conversion factor is similar to an exchange rate it converts amounts of goods and services into their equivalent units of “protected time,” the amount of time that a couple is not at risk of conception Because methods vary in terms of the protection they provide to couples, each is associated with its own conversion factor The choice of conversion factors used by a program depends on a set of assumptions If a program is willing to assume that its services are efficiently dispensed, and that the methods it distributes are properly used, CYP becomes a straightforward measure of the output or volume of services provided by the program If it chooses to acknowledge that some of the contraceptive methods it dispenses are less effective than others, or that it is providing services to women who are not at risk of conception, or who face a low risk of conception, the conversion factors used by the program must be adjusted to reflect these realities

One option is for each program to determine the appropriate conversion factors for its own operations But, arriving at program-specific conversion factors would be difficult for most programs The data are simply not available Another problem with program-specific conversion factors is their potential to confuse users of this information Which conversion factors did Program A use? Moreover, if they differ from those used by Program B, can we compare their CYP estimates? Taking this into account, the U S Agency for International Development has promoted the use of standardized conversion factors across programs

In reviewing the empirical evidence for the conversion factors under The EVALUATION Project, Stover et al (1996) find that the calculation of couple-years of protection can be modified to reflect recent demographic information about the components of CYP In practical terms, this would involve two changes in how CYP is currently being calculated First, Stover and colleagues suggest that evaluators can use their updated empirically-derived conversion factors for all methods except sterilization Second, they recommend calculating program-specific conversion factors for sterilization if desired (see Table 4) To facilitate this task, they devised a simple table that enables evaluators to translate a program’s average age at the time of sterilization into a program-specific conversion factor for sterilization For other methods, country-specific factors are not warranted Cross-national variation in the CYP factor for IUDs



Table 4
Empirically-based CYP Conversion Factors by Method

Contraceptive Method	CYP Factor
VSC (CYP per procedure)	
Global	8.9
Africa	7.8
Asia	9.7
Latin America	9.5
N. Africa/Near East	7.7
IUD (CYP per insertion)	3.7
NORPLANT ^o (CYP per implant)	3.8
Natural Family Planning (CYP per trained person)	2.0
Lactational Amenorrhea Method (CYP per identified user)	0.25
Pill (Cycles per CYP)*	14
Injectable (Injections per CYP)	
Depo-Provera	4.2
Noristerat	6.3
Condoms/VFT (Units per CYP)	105
Diaphragm (CYP per diaphragm distributed)	1.0

* One use of oral contraceptives for emergency contraception is equivalent to 1/14 CYP

Source: Stover et al (1996)

is small. For the condom and pill, the uncertainty associated with country-specific data (coital frequency for condoms, failure rates for pills) is large compared to the differences among countries. For the other methods, few country-specific data are available.

Although their recommended approach does not provide a perfect solution to all issues confounding the CYP indicator, it does offer the major advantage of partially accounting for differences between programs, specifically, those related to clients' characteristics. As a result, its use can produce CYP figures that more accurately indicate achievements in the provision of family planning services and contribute to comparability of programs.

Projecting Service and Commodity Needs

Repeatedly, investigators have found that contraceptive practice increases with the age of the acceptor and the parity of the acceptor. And, although less often observed, contraceptive practice is more consistent when a woman is breastfeeding than when she is not. Kirmeyer and Suchindran (1995) used data from seven Demographic and Health Surveys to develop model life tables for contraceptive use that incorporate information on age, parity, and the overlap between contraceptive use and breastfeeding in the population. The tables illustrate the expected increase in protection resulting from an increase in duration of use with higher parity, greater age, or longer overlap with breastfeeding, and the associated decrease in commodities and services needed to provide a year of protection against pregnancy. These modeled estimates provide program managers with a refined means of projecting service and commodity needs based on the characteristics of their clientele.

An Alternative Measure of Fertility Control

Are family planning programs accomplishing their aims vis-a-vis fertility? In order to answer this question one needs accurate outcome-level measures of fertility control. In 1992 Anderson and Silver proposed a measure of fertility control defined as the proportion of all births from the age-specific fertility schedule that comprises births to women by age 35. The index is based on the conjecture that the lower the proportion of births that occur after age 35 the higher the amount of fertility control in the population. This index was shown to have several advantages over its predecessors. However, the simplicity of the index may belie some important distributional issues. The Anderson and Silver index is analogous to a poverty index based on the proportion of the population with income below a specified poverty line. Such an index does not distinguish between a population in which a large proportion of those below the poverty line are barely below it, and another population in which the population below the poverty line is more evenly distributed below the line. The Anderson and Silver index suffers from this same over simplicity because it doesn't give any credit for fertility control when childbearing after age 35 is concentrated exclusively around age 35.

Suchindran (1997) has proposed a modification of the Anderson and Silver index which provides a more robust measure of fertility control in a population. The index has three components that are easy to compute: 1) the proportion of women having children after age 35 (complement of the Anderson-Silver index), 2) the mean age at childbearing among women who bear children after age 35, and 3) a dispersion measure of age at childbearing after age 35. Although each of these components is, by itself, a measure of fertility control, the combined index is robust to small perturbations in any one of the components and is especially useful for ordering populations by their level of fertility control when all three measures give different directions. Suchindran placed the age cut-off at 35 to define the tail of the distribution in accordance with the arguments made by Anderson and Silver but notes that indices based on other age cut-offs can be easily calculated. If data are available, one can also extend the construction to age-marital-specific fertility rates and parity-specific fertility rates, both useful refinements.



Indexing Changes in Fertility

Singh et al. (1997) have developed a useful new index for describing fertility differentials and trends which takes advantage of survey data currently available for many developing countries. This index describes the shape of the marital-specific fertility curves in a specified age interval. It can be used to compare fertility both across time and across various sub-groups (e.g.



education religion socioeconomic status) To calculate the index one needs women's birth histories five to seven years before the interview date These data are standard components of many national surveys such as the Demographic and Health Surveys

Data Collection

Rapid Feedback from Surveys

For quick and comparatively low-cost collection of data, we are likely to be hearing more about innovative techniques designed to streamline data collection and processing in the population and reproductive health field Rapid feedback surveys are intended to provide more immediate feedback to program evaluators by shortening the period from data collection in the field to feedback of results Most involve reduced sample-size surveys using short questionnaires typically 15–30 questions (3-page maximum) Some of the techniques call for data to be entered “on site” by surveyors with hand-held computers These “accelerated and abbreviated” surveys have been used in the health and population field to facilitate collection of data for program management in immunization and maternal and child health programs Some (but not all) are conducted using the set of formal guidelines and techniques known as Rapid Assessment Surveys (RAS), as illustrated by the Ecuador survey described below



Under The EVALUATION Project, three investigators, Richard Bilsborrow, Linda Lacey and Kate Macintyre (Macintyre, 1995, 1996, Lacey et al., 1996), suggest several reasons why rapid survey approaches might be useful in family planning monitoring and evaluation First, these are less costly than large demographic surveys and make fewer demands on infrastructure and personnel Second because of their lower cost and relative ease, the abbreviated surveys may be able to provide data at the sub-national level when large surveys are not feasible Thus, these surveys may be particularly useful for collecting approximate measures for periodic review in the interval between large surveys or after a major change in the delivery system Along with the overall advantages bestowed by rapid feedback of data used to guide decision-making, access to district and local-level data may be more immediately relevant to local program managers Finally, they could be used as tools for training survey researchers

The overriding concern with these techniques involves sacrificing data quality Unfortunately empirical evidence that compares rapid surveys to more conventional surveys is scarce, and without such evidence, we have little sense of the tradeoff between data accuracy and cost There is also some concern that the use of computers in data collection—a feature many proponents view as a hallmark of the RAS approach—may pose problems For instance, respondents may be distracted by the presence of computers or by onlookers who are drawn to the interview site by the novel technology Others worry that possession of valuable computer equipment may endanger field workers

Preliminary results from two field tests, one using RAS techniques in Ecuador and a second using a different approach in Nigeria, indicate that rapid surveys may prove to be instrumental for quickly and economically collecting supplementary data for family planning program management and evaluation in the future Although the rapid techniques investigated differed widely between the two studies, in both cases researchers were able to compare the

quality of data derived from the rapid methods with data gathered by one or more large-scale, nationally-representative household surveys. In a study sited in Ecuador (ENRAF-1995) Macintyre (1996) experimented with two different RAS sampling techniques and implementation procedures including a comparison of results obtained when using pencil and paper for data entry versus pre-programmed hand held computers. Macintyre was able to test RAS data quality against results obtained from a 'parent' survey of 20,000 households (ENDEMAIN-94) conducted the previous year by the same Ecuadorian research organization implementing the rapid surveys study. The short instrument used in the study is based on a subset of questions asked in the parent survey, and gathers data on background characteristics, fertility, contraceptive use/non-use, method mix, and reproductive preferences.

Results confirm the feasibility of conducting RAS in a developing country, using "palm-top" computers, short questionnaires and a skeleton staff of well-trained interviewers. Response rates for the parent and rapid survey were almost identical at 70 and 69 percent respectively. Examination of survey data on background characteristics and on contraceptive use indicated that the rapid surveys generated aggregate estimates that were very close to the large survey. Contraceptive prevalence among married/in union women (any method) was measured at 47 percent by ENDEMAIN and at 48.9 percent by the rapid survey. Field observation suggests no evidence that the palmtop computers were a negative distraction. On the contrary, refusal rates among women interviewed using the palmtops were slightly lower than for the pen and paper interviews. Nevertheless, the investigators say it is too soon to assess the cost-effectiveness of the rapid methods they used and warn against viewing rapid surveys as "simple" or "easy." Preparation time (prior to implementation) for a rapid survey is as long as for any traditional survey, and using simplified sampling procedures in the field still requires the use of carefully specified procedures developed by sampling specialists.

A somewhat different variation on the rapid approach is illustrated by experimentation with a "piggy-back" module attached to a federal household survey in Nigeria (Lacey et al. 1996). The tool is a one-page questionnaire that collects information on the household composition, knowledge and current use of family planning, and the source of family planning supplies and services. An example is shown in Figure 8 on the next page. The questionnaire is designed to be administered as an add-on module attached to a larger, nationally representative survey routinely conducted by government statistical offices, in this case, the Federal Office of Statistics (FOS) in Nigeria. The questionnaire attachment to the quarterly Nigerian Integrated Survey of Households (NISH) is one-page in length and uses pre-coded responses to facilitate quick processing of the data.

To test performance of the monitoring tool in the Nigerian context, Lacey and colleagues compared the FOS survey data for 1992 and 1993 with the 1982 Nigeria Fertility Survey and the 1990 Demographic and Health Survey. Tests of data quality indicate that the FOS survey achieved representative coverage and, within acceptable limits, provided reliable data useful for guiding routine decision-making. The FOS data were able to provide a comprehensive picture of the service environment across all sectors—public, private and commercial—and to detect and document a recent and notable expansion of family planning users. While use of modern methods among women increased from 0.5 percent in 1982 to 3.8 percent in 1990, the FOS data revealed substantial increases in contraceptive prevalence among all segments of the population in the three-year span between 1990 and 1993. By 1992, use of modern methods had increased to 8.7 percent and rose to 9.6 percent in 1993. In the absence of the FOS survey, these increases would have remained undocumented for several years. In Nigeria, use of the monitoring tool allowed program planners to monitor user and source profiles across sectors, the per-

Preliminary results indicate that rapid surveys may prove to be instrumental for quickly and economically collecting supplementary data for family planning program management and evaluation.



formance of IEC efforts and progress in coverage of targeted population sub-groups. The approach demonstrated by the FOS monitoring tool is not a substitute for national demographic and health surveys, but may provide a low-cost option for obtaining timely and reliable interim data, particularly in countries where resources for data collection are severely limited. Findings from the studies are promising, but researchers continue to emphasize that these methods must be “handled with care” if they are to be useful and sufficiently accurate for evaluation and policy making.

Longitudinal Facility Surveys

Longitudinal surveys involve the repeated measurement of service facilities, staff or population over time. Longitudinal data are highly desirable for purposes of program evaluation. As illustrated by the evaluation study conducted in Tanzania, the use of longitudinal data on service facilities offers two particular advantages. Repeated application of a facility-level survey in the same communities or facilities can record changes in the service environment that reflect programmatic changes. Also, the first round of a longitudinal survey can be timed to coincide with major modifications in program input or services, providing the baseline data needed to measure subsequent change. An innovative approach to the collection and analysis of longitudinal facility data is illustrated by a study undertaken by EVALUATION Project researchers in Tanzania. The strategy takes advantage of a DHS Service Availability Module conducted in 1991 to provide baseline data at the time of a major program expansion. The design of a second SAM, fielded in 1994, was then modified to provide for a resurvey of the same facilities sampled in a previous round. Using this approach, investigators were able to examine changes in the numbers of facilities providing family planning, assess the choice of methods available, observe improvements in commodity logistics, and gain insights into whether or not increased services and supplies led to an increase in new and continuing users of contraception (see also the related study on fertility outcomes by Angeles, Mroz and Guilkey [1995] under *Service Outputs: Accessibility*).

In preparation for a mid-term review of the USAID-funded Family Planning Support Services (FPSS) Project in Tanzania, Aboud et al. (1996) compared data from the 1991 DHS survey (TSAM91) conducted at the time of project initiation to that from a 1994 survey (TSAM94). Since facilities included in the 1991 and 1994 samples were not identical, researchers made adjustments to create a matched sample so that change could be measured in exactly the same facilities over the three year period. The matched sample includes a total of 366 hospitals, health centers and dispensaries, both government and non-government, and provided information on selected facility characteristics, such as services offered and stocks of contraceptives. A comparison of the matched surveys revealed that family planning services improved significantly over the three year period. While there was no increase in the percentage of hospitals offering family planning, and only a modest increase in the percentages for health centers and dispensaries offering family planning (8 and 13 percentage points respectively), increases in the availability of family planning methods were dramatic. Figure 9 shows the percentage of each facility type with contraceptive supplies in stock in 1991 and in 1994. The percentage of health centers and dispensaries offering injectables and IUDs in 1994 was approximately twice that for 1991. These data suggest that the logistical support system implemented under the FPSS Project was highly successful in increasing the availability of contraceptives in Tanzania. Furthermore, the number of new acceptors per month increased by more than 100 percent in hospitals and by almost this much in health centers. Increased access to contraceptives appears to have been translated into a major increase in acceptors of modern methods in these two facilities.



Figure 9
The Family Planning Service Environment in Tanzania: 1991–1994

		Type of Facility		
		Hospital	Health Center	Dispensary
Percent offering family planning services	1991	85	84	67
	1994	83	92	80
Percent with pills in stock	1991	97	96	98
	1994	100	100	99
Percent with injectables in stock	1991	87	43	23
	1994	99	94	84
Percent with IUDs in stock	1991	94	23	15
	1994	96	51	24
Percent with condoms in stock	1991	96	96	98
	1994	96	93	96
Monthly (mean) number of new acceptors	1991	35	14	16
	1994	76	26	15

Source Ngallaba et al (1996) and Aboud et al (1996)

Other Methodological Innovations

Modeling Joint Decisions about Reproductive Behavior

Family planning evaluators frequently use cross-sectional data sets to analyze the impact of various explanatory variables on a particular behavior of interest, such as contraceptive use. The determinants of contraceptive use, for example, may include the respondent's age and level of education as well as characteristics of the service environment. Estimation of statistical models with these types of variables is straightforward, since the explanatory variables are "exogenous" to the decision regarding contraceptive use. That is, these are variables over which the individual has no control (e.g., age and service environment) or that represent decisions made so far in the past that they must have preceded the choice about contraceptive use (e.g., educational attainment). Problems arise, however, when the analyst expands the set of explanatory variables to include factors that are also choices made by respondents. For example, variables that help explain contraceptive use might include desired family size or desired child spacing.

The problem is that we cannot say with certainty that these decisions about desired family size and child spacing preceded decisions about contraceptive use. In econometrics terms, desired family size and child spacing may not be exogenous to decisions about contraceptive use. In fact, all three decisions may be determined by factors that are not included in the model either because they are impossible to measure or because they remain unspecified. Insofar as this is the case, one will get badly biased estimates of the effects of reproductive intentions on contraceptive use.

Angeles et al (1996) address another version of this scenario involving the relationship between family planning programs and fertility levels. Researchers typically assume in their investigations of this relationship that family planning clinics are "randomly" assigned to various areas. However, the more likely situation is that the location and funding of clinics in specified areas is determined by various factors taken into consideration by program managers such as



perceived need. A manager might define need for areas where fertility levels are high. Again, ignoring this situation could lead a researcher to arrive at the naive and probably erroneous conclusion that clinics “cause” high fertility, or more likely, the analyst will merely decide that the program has no impact. In turn, funding decisions—especially budget cuts—may be influenced by faulty analysis.

What can we do? First, we must test for joint determination. Focusing on models containing binary outcomes (e.g., “yes/no,” “use contraceptives/do not use contraceptives”), Bollen, Guilkey, and Mroz (1995) describe a relatively simple test that can be performed using standard statistical software packages. Second, for circumstances under which the test shows that endogeneity is a problem, Bollen and colleagues provide guidelines for how to approach these problems in practice, emphasizing that the more complicated estimation methods should only be used under circumstances in which they are deemed necessary and methodologically appropriate.

Characterizing Service Availability with DHS Data

In family planning evaluation, we often need to be able to compare service delivery within and between countries, and over time. Many Demographic and Health Surveys (DHS) include a Service Availability Module (SAM) used to collect data about the health and family planning environment of primary sampling units (PSU). These data have been used in multilevel models of contraceptive choice, but remain underutilized as a source of descriptive data on service availability.

The obstacle to their use as a source of descriptive data stems from the fact that the primary sampling units for which the service availability module data are collected are not a random sample drawn from a universe of PSUs. Consequently, these data do not provide a representative picture of service delivery at the community (or PSU) level. However, Hermalin et al. (1996) demonstrate a method that would enable researchers to make statements concerning the attributes of the average PSU. The procedure involves adopting a set of weights derived from the sampling design. Hermalin and Entwisle applied weights to the 1988–89 SAM data from Egypt to illustrate the types of information that can be generated for program planning and evaluation. Using the weights, managers can generate figures that compare the number of clinics or family planning workers per village and per woman. Such analyses can reveal whether, for example, increased access to services is due to expansion of facilities or is a result of migration trends that bring families into areas with more services. Tracking both the village and the women’s characteristics allows one to determine which factor accounts for increases in the availability of services and supplies. Applying weights to SAM data can provide the international donor community with a new way to assess the performance of alternative strategies aimed at increasing the availability of supplies and services. Knowledge of the sample design is the key to development of different weights. The information about sampling needed to generate distributions of communities, as well as of women, could be provided easily and at little cost as part of standard DHS documentation. Hermalin and colleagues recommend that the standard DHS data tapes include these weights for converting the SAM characteristics to distributions of communities. Additionally, they recommend exploring weights for estimating the distributions of facilities that would enable researchers to use DHS data to describe the average characteristics of facilities.

Estimating Levels of Induced Abortion

As concern over the health risks posed by unsafe abortions in developing countries escalates, reducing the unwanted pregnancies that cause women to resort to induced abortion has become a priority for family planning program efforts in many countries. Monitoring the



progress of these efforts is hampered by the lack of reliable data that can be used to track the practice of induced abortion. In two related studies supported by The EVALUATION Project investigators explore whether data from the Demographic and Health Surveys (DHS) can be used to estimate levels of induced abortion in developing countries (note that a separate study by Singh and Sedgh [1996] summarized earlier estimates abortion rates from hospital data). Recognizing that the inclusion of information on pregnancy losses can potentially improve the reporting of live births and contraceptive use between births, DHS surveys have added a five- to six-year monthly calendar to record fertility and contraceptive histories. As part of this history, women are asked to report on their pregnancies that did not end in live births. Unfortunately, data on the cause of the termination (abortion, miscarriage, stillbirth), information essential for calculating levels of induced abortion, are not recorded in the calendar. In response to this methodological obstacle, Magnani et al. (1996) develop and test a decision algorithm designed to classify each reported pregnancy termination as being either "probably spontaneous," "probably induced," or "unclassifiable." The algorithm is based on a methodology developed by the World Health Organization and considers the following factors: 1) length of gestation at the time of termination, 2) contraceptive use in the interval prior to the termination and, where relevant, reason for discontinuation, 3) wanted status of pregnancies ending in terminations, and 4) age, parity, and marital status of respondents at the time of termination. The researchers use the 1993 Turkey DHS for an evaluation of the algorithm because it is one of only two such surveys currently available in which respondents were asked whether each reported pregnancy termination was induced or spontaneous. Results indicate that the proposed classification method identifies true cases of induced abortion accurately. However, the method tends to classify a relatively large number of reported spontaneous terminations as induced abortions. Thus, correcting for likely misreporting of induced abortions as spontaneous terminations improved performance of the method considerably.

While these results are encouraging on the whole, the ultimate usefulness of the classification algorithm for estimating levels of induced abortion using DHS calendar data is dependent on overcoming deficiencies in the survey data caused by under-reporting. Although a key advantage of the proposed method is that it does not require asking direct questions about induced abortion, substantial numbers of women are nevertheless unwilling to report pregnancy terminations in a survey interview. If large numbers of pregnancy terminations go unreported, resulting estimates of induced abortion rates will continue to be defective, regardless of how well the classification scheme performs.

In a related study, Rutenberg et al. (1995) combine an assessment of pregnancy termination coverage with an application of the proposed classification scheme using data from the 1991 Northeast Brazil Demographic and Health Survey (NBDHS). Their estimates of induced abortion in Northeast Brazil thus combine information about the reported overall level of recent pregnancy loss (13 percent) with the individual-level classification of terminations produced by the algorithm described above. Results indicate that 61 percent of all terminations are probably induced and 39 percent are probably spontaneous. These percentages exclude 120 unclassifiable terminations (out of 553 reported terminations). Depending on whether they assume that these unclassified terminations were induced or spontaneous, Rutenberg and colleagues (1995) arrive at estimates of the abortion ratios ranging from 5.6 to 8.2 induced abortions per 100 pregnancies, with a central estimate of 7.2. Comparing these figures to their best estimates of expected ratios of spontaneous and induced abortion for four non-Brazilian settings where induced abortion is also common, they speculate that only between one-quarter and one-third of induced abortions were measured by the NBDHS calendar data. They therefore conclude that (1) application of the classification scheme produces useful results but must be accompanied by an assessment of the level of coverage of pregnancy terminations, and (2) the DHS calendar data in the Brazil setting did not adequately cover induced abortions.



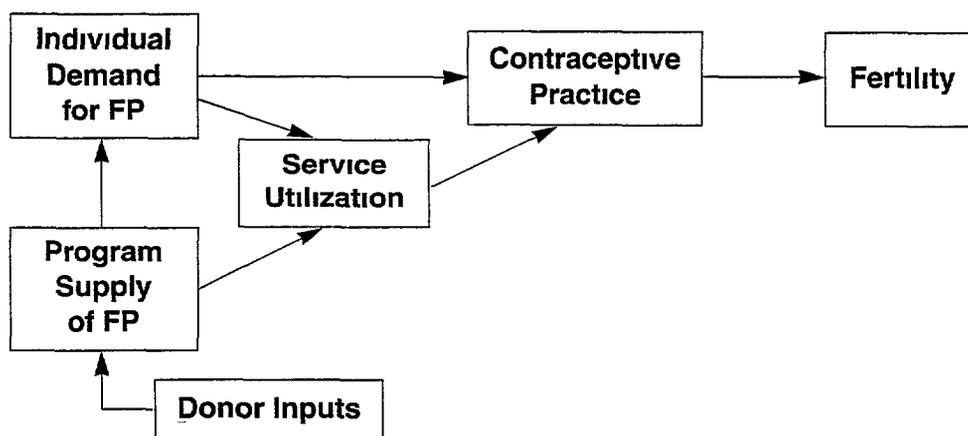
V. SUMMARY AND CONCLUSIONS

This synthesis rests on the prodigious research output of the investigators of the various studies undertaken from early 1992 to mid-1996 with EVALUATION Project support. The output, nurtured to address a predeliberated conceptual framework accordingly is focused on answering questions regarding the effects of program factors on desired outputs and behavioral outcomes and measurement needs for improved program evaluation. In this section we will (1) highlight and summarize the main findings, (2) raise several outstanding evaluation issues either addressed by ongoing Project-sponsored research not reviewed in this report or still to be addressed in the future, and (3) discuss areas for future effort, including needs for monitoring and evaluating reproductive health services and programs.

Summary of Findings

It is difficult to render a single, meta-analytic statement regarding the effects of program factors on reproductive preferences, contraceptive demand and practice, and fertility. This is true for a number of reasons, foremost among which is that family planning programs are increasingly characterized by considerable diversity in structure and capacity. More easily determined is whether and how program factors are influential in a statistically significant way for a given set of conditions. Moreover, this research agenda like many others predominantly involved observational, rather than experimental, study designs in evaluating family planning program inputs. The absence of experimental study findings requires attaching more conditions to the interpretations of the results. At the same time, the technical quality of the sponsored observational studies has been strong, often exemplary, in terms of the conceptualization of program structure and processes, adequacy of the data, measurement appropriateness, methodolog-

Figure 10
A Simplified Model of FP Demand and Supply Effects on Fertility



ical rigor and balanced discussion of the results and their limitations. The findings presented highlight what are important second generation issues to family planning programs—improved effectiveness and resource management—advancing beyond traditional concerns regarding the existence of effects.

Figure 10 on the previous page is a simplified rendition of Figures 1 and 2 presented earlier. Headings reflecting the sequence depicted in Figure 10 can be used to highlight key findings from the forty-some research studies.

Program Influences on Family Planning Demand

A number of studies identified means by which program factors influence contraceptive demand among individuals, mostly childbearing aged women.

- According to Bankole et al (1996) Nigerian women who have heard or seen family planning media messages are more likely to have a definitive and smaller ideal number of children than those not exposed (5.65 versus 6.07). An 18 percentage point difference (44 versus 26 percent) in intention to use modern contraception in the future was found among Nigerian women exposed to a family planning campaign logo and who discussed it with others compared to exposed but non-discussing women, after controlling for background characteristics (Bankole and Adewuyi 1994).
- Unmet need in the Philippines is rooted in traditional concerns about husbands' pronatalism, strength of wives' fertility preferences, acceptability of and side effects from contraceptive method use, and women's perceived risk of pregnancy but not adequate access of family planning services (Casterline et al., 1996).
- In Kenya women are more likely to discuss family planning informally with other women whom they believe to be contraceptors (Rutenberg and Watkins 1996).

Program Influences on Use of Family Planning Services

At least three studies investigated how the quality of services can influence their use.

- Akin and Rous (1994) found significant effects from the quality of services on the choice of a contraceptive provider in the Philippines—increasing the number of methods available at public clinics and at private clinics or hospitals by one can raise use by nearly 5 percentage points, from 5.5 to 10.3 percent, adding a family planning motivator where none is available in public or private clinics can raise usage from 12 to 28 percent.
- Innovative use of GIS (geographic information systems) data and spatial network analysis by Entwisle et al (1997) finds that the proximity of a local service outlet, road composition, and the longterm availability of services influence contraceptive method choice in a Thai province (Entwisle et al 1997).
- Integrated services can expose women to prenatal and other MCH care including family planning services. Aghajanian (1995) and Magnani et al (1995) find that net of other program, individual and non-measured factors, women with prior exposure to MCH services in Tunisia and Morocco are more likely to use modern contraceptive services postpartum than non- or less-utilizing women.
- Also in Morocco, the presence of IEC materials and unbiased, trained family planning providers was positively associated with contraceptive service use, however having friendly staff expanded method choice and clients informed about their method choice were not (Brown et al., 1995). The latter may be related to the intensification of such inputs in low-prevalence areas.



Program Influences on Contraceptive Use

Several studies investigated the direct influence of the availability and quality of family planning program service delivery on contraceptive use in Bangladesh the Philippines Nigeria, Tunisia, Morocco Thailand Northeast Brazil Peru, and Kenya

- In a comparative study of six countries (Phillips et al 1994) family planning availability effects were greatest in countries with low levels of use and in the early stages of the demographic transition
- Mass media messages about family planning were particularly significant in their association with greater use of modern contraceptives Only one study (Bankole et al , 1996) had the benefit of a longitudinal design, the researchers found 34 percent of women exposed to the media message in 1990 were using a modern method three years later compared to 18 percent who were not exposed Reflecting the importance of continuous interpersonal outreach, Phillips et al (1996) finds domiciliary contact by community-based workers in Bangladesh enabled a rise in contraceptive use from 13 percent in 1984 to 40 percent in 1993, in the absence of outreach, prevalence is unlikely to have exceeded 25 percent by 1993 Outreach also raised clients perceptions of service quality, as well as sustained contraceptive use showing a stronger effect in preventing discontinuation by 65 percent in the late 1980s as compared to 43 percent in the mid-1980s (Hossain et al , 1996)
- While, as noted above family planning service quality influences use of family planning services its effect on contraceptive practice may be small, as viewed from results of a Peru-based study (Mensch et al 1996) and a northeast Brazil study (Hotchkiss et al , 1995) Difficulties in operationalizing the concept of quality of care, as well as relying on cross-sectional data analysis, may constrain the measurement of strong quality of care effects

Program Influences on Fertility

Three studies one each in Tanzania and Indonesia, and a comparative one of three Latin American countries, addressed the impact of family planning services on fertility

- Angeles et al (1996), through a simulation analysis found that the total fertility rate for a woman aged 34 would be moderately lower (4 to 7 percent) with longterm availability of family planning services in Tanzanian hospitals and dispensaries, and more substantially lower at 26 percent for health centers than in the absence of services
- Clients in Indonesia supplied with modern contraceptives by public clinics were found to avert pregnancy more successfully than those obtaining their methods from private providers (Jensen, 1996)
- Abortion practice played a subsidiary role in reducing fertility in Colombia, Mexico and Brazil but contraceptive practice outpaced abortion in lowering fertility in the mid-1970s to mid-1980s in Colombia and Mexico (Singh and Sedgh 1996)

Measuring Expansion of Program Capacity

Underscoring the benefits of longitudinal measurement two studies illustrate the informational benefits of monitoring trends in family planning program capacity One of the major studies sponsored through the Project was a third (1994) round of the family planning program effort (FPPE) scores initiated by Robert Lapham and Parker Mauldin

- Ross and Mauldin (1996) found that time trends in FPPE scores since 1972 show large increases in program strength but overall program effort rises only modestly in the



period 1989–1994. Of the 77 countries with four rounds of data, 40 had reached at least 50 percent of the maximum score by 1994 compared to 20 in 1972.

- Aboud et al (1994) measured improvements in Tanzanian family planning service delivery between 1991–1994 and found better contraceptive logistics support, no increase in staff trained, and higher volumes of new and resupply family planning clients in hospitals and health centers but to a less extent in dispensaries.
- A survey in Metropolitan Cebu, the Philippines, by Lacey and Carba (1996) found grassroots community development, religious, and private volunteer organizations served different client populations and collectively expanded service delivery capacity by the private sector.

Data Collection, Monitoring and Evaluation Design

Sixteen studies addressed measurement, indicator development, and impact evaluation design issues with the key findings summarized below.

- The availability of health and family planning services can be usefully characterized at the community level using household data, provided cluster weights are available (Hermalin et al, 1996).
- A one-page module of family planning questions, attached to an ongoing national sample survey of households, tested in Nigeria, provided reliable annual data on contraceptive knowledge, attitude and practice (Lacey et al, 1996).
- Rapid assessment surveys, both with traditional paper recording and palmtop computers, tested in Ecuador, provided reliable data on a selected number of contraceptive behavior measures (Macintyre, 1995). No gains in preparation time, interviewer training, or sampling design were obtained.
- Estimating induced abortion levels from DHS calendars produced mixed results using a WHO-based classification scheme (Rutenberg et al, 1995 and Magnani et al, 1996). The extent of underreported pregnancy termination was key.
- To support the continued use of the couple-years of protection indicator, empirically-based conversion factors were obtained from a combination of crossnational DHS data analysis, literature reviews, and dynamic modeling (Stover et al, 1996, Kirmeyer and Suchindran, 1995).
- Classic experimental design remains the gold standard method for evaluating the effect of interventions. A meta-analysis of 16 studies using true experiments to evaluate family planning interventions affecting a range of outcomes found favorable but minimal effects (Bauman et al, 1994).
- Multilevel analysis methods, particularly with longitudinal data, for program evaluation offer comparative advantages to a field heavily dependent on survey methodology for measuring program inputs and demographic outcomes. However, care must be exercised to avoid problems introduced by structural endogeneity (Bollen et al, 1995) and purposive placement of resources (Angeles et al, 1996).

Why are these investigated improvements to data collection, monitoring and evaluation design important to the field? In two instances, the pilot studies offer ways to conserve evaluation resources through fielding lower-cost data collection efforts, such as in the case of the rapid assessment survey or question-module attachment to an ongoing national household survey. Similarly, by capitalizing upon data already collected through introducing small modifications, it is possible to increase the yield of evaluation-relevant information. Two examples are using sample cluster



weights to characterize individual reports of service availability in existing surveys and attempting to use algorithm-driven procedures to estimate abortion rates from DHS calendar data

Another reason for the Project's effort in methodological innovations is to strengthen the means for estimating the effectiveness of family planning program interventions. Identifying the empirical basis for widely used conversion factors for couple-years of protection, conducting a meta-analysis of available true experimental studies, and investigating how resource allocation decisions can affect impact estimates have all yielded important results that reinforce the Project's commitment to basing program impact findings on the most rigorous plane of measurement and analysis possible. While the effectiveness of family planning interventions on contraceptive and fertility behavior remains established, these methodological studies shed new light on issues of magnitude, validity and reliability.

Remaining Issues

Three additional but ongoing studies will generate results relevant to the purpose of this report—a comparative sub-Saharan African study of program structure and performance, a comparative, multi-design study of family planning program impact, and a multi-country study testing estimation methods for family planning program expenditures. The latter two are specifically designed to promote standardized methods for assessing program effectiveness and expenditure levels in order to obtain comparable judgments of cost-effectiveness. These studies will be reported later individually.

Findings from still other study reports originating from the approved study agenda are nearing completion and have not been included here. These include an evaluation of cross-sectoral effects from public subsidization of nutrition and family planning programs in Honduras, and measurement issues related to use of community informants for assessing health service availability. The reports will be available directly from the Project and potentially in the published literature.

Among the number of evaluation challenges that remain for the population and family planning community—some of which have been addressed by a study or two in this report—a principal one is the problem of non-random allocation of program resources. Variation in methods for allocating program resources is particularly nettlesome for program impact evaluation when only cross-sectional data (data at one time point) are available. These variations—the result of policy and administrative decisions—can lead to non-random allocation of program inputs that confound the assessment of the subsequent relationships observed with fertility levels. For example, when health program administrators invest resources for family planning more heavily in areas where contraceptive use levels are lower, an impact analysis in the cross-section can show that strong family planning inputs are correlated with low contraceptive prevalence (and likely high fertility). Observing the changes over time may later reveal this not to be the case but only if longitudinal data are collected and appropriate measurements taken.

The intentions and decisions of program managers or senior policy officials to assign resources areally according to their perceived utility is rational organizational behavior and therefore not unexpected phenomena. However, their implications for evaluating program impact are not fully appreciated and are understudied, resulting in a need to document better the dynamics of programmatic decisions and changes in resource investments. Are resources distributed or allocated according to a limited set of rules, such as transportation access, a population coverage ratio, political utilities, or personal familiarity with local capabilities? The consequences of these decisions directly influence performance and productivity at the program level and ulti-



mately measured impact at the behavioral level. If there are unobserved determinants that jointly affect resource availability and outcomes at the community level, the impact of resource inputs assessed by standard analytic practices is likely to be biased. Increased availability of historical or retrospective information on services becomes necessary to enable evaluators to overcome weak impact evaluation designs.

Future Areas of Effort

This report has reviewed evaluation research conducted simultaneously to explicate the role family planning programs play in a particular theoretical paradigm that explains fertility change. As noted earlier, most studies were competitively selected to be of general relevance to ongoing dialogue regarding population policy and programs, some were specifically responsive to questions articulated by a donor agency, field mission or host country. All studies, however, have been pursued with the scientific objectivity and detachment characteristic of external evaluation research. The findings, as just reviewed, have been supportive of family planning program interventions in general, finding their intended effects to be stronger in some places and settings than others. The overall utility of the research agenda will lie in its expansion of the knowledge base regarding human behavioral responses to programmatic interventions of social welfare organizations. Implementing organizations can draw selectively upon the individual study results to guide their strategic planning and collectively across all studies for support for their service missions.

A second important context in which to conduct evaluation research is managerial, wherein the program function of evaluation supports those of management and planning. In these instances, evaluation studies are defined and framed cooperatively with management and conducted internally by staff of the social welfare organization. Results are actively and quickly fed back to inform specific questions or uncertainties about recent and future directions of program implementation. In this setting, evaluation resources are often too limited and the breadth of service settings too constrained for a given organization to address comprehensively and systematically a broad series of questions regarding pathways of and conditions for impact, as has been done in this report. However, this second type of context for evaluation research remains an essential activity of any service organization seeking sustainable outcomes. Such evaluation efforts can be strengthened by the discussions on study design and methodological issues noted in some of the individual studies referenced here. Particular lessons of relevance are

- the need to operationalize often broadly stated service goals and objectives to specific evaluation strategies and options feasible and practical for the organization,
- the need to establish a monitoring system, database and data collection schedule to produce a focused, sensitive and limited set of measurable performance indicators, and
- the need to design the impact evaluation at the outset to maximize the likelihood that requisite data and analytic resources will be available at the end of a program, project or intervention period to produce the most rigorous set of results possible.

Many of these issues are discussed in EVALUATION Project reference manuals (e.g., Bertrand et al., 1993, Bertrand et al., 1996).

Another relevant domain for future evaluation research effort is reproductive health, as defined by the 1994 International Conference on Population and Development in Cairo. The reproductive health paradigm has been embraced by national governments and international donor agencies to varying degrees. Where it has been adopted, national governments have reor-



ganized health and social welfare program services and donor agencies have redesigned and/or reallocated assistance funds. The shift has directed efforts towards needs in a number of areas including prevention of unwanted pregnancies, sexually transmitted infections (including HIV/AIDS), unsafe birth delivery, perinatal mortality, reproductive cancers, nutritional deficiencies and domestic violence.

Evaluation research on the impact of the new, added, or melded initiatives will encounter *de novo* challenges in terms of establishing baseline levels for gynecologic and obstetric morbidities that require clinical expertise and technical resources to measure. Increased integration of services addressing various maternal, paternal, adolescent, sexual and child health problems will also challenge the ability to measure and separate the differential contributions of these services toward gains in wellness. Additionally, individual awareness, interpretation and reporting of serious symptoms and the motivation and ability to seek treatment will vary considerably by location and level of recognized morbidity. All of these suggest that the anticipated paradigm shift of family planning to reproductive health will invoke technical issues for monitoring and evaluating program impact, some of which will be in common with those faced by family planning program evaluators in the past but most amplified almost exponentially by the substantive complexity of the reproductive health rubric. Traditional questions will drive evaluation efforts of the next generation of reproductive health programs—were the interventions effective, how effective were they, which ones were the most effective, and at what cost were they effective—but answering them will be possible only if innovative means and the resources to support them are marshalled to enhance and complement the existing expertise.



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Appendices

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APPENDIX 1

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APPENDIX 2

SUMMARY TABLES OF STUDY FINDINGS

TABLE 1 Summary of Study Findings on Family Planning Program Impact on Reproductive or Contraceptive Demand

Investigators	Study/Site	Objectives	Findings
Bankole and Adewuyi 1994	Multi Media Campaigns Interpersonal Contacts and Contraceptive Behavior in Southwest Nigeria Nigeria	To determine the effects of women's exposure to and discussion about three media campaigns on their current contraceptive use and intention to use	32% of women exposed to PSA/logo intended to use a modern method vs 24% of women not exposed 34% of women exposed to all three campaigns intended to use a contraceptive method (See also Table 2)
Bankole Rodriguez and Westoff 1993-1994	The Mass Media and Reproductive Behavior in Nigeria Nigeria	To evaluate the influence of family planning messages delivered through radio and television on contraceptive use and desired number of children	Women who have heard or seen family planning messages in the media are more likely to have a definite idea about their ideal number of children Exposure to media promotion of family planning is negatively related to the ideal number of children desired (See also Table 2)
Casterline Perez and Biddlecom Casterline and Perez Casterline Perez Biddlecom and Baltazar 1995	In Depth Study of Unmet Need for Family Planning in the Philippines Philippines	To examine the causes of unmet need for family planning	Factors accounting for unmet need 1) husbands pro natalism 2) women's weak fertility preferences 3) women's views that contracepting is not socially acceptable 4) women's beliefs that they are not at risk of conceiving and 5) women's concerns about health side effects Inadequate family planning services do not seem to account for unmet need





TABLE 2 Summary of Study Findings on Family Planning Program Impact on Contraceptive Use

Investigators	Study/Site	Objectives	Findings
Aghajanian 1995	Prenatal Care and Adoption of Family Planning Morocco and Tunisia	To examine the relationship between prenatal care participation and adoption of contraceptives after childbirth	1) Exposure to prenatal care has a positive effect on postpartum contraceptive use 2) The effect of exposure to prenatal care services is stronger in Morocco than in Tunisia 3) Prenatal care provided by midwives and nurses is most likely to lead to contraceptive use 4) Results support integrating family planning services with prenatal care
Akin and Rous 1994	Effect of Quality of Services on Choice of Contraceptive Provider Philippines	To determine which provider characteristics attract users of contraceptives and to quantify consumer preferences for those characteristics	Increasing the number of methods available at a public clinics and at private clinics or hospital raises predicted usage by 5.5% and 10.3% respectively Adding a doctor to a public clinic without one increases predicted usage by 5.6% while removing doctors from half of the public clinics results in an estimated decrease of 14.1% in usage Adding a family planning motivator to public clinics and private clinics that do not have one increases predicted usage by 11.8% and 27.8% respectively Decreasing distance to drug stores and public clinics by half increases predicted usage of the facilities by 18.4% and 12.0% respectively
Bankole and Adewuyi 1994	Multi Media Campaigns Interpersonal Contacts and Contraceptive Behavior in Southwest Nigeria Nigeria	To determine the effects of women's exposure to and discussion about three media campaigns on their current contraceptive use and intention to use in the future	% currently using method is 11.5% higher among women exposed to PSA/logo versus women not exposed and 28% higher among women exposed to all three campaigns After controlling for background socioeconomic characteristics 44% of women exposed to the campaign and who discussed it with others intended to use a method versus 26% who were exposed but did not discuss the campaign (see also Table 1)
Bankole Rodriguez and Westoff 1993-1994	The Mass Media and Reproductive Behavior in Nigeria Nigeria	To evaluate the influence of family planning messages delivered through radio and television on contraceptive use and desired number of children	Exposure to media messages has a positive effect on current use of any method and current use of modern methods when other variables are controlled About 34% of the women who listened to or saw a media message in 1990 were using a modern method three years later compared to only 18% of those who did not (See also Table 1)
Bollen Guilkey and Mroz 1995	Binary Outcomes and Endogenous Explanatory Variables Tests and Solutions with an Application to the Demand for Contraceptive Use in Tunisia Tunisia	To describe a simple analytic framework for estimating the effects of explanatory variables on discrete outcomes that controls for the potential endogeneity of explanatory variables to demonstrate the methodology by analyzing the impact of various components of Tunisia's family planning program on contraceptive use	IEC messages have a substantial direct effect on contraceptive use the indirect effect through additional children desired is small

TABLE 2 continued Summary of Study Findings on Family Planning Program Impact on Contraceptive Use

Investigators	Study/Site	Objectives	Findings
Brown Rice Tyane Bertrand 1995	Measuring the Effect of Quality of Services on Contraceptive Use in Morocco Morocco	To develop facility based measures of service quality and to investigate in a pilot study whether the quality of family planning services affects women's contraceptive use	The availability of IEC materials and trained unbiased providers both have a positive effect on contraceptive use. Friendly staff, choice of methods, and the degree to which clients leave the facility informed about their chosen method are all negatively associated with clients' contraceptive use. At least some of these negative effects may be due to program targeting, i.e. they reflect a greater effort to attract clients in areas where contraceptive use is low.
Entwisle Rindfuss Walsh Evans Curran 1995	Geographic Information Systems Spatial Network Analysis and Contraceptive Choice Thailand	To develop alternative measures of family planning accessibility using spatial network analysis. To determine how family planning accessibility affects contraceptive choice.	Contraceptive choice depends on: 1) proximity of local outlet (threshold for travel time is less than 6 minutes), 2) road composition, and 3) the availability of services during the initial years of the family planning program.
Hossain Khuda Phillips 1995	The Effects of Outreach Worker Visits on Perceived Quality of Care in Two Rural Areas of Bangladesh Bangladesh	To examine whether outreach workers' visits affect clients' perceptions of service quality.	Exposure to family planning outreach services increases women's perceptions of service quality. Outreach leads to greater satisfaction with the program than leaving women to seek care at fixed service points.
Hossain Phillips Haaga 1994	The impact of outreach on the continuity of contraceptive use in rural Bangladesh Bangladesh	To examine whether domiciliary outreach promotes continuity of contraceptive use.	Outreach encounters promote continuity in contraceptive use even after controlling for women's reproductive preferences, age, and socioeconomic status. These exchanges promote continuity of use among all types of users including women who adopt long-acting methods such as the IUD. The role of outreach has increased over time.
Hotchkiss Magnani Rutenberg Correia Morgan and Sutula 1995	Access to Family Planning Services, Service Quality, and Contraceptive Use in Northeast Brazil Brazil	To investigate how variations in service accessibility and quality influence contraceptive use.	The presence of a private sector facility among the facilities in the respondents' choice set exhibits a positive effect on contraceptive use. However, in general, the investigators find little evidence for the impact of service quality of contraceptive use. Methodological flaws may underlie this failure to observe stronger supply environment effects.
Magnani Hotchkiss Mroz Rous Eckert McDavid 1995	Does Utilization of MCH Services Influence Subsequent Contraceptive Use? Evidence from Morocco Morocco	To assess the impact of MCH service utilization on contraceptive use.	Women who use MCH services intensively are significantly more likely to go on to adopt a modern method than women with lower service utilization intensities, when the effects of other individual and household level variables, characteristics of the supply environment, and unobserved factors that jointly influence both choice variables are controlled. The intensity of MCH service use is determined to a significant degree by the accessibility of MCH services.





TABLE 2 continued Summary of Study Findings on Family Planning Program Impact on Contraceptive Use

Investigators	Study/Site	Objectives	Findings
Mensch Arends Kuenning and Jain 1994	Assessing the Impact of the Quality of Family Planning Services on Contraceptive Use in Peru A Case Study Linking Situation Analysis Data to the DHS Peru	To determine whether current contraceptive use in Peru is affected by the quality of family planning services to address methodological issues involved in measuring quality of care at the cluster level	Better services are associated with greater contraceptive use although quality of care is less important than standard socioeconomic variables in explaining differentials in contraceptive behavior Simulations predict that contraceptive prevalence would be 16% greater if all women lived in a cluster with the highest quality of care compared to the lowest
Phillips Haaga Leon 1995	Assessing the Impact of Community Based Distribution of Contraceptives on the Prevalence of Contraceptive Use A Field Study in Bangladesh Bangladesh	To assess the impact of community based distribution of contraceptives on contraceptive use	Outreach remains a key component of the Bangladesh family planning program It exerts an incremental effect over and above the impact of other components
Phillips, Hossain Arends Kuenning 1995	The Long Term Demographic Role of Community Based Family Planning in Rural Bangladesh Bangladesh	To determine whether community based services have a continuing impact on contraceptive use after a decade of outreach services	CBD mitigates constraints to contraceptive use and mobilizes demand for fertility regulation
Phillips Zimmerman and Li 1995	Estimating the Demographic Impact of Family Planning Programs in Six Developing Countries with DHS Availability Data Thailand Colombia Dominican Republic Ecuador Guatemala Uganda	To assess the influence of family planning service accessibility and intensity on contraceptive use	In five of the six countries availability of family planning services influences the likelihood of contraceptive use Accessibility appears to play no role in Colombia The effects of service accessibility are greatest in the countries with low contraceptive prevalence rates and countries at the early stages of the demographic transition
Rutenberg and Watkins 1996	Do Informal Personal Conversations Amplify Family Planning Program Impact? Kenya	To determine whether women discuss family planning with family and friends and whether these personal conversations amplify the impact of family planning programs	Three quarters of respondents talked to one or more people about family planning 94% of conversations about family planning occurred with other women about half of whom respondents believed to be family planning users themselves Current users report an average of 4.1 conversations with friends and relatives about family planning non users average 2.8 discussions

TABLE 3 Summary of Study Findings on Family Planning Progra Impact on Fertility

Investigators	Study/Site	Objectives	Findings
Angeles Mroz and Guilkey 1996	Purposive Program Placement and the Estimation of Program Effects The Impact of Family Planning Programs in Tanzania Tanzania	To develop an estimation method that accounts for the potential endogeneity of family planning facility placement in a model of individual level fertility decisions To use this method to analyze the impact of family planning service availability on fertility in rural Tanzania	The presence of hospitals health clinics and dispensaries reduces fertility If services from all three types of facilities were available in each community the estimated average annual fertility rate would be 35% lower than what it would be in the absence of any family planning services
Jensen 1995	The Fertility Impact of Alternative Family Planning Distribution Channels in Indonesia Indonesia	To assess the extent to which the eventual fertility outcomes of users supplied through varying supply sources differ	There are marked differences in the subsequent fertility of users supplied with modern methods from different sources In particular clients who obtain modern methods from private midwives are much better at averting pregnancy than women who obtain modern methods from any other type of provider either public or private
Singh and Sedgh 1996	Abortion Contraception and Fertility in Three Latin American Countries Brazil Colombia Mexico	To estimate levels of induced abortion in order to assess the relative impact of abortion and contraceptive use on fertility	The impact of contraception has been much stronger than the effect of abortion on fertility levels but abortion plays a subsidiary role in determining fertility levels in Brazil Colombia and Mexico





TABLE 4 Summary of Study Findings on Determinants of Program Capacity

Investigators	Study/Site	Objectives	Findings
Ross and Mauldin 1996	30 FPPE items for 1994 Developing countries	To gather 1994 data for another round of widely used the Lapham Mauldin and Ross family planning program effort (FPPE) scores in order to extend the time series undertake technical analyses and explore methodological and substantive improvements in the scores	A set of 30 FPPE scores for 1994 was compiled for 94 countries. The 1994 data show nine of the strongest programs in Asia, two in Latin America and two Sub-Saharan Africa. Time trends in the FPPE scores since 1982 show large increases in strength of family planning programs over the past 22 years, but overall program effort rose only modestly in the period 1989–1994.
Ngallaba Bardsley Guilkey Riphahn 1994	The Family Planning Service Environment in Tanzania Tanzania	To measure improvements in service delivery brought about by the Family Planning Support Services (FPSS) project, the study focuses on family planning services at hospitals, health centers and dispensaries.	From 1991–1994: 1) There was no increase in the percentage of staff trained in family planning. 2) The level of logistical support to SDPs increased dramatically. Pills and condoms continue to be available while the percentage of facilities offering injectables, IUCD, and foam has more than doubled. 3) The results show an increase of more than 100% in new clients for both hospitals and health centers; hospitals nearly doubled their number of resupply clients while health centers had more modest increases. Dispensaries showed no increase in new clients and marginal increases in resupply clients.
Lacey and Carba 1995	The Role of NGOs in Family Planning Service Delivery Philippines	Conduct a case study of non-government provision of family planning in Metropolitan Cebu, the Philippines, and compare the services and client populations served by three types of NGO organizations.	Each of the three provider types (grassroots community development organizations, religious organizations, and private volunteer organizations) fills a separate niche with respect to type of clients best served and methods provided. Given that each type caters to a specific group of clients, concurrent strategies to expand the private sector role are recommended.

TABLE 5 Summary of Methodological Study Findings on Measurement

Investigators	Study	Objectives	Findings
Hermalin Khadr Entwisle 1996	Reweighting DHS Data to Serve Multiple Perspectives	To develop a method for adjusting data from DHS Service Availability Modules (SAMs) to provide a measure reflecting the distribution of services across communities and facilities as distinct from averages per woman	The methodology developed for reweighting DHS data allows for useful characterization of available facilities at the community level. Application of the methodology is illustrated using rural data from the Egypt DHS
Lacey Adeyemi Adewuyi 1996	Monitoring the Expansion of Family Planning in the Public and Private Sectors. Introducing a Low Cost Monitoring Tool with Application in Nigeria	Describe and test a family planning monitoring tool designed by the Federal Office of Statistics (FOS) in Nigeria. The one page questionnaire can be implemented as an attachment to a nationally representative household survey	Tests of data quality indicated that the FOS survey achieved representative coverage and provided reliable data (within acceptable limits). The FOS survey data were able to document a rapid increase in modern method use from 3.8 percent in 1990 to 9.6 percent in 1993
Magnani Rutenberg and McCann 1996	Detecting Induced Abortions from Reports of Pregnancy Terminations in DHS Calendar Data	Determine whether pregnancy terminations reported in DHS calendar data can be classified accurately as spontaneous or induced based up other information gathered in the survey interview	1993 DHS calendar data from Turkey was used to evaluate a classification scheme based on a method developed by WHO. Results indicate that the method identifies true cases of induced abortion accurately but tends to classify a relatively large number of reported spontaneous terminations as induced abortions. When corrected for misreporting sensitivity and specificity are acceptable
Macintyre April 1995	The Case for Rapid Assessment Surveys for Family Planning Program Evaluation	To explore the potential usefulness of rapid assessment surveys for family planning program evaluation through implementation of an RAS and an empirical comparison of the RAS results with a conventional DHS survey	Results confirm the feasibility of conducting RAS in Ecuador using hand held computers. Tests of data quality indicate that aggregate estimates produced by the RAS were very close to those of the parent survey and results were available within three weeks. RAS offer no shortcuts in terms of preparation time, interviewer training or sampling design
Mauldin et al 1995	Direct and Judgmental Measures of Family Planning Program Inputs	To develop and test a methodology for obtaining reliable and valid measures of key program input variables based on direct evidence and to compare the validity of the new measures with the traditional subjective FPPE measures	The feasibility of obtaining direct measures for 18 of the original 30 FPPE items is demonstrated. A comparison of the direct and judgmental measures using data from Bangladesh revealed only trivial differences in the total score (71 vs 72 percent of maximum). Data from Kenya produced a total score for the direct measure of 61 percent of maximum compared to a score of 52 for the traditional measure





TABLE 5 continued Summary of Methodological Study Findings on Measurement

Investigators	Study	Objectives	Findings
Rutenberg Magnani and McCann 1995	Estimating Levels of Induced Abortion in Northeast Brazil Based on DHS Calendar Data	To assess the extent to which plausible estimates of induced abortion rates for northeast Brazil may be derived from DHS calendar data	Using DHS calendar data from northeast Brazil does not significantly improve the coverage of induced abortions. The survey did not ask women to distinguish spontaneous terminations from induced abortion and the classification algorithm explored did not perform acceptably in addressing this problem.
Entwisle Rindfuss Walsh Evans and Curran 1995	Geographic Information Systems spatial network analysis and contraceptive choice	To develop alternative measures of family planning accessibility using spatial network analysis to determine how family planning accessibility affects contraceptive choice	Contraceptive choice depends on 1) proximity of local outlet (threshold for travel time is less than 6 minutes) 2) road composition 3) the availability of services during the initial years of the family planning program

TABLE 6 Summary of Methodological Study Findings on Indicator Development

Investigators	Study/Site	Objectives	Findings
Brown Rice Bertrand 1994	Measuring Quality of Care in Quantitative Terms Morocco	Refine and test instruments and measures for assessing quality of care in a non random sample of Moroccan service delivery points in five provinces	A quality index can be constructed by combining detailed indicator scores obtained from a Situation Analysis. The index can be used to compare across facilities or to compare a single facility over time but the single score does not provide guidance on how or where to improve services. The utility of the single score depends on the consistency of the component scores and some inconsistencies across components were found.
Stover Bertrand Smith Rutenberg Meyer Ramirez 1996	Empirically Based Conversion Factors for Calculating Couple Years of Protection	To review the empirical evidence relating to determination of CYP conversion factors and propose modifications that reflect recent demographic information	Calculation of CYP can be modified to reflect recent information about the components of CYP. Evaluators can use the author's updated empirically derived conversion factors for all methods except sterilization. For sterilization a table is provided to facilitate calculation of a program specific conversion factor that reflects the average age of program clients at time of sterilization. For other methods country specific factors are not warranted.
Kirmeyer and Suchindran March 1995	Model Life Tables for Contraceptive Use and Couple Years of Protection. A Summary of Findings 7 DHS Countries	To explore refinement of the Couple Years of Protection (CYP) measure through the use of model contraceptive use life tables by incorporating information on relevant client characteristics age parity and the overlap between contraceptive use and breastfeeding in the population	Data from 7 DHS countries are used to develop model life tables that illustrate the expected increase in protection resulting from increased duration of use with higher parity older age or longer overlap with breastfeeding. The effect of parity on duration and discontinuation did not vary by method. The effect of age and overlap of use and lactation however depended on the method.
Suchindran 1995	An Alternative Measure of Fertility Control	To develop new measures of fertility change suited for use in a program evaluation context to supplement traditional measures of period fertility	A modification of the Anderson and Silver index provides a more robust measure of fertility control in a population and the new measure has three easily computed components: (1) the complement of the Anderson Silver index (2) mean age at childbearing among women older than 35 and (3) a dispersion measure of age at childbearing after age 35. Where data are available construction of the index can be extended to useful refinements such as age marital specific fertility rates and parity-specific rates.
Singh K K C M Suchindran U Singh and A. Kumar 1994	Fertility Pattern in An Age Interval. An Index Based on Demographic Calendar Data	Using readily available survey data to develop an index that can describe fertility differentials and trends across time and sub groups of the population	The index developed describes the shape of the marital specific fertility curves in a specified age interval. Use of the index to compare fertility across time and across various sub groups (e.g. education religion) is demonstrated. The birth history data needed to compile the index are standard components of national surveys such as the Demographic and Health Surveys.



TABLE 7 Summary of Methodological Study Findings on Program Impact Analysis

Investigators	Study/Site	Objectives	Findings
Bauman 1995	The Effectiveness of Family Planning Programs Evaluated with True Experimental Designs?	To determine the magnitude of family planning program effects in developing countries	Among the 16 studies identified the units analyzed ranged from individuals to provinces. Most outcome variables were measures of clinic attendance and contraceptive use. Thirteen of 16 studies showed positive program effects. In two studies no significant effects were found and in one study only unintended program effects were found.
Bauman Viadro and Tsun 1994	Use of True Experimental Designs for Family Planning Program Evaluation: Merits, Problems and Solutions	To conduct a meta-analysis of results from 16 studies using a true experimental design (random allocation to treatment and control groups) to analyze family planning program effects, and to describe the magnitude of program effects and the temporal and geographical distribution of studies using a true experimental design.	Thirteen of the 15 studies showed favorable program effects. Effect magnitude was relatively small. The factors influencing contraceptive use may be different from the types of program components and variations that have been evaluated using true experimental designs.
Angeles Mroz and Guilkey 1995	Purposive Program Placement and the Estimation of Program Effects	To develop an estimation method that accounts for the potential endogeneity of family planning facility placement in a model of individual level fertility decisions to use this method to analyze the impact of family planning service availability on fertility in rural Tanzania.	The presence of hospitals, health clinics, and dispensaries reduces fertility. If services from all three types of facilities were available in each community the estimated average annual fertility rate would be 35% lower than what it would be in the absence of any family planning services.
Bollen Guilkey and Mroz 1995	Binary Outcomes and Endogenous explanatory variables	To describe a simple analytic framework for estimating the effects of explanatory variables on discrete outcomes that controls for the potential endogeneity of explanatory variables to demonstrate the methodology by analyzing the impact of various components of Tunisia's family planning program on contraceptive use.	IEC messages have a substantial direct effect on contraceptive use. The indirect effect through additional children desired is small.