# Breastfeeding and Child Spacing

## *Country Profiles*

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# Contents

# Preface

The goal in creating *Breastfeeding and Child Spacing Country Profiles* is to highlight the complementary aspects of breastfeeding and nutrition, health, child spacing, and maternal and infant survival. These benefits of breastfeeding, for both mother and infant, are well documented:

### Nutrition:

- Exclusive breastfeeding is optimal for infants for the first six months.
- Breastfeeding continues to provide an excellent source of nutrients for several years.
- Child spacing attributed to breastfeeding gives mothers an opportunity to replace nutrient reserves that were depleted during pregnancy.

### Health:

- Breastmilk, particularly colostrum, provides the first immunization for the infant.
- Breastfeeding is associated with decreased infectious diseases such as pneumonia, diarrhea, inner ear infections, and others.
- Breastfeeding is associated with decreased chronic disease such as diabetes, Chron's disease, and cancers.
- Breastfeeding is associated with improved maternal health, including rapid postpartum recovery as well as decreased cancers and osteoporosis.

### Child Spacing:

- Breastfeeding provides a significant proportion of the child spacing seen in developing countries.
- If the Lactational Amenorrhea Method (LAM), a short-term family planning method based on breastfeeding, were widely practiced, the increases in lactational infertility and the timely introduction of other family planning would produce a highly significant impact on child spacing worldwide.

### Maternal and Infant Survival:

- Breastfeeding is credited with saving about six million infant lives annually.
- If breastfeeding patterns were to improve, one to two million additional lives could be saved.
- By contributing to child spacing, breastfeeding and LAM improve maternal nutritional preparation for the next pregnancy, increasing the mother's and the next infant's chances of survival.

This document presents the relationships and program and policy implications between these different components of public health, and summarizes the issues and recommendations most relevant to decision and policy makers.


### Acknowledgments

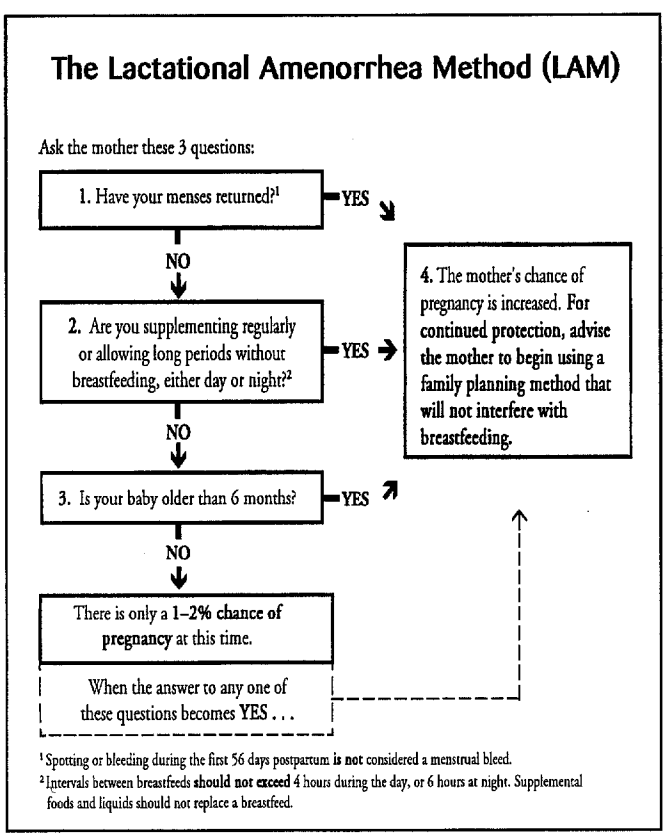
The authors would like to acknowledge the contribution of many colleagues to the initial analysis and groundwork of this evolving document. The first draft of the graphics and text for eleven country profiles was prepared in 1990 by Ravi Sharma, Shea Rutstein, Miriam Labbok, and Christopher Keane under Cooperative Agreement DPE-3040-A-00-5064-00. In 1994, a second draft of the graphics and text for 25 countries was prepared by Miriam Labbok, Elisa Ballard, Ravi Sharma, Shea Rutstein, Joseph Kelaghan, and Christopher Keane for advocacy efforts at the International Conference on Population and Development in Cairo, Egypt. The current publication, while based on previous drafts, includes data and analysis of sixteen new countries as well as an expanded introduction and description of the methodology employed.

Parts of this report were produced at the University of Connecticut, College of Agriculture and Natural Resources, under a subcontract with the Institute for Reproductive Health. The authors also would like to thank Jennifer Grove and Jed Coffin for their assistance in preparing the graphs that appear in this document.

# Introduction

There is a growing global interest in the goal of improving maternal and child health. Breast feeding and family planning use are well recognized interventions that serve this goal. In its statement on infant and young child nutrition, the World Health Assembly (WHA) of the World Health Organization encourages mothers to exclusively breastfeed their infants for about six months, introduce nutritive supplements at that time, and continue supplemented breastfeeding until 24 months postpartum or beyond.[1]

Another major benefit of breastfeeding is its role as a proximate determinant of fertility. The postpartum infertile period (for which lactational amenorrhea frequently is used as a proxy) has a significant impact on total fertility rates worldwide. The key to achieving healthy child spacing of two to four years or more is the introduction of complementary family planning before the end of lactational infertility. The maximum birth-spacing effect of lactational infertility is achieved when a mother is amenorrheic, less than six months postpartum, and fully or nearly fully breastfeeding, defined herein as exclusive breastfeeding or breastfeeding supplemented with water only. The Lactational Amenorrhea Method (LAM), presented here as an algorithm, encourages this behavior,[2] and is based on the physiological precepts confirmed in the 1988 Bellagio Consensus Meeting.[3]




The purpose of this analysis is to explore breastfeeding patterns, the transition from lactational amenorrhea to the acceptance of a complementary family planning method, and the potential for the use of LAM in each country profiled. The data analyzed are from the Demographic and Health Surveys (DHS) project in collaboration with the governments of each of the countries; the data and survey techniques are explained more fully in the Methodology section. Twenty-seven separate country profiles are presented, each consisting of four graphs that are accompanied by brief interpretive comments on breastfeeding and family planning-related issues that may be amenable to program and policy change. It is understood that family planning is a dynamic area in which interpretations may differ and where policy recommendations can change within a relatively short period of time.

The interpretative comments within this document rely upon the definitions used for each variable, as well as the methodology applied to each figure. Therefore, to appropriately use the analyses contained herein, it is important to fully understand the methodology and definitions pertinent to each set of figures.

# Methodological Issues and Definitions

The data used in the following analyses are from the Demographic and Health Surveys (DHS) project in collaboration with the governments of each of the countries. The DHS program is a project designed to assist government and private agencies in developing countries to conduct national sample surveys of population health and maternal and child health. By expanding the worldwide body of information in this area, the Demographic and Health Surveys provide policy makers with a valuable resource for informed decision making at both the national and the international levels. The surveys use the best obtainable representative sampling frames and a well-validated methodology suitable for national policy making and international comparisons.[4]

Data from 27 countries included in phases II and III of the surveys, carried out from 1990 to 1995, are included in these country analyses. The data are derived from nationally representative sample surveys of women of reproductive age. The surveys included, among other things, detailed questions on infant feeding practices, family planning use, and menstrual status.

## Figure 1: Percentage Breastfeeding by Time Postpartum

Figure 1 gives an overall view of women's breastfeeding practices by time postpartum in each country. The data are interpreted with respect to how well those practices conform to the WHA's prescribed goals for optimal breastfeeding. Percentages of women who ever breastfeed, initiate exclusive breastfeeding, continue exclusive breastfeeding for six months, and practice supplemented breastfeeding for 24 months or beyond are presented and discussed.

The data at each of the 24 time intervals in Figure 1 are smoothed. Each data point on the graph is the average of the values of that month plus the preceding month plus the following month. This moving average formula reflects the method used in the DHS to record the age of the child during the interview process. Whenever possible, birth records or other documentation are checked to ensure accuracy in age reporting. Generally, birth dates of children are well reported, and the nearer the birth date is to the date of the interview, the more accurate the reporting. However, when the age of the child is reported in months, as it is in Figure 1, some degree of accuracy is lost. For example, if the interview is at the end of the month and the child is born at the beginning of the previous month, the reported age is one month, even though the actual age of the child was closer to two months. Use of a moving average accommodates this variability in age reporting. As a result of the moving average technique, however, the reported percent Ever Breastfed may vary slightly from the level indicated in the graph. Average breastfeeding duration that is reported in the text is estimated by the prevalence/incidence method where the prevalence is based on the proportion of women who were breastfeeding and the incidence on the average number of monthly births occurring in the 24 months preceding the interview.

### Definitions for Figure 1

***Exclusive Breastfeeding*** is defined as breastmilk as the sole source of nourishment and fluids given to the child during the 24 hours prior to the interview. ***Breastfeeding and Water and Breastfeeding and Tea/Juice*** refer to breastfed children who were supplemented only with water or tea/juice, respectively. In the text, breastfeeding and water supplements only is occasionally referred to as ***Full Breastfeeding.*** In this figure, ***Any Breastfeeding*** refers to breastfeeding mothers who followed any other type of supplementation pattern.

## Figure 2: Percentage Breastfeeding in First Six Months by Sociodemographic Variables

Figure 2 illustrates the urban/rural, educational, and regional differences by percent of mothers practicing exclusive, full, and other breastfeeding patterns in the first six months postpartum. The focus here is on the notable differences in patterns of breastfeeding and the implications for program intervention.

The data in Figure 2 are a weighted average of the indicated breastfeeding patterns among infants six month of age or younger presented by selected socioeconomic and demographic characteristics.

### Definitions for Figure 2

The same definitions used in Figure 1 are applied for this second figure. However, the category ***Any Other Breastfeeding*** also includes supplementation with tea/juice.

## Figure 3: Lactational Amenorrhea, Family Planning Use, and Risk of Pregnancy

Figure 3 presents the percentages of women who are in full lactational amenorrhea and the percentages using family planning at three, six, nine, and twelve months postpartum. The overlap between full lactational amenorrhea, sometimes referred to as "passive LAM use," and family planning use also is addressed. An important emphasis of the figure is the proportion of women who are at risk of pregnancy.

Although researchers have not yet identified the precise suckling parameters that guarantee the inhibition of fertility, the general consensus is that the maximum birth-spacing effect of breastfeeding is achieved when a mother breastfeeds exclusively or supplements breastmilk with only a small quantity (a few swallows to less than one feeding per day) of non-breastmilk foods or liquids in the first six months. (For a more complete set of definitions on breastfeeding patterns, see references 2 and 5.) To determine the percentage overlap with the use of family planning methods, the percentage of women in full lactational amenorrhea and using a method of family planning also is reported in Figure 3. The estimated impact of lactational amenorrhea on fertility reduction is presented in Figure 4.

### Definitions for Figure 3

In this figure, ***Family Planning*** is defined as the use of any modern or traditional method that may prevent conception. In this document, ***Full Lactational Amenorrhea*** is defined as amenorrhea accompanied by exclusive breastfeeding or breastfeeding supplemented with water only. This is not a definition that is generally used in working guidelines on breastfeeding.[2] The category ***At Risk*** has two different definitions: one for three and six months postpartum, and another for the months after six postpartum. Prior to six months postpartum, women who are not in full lactational amenorrhea nor using family planning are considered to be at risk of pregnancy. The impact of lactational amenorrhea on fertility begins to decline with increased intervals between feedings, and this occurs with the introduction of complementary foods at about six months postpartum. Therefore, all women who are not using family planning after month six postpartum, regardless of their status of full lactational amenorrhea, are considered to be at increased risk of pregnancy.

## Figure 4: Fertility-Inhibiting Effects of the Intermediate Determinants of Fertility

Figure 4 depicts the fertility-inhibiting effects of the intermediate determinants of fertility. The accompanying text identifies the predominant fertility-inhibiting variable for each country, and also addresses the effect a significant decline in the prevalence of breastfeeding could have on population growth and family planning needs. An estimate of the number of births averted by breastfeeding also is presented.

The differences in fertility rates among populations are due largely to four principal intermediate determinants of fertility: the age at marriage, family planning use, postpartum infecundability, and induced abortion. Because data on the prevalence of abortion are not generally available in these populations, in this analysis it is assumed to be zero, thus only three of the four intermediate determinants of fertility appear in Figure 4.

The estimated effects of the intermediate determinants of fertility in Figure 4 are calculated using Bongaarts' model.[6] The following equation summarizes the relationship between the TFR and the intermediate determinants of fertility:

$TFR = C_m\ C_c\ C_a\ C_i\ TF$ where

$C_m$ = index of marriage
$C_c$ = index of contraception
$C_a$ = index of induced abortion
$C_i$ = index of postpartum infecundability

The relative effect of each of the intermediate variables is the basis for the estimates of births averted, or additional births that might occur, by breastfeeding in each country. The estimates are based on an annualized rate of postpartum infecundability derived from this formula and applied to the population of women of reproductive age as reported in the 1993 World Development Report.[7]

## Definitions for Figure 4

The ***total fertility rate (TFR)*** estimates the total number of live births a women would have if she lived through her entire reproductive years and was subject to the current age-specific fertility rates. The TFRs in this analysis range from a high of 7.4 in Niger to a low of 2.7 in Colombia and Turkey.

The ***total fecundity rate (TF)*** is a measure of total potential fertility in the absence of all of the indicated intermediate fertility variables. The TF tends to be fairly stable across populations, ranging from 10 to a little more than 21 births per woman, with an average of about 15.3. TF is the result of adding the total fertility rate (TFR) to the number of births prevented attributed to each of the intermediate fertility variables.

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6. Bongaarts J: 1982. The Fertility-inhibiting Effects of the Intermediate Fertility Variables. *Studies in Family Planning* 13(67):179-89.

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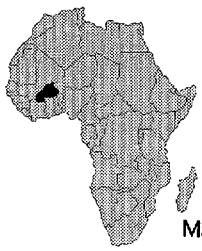
# Africa Region

Burkina Faso
Central African Republic
Côte d'Ivoire
Ghana
Kenya
Madagascar
Malawi
Namibia
Niger
Nigeria
Rwanda
Senegal
Tanzania
Zambia

# Burkina Faso



Population in millions (1995): 10.3
Annual growth rate: 2.6%
Population urbanized: 27%
Life expectancy: 47
Infant mortality rate: 86/1,000 live births
Maternal mortality rate (1990): 930/100,000
Literacy: male-30% female-9%

Almost 99% of mothers in Burkina Faso initially breastfeed their infants (Figure 1). However, only 5% of new mothers ever breastfeed exclusively, and less than 5% breastfeed exclusively four to six months after giving birth. Water-based supplements are commonly used. About half of the women continue to breastfeed fully or to supplement breastmilk with herbal infusions and/or juices at nine months and 20% at month twelve postpartum. This is of serious concern because after about six months postpartum most infants should be receiving nutritive supplements. At 24 months postpartum 67% of women are still breastfeeding their children, though most have introduced complementary foods. The mean duration of breastfeeding is 25 months, about three and a half months shorter in urban than in rural areas.

During the first six months after birth, about 94% of infants are breastfed; the prevalence of exclusive breastfeeding is only 2% (Figure 2). There is no great difference in breastfeeding practices across education levels or by urban/rural differential. Greater differences are seen across geographical regions.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

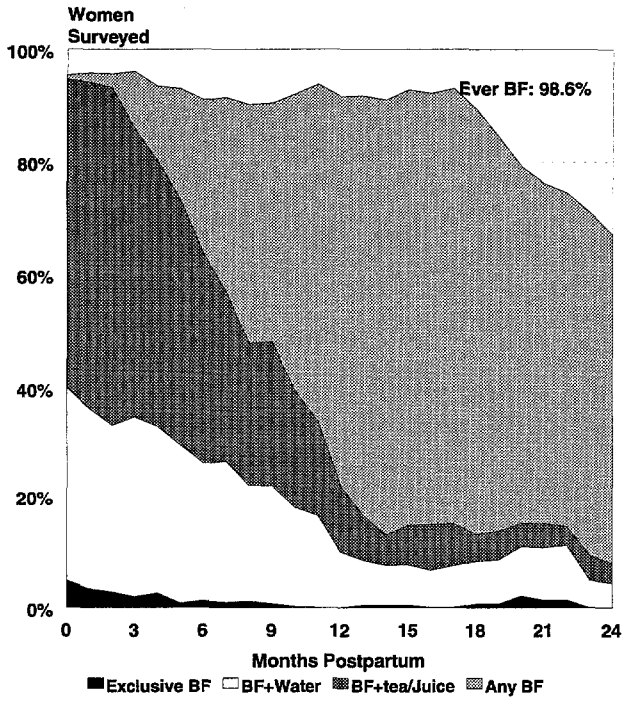
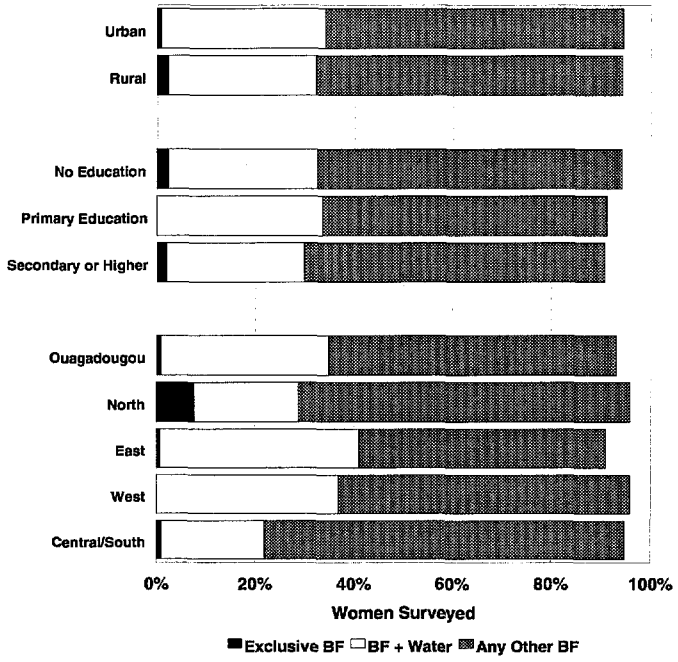



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




At three months postpartum, about 33% of women are protected by full lactational amenorrhea and 36% use family planning. In each of these two groups, approximately 10% are both using a family planning method and protected by full lactational amenorrhea. The remaining 41% of women are at an increased risk of an unplanned pregnancy. At six months postpartum, about 19% of women are protected by full lactational amenorrhea, 35% use family planning, and about 6% of these are protected by both. This leaves 52% of women at six months postpartum unprotected against an unplanned pregnancy.

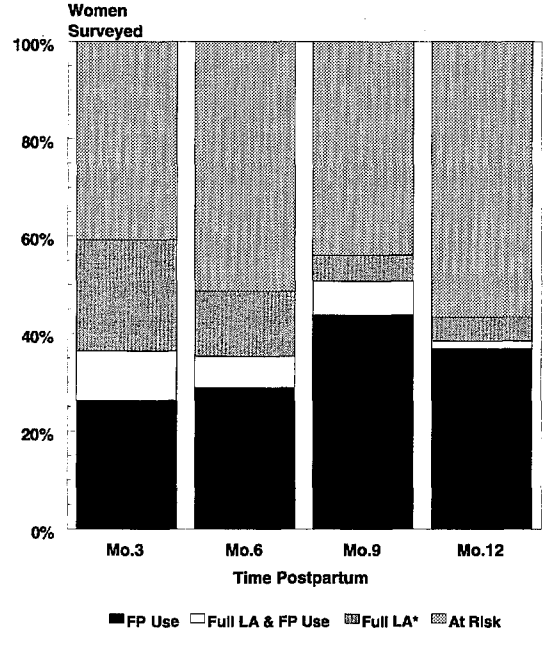
All couples who wish to achieve healthy child spacing should consider adopting a complementary family planning method after full lactational amenorrhea has ended or after six months postpartum, whichever occurs first. However, at months nine and twelve postpartum only about 50% and 39% of women, respectively, have adopted a family planning method. All others are at an increased risk of pregnancy. The women who remain in full lactational amenorrhea in months nine and twelve postpartum are considered to be at increased risk, although they are slightly more protected against pregnancy than the women who are not in full lactational amenorrhea in these months.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1993, Burkina Faso's actual level of fertility, indicated by the total fertility rate (TFR), was 6.9. Without the effect of the intermediate variables, the observed fertility level (or total fecundity rate [TF]) would be 19.0. Lactational amenorrhea and postpartum abstinence are responsible for a significant reduction in total potential fertility, a full 81%. At the time of the survey, Burkina Faso had a family planning prevalence of 25%, which represents 12% of the overall reduction in fertility, or 1.5 fewer births. A delay in the age at first marriage accounts for the remaining 7% of the reduction, or 0.8 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 690,000 additional births could occur. If the duration of lactational amenorrhea were shortened due to a decrease in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. Such an increase would be difficult and costly to achieve.

FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**

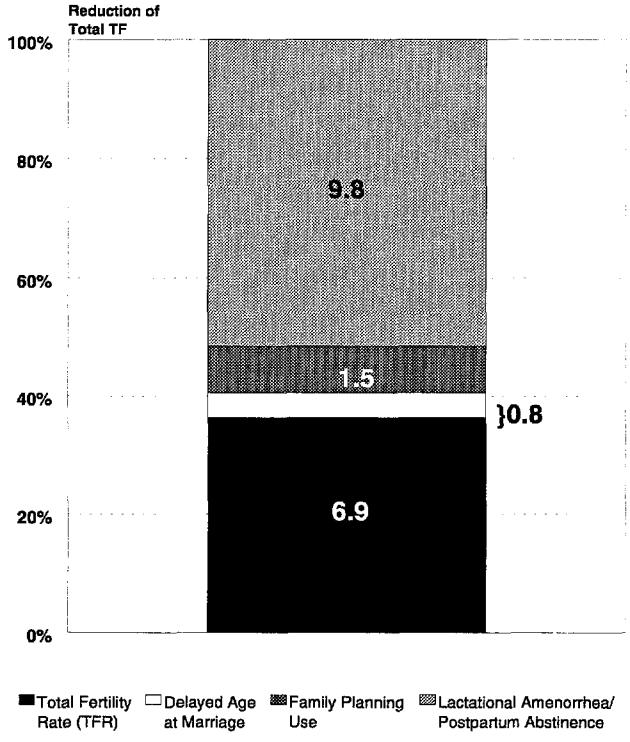



*The impact of LA on fertility begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 19.0***



# Program and Policy Considerations-Burkina Faso

1. Burkina Faso's levels of exclusive breastfeeding are practically non-existent. Therefore, increased levels of exclusive breastfeeding in the first six months are needed to enhance both the child spacing benefits for the mother and the health and nutritional benefits for the infant. The elimination of water supplements must be an important focus.

2. The uniformly low rates of exclusive or full breastfeeding suggest that any intervention will have to be widespread. However, the issue is one of changing breastfeeding patterns, rather than changing the breastfeeding norm.

3. A delay in the introduction of nutritive supplements past six months can be unhealthy for the infant. The rates of breastfeeding supplemented with only water or tea and juice after six months postpartum are alarmingly high. Mothers should be encouraged to breastfeed exclusively in the first six months, introduce nutritive supplements after this time, and continue frequent breastfeeding for up to two years or longer.

4. Introducing water and other supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1995, Burkina Faso's infant mortality rate was 86 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved.

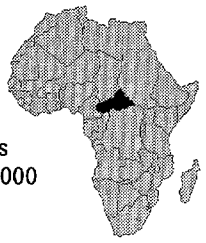
5. There is a marked overlap between full lactational amenorrhea and family planning use in months three (10%) and six (5%). Although this level of overlaps is not a major issue, the introduction of family planning methods at the biologically appropriate time may help minimize the misdirection of scarce resources and the risk of using an inappropriate postpartum family planning method.

6. The Lacatational Amenorrhea Method (LAM) would be an ideal intervention in this setting. LAM simultaneously supports optimal breastfeeding practices and encourages the timely introduction of complementary family planning, and would be useful in Burkina Faso to help decrease the levels of water supplementation prior to six months postpartum. The concept of healthy child spacing also must be stressed to ensure that rates of family planning use will rise after the first year postpartum.

*Burkina Faso's overall breastfeeding rate is encouraging, and breastfeeding currently has a significant impact on a woman's lifetime fertility in this country. However, if exclusive breastfeeding in the first six months postpartum were adopted by more women, this impact could be heightened significantly, and infant mortality rates would fall. Efforts should be made to maintain current levels of breastfeeding, and to improve breastfeeding practices, such as exclusive breastfeeding during the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, as well as the need for family planning services. At the same time, family planning use and acceptance must receive special attention and complementary support, with particular emphasis given to postpartum women, and their unique family planning needs while breastfeeding. To this end, the use of LAM could have a significant impact by increasing both exclusive breastfeeding and the timely use of complementary family planning.*

# Central African Republic

Population in millions (1995): 3.3
Annual growth rate: 2.4%
Population urbanized: 39%
Life expectancy: 50
Infant mortality rate: 106/1,000 live births
Maternal mortality rate (1990): 700/100,000
Literacy: male-69% female-52%



Almost 99% of mothers in the Central African Republic breastfeed their infants, and 33% continue breastfeeding until their children are 24 months of age (Figure 1). However, only 7% of new mothers initiate exclusive breastfeeding at birth, and this practice all but disappears by four months postpartum. Giving water to the infant in addition to breastmilk is a common practice, and, by nine months postpartum 5% of women were still practicing this infant feeding method. While the mean duration of breastfeeding is 21 months, this duration is almost three months shorter in urban than in rural areas.

During the first six months after birth, only 2% of all infants are exclusively breastfed and 36% of infants receive water in addition to breastmilk (Figure 2). These latter practices are slightly more common in rural than in urban areas. Among the Central African Republic's different regions, the prevalence of exclusive breastfeeding ranges from 0% to 4%, and water-supplemented breastfeeding ranges from 24% to 46%. The latter is less commonly practiced by women with high school education or higher (28%) than by women with no education (38%) or those with elementary schooling (35%).

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

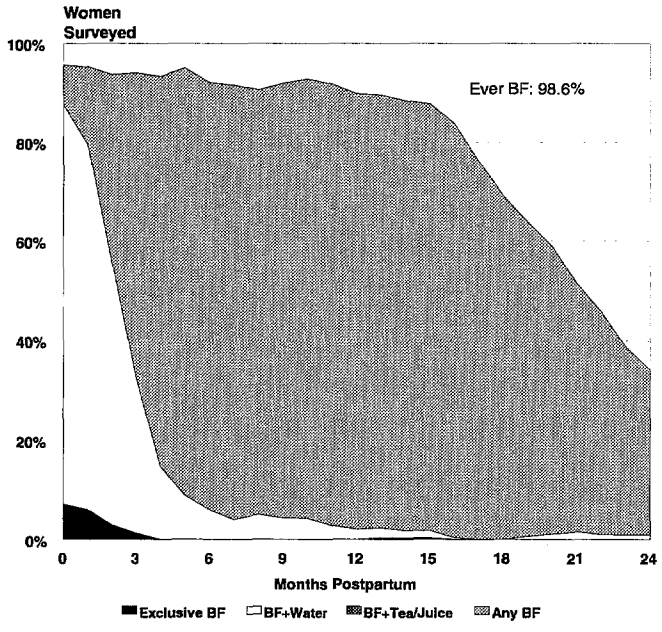
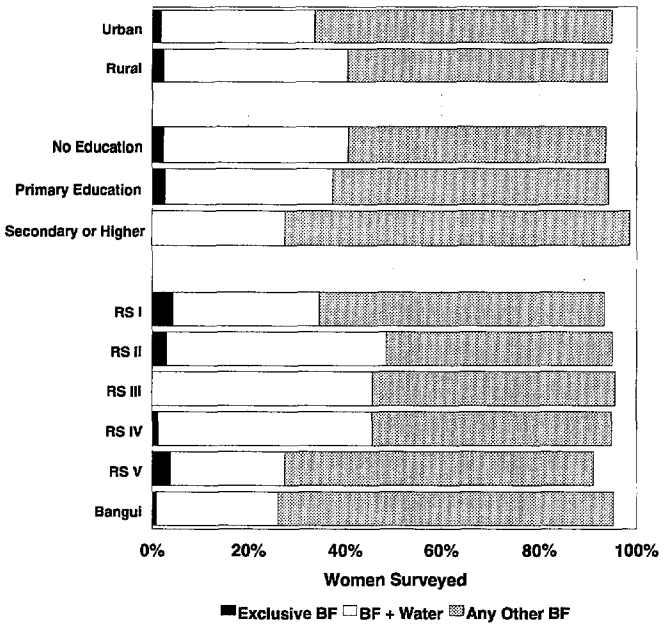



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




At three months postpartum, 18% of women are in full lactational amenorrhea, and 15% use family planning (Figure 3). Approximately 2% of women in each of these groups use family planning during the time they are protected by full lactational amenorrhea. The remaining 69% of women are at an increased risk of an unplanned pregnancy. At six months postpartum, 4% of women remain in full lactational amenorrhea, and 26% use a family planning method. The other 70% of women are unprotected against unplanned pregnancy.

All couples who wish to achieve healthy child spacing should adopt a family planning method after full lactational amenorrhea has ended or after six months postpartum, whichever occurs first. At

month nine postpartum, however, only 28% of women have adopted a family planning method, and this figure increases only to 35% at twelve months. The other 72% and 65% of women in months nine and twelve postpartum, respectively, have no means of protection against pregnancy. The approximately 5% of women who remain in full lactational amenorrhea in month nine postpartum are also considered to be at risk, although they are at a lower risk of pregnancy than the women who are not using family planning during this time.

The fertility-inhibiting effect of the intermediate determinants of fertility are presented in Figure 4. In 1991, the Central African Republic's actual level of fertility, indicated by the total fertility rate (TFR), was 5.0. Without the effect of the intermediate variables, the observed fertility level, (or the total fecundity rate [TF]), would be 13.2. Lactational amenorrhea and postpartum abstinence are the greatest fertility inhibitors, reducing the number of births by 5.8, which is 71% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 20% of the reduction, or 1.6 fewer births. At the time of the survey, the Central African Republic had a family planning prevalence of 15%, which provided the remaining 9% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity (TF) = 13.2***

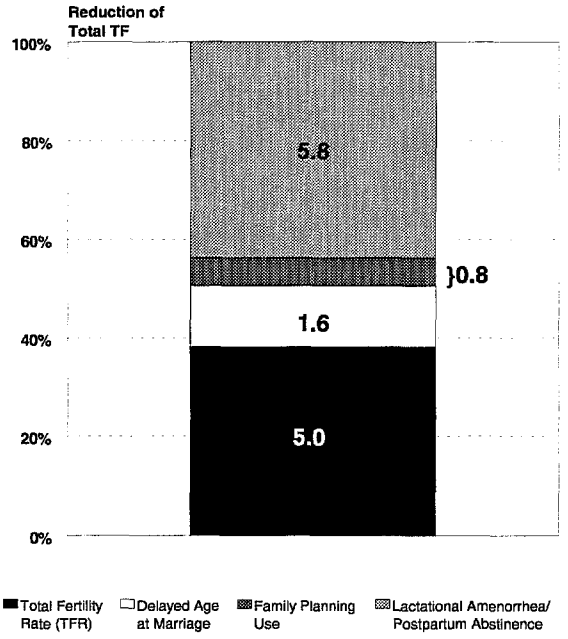
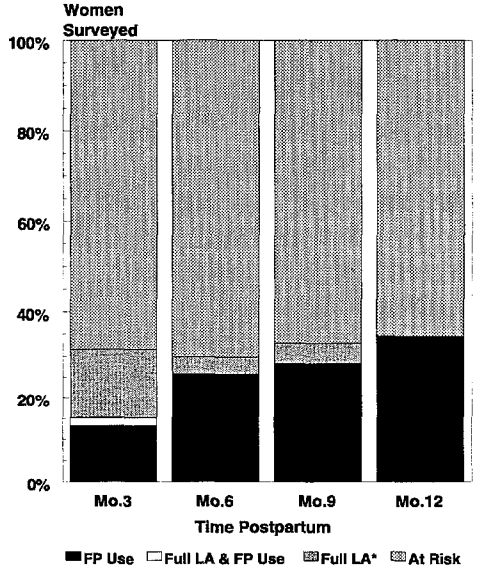



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

Lactational amenorrhea and postpartum abstinence have a significant impact on fertility in the Central African Republic. If they were to disappear with no concomitant increases in family planning use or age at marriage, as many as 189,000 additional births could occur. If the duration of lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In the Central African Republic, where the TFR is still very high and the family planning prevalence rate is among the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility would present an almost insurmountable task for family planning programmers.

# Program and Policy Considerations
# Central African Republic

1. Exclusive breastfeeding in the first six months is almost non-existent in the Central African Republic. Therefore, increasing these levels should be a priority to further enhance the child spacing, nutritional, and health benefits for the mother and infant. The elimination of water supplements is an important focus.

2. The uniformly low rates of exclusive breastfeeding suggest that any intervention will have to be widespread with, perhaps, special emphasis on some education levels and regions.

3. In 1995, the Central African Republic's infant mortality rate was one of the highest in the world, at 106 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, and water supplementation lower, there could be a reduction in this alarming rate.

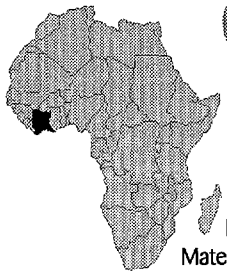
4. Delaying the introduction of nutritive supplements past six months can be unhealthy for the infant. Mothers should be encouraged to breastfeed exclusively in the first six months, introduce nutritive supplements after this time, and continue frequent breastfeeding for at least two years.

5. The Central African Republic has one of the lowest family planning prevalence rates of any country in this analysis. At any month during the first year postpartum, the percentage of women who are at risk of pregnancy remains above 60%. Any intervention would need to stress the benefits of child spacing while emphasizing the effect of exclusive breastfeeding in this area.

6. The timely introduction of complementary family planning is essential for couples who want to control their fertility beyond the period of lactational amenorrhea or beyond six months postpartum. Although family planning use increases slightly after the sixth month postpartum, the level is hardly sufficient to ensure healthy child spacing of at least two years.

7. Because of the number of women remaining in full lactational amenorrhea through month six, the Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children. LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices, and has been shown in clinical studies to increase family planning use among women who had never used family planning prior to LAM. Additionally, LAM is an effective tool for increasing exclusive breastfeeding, and could help to improve the Central African Republic's low rates in this area.

*The Central African Republic's overall initiation and longevity of breastfeeding is encouraging, and breastfeeding currently has a significant impact on a woman's lifetime fertility in this country. However, increasing the levels of exclusive breastfeeding should be a priority. Efforts should be made to maintain current levels of breastfeeding, while improving breastfeeding practices, such as exclusive breastfeeding during the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, as well as the need for family planning services. At the same time, family planning use and acceptance must receive special attention and support, with particular emphasis given to postpartum women and their unique family planning needs while breastfeeding. The concept of healthy child spacing also must be stressed in any intervention programming.*



# Côte d'Ivoire

Population in millions (1995): 25.2
Annual growth rate: 3.7%
Population urbanized: 44%
Life expectancy: 50
Infant mortality rate: 90/1,000 live births
Maternal mortality rate (1990): 810/100,000
Literacy: male-50% female-30%

Initiation of breastfeeding is a common practice among women in the Côte d'Ivoire. Almost all mothers (98%) breastfeed their infants at some time, and 33% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). However, only 4% of women initiate exclusive breastfeeding at birth, and this practice all but disappears by six months postpartum. Giving water in addition to breastmilk is a very common practice, and at nine months postpartum, 19% of women are still practicing this infant feeding method. The mean duration of breastfeeding in the Côte d'Ivoire is 21 months, almost four months longer in rural than in urban areas.

Only 3% of all infants are exclusively breastfed and 57% of infants receive water in addition to breastmilk during the first six months after birth (Figure 2). Water use is more common in rural (63%) than in urban (44%) areas. Among the Côte d'Ivoire's different regions, the prevalence of exclusive breastfeeding ranges from 0% to 5%, and from 51% to 68% if water is added. This is less commonly practiced by women

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

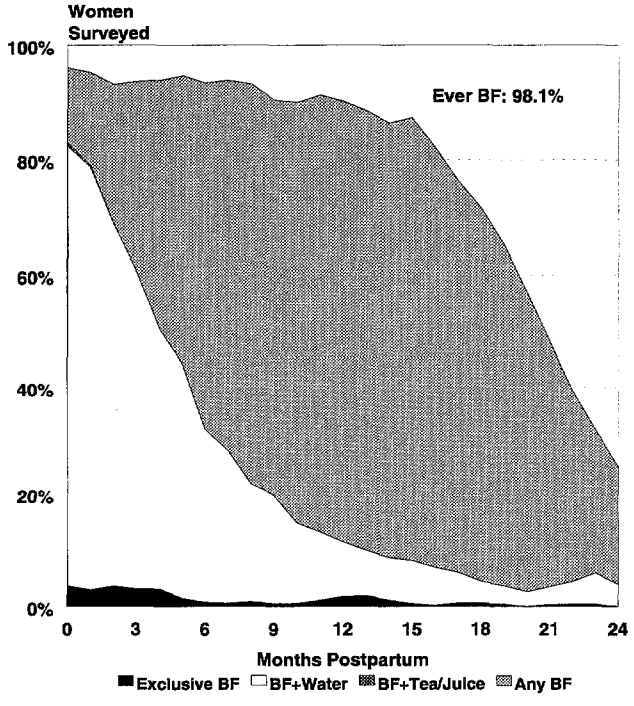
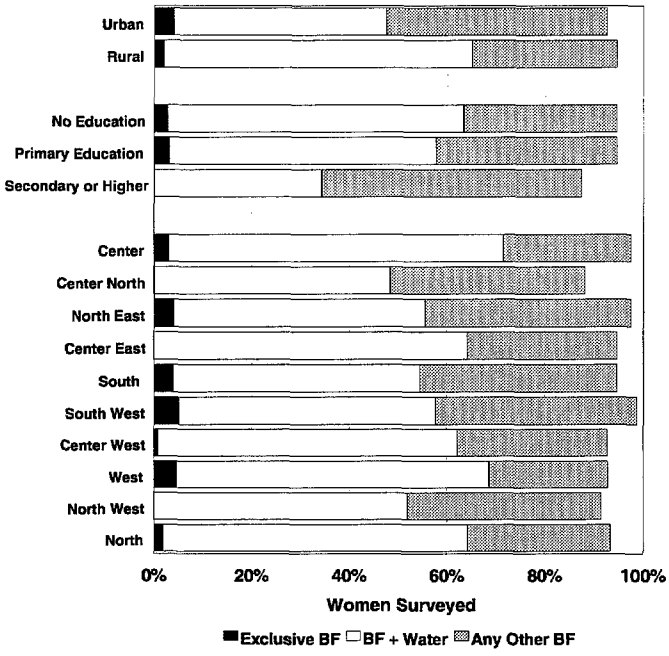



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




with secondary/higher education (34%) than by women without formal education (61%) or those with an elementary education (55%).

At three months postpartum, 50% of women are in full lactational amenorrhea, and 3% use family planning (Figure 3). In each of these two groups, approximately 1% use family planning and are also protected by full lactational amenorrhea. The remaining women (48%) are at an increased risk of an unplanned pregnancy. At six months postpartum, 30% of women remain in full lactational amenorrhea, and 4% use a family planning method. The remaining women are unprotected against pregnancy.

All couples who wish to achieve healthy child spacing should consider adopting a family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. However, at months nine and twelve postpartum, only 8% and 4% of women, respectively, have adopted a family planning method. This leaves 92% of women at month nine, and 96% of women at month twelve, at an increased risk of pregnancy.

The fertility-inhibiting effect of the intermediate determinants of fertility are presented in Figure 4. In 1994, the Côte d'Ivoire's actual level of fertility, indicated by the total fertility rate (TFR), was 5.2. Without the effect of the intermediate variables, the observed fertility level, or the total fecundity rate (TF), would be 14.3. Lactational amenorrhea and postpartum abstinence are a very significant fertility inhibitor, reducing the number of births by 6.3, or 69% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 23% of the reduction, or 2.1 fewer births. At the time of the survey, the Côte d'Ivoire had a family planning prevalence of 11%, which provided the remaining 8% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

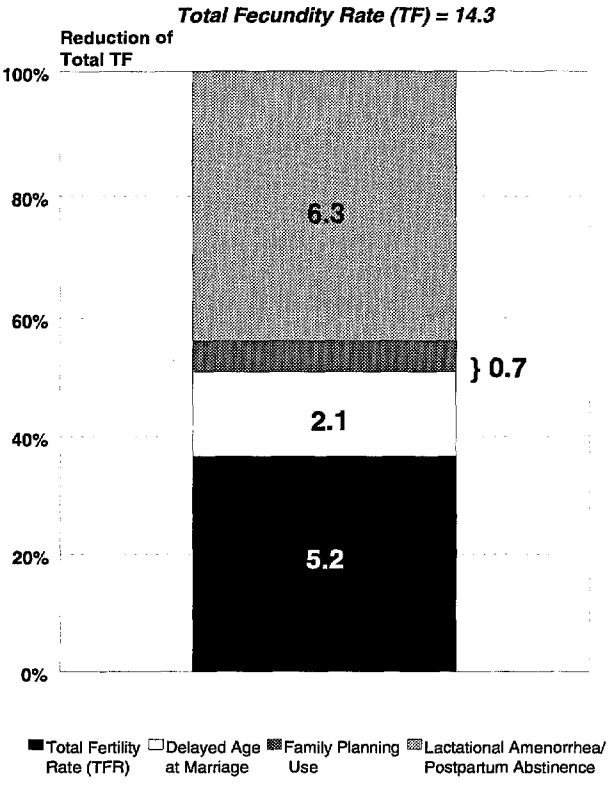
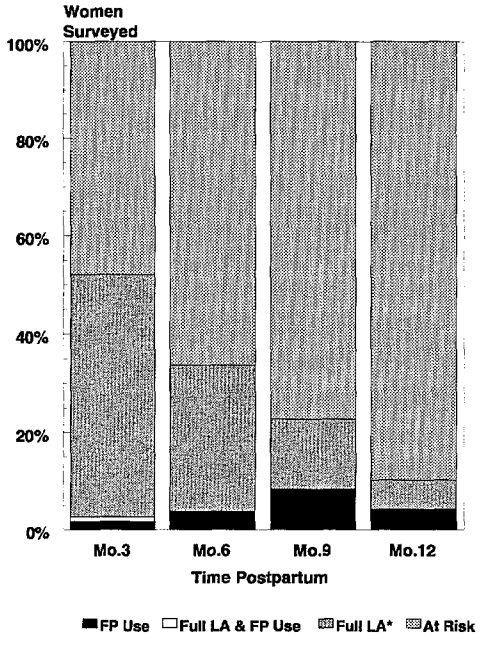



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 568,000 additional births could occur in the following year. A significant increase in family planning use would be necessary to maintain the current fertility level if the duration of full lactational amenorrhea were shortened due to a decline in breastfeeding. In the Côte d'Ivoire, where the TFR is still very high and the family planning prevalence rate is one of the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility would present an almost insurmountable task for family planning programmers.

# Program and Policy Considerations-Côte d'Ivoire

1. The level of exclusive breastfeeding in the first six months is exceedingly low in the Côte d'Ivoire; however, breastfeeding supplemented with water is quite high. Increasing the levels of exclusive breastfeeding is an achievable priority. Additionally, research to identify the factors that support high levels of breastfeeding but also the common use of water supplementation, would be beneficial for health, nutrition, and child spacing.

2. In 1995, the Ivory Coast's infant mortality rate was one of the highest in the world, at 90 deaths per 1,000 births. This high rate could be reduced with increased rates of exclusive breastfeeding.

3. Delaying the introduction of nutritive supplements well past six months can be unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive complementary foods after this point, and continue frequent breastfeeding for two years or longer.

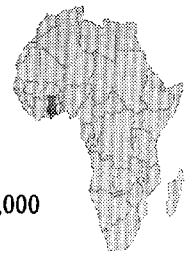
4. The timely introduction of complementary family planning is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum. Although family planning use increases very slightly after the sixth month postpartum, it drops again in month twelve, and the level is insufficient to ensure healthy child spacing. Initiatives focusing on healthy child spacing and family planning are necessary.

5. There are a significant number of women who are in full lactational amenorrhea through month six postpartum in the Côte d'Ivoire. These women would be ideal candidates for using the Lactational Amenorrhea Method (LAM), and could benefit from its support for optimal breastfeeding practices and encouragement to use other family planning methods in a timely manner.

*The women of Côte d'Ivoire have an encouragingly high rate and duration of breastfeeding, and it currently has a significant impact on a woman's lifetime fertility. However, efforts should be made to maintain current levels of breastfeeding, and to improve infant feeding practices such as exclusive breastfeeding during the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, infant mortality, and the need for family planning services.*

*Family planning promotion and provision must receive special attention and support, given that the Côte d'Ivoire has one of the lowest family planning prevalence rates in the world. Offering family planning services in all health care facilities that serve infants would reach the appropriate group of mothers.*

# Ghana



Population in millions (1995): 17.5
Annual growth rate: 3.2%
Population urbanized: 36%
Life expectancy: 41
Infant mortality rate: 76/1,000 live births
Maternal mortality rate (1990): 740/100,000
Literacy: male-76% female-54%

Initiation of breastfeeding is a common practice among women in Ghana. About 98% of mothers breastfeed their infants, and 28% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). The prevalence of exclusive breastfeeding, however, is low. Only 14% of mothers initially exclusively breastfeed, and less than 3% continue this practice until six months postpartum. A common feeding pattern is breastfeeding with water supplements. Between months nine and twelve postpartum, the only supplement 13% of infants receive is water, although nutritive complementary foods should be introduced around the sixth month. The mean duration of breastfeeding is 21 months, about five months shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

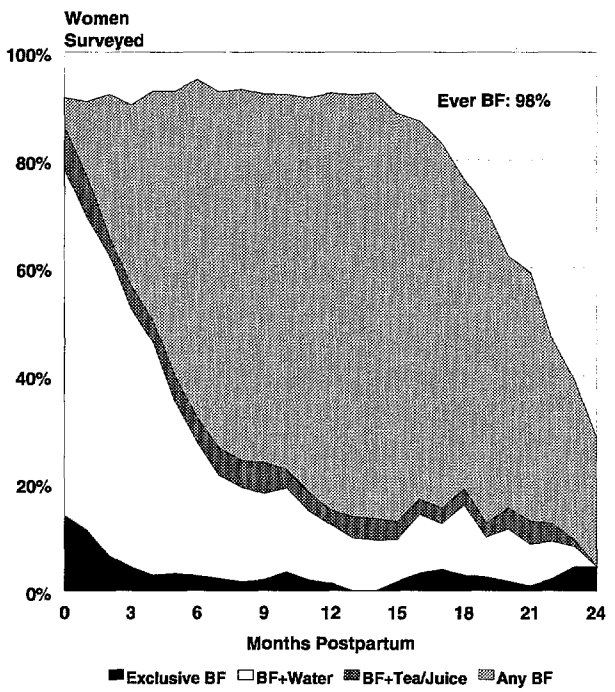
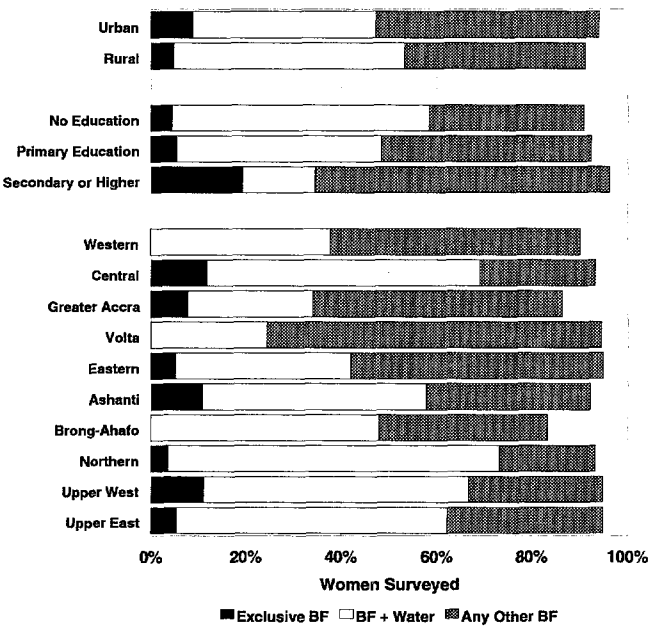



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




Women in urban areas are twice as likely to breastfeed exclusively than women living in rural areas (Figure 2). In three of Ghana's ten regions, there is no reported exclusive breastfeeding, and the prevalence of exclusive breastfeeding in the first six months is less than 12% in the seven remaining regions, however, full breastfeeding is the norm. More educated women are more likely to supplement, but also are about four times as likely to breastfeed exclusively than women with low levels of education. Women with no formal education or with a primary education are approximately three and two times more likely, respectively, to fully breastfeed than women with a secondary and higher education.

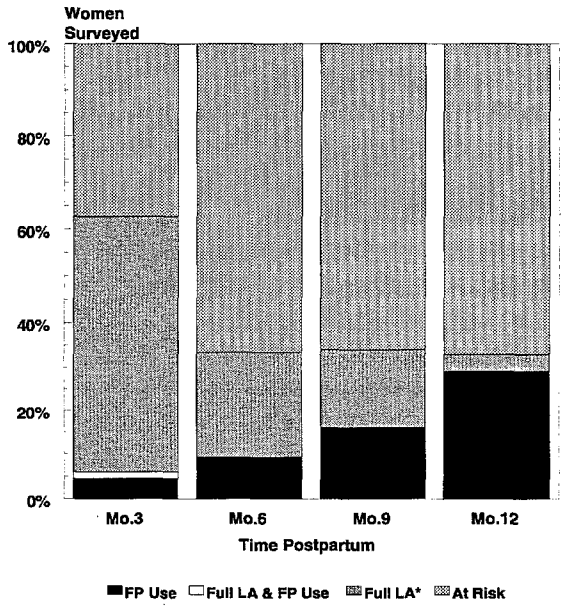
In Figure 3, at three months postpartum, 58% of women are in full lactational amenorrhea and 5% use family planning. In each of these two groups, 1% represent an overlap because they are protected by both family planning and full lactational amenorrhea. The remaining 37% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 24% of women remain in full lactational amenorrhea, and 9% use a family plan-

ning method, leaving 67% of women unprotected against pregnancy. All couples who wish to achieve healthy child spacing should adopt an appropriate family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. However, at months nine and twelve postpartum, only 16% and 29% of women, respectively, have adopted a family planning method. All others have no protection against pregnancy. The 18% and 4% of women who remain in full lactational amenorrhea at months nine and twelve postpartum, respectively, are considered to be at an increased risk, although they are at a lower risk of pregnancy than other women who are not using family planning.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1993, Ghana's actual level of fertility, indicated by the total fertility rate (TFR), was 5.4. Without the effect of the intermediate variables, the observed fertility level, or the total fecundity rate (TF), would be 15.8. Lactational amenorrhea and postpartum abstinence have a significant impact on fertility inhibition in Ghana, reducing the number of births by 7.1, which is 68% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 19% of the reduction, or 2.0 fewer births. At the time of the survey, Ghana had a family planning prevalence of 20%, which provided the remaining 13% reduction in fertility.

FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**

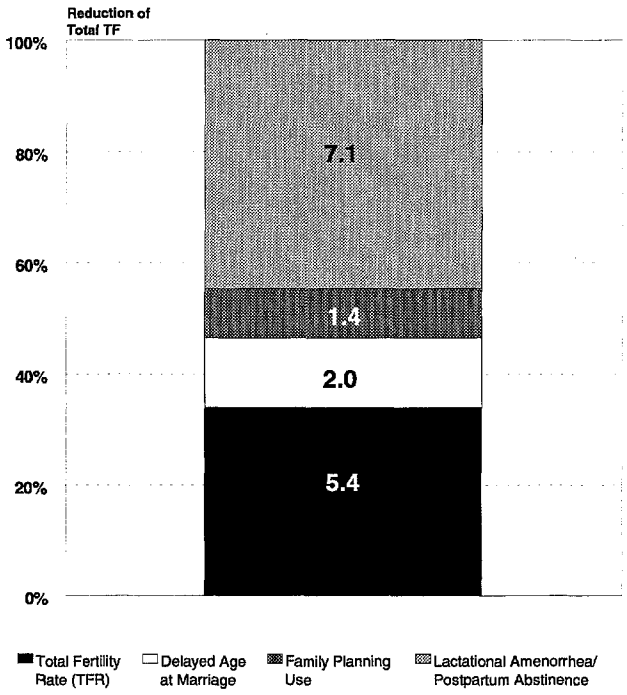



*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.8***




As many as 950,000 additional births could occur if lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Ghana, where the TFR is one of the highest in the world and the family planning prevalence rate is one of the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility presents an almost insurmountable task for family planning programmers.

# Program and Policy Considerations-Ghana

1. Ghana's levels of exclusive breastfeeding are extremely low but full breastfeeding is quite common. If water supplements could be eliminated, exclusive breastfeeding could be the norm. Increased levels of exclusive breastfeeding in the first six months are recommended for the child spacing, nutritional, and health benefits for the mother and infant.

2. The uniformly low levels of exclusive breastfeeding in Ghana suggest that any intervention will need to be widespread. Messages stressing the importance of exclusive breastfeeding are needed universally, but a special emphasis should be placed on reducing water supplements in the first six months and increasing nutritive complementary foods thereafter. Research to identify the factors that support the common use of water supplementation would be beneficial.

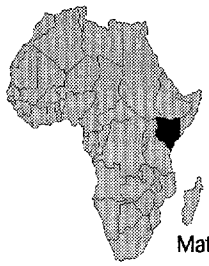
3. The introduction of supplements into the infant's diet at too early an age (before six months) contributes to increased levels of infant morbidity and mortality. In 1995, Ghana's infant mortality rate was 76 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved. Optimal breastfeeding guidelines should discourage the addition of water to breastfeeding in the first six months.

4. Delaying the introduction of nutritive supplements well past six months can be unhealthy for the infant. Accordingly, mothers should be encouraged to introduce nutritive supplements at about six months while continuing frequent breastfeeding for up to two years or more.

5. The timely introduction of complementary family planning methods is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum. Although family planning use increases over time, the level is insufficient to assure healthy child spacing.

6. A significant number of women remain in full lactational amenorrhea through six months postpartum in Ghana. In this setting, the Lactational Amenorrhea Method (LAM) could be an important tool for improving breastfeeding practices and encouraging continued family planning use.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Ghana, and an increase in exclusive breastfeeding rates will only heighten this impact. Efforts should be made to at least maintain current levels of breastfeeding, to increase exclusive breastfeeding during the first six months postpartum, and to introduce nutritive supplements at that time. Any deterioration in breastfeeding levels or practices would have profound negative effects on maternal and child health, infant mortality rates, and the need for family planning services. At the same time, family planning promotion and provision among postpartum and breastfeeding women must receive special attention.*



# Kenya

Population in millions (1995): 28.3
Annual growth rate: 3.5%
Population urbanized: 28%
Life expectancy: 55
Infant mortality rate: 61/1,000 live births
Maternal mortality rate (1990): 650/100,000
Literacy: male-86% female-70%

Most Kenyan women initiate breastfeeding; approximately 98% of mothers breastfeed their infants at birth, and 38% practice supplemented breastfeeding until 24 months postpartum. Although initiation of breastfeeding is common, only 26% of mothers exclusively breastfeed at birth, and this practice decreases rapidly in the first four months. A small percentage of women continue to breastfeed exclusively or fully after the sixth month postpartum. The mean duration of breastfeeding is 21 months, about two months shorter in urban than in rural areas.

During the first six months after birth, the prevalence of exclusive and full breastfeeding are low (Figure 2). The most notable differences in breastfeeding patterns are seen among geographical areas. Levels of exclusive breastfeeding range from 0% in Nairobi to a high of 17% in the Western region of Kenya.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

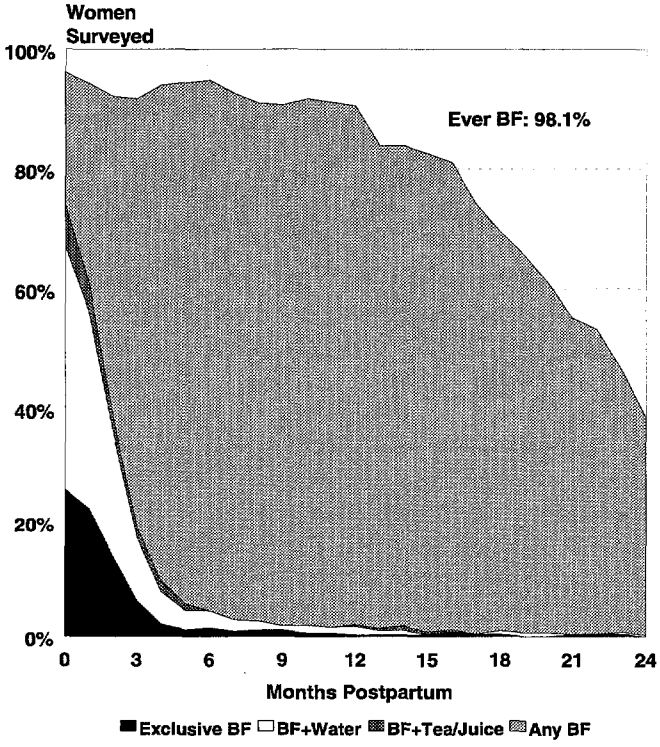
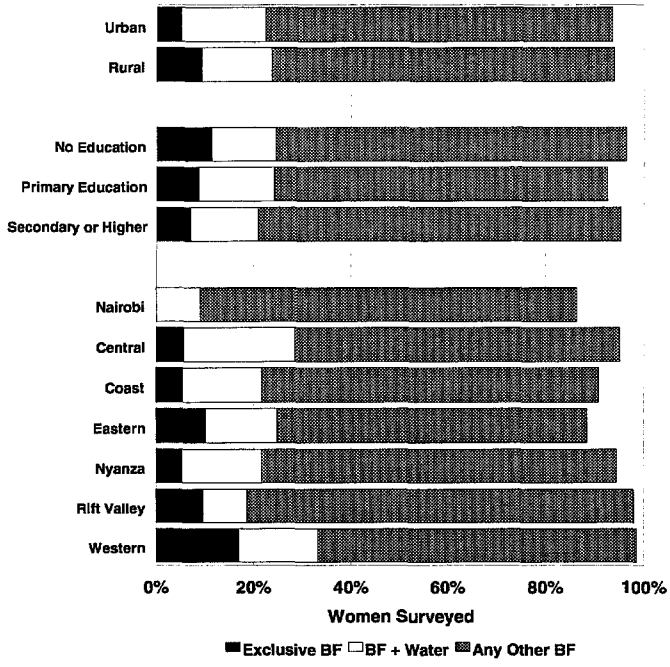



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




At three months postpartum, 9% of women are in full lactational amenorrhea and 21% use family planning (Figure 3). In each of these two groups, 1% are protected by both family planning and full lactational amenorrhea. The remaining 71% of women are unprotected against unplanned pregnancy. At six months postpartum, 1% of women remain in full lactational amenorrhea and 24% use a family planning method. This leaves the remaining 75% of women at risk of pregnancy.

All couples who wish to achieve healthy child spacing should adopt an appropriate family planning method when full lactational amenorrhea ends or after six months postpartum, whichever occurs first.

At months nine and twelve postpartum, however, only 16% and 18% of women, respectively, have adopted a method of family planning. All other women in these months have no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1993, Kenya's actual level of fertility, indicated by the total fertility rate (TFR), was 5.2. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 17.0. Lactational amenorrhea and postpartum abstinence have a significant impact on fertility, reducing the number of births by 6.1, or 52% of the overall reduction in total potential fertility. At the time of the survey, Kenya had a family planning prevalence rate of 33%, which provided a 27% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 17.0***

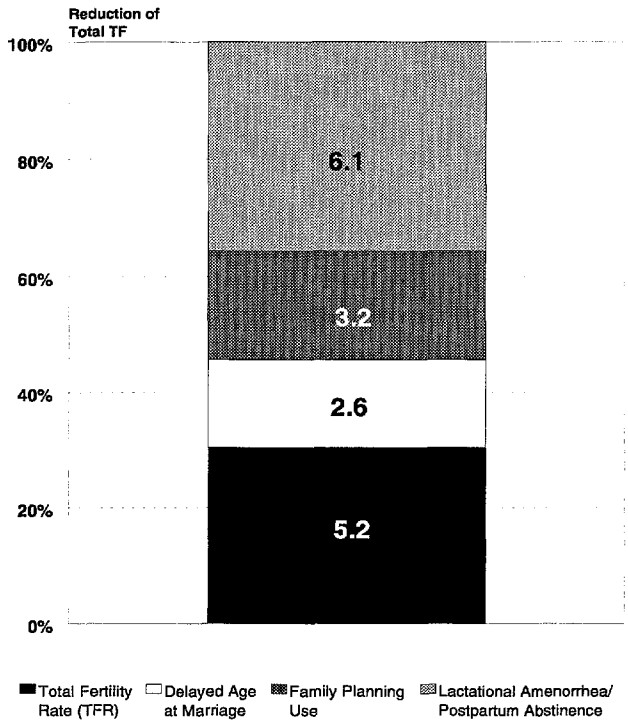
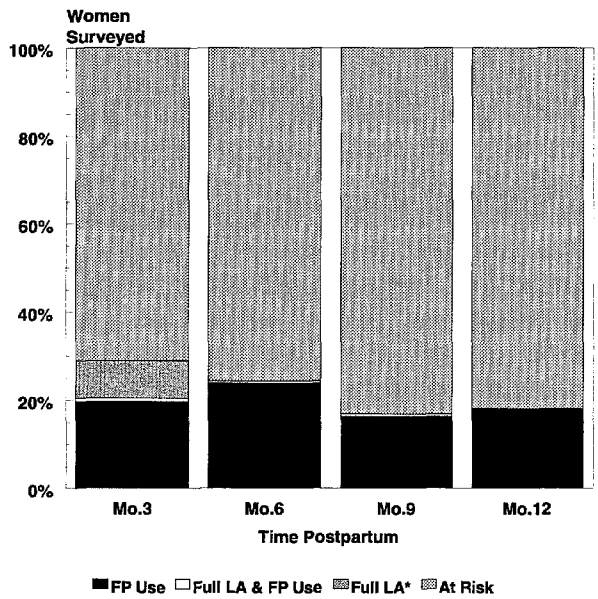



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

A delay in the age at first marriage accounts for the remaining 22% of the reduction, or 2.6 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as an estimated 831,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Kenya, where the TFR is high and family planning prevalence is low, the increase in family planning use needed to replace the loss of protection from lactational infertility presents an almost insurmountable task for family planning programmers.

# Program and Policy Considerations-Kenya

1. Kenya's prevalence of exclusive breastfeeding is low. Therefore, increased levels of exclusive breastfeeding in the first six months are recommended to enhance both the child spacing benefits for the mother and the health and nutritional benefits for the infant.

2. The introduction of supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1995, Kenya's infant mortality rate was 61 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved.

3. The uniformly low rates of exclusive breastfeeding suggest that any intervention must be widespread. Conducting additional studies to assess the factors that encourage breastfeeding and those that discourage exclusivity may be necessary.

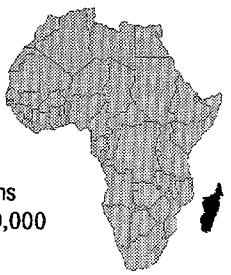
4. Delaying the introduction of nutritive supplements well past six months can be unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive complementary foods after this point, and continue frequent breastfeeding for two years or longer.

5. Family planning use does not increase over the period of time when the protective effect of full lactational amenorrhea is declining. In fact, family planning use declines after the sixth month postpartum in Kenya. The timely introduction of family planning methods is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum. The drop in family planning prevalence in months where fertility is increasing suggests that the concept of child spacing must be added to family health or family planning initiatives.

6. The Lactational Amenorrhea Method (LAM) would greatly benefit many Kenyan couples and their children because it simultaneously supports optimal breastfeeding practices while encouraging the timely introduction of a complementary family planning method.

*Overall breastfeeding rates in Kenya are encouraging, and breastfeeding currently has a significant impact on a woman's lifetime fertility. However, efforts should be made to maintain current levels of breastfeeding and to increase infant feeding practices, such as exclusive breastfeeding during the first six months postpartum. Any deterioration in current levels or practices would have profound effects on maternal and child health as well as the need for family planning services. At the same time, family planning use and acceptance must receive special attention and support, with special emphasis given to postpartum women and their unique family planning needs while breastfeeding.*

# Madagascar



Population in millions (1995): 14.8
Annual growth rate: 3.3%
Population urbanized: 27%
Life expectancy: 58
Infant mortality rate: 100/1,000 live births
Maternal mortality rate (1990): 490/100,000
Literacy: male-88% female-73%

Breastfeeding is a common practice in Madagascar. Approximately 98% of mothers breastfeed their infants, and supplemented breastfeeding until 24 months postpartum is practiced by 35% of mothers. Although initiation of breastfeeding is common, only half of mothers exclusively breastfeed at birth, and this practice decreases rapidly to 24% by four months postpartum. By month nine postpartum, about 10% of women continue to breastfeed exclusively or fully or to supplement breastmilk only with herbal infusions and/or juices. This is of concern because infants should begin receiving nutritive supplements by this age. The mean duration of breastfeeding in Madagascar is 20 months, about two and a half months shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

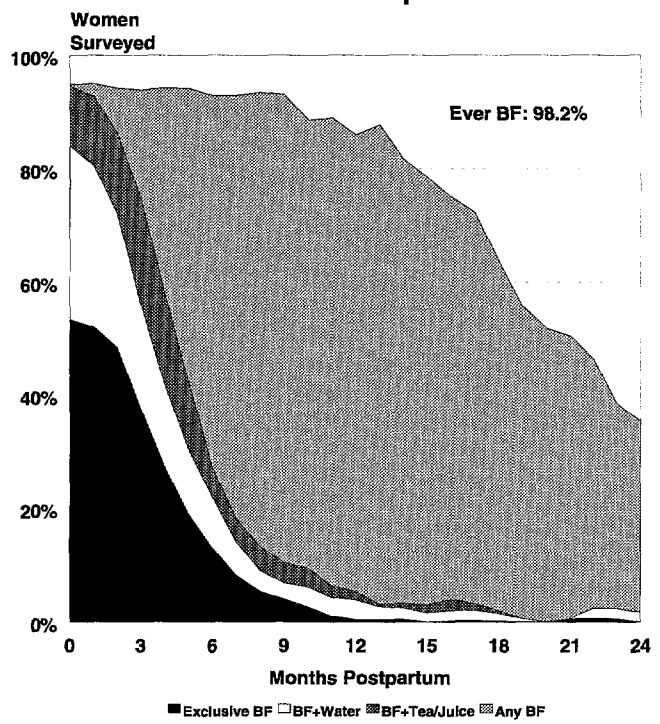
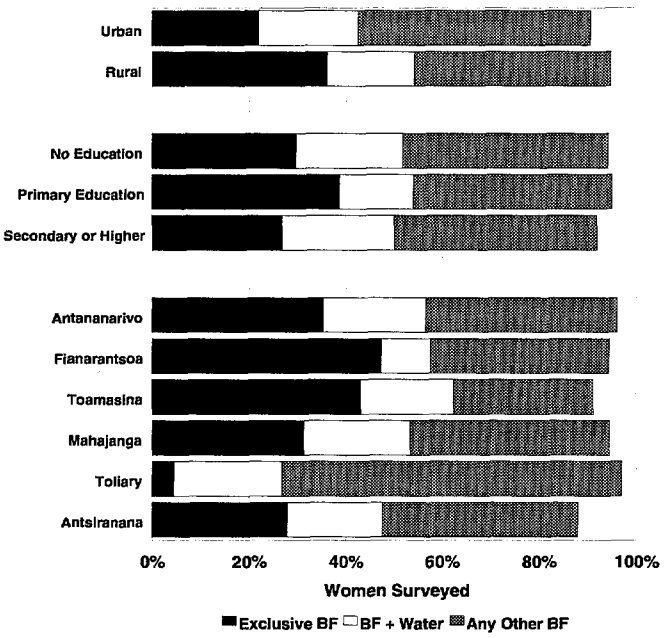



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




During the first six months after birth, the prevalence of full breastfeeding varies little by education or region. Generally, about 20% of mothers are giving only water in addition to breastfeeding, except for in the region of Toliary (Figure 2). Levels of exclusive breastfeeding range from 4% in the Toliary region to a high of 47% in the Fianarantsoa region. Women with primary education are more likely to exclusively breastfeed than women with no education or a secondary/higher education.

At three months postpartum, 51% of women are in full lactational amenorrhea and 8% use family planning (Figure 3). In each of these two groups, 3% are protected by both family planning and full lactational amenorrhea. The remaining 44% of women are unprotected against an unplanned pregnancy. At six months postpartum, 18% of women remain in full lactational amenorrhea and 10% use a family planning method; 1% fall into both categories. This leaves 73% of women at risk of a pregnancy.

All couples who wish to achieve healthy child spacing should adopt an appropriate method of family planning after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 14% and 16% of women, respectively, have adopted a family planning method. This leaves about 80% of women with no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Madagascar's actual level of fertility, indicated by the total fertility rate (TFR), was 5.7. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 15.9. The greatest fertility inhibitor is lactational amenorrhea and postpartum abstinence, which reduce the number of births by 5.8, almost 57% of the overall reduction in fertility. A delay in the age at first marriage accounts for 31% of the reduction, or 3.1 fewer births. Madagascar had a family planning prevalence rate of 17% at the time of the survey, which accounts for the remaining 12% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 450,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Madagascar, where the TFR is high and family planning prevalence is low, the increase in family planning use needed to replace the loss of protection from lactational infertility presents an almost insurmountable task for family planning programmers.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

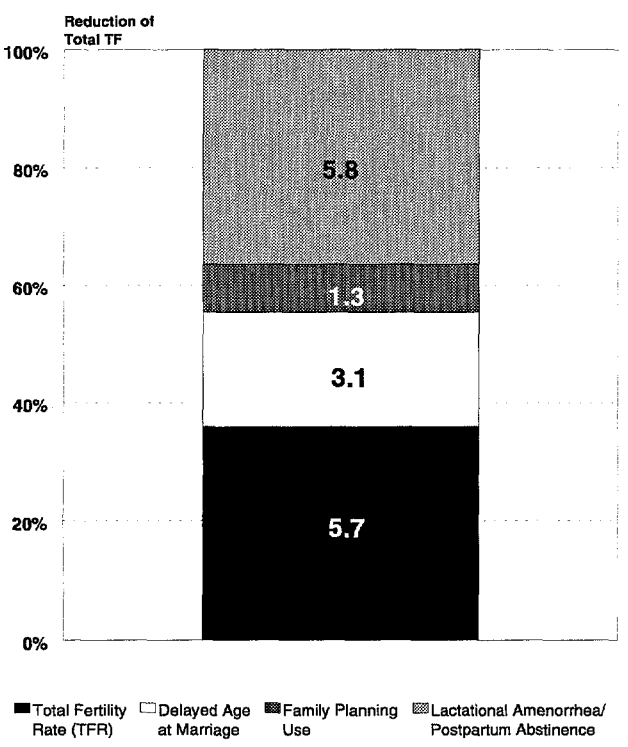
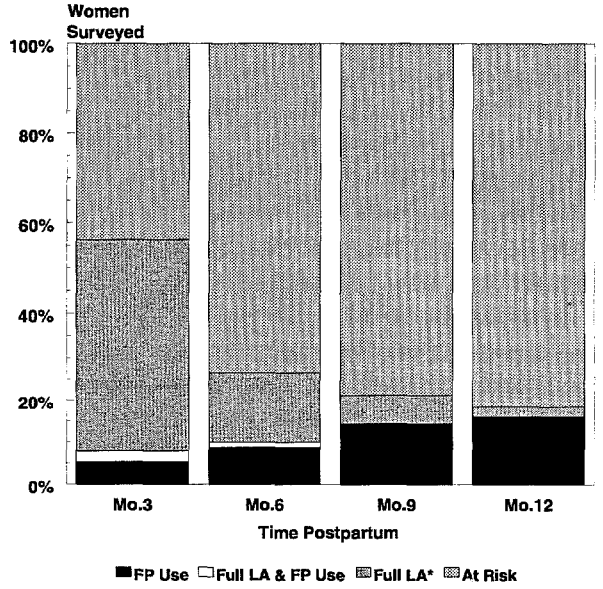



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Madagascar

1. Madagascar's rate of exclusive and full breastfeeding drop dramatically by the sixth month postpartum. Therefore, increased levels of exclusive breastfeeding in the first six months are recommended to enhance both the child spacing benefits for the mother and the health and nutritional benefits for the infant.

2. The less than optimal rates of exclusive breastfeeding across social variables suggest that any intervention will have to be widespread. However, overall duration of breastfeeding is relatively long. It needs to be determined what factors discourage exclusive or full breastfeeding in a nation where breastfeeding is widely practiced.

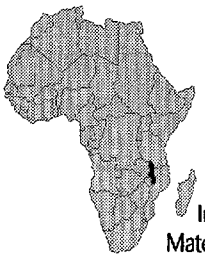
3. Introducing supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1993, Madagascar's infant mortality rate was 100 deaths per 1,000 births. Increasing the incidence of exclusive breastfeeding could reduce this high infant mortality rate.

4. A delay in the introduction of nutritive supplements past about six months can be unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue frequent breastfeeding for two years or longer.

5. Family planning use does not increase over the period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of complementary family planning methods is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum.

6. In Madagascar, a significant number of breastfeeding women remain amenorrheic through the sixth month postpartum. The Lactational Amenorrhea Method (LAM) could greatly benefit these women because it simultaneously supports optimal breastfeeding practices while teaching the need for the timely introduction of complementary family planning methods.

*Overall breastfeeding rates in Madagascar are encouraging. However, efforts should be made to maintain current levels of breastfeeding and help women switch from partial and full breastfeeding to exclusive breastfeeding during the first six months postpartum. Since full lactational amenorrhea has a significant impact on a woman's lifetime fertility, any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, as well as the need for family planning services. At the same time, Madagascar's family planning prevalence rate is low. Therefore, family planning use and acceptance must receive special attention and suppport, especially during the first two years postpartum.*



# Malawi

Population in millions (1995): 11.1
Annual growth rate: 3.9%
Population urbanized: 14%
Life Expectancy: 45
Infant mortality rate: 138/1,000 live births
Maternal mortality rate (1990): 560/100,000
Literacy: male-72% female-42%

Breastfeeding is a common practice among women in Malawi. Almost 98% of mothers breastfeed their infants at some time, and 30% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). However, the prevalence of exclusive breastfeeding is very low. Only 6% of mothers initiate exclusive breastfeeding, and less than 3% continue this practice until six months postpartum. The most common early feeding pattern is breastfeeding with water supplements. At nine months postpartum, almost 5% of infants receive only water supplements, even though nutritive supplements should already have been introduced.

During the first six months after birth, 92% of infants are breastfed, but exclusive breastfeeding is rare and full breastfeeding is limited (Figure 2). About one fourth of these infants receive water in addition to breastmilk. (All of the geographic identifiers were omitted from the data files, in accordance with the agreement with the Government of Malawi.)

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

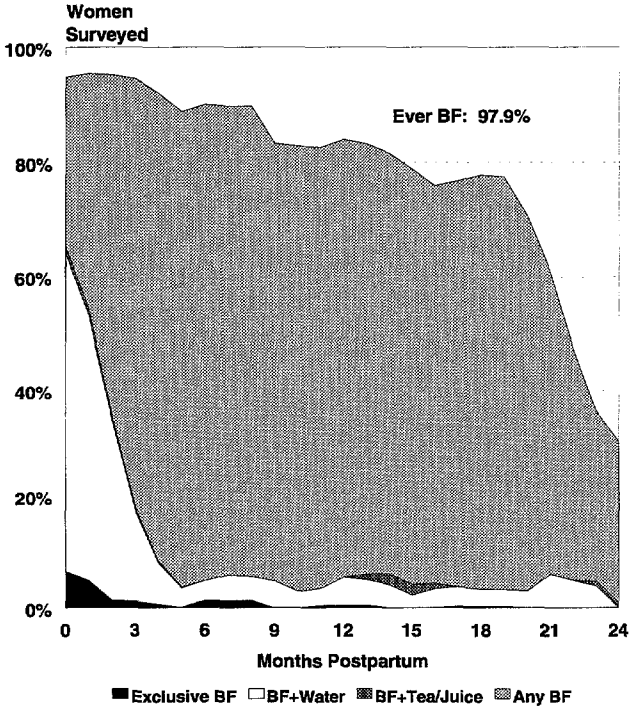
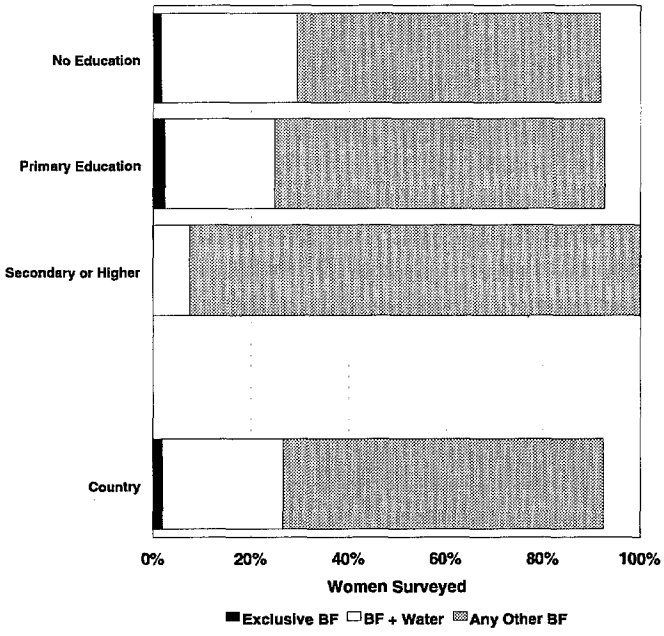



FIGURE 2

**% Breastfeeding in First 6 Months by Sociodemographic Variables***




*All geographic identifiers were omitted from the data in accordance with an agreement with the Government of Malawi.

In Figure 3, at three months postpartum 15% of women are in full lactational amenorrhea, 13% use family planning. The remaining 72% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 3% of women remain in full lactational amenorrhea, and 21% use a family planning method. The other 76% are at risk of a pregnancy.

Couples who wish to achieve healthy child spacing should adopt an appropriate family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 17% and 29% of women, respectively, have adopted

a family planning method. Other women in these later months postpartum are at an increased risk of pregnancy. The few women who remain in full lactational amenorrhea at months nine and twelve postpartum are considered to be at an increased risk, although they are slightly more protected against pregnancy than the rest of the women who are not using family planning.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Malawi's actual level of fertility, indicated by the total fertility rate (TFR), was 6.6. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]), would be 15.2. Lactational amenorrhea and postpartum abstinence have a large impact on fertility inhibition, reducing the number of births by 5.9, or 68% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 21% of the reduction, or 1.8 fewer births. At the time of the survey, Malawi's family planning prevalence rate of 13% accounted for the remaining 11% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, an estimated 335,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Malawi, where the TFR is one of the highest in the world and the family planning prevalence rate one of the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility would present an insurmountable task for family planning programmers.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.2***

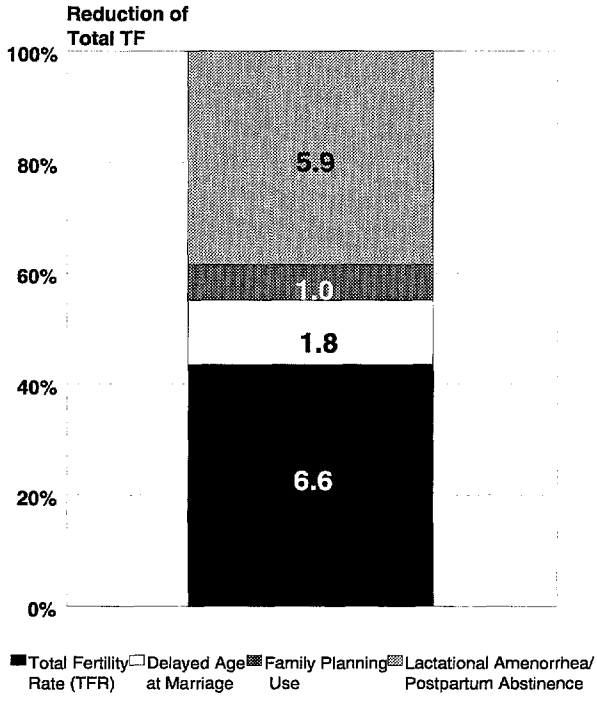
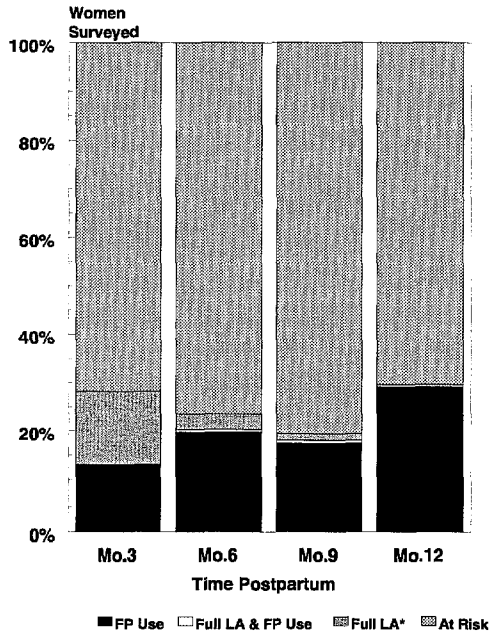



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Malawi

1. Exclusive and full breastfeeding are very rare in Malawi. Therefore, increased levels of exclusive breastfeeding in the first six months are recommended to enhance the child spacing, nutritional, and health benefits for the mother and infant. Guidelines for optimal infant feeding should discourage the addition of water to breastfeeding in the first six months.

2. The uniformly low levels of exclusive breastfeeding in Malawi suggest that any intervention must be widespread. Women of higher education attainment merit special attention. Further research may be necessary to assess the factors that support high levels of breastfeeding and the use of water supplementation, and those that discourage exclusive and sustained breastfeeding.

3. The introduction of supplements into the infant's diet at too early an age (before about six months) contributes to increased levels of infant morbidity and mortality. In 1995, Malawi's infant mortality rate was 138 deaths per 1,000 births. This high rate could be reduced by increasing the incidence of exclusive breastfeeding.

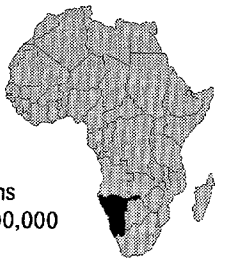
4. Delaying the introduction of nutritive supplements well past six months is unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue frequent breastfeeding for two years or longer.

5. Family planning use remains uniformly low over the same period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of complementary family planning methods after the full lactational amenorrhea ends or after six months postpartum is essential for healthy child spacing.

6. With its high levels of breastfeeding, but low levels of exclusive breastfeeding and family planning use, Malawi is an ideal setting for the Lactational Amenorrhea Method (LAM). LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices while also encouraging the timely introduction of complementary family planning.

*Malawi's overall breastfeeding rate is encouraging, and breastfeeding has a significant impact on a woman's lifetime fertility. However, efforts should be made to maintain current levels of breastfeeding while improving breastfeeding practices such as exclusive breastfeeding for the first six months postpartum. Any deterioration in infant feeding levels or practices would have profound effects on maternal and child health, infant mortality, and the need for family planning services. Malawi has one of the lowest family planning prevalence rates in the world. Therefore, family planning promotion and provision must receive special attention and support. Family planning services in all health care facilities and programs that serve infants and young children will reach the appropriate group of mothers in need of child spacing counseling and supplies.*

# Namibia



Population in millions (1995): 1.5
Annual growth rate: 2.7%
Population urbanized: 37%
Life expectancy: 60
Infant mortality rate: 61/1,000 live births
Maternal mortality rate (1990): 370/100,000
Literacy: male-80% female-59%

Initiation of breastfeeding is a very common practice among women in Namibia. Over 96% of mothers breastfeed their infants at some time, and 18% continue breastfeeding until their children are 24 months of age (Figure 1). However, while full breastfeeding is not uncommon, the prevalence of exclusive breastfeeding is very low. Only 29% of mothers initiate exclusive breastfeeding, and less than 3% continue this practice until six months postpartum. At nine months postpartum, 7% of infants are still exclusively breastfed and 3% receive only water supplements, although nutritive supplements should be introduced around the sixth month. The mean duration of breastfeeding in Namibia is seventeen months, about five months shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

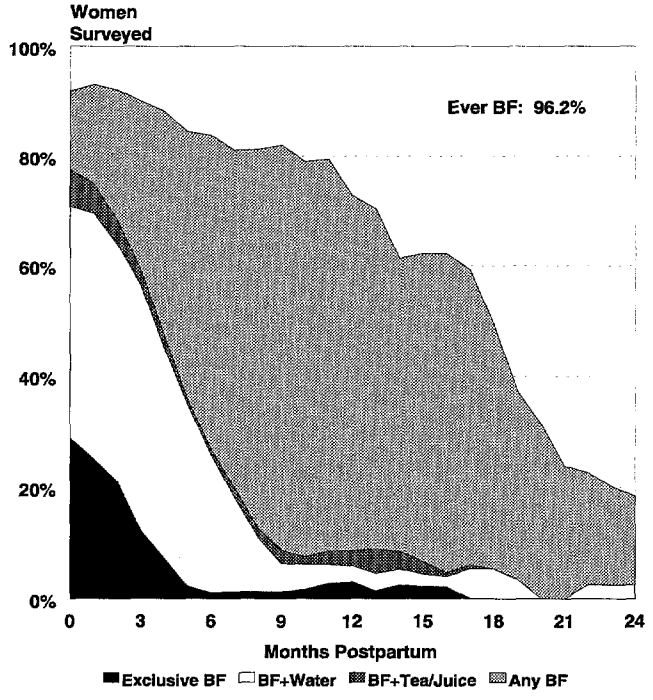
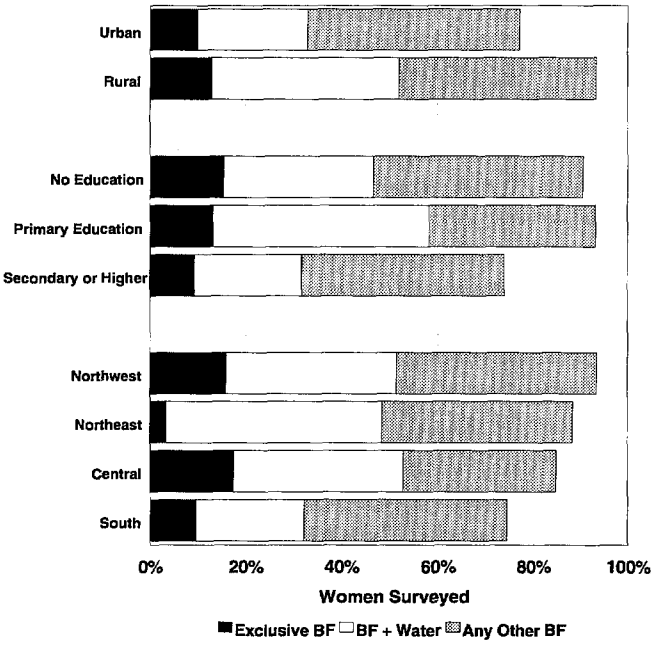



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




During the first six months after birth, 89% of infants are breastfed, and about 40% are fully breastfed, but exclusive breastfeeding is rare (Figure 2). Exclusive and full breastfeeding are higher in rural than in urban areas, and the regional patterns indicate that exclusive breastfeeding ranges from 3% in the Northeast to 18% in the Central region, while breastfeeding and water is over 40% everywhere except the South region. Women with no education are more likely to breastfeed exclusively than women with a primary or secondary/higher levels of education.

At three months postpartum, 44% of women are in full lactational amenorrhea and 28% use family planning (Figure 3). In each of these two groups, 8% are protected both by family planning and full lactational amenorrhea. The remaining 36% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 20% of women remain in full lactational amenorrhea and 26% use a family planning method; 3% fall into both categories. The other 57% are at an increased risk of pregnancy.

Couples who wish to achieve healthy child spacing should adopt an appropriate family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 25% and 30% of women, respectively, have adopted a family planning method. The remaining 75% and 70% of women in these months have no protection against pregnancy. The women who remain in full lactational amenorrhea at months nine and twelve postpartum are considered to be at risk, although they are slightly more protected against pregnancy than the rest of the women who are not using family planning. There is little increase in family planning use over these later months.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Namibia's actual level of fertility, indicated by the total fertility rate (TFR), was 5.6. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 16.6. Lactational amenorrhea and postpartum abstinence have a significant impact in inhibiting fertility; they account for 56% of the overall reduction in total potential fertility, reducing the number of births by 6.1. A delay in the age at first marriage accounts for 20% of the reduction, or 2.1 fewer births. At the time of the survey, Namibia had a family planning prevalence of 29%, which provided the remaining 26% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 65,200 additional births could occur. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Namibia, where the TFR is very high and the family planning prevalence rate relatively low, the increase in family planning use needed to replace the loss of protection from lactational infertility would present a formidable task for family planning programmers.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 16.6***

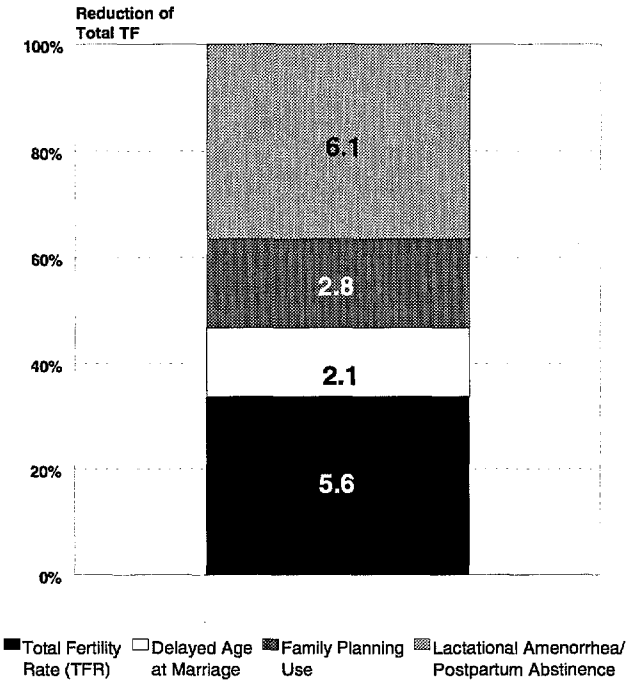
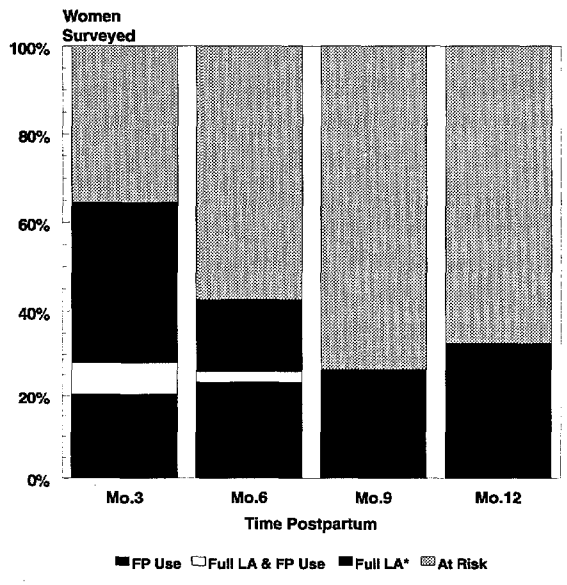



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Namibia

1. Namibia's most common early feeding pattern, breastfeeding with water supplements, is perilous. The introduction of supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1995, Namibia's infant mortality rate was 61 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved. Breastfeeding guidelines should discourage the addition of water to breastfeeding in the first six months.

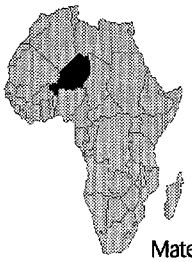
2. The uniformly low levels of exclusive breastfeeding in Namibia suggest that any intervention must be widespread. Special emphasis should be given to the urban and southern areas, as well as to better educated women. Studies are needed to identify the factors that support high levels of breastfeeding and the common use of water supplementation.

3. A delay in the introduction of nutritive supplements well past six months can be unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point while continuing frequent breastfeeding for up to two years.

4. Family planning use remains fairly constant over the same period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of complementary family planning methods is essential for achieving healthy child spacing. Family planning services in all health care facilities that serve infants will reach the appropriate group of mothers.

6. The Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children in this setting. LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices and encourages the timely introduction of complementary family planning.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Namibia. Efforts to maintain current levels of breastfeeding while improving breastfeeding practices such as exclusive breastfeeding for the first six months postpartum are crucial. Any deterioration in breastfeeding practices or levels would have profound effects on maternal and child health, infant mortality rates, and the need for family planning services. Therefore, family planning promotion and provision must receive special attention and support, with particular emphasis given to postpartum women and their unique family planning needs while breastfeeding. Offering family planning services in all health care facilities or programs that serve infants and young children could reach the appropriate group of mothers to ensure healthy child spacing.*



# Niger

Population in millions (1995): 9.2
Annual growth rate: 3.3%
Population urbanized: 17%
Life expectancy: 48
Infant mortality rate: 191/1,000 live births
Maternal mortality rate (1990): 1200/100,000
Literacy: male-21% female-7%

In Niger, more than 98% of mothers initiate breastfeeding, and about 34% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). Although exclusive breastfeeding is very rare, 43% of women are breastfeeding fully at birth, declining to approximately 30% at six months. At nine months postpartum, nearly 15% of mothers offer only non-milk liquid supplements, although nutritive supplements should be introduced at around six months postpartum. The mean duration of breastfeeding in Niger is 20 months, about two months shorter in urban than in rural areas.

During the first six months after birth, 94% of infants are breastfed, and the prevalence of full breastfeeding is 37% (Figure 2). There are essentially no infants who are exclusively breastfed. The greatest variations in the prevalence of specific breastfeeding patterns are shown across educational levels and geographic regions; approximately 40% of women with no formal education breastfeed fully for six months, while less than 10% of women with a secondary and higher education practice this feeding pattern. Among Niger's eight regions, levels of full breastfeeding range from 20% in Zinder to 61% in Dosso.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

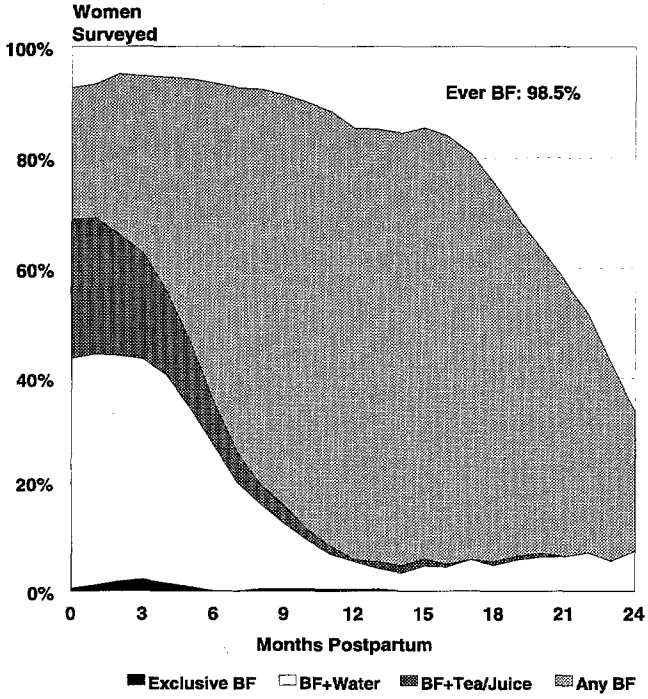
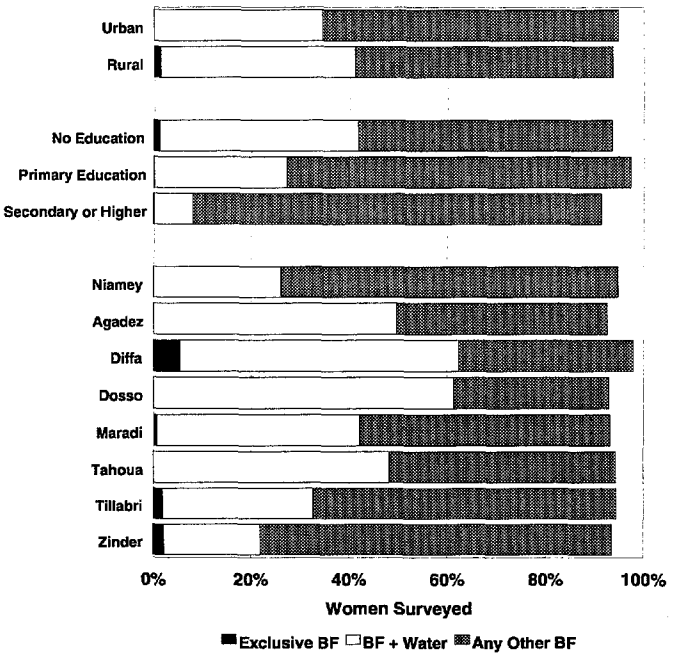



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




At three months postpartum, 36% of women are in full lactational amenorrhea and 5% use family planning (Figure 3). In each of these two groups, 2% are protected both by full lactational amenorrhea and family planning. The remaining 60% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 19% of women remain in full lactational amenorrhea, and only 10% use a family planning method. The other 71% have no protection against pregnancy.

Couples wishing to achieve healthy child spacing should adopt an appropriate family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. However, at months nine and twelve postpartum, only 8% and 5% of women, respectively, are using a family planning method. This leaves the remaining 92% and 95% of women in months nine and twelve postpartum, respectively, with no protection against pregnancy. The 12% and 5% of women who remain in full lactational amenorrhea at months nine and twelve postpartum are at an increased risk, although they are less likely to become pregnant than the rest of the women who are not using family planning.

Figure 4 presents the fertility-inhibiting effects of the intermediate determinants of fertility. Niger's actual level of fertility, indicated by the total fertility rate (TFR), was 7.4 in 1992. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]), would be 14.8. Lactational amenorrhea and postpartum abstinence have a significant impact on fertility inhibition. Together they reduce the number of births by 6.3, which is 85% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 11% of the reduction, or 0.8 fewer births. At the time of the survey, Niger's family planning prevalence of 4%, provided the remaining 4% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 346,000 additional births could occur. A significant increase in family planning use would be necessary to maintain the current fertility level if the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding. In Niger, this would be difficult and costly to achieve.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 14.8***

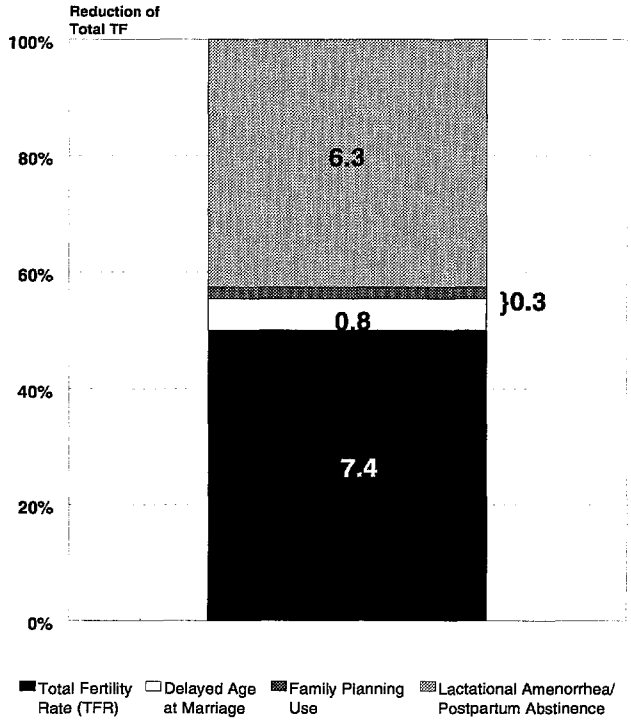
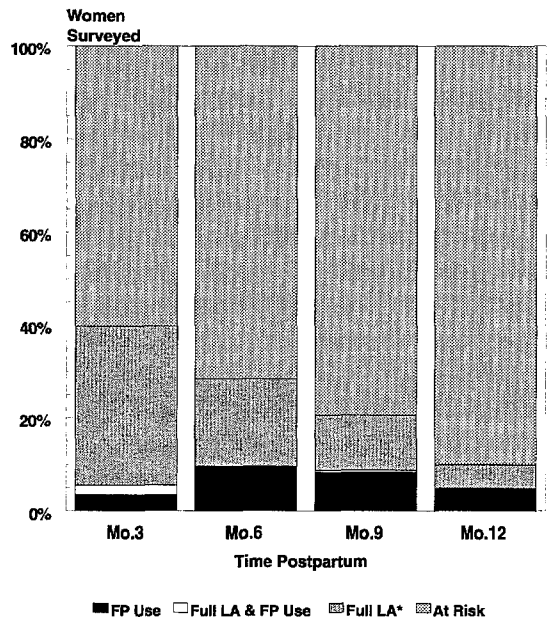



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Niger

1. The promotion of exclusive breastfeeding in the first six months postpartum should be a priority in Niger, since it is virtually nonexistent. This would enhance its child spacing, nutritional, and health benefits for the mother and infant. In addition, research is needed to identify the factors that support high levels of breastfeeding but that discourage exclusive breastfeeding.

2. Introducing supplements into the infant's diet at too early an age (before six months) contributes to increased levels of infant morbidity and mortality, and the practice of supplementing young infants with water-based fluids is widespread. In 1995, Niger's infant mortality rate was the highest in the world at 191 deaths per 1,000 births. An increase in exclusive breastfeeding rates is necessary to reduce this startling infant mortality rate.

3. A delay in the introduction of nutritive supplements past six months may be unhealthy for the infant. At nine months postpartum, Niger's prevalence of breastfeeding with water is still 15%. This should be an issue of concern for the country's policy makers. Mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue frequent breastfeeding for two years or longer.

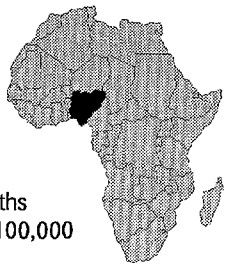
4. Niger's family planning prevalence rate is very low. While there is a slight increase in family planning use when the early protective effect of full lactational amenorrhea is declining, it is nowhere near a level sufficient to ensure healthy child spacing. Initiatives focusing on healthy child spacing are necessary, and family planning promotion and provision must also receive special attention and support.

5. The introduction of family planning methods at the biologically appropriate time may also help minimize the overlap between full lactational amenorrhea and family planning use. The overlap represents unnecessary program costs and may pose a risk to lactating women who use an inappropriate family planning method. However, this is a minor issue when compared to the alarmingly low use of family planning for child spacing.

6. The Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children because it reduces infant morbidity and mortality through its support of optimal breastfeeding practices and encourages the timely introduction of complementary family planning. It has also been shown to increase the use of family planning among women who never relied on a method prior to LAM.

*Among the four intermediate variables, breastfeeding currently has the strongest impact on a woman's lifetime fertility in Niger. Efforts should be made to at least maintain current levels of breastfeeding and to improve infant feeding practices, such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding levels or practices would have dramatic effects on maternal and child health, infant mortality, and the need for family planning services. Family planning use is exceedingly low in Niger, and breastfeeding is likely to remain as the main fertility regulator in the years to come. These factors give LAM an important role in this setting because it can be used as a tool to increase the number of family planning acceptors while improving optimal breastfeeding.*

# Nigeria



Population in millions (1995): 111.7
Annual growth rate: 2.9%
Population urbanized: 39%
Life expectancy: 51
Infant mortality rate: 114/1,000 live births
Maternal mortality rate (1990): 1000/100,000
Literacy: male-67% female-47%

Breastfeeding is a common practice among women in Nigeria. About 98% of mothers breastfeed their infants at some time, and about 28% continue breastfeeding until their children are 24 months of age (Figure 1). Although exclusive breastfeeding is practically nonexistent, 64% of women are fully breastfeeding at birth. At nine months postpartum, nearly 30% of mothers offer only non-milk liquid supplements, although nutritive supplements should be introduced around the sixth month. The mean duration of breastfeeding is 20 months, about five months shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

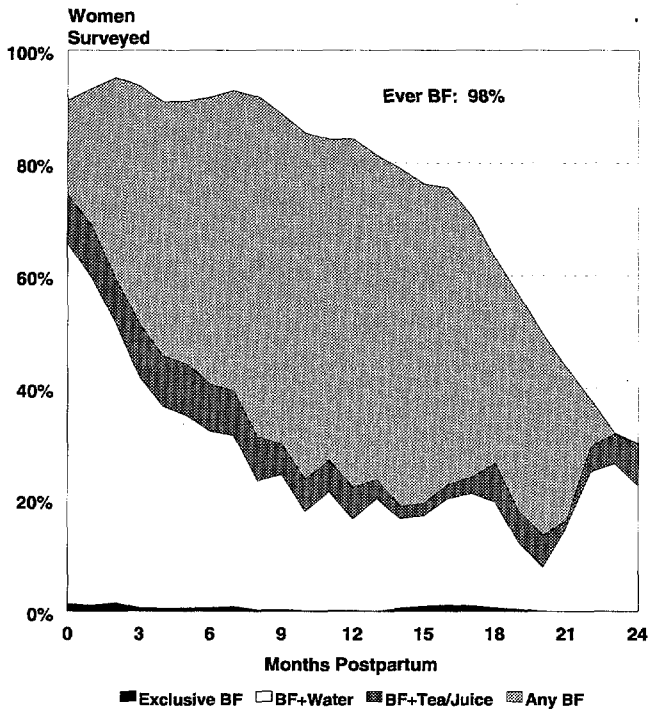
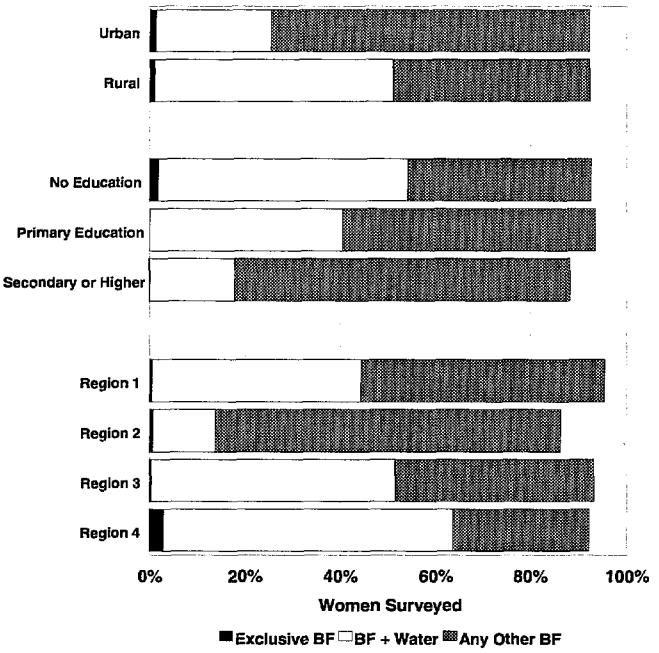



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




During the first six months after birth, 92% of infants in Nigeria are breastfed (Figure 2). While there is virtually no exclusive breastfeeding, the prevalence of full breastfeeding is almost 40%. The variations in full breastfeeding rates are dramatic among the sociodemographic variables. Full breastfeeding is twice as high in rural than in urban areas, is significantly more common among women with no formal education than among women with a primary or secondary/higher education, and full breastfeeding levels vary from 18% in region 2 to 52% in region 4.

In Figure 3, at three months postpartum, 37% of women are in full lactational amenorrhea and less than 1% use family planning. The remaining 63% are women at an increased risk of an unplanned pregnancy. At month six postpartum, 29% of women remain in full lactational amenorrhea, and 5% use a family planning method. The other 66% are at a heightened risk of pregnancy.

Couples wanting to achieve healthy child spacing should adopt an appropriate complementary family

planning method when full lactational amenorrhea ends or after six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 3% and 2% of women, respectively, have adopted a family planning method. This leaves the remaining 97% and 98% of women in these months, respectively, unprotected against pregnancy. The 10% and 16% of women who remain in full lactational amenorrhea in months nine and twelve postpartum are at increased risk, although they are at a lower risk than the remainder of the women who are not using family planning.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Nigeria's actual level of fertility, indicated by the total fertility rate (TFR), was 6.5. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 16.1. Lactational amenorrhea and postpartum abstinence are the major fertility-inhibiting factors,

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

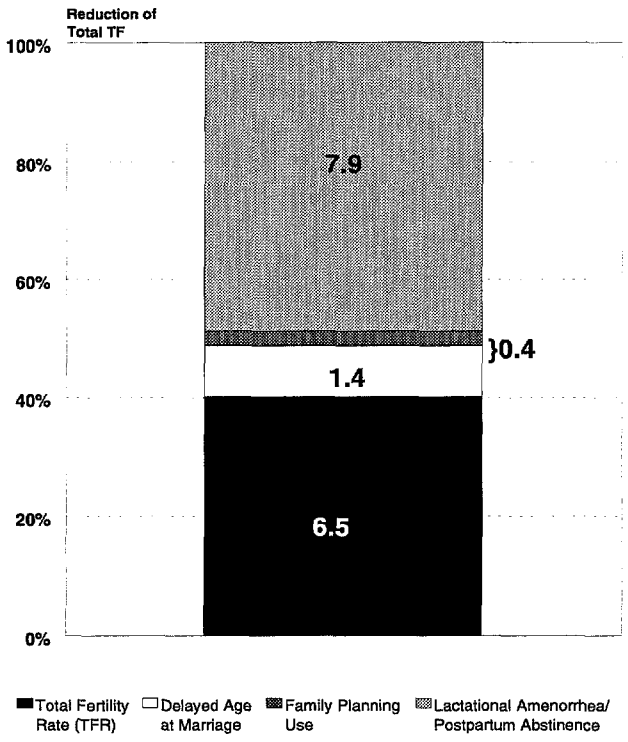
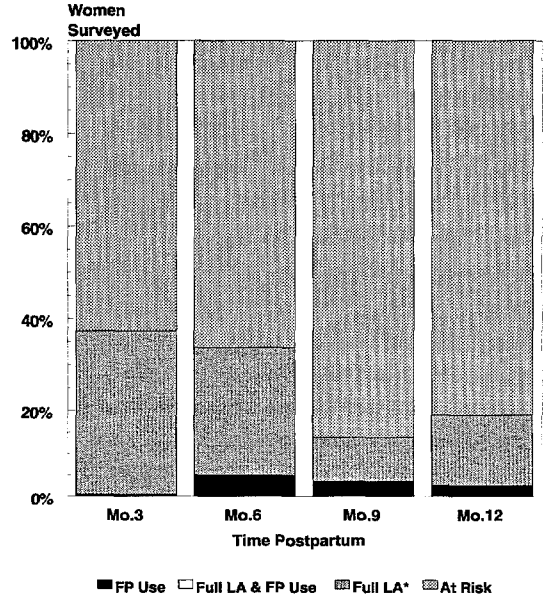



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

reducing the number of births by 7.9, which is 82% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 14% of the reduction, or 1.4 fewer births. At the time of the survey, Nigeria had a family planning prevalence of 6%, which provided the remaining 4% reduction in fertility.

As many as 7.5 million additional births could occur in the following year in Nigeria if lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Nigeria, where family planning prevalence is extremely low, this would be a difficult and costly undertaking.

# Program and Policy Considerations-Nigeria

1. There is virtually no exclusive breastfeeding in Nigeria. The promotion of exclusive breastfeeding in the first six months is recommended to enhance the child spacing, nutrition, and health benefits for the mother and infant that this breastfeeding pattern affords. In addition, studies are needed to identify the factors that support high levels of breastfeeding and common use of water supplementation.

2. The practice of supplementing young infants with water-based fluids is widespread in Nigeria, introducing supplements into the infant's diet at too early an age (prior to six months) contribute to increased levels of infant morbidity and mortality. In 1995, Nigeria's infant mortality rate was 114 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved. The practice of supplementing breastfeeding with water during the first six month needs to be discouraged.

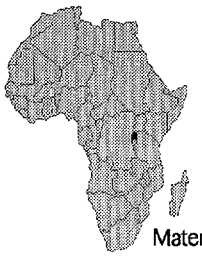
3. A delay in the introduction of nutritive supplements past six months is unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue breastfeeding for up to two years or longer.

4. Program and policy initiatives aimed at improving optimal breastfeeding practices should be widespread, targeting urban women and those with some education. These educational efforts are best started while the women are still in school.

5. Nigeria has an astonishing low prevalence of family planning use. Family planning use is nowhere near a level sufficient to ensure healthy child spacing. The timely introduction of family planning methods is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum. Initiatives focusing on healthy child spacing and family planning are necessary.

6. The number of women remaining in full lactational amenorrhea through month six postpartum makes Nigeria an ideal setting to introduce the Lactational Amenorrhea Method (LAM). LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices, and, perhaps more importantly, it encourages the timely introduction of another family planning method. Studies have shown that many LAM users go on to use another method of family planning, even those who had never used family planning prior to accepting LAM.

*Breastfeeding currently has the strongest impact on a woman's lifetime fertility in Nigeria. Efforts must be made to maintain current levels of breastfeeding and to improve breastfeeding practices, such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, infant mortality rates. At the same time, family planning use and acceptance must receive special attention and support. It must be underscored that, because family planning use is exceedingly low in Nigeria, breastfeeding is likely to remain as the main fertility regulator until a major change in family planning use occurs.*



# Rwanda

Population in millions (1995): 8.0
Annual growth rate: 2.9%
Population urbanized: 31%
Life expectancy: 47
Infant mortality rate: 85/1,000 live births
Maternal mortality rate (1990): 1300/100,000
Literacy: male-70% female-52%

Breastfeeding is widespread in Rwanda, with almost 99% of mothers breastfeeding their infants at some time, and 76% continuing some type of breastfeeding until their children are 24 months of age (Figure 1). The prevalence of exclusive breastfeeding is the highest of any country in this set of analyses; about 90% of mothers initiate exclusive breastfeeding, and 37% continue this practice until six months postpartum. At nine months postpartum, 10% of infants are still exclusively breastfed and 3% receive only water supplements, although nutritive complementary foods are recommended at about six months of age. The mean duration of breastfeeding is 27 months, about three months shorter in urban than in rural areas.

During the first six months after birth, 92% of infants are breastfed, and 72% are exclusively breastfed (Figure 2). Exclusive breastfeeding is slightly higher in rural than in urban areas, and women with no education are more likely to breastfeed exclusively than women with higher levels of education; these differences, though, are small. The greatest variations in breastfeeding patterns are exhibited in Rwanda's regions;

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

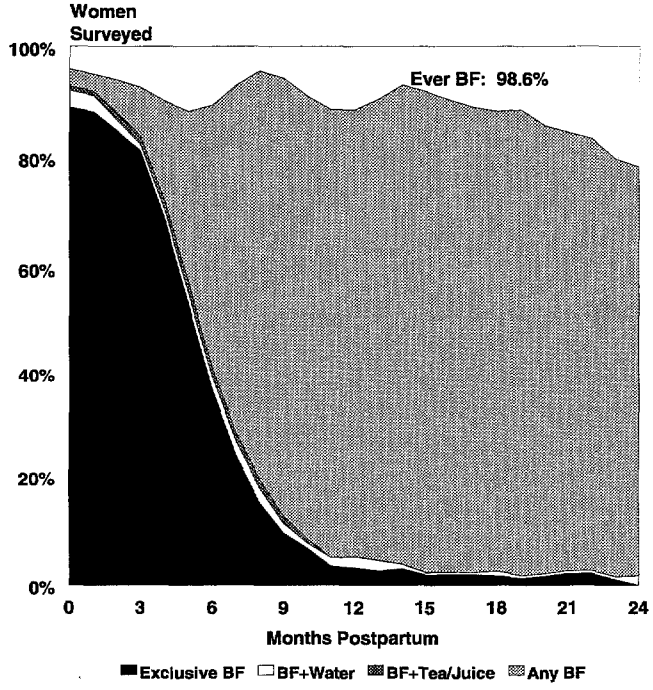
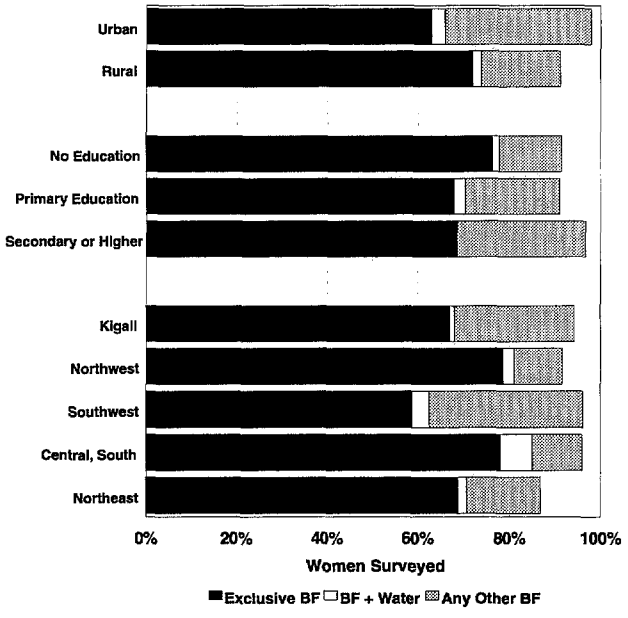



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




exclusive breastfeeding during the first six months ranges from 59% in the Southwest to 79% in the Northwest.

At three months postpartum, 80% of women are in full lactational amenorrhea and 8% use family planning (Figure 3). In each of these two groups, 5% of these women are protected by both family planning and full lactational amenorrhea. The remaining 17% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 32% of women remain in full lactational amenorrhea and 15% use a family planning method; about 2% of the women are in both groups. The other 55% of women are unprotected against pregnancy.

Couples wanting to achieve healthy child spacing should adopt an appropriate family planning method

when full lactational amenorrhea ends or after six months postpartum, whichever occurs first. At both months nine and twelve postpartum, however, only 14% of women have adopted a family planning method. The remaining 86% of women in these months have no protection against pregnancy. The women who remain in full lactational amenorrhea through months nine and twelve postpartum are considered to be at increased risk, although they are at a lower risk of pregnancy than those women not using family planning during this same time.

Figure 4 presents the fertility-inhibiting effects of the intermediate determinants of fertility. Rwanda's actual level of fertility, indicated by the total fertility rate (TFR), was 6.3 in 1992. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 21.4. A significant part of this reduction is due to lactational amenorrhea and postpartum abstinence, which reduce the number of births by 9.2, 61% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 25% of the reduction, or 3.8 fewer births. At the time of the survey, Rwanda's family planning prevalence of 21% provided the remaining 14% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 314,000 additional births could occur in the following year. A significant increase in family planning use would be necessary to maintain the current fertility level if the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding. In Rwanda, where the TFR is very high and the family planning prevalence rate is relatively low, the increase in family planning use needed to replace the loss of protection from lactational infertility would present a formidable task for family planning programmers.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 21.4***

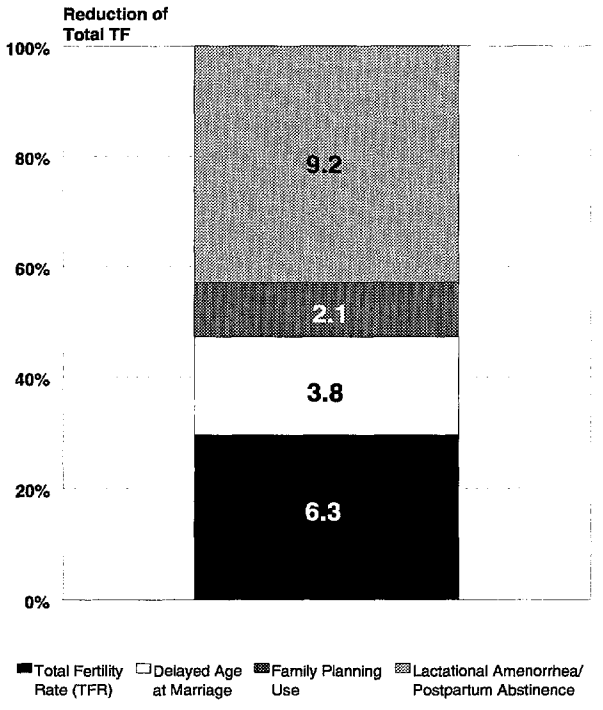
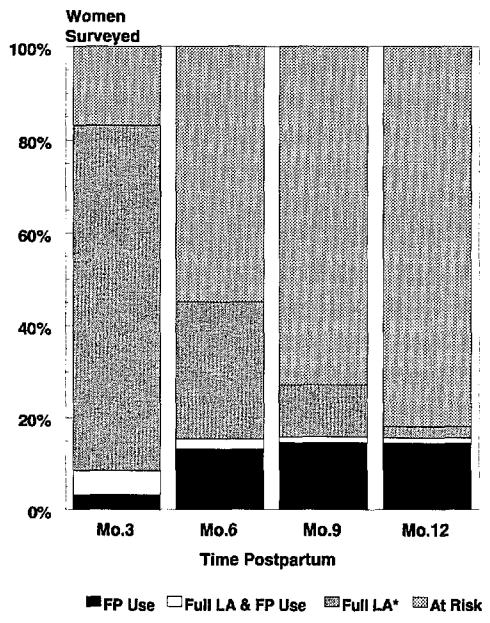



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Rwanda

1. Rwanda's prevalence and duration of exclusive breastfeeding is the highest and longest of any country included in these analyses. Research into why these breastfeeding practices are so strong might aid the formulation of policies for countries where the prevalence and duration of exclusive breastfeeding are weaker. The notable high levels of exclusive breastfeeding are associated with the long durations of full lactational amenorrhea found in this country.

2. The relatively high levels of exclusive breastfeeding in Rwanda suggest that any intervention might best target most resistant the geographical areas and perhaps concentrate on weaning foods and timely family planning use.

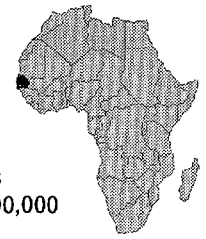
3. Although Rwanda's infant mortality rate is high at 85/1000, this rate would certainly be higher if not for the current prevalence of exclusive breastfeeding. However, delaying the introduction of nutritive supplements well past six months can be unhealthy for the infant. In Rwanda, 13% of infants are not yet receiving complementary foods at nine months. Mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue breastfeeding frequently for up to two years or longer.

4. Family planning use remains low over the period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of complementary family planning methods is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum. Offering family planning services in all health care facilities and programs that serve infants might reach the appropriate group of mothers.

5. Rwanda's high levels of exclusive breastfeeding and long durations of amenorrhea suggest that the Lactational Amenorrhea Method (LAM) is an ideal family planning method for this setting. LAM would greatly benefit many couples and their children as it reduces infant morbidity and mortality through its support of optimal breastfeeding practices and encourages the timely introduction of complementary family planning.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Rwanda. However, efforts should be made to maintain and improve current breastfeeding practices, such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health as well as the need for family planning services. Rwanda's low family planning prevalence suggests that family planning and child spacing must also receive special attention; LAM could help increase the levels of family planning use as it has been shown to bring new acceptors to other family planning methods.*

# Senegal



Population in millions (1995): 8.3
Annual growth rate: 2.7%
Population urbanized: 42%
Life expectancy: 50
Infant mortality rate: 70/1,000 live births
Maternal mortality rate (1990): 1200/100,000
Literacy: male-43% female-23%

Initiation of breastfeeding is a common practice among Senegalese women. Over 98% of mothers breastfeed their infants at some time, and 22% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). The most common early feeding pattern is breastfeeding with water supplements. The prevalence of exclusive breastfeeding, however, is very low. Only 8% of mothers initiate exclusive breastfeeding, and less than 5% continue this practice until six months postpartum. At nine months postpartum, 20% of infants still receive only water supplements, although nutritive complementary foods are recommended at about six months. The mean duration of breastfeeding is 20 months, about one and a half months shorter in urban than in rural areas.

During the first six months after birth, 96% of infants are breastfed (Figure 2). Nearly 60% of infants receive water in addition to breastmilk. Both exclusive and full breastfeeding practices are higher in rural than in urban areas, and declines with increasing educational level. In all four of Senegal's regions, the prevalence of exclusive breastfeeding is 11% or less.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

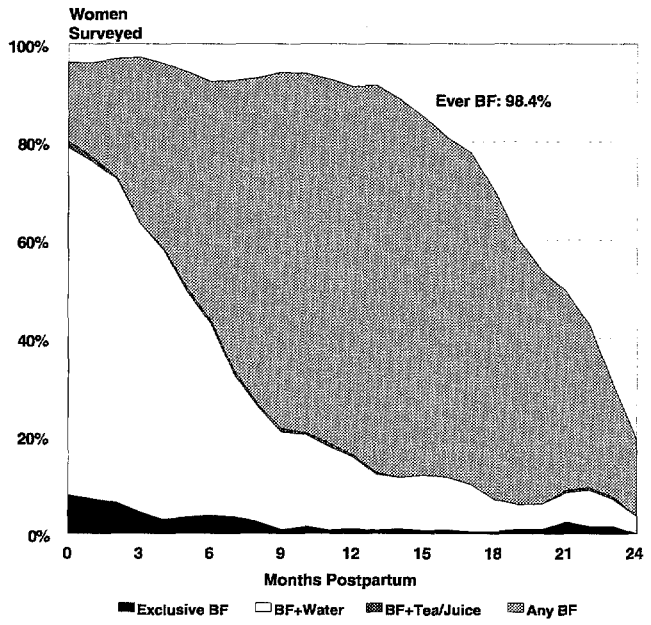
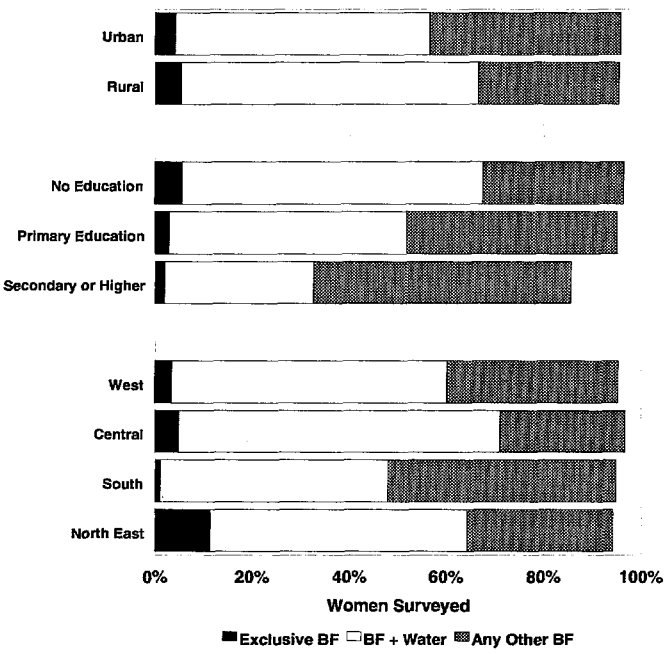



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




At three months postpartum, 60% of women are in full lactational amenorrhea and 5% use a method of family planning (Figure 3). About 2% within each group also are protected by full lactational amenorrhea. The remaining 37% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 32% of women remain in full lactational amenorrhea and 9% use a family planning method; 2% fall into both categories. The remaining 61% of women have no protection against pregnancy.

Couples who wish to achieve healthy child spacing should adopt an appropriate family planning method when full lactational amenorrhea ends or at six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 7% and 6% of women, respectively have done so.

The remaining 93% and 94% of women in months nine and twelve postpartum have no protection against pregnancy. The 17% and 7% of women who remain in full lactational amenorrhea in months nine and twelve, respectively, are considered to be at increased risk, although they are more protected against another pregnancy than the population not using family planning.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Senegal's actual level of fertility, indicated by the total fertility rate (TFR), was 6.1. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]), would be 15.3. Lactational amenorrhea and postpartum abstinence provide the greatest reduction in the number of births, 6.7, which is 72% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 22% of the reduction, or 2.0 fewer births. At the time of the survey, Senegal's family planning prevalence of 7% provided the remaining 5% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 434,000 additional births could occur in the following year in Senegal. A significant increase in family planning use would be necessary to maintain the current fertility level if the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding. In Senegal, where the TFR is one of the highest in the world and the family planning prevalence rate is among the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility would represent an almost insurmountable task for family planning programmers.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.3***

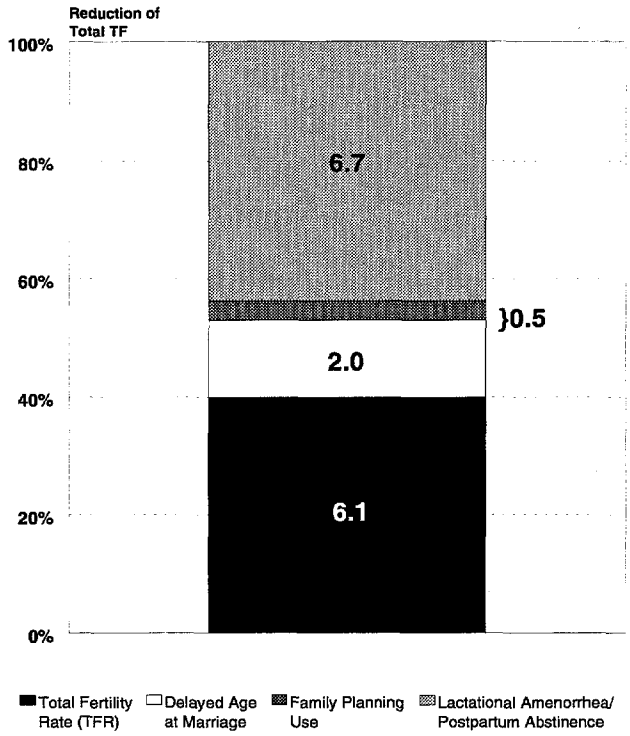
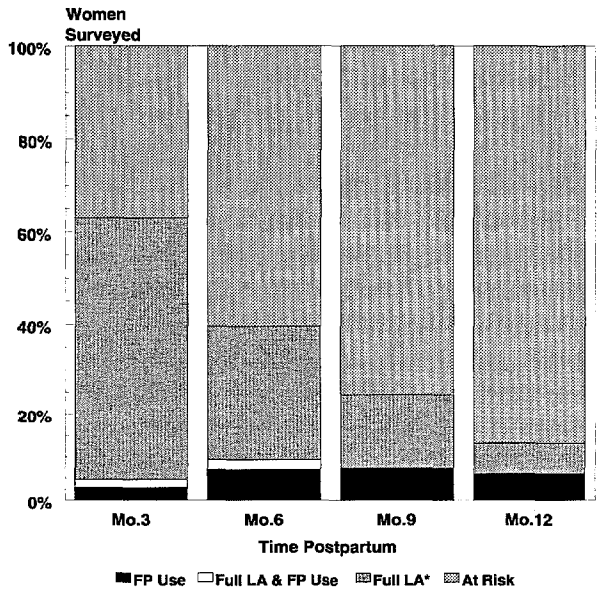



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Senegal

1. Increasing Senegal's very low levels of exclusive breastfeeding in the first six months is recommended to enhance breastfeeding's child spacing, nutritional, and health benefits for the mother and infant. The common use of water supplementation needs to be assessed and addressed. If water were eliminated, infant health could be enhanced and lactational infertility could be maximized.

2. In 1995, Senegal's infant mortality rate was 70 deaths per 1,000 births. An increase in exclusive breastfeeding might reduce this high rate, as would the timely introduction of nutritive complementary foods. In Senegal, 20% of nine-month old infants are not yet receiving complementary foods. Optimal breastfeeding guidelines should discourage the addition of water to breastfeeding in the first six months and encourage nutritive supplements at about six months.

3. Senegal's family planning prevalence rate is very low, and family planning use declines over the same period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of family planning methods is essential for couples who want achieve healthy child spacing. Offering family planning services in all health care facilities and programs that serve infants and young children could reach the appropriate group of mothers.

4. In Senegal, the percent of women who remain in full lactational amenorrhea through month six is striking, and is one of the highest of any country in this analysis. Because of this, the Lactational Amenorrhea Method (LAM) could be introduced and used easily in this setting. LAM also provides other benefits, such as support of optimal breastfeeding practices, encouragement of timely introduction of complementary family planning, and promotion of exclusive breastfeeding.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Senegal. However, efforts should be made to maintain current levels of breastfeeding while improving infant feeding practices, such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding levels or other infant feeding practices would have profound effects on maternal and child health, the infant mortality rate, and the need for family planning services. At the same time, special attention must be placed on family planning services and child spacing counseling.*

# Tanzania

Population in millions (1995): 29.7
Annual growth rate: 3.1%
Population urbanized: 24%
Life expectancy: 52
Infant mortality rate: 100/1,000 live births
Maternal mortality rate (1990): 770/100,000
Literacy: male-79% female-57%

More than 98% of mothers in Tanzania initiate breastfeeding, and 30% continue breastfeeding until their children are 24 months of age (Figure 1). Approximately 40% of women initiate exclusive breastfeeding, but this practice declines to 10% at four months postpartum and to 5% at six months postpartum. At month nine postpartum, 8% of women supplement their breastmilk with only non-milk liquids. The mean duration of breastfeeding is 20 months, and is almost one and a half months shorter in urban than in rural areas.

During the first six months after birth, 19% of all infants are exclusively breastfed (Figure 2). This practice is twice as common in rural areas (22%) as it is in urban areas (11%). Among Tanzania's different regions, the prevalence of exclusive breastfeeding ranges from 3% in the Coastal area to 32% in the Lake region. There is a notable difference in the prevalence of exclusive breastfeeding among the different educational levels. Only 8% of women with a secondary education or higher practice exclusive breastfeeding,

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

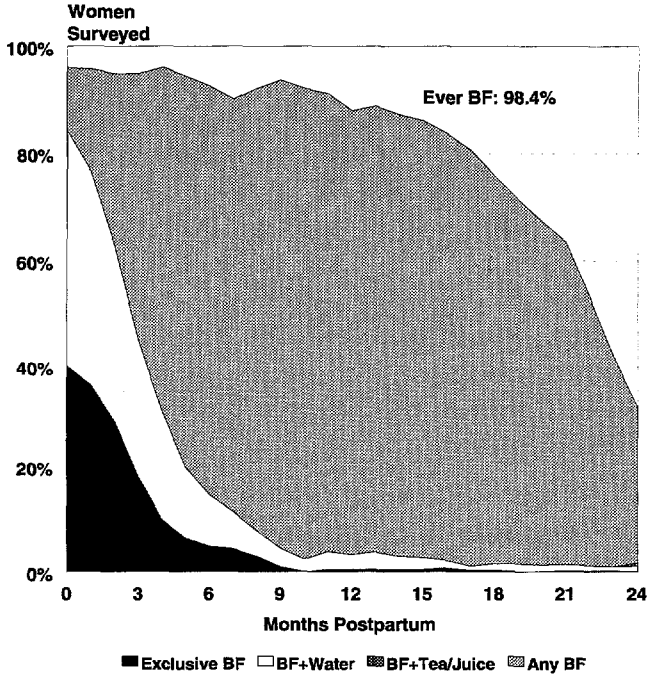
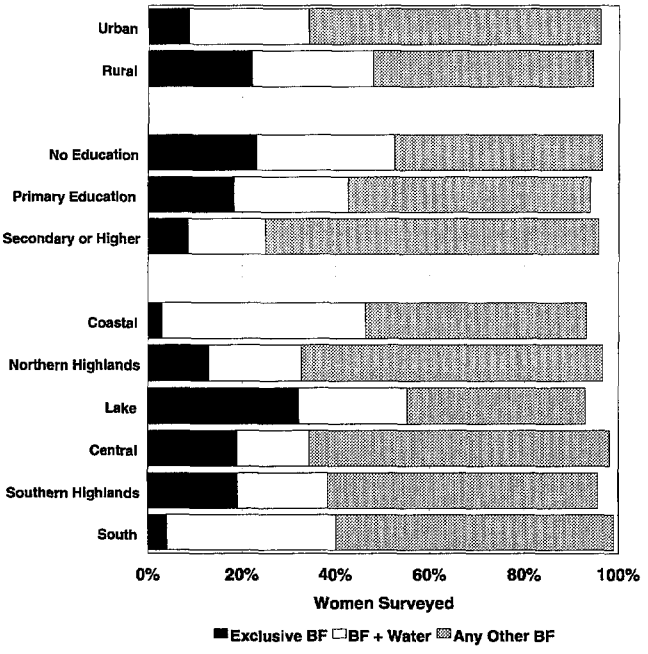



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




while 18% of those with an elementary education and 23% of women with no formal education breastfeed exclusively in the first six months postpartum. Full breastfeeding, which accounts for an additional 25% of infants, varies similarly.

At three months postpartum, 42% of women are in full lactational amenorrhea, and 11% use family planning (Figure 3). Approximately 1% overlap because they use family planning and also are protected by full lactational amenorrhea. The remaining women are at an increased risk of an unplanned pregnancy. At six months postpartum, 10% of women remain in full lactational amenorrhea, and 10% use a family planning method. The other 80% are unprotected against pregnancy.

Couples wanting to achieve healthy child spacing should adopt a family planning method after the end of full lactational amenorrhea or at six months postpartum, whichever occurs first. At nine months postpartum, however, only 7% of women have adopted a family planning method, and this figure increases to only 14% at twelve months. The remaining 93% and 86% of women in months nine and twelve postpartum, respectively, have no protection against pregnancy.

The fertility-inhibiting effect of the intermediate determinants of fertility are presented in Figure 4. In 1991, Tanzania's actual level of fertility, indicated by the total fertility rate (TFR), was 5.7. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 15.3. The greatest fertility-inhibiting factor is lactational amenorrhea and postpartum abstinence, which reduces the number of births by 6.5, or 68% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 24% of the reduction, or 2.3 fewer births. At the time of the survey, Tanzania had a family planning prevalence rate of 10%, which provides the remaining 8% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.3***

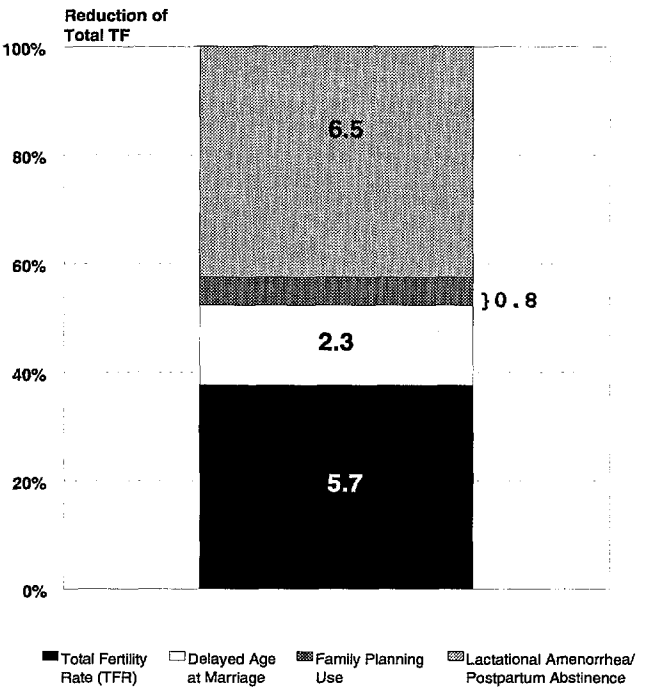
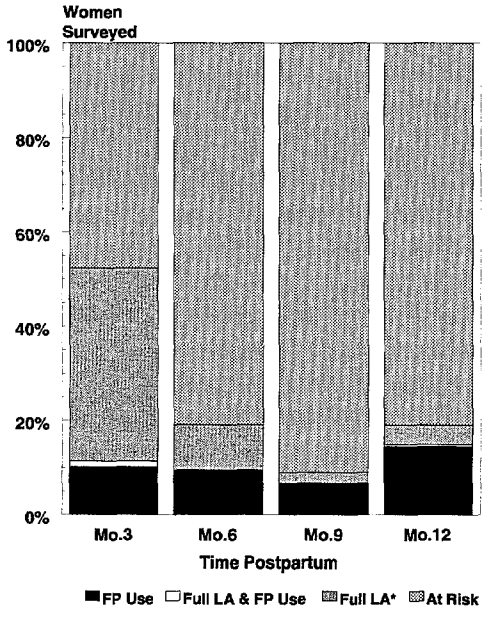



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 1.3 million additional births could occur in the following year in Tanzania. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary just to maintain the current fertility level. In Tanzania, where the TFR is one of the highest in the world and the family planning prevalence rate is among the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility would present an almost insurmountable task for family planning programmers.

# Program and Policy Considerations-Tanzania

1. Exclusive breastfeeding in the first six months is not the normative behavior in Tanzania, but, higher levels of full breastfeeding are encouraging. However, water supplements during this time should be discouraged. In 1995, Tanzania's infant mortality rate was one of the highest in the world, at 100 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate might be achieved. Therefore, increasing these levels should be a priority to further enhance the child spacing, nutrition, and health benefits for both mother and infant.

2. Mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue frequent breastfeeding for up to two years or longer.

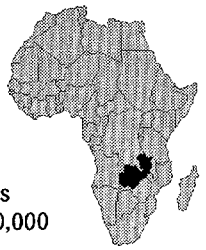
3. Tanzania has one of the lowest family planning prevalence rates in these analyses. The timely introduction of complementary family planning is essential for couples who want to achieve healthy child spacing of two years or more. Although family planning use may increase slightly after the sixth month postpartum, the level does not replace the decline in biological infertility and is insufficient to ensure healthy child spacing.

4. The percent of women in full lactational amenorrhea during months three and six postpartum is notable. In this setting the Lactational Amenorrhea Method (LAM) could greatly benefit many couples and their children. LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices and encourages the timely introduction of complementary family planning, both of which are needed in Tanzania.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Tanzania. However, efforts should be made to maintain current levels of breastfeeding while improving breastfeeding practices, such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding rates or practices would have profound effects on maternal and child health as well as the need for family planning services.*

*At the same time, Tanzania's low prevalence of family planning use must receive special attention and support, with particular emphasis given to the concept of healthy child spacing and postpartum women with their unique family planning needs while breastfeeding.*

# Zambia



Population in millions (1995): 9.5
Annual growth rate: 3.3%
Population urbanized: 43%
Life expectancy: 48
Infant mortality rate: 114/1,000 live births
Maternal Mortality Rate (1990): 940/100,000
Literacy: male-86% female-71%

Initiation of breastfeeding is the normative behavior among women in Zambia. More than 98% of mothers breastfeed their infants, and 17% continue breastfeeding until their children are 24 months of age (Figure 1). The prevalence of exclusive breastfeeding, however, is low. Only 15% of mothers initiate exclusive breastfeeding, and less than 3% continue this practice until six months postpartum. The most common early feeding pattern is breastfeeding with water supplements. At nine months postpartum, 5% of infants still receive only water supplements, although nutritive supplements should be introduced around the sixth month. The mean duration of breastfeeding is eighteen months, approximately one month shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

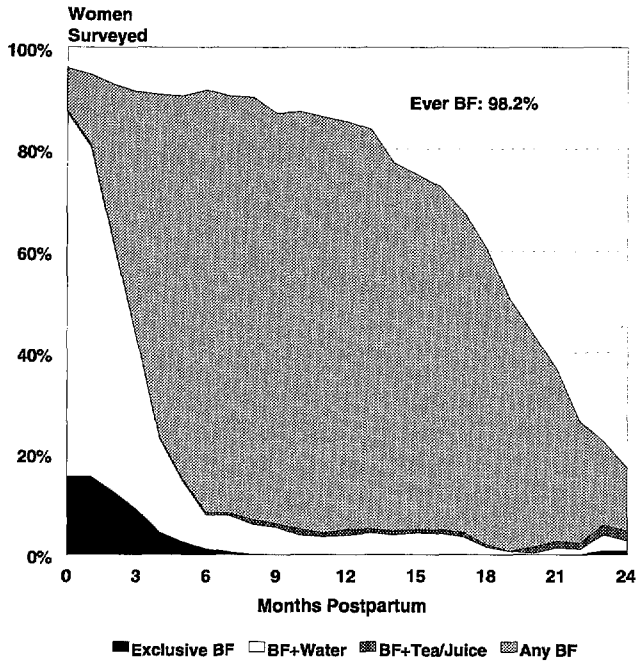
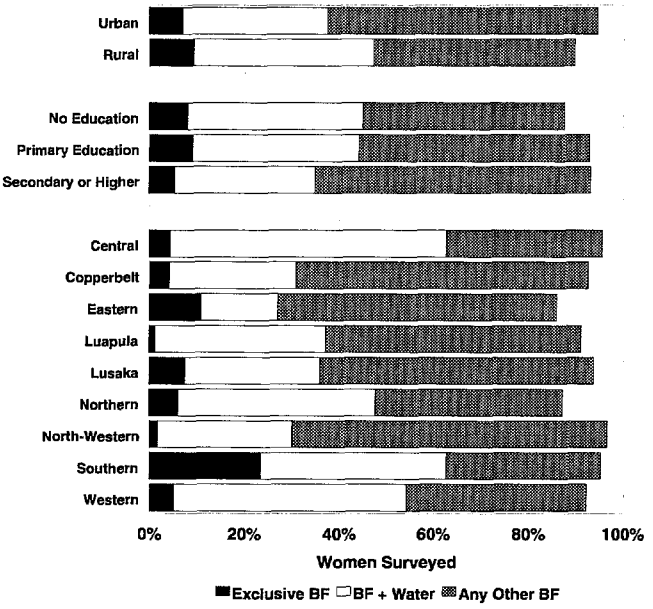



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




During the first six months after birth, 93% of infants are breastfed, but exclusive breastfeeding is rare (Figure 2): about one third of infants receive water in addition to breastmilk. There is no significant variance in breastfeeding practices by education level or by urban/rural differential, but across geographic regions, there is a greater difference seen in both exclusive breastfeeding and breastfeeding with water supplements. In the nine Zambian regions, the prevalence of exclusive breastfeeding ranged from 1% in Luapula to 23% in the Southern region, and prevalence of breastfeeding with water supplements ranged from approximately 10% in the Eastern region to almost 60% in the Central region.

At three months postpartum, 31% of women are in full lactational amenorrhea and 13% use family planning (Figure 3). In each of these two groups, 3% use family planning and are also protected by full lactational amenorrhea. The remaining 59% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 9% of women remain in full lactational amenorrhea, and 20% use a family planning method. The other 71% of women at six months postpartum have no protection against pregnancy.

Couples wanting to achieve healthy child spacing should adopt an appropriate family planning method when full lactational amenorrhea ends or at six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 22% and 19% of women, respectively, have adopted a family planning method. The remaining 78% and 81% of the women, respectively, have no means of protection against pregnancy. The few women who remain in full lactational amenorrhea in months nine and twelve are considered to be at increased risk, although they are slightly more protected against pregnancy than the women who are not in full lactational amenorrhea in these months.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Zambia's actual level of fertility, indicated by the total fertility rate (TFR), was 6.0. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 15.4. Lactational amenorrhea and postpartum abstinence reduce the number of births by 5.8, which is 62% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 25% of the reduction, or 2.4 fewer births. At the time of the survey, Zambia's family planning prevalence of 15% provided the remaining 13% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

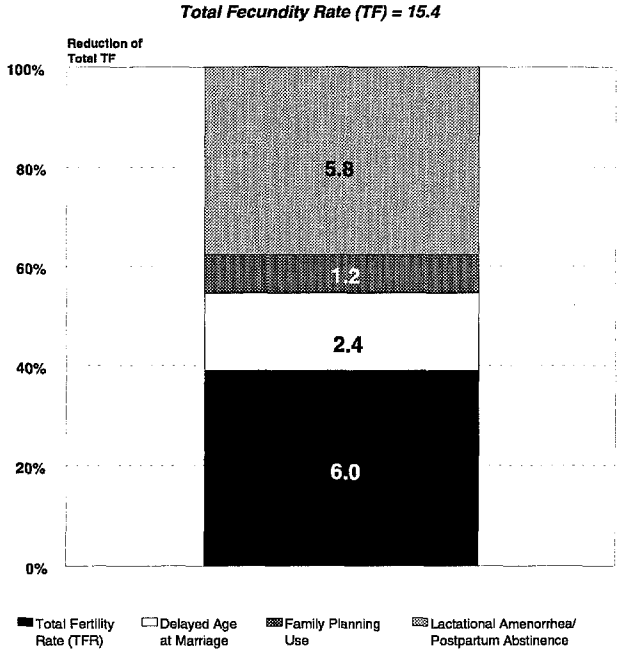
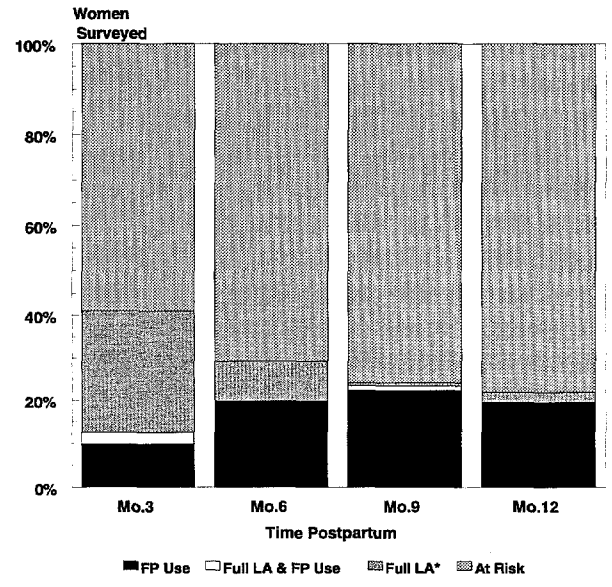



FIGURE 3

**Lactational Amenorrhea(LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 333,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Zambia, where the TFR is one of the highest in the world and the family planning prevalence rate is one of the lowest, the increase in family planning use needed to replace the loss of protection from lactational infertility would represent a daunting task for family planning programmers.

# Program and Policy Considerations-Zambia

1. Since Zambia has a very low prevalence and duration of exclusive breastfeeding, increasing these levels in the first six months is suggested to enhance the benefits of child spacing, nutrition, and health for both the mother and infant. The elimination of water supplements needs to be targeted.

2. The introduction of supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1995, Zambia's infant mortality rate was 114 deaths per 1,000 births, one of the highest in the world. If the incidence of exclusive breastfeeding were higher, and water supplementation lower, a reduction in the infant mortality rate could be achieved.

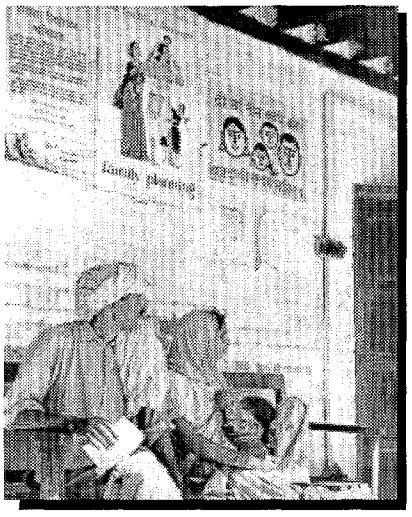
3. The uniformly low levels of exclusive breastfeeding in Zambia suggest that any intervention must be widespread. Further studies are needed to identify the factors that support high levels of breastfeeding with common use of water supplementation and early introduction of supplementary foods. The issue in Zambia is one of changing breastfeeding patterns, rather than changing the breastfeeding norm.

4. Delaying the introduction of nutritive supplements well past six months can be unhealthy for the infant. Mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements at about this time and continue frequent breastfeeding for up to two years.

5. Family planning use does not increase over the same period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of complementary family planning methods is essential for couples who want to achieve health child spacing by controlling their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum.

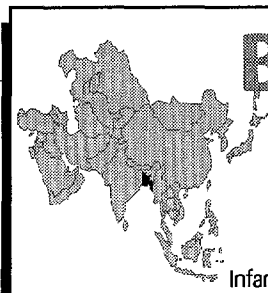
6. The Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children because it supports optimal breastfeeding practices and encourages timely introduction of complementary family planning. LAM also has been shown to increase rates of exclusive breastfeeding.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Zambia. However, efforts should be made to maintain current levels of breastfeeding while improving breastfeeding and weaning practices. Any deterioration in breastfeeding levels or practices would have negative effects on maternal and child health, as well as on the need for family planning services. Given Zambia's low family planning prevalence, special attention and support must be given to child spacing/family planning promotion and acceptance. Offering family planning services in health care facilities and programs that serve infants and young children would reach the appropriate group of mothers.*



# Asia Region

Bangladesh
Indonesia
Pakistan
Philippines



# Bangladesh

Population in millions (1995): 120.4
Annual growth rate: 2.1%
Population urbanized: 18%
Life expectancy: 57
Literacy: male-49% female-26%
Infant mortality rate: 85/1,000 live births
Maternal mortality rate (1990): 850/100,000

Women in Bangladesh initiate breastfeeding; almost 97% of mothers breastfeed their infants at some time, and approximately 81% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). Although 58% of mothers initiate exclusive breastfeeding at birth, this practice declines to 33% at four months postpartum and to 21% at six months postpartum. At month nine postpartum, 9% of mothers are still exclusively breastfeeding and an additional 12% are supplementing breastmilk with water only, although it is recommended that nutritive supplements be introduced at about six months postpartum. The mean duration of any type of breastfeeding in Bangladesh is 28 months, and is more than three months shorter in urban than in rural areas.

During the first six months after birth, the prevalence of the different breastfeeding patterns is relatively consistent across educational levels and geographic areas. Nonetheless, exclusive breastfeeding is higher in rural (41%) areas than it is in urban areas (32%) (Figure 2). Exclusive breastfeeding rates range from 34% in Dhaka to 45% in Chittagong. Nearly 42% of women with no formal education breastfeed exclusively, compared to 37% and 34% of women with primary or secondary/higher education, respectively.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

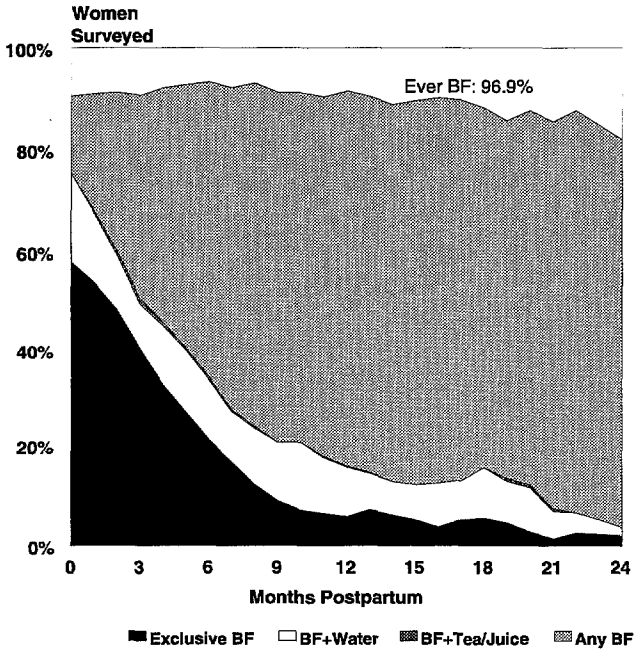
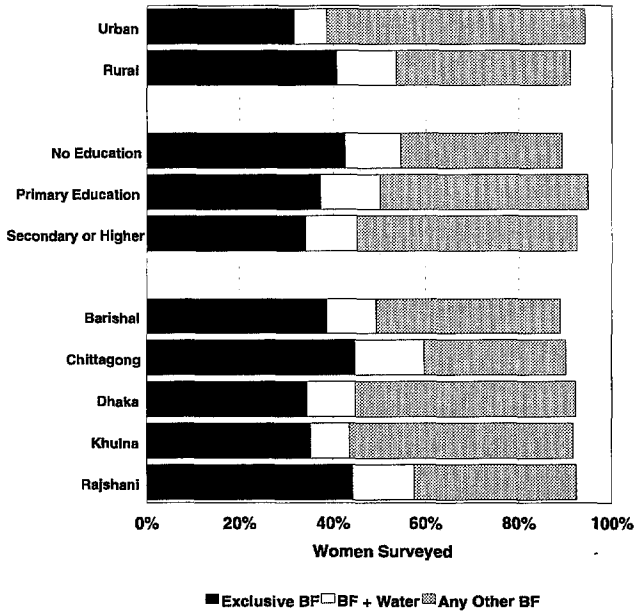



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




In Figure 3, at three months postpartum, 42% of women are in full lactational amenorrhea and 10% use a family planning method. Approximately 2% use family planning and also are protected by full lactational amenorrhea. The remaining 50% are at an increased risk of an unplanned pregnancy. At six months postpartum, 25% of women remain in full lactational amenorrhea, and 14% use a method of family planning. About 1% of the women fall into both groups; this leaves 63% at six months postpartum unprotected against unplanned pregnancy.

Couples who wish to achieve healthy child spacing should adopt an appropriate family planning method after full lactational amenorrhea has ended or six months postpartum, whichever is earlier. However, by nine months postpartum, only 31% of women have adopted a method of family planning. This figure drops to 28% by one year postpartum. The remaining 69% and 72% of women at months nine and twelve postpartum, respectively, have no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1994, Bangladesh's actual level of fertility, indicated by the total fertility rate (TFR), was 3.9. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 11.6. The greatest factor in fertility reduction in Bangladesh is lactational amenorrhea and postpartum abstinence, decreasing the number of births by 4.0,

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 11.6***

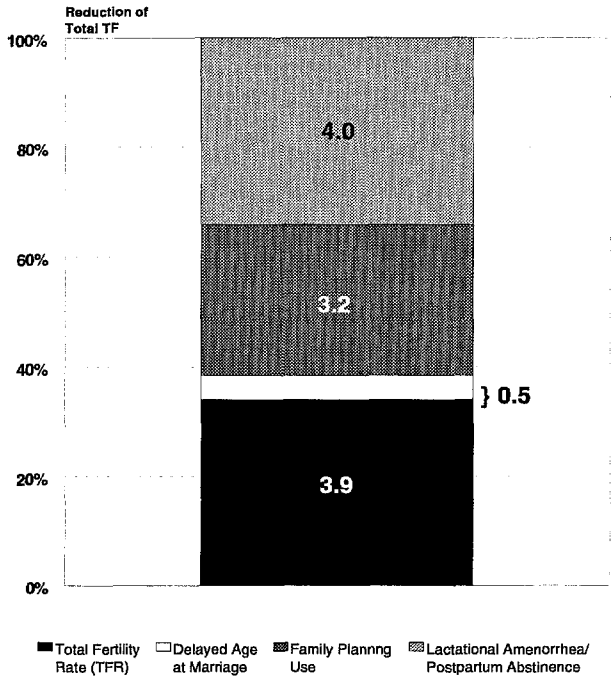
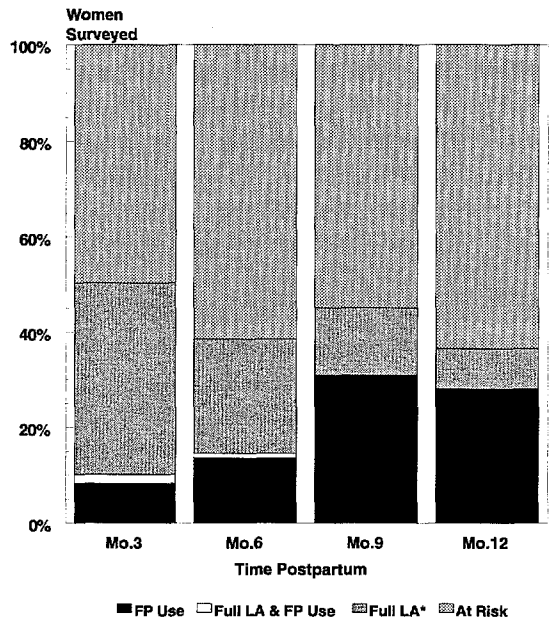



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

and contributing 51% of the overall reduction in total potential fertility. However, family planning use is important in Bangladesh with family planning prevalence rate at 45% or a 42% reduction in total potential fertility. A delay in the age at first marriage accounts for the remaining 7% of the reduction, or 0.5 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 5.2 million additional births could occur in the next year. If the duration of lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Bangladesh, where family planning use is relatively high, this would necessitate a more than doubling of the current use of family planning.

# Program and Policy Considerations-Bangladesh

1. Increased levels of exclusive breastfeeding in the first six months, particularly months three through six, would enhance both the child spacing benefits to the mother and the nutritional and health benefits for the infant. Introducing supplements into the infant's diet too early (before about six months) contributes to increased levels of infant morbidity and mortality. In 1995, Bangladesh's infant mortality rate was 85 deaths per 1,000 births. A higher rate of exclusive breastfeeding in the first six months, may help reduce this rate.

2. The lower levels of exclusive breastfeeding among urban women and women with a secondary education suggest that any intervention should target these groups. However, the relative consistency across groups indicates a societal norm that would merit a more universal approach.

3. In Bangladesh, 21% of women at month nine postpartum have not yet supplemented their infant's diet with nutritive supplements even though introducing foods is recommended at about six months of age. Mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, and continue breastfeeding frequently for up to two years or longer.

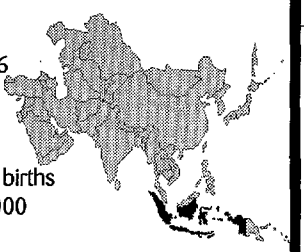
4. At months three and six postpartum, there is a notable amount of overlap between full lactational amenorrhea and family planning use. Introducing family planning methods at the biologically appropriate time may help minimize this overlap, which misdirects scarce resources and can pose a risk to lactating women who use an inappropriate family planning method .

5. Family planning use increases substantially over the period of time when the protective effect of full lactational amenorrhea is declining. However, it does not continue to increase after month nine postpartum, the time of greatest need. Introducing complementary family planning methods in a timely manner is essential for couples who want to achieve optimal child spacing of two years or more.

6. A considerable number of women remain in full lactational amenorrhea through six months postpartum, and could greatly benefit from the Lactational Amenorrhea Method (LAM). Through its support of optimal breastfeeding practices and encouragement of the timely introduction of complementary family planning, LAM improves both maternal and child health.

*The overall breastfeeding practices in Bangladesh are encouraging, and breastfeeding currently has a significant impact on a woman's lifetime fertility. However, efforts should be made to maintain current levels of breastfeeding, and to improve weaning practices, such as the timely use of nutritive weaning foods. Any deterioration in breastfeeding levels or practices could have profound effects on maternal and child health, as well as the need for family planning services. At the same time, family planning use and acceptance must continue to receive special attention, with particular emphasis given to breastfeeding women, and their unique family planning needs. The concept of healthy child spacing should also be highlighted in any intervention programming.*

# Indonesia



Population in millions (1995): 197.6
Annual growth rate: 1.8%
Population urbanized: 35%
Life expectancy: 64
Infant mortality rate: 50/1,000 live births
Maternal mortality rate: 650/100,000
Literacy: male-90% female-78%

Indonesia's overall breastfeeding practices are very strong, with approximately 97% of mothers breastfeeding their infants; 56% of mothers practice supplemented breastfeeding until 24 months postpartum. Although initiation of breastfeeding is common, only 57% of mothers exclusively breastfeed; this decreases to 20% at four months postpartum, and to only 7% at six months postpartum. A small percentage of women continue to exclusively breastfeed well after the sixth month postpartum, even though nutritive supplements should be introduced around the sixth month. The mean duration of breastfeeding in Indonesia is 26 months, and is two and a half months shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

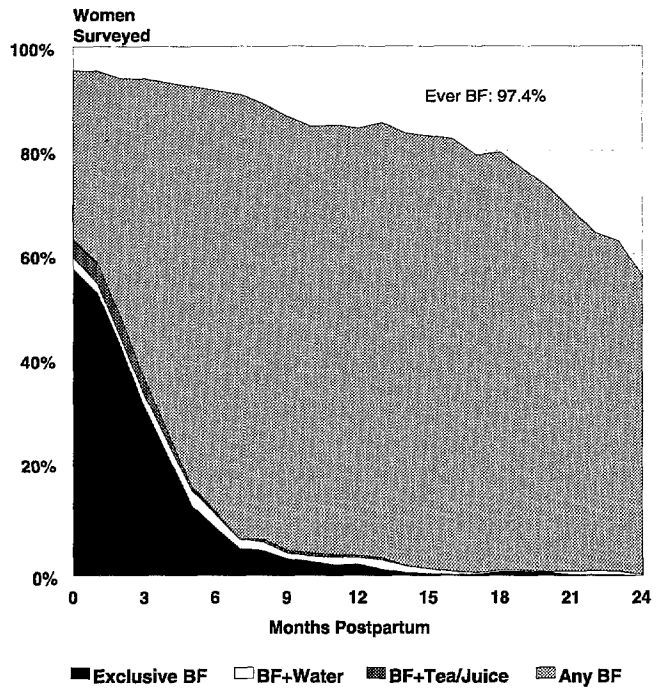
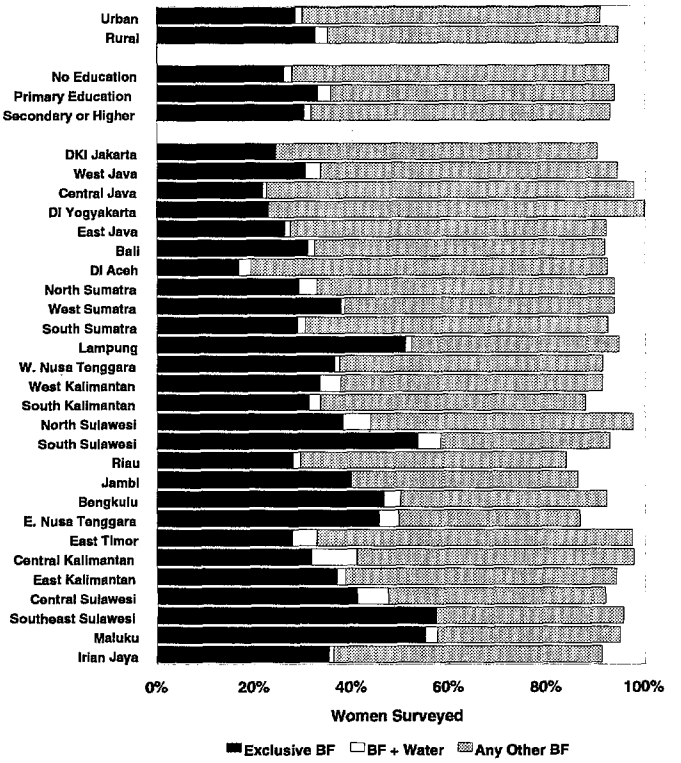



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




During the first six months after birth, exclusive breastfeeding is somewhat more common in rural areas (32%) than it is in urban areas (28%) (Figure 2). Exclusive breastfeeding rates are lowest in Di Aceh (17%) and highest in Southeast Sulawesi (57%). Variation among educational levels is also slight, but women with a primary education are somewhat more likely to exclusively breastfeed than women with less or more education.

In Figure 3, at three months postpartum, 22% of women are protected by full lactational amenorrhea, and 39% use family planning. Approximately 4% use family planning and also are protected by full lactational amenorrhea. The remaining 43% of women are at an increased risk of an unplanned pregnancy. At six months postpartum, 5% of women remain in full lactational amenorrhea, and 51% use family planning; less than 1% are in both categories. This leaves 45% of the women at risk of pregnancy.

Couples who wish to achieve healthy child spacing should adopt a family planning method when full lactational amenorrhea ends or after six months postpartum, whichever occurs first. At nine months postpartum the percentage of women who use family planning is 53% and 60% by twelve months, reflecting a high acceptance of family planning and an understanding of the need to increase its use as biological infertility declines.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1994, Indonesia's actual level of fertility, indicated by the total fertility rate (TFR), was 3.1. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 13.1. At the time of the survey, Indonesia had a high family planning prevalence of 55%, which accounts for 44% of the reduction in total potential fertility, or 4.5 fewer births. Lactational amenorrhea and postpartum abstinence reduce the number of births by 4.2, or 42% of the overall reduction in fertility. A delay in the age at first marriage is responsible for the remaining 14% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 13.1***

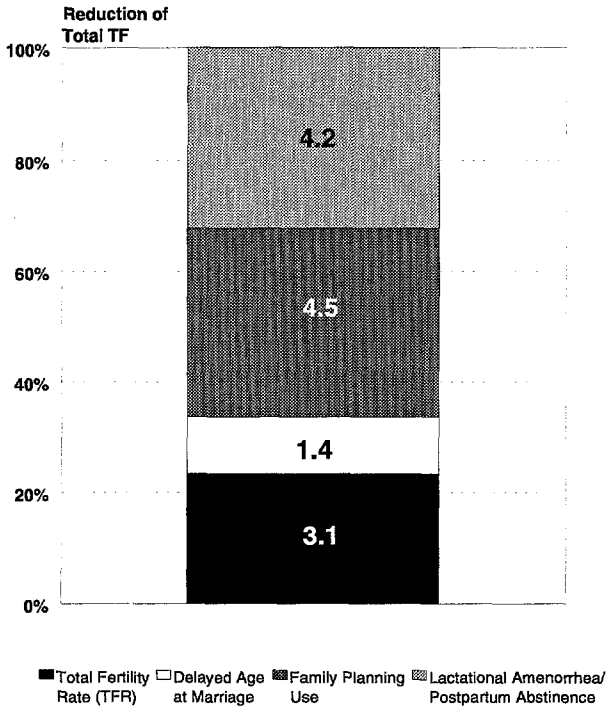
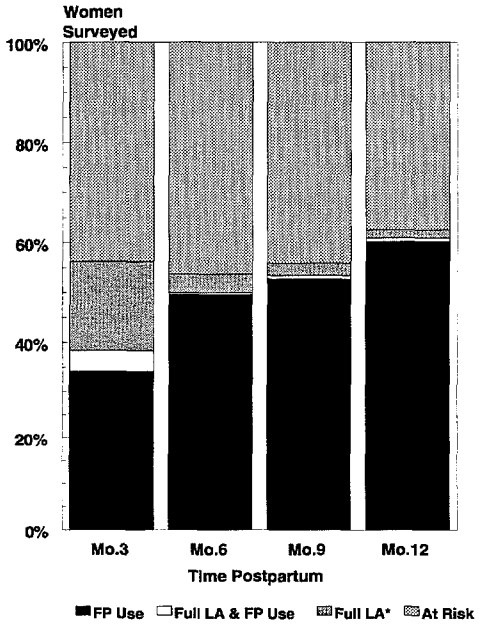



FIGURE 3

**Full Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

Lactational amenorrhea and postpartum abstinence have a significant impact on fertility inhibition in Indonesia. If they were to disappear with no concomitant increases in family planning use or age at marriage, as many as 11 million additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Indonesia, this would be difficult and costly to achieve.

# Program and Policy Considerations-Indonesia

1. Indonesia's levels of exclusive breastfeeding are significant in the first few months, but these rates drop dramatically by month four. Research should explore the beliefs and practices that result in early supplementation. All interventions should promote optimal breastfeeding practices, particularly exclusive breastfeeding for the first six months postpartum.

2. There are slightly different rates of exclusive breastfeeding among women in urban areas, with different levels of education, and in certain regions. However, any intervention should not be limited to these groups, since the prevalence of exclusive breastfeeding is low in all groups studied.

3. Introducing supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1995, Indonesia's infant mortality rate was 50 deaths per 1,000 births. A reduction in the infant mortality rate could be achieved if the incidence of exclusive breastfeeding were higher.

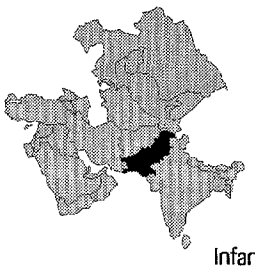
4. A delay in the introduction of nutritive supplements well past six months may also be unhealthy for the infant. Mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive complementary foods after this point, and continue breastfeeding frequently for two years or longer.

5. Family planning use does increase over the period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of complementary family planning methods is essential for couples who wish to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum.

6. In Indonesia there is overlap between full lactational amenorrhea and family planning use, most significantly at three months postpartum. Introducing family planning methods at the biologically appropriate time may help to minimize this overlap, which misdirects costly resources and can pose a risk to lactating women who use an inappropriate family planning method. Nonetheless, Indonesia's patterns of family planning acceptance are quite good.

7. The Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children. LAM not only supports optimal breastfeeding practices, but also teaches the timely introduction of complementary family planning, and perhaps would further enhance child spacing in Indonesia.

*Indonesia's breastfeeding rate is very encouraging as are their rates of family planning use by twelve months postpartum. Breastfeeding currently has a significant impact on a woman's lifetime fertility in this country, however, efforts should be made to at least maintain current levels of breastfeeding, and to improve infant feeding practices such as exclusive breastfeeding during the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, infant mortality rates, and the need for family planning services. At the same time, family planning promotion and provision must continue to receive special attention, with particular emphasis on breastfeeding women and their unique family planning needs.*



# Pakistan

Population in millions (1995): 140.5
Annual growth rate: 3.3%
Population urbanized: 35%
Life expectancy: 63
Literacy: male-50% female-24%
Infant mortality rate: 95/1,000 live births
Maternal mortality rate (1990): 340/100,000

In Pakistan, while more than 95% of mothers initiate breastfeeding, and 41% continue breastfeeding until their children are 24 months of age, the prevalence of exclusive breastfeeding is low (Figure 1). Only 27% of mothers initiate exclusive breastfeeding, and this declines to 15% at six months postpartum. The most common early feeding pattern is breastfeeding combined with water and other types of supplements. At nine months postpartum, 27% of infants are still exclusively breastfed or receive only water supplements, although nutritive complementary foods should be introduced at around six months. The mean duration of breastfeeding in Pakistan is 20 months, about four months shorter in urban than in rural areas.

During the first six months after birth, 89% of infants are breastfed, but exclusive breastfeeding is not uncommon (15%); an additional 12% of infants receive water in addition to breastmilk (Figure 2). Exclusive breastfeeding is twice as high in rural than in urban areas,

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

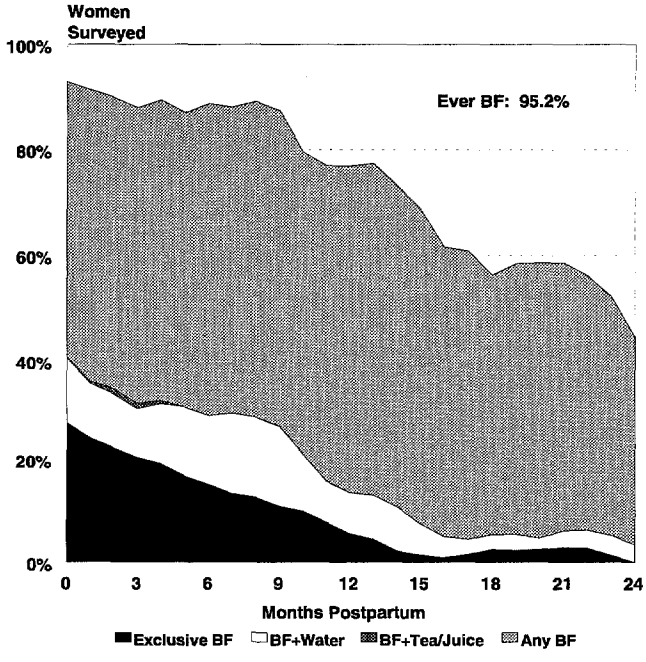
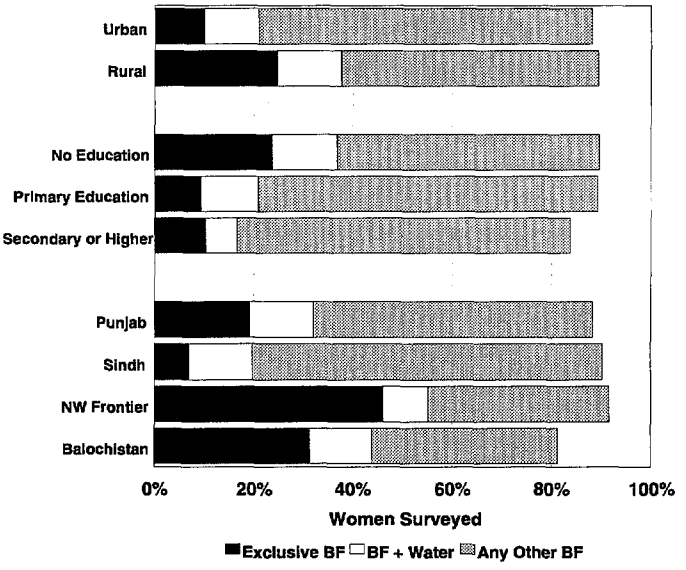



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




and women with less education are more likely to breastfeed exclusively than women with higher levels of education. Regional patterns indicate that exclusive breastfeeding ranged from 46% in the Northwest Frontier to 7% in the Sindh region.

At three months postpartum, 28% of women are in full lactational amenorrhea and 7% use family planning (Figure 3). The remaining 66% are women at an increased risk of an unplanned pregnancy. At month six postpartum, 21% of women remain in full lactational amenorrhea, and 14% use a family planning method. The other 65% of women are unprotected against pregnancy.

Couples wanting to achieve healthy child spacing should adopt an appropriate complementary family planning method when full lactational amenorrhea ends or after six months postpartum, whichever occurs first. At months nine and twelve postpartum, however, only 8% and 14% of women, respectively, have adopted a family planning method. This leaves the remaining 92% and 86%, respectively, with no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1990-91, Pakistan's actual level of fertility, indicated by the total fertility rate (TFR), was 5.2. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 11.7. Lactational amenorrhea and postpartum abstinence provide a significant reduction in the number of births, 3.7, which is 57% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 32% of the reduction, or 2.1 fewer births. At the time of the survey, Pakistan had a family planning prevalence of 12%, which provided the remaining 11% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 11.7***

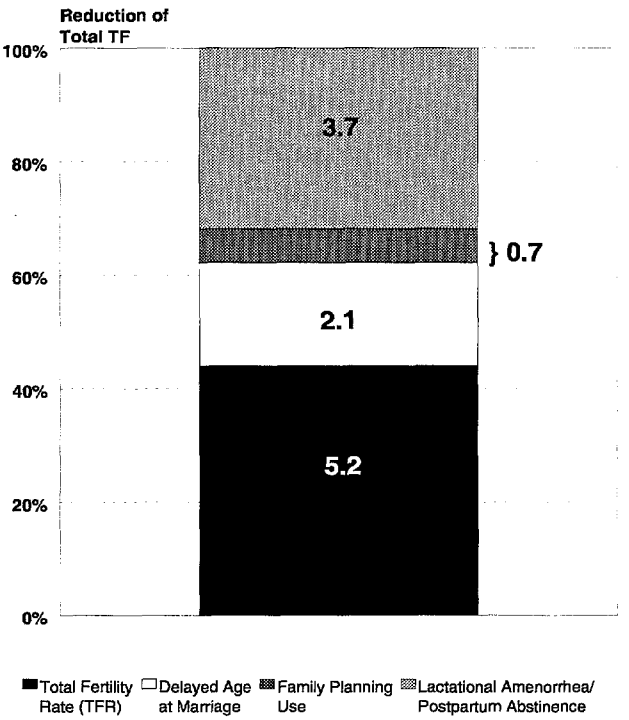
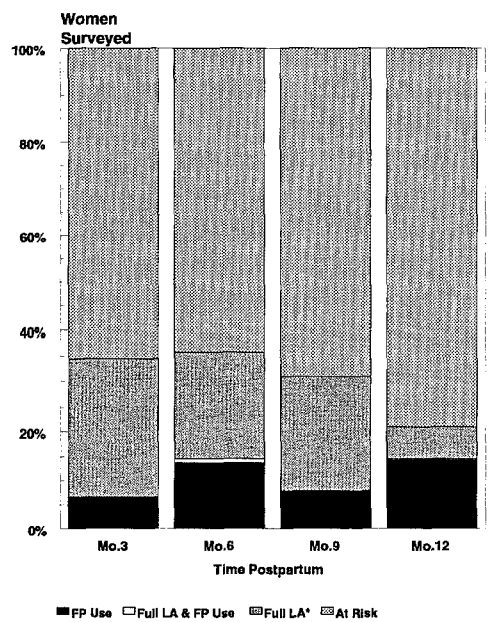



FIGURE 3

**Lactational Amenorrhea (LA) and Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

As many as 3.6 million additional births could occur in the following year in Pakistan if lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Pakistan, where the TFR is very high and the family planning prevalence rate quite low, the increase in family planning use needed to replace the loss of protection from lactational infertility would represent a formidable task for the nation.

# Program and Policy Considerations-Pakistan

1. Pakistan's levels of exclusive breastfeeding are low. Therefore, increased levels of exclusive breastfeeding in the first six months are recommended to enhance the child spacing, nutritional, and health benefits for the mother and infant.

2. Introducing supplements into the infant's diet at too early an age (before six months) contributes to increased levels of infant morbidity and mortality. In 1995, Pakistan's infant mortality rate was 95 deaths per 1,000 births. Improved rates of exclusive breastfeeding would reduce this high mortality rate. Also, optimal breastfeeding guidelines should discourage the addition of water to breastfeeding during the first six months.

3. The uniformly low levels of exclusive breastfeeding in Pakistan suggest that any intervention must be widespread. Studies are needed to identify the factors that support high levels of breastfeeding but also the common use of water and other supplementation.

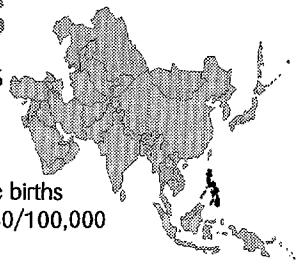
4. A delay in the introduction of nutritive supplements well past six months is unhealthy for the infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point, while continuing frequent breastfeeding through the second year and beyond.

5. Family planning prevalence in Pakistan is low, and remains uniformly low over the same period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of family planning is essential for couples who want to achieve health child spacing of two years or more.

6. The Lactational Amenorrhea Method (LAM) would be an ideal method to introduce in this setting because of the high percentage of women in full lactational amenorrhea up to six months postpartum. LAM supports optimal breastfeeding practices and also encourages the timely introduction of another family planning method.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in Pakistan, and the rates of ever breastfed are encouraging. However, efforts should be made to support women's health while maintaining current levels of breastfeeding, and to improve breastfeeding practices such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, infant mortality rates, and the need for family planning services. Given that family planning prevalence is so low, family planning use and acceptance must receive special attention and support among women and in the community, with an emphasis on women who are breastfeeding and their unique family planning needs.*

# Philippines



Population in millions (1995): 67.6
Annual growth rate: 2.2%
Population urbanized: 54%
Life expectancy: 67
Infant mortality rate: 40/1,000 live births
Maternal mortality rate (1990): 280/100,000
Literacy: male-95% female-94%

Breastfeeding is a fairly common practice among women in the Philippines. Almost 89% of mothers breastfeed their infants at some time, but only 16% of mothers continue breastfeeding until their children are 24 months of age (Figure 1). Although 51% of mothers initiate exclusive breastfeeding at birth, it declines to 22% by four months postpartum and to only 5% by month six postpartum. The mean duration of breastfeeding is thirteen months, and is about five months shorter in urban than in rural areas.

During the first six months after birth, about 77% of infants are breastfed, but less than one third of these infants are breastfed exclusively (Figure 2). Exclusive breastfeeding is higher in rural than in urban areas. There is significant variation in breastfeeding patterns by educational level; over 40% of women with no education breastfeed exclusively, while approximately 21% of women with a secondary/higher education practice this breastfeeding mode. Among the Philippines's fourteen regions, exclusive breastfeeding levels vary from 13% in W-Visayas to 48% in Bicol. The 15% prevalence of breastfeeding with water supplementation is relatively consistent across education levels and between the urban/rural settings.

At three months postpartum, 27% of women are in full lactational amenorrhea and 17% use family planning (Figure 3). In each of these two groups, 2% are protected by both family planning and full lactational amenorrhea. The remaining 57% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 4% of women remain in full lactational amenorrhea, and 27% use a

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

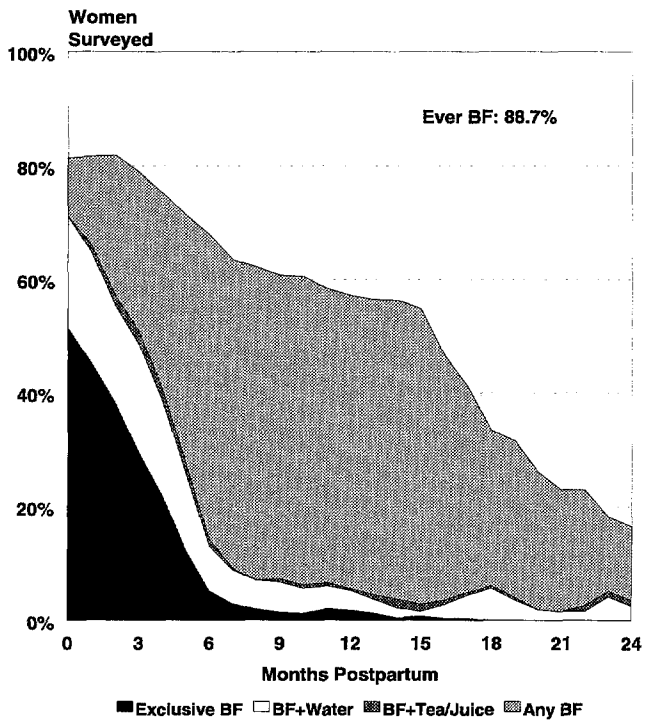
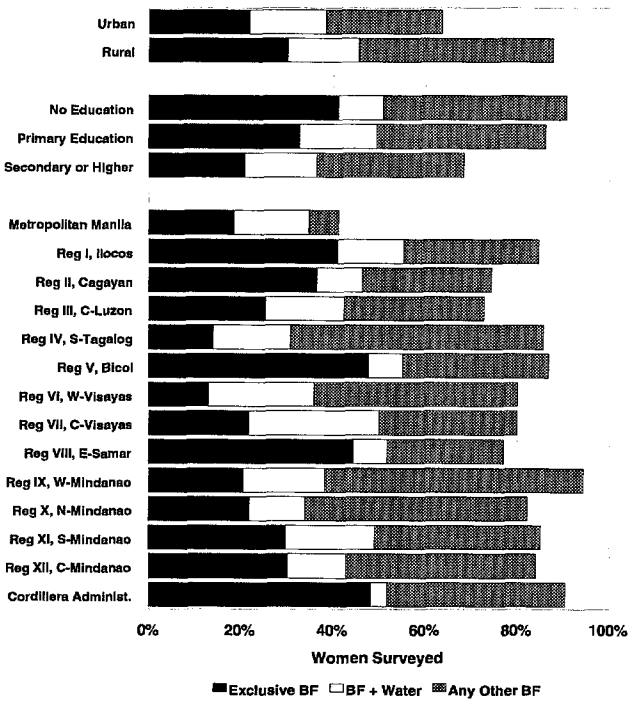



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**



family planning method. The other 69% of women are unprotected against pregnancy.

Couples wanting to achieve healthy child spacing should adopt an appropriate family planning method when full lactational amenorrhea ends or after six months postpartum, whichever occurs first. At nine months and twelve months postpartum, however, only 34% and 47% of women, respectively, have adopted a family planning method. The remaining 66% and 53% of women in these months, respectively, have no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, he Philippines' actual level of fertility, indicated by the total fertility rate (TFR), was 4.1. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 13.7. Lactational amenorrhea and postpartum abstinence reduce the number of births by 3.2, which is 33% of the overall reduction in total potential fertility. A delay in the age at first marriage accounts for 33% of the reduction, or 3.2 fewer births. At the time of the survey, the Philippines had a family planning prevalence of 40%, which provided an important 34% reduction in fertility.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 1.8 million additional births could occur in the Philippines in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In the Philippines, this would be not only costly, but difficult due to cultural constraints.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

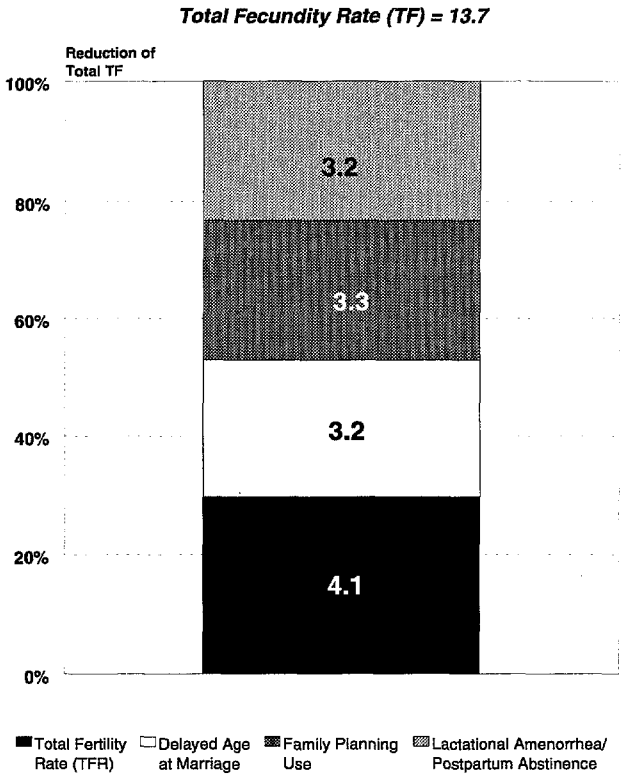
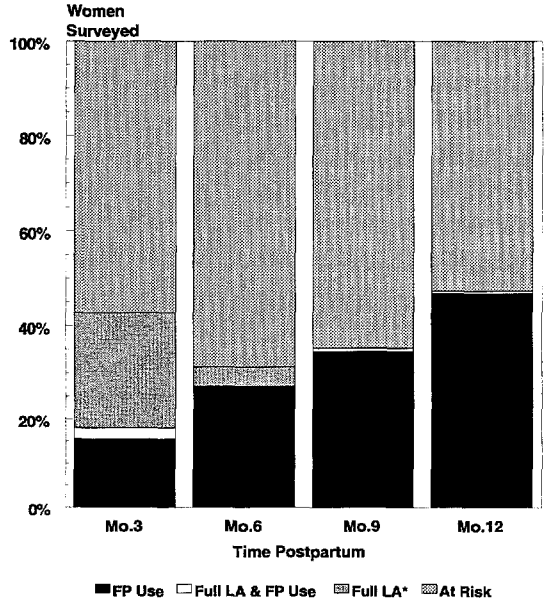



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Philippines

1. The duration of exclusive breastfeeding is low in the Philippines. Therefore, increased levels of exclusive breastfeeding in the first six months are recommended to enhance the benefits of child spacing, nutrition, and health for the mother and infant.

2. Supplementing the infant's diet too early (prior to six months) contributes to increased levels of infant morbidity and mortality. In 1995, the Philippines' infant mortality rate was 40 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved.

3. Program and policy initiatives aimed at improving optimal breastfeeding practices should ensure that these initiatives target educated women. Such an educational effort is best begun while women are still in school. In addition, certain geographical regions deserve special attention.

4. While there is an increase in family planning use over the period of time when the protective effect of full lactational amenorrhea is declining, it is not yet at a level sufficient to ensure healthy child spacing. The timely introduction of a family planning method is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum.

5. The Lactational Amenorrhea Method (LAM) would greatly benefit Filipino couples and their children because it supports optimal breastfeeding practices while encouraging the timely introduction of complementary family planning. The method also emphasizes the importance of child spacing.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility in the Philippines, as does family planning use. Efforts should be made to maintain current levels of breastfeeding and improve certain infant feeding practices. Increasing family planning use should also be a priority. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, as well as on the need for family planning services. At the same time, family planning and child spacing must receive special attention and support.*

# Latin America/Caribbean Region

**Bolivia**
**Brazil**
**Colombia**
**Dominican Republic**
**Paraguay**
**Peru**

# Bolivia

Population in millions (1995): 7.4
Annual growth rate: 2.2%
Population urbanized: 61%
Life expectancy: 60
Infant mortality rate: 73/1,000 live births
Maternal mortality rate (1990): 650/100,000
Literacy: male-91% female-76%

Women in Bolivia (97%) initiate breastfeeding, and 23% continue to breastfeed until their children are 24 months of age (Figure 1). Although 57% of mothers initiate exclusive breastfeeding, this declines to 32% at four months postpartum, and to only 9% at six months postpartum. At nine months postpartum, 2% of mothers are still breastfeeding exclusively, although nutritive supplements should be introduced at around six months postpartum. The mean duration of breastfeeding in Bolivia is sixteen months, and is almost two months higher in rural than in urban areas.

During the first six months after birth, the prevalence of exclusive breastfeeding is higher in rural areas (40%) than it is in urban areas (32%) (Figure 2). Women from the Altiplano region are almost four times as likely to practice exclusive breastfeeding as women from the Llanos region. Nearly half of women with no education breastfeed exclusively, compared to 39% and 28% of women with a primary or secondary/higher education, respectively.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

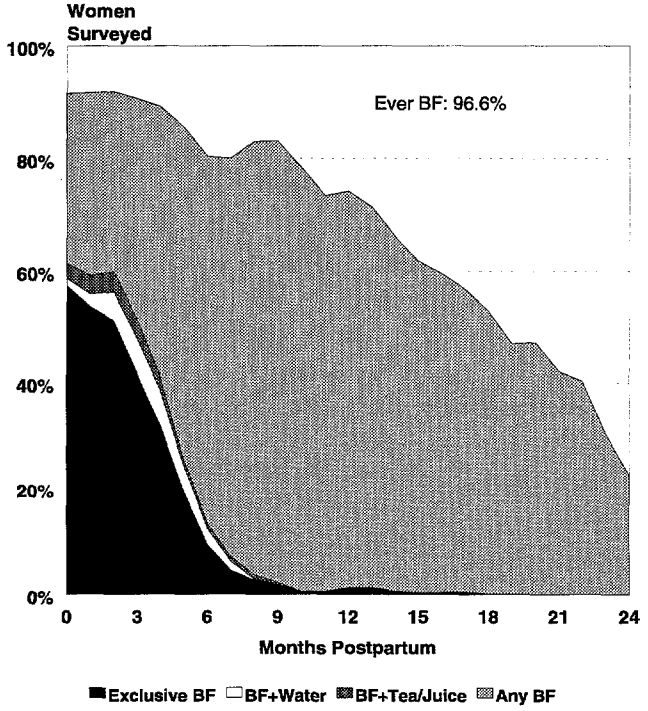
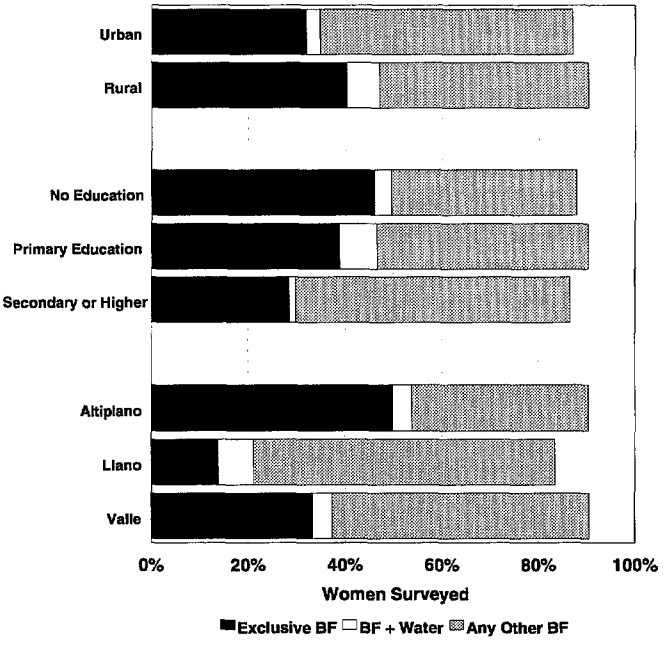



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




In Figure 3, at three months postpartum, 49% of women are in full lactational amenorrhea, and 19% use a family planning method; approximately 7% use family planning and are also protected by full lactational amenorrhea. The remaining 39% are at an increased risk of an unplanned pregnancy. At six months postpartum, 12% of women remain in full lactational amenorrhea, and 32% are using family planning. This leaves 57% of women at six months postpartum unprotected against unplanned pregnancy.

Couples who wish to achieve healthy child spacing should adopt a family planning method after full lactational amenorrhea has ended or after six months

postpartum, whichever occurs first. At month nine postpartum, however, only 45% of women have adopted a family planning method, and this figure drops to 39% at one year. This leaves the remaining 55% and 61% of women at months nine and twelve postpartum, respectively, with no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1993, Bolivia's actual fertility, indicated by the total fertility rate (TFR), was 4.8. Without the effect of the intermediate variables, the total fecundity rate (TF) would be 17.6. Lactational amenorrhea and postpartum abstinence provide the greatest reduction in the number of births, 5.9, or 46% of the overall reduction in total potential fertility. At the time of the survey, Bolivia's family planning prevalence of 45% provided

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 17.6***

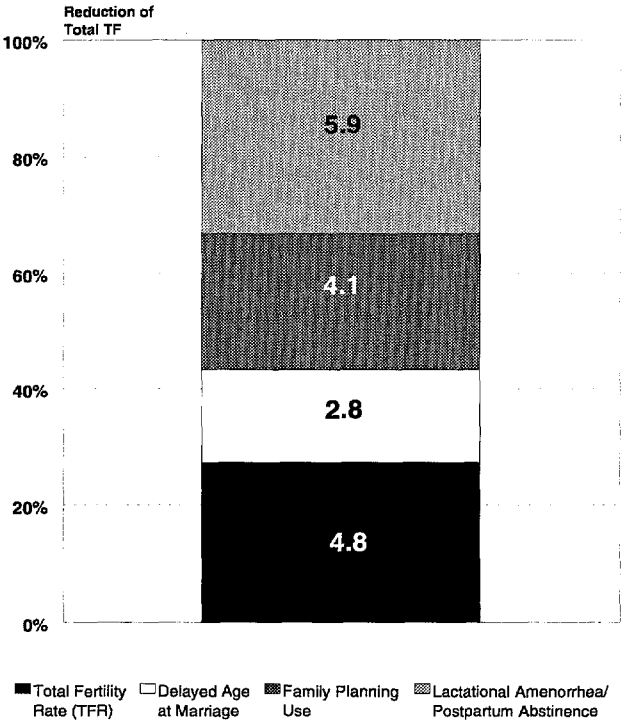
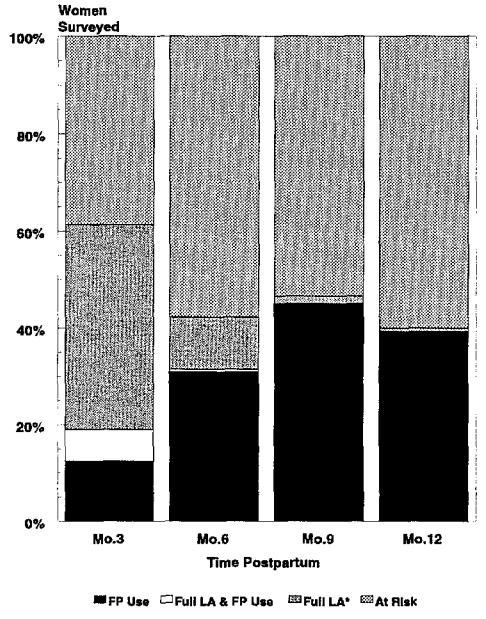



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

a 32% reduction in fertility. A delay in the age at first marriage accounts for the remaining 22% of the fertility reduction, or 2.8 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, an estimated 345,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Bolivia, this alone would necessitate more than a doubling of family planning use.

# Program and Policy Considerations-Bolivia

1. While Bolivia's levels of exclusive breastfeeding are relatively high at initiation, these levels drop significantly by three months postpartum. Increasing levels of exclusive breastfeeding in the first six months would enhance both the child spacing benefits and the nutritional and health benefits for mother and infant.

2. The lower levels of exclusive breastfeeding among urban women and women with a secondary education suggest that interventions might best target these groups.

3. Weaning commencing at too early an age (before six months) contributes to increased levels of infant morbidity and mortality, as well as increased fertility. In 1995, Bolivia's infant mortality rate was 73 deaths per 1,000 births. Increasing the incidence of exclusive breastfeeding in the first six months and encouraging some breastfeeding throughout at least one year, might reduce the infant mortality rate.

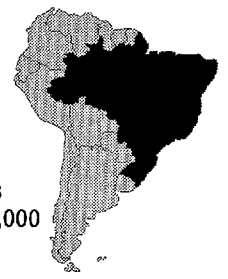
4. At month three postpartum, there is a notable amount of overlap (7%) between full lactational amenorrhea and family planning use. The introduction of family planning methods at the biologically appropriate time may help minimize this overlap, which misdirects costly resources and can pose a risk to lactating women who use an inappropriate family planning method.

5. The Lactational Amenorrhea Method (LAM) could have a widespread impact on fertility reduction, the timely use of family planning methods and maternal and child health in Bolivia. This would greatly benefit many couples and their children, as LAM supports optimal breastfeeding practices, encourages the timely introduction of family planning, and allows resources to be appropriated in a more suitable manner. Additionally, LAM has been shown to improve breastfeeding practices, and could increase the rates of exclusive breastfeeding in Bolivia.

*In Bolivia, breastfeeding currently has a significant impact on a woman's lifetime fertility. However, efforts should be made to maintain current levels of breastfeeding, and to improve breastfeeding practices, such as exclusive breastfeeding in the first six months postpartum. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, as well as the need for family planning services. At the same time, family planning use and acceptance must receive special attention, with particular emphasis given to child spacing for postpartum women and their unique family planning needs while breastfeeding.*

# Brazil

Population in millions (1995): 161.8
Annual growth rate: 1.9%
Population urbanized: 78%
Life expectancy: 67
Infant mortality rate: 51/1,000 live births
Maternal mortality rate (1990): 170/100,000
Literacy: male-83% female-83%



Close to 90% of mothers in Brazil breastfeed their infants (Figure 1), but breastfeeding decreases rapidly to approximately 30% at twelve months postpartum. Although initiation of breastfeeding is a common practice, only 13% of new mothers ever exclusively breastfeed, and almost none are breastfeeding exclusively three months after birth. Nearly 24% of mothers are still breastfeeding at 24 months. The mean duration of breastfeeding is nine months, and is about three months shorter in urban than in rural areas.

The prevalence of exclusive breastfeeding is extremely low in all populations during the first six months after birth (Figure 2). However, there is significant variance in the duration of any breastfeeding across geographic areas. Women in the Piaui and Alagoas regions are more likely to practice exclusive breastfeeding than women from any other region, and in the Rio Grande do Norte and Sergipe regions, there is virtually no exclusive breastfeeding. Women with the lowest education or with a secondary education are more likely to exclusive breastfeed than women with a primary education. About 45% of infants six months or less are not breastfed.

FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**

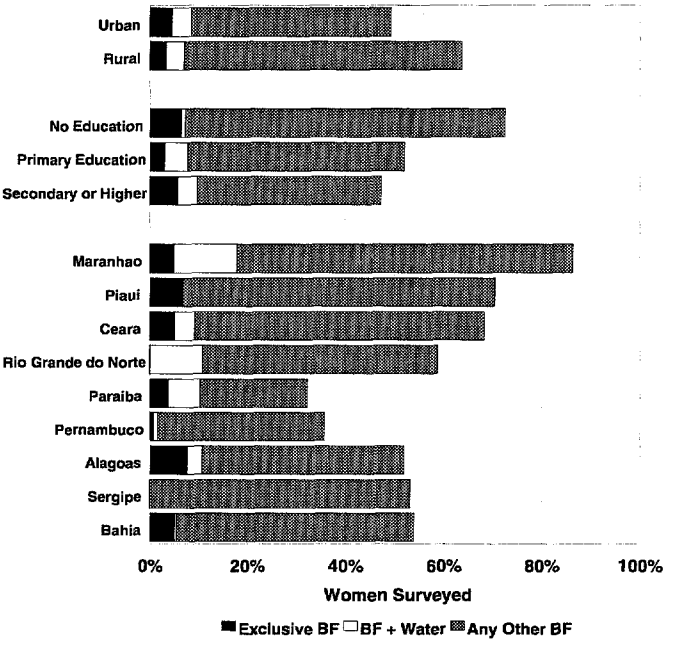
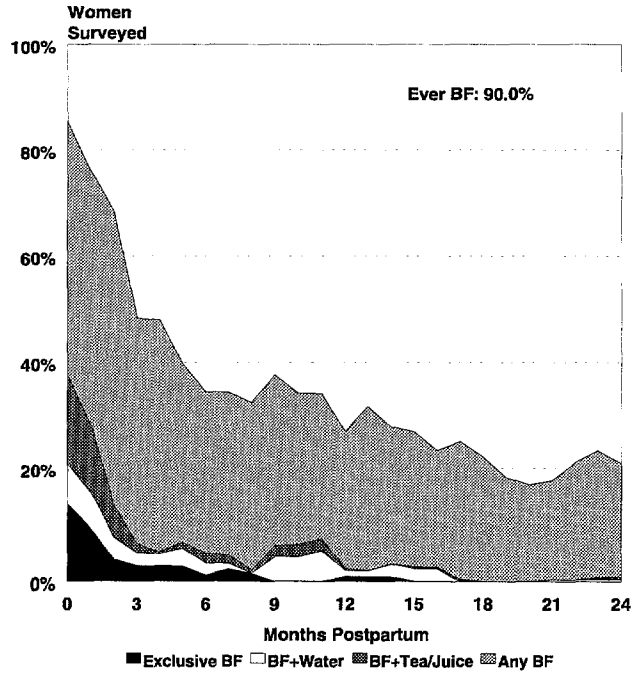



FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**




In Figure 3, by three months postpartum, 43% of women use family planning, and of these, 2% are protected by both family planning and full lactational amenorrhea. The remaining 57% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 1% of women are still protected by full lactational amenorrhea and 60% use family planning. The remaining 39% of women are unprotected against an unplanned pregnancy.

Couples who wish to achieve healthy child spacing should adopt a complementary family planning method when full lactational amenorrhea ends or at

six months postpartum, whichever occurs first. At nine months postpartum however, 71% of women have adopted a family planning method, dropping to 41% at twelve months. All others have no means of protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1991, Brazil's actual level of fertility, indicated by the total fertility rate (TFR), was 3.7. Without the effect of the intermediate variables, the observed fertility level (or total fecundity rate [TF]) would be 17.9. At the time of the survey, Brazil had a family planning prevalence of 59%, which accounts for 63% of the overall reduction in total potential fertility, or nine fewer births. Lactational amenorrhea and postpartum abstinence account for 16% of the reduction, or 2.2 fewer births. A delay in the age at first marriage is responsible for the remaining 21% reduction.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 17.9***

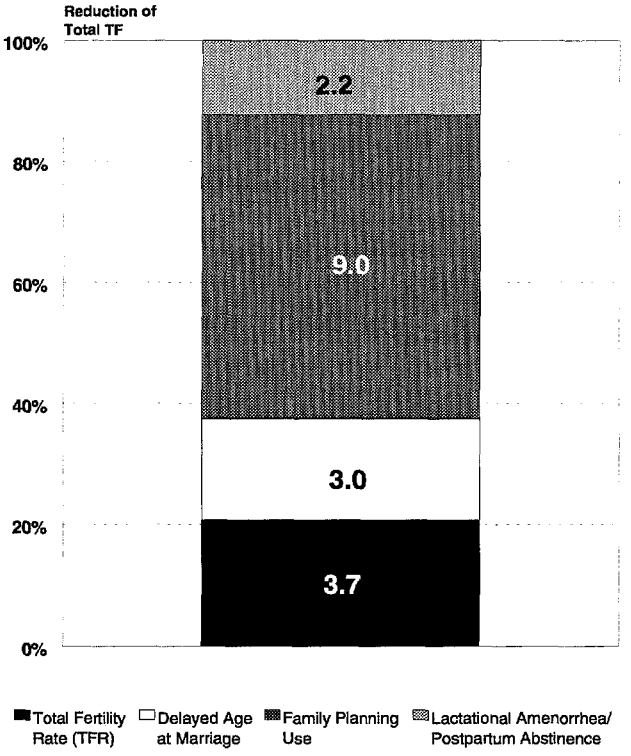
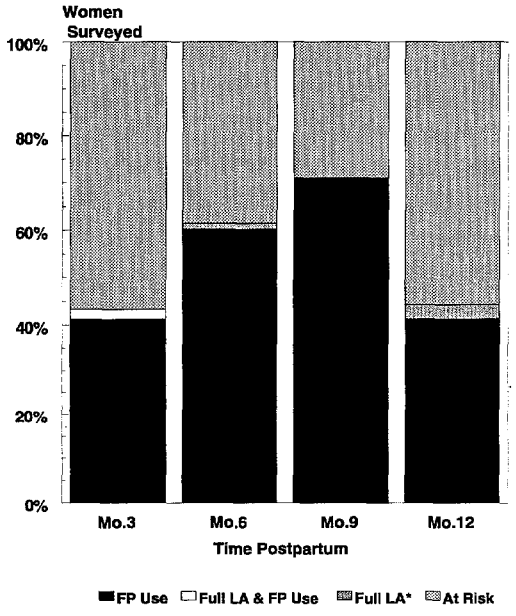



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

Although the duration of exclusive breastfeeding is extremely brief, breastfeeding and amenorrhea still have a significant impact on fertility. If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 900,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decrease in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. Any attempt to significantly increase family planning use in Brazil, where family planning prevalence is already near the average for developed countries, may be an unrealistic and costly goal. However, an increased focus on the timing of family planning use that could result in better child spacing is merited.

# Program and Policy Considerations-Brazil

1. Brazil's overall rates of breastfeeding are the lowest of any country included in these analyses. Increasing these levels of breastfeeding in the first six months would enhance the child spacing, health, and nutritional benefits for both the mother and infant.

2. The uniformly low rates of exclusive breastfeeding suggest that any intervention will have to be widespread. Additional studies assessing those factors that encourage breastfeeding but do not support exclusivity may be necessary.

3. Supplementing the infant's diet too early and cessation of breastfeeding prior to six months contribute to increased levels of infant morbidity and mortality. In 1995, Brazil's infant mortality rate was 51 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved. Accordingly, mothers should be encouraged to exclusively breastfeed for the first six months, introduce nutritive supplements after this point, but continue breastfeeding for up to two years or longer.

4. Family planning use is relatively high from three to six months postpartum, but declines dramatically in month twelve postpartum. In order to achieve healthy child spacing of two years or more, program and policy initiatives must emphasize that family planning use should increase as the biological protection of breastfeeding declines.

*In Brazil, family planning use has the greatest contribution to fertility inhibition. Nonetheless, breastfeeding still plays a significant role in reducing a woman's lifetime fertility. Efforts should be made to maintain current levels of breastfeeding and to improve breastfeeding practices, such as exclusive breastfeeding in the first six months postpartum. All family planning interventions should emphasize lengthening the birth interval. Any deterioration in breastfeeding levels or practices would have profound effects on maternal and child health, and may affect the need for family planning services, especially during the fist two years postpartum.*

# Colombia

Population in millions (1995): 35.1
Annual growth rate: 1.9%
Population urbanized: 73%
Life expectancy: 70
Infant mortality rate: 30/1,000 live births
Maternal mortality rate (1990): 100/100,000
Literacy: male-87% female-87%

Initiation of breastfeeding is common in Colombia, with approximately 94% of mothers breastfeeding their infants (Figure 1). However, only 27% of new mothers ever breastfeed exclusively, and less than 5% are breastfeeding exclusively four to six months after giving birth. Breastfeeding was the feeding practice of only 22% of mothers at 24 months postpartum.

During the first six months after birth, the prevalence of supplemented breastfeeding is 80%, but only 10% of infants are exclusively breastfed (Figure 2). Exclusive breastfeeding is twice as high in rural areas than it is in urban areas. In four of the five regions, less than 15% of infants under six months old are exclusively breastfed, and in the Central region, this figure is only 3%. Of the different educational levels, exclusive breastfeeding is highest among women with a primary

FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**

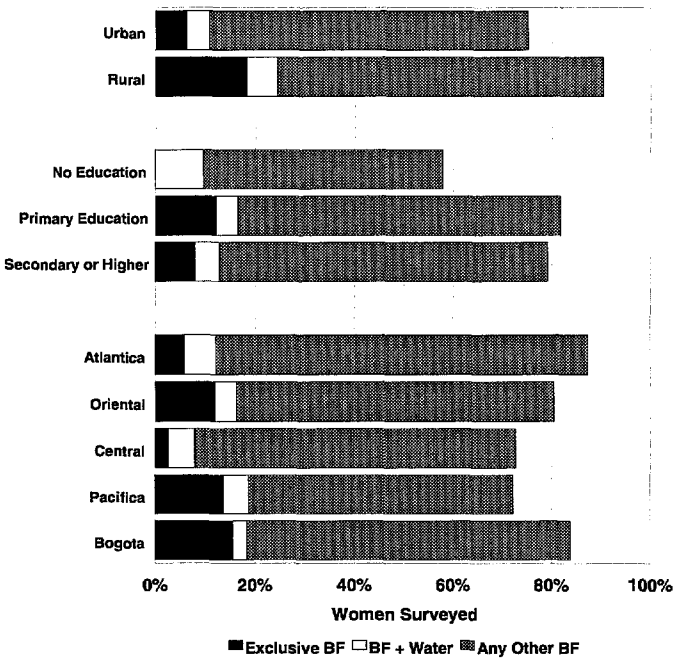
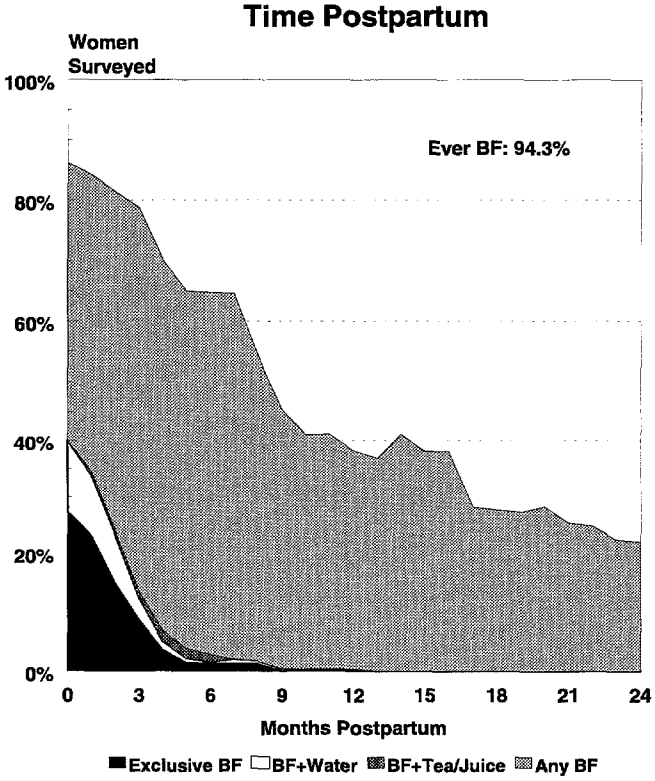



FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**




education, although this number still does not exceed 20%. Women with no formal education did not report any exclusive breastfeeding, but about 10% of their infants are fully breastfeed.

At three months postpartum, only 4% of women are protected by full lactational amenorrhea, 59% use family planning (Figure 3), with 1% overlap. The remaining 38% are at an increased risk of an unplanned pregnancy. At six months postpartum, no woman is protected by full lactational amenorrhea and 50% use family planning. The other half of these women are unprotected againstpregnancy.

When full lactational amenorrhea ends or after six months postpartum, whichever occurs first, couples wanting to achieve healthy child spacing should adopt a complementary family planning method. However, at months nine and twelve postpartum only 67% and 62% of women, respectively, have adopted a method. All others have no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1986, Colombia's actual level of fertility, indicated by the total fertility rate (TFR), was 2.7. Without the effect of the intermediate variables, the observed fertility level, or total fecundity rate (TF), would be 15.3. At the time of the survey, Colombia had a family planning prevalence level similar to developed countries, 66%, or 7.6 fewer births. Lactational amenorrhea and postpartum abstinence account for 20% of the reduction, or 2.5 fewer births. A delay in the age at first marriage is responsible for the remaining 20% reduction.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.3***

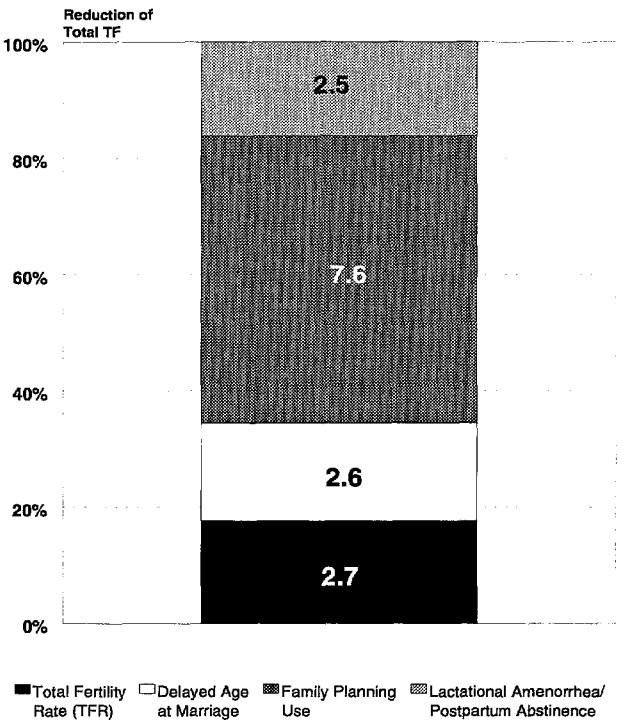
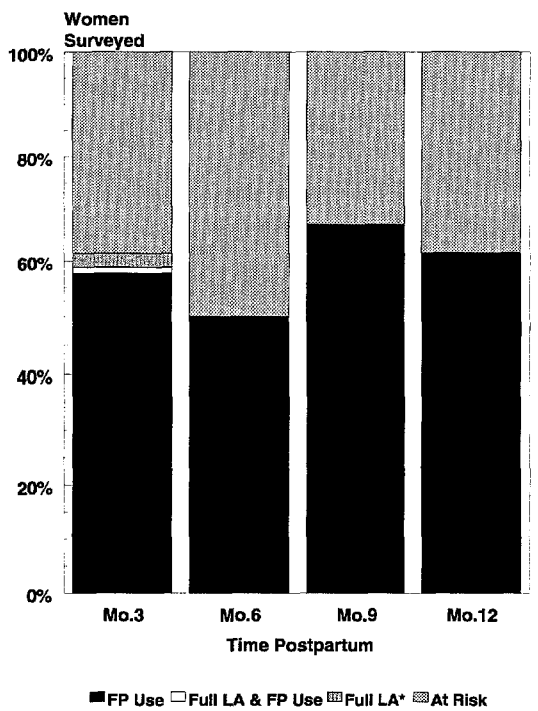



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, Risk of Pregnancy**




If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 520,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decrease in the prevalence of breastfeeding, an increase in family planning use would be necessary to maintain the current fertility level. An attempt to significantly increase family planning use in Colombia, where family planning prevalence is already near the average for the developed world, may be an unrealistic and costly goal to achieve. However, improving the timing of family planning use to achieve healthy child spacing might be a useful and attainable intervention.

# Program and Policy Considerations-Colombia

1. Colombia's levels of exclusive breastfeeding in the first six months postpartum are very low. Therefore, action towards increasing these levels are recommended. The result would be enhanced health and nutritional benefits for both the mother and infant.

2. The early cessation of breastfeeding and introduction of supplements into the infant's diet prior to six months contributes to increased levels of infant morbidity and mortality. In 1995, Colombia's infant mortality rate was 30 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, a reduction in the infant mortality rate could be achieved.

3. Colombia's low mean duration of breastfeeding and uniformly low rates of exclusive breastfeeding suggest that any intervention must be widespread and target diverse audiences. Any breastfeeding intervention should also include messages encouraging an increased duration of overall breastfeeding. Mothers should be encouraged to exclusively breastfeed for the first six months, introduce nutritive supplements after this point, while continuing to breastfeed for up to two years or more.

4. Family planning use more than offsets the decline in full lactational amenorrhea in the transition from three to six months postpartum. However, family planning use is lower at month nine postpartum than at month six. In order to achieve healthy child spacing of two to four years or more, program and policy initiatives should emphasize the health implications of child spacing and that family planning use needs to continue to increase after six months postpartum.

5. The Lactational Amenorrhea Method (LAM) could greatly benefit many Colombian couples and their children. LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices, and encourages the timely introduction of complementary family planning.

*In spite of Colombia's relatively low levels, breastfeeding still has a significant impact on a woman's lifetime fertility in Colombia. However, efforts should be made to increase current levels of breastfeeding, while improving optimal breastfeeding practices. Any deterioration in breastfeeding levels or practices would have effects on maternal and child health, as well as the need for family planning services. At the same time, family planning use and acceptance must receive special attention, with particular emphasis given to breastfeeding women, their unique family planning needs, and the importance of continuing both breastfeeding and family planning use. The concept of healthy child spacing also needs to be stressed in any intervention*

# Dominican Republic

Population in millions (1995): 7.8
Annual growth rate: 2.1%
Population urbanized: 65%
Life expectancy: 70
Infant mortality rate: 37/1,000 live births
Maternal mortality rate: 110/100,000
Literacy: male-82% female-82%

Initiation of breastfeeding is a common practice in the Dominican Republic, but the rates drop significantly during the first six months (Figure 1). While almost 93% of mothers breastfeed their infants, only 21% of new mothers ever breastfeed exclusively, and less than 5% are still exclusively breastfeeding by four months. Only 4% practice any breastfeeding until 24 months postpartum. The mean duration of breastfeeding is eight months, about three and a half months shorter in urban than in rural areas.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

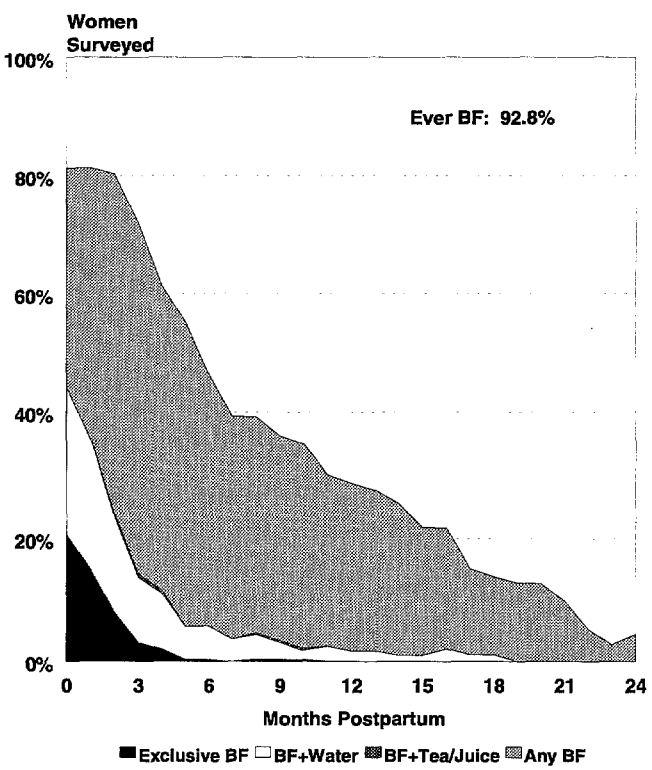
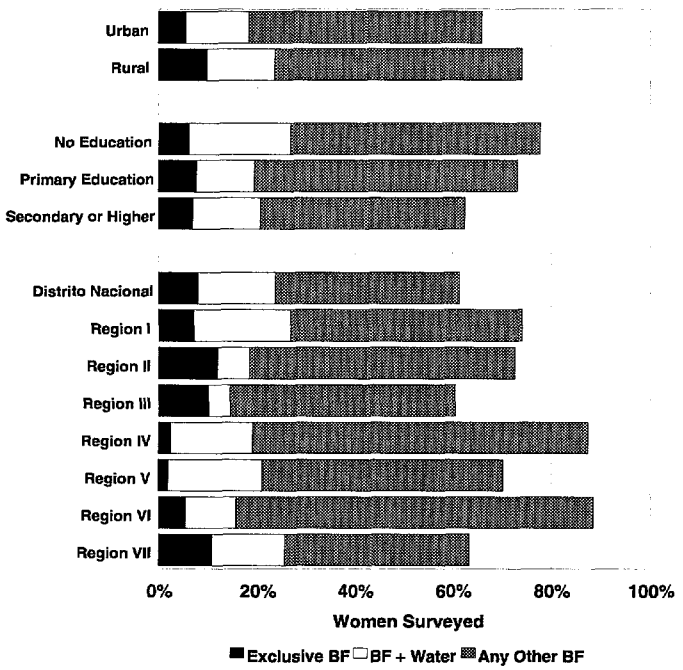



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




About 69% of infants are breastfed in the first six months (Figure 2). The prevalence of exclusive breastfeeding is less than 10% and is relatively consistent across educational levels. This percentage is only slightly higher in rural than in urban areas. In all of the eight regions, less than 15% of women exclusively breastfeed; there is a greater range in the levels of breastfeeding with water supplementation, with approximately 20% of the women in Region I and approximately 5% in Region II practicing this feeding pattern.

In Figure 3, at three months postpartum, 10% of women are protected by full lactational amenorrhea, and 33% use family planning. The remaining 57% are women at an increased risk of an unplanned pregnancy. At six months postpartum, full lactational amenorrhea had ended, but only 58% use family planning. The other 42% are women unprotected against an unplanned pregnancy.

Couples wanting to achieve healthy child spacing should adopt a complementary family planning method when full lactational amenorrhea has ended or after six months postpartum, whichever occurs first. However, at months nine and twelve postpartum, only 41% and 57% of women, respectively, have adopted a family planning method. The remaining 59% and 43%, respectively, are not protected against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1991, the Dominican Republic's actual level of fertility, indicated by the total fertility rate (TFR), was 3.3. Without the effect of the intermediate variables, the observed fertility level (or total fecundity rate [TF]) would be 12.4. At the time of the survey, the Dominican Republic had a family planning prevalence of 56%, which represents 48% of the overall reduction in total potential fertility, or 4.3 fewer births. A delay in the age at first marriage accounts for 32% of the reduction, or 2.9 fewer births. Lactational amenorrhea and postpartum abstinence are responsible for the remaining 20% reduction in fertility.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 12.4***

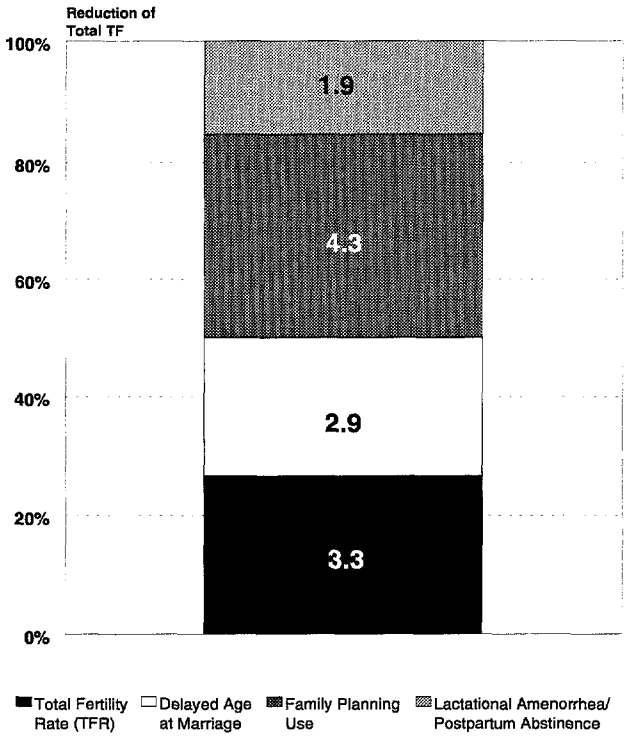
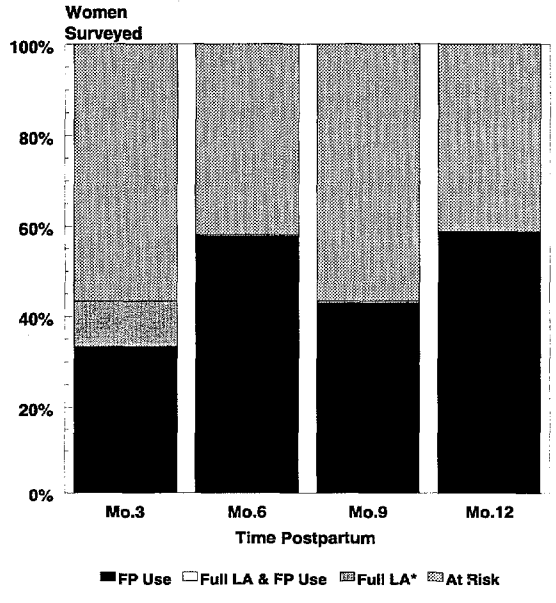



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

While the Dominican Republic's breastfeeding rates were not particularly high in 1991, lactational amenorrhea and postpartum abstinence still affected overall fertility rates. If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 61,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decrease in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level.

# Program and Policy Considerations
# Dominican Republic

1. The Dominican Republic's level of exclusive and full breastfeeding are low. Therefore, action to increase these levels in the first six months are recommended in order to enhance the child spacing, health, and nutritional benefits for the mother and infant.

2. The uniformly low rates of exclusive breastfeeding suggest that an intervention is widely needed. Research is suggested to determine the factors that negatively affect breastfeeding in this country.

3. Supplementing the infant's diet at a very early age contributes can increase levels of infant morbidity and mortality. In 1995, the Dominican Republic's infant mortality rate was 37 deaths per 1,000 births. If the incidence of exclusive breastfeeding were higher, the infant mortality rate could be further reduced.

4. Family planning use in the Dominican Republic replaces the decline in full lactational amenorrhea from three to six months postpartum. However, family planning use does not continue to increase by month nine. In order to achieve healthy child spacing of two years or more, program and policy initiatives should emphasize that family planning use continue to increase after the sixth month postpartum.

5. The Lactational Amenorrhea Method (LAM) could greatly benefit many couples and their children in the Dominican Republic. LAM reduces infant morbidity and mortality through its support of optimal breastfeeding practices and encourages the timely introduction of complementary family planning. LAM has also been shown to improve breastfeeding practices and could be an effective tool for increasing this country's low exclusive breastfeeding rate.

*Breastfeeding currently has an impact on a woman's lifetime fertility in the Dominican Republic. However, an increase in exclusive and sustained breastfeeding rates would only heighten this impact. Efforts should be made to improve current levels of breastfeeding; any deterioration in breastfeeding practices could have measurable effects on maternal and child health, as well as the need for family planning services. Of equal importance is the concept of healthy child spacing, and family planning acceptance and use. Particular emphasis in these areas should be given to postpartum women, and their unique family planning needs while breastfeeding. Accordingly, health care facilities should be encouraged to provide appropriate family planning counseling and support for mothers with infants and young children.*

# Paraguay

Population in millions (1995): 5.0
Annual growth rate: 3.1%
Population urbanized: 53%
Life expectancy: 71
Infant mortality rate: 28/1,000 live births
Maternal mortality rate: 160/100,000
Literacy: male-94% female-91%

Over 93% of women initiate breastfeeding in Paraguay, but only 8% continue breastfeeding until their children are 24 months of age (Figure 1). Only 9% of mothers practice exclusive breastfeeding at birth, and this declines to 2% at four months postpartum. Approximately 35% of women initiate breastfeeding in conjunction with water and tea/juice supplementation, but this practice also all but disappears by six months. The mean duration of breastfeeding is eleven months, almost four and a half months longer in rural than in urban areas.

The prevalence of exclusive breastfeeding is very low both in rural (5%) and urban areas (4%) for infants under six months old (Figure 2). Women in rural areas are twice as likely to fully breastfeed (supplement breastmilk with water) (16%) than their urban counterparts (7%). This practice is also more common in the North (25%) than in the remaining regions (6%-8%);

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

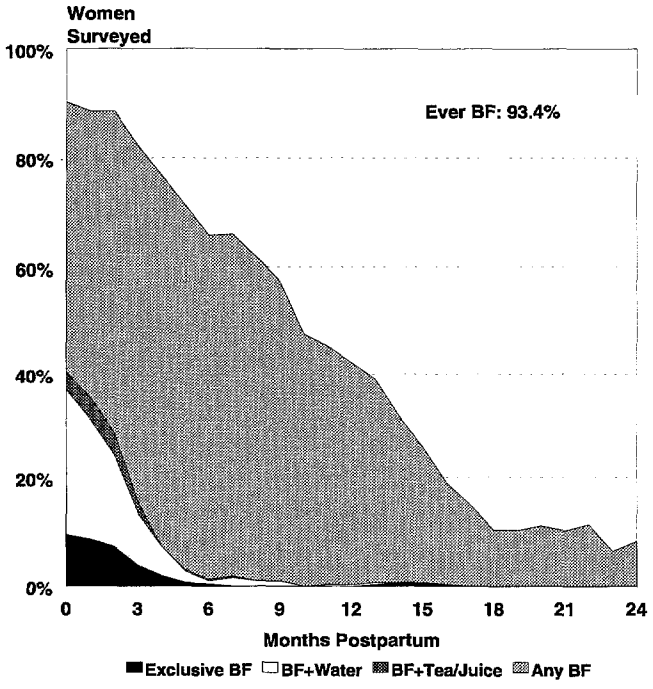
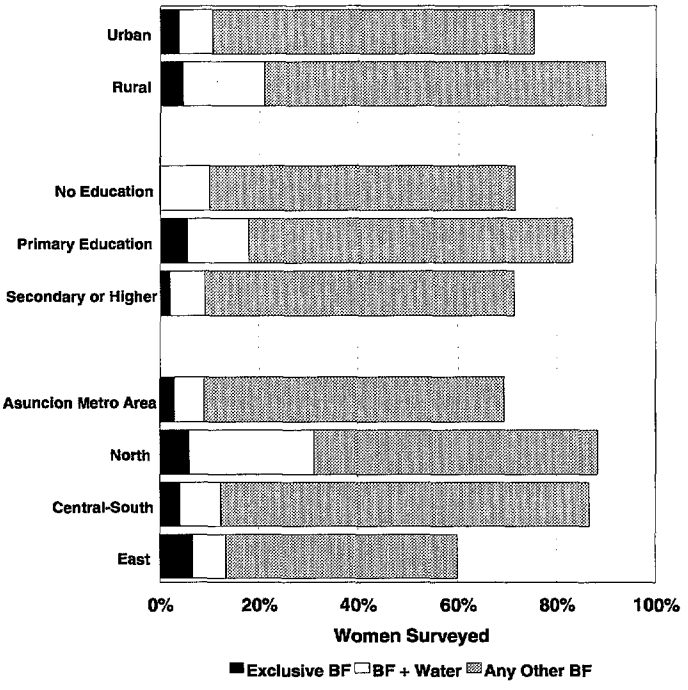



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




exclusive breastfeeding is uniformly low in all regions. Exclusive and full breastfeeding are more commonly practiced by women with a primary education than by those with other educational levels.

At three months postpartum, 9% of women are in full lactational amenorrhea and 33% use a family planning method (Figure 3). Approximately 2% use both. The remaining 59% are at an increased risk of an unplanned pregnancy. At six months postpartum, less than 1% of women remain in full lactational amenorrhea, and 42% use a family planning method. The other 57% of women are unprotected against pregnancy.

Couples who wish to achieve healthy child spacing should adopt an appropriate family planning method when lactational amenorrhea ends or after six months postpartum, whichever comes first. At nine months postpartum, however, only 51% of women have adopted a family planning method, and this figure is even lower at one year (31%). The remaining 49% and 69% respectively, have no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1990, Paraguay's actual level of fertility, indicated by the total fertility rate (TFR), was 4.5. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 15.6. At the time of the survey, Paraguay had a family planning prevalence of 50%, which provided a 49% reduction in total potential fertility, or 5.4 fewer births. Lactational amenorrhea and postpartum abstinence reduce the number of births by 3.0, or 27% of the overall reduction in fertility. A delay in the age at first marriage accounts for the remaining 24% of the reduction, or 2.7 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear, with no concomitant increases in family planning use or age at marriage, as many as 61,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. Family planning levels and timing of use also must be reconsidered in light of the need for health child spacing.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.6***

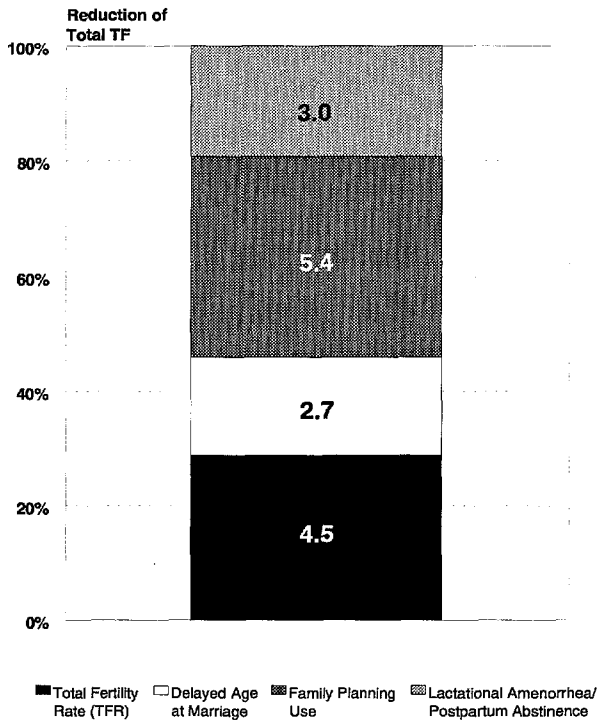
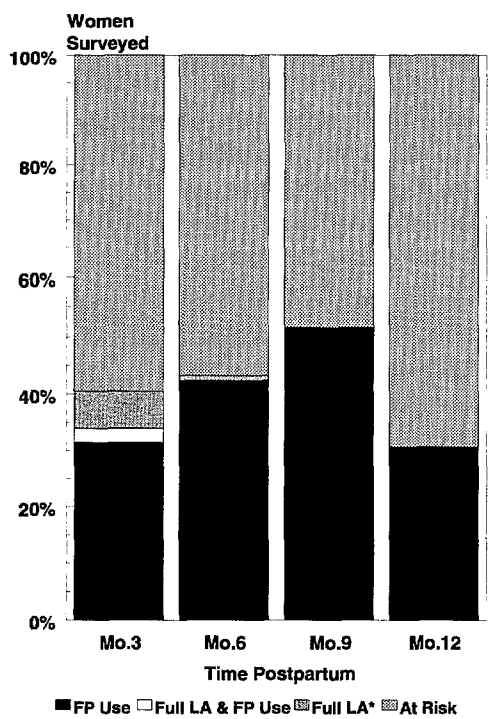



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning Use, and Risk of Pregnancy**



# Program and Policy Considerations-Paraguay

1. Exclusive breastfeeding is a rare practice and the full breastfeeding rate is also low in Paraguay. Increased levels of exclusive breastfeeding in the first six months would enhance the child spacing, nutritional, and health benefits for both the mother and infant. It may be necessary to conduct additional studies in order to assess those factors that inhibit optimal breastfeeding patterns.

2. Early weaning and introduction of supplements into the infant's diet prior to six months contribute to increased levels of infant morbidity and mortality. In 1995, Paraguay's infant mortality rate was 28 deaths per 1,000 births. If the prevalence of exclusive breastfeeding were higher, this rate might be reduced.

3. The lower levels of full breastfeeding among urban women and women with no formal education suggest that any intervention should specifically target these groups. However, the universally low levels indicate the need for widespread support.

4. Breastmilk continues to offer immunological protection well into the child's second year. In Paraguay, where the mean duration of any breastfeeding is only eleven months, mothers need to be encouraged to breastfeed exclusively for the first six months, introduce nutritive foods after this point, and continue breastfeeding for two years or longer.

5. Family planning use in Paraguay increases during the first nine months postpartum, replacing the lost lactational infertility, but it then drops significantly between months nine and twelve. The timely introduction of a family planning method is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum. This decrease in family planning use in the later portion of the first year postpartum is an issue that could be addressed through initiatives encouraging healthy child spacing.

6. The Lactational Amenorrhea Method (LAM) could be an important tool to improve exclusive breastfeeding as women relying on the method report it improves their breastfeeding patterns and practices. Additionally, LAM encourages the timely introduction of family planning and child spacing.

*Breastfeeding practices in Paraguay are suboptimal. If this situation changes for the better, breastfeeding could potentially have a significant impact on a woman's lifetime fertility. Every effort should be made to maintain and improve breastfeeding practices. At the same time, any deterioration in breastfeeding levels or practices will negatively affect maternal and child health, the infant mortality rate, and increase the need for family planning services. It is important to ensure that the concept of healthy child spacing is emphasized through increased family planning service availability in all settings where mothers bring their infants for care. Family planning provision and acceptance and child spacing counseling must also receive special attention and support in Paraguay.*

# Peru

Population in millions (1995): 23.8
Annual growth rate: 2.1%
Population urbanized: 72%
Life expectancy: 67
Infant mortality rate: 41/1,000 live births
Maternal mortality rate: 280/100,000
Literacy: male-95% female-83%

Initiation of breastfeeding is a common practice among women in Peru. Almost 97% of mothers breastfeed their infants, and 33% continue breastfeeding until 24 months postpartum (Figure 1). However, only 52% of mothers exclusively breastfeed early on, and this decreases to 22% by four months postpartum, and to only 8% by six months postpartum. The mean duration of breastfeeding is eighteen months, about three months shorter in urban than in rural areas.

Among infants under six months old, 88% are breastfed, but only 28% are exclusively breastfed

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

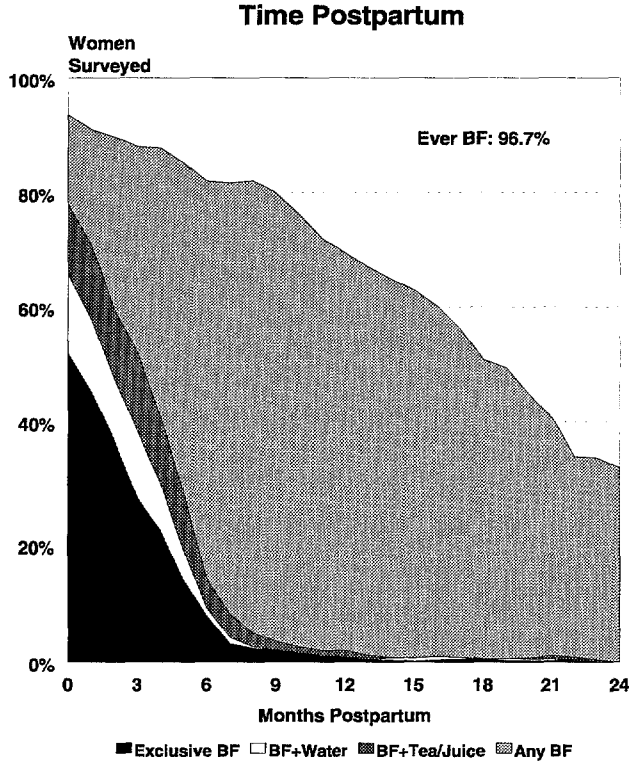
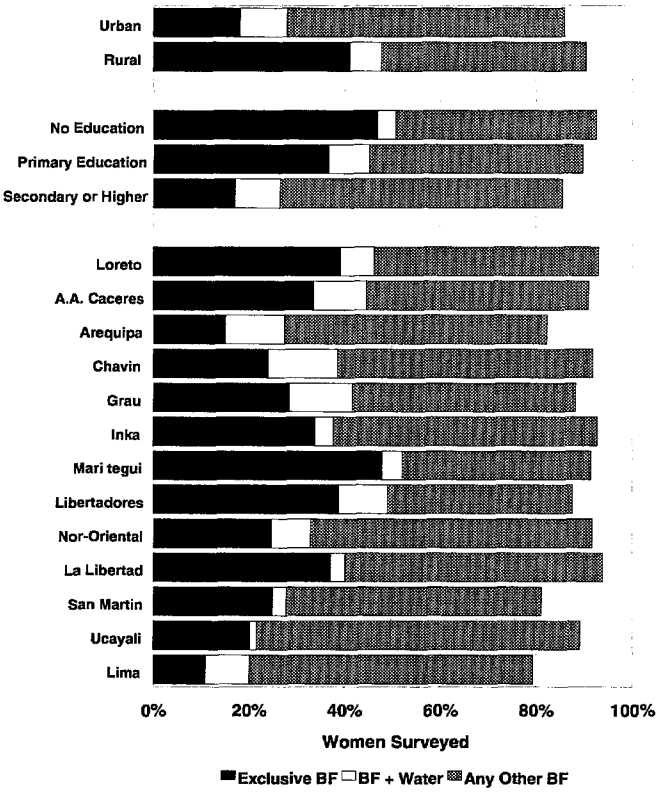



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




(Figure 2). The prevalence of exclusive breastfeeding is more than twice as high among women from rural areas as it is among women from urban areas. Women with a primary or no formal education are two to three times more likely to exclusively breastfeed than women with a secondary/higher education. Among Peru's geographic regions, there is a large degree of variation in breastfeeding patterns; exclusive breastfeeding levels range from a low of 11% in Lima to a high of 48% in Mari Tegui.

At three months postpartum, 32% of women are protected by full lactational amenorrhea and 26% use a method of family planning (Figure 3). Of those percentages, 4% of each use family planning and are also protected by full lactational amenorrhea. The remaining 46% are women at an increased risk of an unplanned pregnancy. At six

months postpartum, 6% of women are protected by full lactational amenorrhea and 35% use family planning. The other 59% are unprotected against pregnancy.

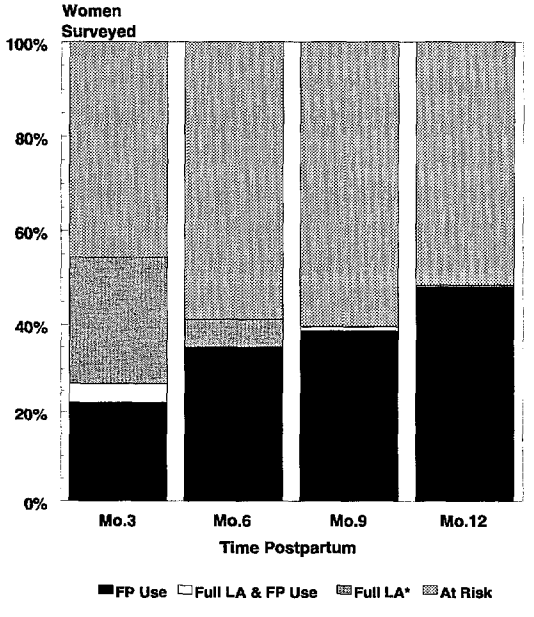
Couples who wish to achieve healthy child spacing should adopt a family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. At nine months and twelve months postpartum, however, only 35% and 48% of women, respectively, have adopted a family planning method. The other 65% and 52%, respectively, have no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Peru's actual level of fertility, indicated by the total fertility rate (TFR), was 3.6. Without the effect of the intermediate variables, the observed fertility level, or the total fecundity rate (TF), would be 18.3. At the time of the survey, Peru had a family planning prevalence of 59%, which accounts for 41% of the reduction in total potential fertility. Lactational amenorrhea and postpartum abstinence reduce the number of births by 5.4, which is 36% of the overall reduction in fertility. A delay in the age at first marriage is responsible for the remaining 23% of the reduction in fertility.

As many as 950,000 additional births could occur in the following year if lactational amenorrhea and postpartum abstinence were to disappear, with no concomitant increases in family planning use or age at marriage. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Peru, this would be difficult and costly to achieve since the data presented indicates that there is little overt replacement of family planning use for the decline in natural infertility of lactation.

FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**

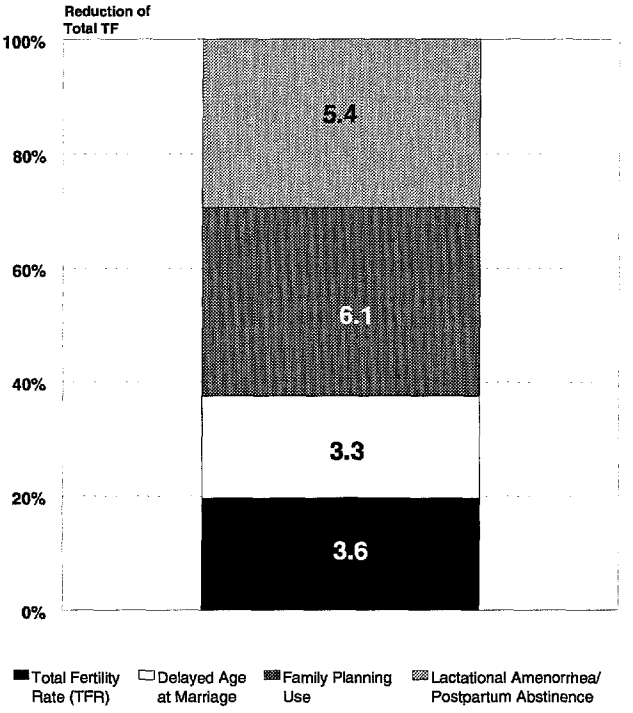



*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 18.3***



# Program and Policy Considerations-Peru

1. Peru's levels of exclusive breastfeeding decrease rapidly by six months postpartum. Therefore, increased levels of exclusive breastfeeding in the first six months are recommended to enhance the child spacing, nutritional, and health benefits for both the mother and infant.

2. The introduction of supplements into the infant's diet at too early an age (prior to six months) contributes to increased levels of infant morbidity and mortality. Delaying the introduction of nutritive supplements past six months can be unhealthy for the infant. In 1995, Peru's infant mortality rate was 41 deaths per 1,000 births. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive complementary foods after this point, while continuing to breastfeed for two years or more.

3. The very low rates of exclusive breastfeeding among women in urban areas and women with a secondary and higher education suggest that any intervention should ensure targeting these groups. However, since full breastfeeding is well below 50%, all groups would benefit from improved practices.

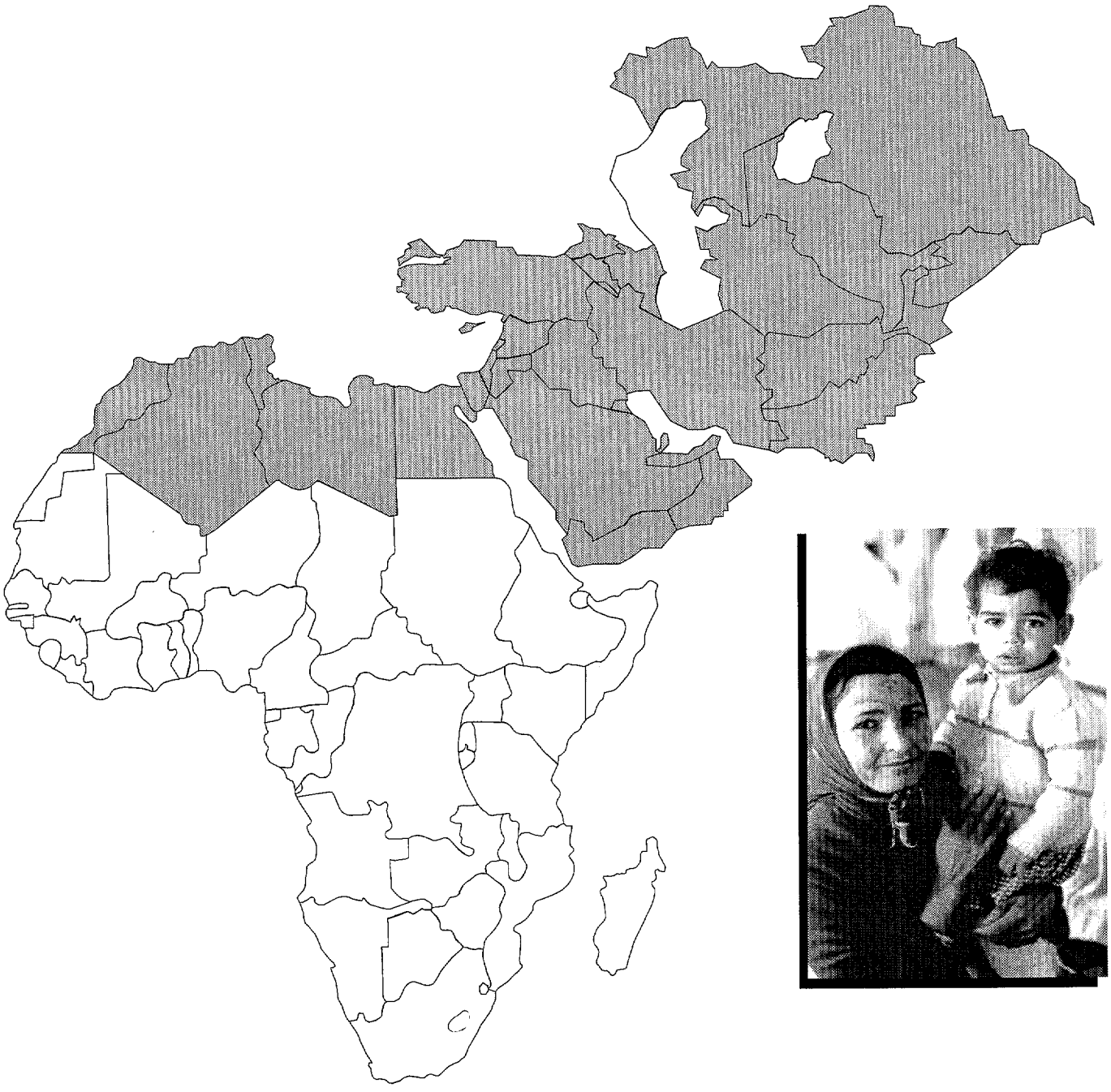
4. Family planning use in Peru increases as full lactational amenorrhea declines in the transition from three to six months postpartum; however, family planning use does not fully replace the loss, nor does it continue to increase at the same degree after this point. The timely introduction of complementary family planning methods, and their continued use, is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum.

5. The Lactational Amenorrhea Method (LAM) is an appropriate family planning method to introduce in Peru because of the percentage of women who remain in full lactational amenorrhea through month three postpartum. LAM would greatly benefit many couples and their children because it encourages the timely introduction of complementary family planning and supports optimal breastfeeding practices.

*In Peru, breastfeeding continues to significantly reduce a woman's lifetime fertility. Efforts should be made to maintain current breastfeeding levels, and to improve infant feeding practices such as exclusive breastfeeding for the first six months postpartum and sustained breastfeeding thereafter. Any deterioration in breastfeeding levels could have profound effects on maternal and child health, as well as the need for family planning services. At the same time, family planning use and acceptance must receive special attention, with particular emphasis given to postpartum women and their unique family planning needs while breastfeeding. The concept of healthy child spacing should also be stressed in any intervention programming.*

# Near East/North Africa Region

**Egypt**
**Morocco**
**Turkey**



# Egypt

Population in millions (1995): 62.9
Annual growth rate: 2.4%
Population urbanized: 45%
Life expectancy: 65
Infant mortality rate: 40/1,000 live births
Maternal mortality rate (1990): 170/100,000
Literacy: male-64% female-39%

In Egypt almost 96% of mothers breastfeed their infants, and 22% continue breastfeeding until their children are 24 months of age (Figure 1). About 61% of mothers initiate exclusive breastfeeding, but only 17% continue this practice until the sixth month postpartum. A small but significant percentage of women continue to fully breastfeed well after the time when nutritive complementary foods should have been introduced. At nine months postpartum, 7% of women are still fully breastfeeding, and at eighteen months postpartum, another 6% still do not offer supplements other than water. The mean duration of breastfeeding in Egypt is eighteen months, almost two months shorter in urban than in rural areas.

The prevalence of exclusive breastfeeding is almost twice as high in rural (47%) than in urban (26%) areas among infants under six months (Figure 2). A similar trend is observed in the different regions, except that the urban/rural differential is higher in Lower Egypt than in Upper Egypt. There is a notable difference in the prevalence of full breastfeeding among women with higher education; only 29% of women with a secondary/higher education practice exclusive breastfeeding, compared to 45% and 43% of women with no formal education or a primary education, respectively.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

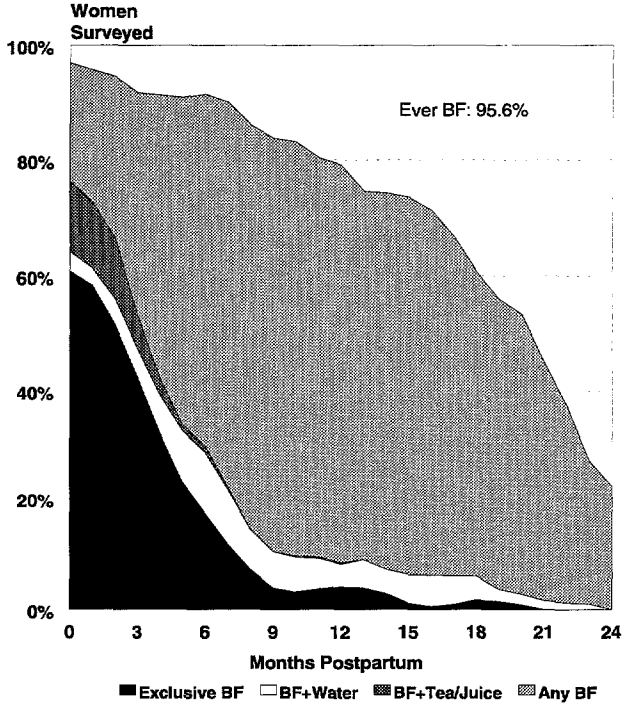
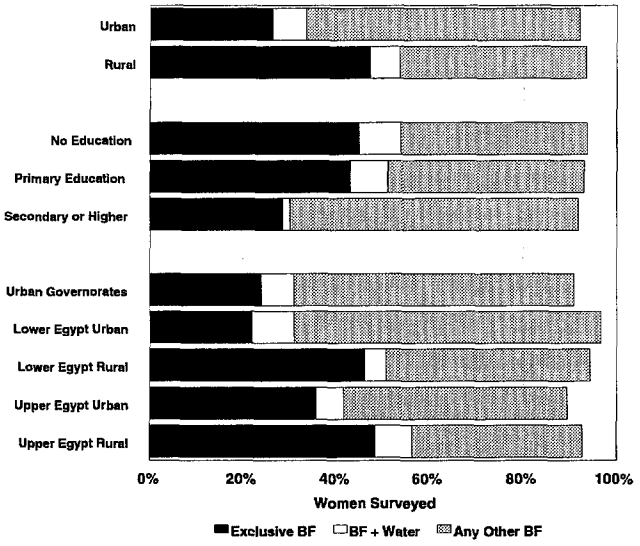



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




In Figure 3, at three months postpartum, 37% of women are in full lactational amenorrhea and 31% use family planning. Approximately 6% of women fall in both categories--they use family planning and are also protected by full lactational amenorrhea. All remaining women (37%) are at an increased risk of an unplanned pregnancy. At six months postpartum, 19% of women remain in full lactational amenorrhea, and 37% use family planning. About 3% of the women are represented in both groups; this leaves 47% of women unprotected against pregnancy.

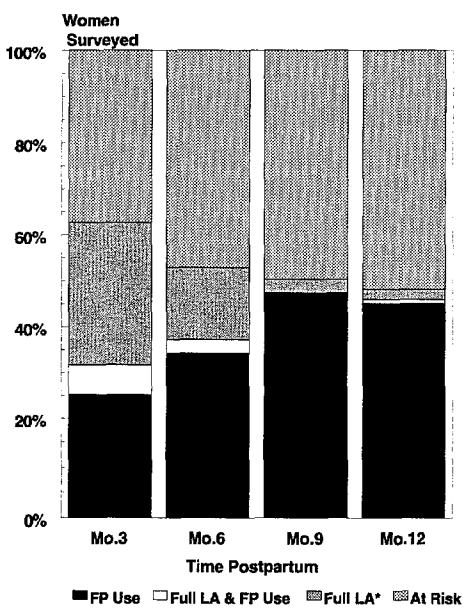
Couples who wish to achieve healthy child spacing should adopt a complementary family planning method after the end of full lactational amenorrhea or after six months postpartum, whichever occurs first. However, the percentage of women who use a family planning method is 47% and 45% at months nine and twelve postpartum, respectively. The remaining women have no protection against pregnancy. The small proportion of women who remain in full lactational amenorrhea past six months postpartum are considered to be at risk, although they are more protected against pregnancy than the women who are not using family planning. While family planning use increases over time, it does not fully replace the declines in lactational infertility.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Egypt's actual level of fertility, indicated by the total fertility rate (TFR), was 4.4. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 14.9. At the time of the survey, Egypt's family planning prevalence was 47%, which provided a 43% reduction in total potential fertility, or 4.4 fewer births. Lactational amenorrhea and postpartum abstinence reduce the number of births by 3.6, or 34% of the overall reduction in fertility. A delay in the age at first marriage accounts for the remaining 23%, or 2.4 fewer births.

Breastfeeding has a significant impact on the fertility levels in Egypt. If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 1.5 million additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level.

FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use, and Risk of Pregnancy**

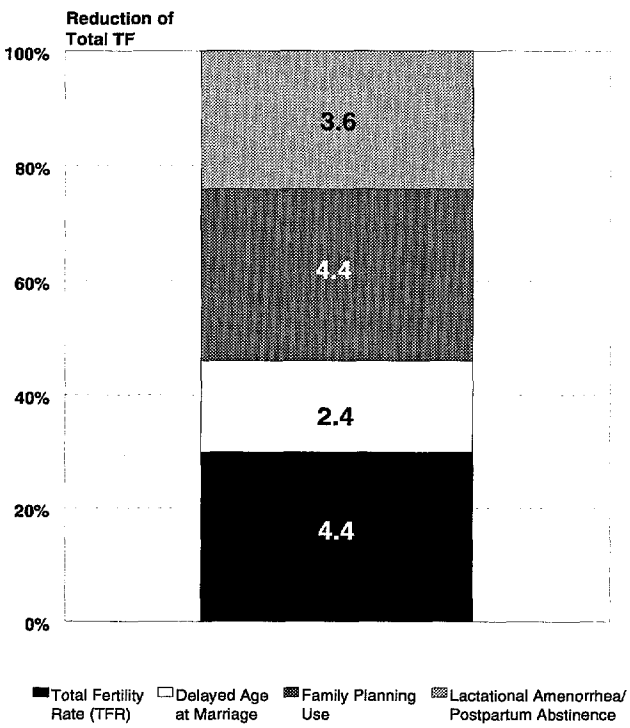



*The impact of LA on fertility begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity (TF) = 14.9***



# Program and Policy Considerations-Egypt

1. Egypt's levels of exclusive breastfeeding decrease rapidly by the sixth month postpartum. In 1995, Egypt's infant mortality rate was 40 deaths per 1,000 births. An improved rate of exclusive breastfeeding could reduce the infant mortality rate.

2. The low levels of exclusive breastfeeding among urban women and women with a secondary and higher education suggest that any intervention should target these groups. However, the generally low levels of full breastfeeding underlines the need for widespread intervention.

3. Delaying the introduction of nutritive supplements well past six months is potentially unhealthy for the infant. At eighteen months, 6% of children still are not receiving nutritive supplements. Mothers should be counseled to exclusively breastfeed in the first six months, introduce supplements in a timely manner, and continue frequent breastfeeding for two years or longer.

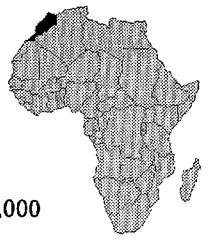
4. Family planning use is relatively high in Egypt, but does not increase substantially over the period of time when the protective effect of full lactational amenorrhea is declining. The timely introduction of and continued increase in use of family planning is essential for couples wanting to achieve health child spacing. This concept could be emphasized through increased breastfeeding and family planning support in all services where mothers bring their infants and young children for care.

5. At months three and six postpartum, there is overlap between full lactational amenorrhea and family planning use. Introducing family planning methods at the biologically appropriate time may help to minimize this double coverage, which misdirects costly resources and could pose a risk to lactating women who use an inappropriate family planning method.

6. The Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children because it supports optimal breastfeeding practices and encourages the timely introduction of complementary family planning.

*Breastfeeding practices in Egypt are encouraging, and breastfeeding currently significantly reduces a woman's lifetime fertility. However, efforts should be made to maintain and to improve breastfeeding practices, including exclusive breastfeeding during the first six months postpartum. Any deterioration in breastfeeding levels or practices would have a real effect on maternal and child health, as well as on the need for family planning services. Family planning and child spacing must receive simultaneous attention and support.*

# Morocco



Population in millions (1995): 27.0
Annual growth rate: 2.2%
Population urbanized: 48%
Life expectancy: 65
Infant mortality rate: 61/1,000 live births
Maternal mortality rate (1990): 610/100,000
Literacy: male-57% female-31%

In Morocco, breastfeeding is a customary practice. However, while about 95% of mothers breastfeed their infants, only 12% continue breastfeeding until their children are 24 months of age (Figure 1). About 71% of mothers initiate exclusive breastfeeding, declining to 36% at four months postpartum, and to only 21% at six months postpartum. At nine months, close to 30% of mothers are either exclusively breastfeeding or offering only non-milk liquid supplements, although nutritive supplements should be introduced by this time. The mean duration of breastfeeding is fourteen months, about seven months shorter in urban than in rural areas.

FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**

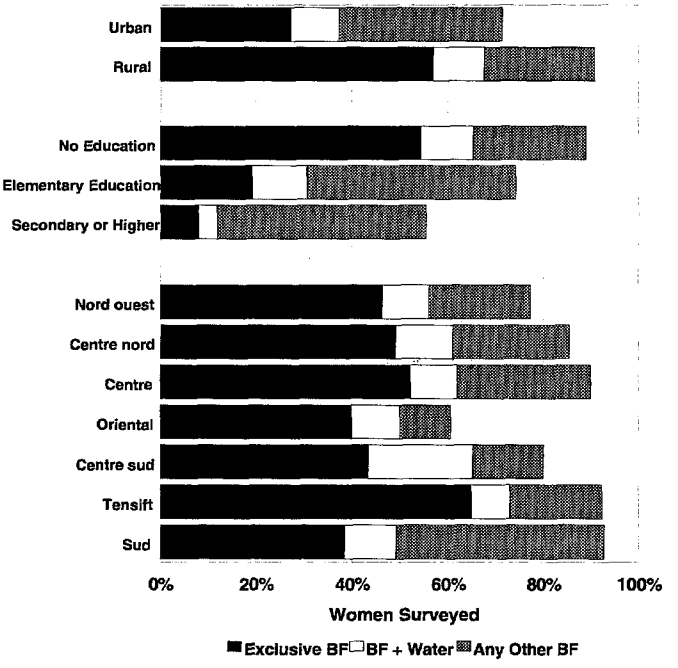
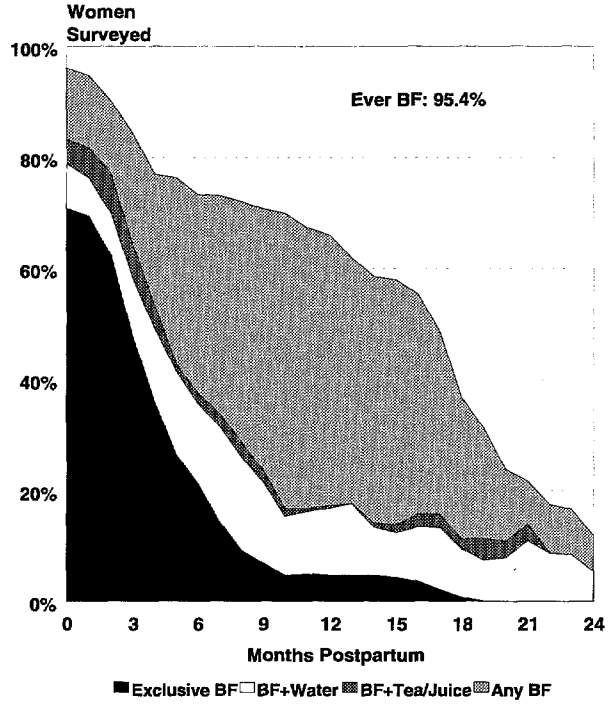



FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**




About 85% of infants less than six months old are breastfed, but the prevalence of exclusive breastfeeding is only about 40% (Figure 2). Exclusive and full breastfeeding are twice as high in rural than in urban areas. Among Morocco's seven regions, levels of exclusive breastfeeding vary from 38% in Oriental to 65% in Tensift. Women with no formal education are significantly more likely to exclusively breastfeed than women with a primary or secondary/higher education.

In Figure 3, at three months postpartum, 32% of women are in full lactational amenorrhea and 29% use family planning. The remaining 38% are at an increased risk of an unplanned pregnancy. At six months postpartum, 13 % of women remain in full lactational amenorrhea, and 39% use a family planning method. About 48% are at risk of pregnancy.

Couples wanting to achieve healthy child spacing should adopt an appropriate complementary family

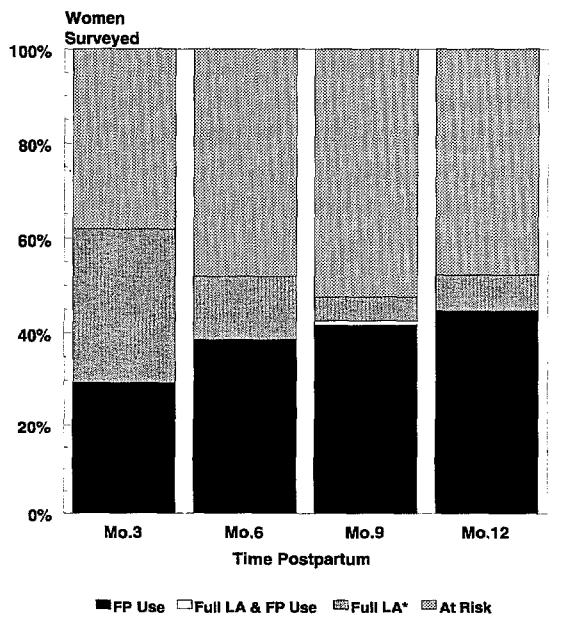
planning method when full lactational amenorrhea ends or after six months postpartum, whichever occurs first. However, at months nine and twelve postpartum, only 42% and 45% of women, respectively, have adopted a family planning method. The other 58% and 55%, respectively, are not protected against pregnancy. Women who remain in full lactational amenorrhea at months nine and twelve postpartum are considered to be at an increased risk, although they are at less risk than the women who are not using family planning during this time.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1992, Morocco's actual level of fertility, indicated by the total fertility rate (TFR), was 4.2. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 15.7. At the time of the survey, Morocco had a family planning prevalence of 41%, which provided the greatest reduction in total potential fertility (39%, or 4.5 births). Lactational amenorrhea and postpartum abstinence reduced the number of births by 3.7, or 32% of the overall reduction. A delay in the age at first marriage accounts for the remaining 29% of the reduction, or 3.3 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage, as many as 629,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. Although family planning use does increase with the decline in lactational amenorrhea, this level of increase in family planning prevalence would be both difficult and costly to achieve.

FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP) Use and Risk of Pregnancy**

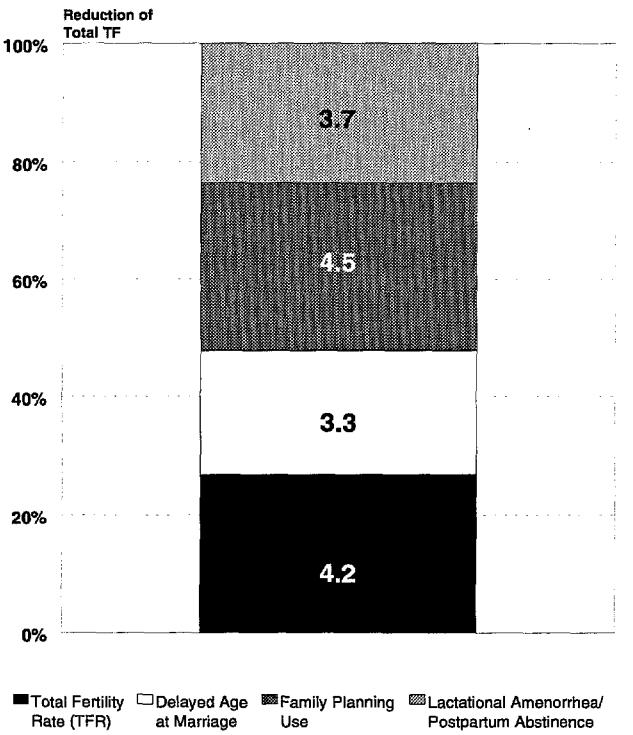



*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 15.7***



# Program and Policy Considerations-Morocco

1. While Morocco's rate of exclusive breastfeeding is relatively high, any increase in prevalence or duration of this practice would enhance the nutritional, health, and child spacing benefits for both the mother and infant. Accordingly, mothers should be encouraged to breastfeed exclusively for the first six months, introduce nutritive supplements after this point while continuing to breastfeed frequently for up to two years or longer.

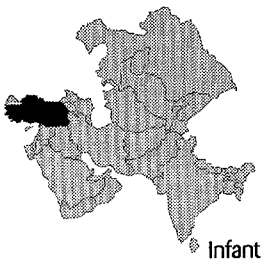
2. Introducing supplements into the infant's diet too early or too late contributes to increased levels of infant morbidity and mortality. In 1995, Morocco's infant mortality rate was 61 deaths per 1,000 births. Higher rates of exclusive breastfeeding and timely nutritive supplementation could reduce this number.

3. Program and policy initiatives aimed at improving optimal breastfeeding practices should especially target urban and educated women. These initiatives may be most effective if started while the women are still in school.

4. While there is an increase in family planning use over the period of time when the protective effect of full lactational amenorrhea is declining, it is not at a level sufficient to ensure healthy child spacing. The timely introduction of complementary family planning methods is essential for couples who want to control their fertility beyond the period of full lactational amenorrhea or beyond six months postpartum.

5. The Lactational Amenorrhea Method (LAM) would greatly benefit many couples and their children because it teaches the timely introduction of complementary family planning and supports optimal breastfeeding practices. Current breastfeeding practices in Morocco indicate a likely high acceptance of LAM. This method would help improve the timely introduction of complementary family planning while increasing the prevalence of exclusive breastfeeding.

*Breastfeeding currently has a significant impact on a woman's lifetime fertility. Efforts should be made to maintain current levels of breastfeeding and to improve breastfeeding practices, such as exclusive breastfeeding for the first six months postpartum. Any deterioration in breastfeeding practices would have profound effect on maternal and child health, infant mortality rates, as well as child spacing. At the same time, family planning must continue to receive special attention and support. A particular emphasis on the needs of postpartum women, and their unique family planning needs while breastfeeding would be appropriate. Family planning services in health care facilities and programs that serve infants would help reach the appropriate group of mothers.*



# Turkey

Population in millions (1995): 61.9
Annual growth rate: 2.2%
Population urbanized: 69%
Life Expectancy: 68
Literacy: male-92% female-72%
Infant mortality rate: 44/1,000 live births
Maternal mortality rate (1990): 180/100,000

Breastfeeding is common among women in Turkey. About 96% of mothers breastfeed their infants at some time, but only 11% continue breastfeeding until their children are 24 months of age (Figure 1). The prevalence of exclusive breastfeeding is very low: only 20% of mothers initiate exclusive breastfeeding, and less than 3% continue this practice until the recommended six months postpartum. The most common early feeding pattern is breastfeeding combined with water and other types of supplementation. At nine months postpartum, 5% of infants are still exclusively breastfed or receive only water supplements, even though nutritive complementary foods should be introduced before this time. The mean duration of breastfeeding is thirteen months, about two months shorter in urban than in rural areas.

About 84% of infants under six months are breastfed, but exclusive breastfeeding is rare (Figure 2). About one quarter of the infants in Turkey receive water in addition to breastmilk from birth. The differences in breastfeeding patterns among education levels, geographic regions, and the urban/rural differential are small. Nonetheless, exclusive and full breastfeeding are somewhat higher in rural than in urban areas, and among women with less education. Exclusive breastfeeding rates vary little by region.

FIGURE 1

**% Breastfeeding (BF) by Time Postpartum**

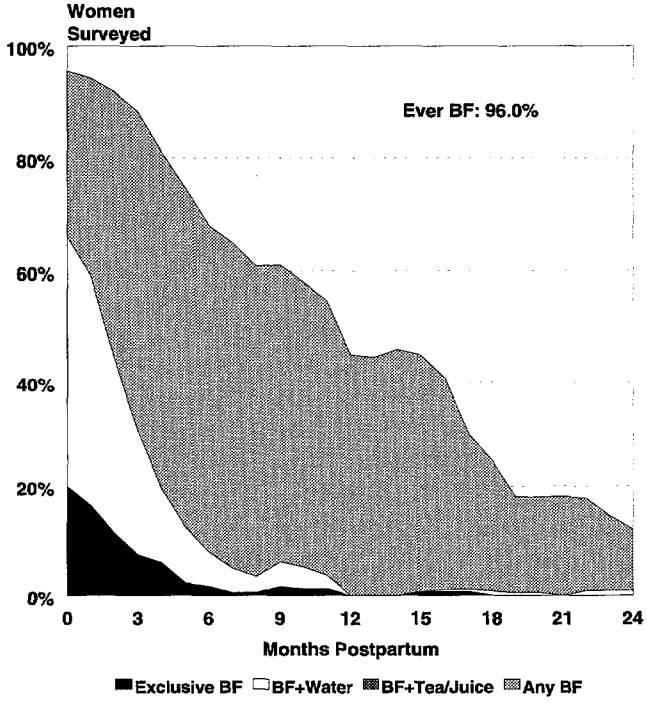
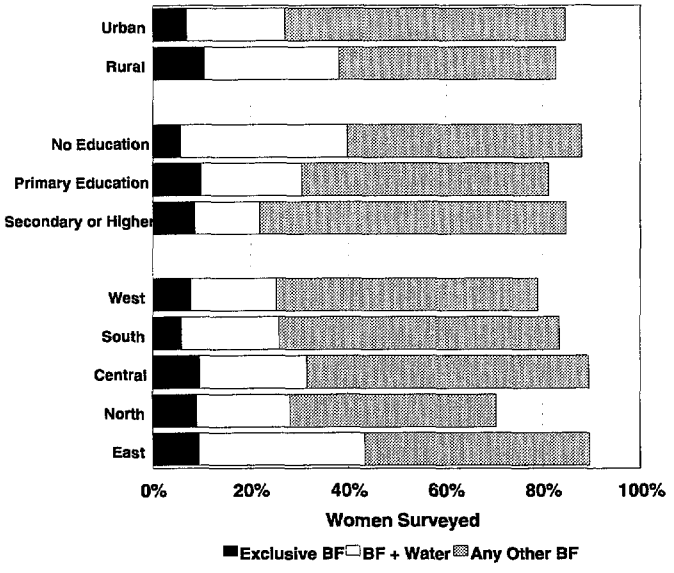



FIGURE 2

**% BF in First 6 Months by Sociodemographic Variables**




At three months postpartum, 23% of women are in full lactational amenorrhea and 45% use family planning (Figure 3). In each of these two groups, 3% represent an overlap because they are protected both by family planning and full lactational amenorrhea. The remaining 35% are women at an increased risk of an unplanned pregnancy. At six months postpartum, 5% of women remain in full lactational amenorrhea, and 53% use a family planning method. The other 42% of these women are not protected against pregnancy.

Couples who wish to achieve healthy child spacing should adopt an appropriate complementary family planning method when full lactational amenorrhea ends or at six months postpartum, whichever occurs first. At months nine and twelve postpartum, 67% and 65% of women, respectively, have adopted a family planning method. This leaves 33% and 35%, respectively, with no protection against pregnancy.

The fertility-inhibiting effects of the intermediate determinants of fertility are presented in Figure 4. In 1993, Turkey's actual level of fertility, indicated by the total fertility rate (TFR), was 2.7. Without the effect of the intermediate variables, the observed fertility level (or the total fecundity rate [TF]) would be 10.0. At the time of the survey, Turkey's family planning prevalence rate is the average for developed nations at 63%. This provided the majority (52%) of the reduction in total potential fertility. Lactational amenorrhea and postpartum abstinence reduce the number of births by 1.7, or 24% of the overall reduction in fertility. A delay in the age at first marriage accounts for the remaining 24% of the reduction, or 1.7 fewer births.

If lactational amenorrhea and postpartum abstinence were to disappear with no concomitant increases in family planning use or age at marriage as many as 873,000 additional births could occur in the following year. If the duration of full lactational amenorrhea were shortened due to a decline in the prevalence of breastfeeding, a significant increase in family planning use would be necessary to maintain the current fertility level. In Turkey, where family planning prevalence is already near the average for the developed world, any attempt to increase the use of family planning may represent an unrealistic and costly goal.

FIGURE 4

**Fertility-Inhibiting Effects of the Intermediate Fertility Variables**

***Total Fecundity Rate (TF) = 10.0***

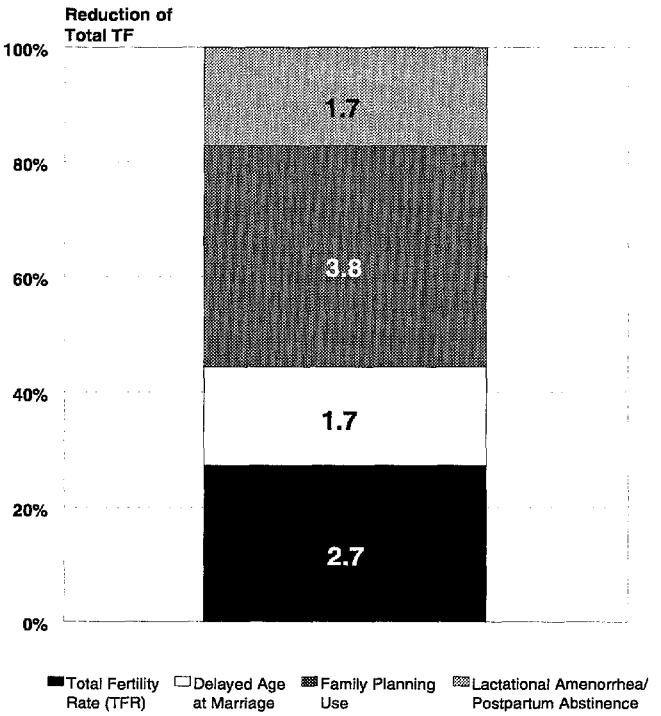
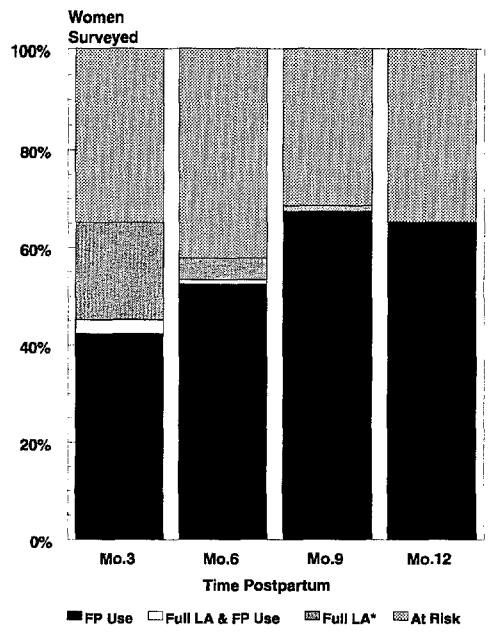



FIGURE 3

**Lactational Amenorrhea (LA), Family Planning (FP)Use, and Risk of Pregnancy**




*The efficacy of LA for birth spacing begins to decline with increased intervals between feedings. This occurs with the introduction of complementary foods at about 6 months pp. Women who have not started using another FP method at this time are also considered at risk.

# Program and Policy Considerations-Turkey

1. The incidence of exclusive breastfeeding in Turkey is very low and the introduction of supplements into the infant's diet at too early or too late an age contributes to increased levels of infant morbidity and mortality. In 1995, Turkey's infant mortality rate was 44 deaths per 1,000 births. An increase in exclusive breastfeeding would result in reducing the current infant mortality rate. Optimal breastfeeding guidelines should discourage the addition of water to breastfeeding in the first six months, while encouraging the timely introduction of nutritive supplements and continued breastfeeding for two years or longer.

2. The uniformly low levels of exclusive breastfeeding in Turkey suggest that any intervention must be widespread. Additional studies are needed to identify the factors that the support high levels of breastfeeding but also the common use of water supplementation; any study would also need to assess why the prevalence of breastfeeding drops dramatically after three months postpartum.

3. Given the current situation, Turkey could greatly benefit from the many advantages of the Lactational Amenorrhea Method (LAM). The method supports optimal breastfeeding practices while encouraging the timely introduction and continuation of complementary family planning.

4. The high level of family planning use might only be improved by timing of introduction and length of use; levels should remain high for at least two years postpartum. A combined breastfeeding and family planning educational campaign could promote the use of both for two years or longer.

*Although the use of family planning is high in Turkey, breastfeeding still has a significant impact on a woman's lifetime fertility. Efforts should be made to maintain and increase current levels of breastfeeding, while improving infant feeding practices such as exclusive breastfeeding for the first six months postpartum. Any deterioration would affect maternal and child health as well as the need for family planning services. At the same time, family planning use and acceptance must continue to receive special attention to achieve good child spacing of two years or more.*

# Summary and Conclusions

1. The prevalence of optimal breastfeeding, as defined by WHA, is very low in most of the 27 countries in this analysis. In only two countries, Bangladesh and Rwanda, do a high proportion of women initiate and continue exclusive breastfeeding for six months. A few other countries—Bolivia, Egypt, Indonesia, Madagascar, Morocco, and Peru—have initial rates of exclusive breastfeeding that are encouraging, but this feeding pattern is not maintained throughout the first six months. Nutritive supplements are introduced well beyond six months postpartum in other countries, including Burkina Faso, Bangladesh, Cote d'Ivoire, Egypt, Ghana, Madagascar, Morocco, Namibia, Niger, Nigeria, Pakistan, and Senegal. In seventeen of the 27 countries, most women neither exclusively breastfeed for six months nor begin supplemented breastfeeding at about six months postpartum.

2. A very common early feeding pattern, particularly in Bangladesh, Burkina Faso, the Central African Republic, Cote d'Ivoire, Madagascar, Malawi, Namibia, Niger, Nigeria, the Philippines, Senegal, Tanzania, and Zambia is breastfeeding with water supplements. Introducing supplements, including water, at less than six months of age contributes to increased levels of infant morbidity and mortality, and to a return of fertility for the mother. Breastfeeding guidelines should discourage adding water to breastfeeding in the first six months.

3. Policies, programs, and breastfeeding support systems that enable women to breastfeed at home, school, and work are essential for improving optimal breastfeeding practices worldwide. Studies identifying the factors contributing to the low prevalence of breastfeeding observed in several countries are needed. Educational and motivational campaigns should especially target women in urban areas and those in the educational system.

4. Breastfeeding has a significant impact on worldwide fertility reduction and should be promoted for its child spacing benefits as well as for its nutritional benefits. For seventeen of the 27 countries, lactational amenorrhea/abstinence is the greatest contributor to fertility reduction. Additionally, studies show that encouraging mothers to switch from partial to exclusive breastfeeding is best done with messages stressing maternal benefits as well as infant health.

5. In ten countries, family planning use does not increase as the biological protection from full lactational amenorrhea declines. In thirteen countries, family planning use drops between months nine and twelve postpartum. The timely introduction of an appropriate postpartum family planning method is essential to ensure healthy child spacing. Family planning methods should be more broadly available; all facilities and programs that serve women and infants must be encouraged to provide child spacing counseling and family planning services.

6. In those countries where breastfeeding rates are low and practices are not optimal, the Lactational Amenorrhea Method (LAM) can serve as an important tool for improving breastfeeding behaviors. LAM users report improved breastfeeding practices *because* of their choice to use this method. In most of these same countries, the family planning prevalence rates also are low; LAM could provide dual benefits by promoting optimal breastfeeding behaviors while also encouraging the use of family planning.

7. LAM would benefit many couples and their children throughout most of the 27 countries studied here, particularly those places where the sustained breastfeeding rate is high and family planning use is low, such as the Central African Republic, Cote d'Ivoire, Malawi, Niger, Nigeria, Pakistan, Senegal, Tanzania, and Zambia. Because LAM encourages optimal breastfeeding and the introduction of complementary methods, it would serve as an adjunct to both improvements in infant health and nutrition and the timely introduction of other family planning for healthy child spacing.

# Breastfeeding, Fertility, and Family Planning:

## Africa

| Country | No Exclusive BF | Low Sustained BF | Water Supplementation Before 6 Months | LA Not Main Fertility Regulator | Low Contraceptive Replacement | FP Use Drops in Month 12 | Low FP Prevalence Rate (<21%) |
|---|---|---|---|---|---|---|---|
| Burkina Faso | X | | X | | | X | |
| Central African Republic | X | | X | | | | X |
| Côte d'Ivoire | X | | X | | X | X | X |
| Ghana | X | | X | | X | | X |
| Kenya | | | X | | X | | |
| Madagascar | | | X | | X | | X |
| Malawi | X | | X | | | | X |
| Namibia | | | X | | | | |
| Niger | X | | X | | X | X | X |
| Nigeria | X | | X | | X | X | X |
| Rwanda | | | | | X | | |
| Senegal | X | | X | | X | X | X |
| Tanzania | | | X | | X | | X |
| Zambia | | | X | | | X | X |

## Asia, Latin America/Caribbean, Near East/North Africa

| Country | No Exclusive BF | Low Sustained BF | Water Supplementation Before 6 Months | LA Not Main Fertility Regulator | Low Contraceptive Replacement | FP Use Drops in Month 12 | Low FP Prevalence Rate (<21%) |
|---|---|---|---|---|---|---|---|
| Bangladesh | | | X | | | X | |
| Indonesia | | | | X | | | |
| Pakistan | | | X | | X | | X |
| Philippines | | | X | X | | | |
| Bolivia | | | | | | X | |
| Brazil | X | X | | X | | X | |
| Colombia | | X | X | X | | X | |
| Dominican Republic | | X | X | X | | | |
| Paraguay | X | X | X | X | | X | |
| Peru | | | X | X | | | |
| Egypt | | | | X | | X | |
| Morocco | | | X | X | | | |
| Turkey | | X | X | X | | X | |