Does Contraceptive Discontinuation Matter?: Quality of Care and Fertility Consequences

Ann K. Blanc
Siân Curtis
Trevor Croft

September 14, 1999

Carolina Population Center
University of North Carolina
at Chapel Hill
123 W. Franklin Street
Suite 304
Chapel Hill, NC 27516
Phone: 919-966-7482
Fax: 919-966-2391
measure@unc.edu
www.cpc.unc.edu/measure

Collaborating Partners:

Macro International Inc.
11785 Beltsville Drive
Suite 300
Calverton, MD 20705-3119
Phone: 301-572-0200
Fax: 301-572-0999
measure@macroint.com

John Snow Research and Training Institute
1616 N. Ft. Myer Drive
11th Floor
Arlington, VA 22209
Phone: 703-528-7474
Fax: 703-528-7480
measure_project@jsi.com

Tulane University
1440 Canal Street
Suite 2200
New Orleans, LA 70112
Phone: 504-584-3655
Fax: 504-584-3653
measure2@tulane.edu

Funding Agency:

Center for Population, Health
and Nutrition
U.S. Agency for
International Development
Washington, DC 20523-3600
Phone: 202-712-4959

WP-99-14

The research upon which this paper is based was sponsored by the MEASURE *Evaluation* Project with support from the United States Agency for International Development (USAID) under Contract No. HRN-A-00-97-00018-00.

The working paper series is made possible by support from USAID under the terms of Cooperative Agreement HRN-A-00-97-00018-00. The opinions expressed are those of the authors, and do not necessarily reflect the views of USAID.

The working papers in this series are produced by the MEASURE *Evaluation* Project in order to speed the dissemination of information from research studies. Most working papers currently are under review or are awaiting journal publication at a later date. Reprints of published papers are substituted for preliminary versions as they become available. The working papers are distributed as received from the authors. Adjustments are made to a standard format with no further editing.

A listing and copies of working papers published to date may be obtained from the MEASURE *Evaluation* Project at the address listed on the back cover.

Acknowledgements: The authors wish to thank Theresa Richardson for her assistance in preparing tables. Jim Shelton and Amy Tsui provided useful comments on an earlier version.

Executive Summary

Contraceptive discontinuation is often cited as an outcome that is associated with the quality of care provided by family planning programs. The primary objective of this study is to document levels of discontinuation across countries and to assess the utility of using this indicator as a reflection of the quality of the service environment. The study also examines contraceptive behavior following a discontinuation and the fertility consequences of contraceptive discontinuation and failure.

The contraceptive histories collected in 15 DHS surveys are used to calculate a range of life table measures of discontinuation, including method and reason-specific rates. The 15 countries included in the study represent a diversity of situations with overall contraceptive prevalence among married women ranging from 31 to 77 percent. The most used method is the pill in six countries, the IUD in two countries, female sterilization in six countries, withdrawal in one country, and periodic abstinence in two countries.

Hormonal methods (pill and injectables) are more likely to be discontinued as a result of side effects or health concerns than are other methods. Except for Zimbabwe, which has very low rates, the percentage discontinuing the pill for these reasons within a year ranges from 11 to 35 percent while for injectables, the percentage varies from 15 to 37 percent. For most countries, the 12-month cumulative rate of discontinuation of the IUD for side effects or health concerns is much lower, varying between 6 and 14 percent. Other method-related reasons (and contraceptive failure) are more important reasons for discontinuation of periodic abstinence, withdrawal, and condoms. Service-related reasons for discontinuation include cost of the method and lack of access to the method; these are rarely mentioned by women as the primary reason for discontinuing use of any method.

In all but three of the countries, the most common action women take after discontinuing use of a modern reversible method for method or service related reasons is to switch to a different modern method. In these countries, between 29 and 58 percent of women begin using a different modern method within three months of discontinuation. Few women return to the method they had discontinued. In contrast, women who experience a contraceptive failure and resume using after the birth are most likely to return to the same method.

All-method discontinuation rates, which measure the rate at which women stop using any method of contraception, are calculated separately for two groups of reasons: reduced need and quality related reasons.

Overall, between 9 percent (Zimbabwe) and 34 percent (Dominican Republic) of women stop using contraception within 12 months for quality related reasons. The all-method discontinuation rate for quality related reasons accounts for between approximately a half and three quarters of the total rate at 12 months. This all-method rate for quality related reasons is inversely associated with overall Family Planning Program Effort (FPPE) scores; that is, strong programs tend to have relatively low quality related discontinuation rates. The relationship between the two indicators is statistically significant, but not particularly strong. The relationship between the all-method discontinuation rate for quality related reasons and the service related component of the FPPE score is also negative and statistically significant but stronger. However, contrary to expectation, two different indicators of method choice are not associated statistically with rates of method discontinuation for quality related reasons.

Nevertheless, the study suggests that the measure of contraceptive discontinuation that most closely approximates an overall indicator of quality of care is the all-method rate for quality related reasons. The advantages of this measure over other types of discontinuation rates are, first, that it focuses on discontinuation of any method of contraception rather than on a specific method. It thus incorporates the notion that high rates of method switching are not necessarily negatively related to quality. Discontinuation of any method is of greater programmatic interest than discontinuation of a specific method because it leaves women unprotected from the risk of unwanted pregnancy. Second, this rate includes only those who discontinued for reasons other than a desire to get pregnant or reduced exposure to pregnancy risk; many of these reasons are ones that can effectively be addressed by improvements in the family planning program. One disadvantage revealed by a trend analysis is that change in this indicator over relatively short periods of time may not be possible to detect with sample sizes in the range utilized by DHS surveys. In addition, we hesitate to recommend this measure unequivocally as a summary indicator of quality of care because it does not have a consistent relationship with one of the core components of a high quality service environment - method choice.

The study demonstrates clearly that contraceptive failure and discontinuation make a substantial contribution to overall fertility rates and to rates of unwanted fertility. In the 15 countries included in this analysis, the total fertility rate (TFR) would be between 4 and 29 percent lower in the absence of contraceptive failure. The average across all countries is 14 percent. Without other types of contraceptive discontinuation, the TFR would be reduced by between 20 (Indonesia) and 48 percent (Jordan). More than half of recent unwanted fertility was due to either a contraceptive failure or a contraceptive discontinuation in all countries except Guatemala. The total unwanted fertility rate would be between about 0.2 and 1.1 births lower in the absence

of failure and discontinuation. This result implies that as fertility declines, family planning programs would profit from a shift in emphasis from providing methods to new clients towards providing services to existing clients, such as counseling, that may help reduce failure and discontinuation rates.

I. Introduction

In recent years, a focus among international donors and policy makers on the quality of services in family planning programs has led to a need to identify appropriate indicators to measure the quality of services for program monitoring and evaluation (United Nations, 1995; USAID, 1997; Bertrand et al., 1994). Contraceptive continuation is often cited as an outcome that is associated with quality of care. Jain (1989) argues that the quality of services affects contraceptive prevalence through increasing contraceptive acceptance and continuation. He emphasizes the range of methods available as a key component of service quality that is likely to influence continuity of use. Using the availability and access component of the program effort score (Mauldin and Lapham, 1985) Jain demonstrates a strong relationship between the range of methods available in a country and contraceptive prevalence. Given this background, the contraceptive continuation rate has been proposed more recently as an outcome indicator for monitoring quality of care (Bertrand, et al., 1994).

The Demographic and Health Surveys (DHS) program has been collecting data on contraceptive continuation in its "A core" questionnaire since its inception. Initially, the data on contraceptive continuation were gathered through incomplete contraceptive histories collected for birth intervals in the five years preceding the survey. Since 1990 the relevant data have been collected through the DHS "calendar" which collects complete monthly contraceptive histories for the five calendar years before the survey. As of October 1998, the calendar had been used in 29 surveys in 18 countries. Contraceptive discontinuation rates by reason for discontinuation are published routinely in the Final Report of surveys that include the calendar and several studies of contraceptive continuation based on DHS data have been conducted for individual countries (Enülü and Doğan, 1996; El-Tawila, 1995; Fathonah, 1996; Ferraz, 1994; Gómez, 1994; Melián, 1994; Mitra and Al-Sabir, 1996; Perez and Tabije, 1996; Padilla, 1994; Polanco, 1994; Sambisa, 1996). A few comparative studies have also been conducted on contraceptive discontinuation and contraceptive failure in developing countries. Most of these are based on the incomplete contraceptive histories collected in the first phase of the DHS program (Ali and Cleland, 1995; Ali and Cleland, 1996; Moreno and Goldman, 1991; Moreno, 1993) although Curtis and Blanc (1997) used calendar data from six recent DHS surveys to study the determinants of contraceptive failure, switching and abandonment.

To date, there is no published study that has compiled the most recent data on contraceptive discontinuation from the DHS calendar in one place. The intention of this comparative study is to provide a resource for researchers and program staff interested in quality of care and contraceptive discontinuation and to explore the extent to which contraceptive discontinuation is a valid indicator of the quality of services.

The specific objectives of the study are

- To document overall levels of discontinuation, and method-specific and reason-specific rates of discontinuation across countries
- To examine contraceptive behavior following a discontinuation or failure
- To examine the fertility consequences of contraceptive discontinuation and failure and
- To assess the utility of contraceptive discontinuation as a reflection of the quality of the service environment

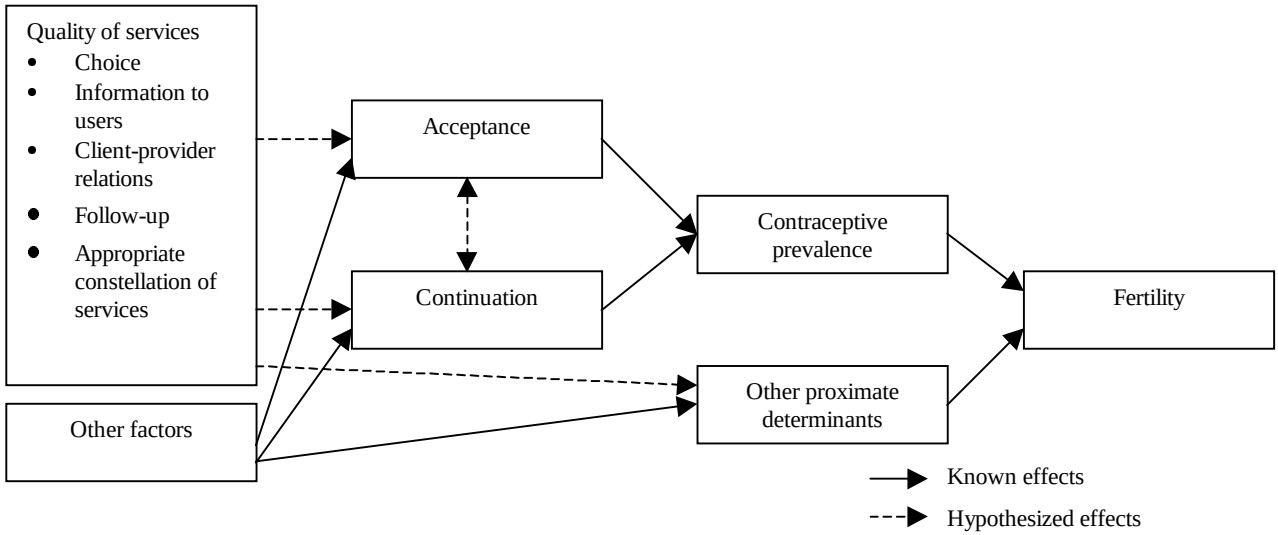
II. Contraceptive Continuation and Quality of Services

As described above, Jain (1989) argues that the quality of family planning services is an important determinant of contraceptive use because it is likely to affect contraceptive adoption and, more significantly, contraceptive continuation (Figure 1). Jain (1989: p.6) concludes that, "programs can achieve better demographic results when they concentrate on a small number of acceptors and provide them with good care to enhance their satisfaction and thus to improve continuation rates, rather than trying to recruit a large number of acceptors at one time and not take care of them." Implicit in this argument is the assumption that the quality of services is an important determinant of continuity of contraceptive use.

Since Jain's work, several authors have attempted to substantiate the theoretical link between the quality of the service environment and contraceptive use. For example, Mensch et al. (1996) found a moderate but significant effect of service quality on current contraceptive use in Peru. In Morocco, Hotchkiss et al. (1995a) found a significant positive effect of the availability of pills in local pharmacies and of the level of family planning infrastructure and equipment in local facilities on use of modern contraception. Magnani et al. (1997) found a significant positive effect of the number of methods available in local facilities on subsequent contraceptive use among non-users, also in Morocco. The effect of the availability of methods at the nearest government facility was particularly strong among women who originally did not intend to use a contraceptive method. However, Hotchkiss et al. (1995b) failed to find any effects of service quality on contraceptive use in two states in Northeast Brazil.[1]

[1] An index of mechanisms to promote continuity of use did have a significant effect on use but the effect was negative.

Figure 1. Schematic presentation of links between quality of family planning services and fertility.



Source: Jain (1989)

Most studies using national surveys such as the DHS, DHS Service Availability Module (SAM) and Situation Analysis (SA) have focused on current contraceptive use. However, Steele, et al. (1999) linked calendar data from the 1995 DHS survey in Morocco to service data from the 1992 SAM to examine the effect of the service environment on pill discontinuation and switching. The results showed significantly higher pill continuation among women who obtained their pills from Government facilities as opposed to private ones (including pharmacies). The availability of three or more methods in the local area did not affect overall pill discontinuation and there was weak evidence that it increased the probability of switching to another method after discontinuing the pill.

In addition to the study by Steele, et al. (1999), a few specialized, sub-national studies have examined the effects of service quality on the separate components of contraceptive adoption and continuation. The largest of these examined women's perceptions of the quality of services provided by field workers in Matlab, Bangladesh on subsequent contraceptive adoption and continuation (Koenig, et al., 1997). The study found a significant, positive effect of women's perceptions of service quality on both adoption and continuation, but the effect was particularly strong for continuation, consistent with Jain's hypotheses. Other studies have shown a positive association between clients receiving their chosen method and contraceptive continuation in Indonesia (Pariani et al., 1991) and adequate counseling on side effects and contraceptive continuation in The Gambia and Niger (Cotten et al., 1992).

In general, the studies cited above provide support for Jain's hypothesized link between elements of service quality and contraceptive continuation. However, the utility of the contraceptive continuation rate (or discontinuation rate) as an indicator of quality of care depends on the specificity of the indicator. If many other factors affect contraceptive continuation in addition to the quality of services, a low continuation rate may indicate poor quality services or it may indicate some other problem that is not related to the quality of services.

There are relatively few multivariate analyses of the determinants of contraceptive discontinuation. Those that exist suggest that the determinants of contraceptive discontinuation are less consistent across countries than are the determinants of current contraceptive use. The determinants that are significant also depend on the type of discontinuation studied. In general, demographic factors such as fertility intentions (spacing or limiting), woman's age, number of living children, and marital status are most consistently related to continuity of use (Ali and Cleland, 1996; Curtis and Blanc, 1997). Socio-economic factors such as education tend to be weakly associated with contraceptive discontinuation (Ali and Cleland, 1996) but have been found to be associated with switching methods (Curtis and Blanc, 1997). The specific method used is strongly associated with all types of contraceptive discontinuation (Curtis and Blanc, 1997).

This review of the literature confirms that contraceptive discontinuation is associated with the quality of services. However, discontinuation is also associated with other factors such as individual motivation. The relative importance of quality of care versus other factors in determining contraceptive discontinuation rates is likely to vary across countries. Therefore, it is unclear how well the contraceptive continuation (or discontinuation) rate will perform as an indicator of quality of care.

III. Data and Methods

a. Data

The analyses in this report are based on data collected in a calendar of recent events which is included in DHS surveys that utilize the 'A core' questionnaire. Since the primary purpose of the calendar is to collect detailed contraceptive histories, it is used in countries that have relatively high contraceptive prevalence. The 15 surveys included in this analysis are:

Bangladesh, 1996/97
Bolivia, 1993/94
Brazil, 1996[2]
Colombia, 1995
Dominican Republic, 1996
Egypt, 1995/96
Guatemala, 1995
Indonesia, 1994
Jordan, 1990
Morocco, 1995
Paraguay, 1990
Peru, 1996
Philippines, 1993
Turkey, 1993
Zimbabwe, 1994

The DHS calendar consists of a matrix of rows and columns. Each row represents a particular month with the first row usually representing January of the fifth calendar year before the survey (e.g., January 1990 for surveys conducted in 1995, etc.). The columns are used to record different types of information for each month. The first column is used to record information on periods of contraceptive use, nonuse, and pregnancies; the reason for discontinuation of each episode of contraceptive use is recorded in the second column in the row corresponding to the last month of continuous use of each method (see Macro International Inc., 1995). Based on this information, episodes of contraceptive use can be identified and linked to the reason for discontinuation. The design of the calendar allows for only one reason for discontinuation to be recorded.

The calendar requires women to recall detailed information on contraceptive adoption and discontinuation for a five-year period before the survey. Such retrospective reporting relies heavily on the ability of respondents to accurately recall these events.[3] The calendar approach has been shown to yield more complete and

[2] Four cases in the Brazil survey were excluded from the analysis due to implausible contraceptive histories.

[3] During the secondary editing phase of the processing of DHS survey data, a number of internal consistency checks are performed on the calendar data. These include several related to the reported reason for discontinuation. For example, if the respondent reported that she became pregnant while using but no pregnancy is recorded in the month after discontinuation, the case is flagged and may be modified if the discrepancy is only one month. Another inconsistency that is checked occurs when the respondent reports that she stopped to become pregnant but the discontinuation is not

internally consistent data than the more traditional approach with structured questions used in the first phase of DHS surveys (Goldman, Moreno, and Westoff, 1989; Westoff, Goldman, and Moreno, 1990). Curtis and Blanc (1997) found evidence of modest heaping of durations of contraceptive use in calendar data from six countries but concluded that it was unlikely to be severe enough to significantly affect estimates of discontinuation. They also found very close agreement between estimates of contraceptive prevalence obtained from the calendar and corresponding current status estimates of contraceptive prevalence obtained from previous surveys.

Strickler et al. (1997) utilized the panel design of the 1992 and 1995 Morocco DHS surveys to examine the reliability of reporting of events in the calendar. The calendars in the 1992 and 1995 DHS surveys overlap for the period 1990-92. Strickler et al. (1997) compared individual responses in the calendar for the overlapping period. They found that reporting of contraceptive behavior at the aggregate level was quite good but that there was considerable unreliability in the individual-level responses, particularly for complex histories. The monthly histories for the period 1990-92 matched exactly for only 28 percent of women who reported at least one episode of contraceptive use in the analysis period in 1992. The reported reason for discontinuation among matched episodes of use was also quite unreliable with just over one-third of respondents giving a different reason for discontinuation (excluding censored episodes of use). Overall, there was a slight tendency for respondents to be more likely to report that they discontinued to get pregnant in the 1995 DHS than in the 1992 DHS which may reflect post-event rationalization if a pregnancy followed the discontinuation.

These findings have implications for our analysis. Strickler et al.(1997) show that the reporting errors in the calendar affect estimates of discontinuation and failure rates and conclude that "the unreliability of the reported reason for discontinuation should act as a caution regarding the conduct of complex statistical analysis designed to explain variation in reasons for discontinuation." Based on results of their analysis of the determinants of discontinuation, Curtis and Blanc (1997) conclude that, “asking women to provide only the main reason for discontinuing use…gives an oversimplified picture of the decision to stop using a method.” For example, changes in marital status are strongly associated with discontinuation even when they are not given as the main reason for stopping. Clearly, some of the unreliability that is attributed to women in reporting the reason for discontinuing may be due to the fact that it is most common for women to have multiple reasons for stopping. At the same time, it seems reasonable to assume that the reason women do report for discontinuing is the most salient for them. The analysis presented below depends strongly on

---

followed by either the start of a pregnancy or at least one month of non-use (for further details, see Macro International Inc., n.d.)

information on the reported reason for discontinuation. Although we are unable to assess empirically the effect of possible biases in reporting on the results, it is important to keep these in mind when interpreting the findings.

b. Life tables

The unit of analysis for the calculation of the discontinuation and failure rates in this report is an episode of contraceptive use. The definition of an episode of contraceptive use depends on the type of discontinuation rate being calculated. For *all-method discontinuation rates,* an episode of contraceptive use is defined as a period of continuous use of any contraceptive method (not necessarily the same method). For *method-specific discontinuation rates*, an episode of use is defined as a period of continuous use of a specific contraceptive method. In this case a switch to a new method initiates a new episode of use.

The analysis of contraceptive discontinuation raises a number of statistical issues. Right-censoring of episodes of use occurs if the episode is still in progress at the end of the observation period. The full duration of the episode is, therefore, unknown; we simply know that it is as least the number of months observed at the end of the period. Dropping these incomplete episodes of use would bias our results so we use event history methods to handle the right-censoring. The discontinuation rates presented in this report are based on life table methods which are the simplest form of event history analysis.

Throughout the analysis, we examine various reasons for discontinuation of contraception (or various types of behavior following discontinuation). At any point in time a woman is simultaneously at risk of discontinuing for any one of a number of different reasons. This type of data is often described as *competing risks* data. There are two ways to model competing risks in life tables. The first approach (the multiple decrement approach) models the observed dependent rates, while the second approach (the associated single-decrement approach) models the underlying independent rates. The life table rates calculated using the first approach are known as *net rates* while those calculated using the second approach are known as *gross rates*. Net rates reflect the observed probabilities of discontinuing for a particular reason in the population in the presence of other reasons. They are affected both by the underlying risk of discontinuation for a particular reason and the underlying risk of discontinuing for other reasons.

Gross rates can be interpreted as the probabilities of discontinuing for a particular reason in the absence of other reasons. They are theoretical rates and represent the underlying risk of discontinuation in the population. Gross discontinuation rates for a particular reason are not affected by the level of discontinuation for other reasons. Because gross rates are independent of the particular distribution of reasons for

discontinuation in a population, they are generally thought to be the appropriate measures for comparing across groups (or countries). For methodological discussions of life table discontinuation rates, see Steiner et al., 1996; Kost, 1993; and Curtis and Hammerslough, 1995.

Although the analyses in this report are comparative, we are primarily interested in comparing the observed patterns of discontinuation across countries rather than the underlying risks of different types of discontinuation. Therefore, we have chosen to present net rates rather than gross ones. Net rates have the advantage that they sum to the overall discontinuation rate. In addition, the fact that they represent the observed rate generally makes them easier to interpret and more appropriate for program monitoring than gross rates. Bertrand, et al. (1994) recommend the net failure rate rather than the gross failure rate for program monitoring purposes. However, it is possible that a country could have a relatively high rate of one type of discontinuation because the discontinuation rates for other types of discontinuation are particularly low. This feature of net rates should be kept in mind when interpreting the findings.

The analyses below are based on all episodes of use that began in the period 3-62 months before the survey.[4] The three months immediately prior to the survey are excluded from the analysis to allow for underreporting of first trimester pregnancies at the time of the survey which could bias estimates of failure rates. Life table rates are not shown if the (unweighted) number of episodes of use is less than 125.

IV. Family Planning Context

The 15 countries included here represent a diversity of situations regarding the level of family planning use, method mix, and the service environment. Forty percent or more of married women currently use contraception in all of the countries included in the analysis, except in Guatemala, where 31 percent are using (Table 1). Contraceptive prevalence is particularly high in Brazil and Colombia where the percent using exceeds 70 percent. The distribution of users by method varies significantly across countries. In 5 countries – Zimbabwe, Bangladesh, Indonesia, Morocco, and Paraguay - the pill is the most common method. Although the pill predominates in Indonesia, it is used by only about 31 percent of users while about 28 percent use injections and 19 percent use the IUD; it is the only country in which a significant percentage of users (9 percent) use Norplant. In contrast, the method mix is highly concentrated on the pill in Morocco and Zimbabwe where pill use constitutes 68 and 69 percent of total use, respectively. The IUD is the most used method in Egypt and Jordan while female sterilization is the most common method in the Philippines, Brazil, Colombia, Dominican Republic, and Guatemala. Turkey is unusual in that withdrawal is the most popular

[4] If there are less than 62 months in the calendar in a country, the longest period possible is used.

method comprising 42 percent of all reported use. Finally, in two countries - Bolivia and Peru - periodic abstinence is the most frequently reported method, encompassing almost half of all use in Bolivia and about 28 percent in Peru.

The distribution of current users by the source at which they most recently obtained their method is shown in Table 2. Government facilities are used by the majority of users of clinical methods (IUD, Norplant, sterilization) in Zimbabwe and in the Asia/Near East/North African countries except Egypt and Jordan. Reliance on government sources is particularly strong in Bangladesh where over 80 percent of users of clinical methods get their method from a government source. In contrast, in all of the Latin American countries except Brazil and Peru, the majority of users of these methods obtain them from the private sector.

Not surprisingly, reliance on private sector sources is generally greater among users of supply methods (pill, injectable, vaginal methods, condom). Pharmacies are the most common source of supply methods in many countries, although there are several exceptions. In the Philippines, for example, 71 percent of users of these methods obtain them from a government source (mostly *barangay* health stations (NSO,1994)). The majority of users obtain their supply method from a Government source also in Zimbabwe (83 percent) and in Peru (64 percent). In Bangladesh, fieldworkers provide supplies for a significant proportion of users of these methods.[5] In Indonesia, about a third of users of supply methods obtain them from family planning posts, health posts, or village delivery posts which are service delivery outlets that are difficult to categorize as either government or private (and are categorized as 'other' in Table 2). They are generally initiated by the government and use government supplies but are staffed by volunteers and are often located in private homes.

[5] Fieldworkers are categorized in Table 2 as private providers although many are government sponsored. Survey respondents were not asked to specify whether the fieldworker was government or NGO sponsored because they are often not able to distinguish.

V. Method and Reason-Specific Discontinuation Rates

a. Method-specific and first-method discontinuation rates

Table 3 provides an overall picture of the extent to which episodes of contraceptive use are discontinued. For *method-specific and first-method discontinuation rates,* all switches between methods are counted as discontinuations (e.g., a woman who uses the pill and then switches immediately to the condom is counted as having discontinued the pill). The method-specific rates are shown in Table 3 for six methods: pill, IUD, injectables, condom, periodic abstinence, and withdrawal.[6] The total discontinuation rate in the last column includes these six methods plus Norplant and vaginal methods. This rate is also known as the first-method discontinuation rate.

In most of the countries, IUD discontinuation rates are substantially lower than the rates for other methods. The 12 month cumulative discontinuation rate for the IUD is in the range of 15-25 percent in nine of the 13 countries for which data are available; in Turkey and Bolivia, the rate is 10-12 percent while Bangladesh and the Dominican Republic have the highest rates at 41 and 32 percent, respectively.

A greater proportion of women discontinue use of the pill than of the IUD within the first year. Discontinuation rates for the pill are between 34 and 64 percent in every country except Zimbabwe, where only 16 percent of users discontinue the pill within 12 months. Discontinuation of injectables is also very low in Zimbabwe at 16 percent. The 12-month discontinuation rate for injectables exceeds 50 percent in all of the other countries with sufficient data, except Indonesia where the rate is 29 percent. Similarly, at least 50 percent of users of the condom discontinue its use within 12 months, except in Zimbabwe where the rate is slightly lower at 45 percent.

Relatively low rates of discontinuation of periodic abstinence (30-38 percent) are found in Indonesia, the Philippines, Bolivia and Guatemala. In the remaining countries rates are higher, reaching 70 percent in the Dominican Republic. Similar rates are evident for discontinuation of withdrawal. The 12 month discontinuation rates for withdrawal vary from 30 percent (Zimbabwe) to 70 percent (Dominican Republic).

In general, there are a few countries that stand out as having low discontinuation rates across all methods (for

[6] These rates are slightly different from those presented in DHS final country reports for two reasons. First, the analysis in this report excludes left-truncated episodes of use (episodes which began at a known duration before the 3-62-month analysis period but continued into it). Left-truncated episodes of use are included in the calculation of the rates in the final reports. Second, in the life table calculations in this report, censored observations receive half a month of exposure for the month in which they are censored. In the final report calculations, they receive a full month of exposure.

which there are sufficient data). Zimbabwe has very low proportions of users discontinuing in the first year across the four methods for which we have data: pill, injections, condom and withdrawal. Indonesia also has low rates for all six methods, especially injections. At the other extreme, the Dominican Republic and, to some extent Paraguay, are notable for their high rates of discontinuation particularly for the condom and, in the Dominican Republic, for the IUD.

As discussed above, Jain (1989) argues that increased method choice may reduce method continuation by making switching easier. The index of dissimilarity (ID) in method mix has been proposed as a population-based indicator of method choice (Bertrand et al., 1998). The index measures the degree of skew in the method mix in a country by comparing it to a standard method mix. A highly skewed method mix is associated with a high value of the index, which in turn is interpreted as indicating low method choice. Figure 2 shows a weak but statistically significant ($p=0.04$) negative relationship between the 12-month first-method discontinuation rate and the index of dissimilarity providing partial support for Jain's hypothesis.

b. Failure rates

Contraceptive failure is of particular interest because it contributes to overall fertility, to levels of unwanted and mistimed fertility (see Section VIII), and to the level of induced abortion. Programmatically, failure rates are significant because they represent an area in which improvements in service quality can improve outcomes for women.

Table 4 presents net 12-month cumulative contraceptive failure rates for six methods.[7] Between 5 and 7 percent of pill users experience a failure within 12 months in 10 of the 15 countries. The rate is less than 3 percent in three countries (Zimbabwe, Bangladesh, and Paraguay) and reaches 9 percent in Jordan. In most countries (for which data are available) failure rates for injectables are substantially lower or approximately the same as the pill failure rates. In Paraguay, however, the failure rate for injectables is much higher - 8 percent within 12 months compared to the pill failure rate of 3 percent. As expected, failure rates for the IUD are very low reaching as high as 3 percent only in Colombia.

Almost 16 percent of condom users in the Philippines experience a contraceptive failure within 12 months. Condom failure rates greater than 10 percent are also seen in Egypt, Jordan, and Guatemala. As has been found in previous studies, failure rates for periodic abstinence and withdrawal tend to be substantially higher

[7] A discontinuation is classified as a contraceptive failure if the respondent reports that she got pregnant while using the method.

than for other methods. More than one in five users of periodic abstinence experience a contraceptive failure within a year in Jordan, Morocco, Dominican Republic, and Peru

c. Method-related and service-related reasons for discontinuation

In Tables 5 and 6, we examine discontinuation rates according to reasons related to the method. We look separately at discontinuations due to side effects and health concerns and those due to all other method-related reasons, including the husband's disapproval, desire for a more effective method, and inconvenience of use. As might be expected, hormonal methods (pill and injectables) are more likely to be discontinued as a result of side effects or health concerns than are the other methods. Except for Zimbabwe, which has very low rates, the percentage discontinuing the pill for these reasons within a year ranges from 11 to 35 percent while for injectables, the percentage varies from 15 to 39 percent. The discontinuation rates for side effects and health concerns are particularly high in Bolivia for both hormonal methods.

For most countries, the 12-month rate of discontinuation of the IUD for side effects or health concerns ranges between 6 and 14 percent. In Bangladesh, however, the rate is much higher at 35 percent. It is also relatively high in the Dominican Republic at 22 percent.

Discontinuation of periodic abstinence and withdrawal due to side effects and health concerns is negligible in most countries. Again, Bangladesh is an exception; the discontinuation rate for withdrawal is 17 percent. In general, however, other method-related reasons (and contraceptive failure) are much more important reasons for discontinuation of these methods (Table 6). Users of the condom are also more likely to discontinue for other method-related reasons than are users of hormonal methods or the IUD. The 12-month discontinuation rate for other method-related reasons among condom users exceeds 20 percent in all countries except Zimbabwe and Guatemala, and reaches 41 percent in the Dominican Republic.

Service-related reasons for discontinuation include cost of the method and lack of access to the method. As shown in Table 7, these are rarely mentioned by women as the primary reason for discontinuing use. The discontinuation rate for service-related reasons tends to be slightly higher for injectables than for other methods but even for injectables, the 12-month discontinuation rate for these reasons exceeds five percent only in Bolivia.

VI. Behavior Following Discontinuation and Failure

Taken together, discontinuations of contraceptive methods for reasons related to the method or the service environment are relatively common events. Discontinuations for these types of reasons are of particular

significance because they potentially put women at risk of an unintended pregnancy. Further, in contrast to other reasons for discontinuation, they are amenable to reduction through improvements in family planning programs. If we assume that women who stop using for these reasons are still in need of a method, it is of interest to examine their behavior subsequent to discontinuation.

Within three months of discontinuing a modern reversible method for method- or service-related reasons, the vast majority of users (between 60 and 88 percent) have either adopted a new method, returned to the same method or become pregnant (Table 8). In all but 3 of the 15 countries in this study, the most likely outcome is adoption of a different modern method. In Zimbabwe and Jordan the most likely outcome within three months is a pregnancy, while in the Philippines it is adoption of a traditional method, closely followed by a pregnancy. Overall, between 10 (Indonesia) and 34 (Jordan) percent of users become pregnant within three months of discontinuing use for method- or service-related reasons, while between 16 (Philippines) and 58 (Indonesia) percent adopt a different modern method. In general, few women return to the method they had discontinued.

In a number of countries, substantial proportions of women switch to a traditional method (periodic abstinence or withdrawal) after discontinuing a modern method for method- or service-related reasons. In Morocco, Philippines, Turkey, Bolivia, Colombia, Paraguay, and Peru, at least 20 percent of those who discontinue a modern method adopt a traditional method within three months. In all but two countries (Jordan and Philippines) with data available the majority of users of traditional methods switch immediately to a modern method of contraception after discontinuing use for method- or service-related reasons (Table 9).

Figure 3 examines the relationship between the percentage of modern method users who switch immediately to another method after discontinuation of their original method and the index of dissimilarity for method choice. The relationship is negative (i.e., users in populations with low method choice are less likely to switch methods when they discontinue than users in populations with more choice) but it is not statistically significant ($p=0.13$). Similar to findings reported above, this evidence supports, although weakly, the hypothesis that increased method choice is associated with increased method switching (Jain, 1989).

Tables 10 and 11 examine the contraceptive behavior of users after they experience a contraceptive failure. The large majority of users of both modern and traditional methods who experience a contraceptive failure resume contraceptive use within 12 months of the pregnancy resulting from the contraceptive failure. In all but two countries, users of modern methods who experience a contraceptive failure are most likely to resume using the same method after the pregnancy. Indeed, in Zimbabwe and Morocco, more than half of modern method users return to the same method within 12 months. In Colombia and Peru, modern method users who

experience a contraceptive failure are most likely to switch to another modern method after a contraceptive failure.

A similar pattern is observed among users of traditional methods (Table 11). More than 40 percent of traditional method users who experience a contraceptive failure resume using the same traditional method within a year of the pregnancy in all countries except Zimbabwe, Brazil, and the Dominican Republic. In these three countries traditional method users are more likely to switch to a modern method after a contraceptive failure. The percentage of traditional method users who resume using the same method after a contraceptive failure is particularly high in the Philippines, Turkey, and Bolivia. These three countries are noted for their relatively high use of traditional methods and, in the case of the Philippines and Bolivia, for opposition to modern family planning from the Catholic Church.

VII. All-Method Discontinuation Rates

Since switching between methods occurs with frequency in some countries and may be related to the quality of the service environment, a useful measure of contraceptive discontinuation is one that gauges the extent to which women stop using contraception entirely. *All-method discontinuation rates* measure the rate at which women shift from using any method of contraception (excluding sterilization) to using no method. Thus, a discontinuation is defined here as stopping any contraceptive use; i.e., a switch to another method is not considered a discontinuation if the user switched immediately to the new method. Because it is not possible (except in rare instances) to discontinue sterilization, segments of use that begin with sterilization are not included. Segments that begin with use of another method followed by a switch to sterilization are censored in the month in which the sterilization occurred because the woman is no longer exposed to the 'risk' of switching or discontinuing. The rates given in Table 12 represent the percentage of users who have discontinued all contraceptive use by a given duration following initiation of use.

In Table 12, we categorize reasons for stopping use of any method into two groups. The first group includes reasons that imply a reduced need for contraception including: wanting to get pregnant, having infrequent sex or husband/partner away, being menopausal or subfecund, and marital dissolution or separation. These are reasons that are not related to the characteristics of the method or the service environment and the level of discontinuation for these reasons is not expected to be influenced by the quality of care. The second group consists of all other reasons for discontinuation including: contraceptive failure, husband's disapproval, desire for a more effective method, side effects, health concerns, lack of access, cost, inconvenience of using the method, being fatalistic, and other (unspecified) reasons. These reasons are referred to here for convenience as "quality related reasons" since the level of discontinuation for these reasons is expected to be

directly related to the quality of care.

The 12 month cumulative all-method discontinuation rates for quality related reasons range from 9 percent in Zimbabwe to 34 percent in Dominican Republic (Figure 4). By 36 months, between 21 and 50 percent of users have stopped using contraception for these reasons. In all countries the rate of discontinuation due to reduced need is less than the rate due to quality related reasons. The extent to which quality related reasons dominate varies across countries, however, with the discontinuation rate for this group constituting between 51 percent (Morocco) and 77 percent (Philippines) of the total rate at 12 months.

Figure 5 shows the relationship between the 12-month all-method discontinuation rate for quality related reasons by the Family Planning Program Effort (FPPE) Score for 1989 (Ross et al., 1993).[8] The FPPE scores are intended to summarize the characteristics of family planning programs in the areas of policy and stage-setting activities, service and service-related activities, record keeping and evaluation, and accessibility of fertility control supplies and services. The higher the score, the stronger the family planning program. Overall, the discontinuation rates vary inversely with the program effort scores; that is, strong programs tend to have relatively low quality related discontinuation rates. The relationship between the two indicators is statistically significant ($p=0.04$), but not particularly strong (R-squared = 0.28).

The service-related component of the FPPE score measures several aspects of the service environment including some related to service quality (e.g., training, logistics, and supervision) and some related to the accessibility of services (e.g., community-based distribution, home visits, and social marketing) (Mauldin and Ross, 1991). If low discontinuation rates are viewed as a measure of high-quality care, then there should be a negative relationship between the discontinuation rate and the service related component of the program effort score. As shown in Figure 6, the relationship between the 12-month all-method discontinuation rates for quality related reasons and the service related component of the FPPE score is negative and statistically significant ($p=0.02$) but relatively weak; about 35 percent of the variance in the 12-month all-method discontinuation rate for quality related reasons is explained.

In his 1989 article, Jain concludes that, "Making multiple methods available through various outlets would appear to be a better strategy to enhance user satisfaction and to improve continuation of contraceptive use, although it may reduce method-specific continuation by making switching easier" (Jain, 1989; p.13). This conclusion implies that method choice is likely to influence discontinuation rates. Specifically, greater

[8] The FPPE scores are based on data collected in 1989, prior to the fieldwork dates of the surveys used here . Since the discontinuation rates are calculated on the basis of data referring to the (roughly) five years prior to the surveys, the FPPE scores refer to a date either just prior to or during the five-year period.

method choice should be associated with lower all-method discontinuation rates if users are more likely to switch methods rather than abandon use entirely when a variety of methods are available. However, Figure 7 shows that there is no relationship between the 12-month all-method discontinuation rate for quality related reasons and the access/availability component of the FPPE which is an indicator of the number of methods available in a country.[9]

Figure 8 presents the 12-month all-method discontinuation rate for quality related reasons by the index of dissimilarity for the 15 countries in this study. Contrary to expectation, the relationship between these two indicators is negative, i.e., a highly skewed method mix (or low method choice) is associated with lower contraceptive discontinuation. However, the relationship is not significant at the five percent level (p=0.08). The relationship between the 24-month and 36-month all-method discontinuation rates for quality related reasons and the index of dissimilarity is even weaker (not shown).

a. Trends in all-method discontinuation rates

The utility of the all-method discontinuation rate for quality related reasons as an indicator of quality of care depends somewhat on the extent to which it can capture change over time. If quality of care improves over time then we would expect the rate of discontinuation for quality related reasons to decline. Seven of the 15 countries in this study have conducted prior DHS surveys with calendar data that make it possible to calculate discontinuation rates for earlier periods.[10] These are shown in Table 13. In six of the seven countries,[11] the 12 month all-method discontinuation rate for quality related reasons decreased between the two surveys. The declines are substantively small, however, ranging from 1 to 5 percentage points.

Standard errors for the rates can be calculated under the assumption of simple random sampling and used to construct confidence intervals (Namboodiri and Suchindran, 1987:116). These standard errors are underestimates because they do not account for the effects of the cluster sampling used in DHS surveys or other structural characteristics of the samples (design effects). In all except two countries (Dominican Republic and Peru), the 95 percent confidence intervals overlap, i.e., the rates from the two surveys are not significantly different from each other. Although it is not possible to draw definitive conclusions from these results since we do not have estimates of the design effects, they suggest that change over periods of five

[9] This component is comprised of a score that sums the number of the following that are available: male sterilization, female sterilization, pills and injectables, condoms, IUDs, abortion.

[10] Because the rates are based on roughly five years of retrospective data, the periods covered by the two estimates overlap to some degree for the surveys that are less than five years apart.

[11] For Brazil, the rates shown are for the Northeast region only because the earlier (1991) survey covered only this

years or less in the discontinuation rate for quality related reasons may not be detectable with sample sizes in the range utilized by DHS surveys.

b. Standardized rates

One of the reasons for differences between countries in all-method discontinuation rates could be differences in the method mix. Appendix Table A1 shows the 12-month all-method discontinuation rates for quality related reasons by first method used for the six most common methods. A woman who first used the pill and switched to injectables would be categorized under 'pill'. Similarly, a woman who used the condom followed by withdrawal would be classified as a condom user. The average all-method discontinuation rate for quality related reasons is very similar for the pill, injectable, condom, periodic abstinence and withdrawal but is lower for the IUD. Therefore, a country in which a large proportion of contraceptors use the IUD will tend to have a relatively low all-method discontinuation rate, all other things being equal.

In order to assess the relative effect of within-country method mix on the all-method rates for quality related reasons versus within-country method-specific discontinuation rates, we have calculated indirectly standardized rates.[12] The average method-specific rates are multiplied by the method mix (i.e., the distribution of segments by method) in each country and summed. The first column of Table 14 shows the results of applying the average rates to each country's method mix. These may be interpreted as the rates that would result if all countries had the same (all method by first method) discontinuation rates but their own observed method mix. They vary in a narrow range from approximately 17 to 25 percent while the observed rates vary from 9 to 34 percent (Table 12). The major factor influencing the standardized rate is the percentage of IUD use in the country, as expected. These results indicate that method mix is not the main determinant of the variation in all-method discontinuation rates across countries.

The standardized discontinuation ratio (SDR) is the ratio of the actual rate in each country to the standardized rate. It can be used to assess the extent to which the observed all-method rate diverges from what would be expected on average given the observed method mix. The SDR for nine of the 15 countries is in the range of 0.8-1.1, but it varies from 0.38 in Zimbabwe to 1.5 in Jordan. Again, these results suggest (indirectly) that the all-method rates would vary substantially even if all countries had the same method mix.

---

region.

[12] We are unable to calculate directly standardized rates by applying a standard method mix to each country's method-specific rates because some countries do not have sufficient numbers of cases to calculate method-specific rates for every method.

VIII. Fertility Consequences of Discontinuation and Failure

Contraceptive failure and discontinuation can make a substantial contribution to overall fertility rates and to rates of unwanted fertility. As fertility desires decline and contraceptive prevalence rises, the effectiveness with which couples use contraceptive methods becomes an increasingly important determinant of fertility levels (Bongaarts and Rodríguez, 1991). Aside from the effect on fertility rates, pregnancies that result from contraceptive failure and discontinuation (for reasons other than a desire to get pregnant) can influence induced abortion rates and may have negative effects on women and, ultimately, on their children (Montgomery et al., 1998).

In the 15 countries included in this analysis, the total fertility rate (TFR) would be between 4 and 29 percent lower in the absence of contraceptive failure (Table 14). The average across all countries is 14 percent. Consistent with the arguments of Bongaarts and Rodríguez (1991), the higher the contraceptive prevalence rate, the greater the relative contribution of contraceptive failure to fertility (Figure 9).

Table 15 also presents estimates of the percentage reduction in the TFR in the absence of contraceptive discontinuation. A birth is defined as "due" to a contraceptive discontinuation if it occurred within two years of a contraceptive discontinuation in the preceding pregnancy interval for any reason other than a desire to get pregnant or failure.[13] Without contraceptive discontinuation, the TFR would be reduced by between 20 (Indonesia) and 48 percent (Jordan). Unlike contraceptive failure, the reduction in TFR due to contraceptive discontinuation is not significantly associated with the contraceptive prevalence rate (data not shown). Overall, a third or more of the TFR is associated with either a contraceptive failure or a contraceptive discontinuation for reasons other than a desire to get pregnant in all 15 countries in this study, and more than half in Jordan, Brazil, Colombia and Peru.

As might be expected, contraceptive failure and discontinuation have an even greater impact on unwanted fertility. Table 16 (and Figure 10) present actual total unwanted fertility rates (TUFR) and the rates that would result if contraceptive failure and contraceptive discontinuation for any reason other than a desire to get pregnant[14] were eliminated. More than half of recent unwanted fertility was due to either a contraceptive

---

[13] That is, if the index birth occurred within two years of a contraceptive discontinuation for any reason other than desire to get pregnant but another pregnancy occurred between the discontinuation and the index birth, the index birth is not classified as due to a contraceptive discontinuation. We only count the first birth occurring after a discontinuation as 'due to' the discontinuation.

[14] The definition of an unwanted birth is based on the mother's response to the question "At the time you became pregnant with NAME, did you want to become pregnant then, did you want to wait until later, or did you want no (more)

failure or a contraceptive discontinuation in all countries except Guatemala. The TUFR would be between about 0.2 and 1.1 births lower in the absence of failure and discontinuation. In a few countries – Turkey, Colombia, Indonesia, Peru – the contribution of contraceptive failure to unwanted fertility equals or exceeds the contribution of all other types of discontinuation. Clearly, contraceptive discontinuation other than that resulting from a desire to get pregnant is a significant determinant of observed unwanted fertility levels in all of the countries included in this study. This suggests that family planning programs that aim to reduce unwanted births should pay close attention to women who are current users of contraception since a large proportion of these births are occurring among women who have recently used contraception, a conclusion consistent with that reached recently by Jain (1999).

IX. Summary and Discussion

In this study, we have examined contraceptive discontinuation across a diverse set of 15 countries in which overall contraceptive prevalence among married women ranges from 31 to 77 percent. There is also great variation in the distribution of specific methods used in these countries. The most-used method is the pill in six countries, the IUD in two countries, female sterilization in six countries, withdrawal in one country, and periodic abstinence in two countries.

children at all?" Births are classified as unwanted if the mother reported that she did not want any (more) children The responses to this question have been shown to be unreliable (Westoff and Bankole, 1998). In particular, women are less likely to report a birth as unwanted as the child gets older. Therefore, the proportion of all births that were actually unwanted when they were conceived is likely to be understated. Women who were using contraception or who had recently discontinued contraception at the time of an unwanted pregnancy might be more likely to report the resulting birth as unwanted than women who did not use contraception at all prior to the pregnancy. This reporting pattern would lead to an overstatement of the proportion of unwanted births that were the result of contraceptive failure or discontinuation. The size of this effect is unknown but we do not expect it to be large.

Despite the variation in the current contraceptive use patterns across countries, contraceptive discontinuation for quality related reasons emerges as a relatively common event in all countries. For purposes of this analysis, we have defined quality related reasons to include all reasons other than those that imply a reduced need for contraception. Within a year of starting use of a method, between 9 and 34 percent of women stop using contraception for reasons related to the quality of the service environment. Between one half and three quarters of all discontinuations are due to these reasons.

Hormonal methods and IUDs are most likely to be discontinued as a result of side effects and health concerns. In contrast, discontinuation of periodic abstinence and withdrawal is mostly due to other method-related reasons, such as contraceptive failure, a desire for a more effective method, and inconvenience of use. Women rarely cite the cost of the method or lack of access as the primary reason for discontinuing use. Similar findings that reveal women's emphasis on health concerns and side effects and the relative insignificance of cost or access have been found with respect to women's reasons for having 'unmet need' for contraception (Bongaarts and Bruce, 1995).

In all but three of the countries, the most common action women take after discontinuing use of a modern reversible method for method or service related reasons is to switch to a different modern method. In these countries, between 29 and 58 percent of women begin using a different modern method within three months of discontinuation. Few women return to the method they had discontinued. In contrast, women who experience a contraceptive failure and resume using after the birth are most likely to return to the same method.

One of the primary objectives of this study was to assess the validity of contraceptive discontinuation as a measure of quality of care. The all method discontinuation rate for quality related reasons emerges as the most likely candidate for a useful summary measure but the analysis provides mixed results on this issue as judged by the relationship of these rates to other measures that have been used to characterize the quality of the service environment. It is important to note, however, that the other measures of quality against which we are comparing contraceptive discontinuation may themselves be weak or incomplete indicators. As outlined in Jain's model, contraceptive choice is considered a core component of high quality family planning programs. If a low discontinuation rate reflects high quality services, then countries with wide contraceptive choice should also be those with low discontinuation rates. Our findings show that the 12 month all-method discontinuation rate for quality related reasons is not related to the access/availability component of the Family Planning Program Effort Score (which measures the number of methods available). In addition, this

rate is weakly *inversely* related to a summary measure of the skewness of method mix. In contrast, as hypothesized by Jain, the first-method discontinuation rate (which counts switching methods and stopping use as discontinuation) *is* significantly negatively related to the index of dissimilarity for method mix. Bongaarts and Bruce (1995) also recognized this link: "Good counseling may encourage clients to present problems at an earlier point and lead to switching, thus marginally reducing first-method continuation rates; but it may also lay the foundation for longer-term contraceptive use and greater client satisfaction. Using first-method continuation rates as indicators of quality of care…is therefore, not appropriate."

Zimbabwe and Indonesia have exceptionally low all-method rates of discontinuation for quality related reasons, although with different underlying dynamics of use. In Zimbabwe, the all-method vs. first-method discontinuation rates suggest that little switching of methods occurs. Also, the method mix is highly concentrated on the pill which accounts for almost 70 percent of use. About 65 percent of those who experience a contraceptive failure resume using the same method within a year. The low discontinuation rates may reflect women's preference for using the limited choices available to them rather than abandoning use entirely. In comparison, Indonesia has a much less concentrated method mix. It also has the highest rate for any country of adoption of a new modern method among those who discontinue and 39 percent of those who fail adopt a new modern method while only 41 percent adopt the same method. In the case of Indonesia, a low all-method discontinuation rate may reflect women's ability to choose a method that satisfies their needs at a given moment. In general, these results reveal that similar overall rates of discontinuation can reflect different sets of method choice circumstances.

The all-method discontinuation rate for quality related reasons is moderately and significantly negatively related to the total Family Planning Program Effort Score but the relationship is stronger between the rate and the service component of the FPPE Score. Some of the indicators included in this component are thought to be crucial indicators of service quality, such as the training and supervision of providers, but others may not be as directly related to service quality (e.g., mass media for IEC). The inverse relationship observed suggests that a low all-method discontinuation rate for quality related reasons may be a proxy for specific elements of the service environment.

Although our conclusions regarding the use of discontinuation rates as summary measures of quality of care are equivocal, the study clearly demonstrates the substantial fertility consequences of contraceptive discontinuation and failure. Across the 15 countries, between 10 and 34 percent of users become pregnant within three months of discontinuing use of a modern method for method- or service-related reasons. Further,

contraceptive failure accounts for between 4 and 29 percent of total fertility. Births that result from contraceptive failure become an increasingly important component of fertility as contraceptive prevalence increases, i.e., the higher the contraceptive prevalence, the greater the proportion of the total fertility rate due to contraceptive failure. An even greater proportion of recent fertility is associated with a contraceptive discontinuation. The total fertility rate would be between 20 and 48 percent lower in the absence of contraceptive discontinuation for any reason other than a desire to get pregnant or failure. This result implies that as fertility declines, family planning programs would profit from a shift in emphasis from providing methods to new clients towards providing services, such as counseling, that may help reduce discontinuation rates.

Not surprisingly, the impact of contraceptive failure and discontinuation is even greater on unwanted fertility. More than half of the total unwanted fertility rate was due to either a contraceptive failure or a contraceptive discontinuation in all countries except Guatemala. Clearly, the reduction of failure and discontinuation rates can make a substantial contribution to reducing unwanted fertility.

Overall, the results point to the utility of various measures of contraceptive discontinuation and failure for program monitoring and evaluation. Perhaps the best of these measures as an overall indicator of quality of care is the all-method rate for quality related reasons. The advantages of this measure over other types of discontinuation rates are, first, that it focuses on discontinuation of any method of contraception rather than on a specific method. It thus incorporates the notion that high rates of method switching (without unprotected gaps between methods) are not necessarily negatively related to quality. This type of discontinuation is of greater programmatic interest than discontinuation of a specific method because it leaves women unprotected from the risk of pregnancy. Second, this rate includes only those who discontinued for reasons other than a desire to get pregnant or reduced exposure to pregnancy risk; many of these reasons are ones that can effectively be addressed by improvement in the family planning program. One disadvantage is revealed by an examination of trends suggests that change in this indicator over relatively short periods of time (e.g., 3-5 years) may not be possible to detect with sample sizes in the range utilized in DHS surveys. In addition, we hesitate to recommend this measure unequivocally as a summary indicator of quality of care, however, because it does not have a consistent relationship with one of the core components of a high quality service environment - method choice.

Although we would not recommend ranking countries on the basis of discontinuation rates, it can be informative to compare the rates across countries and programs because this can highlight country-specific

patterns that are anomalous and that may deserve programmatic attention. For example, the all-method discontinuation rate for quality related reasons in Paraguay is second highest of any country included in this analysis. Injectable and condom discontinuation rates are particularly high. There appears to be a great deal of switching of methods with an unusually high proportion of women returning to the same modern method after discontinuing. Failure rates for injectable users in Paraguay are 1.5 times greater than the next highest country. These results suggest that the program may want to examine more closely the delivery of injectables and possibly condoms. The exceptionally high IUD discontinuation rates in Bangladesh and the Dominican Republic are other examples in which significant issues for country programs are highlighted by comparative analysis.

References

Ali, Mohamed and John Cleland. 1995. Contraceptive discontinuation in six developing countries: a cause-specific analysis. *International Family Planning Perspectives,* 21 (3): 92-97.

Ali, Mohamed M. and John Cleland. 1996. Determinants of contraceptive discontinuation in six developing countries: a discrete event history analysis approach. Paper presented at the annual Meeting of the Population Association of America, New Orleans.

Bertrand J., R. Magnani and J. Knowles. 1994. *Handbook of Indicators for Family Planning Program Evaluation*. Chapel Hill, North Carolina: The EVALUATION Project.

Bertrand, Jane, James Shelton, Janet Rice, and Tara Sullivan. 1998. Skewed method mix as an indicator of quality of care. Unpublished manuscript, MEASURE *Evaluation*.

Bongaarts, John and Germán Rodríguez. 1991. A new method for estimating contraceptive failure rates. In *Measuring the Dynamics of Contraceptive Use.* New York: United Nations: pp.52-64.

Bongaarts, John and Judith Bruce. 1995. The causes of unmet need for contraception and the social content of services. *Studies in Family Planning.* 26 (2): 57-75.

Cotten, Niki, John Stanback, Halima Maidouka, Joseph T. Taylor-Thomas, and Tom Turk. 1992. Early discontinuation of contraceptive use in Niger and The Gambia. *International Family Planning Perspectives,* 18 (4): 145-149.

Curtis, Siân L. and Charles R. Hammerslough. 1995. *Model Further Analysis Plan: Contraceptive Use Dynamics.* Calverton, Maryland: Macro International Inc.

Curtis, Siân L. and Ann K. Blanc. 1997. *Determinants of contraceptive failure, switching, and discontinuation: An analysis of DHS contraceptive histories.* DHS Analytical Reports. No. 6. Calverton, Maryland: Macro International Inc.

El-Tawila, Sahar. 1995. Contraceptive use dynamics in Egypt. In M. Mahran, F.H. El-Zanaty, and A.A. Way (eds.), *Perspectives on Fertility and Family Planning in Egypt: Results of Further Analysis of the 1992 Egypt Demographic and Health Survey*. Calverton, Maryland: National Population Council [Egypt] and Macro International Inc.

Enülü, Tayfun and Bahar Güçiz Doğan. 1996. Contraceptive use dynamics in Turkey. In A. Akin and M. Bertan (eds.), *Contraception, Abortion, and Maternal Health Services in Turkey: Results of Further Analysis of the 1993 Turkish Demographic and Health Survey*. Calverton, Maryland: Ministry of Health [Turkey] and Macro International Inc.

Fathonah, Siti. 1996. Contraceptive use dynamics in Indonesia. *DHS Working Papers*. No. 20. Calverton, Maryland: Macro International Inc.

Ferraz, Elisabeth Anhel. 1994. Dinâmica do uso da anticoncepção na Região Nordeste do Brasil: uma análise de descontinução, falha, e mudança de métodos com tábuas de mortalidade. *Seminário Sobre a Dinâmica da Anticoncepção na América Latina*. Calverton, Maryland: Macro International Inc.

Goldman, Noreen, Lorenzo Moreno, and Charles F. Westoff. 1989. *Peru Experimental Study: An Evaluation of Fertility and Child Health Information.* Columbia, Maryland: Institute for Resource Development/Macro Systems, Inc.

Gómez, Myriam Ordóñez. 1994. La dinámica anticonceptiva en Colombia: discontinuación del uso de métodos anticonceptivos, cambio y tasas de falla de los methodos. *Seminario Sobre La Dinámica Anticonceptiva en America Latina*. Calverton, Maryland: Macro International Inc.

Hotchkiss, David R., Robert J. Magnani, Jeffrey J. Rous, Mustapha Azelmat, Thomas A. Mroz, and Jaffar Heikel. 1995a. The effects of MCH service utilization on subsequent contraceptive use in Morocco. Unpublished manuscript, School of Public Health and Tropical Medicine, Tulane University Medical Center.

Hotchkiss, David R., Robert J. Magnani, Naomi Rutenberg, Luciano L. Correia, Gwendolyn T. Morgan, and Martha Scutula. 1995b. Access to family planning services, service quality, and contraceptive use in Northeast Brazil. Paper presented at the annual meeting of the Population Association of America, San Francisco.

Jain, Anrudh K. 1989. Fertility reduction and the quality of family planning services. *Studies in Family Planning* 20 (1): 1-16.

Jain, Anrudh K. 1999. Should eliminating unmet need for contraception continue to be a program priority? *International Family Planning Perspectives*. 25(Supplement): S39-S43, S49.

Koenig, Michael, Mian Bazzle Hossain, and Maxine Whittaker. 1997. The influence of quality of care upon contraceptive use in rural Bangladesh. *Studies in Family Planning* 28 (4): 278-289.

Kost, Kathryn. 1993. The dynamics of contraceptive use in Peru. *Studies in Family Planning*. 24 (2): 109-119.

Macro International Inc.. n.d. *Data Processing Editing Guidelines*. Calverton, Maryland.

Macro International Inc. 1995. *Model "A" Questionnaire with Commentary for High Prevalence Countries*. Calverton, Maryland: Macro International Inc.

Magnani, Robert J., David R. Hotchkiss, Curtis S. Florence, and Leigh Anne Shafer. 1999. The impact of the family planning supply environment on contraceptive intentions and use in Morocco. *Studies in Family Planning*. 30 (2): 120-132.

Mauldin, W. Parker and Robert J. Lapham. 1985. Measuring family planning program effort in developing countries, 1972 and 1982. In Nancy Birdsall *(ed.) The Effects of Family Planning on Fertility in the Developing World*. World Bank Staff Working Paper No. 677. Washington D.C.: The World Bank.

Mauldin, W. Parker and John A. Ross. 1991. Family planning programs: efforts and results, 1982-89. *Studies in Family Planning*, 22 (6): 350-367.

Melián, María Mercedes. 1994. La dinámica del uso de la anticoncepción en Paraguay: un análisis de discontinuación, falla, y cambio de métodos con tablas de vida. *Seminario Sobre La Dinámica Anticonceptiva en America Latina*. Calverton, Maryland: Macro International Inc.

Mensch, Barbara, Mary Arends-Kuenning, and Anrudh Jain. 1996. The impact of the quality of family planning services on contraceptive use in Peru. *Studies in Family Planning* 27 (2): 59-75.

Mitra, S.N. and Ahmed Al-Sabir. 1996. Contraceptive use dynamics in Bangladesh. *DHS Working Papers*. No. 21. Calverton, Maryland: Macro International Inc.

Montgomery, Mark, Cynthia B. Lloyd, Paul C. Hewett, and Patrick Heuveline. 1997. *The consequences of imperfect fertility control for children's survival, health, and schooling*. DHS Analytical Reports. No. 7. Calverton, Maryland: Macro International Inc.

Moreno, Lorenzo and Noreen Goldman. 1991. Contraceptive failure rates in developing countries: evidence from the Demographic and Health Surveys. *International Family Planning Perspectives*. 17 (2): 44-49.

Moreno, Lorenzo. 1993. Differences by residence and education in contraceptive failure rates in developing countries. *International Family Planning Perspectives*. 19: 54-60, 71.

Namboodiri, Krishnan and C.M. Suchindran. 1987. *Life Table Techniques and Their Applications.* (Orlando: Academic Press, Inc.).

National Statistics Office (NSO) [Philippines] and Macro International Inc. (MI) 1994. *National Demographic Survey 1993.* Calverton, Maryland: NSO and MI.

Padilla, Alberto. 1994. La dinámica del uso de la anticoncepción en el Perú: un análisis de discontinuación, falla, y cambio de métodos. *Seminario Sobre La Dinámica Anticonceptiva en America Latina*. Calverton, Maryland: Macro International Inc.

Pariani, Siti, David M. Heer, and Maurice D. Van Arsdol, Jr. 1991. Does choice make a difference to contraceptive use? Evidence from East Java. *Studies in Family Planning* 22 (6): 384-390.

Perez Aurora E. and Tita L. Tabije. 1996. Contraceptive discontinuation, failure and switching behavior in the Philippines. *DHS Working Papers*. No. 18. Calverton, Maryland: Macro International Inc.

Polanco, Juan José. 1994. La dinàmica del uso de la anticoncepción en la Republica Dominicana: un análisis de discontinuación, falla, y cambio de métodos con tablas de vida. *Seminario Sobre La Dinámica Anticonceptiva en America Latina*. Calverton, Maryland: Macro International Inc.

Ross, John A., W. Parker Mauldin, Vincent C. Miller. 1993. *Family Planning and Population: A Compendium of International Statistics*. New York: The Population Council.

Sambisa, William. 1996. Contraceptive use dynamics in Zimbabwe: discontinuation, failure and switching. *Zimbabwe Further Analysis*. Calverton, Maryland: Macro International Inc.

Steiner, M., R. Dominik, J. Trussell, and I. Hertz-Picciotto. 1996. Measuring Contraceptive Effectiveness: A Conceptual Framework. *Obstetrics and Gynecology*, 88 (3) (Supplement): 24S-30S.

Steele, Fiona, Siân L. Curtis, and Minja Choe. 1999. The impact of family planning service provision on contraceptive-use dynamics in Morocco. *Studies in Family Planning*. 30 (1): 28-42.

Strickler, Jennifer A., Robert J. Magnani, H. Gilman McCann, Lisanne F. Brown, Janet C. Rice. 1997. The reliability of reporting of contraceptive behavior in DHS calendar data: evidence from Morocco. *Studies in Family Planning*. 28(1): 44-53.

United Nations. 1995. Population and Development: Programme of Action Adopted at the International Conference on Population and Development, Cairo, 5-13 September 1994. New York: United Nations.

U.S. Agency for International Development. 1997. Strategic Plan. Washington, DC: USAID.

Westoff, Charles F., Noreen Goldman, and Lorenzo Moreno. 1990. *Dominican Republic Experimental Study: An Evaluation of Fertility and Child Health Information.* Columbia, Maryland: Institute for Resource Development/Macro Systems, Inc.

Westoff, Charles F. and Akin Bankole. 1998. The consistency and validity of reproductive attitudes: evidence from Morocco. *Journal of Biosocial Science*. 30, 4:439-455.

Table 1: Current Contraceptive Use

Percentage of currently married women age 15-49 who are currently using a contraceptive method, by method used, DHS surveys, 1990-1997.

Country	Method												
	Pill	IUD	Injection	Norplant	Vaginal	Condom	Female Sterili-zation	Male Sterili-zation	Periodic Abstinence	With-drawal	Other	Total	N
Sub-Saharan Africa													
Zimbabwe	33.1	1.0	3.2	0.2	0.0	2.3	2.3	0.2	0.1	4.2	1.7	48.1	3,788
North Africa, Asia, Near East													
Bangladesh	20.8	1.8	6.2	0.1	0.0	3.9	7.6	1.1	5.0	1.9	0.8	49.2	8,450
Egypt	10.4	30.0	2.4	0.0	0.1	1.4	1.1	0.0	0.8	0.5	1.0	47.9	13,710
Indonesia	17.1	10.3	15.2	4.9	0.0	0.9	3.1	0.7	1.1	0.8	0.8	54.7	26,186
Jordan	4.6	15.3	0.0	0.0	0.6	0.8	5.6	0.0	3.9	4.0	5.2	40.0	6,168
Morocco	28.1	3.2	0.1	0.0	0.2	0.9	3.0	0.0	3.0	2.6	0.3	41.5	5,118
Philippines	8.5	3.0	0.1	0.0	0.0	1.0	11.9	0.4	7.3	7.4	0.4	40.0	8,961
Turkey	4.9	18.8	0.1	0.0	1.2	6.6	2.9	0.0	1.0	26.2	0.9	62.6	6,271
Latin America and Caribbean													
Bolivia	2.8	8.1	0.8	0.0	0.1	1.3	4.6	0.0	22.0	1.7	3.9	45.3	5,334
Brazil	20.7	1.1	1.2	0.0	0.1	4.4	40.1	2.6	3.0	3.1	0.3	76.7	7,578
Colombia	12.9	11.1	2.5	0.7	1.4	4.3	25.7	0.7	5.2	5.8	1.8	72.2	6,097
Dominican Rep	12.9	2.5	0.5	0.6	0.3	1.4	40.9	0.1	1.8	1.9	0.7	63.7	4,983
Guatemala	3.8	2.6	2.5	0.0	0.0	2.2	14.3	1.5	3.6	0.9	0.1	31.4	7,984
Paraguay	13.6	5.7	5.2	0.0	0.8	2.6	7.4	0.0	5.3	2.9	5.0	48.4	3,574
Peru	6.2	12.0	8.0	0.3	0.7	4.4	9.5	0.2	18.0	3.2	1.6	64.2	16,885

Table 2: Source of Contraception

Percent distribution of current users of modern family planning methods by most recent source, DHS Surveys, 1990-1997

	Clinical Methods								Supply Methods							
	Government		Private						Government		Private					
Country	Stationary	Mobile	Pharmacy	Other	Other	Missing	Total	N	Stationary	Mobile	Pharmacy	Other	Other	Missing	Total	N
Sub-Saharan Africa																
Zimbabwe	56.4	7.7	0.0	30.7	1.9	3.3	100.0	136	55.5	27.9	2.4	11.7	1.6	0.8	100.0	1461
North Africa, Asia, Near East																
Bangladesh	87.1	0.8	0.0	5.9	6.1	0.1	100.0	896	13.9	2.2	18.5	53.3	11.9	0.1	100.0	2614
Egypt	44.8	0.0	0.0	54.8	0.4	0.0	100.0	4265	15.9	0.0	72.5	7.1	4.5	0.0	100.0	1975
Indonesia	65.2	5.0	0.0	20.6	9.0	0.2	100.0	4935	35.2	1.1	3.2	29.2	31.3	0.1	100.0	8695
Jordan	28.3	0.0	0.8	69.5	1.4	0.0	100.0	1290	9.1	0.0	63.9	25.3	1.6	0.0	100.0	367
Morocco	72.8	8.5	0.0	18.0	0.6	0.0	100.0	316	21.0	37.7	37.1	3.1	1.1	0.1	100.0	1503
Philippines	72.0	0.0	0.0	26.5	1.5	0.1	100.0	1369	71.2	0.0	19.1	6.2	2.8	0.7	100.0	858
Turkey	72.5	0.0	0.3	27.0	0.2	0.0	100.0	1361	24.6	0.0	69.0	3.6	2.4	0.4	100.0	804
Latin America and Caribbean																
Bolivia	39.9	0.0	0.7	57.5	0.4	1.5	100.0	680	14.6	1.4	69.3	9.9	3.5	1.5	100.0	269
Brazil	67.7	0.0	0.1	30.3	1.0	0.9	100.0	3325	9.2	0.0	85.9	2.1	2.6	0.1	100.0	2001
Colombia	41.1	0.4	0.0	58.4	0.1	0.0	100.0	2323	3.3	0.2	90.8	4.3	1.2	0.1	100.0	1293
Dominican Rep.	41.3	0.0	0.0	58.3	0.0	0.3	100.0	2201	16.2	2.3	61.5	14.5	5.1	0.5	100.0	750
Guatemala	31.4	0.0	0.0	67.6	0.8	0.2	100.0	1462	11.3	4.7	36.5	40.4	7.1	0.0	100.0	682
Paraguay	38.1	0.0	0.3	59.4	1.9	0.3	100.0	468	8.1	0.0	74.9	9.6	7.2	0.1	100.0	790
Peru	77.1	0.0	0.1	20.4	2.4	0.1	100.0	3706	64.3	0.0	29.2	3.7	2.6	0.2	100.0	3276

Table 3: Method Specific Discontinuation Rates

12-month life table discontinuation rates for selected methods, DHS surveys, 1990-97.

	Contraceptive method													
	Pill		IUD		Injections		Condom		Periodic Abstinence		Withdrawal		Total	
Country	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Sub-Saharan Africa														
Zimbabwe	15.7	2,445	-	49	16.2	134	45.0	312	-	36.0	29.6	345	20.1	3,329
North Africa, Asia, Near East														
Bangladesh	45.1	3,232	41.4	264	51.7	1,030	65.2	759	42.6	608	61.3	314	48.8	6,216
Egypt	47.1	3,015	14.6	4,626	53.4	479	56.2	391	46.1	133	-	107	30.7	8,802
Indonesia	34.0	5,338	15.5	1,851	29.3	5,829	52.0	333	33.2	376	36.3	296	27.9	15,297
Jordan	63.9	1,161	20.9	1,553	-	10	66.1	142	55.3	690	54.7	602	46.6	4,326
Morocco	37.4	2,869	18.7	252	-	33	-	108	51.7	368	46.6	272	39.4	3,945
Philippines	41.0	1,503	22.4	288	-	21	60.5	201	32.0	966	41.1	1,251	38.7	4,238
Turkey	56.0	756	10.2	1,218	-	23	49.5	734	-	126	39.6	2,252	38.0	5,274
Latin America and Caribbean														
Bolivia	58.1	578	12.1	533	75.0	194	69.1	221	38.8	2,293	55.6	241	42.8	4,118
Brazil	42.3	4,183	-	131	62.8	384	58.1	1,282	50.0	591	58.7	672	47.9	7,170
Colombia	52.7	2,483	19.4	979	67.0	684	63.9	1,020	53.4	1,225	62.4	1,088	53.8	7,989
Dominican Rep.	59.2	2,267	31.6	278	-	102	82.6	526	69.7	477	69.7	505	62.9	4,273
Guatemala	47.3	765	18.8	244	56.9	371	52.2	403	36.7	463	-	148	44.4	2,425
Paraguay	60.3	1,454	15.1	252	71.5	801	72.9	288	51.2	528	44.1	180	58.8	3,582
Peru	54.1	3,174	17.8	2,779	53.9	2,550	59.8	1,941	45.9	6,592	55.8	1,375	47.1	19,142

Note: Total includes Norplant and vaginal methods.
- Less than 125 cases.

Table 4: Contraceptive Failure

12-month life table net failure rates for selected methods, DHS surveys, 1990-97.

	Contraceptive method													
	Pill		IUD		Injections		Condom		Periodic Abstinence		Withdrawal		Total	
Country	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Sub-Saharan Africa														
Zimbabwe	2.2	2,445	-	49	1.4	134	4.3	312	-	36	9.4	345	3.3	3,329
North Africa, Asia, Near East														
Bangladesh	2.9	3,232	0.0	264	1.2	1,030	6.3	759	10.4	608	5.0	314	3.8	6,216
Egypt	6.6	3,015	1.4	4,626	0.7	479	10.3	391	16.3	133	-	107	3.9	8,802
Indonesia	4.2	5,338	1.9	1,851	1.6	5,829	5.7	333	12.2	376	11.4	296	3.0	15,297
Jordan	8.5	1,161	2.5	1,553	-	10	12.3	142	29.1	690	19.6	602	12.3	4,326
Morocco	5.9	2,869	2.2	252	-	33	-	108	25.0	368	11.2	272	8.0	3,945
Philippines	5.3	1,503	2.7	288	-	21	15.8	201	15.9	966	21.3	1,251	12.7	4,238
Turkey	6.6	756	1.0	1,218	-	23	8.4	734	-	126	15.4	2,252	10.1	5274
Latin America and Caribbean														
Bolivia	5.1	578	1.5	533	4.2	194	5.2	221	19.1	2,293	15.2	241	13.0	4,118
Brazil	4.8	4,094	-	131	4.3	384	5.2	1,282	18.1	591	17.1	672	7.1	7,170
Colombia	6.4	2,483	3.1	979	5.5	684	5.0	1,020	17.9	1,225	14.9	1,088	9.2	7,989
Dominican Rep.	7.1	2,267	2.1	278	-	102	7.0	526	25.3	477	16.7	505	9.8	4,273
Guatemala	5.3	765	0.0	244	2.6	371	11.2	403	14.6	463	-	148	7.7	2,425
Paraguay	2.7	1,454	1.8	252	8.1	801	4.3	288	18.2	528	10.9	180	6.8	3,582
Peru	5.5	3,174	0.6	2,779	2.4	2,550	6.8	1,941	23.5	6,592	17.9	1,375	12.1	19,142

Note: Total includes Norplant and vaginal methods.
- Less than 125 cases.

Table 5: Discontinuation due to Side Effects and Health Concerns

12-month life table net discontinuation rates for side effects and health concerns for selected methods, DHS surveys, 1990-97.

	Contraceptive method													
	Pill		IUD		Injections		Condom		Periodic Abstinence		Withdrawal		Total	
Country	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Sub-Saharan Africa														
Zimbabwe	4.5	2,445	-	49	5.4	134	1.8	312	-	36	0.0	345	3.8	3,329
North Africa, Asia, Near East														
Bangladesh	24.5	3,232	35.4	264	36.2	1,030	11.2	759	0.1	608	16.8	314	22.4	6,216
Egypt	20.5	3,015	8.6	4,626	29.4	479	3.2	391	0.0	133	-	107	13.2	8,802
Indonesia	11.0	5,338	8.5	1,851	15.1	5,829	2.1	333	0.8	376	0.0	296	10.9	15,297
Jordan	30.2	1,161	10.8	1,553	-	10	12.9	142	2.1	690	2.6	602	13.9	4,326
Morocco	11.1	2,869	9.9	252	-	33	-	108	0.6	368	0.8	272	9.3	3,945
Philippines	13.9	1,503	8.1	288	-	21	4.0	201	1.1	966	3.7	1,251	7.1	4,238
Turkey	22.5	756	6.3	1,218	-	23	0.5	734	-				5.0	5,274
Latin America and Caribbean														
Bolivia	35.1	578	7.3	533	37.1	194	5.7	221	1.1	2,293	2.0	241	8.8	4,118
Brazil	21.3	4,094	-	131	38.5	384	2.9	1,282	2.8	591	0.7	672	15.3	7,170
Colombia	23.6	2,483	11.6	979	34.0	684	0.4	1,020	0.5	1,225	0.9	1,088	12.4	7,989
Dominican Rep.	25.0	2,267	22.1	278	-	102	2.4	526	0.0	477	0.0	505	17.2	4,273
Guatemala	21.6	765	8.5	244	20.0	371	5.8	403	0.6	463	-	148	12.1	2,425
Paraguay	31.9	1,454	8.6	252	33.9	801	5.2	288	0.3	528	4.5	180	21.9	3,582
Peru	27.9	3,174	13.7	2,779	30.2	2,550	3.9	1,941	0.4	6,592	0.8	1,375	11.4	19,142

Note: Total includes Norplant and vaginal methods.
- Less than 125 cases.

Table 6: Discontinuation Due to Other Method-Related Reasons

12-month life table net discontinuation rates for method-related reasons (other than side effects or health concerns) for selected methods, DHS surveys 1990-97.

	Contraceptive method													
	Pill		IUD		Injections		Condom		Periodic Abstinence		Withdrawal		Total	
Country	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Sub-Saharan Africa														
Zimbabwe	1.5	2,445	-	49	0.8	134	12.7	312	-	36	9.7	345	3.3	3,329
North America, Asia, Near East														
Bangladesh	1.9	3,232	2.1	264	0.8	1,030	23.7	759	12.3	608	22.0	314	6.3	6,216
Egypt	2.7	3,015	0.4	4,626	8.2	479	31.9	391	16.7	133	-	107	3.5	8,802
Indonesia	3.4	5,338	3.0	1,851	1.2	5,829	26.3	333	7.5	376	15.1	296	3.1	15,297
Jordan	3.6	1,161	1.4	1,553	-	10	20.4	142	8.1	690	14.8	602	5.8	4,326
Morocco	0.7	2,869	2.6	252	-	33	-	108	11.8	368	20.5	272	4.4	3,945
Philippines	2.7	1,503	3.7	288	-	21	26.0	201	4.3	966	6.4	1,251	5.4	4,238
Turkey	3.5	756	0.1	1,218	-	23	25.5	734	-	126	11.3	2,252	9.9	5,274
Latin America and Caribbean														
Bolivia	3.6	578	0.6	533	5.4	194	29.8	221	5.8	2,293	22.9	241	7.4	4,118
Brazil	2.3	4,094	-	131	2.7	384	24.4	1,282	18.0	591	26.0	672	9.8	7,170
Colombia	4.9	2,483	1.5	979	6.1	684	33.1	1,020	20.0	1,225	26.8	1,088	15.1	7,989
Dominican Rep.	2.0	2,267	0.2	278	-	102	41.2	526	16.7	477	28.4	505	11.6	4,273
Guatemala	4.8	765	1.0	244	7.0	371	18.4	403	4.7	463	-	148	8.0	2,425
Paraguay	1.5	1,454	3.1	252	4.1	801	32.9	288	16.8	528	14.7	180	8.1	3,582
Peru	4.5	3,174	0.8	2,779	2.9	2,550	24.7	1,941	9.1	6,592	22.2	1,375	9.4	19,142

Note: Total includes Norplant and vaginal methods.
- Less than 125 cases.

Table 7: Discontinuation due to Service-Related Reasons

12-month life table net discontinuation rates for service-related reasons for selected methods, DHS surveys, 1990-97.

	Contraceptive method													
	Pill		IUD		Injections		Condom		Periodic Abstinence		Withdrawal		Total	
Country	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Sub-Saharan Africa														
Zimbabwe	1.0	2,445	-	49	2.1	134	1.1	312	-	36	0.0	345	1.0	3,329
North Africa, Asia, Near East														
Bangladesh	1.0	3,232	0.0	264	2.3	1,030	0.8	759	0.0	608	0.0	314	1.0	6,216
Egypt	0.3	3,015	0.0	4,626	1.4	479	0.3	391	0.0	133	-	107	0.2	8,802
Indonesia	0.4	5,338	0.1	1,851	2.7	5,829	0.0	333	0.0	376	0.0	296	1.2	15,297
Jordan	0.3	1,161	0.0	1,553	-	10	0.0	142	0.0	690	0.0	602	0.1	4,326
Morocco	0.1	2,869	0.0	252	-	33	-	108	0.0	368	0.0	272	0.2	3,945
Philippines	1.4	1,503	1.0	288	-	21	2.3	201	0.2	966	0.0	1,251	0.8	4,238
Turkey	1.6	756	0.0	1,218	-	23	2.8	734	-	126	0.0	2,252	0.7	5,274
Latin America and Caribbean														
Bolivia	2.4	578	0.1	533	8.0	194	2.2	221	0.0	2,293	0.0	241	0.9	4,118
Brazil	0.8	4,094	-	131	2.7	384	1.3	1,282	0.1	591	0.4	672	0.9	7,170
Colombia	1.3	2,483	0.0	979	4.2	684	1.9	1,020	0.0	1,225	0.0	1,088	1.1	7,989
Dominican Rep.	1.0	2,267	0.0	278	-	102	2.1	526	0.0	477	0.3	505	1.0	4,273
Guatemala	1.0	765	0.0	244	2.9	371	2.4	403	0.0	463	-	148	1.2	2,425
Paraguay	2.8	1,454	0.0	252	2.6	801	4.1	288	0.0	528	1.3	180	2.4	3,582
Peru	1.9	3,174	0.1	2,779	4.9	2,550	2.3	1,941	0.1	6,592	0.1	1,375	1.3	19,142

Note: Total includes Norplant and vaginal methods.
- Less than 125 cases.

Table 8: Behavior following discontinuation of a modern method

Cumulative life table net rates of re-adopting contraception or becoming pregnant at 0, 3, and 6 months following discontinuation of a modern reversible contraceptive method due to side effects/health concerns, method-related reasons, or service-related reasons, DHS surveys, 1990-97

	Behavior after discontinuation															
	Adopted modern method			Adopted same method			Adopted traditional method			Became pregnant			All behaviors			
Country	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	N
Sub-Saharan Africa																
Zimbabwe	23.8	25.1	25.2	NA	0.2	0.4	6.3	6.9	6.9	2.9	27.5	36.5	33.1	59.8	69.0	739
North Africa, Asia, Near East																
Bangladesh	46.8	50.0	51.0	NA	0.9	1.3	12.0	12.5	12.6	3.7	15.7	19.1	62.5	79.1	84.0	2,429
Egypt	36.8	42.6	43.0	NA	3.4	3.6	2.6	2.7	2.7	5.4	27.0	32.6	44.8	75.6	81.9	3,321
Indonesia	54.4	58.3	58.9	NA	0.4	0.5	3.2	3.5	3.6	1.9	9.7	13.7	59.5	71.8	76.8	4,646
Jordan	22.0	25.6	26.0	NA	1.8	1.8	16.4	18.5	18.5	7.8	33.6	39.2	46.2	79.6	85.5	1,122
Morocco	26.2	29.7	29.8	NA	1.1	1.7	19.0	20.0	20.0	2.7	23.0	29.6	48.0	73.7	81.1	901
Philippines	14.3	16.0	16.0	NA	0.4	0.9	23.9	24.4	25.3	8.6	23.2	30.8	46.8	64.1	72.9	602
Turkey	37.7	39.7	40.5	NA	1.2	1.3	32.5	33.8	33.8	1.5	13.6	15.6	71.7	88.2	91.2	1,119
Latin America and Caribbean																
Bolivia	29.5	34.3	34.9	NA	7.0	7.9	28.4	29.7	29.8	3.3	15.6	17.8	61.1	86.7	90.5	737
Brazil	39.3	40.9	44.8	NA	9.6	10.8	16.9	17.3	17.3	1.1	15.6	19.7	57.3	83.4	89.4	2,672
Colombia	48.6	50.7	51.6	NA	2.0	2.2	19.9	20.5	20.6	2.5	13.6	16.7	71.0	86.8	91.2	2,767
Dominican Rep.	25.1	29.4	29.8	NA	0.3	0.3	14.2	14.8	14.9	9.1	28.7	36.9	48.3	73.2	82.0	1,372
Guatemala	36.2	40.0	40.6	NA	0.1	0.1	8.6	8.8	9.0	7.0	20.4	28.4	51.9	69.3	78.1	674
Paraguay	40.2	42.7	43.1	NA	10.7	11.6	23.0	23.6	23.8	0.3	10.2	12.9	63.6	87.2	91.5	1,302
Peru	45.2	50.2	51.2	NA	1.3	1.4	22.9	24.1	24.4	0.7	10.5	13.3	68.8	86.1	90.3	5,351

- Less than 125 cases
NA Not applicable

Table 9: Behavior following discontinuation of a traditional method.

Cumulative life table net rates of re-adopting contraception or becoming pregnant at 0, 3, and 6 months following discontinuation of a traditional contraceptive method due to side effects/health concerns, method-related reasons, or service-related reasons, DHS surveys, 1990-97.

Country	Behavior after discontinuation															
	Adopted modern method			Adopted same method			Adopted traditional method			Became pregnant			All behaviors			
	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	N
Sub-Saharan Africa																
Zimbabwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57
North Africa, Asia, Near East																
Bangladesh	82.2	84.0	84.7	NA	0.0	0.0	11.6	11.6	11.6	1.2	2.8	2.8	94.9	98.4	99	248
Egypt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58
Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97
Jordan	47.0	49.6	49.6	NA	1.1	1.4	16.3	17.1	17.1	3.8	15.9	21.7	67	83.7	89.8	221
Morocco	74.1	75.0	75.0	NA	0.0	0.0	12.0	12.0	12.0	4.8	10.5	10.5	90.8	97.5	97.5	127
Philippines	35.1	35.8	36.2	NA	0.0	0.0	21.1	24.2	24.9	10.7	16.5	18.9	66.9	76.4	80	246
Turkey	87.2	88.4	88.4	NA	0.0	0.0	4.7	4.7	4.7	0.4	3.4	4.0	92.3	96.5	97.0	441
Latin America and Caribbean																
Bolivia	64.7	67.5	67.9	NA	1.3	1.5	16.4	17.2	17.4	1.3	3.0	3.3	82.4	89	90.1	321
Brazil	81.9	84.0	85.3	NA	0.0	0.0	5.6	5.6	5.6	1.6	3.7	4.6	89.0	93.2	95.4	404
Colombia	76.2	77.5	77.7	NA	0.1	0.1	12.7	12.7	12.7	2.6	5.9	6.2	91.5	96.2	96.7	764
Dominican Rep	56.9	64.2	64.7	NA	0.1	0.1	15.9	15.9	15.9	4.0	9.5	12.6	76.8	89.8	93.4	276
Guatemala	-	-	-	NA	-	-	-	-	-	-	-	-	-	-	-	90
Paraguay	78.8	80.2	81.7	NA	0.0	0.0	7.1	7.1	7.1	0.3	2.9	2.9	86.2	90.2	91.7	161
Peru	78.3	79.8	80.1	NA	0.0	0.0	11.8	12.2	12.2	0.8	2.5	3.4	90.9	94.5	95.8	1,550

- Less than 125 cases
NA Not applicable

Table 10: Behavior following failure of a modern method

Cumulative life table net rates of re-adopting contraception or becoming pregnant at 3, 6, and 12 months following a pregnancy that resulted from the failure of a modern contraceptive method, DHS surveys, 1990-97.

	Behavior after discontinuation															
	Adopted modern method			Adopted same method			Adopted traditional method			Became pregnant			All behaviors			
Country	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	N
Sub-Saharan Africa																
Zimbabwe	9.8	11.9	12.9	60.5	63.5	65.4	3.7	3.7	3.7	2.8	3.6	4.5	76.8	82.7	86.6	242
North Africa, Asia, Near East																
Bangladesh	15.5	18.0	23.8	26.0	29.3	41.1	2.8	2.8	4.2	1.6	4.0	4	46.0	54.2	73.1	220
Egypt	26.6	28.7	31.6	32.9	36.4	42.0	4.0	4.0	4.0	3.7	5.2	7.1	67.2	74.3	84.8	747
Indonesia	30.8	36.2	39.0	32.3	35.9	40.5	0.8	0.9	0.9	0.7	1.9	4.4	64.6	75.0	84.8	1,002
Jordan	23.3	25.4	26.3	31.3	32.7	34.9	17.0	17.4	18.3	3.9	6.3	11.7	75.4	81.9	91.3	321
Morocco	7.9	9.2	10.2	43.6	48.6	57.5	3.3	3.6	3.6	2.0	3.2	4.2	56.7	64.5	75.5	374
Philippines	11.2	12.5	13.1	26.8	32.5	38.1	10.6	13.5	15.3	3.7	5.4	12.5	52.4	63.9	79.0	198
Turkey	32.7	33.1	34.9	33.5	34.8	35.5	17.4	18.5	18.5	1.6	3.4	5.1	85.3	89.8	93.9	295
Latin America and Caribbean																
Bolivia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Brazil	32.1	33.3	33.6	42.2	46.6	49.5	3.4	3.4	3.4	4.1	4.5	6.7	81.7	87.9	93.3	578
Colombia	38.9	41.9	42.4	25.5	27.6	28.9	15.9	17.0	17.7	1.0	2.4	3.6	81.3	88.9	92.6	529
Dominican Rep.	26.1	29.1	30.7	35.7	39.2	42.8	6.8	7.0	7.0	2.6	4.6	8.4	71.1	80.0	89.0	272
Guatemala	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	149
Paraguay	27.2	31.4	33.4	26.7	28.9	36.3	5.5	5.9	5.9	2.5	8.4	12.4	61.9	74.6	87.9	155
Peru	31.4	36.5	41.4	18.0	20.6	24.6	13.1	14.2	18.0	2.2	3.0	5.4	64.7	74.3	89.4	743

- Less than 125 cases.

Table 11: Behavior following failure of a traditional method

Cumulative life table net rates of re-adopting contraception or becoming pregnant at 3, 6, and 12 months following a pregnancy that resulted from the failure of a traditional contraceptive method, DHS surveys, 1990-97.

	Behavior after discontinuation															
	Adopted modern method			Adopted same method			Adopted traditional method			Became pregnant			All behaviors			
Country	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	0 Months	3 Months	6 Months	N
Sub-Saharan Africa																
Zimbabwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90
North Africa, Asia, Near East																
Bangladesh	18.6	25.1	33.0	10.1	13.8	26.0	1.3	3.1	3.6	3.1	5.1	6.5	33.1	47.1	69.1	134
Egypt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48
Indonesia	24.7	32.1	38.1	42.2	47.0	47.7	2.2	2.2	2.5	0.4	2.6	3.0	69.5	83.9	91.3	176
Jordan	26.2	28.0	29.1	39.2	41.2	42.6	12.5	12.5	12.9	6.3	9.9	12.3	84.2	91.7	97.0	422
Morocco	29.6	32.4	33.2	39.0	41.0	44.7	3.3	3.3	4.1	1.1	2.5	4.0	73.0	79.0	85.9	191
Philippines	10.7	12.9	15.6	45.8	51.6	56.9	4.0	5.2	5.9	2.9	4.9	8.5	63.4	74.6	86.9	763
Turkey	29.7	31.6	32.5	57.6	58.4	59.3	2.8	2.8	2.8	1.5	2.0	2.8	91.7	94.8	97.5	783
Latin America and Caribbean																
Bolivia	9.1	10.6	11.8	29.0	36.1	50.0	8.2	9.4	10.3	2.3	3.7	5.7	48.5	59.6	77.8	791
Brazil	50.8	53.2	54.7	26.3	27.5	27.7	3.7	3.9	3.9	2.0	4.3	7.2	82.8	88.9	93.6	374
Colombia	32.9	35.4	36.5	31.8	36.8	40.0	8.4	9.8	10.7	0.9	1.9	2.8	74.1	83.9	90	605
Dominican Rep.	44.9	48.4	52.0	21.3	23.5	25.2	8.3	9.6	9.6	0.9	2.7	6.6	75.4	84.1	93.4	240
Guatemala	25.7	26.1	29.6	42.5	45.7	49.3	0.2	0.2	0.5	1.5	1.8	3.8	70.0	73.8	83.1	162
Paraguay	22.9	27.2	32.9	37.5	42.1	43.9	3.9	5.3	7.0	2.2	5.6	7.5	66.5	80.3	91.3	195
Peru	18.0	22.0	26.6	19.8	25.5	39.6	7.0	7.9	8.8	1.5	2.3	4.3	46.3	57.7	79.3	3,041

- Less than 125 cases.

Table 12: All-Method Discontinuation Rates (excluding sterilization)

12, 24, and 36-month cumulative net discontinuation rates excluding sterilization, by reason for discontinuation, DHS surveys, 1990-97.

	Reason for discontinuation									
	Reduced need			Quality related reasons			All reasons			
Country	12 Months	24 Months	36 Months	12 Months	24 Months	36 Months	12 Months	24 Months	36 Months	N
Sub-Saharan Africa										
Zimbabwe	6.9	20.8	31.3	9.4	23.0	31.9	16.3	43.8	63.2	3,065
North Africa, Asia, Near East										
Bangladesh	12.8	19.4	24.8	21.1	28.5	34.9	33.9	47.8	59.7	4,423
Egypt	8.9	18.7	25.7	13.8	22.9	29.5	22.7	41.6	55.2	7,351
Indonesia	7.3	12.8	18.7	10.4	16.5	21.0	17.7	29.2	39.7	12,135
Jordan	10.1	18.9	24.9	27.9	42.1	49.9	38.0	61.0	74.8	3,663
Morocco	15.8	25.5	32.1	16.6	28.3	36.1	32.4	53.8	68.2	3,384
Philippines	7.9	13.3	16.8	25.8	40.8	48.7	33.6	54.1	65.5	3,802
Turkey	9.1	14.5	18.6	16.5	25.8	32.5	25.6	40.3	51.0	3,857
Latin America and Caribbean										
Bolivia	8.8	14.1	17.3	22.7	37.5	45.4	31.5	51.6	62.7	3,313
Brazil	10.9	17.2	22.3	23.6	33.7	40.3	34.5	51.0	62.6	5,307
Colombia	14.4	22.1	27.4	21.1	31.0	37.3	35.5	53.1	64.8	5,326
Dominican Rep.	19.6	27.4	32.5	33.7	43.9	49.2	53.3	71.3	81.7	3,444
Guatemala	8.9	16.7	22.6	25.9	35.7	42.6	34.8	52.4	65.2	2,023
Paraguay	9.5	15.0	19.4	33.4	42.3	47.9	42.9	57.3	67.3	2,494
Peru	8.9	13.7	17.3	23.2	35.0	42.2	32.1	48.6	59.5	13,525

Table 13: Trends in All-Method Discontinuation Rates

12 month all-method discontinuation rates (excluding sterilization) by reason for discontinuation for subsequent surveys

	Reason for discontinuation			Standard error (quality related reasons)	95 percent confidence interval (quality related reasons)	N
	All	Reduced need	Quality related			
Bangladesh, 1996/97	33.9	12.8	21.1	0.7	19.8 - 22.3	4,423
Bangladesh, 1993/94	36.2	12.9	23.4	0.7	22.1 - 24.7	4,728
Change	**-2.3**	**-0.1**	**-2.3**			
Egypt, 1995/96	22.7	8.9	13.8	0.4	13.0 - 14.6	7,351
Egypt, 1992	23.1	8.1	15.0	0.5	14.0 - 16.1	5,171
Change	**-0.4**	**0.8**	**-1.2**			
Indonesia, 1994	17.7	7.3	10.4	0.3	9.8 - 11.0	12,135
Indonesia, 1991	18.3	6.7	11.6	0.3	10.9 - 12.3	9,745
Change	**-0.6**	**0.6**	**-1.2**			
Brazil(NE), 1996	42.3	13.9	28.4	1.3	25.8 - 30.9	1,321
Brazil (NE), 1991	43.9	10.8	33.1	1.1	30.9 - 35.3	1,981
Change	**-1.6**	**3.1**	**-4.7**			
Colombia, 1995	35.5	14.4	21.1	0.6	20.0 - 22.3	5,326
Colombia, 1990	31.4	11.5	19.9	0.7	18.4 - 21.4	3,241
Change	**4.1**	**2.9**	**1.2**			
Dominican Rep., 1996	53.3	19.6	33.7	0.9	32.0 - 35.4	3,444
Dominican Rep., 1991	58.2	20.5	37.7	1.0	35.7 - 39.6	2,582
Change	**-4.9**	**-0.9**	**-4.0**			
Peru, 1996	32.1	8.9	23.2	0.4	22.5 - 24.0	13,525
Peru, 1991/92	36.4	10.3	26.2	0.6	25.1 - 27.3	6,974
Change	**-4.3**	**-1.4**	**-3.0**			

Table 14: Indirectly Standardized All-Method Discontinuation Rates

Country	Standardized rate	Standardized discontinuation ratio
Sub-Saharan Africa		
Zimbabwe	25.00	0.38
North Africa, Asia, Near East		
Bangladesh	24.59	0.86
Egypt	16.53	0.83
Indonesia	23.70	0.44
Jordan	18.46	1.51
Morocco	24.48	0.68
Philippines	23.18	1.11
Turkey	20.53	0.80
Latin America and Caribbean		
Bolivia	22.07	1.03
Brazil	24.74	0.95
Colombia	22.50	0.94
Dominican Rep.	23.86	1.41
Guatemala	23.38	1.11
Paraguay	24.13	1.38
Peru	21.91	1.06

Table 15: Fertility Effects of Contraceptive Failure and Discontinuation

Total fertility rate for the three years preceding the survey in the absence of contraceptive failure and discontinuation and percent reduction in the TFR without failure and discontinuation, DHS Surveys, 1990-1997.

	Total fertility rate (TFR)				Percent reduction in TFR		
Country		Without failure	Without discon-tinuation	Without both	Without failure	Without discon-tinuation	Without both
Sub-Saharan Africa							
Zimbabwe	4.28	3.81	3.37	2.90	11	21	32
North Africa, Asia, Near East							
Bangladesh	3.23	3.00	2.37	2.14	7	27	34
Egypt	3.63	3.32	2.36	2.05	9	35	44
Indonesia	2.86	2.64	2.28	2.06	8	20	28
Jordan	5.57	4.71	2.89	2.03	15	48	64
Morocco	4.03	3.50	2.90	2.37	13	28	41
Philippines	4.07	3.56	2.67	2.17	13	34	47
Turkey	2.52	2.13	1.87	1.48	15	26	41
Latin America and Caribbean							
Bolivia	4.74	3.87	3.44	2.56	18	27	46
Brazil	2.52	2.01	1.75	1.24	20	31	51
Colombia	2.95	2.15	2.26	1.47	27	23	50
Dominican Rep.	3.16	2.78	2.03	1.65	12	36	48
Guatemala	5.11	4.91	3.54	3.34	4	31	35
Paraguay	4.70	4.05	3.06	2.41	14	35	49
Peru	3.53	2.50	2.70	1.67	29	24	53

Table 16: Unwanted Fertility Effects of Contraceptive Failure and Discontinuation

Total unwanted fertility rate for the three years preceding the survey in the absence of contraceptive failure and discontinuation and percent reduction in the TUFR without failure and discontinuation, DHS Surveys, 1990-1997.

	Total unwanted fertility rate (TUFR)				Percent reduction in TUFR		
Country		Without failure	Without discon-tinuation	Without both	Without failure	Without discon-tinuation	Without both
Sub-Saharan Africa							
Zimbabwe	0.48	0.36	0.34	0.23	25	29	52
North Africa, Asia, Near East							
Bangladesh	0.46	0.38	0.26	0.18	17	43	61
Egypt	0.87	0.66	0.47	0.26	24	46	70
Indonesia	0.29	0.20	0.20	0.11	31	31	62
Jordan	1.44	1.06	0.69	0.32	26	52	78
Morocco	0.97	0.68	0.62	0.33	30	36	66
Philippines	0.80	0.65	0.51	0.35	19	36	56
Turkey	0.60	0.38	0.40	0.18	37	33	70
Latin America and Caribbean							
Bolivia	1.89	1.40	1.35	0.86	26	29	54
Brazil	0.62	0.42	0.38	0.18	32	39	71
Colombia	0.70	0.37	0.47	0.13	47	33	81
Dominican Rep.	0.33	0.29	0.20	0.15	12	39	55
Guatemala	0.71	0.63	0.48	0.40	11	32	44
Paraguay	0.40	0.31	0.21	0.13	23	48	68
Peru	1.37	0.83	0.98	0.44	39	28	68

Table A.1: 12 month all-method discontinuation rates for quality related reasons by first method used, selected DHS surveys

	Pill		IUD		Injectable		Condom		Periodic Abstinence		Withdrawal		Total	
Country	Rate	Pct. of segments	Rate	Pct. of segments	Rate	Pct. of segments	Rate	Pct. of segments	Rate	Pct. of segments	Rate	Pct. of segments	Rate	Pct of segments
Sub-Saharan Africa														
Zimbabwe	8.5	77.2	-	0.8	-	2.2	13.7	8.5	-	1.0	12.1	10.3	9.4	100.0
North Africa, Asia, Near East														
Bangladesh	21.8	58.2	12.1	3.9	25.5	14.1	22.0	10.6	15.6	9.3	15.5	3.9	21.1	100.0
Egypt	22.1	35.1	6.7	55.6	32.9	4.2	22.6	3.3	-	0.9	-	0.9	13.8	100.0
Indonesia	14.0	33.0	6.2	14.5	9.7	45.8	15.7	2.1	16.2	2.5	17.4	2.2	10.4	100.0
Jordan	37.9	28.4	12.3	39.5	-	0.2	-	2.7	36.6	15.9	35.6	13.4	27.9	100.0
Morocco	16.4	80.1	8.5	4.9	-	0.7	-	1.5	21.7	6.9	13.3	5.9	16.6	100.0
Philippines	25.0	36.6	14.7	6.7	-	0.4	38.2	4.1	22.2	22.6	30.2	29.6	25.8	100.0
Turkey	27.3	14.7	5.4	21.1	-	0.5	16.6	13.4	-	2.0	16.6	48.3	16.5	100.0
Latin America and Caribbean														
Bolivia	31.7	12.3	7.2	12.7	-	3.3	19.1	3.9	23.2	62.1	26.8	5.6	22.7	100.0
Brazil	23.8	65.0	-	1.1	34.4	4.1	20.7	15.4	19.4	6.0	26.3	8.5	23.6	100.0
Colombia	24.7	35.0	8.3	13.1	26.5	7.3	15.7	12.9	21.9	16.2	22.2	15.5	21.1	100.0
DR	33.5	60.0	18.1	6.1	-	1.9	39.2	11.6	31.8	9.4	37.5	10.9	33.7	100.0
Guatemala	32.4	33.2	-	8.6	22.9	14.8	29.4	17.4	21.4	20.1	-	5.9	25.9	100.0
Paraguay	39.8	46.1	6.9	7.4	40.4	22.0	-	5.1	24.0	14.1	21.8	5.2	33.4	100.0
Peru	25.1	15.4	6.5	16.0	23.1	11.8	23.0	8.9	28.7	40.1	23.6	7.8	23.2	100.0
Average	25.6		9.4		26.9		23.0		23.6		23.0			

- Less than 125 cases

Figure 2
12-month first-method discontinuation rate by index of dissimilarity for method choice

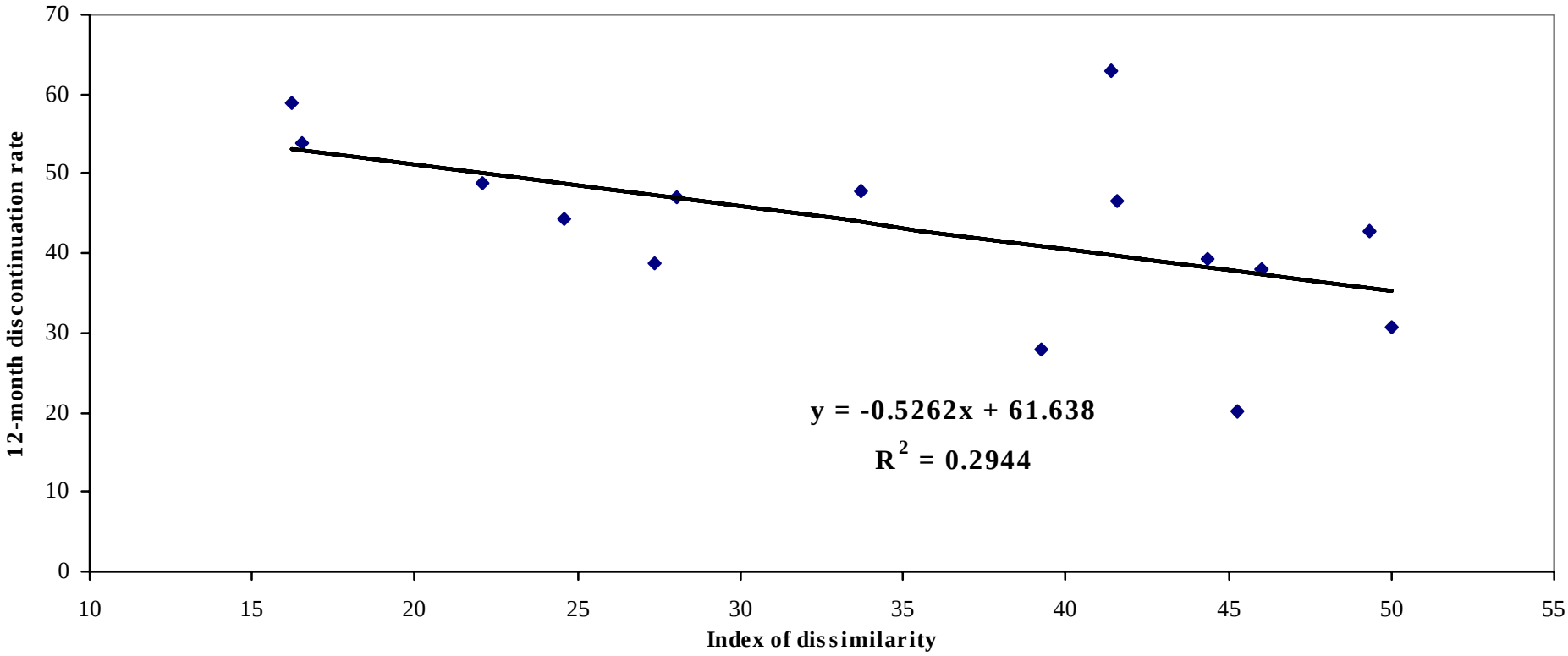


Figure 3

Percentage of modern method users who switch immediately to another method after discontinuation by index of dissimilarity for method choice

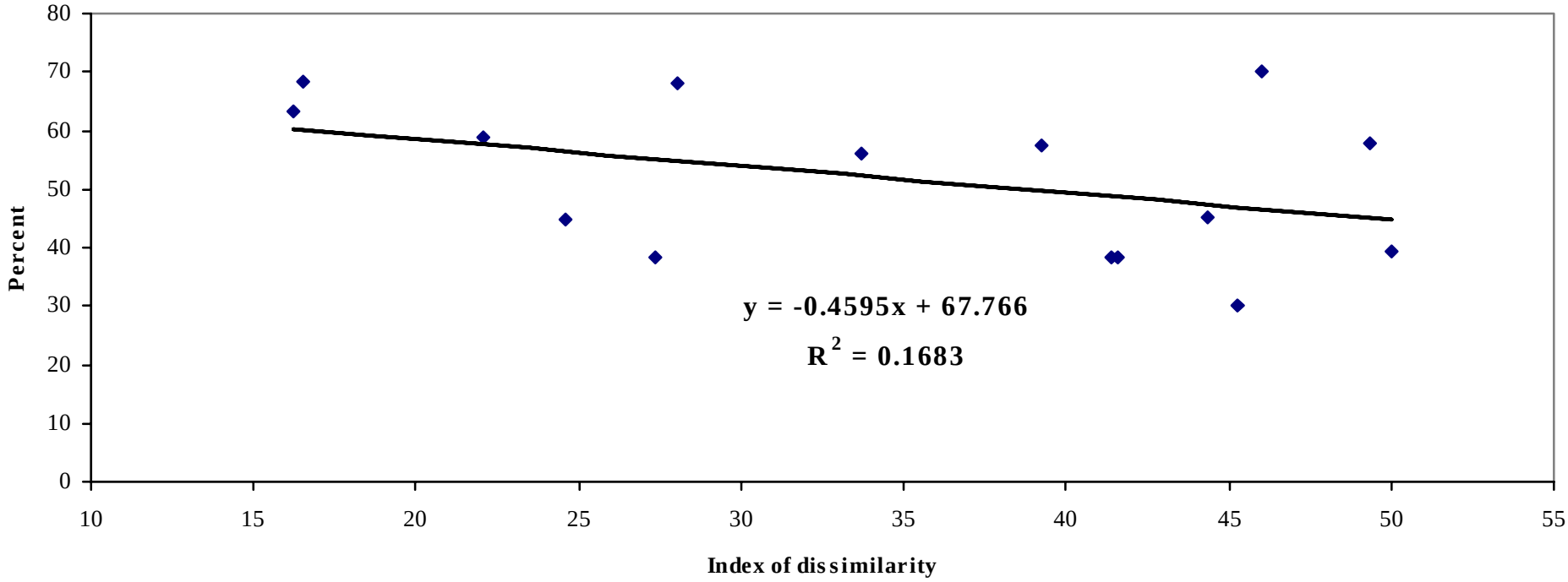


Figure 4

12 month cumulative all-method (excluding sterilization) discontinuation rates

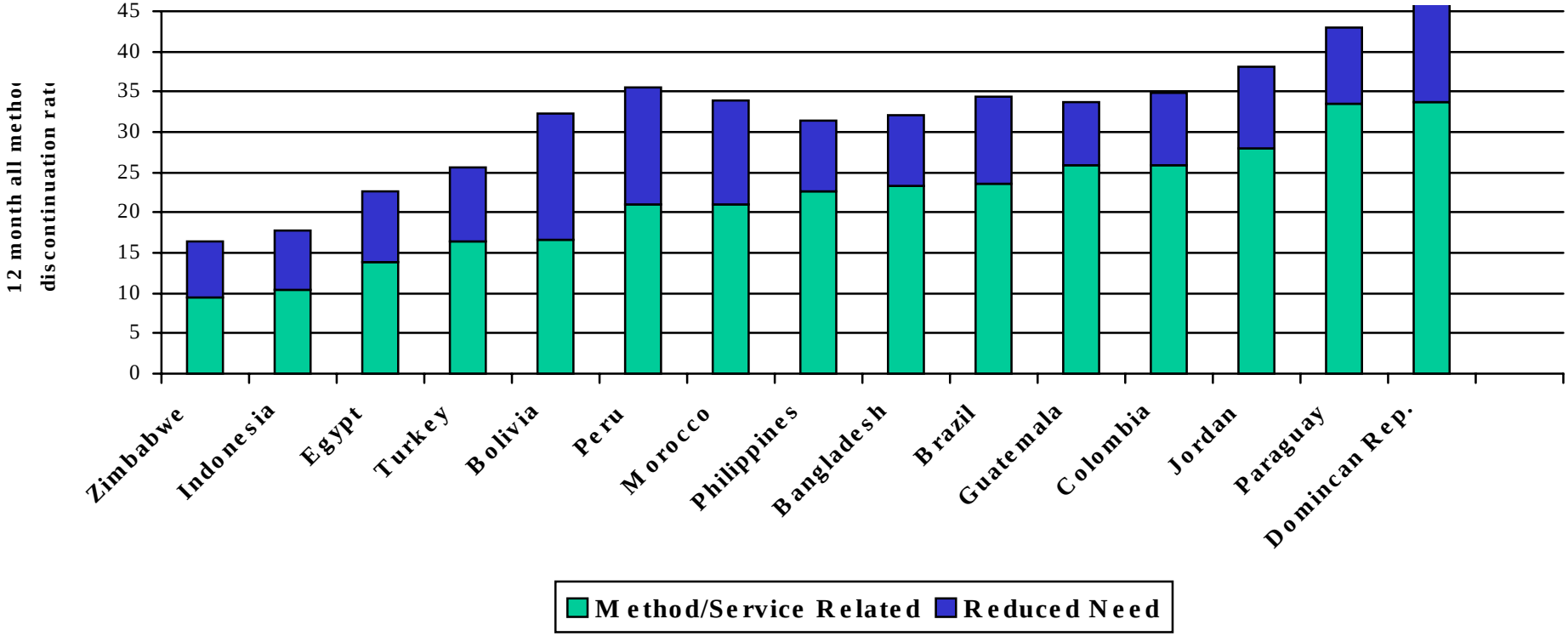


Figure 5

12 month cumulative all-method discontinuation rates for quality related reasons by total program effort score

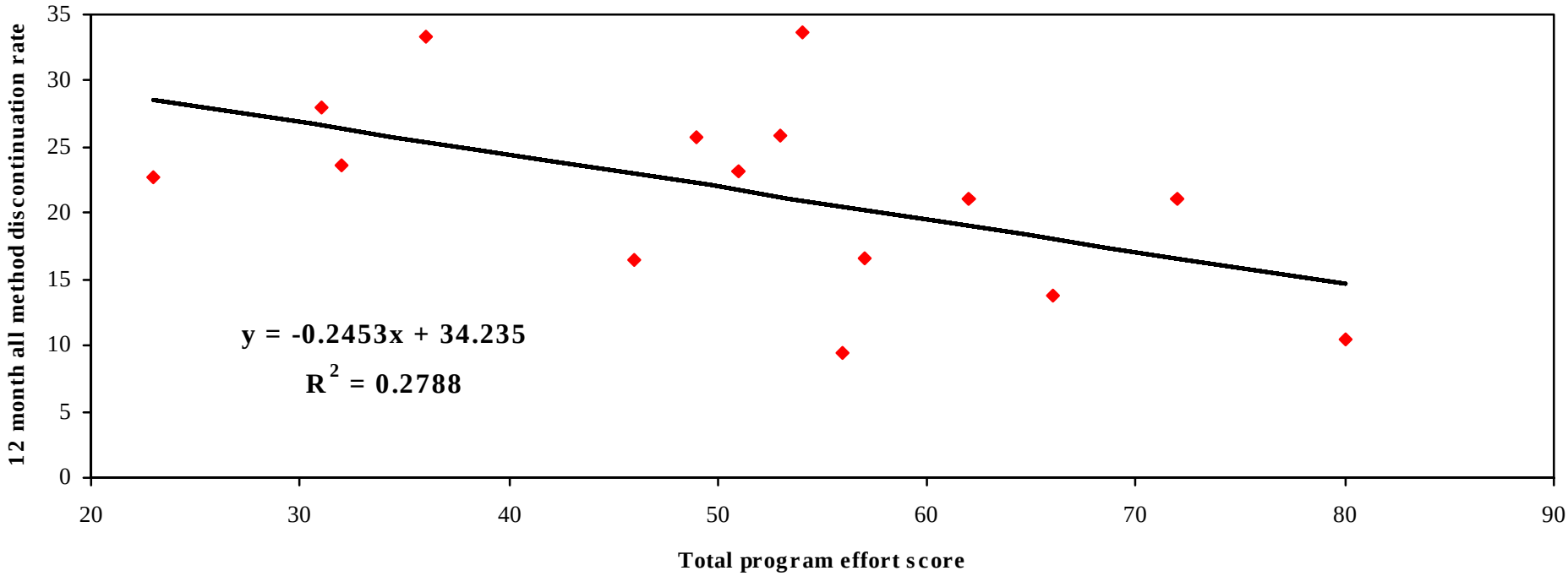


Figure 6

12 month cumulative all-method discontinuation rate for quality related reasons by service related program effort score

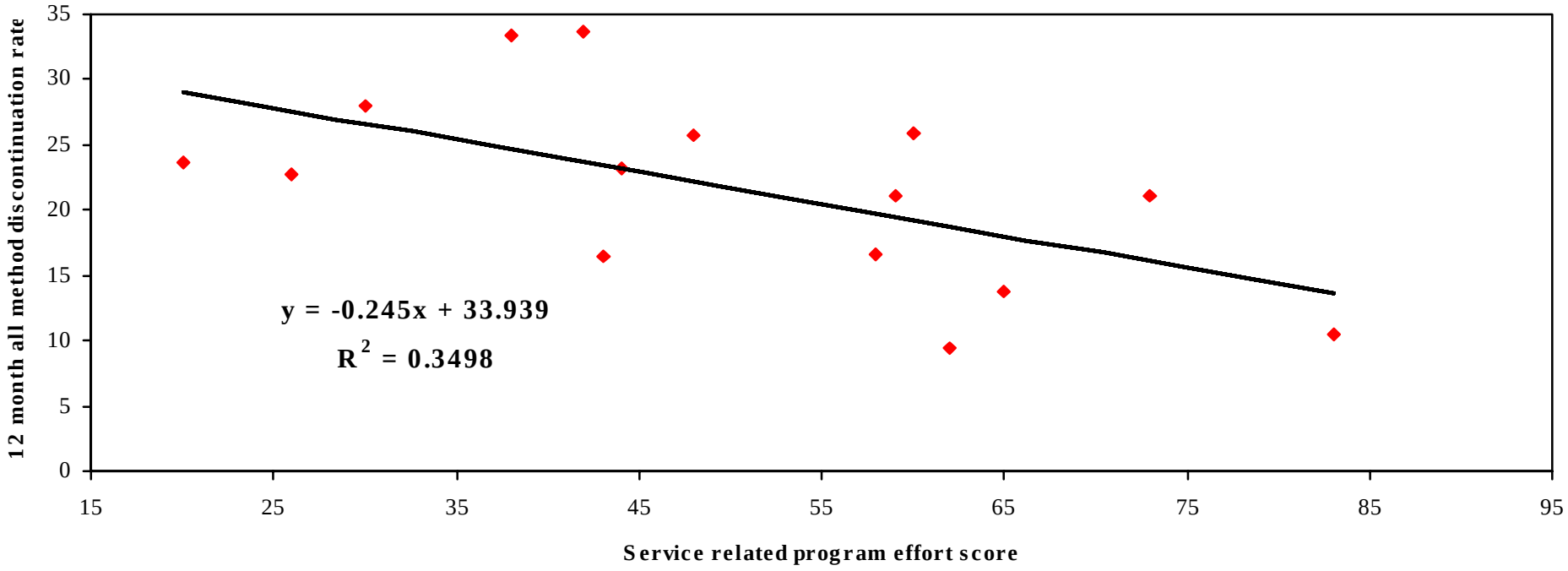


Figure 7
12-month cumulative all-method discontinuation rate for quality related reasons by access program effort score

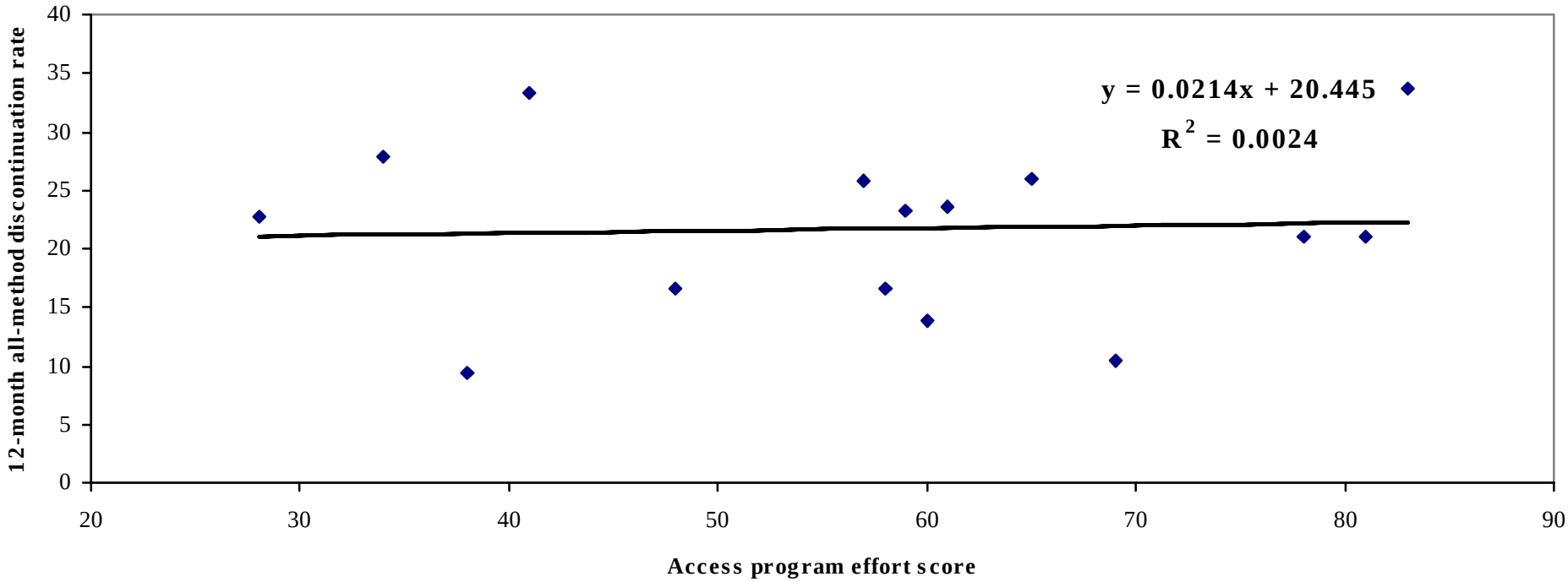


Figure 8

12-month cumulative all-method discontinuation rate for quality related reasons by index of dissimilarity for method choice

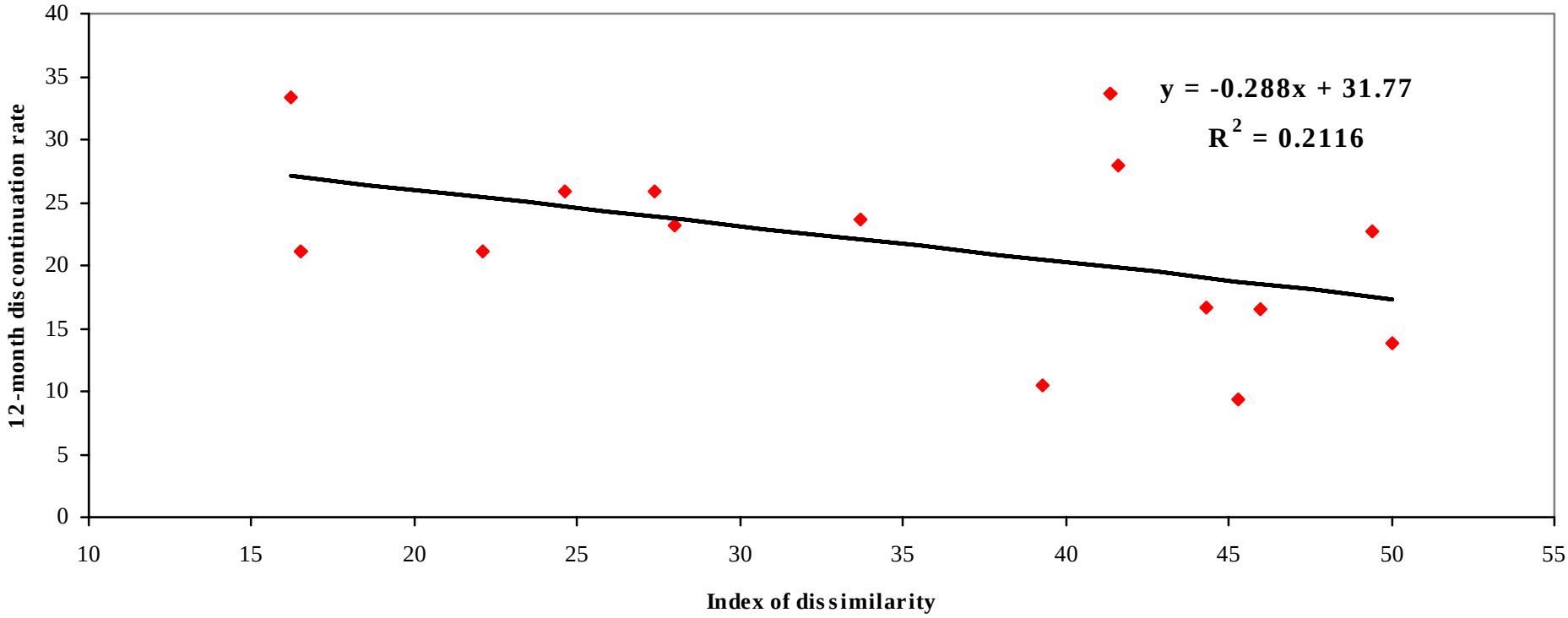


Figure 9
Percentage of total fertility rate due to contraceptive failure by contraceptive prevalence rate

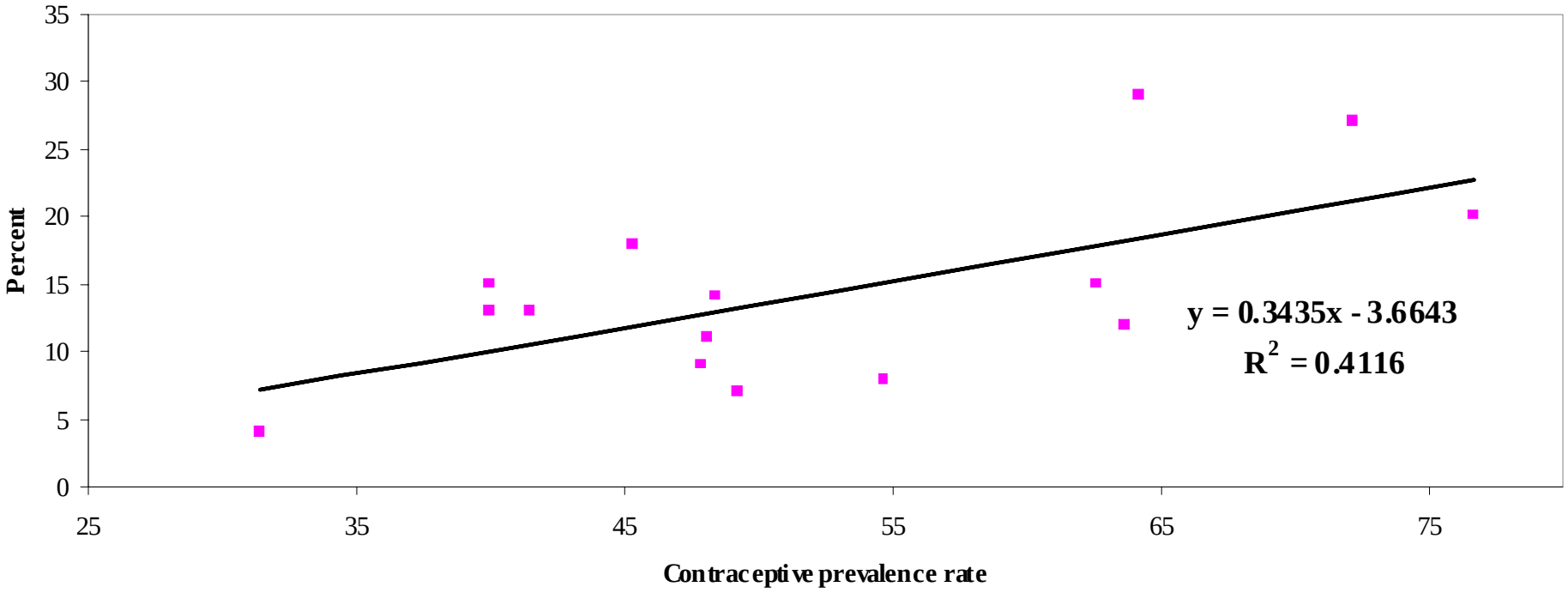


Figure 10
The contribution of contraceptive failure and discontinuation to the total unwanted fertility rate