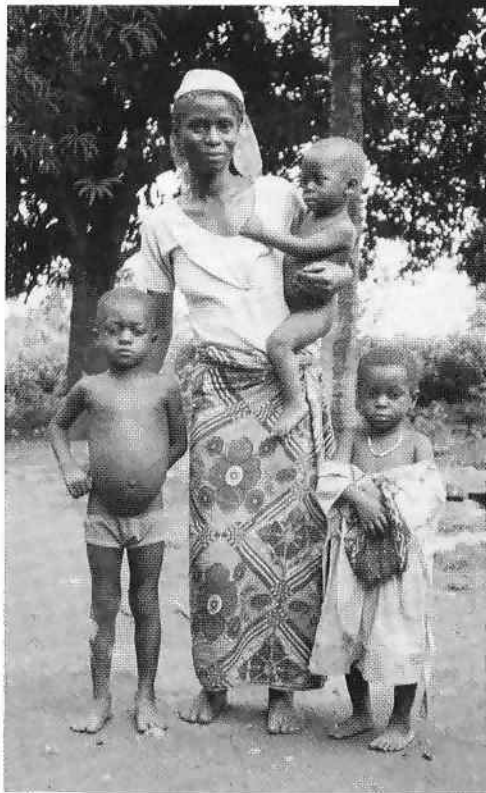

COMPARATIVE STUDIES 3

REPRODUCTIVE PREFERENCES



Demographic
and Health
Surveys



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The Demographic and Health Surveys (DHS) is a nine-year project to assist government and private agencies in developing countries to conduct national sample surveys on population and health. DHS is funded by the U.S. Agency for International Development and administered by the Institute for Resource Development.

The main objectives of the DHS program are: (1) to provide decisionmakers in survey countries with data and analyses useful for informed policy choices, (2) to expand the international population and health database, (3) to advance survey methodology, and (4) to develop in participating countries the skills and resources necessary to conduct demographic and health surveys.

For information about the Demographic and Health Surveys program, write to DHS, IRD/Macro Systems, 8850 Stanford Boulevard, Suite 4000, Columbia, MD 21045, USA (Telephone 301-290-2800; Telex 87775; Fax 301-290-2999).

**Demographic and Health Surveys
Comparative Studies No. 3**

**Reproductive Preferences:
A Comparative View**

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Institute for Resource Development/Macro Systems, Inc.
Columbia, Maryland USA

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Preface

An important part of the DHS program is the comparative analysis and further analysis of data obtained from DHS surveys. Standard recode files have been prepared for most surveys and researchers worldwide are encouraged to use the datasets for further analysis.

Much of the comparative analysis of DHS data, particularly for major topics such as fertility, mortality, contraceptive use, and maternal and child health, is being carried out by DHS staff in Columbia, Maryland. The results of these analyses are published in the *DHS Comparative Studies* series. A total of 15 *Comparative Studies* are planned.

The studies in this series are based on the standard recode files which were available in early 1990. These include datasets for 25 standard DHS surveys carried out from 1985 to 1989. Data for El Salvador, Ondo State (Nigeria), and Sudan may not be included in all reports because some of the El Salvador and Ondo State data are not comparable with data from other DHS surveys and the Sudan survey was not completed until mid-1990.

Reports in the *DHS Comparative Studies* series provide detailed tables and graphs comparing the results of DHS surveys for countries in sub-Saharan Africa, the Near East/North Africa, Asia, and Latin America/Caribbean. The reports also discuss various issues such as questionnaire comparability, survey procedures, and data quality. Where appropriate, data from previous survey programs, primarily the World Fertility Survey (WFS), are used to evaluate trends over time.

The *DHS Comparative Studies* series is intended to provide analysts and policymakers with readily available comparisons of data from developing countries. The studies will also be useful to others in the fields of international population and health.

During the second phase of the DHS program (1988-1993), data will be collected for a further 25 countries. An update of the information on fertility (including data from DHS-II countries) will be published later in the program.

Martin Vaessen
Project Director

Acknowledgments

This report has been reviewed by colleagues on the staff of the Demographic and Health Surveys. It has also benefited from extensive comments from Germán Rodríguez and Noreen Goldman of the Office of Population Research at Princeton University and from Thomas Pullum of the University of Texas.

1 Introduction

The subject of reproductive preferences has been included routinely in fertility and family planning surveys since their beginning. These surveys have attempted to quantify and measure the concepts of ideal family size, intentions to have another child, intentions to postpone the next birth, and wanted and unwanted births. The basic program objective of collecting such information has been to determine the demand for fertility regulation and to estimate the demographic implications of the underlying preferences. While reproductive preferences have long been regarded as the "soft" part of measurement in these surveys, recent methodological research has raised confidence in their predictive validity (Westoff, 1990).

This report analyzes and compares reproductive preferences in the 28 countries included in the first phase of the Demographic and Health Surveys (DHS) program. Comparisons

with data collected by the World Fertility Survey (WFS) conducted a decade earlier allow us to trace recent trends in some of these preferences. First, fertility norms are examined, that is, the desired or ideal number of children. Then the report looks at reproductive intentions, in particular the proportion of women who want no more children, and some of the associated demographic and social factors. Next, spacing intentions are analyzed and an attempt is made to infer the preferred length of the next birth interval. Based on this information on reproductive preferences, desired fertility rates are then estimated, which are of special importance to an assessment of demographic implications. The report concludes by forecasting total fertility rates for each of the countries over the next five years. These forecasts are based on earlier research linking reproductive intentions with contraceptive prevalence and total fertility rates.

2 Reproductive Norms

The desired or ideal number of children reflects the reproductive norms of a society. Measurement of the desired number of children provides a range within which socially acceptable fertility is defined. Desired number of children is not regarded as a "predictor" of fertility for two reasons. First, it contains a strong element of idealization. Second, it is influenced by mothers' rationalizations of their existing children, who may or may not have been desired at the time of conception. In DHS surveys the following question was asked of all women:

"If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?"

The data presented in Table 2.1 and Figure 2.1 for ever-married women reveal a strong difference between the fertility norms of sub-Saharan Africa and the other regions surveyed. In sub-Saharan Africa the ideal number averages just under six children, compared with an average of just over three children in the countries of North Africa, Asia, and Latin America and the Caribbean. The lowest value in a sub-Saharan country is 4.7 (Kenya), while the highest value elsewhere is only 4.1 (Guatemala).

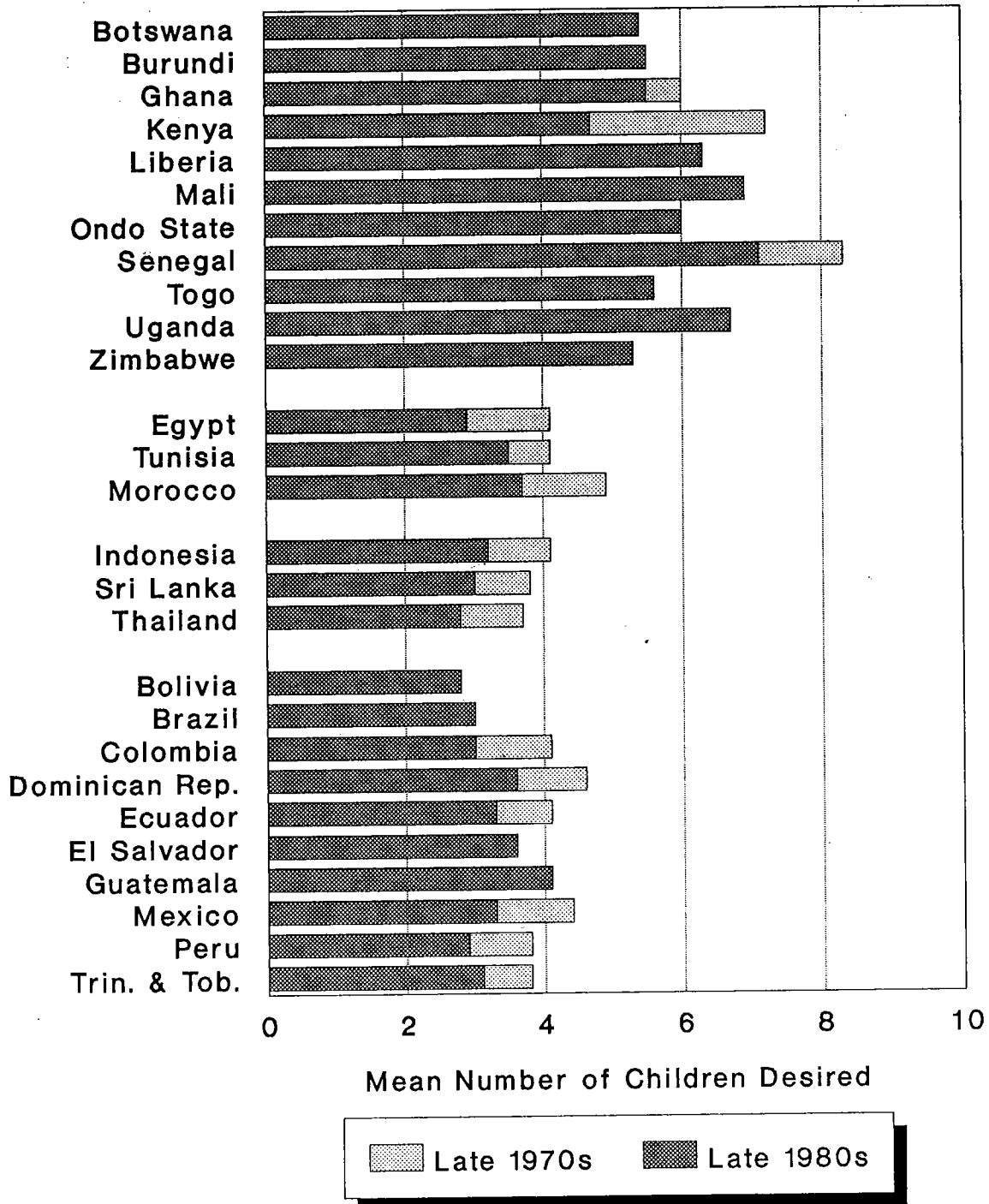
There is a tendency for the average desired or ideal number of children to rise with family size, some of which is no doubt due to the rationalization of unwanted births as desired. This tendency is less evident in the sub-Saharan countries. We can roughly measure the extent of this phe-

Table 2.1 Mean number of children desired among ever-married women by number of living children, Demographic and Health Surveys, 1985-1989

Country	Date of Fieldwork	Number of Living Children ^a							Total
		0	1	2	3	4	5	6+	
SUB-SAHARAN AFRICA									
Botswana	1988	5.0	5.0	4.7	4.9	5.7	5.6	6.4	5.4
Burundi	1987	5.2	4.9	5.0	5.4	5.6	5.8	6.2	5.5
Ghana	1988	5.2	4.9	5.2	5.4	5.7	6.0	6.1	5.5
Kenya	1988/89	4.3	4.1	4.0	4.4	4.6	5.1	5.4	4.7
Liberia	1986	6.0	6.0	6.0	6.0	6.6	7.1	7.5	6.3
Mali	1987	6.2	6.6	6.9	6.6	7.0	7.4	7.9	6.9
Ondo State	1986/87	5.8	5.4	5.3	5.9	6.1	6.2	7.0	6.0
Senegal	1986	7.3	7.1	7.0	7.2	7.3	7.2	6.8	7.1
Togo	1988	5.4	5.1	5.4	5.6	5.9	5.7	5.9	5.6
Uganda	1988/89	6.1	6.1	6.2	6.6	6.8	6.9	7.6	6.7
Zimbabwe	1988/89	4.8	4.2	4.5	5.2	5.5	5.9	6.8	5.3
NORTH AFRICA									
Egypt	1988/89	2.8	2.6	2.6	2.8	3.0	3.1	3.4	2.9
Morocco	1987	3.1	3.0	3.3	3.6	3.9	4.2	4.3	3.7
Tunisia	1988	2.6	2.9	3.0	3.3	3.7	3.9	4.3	3.5
ASIA									
Indonesia	1987	2.5	2.6	2.9	3.3	3.7	4.0	4.4	3.2
Sri Lanka	1987	2.5	2.3	2.7	3.1	3.5	3.9	4.5	3.0
Thailand	1987	2.2	2.2	2.5	3.0	3.5	3.5	4.1	2.8
LATIN AMERICA/CARIBBEAN									
Bolivia	1989	2.2	2.3	2.4	2.8	3.0	3.1	3.5	2.8
Brazil	1986	2.4	2.4	2.6	3.2	3.5	3.5	4.0	3.0
Colombia	1986	2.3	2.3	2.6	3.0	3.4	3.6	4.1	3.0
Dominican Republic	1986	3.1	2.9	3.2	3.6	4.0	4.1	4.5	3.6
Ecuador	1987	2.5	2.5	2.8	3.2	3.4	3.9	4.8	3.3
El Salvador	1985	2.9	2.7	3.0	3.7	4.5	4.9	6.2	3.6
Guatemala	1987	3.5	3.2	3.4	3.8	4.2	5.0	5.9	4.1
Mexico	1987	2.4	2.5	2.7	3.2	3.5	4.1	4.4	3.3
Peru	1986	2.1	2.2	2.5	3.0	2.9	3.3	3.6	2.9
Trinidad and Tobago	1987	2.5	2.6	2.9	3.1	3.5	3.7	4.0	3.1

^a Includes current pregnancy

Figure 2.1 Mean number of children desired among ever-married women, selected DHS and WFS surveys



nomenon by comparing the average number of children desired by nonpregnant women with no living children with the average number for all women. In the sub-Saharan countries the ratio is nearly .95 on average, while in the other countries it is .80 on average (only Egypt exceeds .90). One possible explanation for this disparity is that fertility norms are more pervasive and have changed less rapidly in the sub-Saharan countries, so that the concept of unwanted births has not yet emerged.

By comparing DHS results with those from WFS, we can assess the changes that have taken place during the intervening decade in the fifteen countries included in both survey rounds (see Table 2.2 and Figure 2.1). The mean desired number of children has declined in all of these countries, in most by 20 to 25 percent. Not surprisingly, Ghana and Senegal have registered the smallest declines. The greatest decline, however, occurred not in a Latin American or Asian country, but in Kenya, where the desired number of children fell 35 percent from 7.2 to 4.7. Other analyses of the Kenya data indicate major changes in reproductive attitudes there as well as in the fertility rate

(National Council for Population and Development and Institute for Resource Development, 1989; Cross et al., 1991). The fertility transition appears to have begun in earnest in Kenya, with changes in norms about family limitation as well as in attitudes toward the spacing of births, which are more common in that part of the world. In the comparative study of unmet need for the DHS countries, Kenya is the only country in sub-Saharan Africa where the demand for family planning for the purpose of limiting births is as great as that for spacing births (Westoff and Ochoa, 1991).

There is further evidence indicating a crystallization of ideas about family size in Kenya. The percentage of women answering the question on the desired number of children with nonnumeric responses such as: "As many as God sends" declined in Kenya from 19 percent in the WFS survey to 4 percent in the DHS survey. This percentage also declined in Senegal, from 27 to 11 percent, but not in Ghana where it remained close to its initial level of 11 percent.

Table 2.2 Trends in average number of children desired among ever-married women, selected WFS and DHS surveys

Country	Date of Fieldwork		Mean Number of Children Desired		Percent Decline
	WFS	DHS	WFS	DHS	
SUB-SAHARAN AFRICA					
Ghana	1979/80	1988	6.0	5.5	9
Kenya	1977/78	1988/89	7.2	4.7	35
Senegal	1978	1986	8.3	7.1	14
NORTH AFRICA					
Egypt	1980	1988/89	4.1	2.9	29
Morocco	1979/80	1987	4.9	3.7	24
Tunisia	1978	1988	4.1	3.5	17
ASIA					
Indonesia	1976	1987	4.1	3.2	22
Sri Lanka	1975	1987	3.8	3.0	21
Thailand	1975	1987	3.7	2.8	24
LATIN AMERICA/CARIBBEAN					
Colombia	1976	1986	4.1	3.0	27
Dominican Republic	1975	1986	4.6	3.6	22
Ecuador	1979	1987	4.1	3.3	19
Mexico	1976	1987	4.4	3.3	25
Peru	1977/78	1986	3.8	2.9	24
Trinidad & Tobago	1977	1987	3.8	3.1	18

3 Reproductive Intentions

3.1 INTENTIONS TO POSTPONE OR TERMINATE CHILDBEARING

To reiterate, the ideal or desired number of children is a measure of the fertility norms in a society and lacks any particular predictive utility. In contrast, information regarding whether women intend to postpone the next birth and, especially, whether they intend to avoid any additional childbearing does have the potential to anticipate future fertility. The DHS survey asked all married women:

"Would you like to have a (another) child or would you prefer not to have any (more) children?"¹

Women who responded that they wanted to have another child were then asked:

"How long would you like to wait from now before the birth of a (another) child?"

The responses to these questions form the basis of the data presented in Table 3.1 and Figure 3.1.

Once again, there is a striking difference between the countries of sub-Saharan Africa and the other nations surveyed. In sub-Saharan Africa, most of the women want more children, although they are divided about the timing of the birth. In North Africa, Asia, and Latin America and the Caribbean, by contrast, most women wish to avoid further childbearing. Overall, in the DHS surveys half to three-quarters of the women who want another child wish to postpone the birth two or more years.

The percentage of women not wanting more children is related to the distribution of the number of living children. This association is shown in Table 3.2, which also reveals the different regional patterns. In sub-Saharan Africa (with the exception of Kenya), the majority of women want to stop childbearing only after they have had six or more children. In Kenya this point is reached just after four children. Some 49 percent of all married women with four children report wanting no more children in Kenya in contrast to an average of less than 25 percent in the other countries in the region.

The picture is quite different elsewhere. In Latin America and the Caribbean (with the exception of Guatemala), most

women want to stop childbearing after two children. The pattern is more varied in North Africa and Asia. Sri Lanka and Thailand are like the Latin American countries, with a large percentage of women wanting no more children after two or three births. Morocco and Tunisia are at the other end of the scale, with most women wanting to stop childbearing only after they have three or four children. Egypt and Indonesia fall into an intermediate category.

In order to adjust for differences in the distribution of the number of living children among married women, the percentage who want no more children has been standardized. (The distribution of number of living children in Indonesia was arbitrarily selected as the model.) This standardization has little effect on the percentages for the populations in Latin America or Asia, which have distributions similar to that of Indonesia, but it reduces the percentages significantly in the African countries. Kenya is an extreme case with the 49 percent of women who want no more children being reduced to 34 percent after standardization. Nevertheless, even with this adjustment Kenya's percentage remains the highest of all the sub-Saharan African countries.

3.2 CORRELATES OF REPRODUCTIVE INTENTIONS

Since there is now evidence that the percentage of women who want no more children is a good short-term predictor of fertility rates, the determinants of this intention take on added importance.² Table 3.3 shows the standardized percentage of women who want no more children by residence (urban vs. rural) and education (number of years of schooling). The standardized percentages are used in order to enhance the comparability of the associations across countries.

In general, urban women are more likely than rural women to wish to terminate childbearing, but in some countries the difference is negligible. The relationship between education and the percentage of women who want no more children is positive in several of the countries, but weak or non-

² On the basis of data assembled for 86 countries, 70 percent of the variance of total fertility rates was explained by the percentage of married women who reported wanting no more children an average of five years earlier (Westoff, 1990).

¹ Currently pregnant women were asked: "After the child you are expecting, would you like to have another child or would you prefer not to have any more children?"

Table 3.1 Percent distribution of currently married women by reproductive intention, Demographic and Health Surveys, 1985-1990

Country	Desire for More Children				Percent Total
	Want Within 2 Years	Want After 2 Years	Want No More	Other ^a	
SUB-SAHARAN AFRICA					
Botswana	24	29	33	14	100
Burundi	16	53	24	7	100
Ghana	19	45	23	13	100
Kenya	12	26	49	12	100
Liberia	32	33	17	18	100
Mali	33	32	16	18	100
Ondo State	19	37	23	21	100
Senegal	48 ^b	31	19	2	100
Sudan ^c	33	32	26	9	100
Togo	19	47	25	9	100
Uganda	39	33	19	9	100
Zimbabwe	23	35	33	9	100
NORTH AFRICA					
Egypt	12	12	60	16	100
Morocco	19	21	48	11	100
Tunisia	12	21	57	10	100
ASIA					
Indonesia	10	27	51	12	100
Sri Lanka	12	18	65	4	100
Thailand	11	17	66	6	100
LATIN AMERICA/CARIBBEAN					
Bolivia	10	9	72	9	100
Brazil	14	16	65	4	100
Colombia	13	15	70	2	100
Dominican Republic	18	16	63	3	100
Ecuador	11	19	63	7	100
El Salvador	10	21	63	6	100
Guatemala	12	27	47	14	100
Mexico	4	13	62	20	100
Peru	9	13	70	8	100
Trinidad and Tobago	16	20	55	8	100

^a Includes women who are undecided about whether they want any more children or who want another child but are undecided about the timing, or who have declared themselves to be infecund, or who have not responded to the questions.

^b Includes nonnumeric responses

^c Based on preliminary data

existent in many others. In fact, Table 3.3 gives the general impression that the intention to terminate childbearing is similar across educational levels. Although the percentage of women wanting no more children tends to be greatest at the highest level of education, there is little evidence to support any strong pattern of diffusion or differential penetration of norms of family limitation across educational levels or from urban to rural areas.

3.3 TRENDS IN INTENTIONS TO TERMINATE FERTILITY

By comparing DHS and WFS data, it is possible to assess the extent to which reproductive intentions changed in the intervening decade. This analysis is limited, however, to

women's intention to terminate childbearing, since WFS did not question women about their intentions with respect to spacing. In addition, only women who reported themselves as fecund were asked about their reproductive intentions in WFS surveys, so the DHS data have been confined to fecund women to increase comparability.³ Table 3.4 and Figure 3.2 present both unadjusted and standardized results from the two surveys.

³ The category "infecund" consists of married, non-pregnant women who have not had a birth in a noncontraceptive open interval of at least five years. Since the surveys did not collect detailed monthly data on contraceptive use, some estimation is involved. "Infecundity" in this analysis also includes the criterion of not having a menstrual period in the past six weeks or longer, but few additional women are excluded on this basis. This measure probably excludes slightly more women from the "fecund" category than self-reporting (Vaessen, 1984).

Figure 3.1 Percentage of currently married women who want to delay or avoid a future birth, Demographic and Health Surveys, 1986-1989

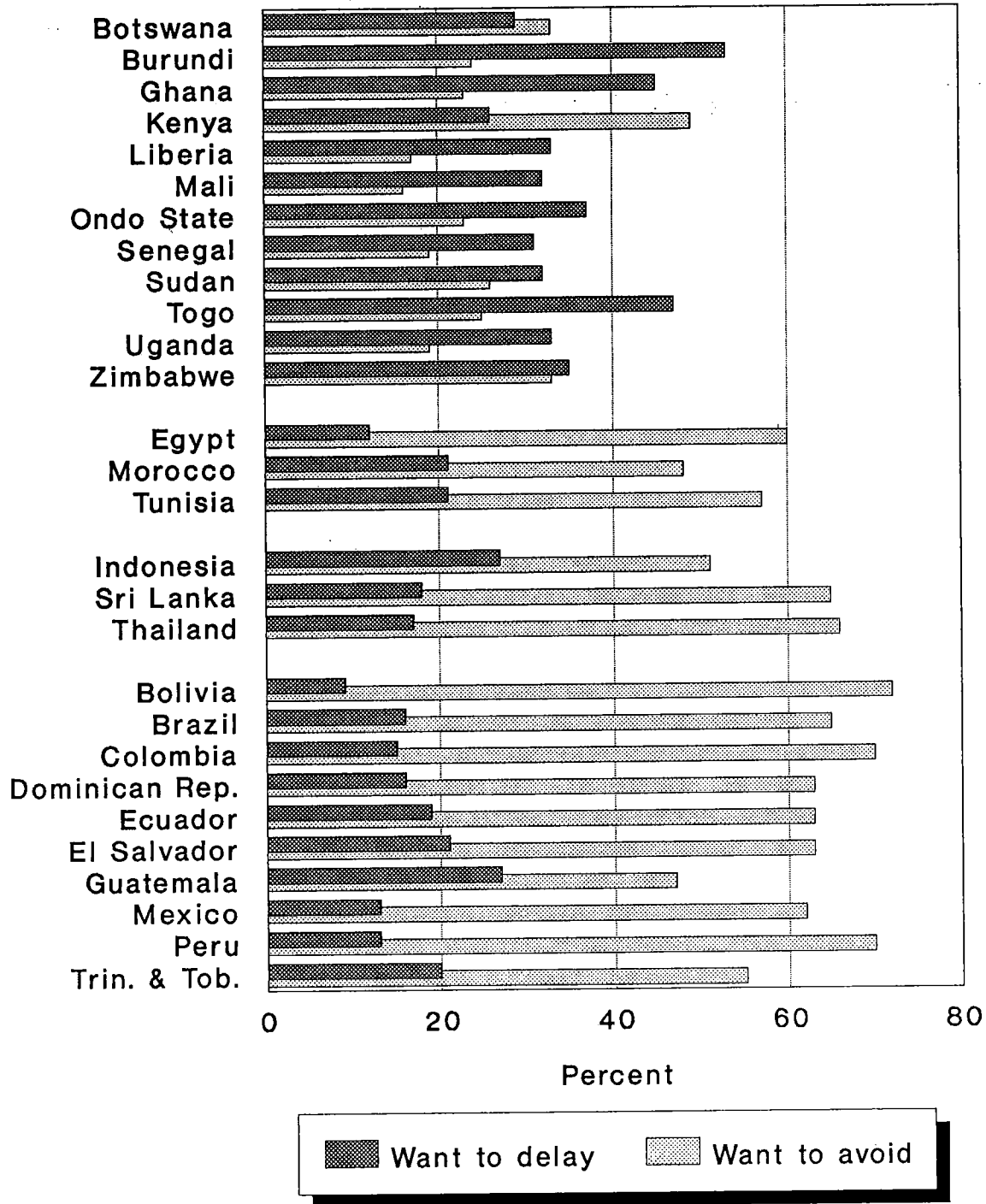


Table 3.2 Percentage of currently married women who want no more children, by number of living children, Demographic and Health Surveys, 1985-1989

Country	Number of Living Children ^a							Total	Standardized ^b
	0	1	2	3	4	5	6+		
<u>SUB-SAHARAN AFRICA</u>									
Botswana	2	5	22	27	30	45	64	33	27
Burundi	1	2	6	15	25	40	64	24	19
Ghana	c	1	7	13	25	39	63	23	19
Kenya	1	3	23	33	49	63	82	49	34
Liberia	2	2	5	10	23	33	57	17	17
Mali	4	4	8	15	22	28	42	16	16
Ondo State, Nigeria	1	2	5	11	22	34	50	23	16
Senegal	2	2	4	11	19	31	63	19	17
Togo	1	1	5	13	27	45	68	25	20
Uganda	c	2	4	9	18	25	57	19	15
Zimbabwe	2	4	15	19	32	46	69	33	25
<u>AFRICA</u>									
Egypt	1	8	52	75	82	83	83	60	54
Morocco	1	8	26	40	60	65	84	48	38
Tunisia	2	9	37	59	76	83	85	57	48
<u>ASIA</u>									
Indonesia	5	12	43	67	79	78	85	51	51
Sri Lanka	4	16	60	87	93	96	99	65	64
Thailand	9	25	74	89	91	95	97	66	69
<u>LATIN AMERICA/CARIBBEAN</u>									
Bolivia	10	31	68	80	86	94	90	72	66
Brazil	11	26	69	86	87	90	92	65	66
Colombia	8	28	69	85	91	91	93	70	67
Dominican Republic	5	16	56	82	89	93	92	63	61
Ecuador	4	24	58	75	84	87	86	63	60
El Salvador	11	25	58	81	78	81	78	63	59
Guatemala	6	13	35	52	62	60	64	47	41
Mexico	5	15	60	75	83	83	80	62	57
Peru	6	27	68	77	86	90	84	70	63
Trinidad and Tobago	5	18	59	76	85	86	89	55	59

^a Includes current pregnancy

^b Based on the distribution of number of living children (including current pregnancy) in Indonesia (1987).

^c <0.5 percent

In all of the countries included in this comparison—without exception—the percentage of women who want no more children has increased, regardless of whether the adjusted or unadjusted measure is used. Kenya has experienced the greatest increase: the unadjusted percentage of women who want no more children rose from 17 percent in 1977-78 to 49 percent in 1989.

Ronald Freedman recently commented "...that increasing numbers of women with years of childbearing still ahead

are saying on surveys that they want no more children. This does not mean that they have all made definite, unambiguous decisions. Some have, but much larger numbers are under cross-pressures between traditional values and institutions and new realities and ideas. A good family planning information and service program helps to crystallize latent demand for contraception by emphasizing the usefulness and legitimacy of family planning as a partial solution for the problems of families" (1990:41).

Table 3.3 Percentage (standardized) of currently married women who want no more children, by residence and education, Demographic and Health Surveys, 1985-1989

Country	Residence		Education (Years)			
	Urban	Rural	None	1-3	4-6	7+
<u>SUB-SAHARAN AFRICA</u>						
Botswana	30	24	24	25	25	28
Burundi	37	19	19	19	21	a
Ghana	25	16	14	21	21	24
Kenya	41	32	30	35	34	36
Liberia	18	16	15	15	20	24
Mali	17	16	16	12	13	22
Ondo	16	16	21	14	9	17
Senegal	22	14	16	14	19	27
Togo	27	17	18	19	25	33
Uganda	19	14	15	12	16	16
Zimbabwe	31	21	20	21	21	31
<u>NORTH AFRICA</u>						
Egypt	59	48	49	54	58	61
Morocco	47	32	35	43	49	57
Tunisia	54	38	44	50	49	58
<u>ASIA</u>						
Indonesia	57	49	53	50	51	55
Sri Lanka	68	63	65	66	65	64
Thailand	73	68	66	67	69	70
<u>LATIN AMERICA/CARIBBEAN</u>						
Bolivia	66	66	65	69	69	65
Brazil	69	60	66	66	66	70
Colombia	68	64	64	68	66	67
Dominican Republic	62	59	59	62	64	61
Ecuador	62	56	53	62	60	61
El Salvador	67	52	57	57	62	66
Guatemala	53	35	33	44	54	56
Mexico ^b	66	53	49	49	59	64
Peru	63	62	58	67	62	65
Trinidad and Tobago	59	60	61	72	60	59

Note: Percentages are standardized on the number of living children (including current pregnancy) in Indonesia (1987).

^a Less than 20 cases

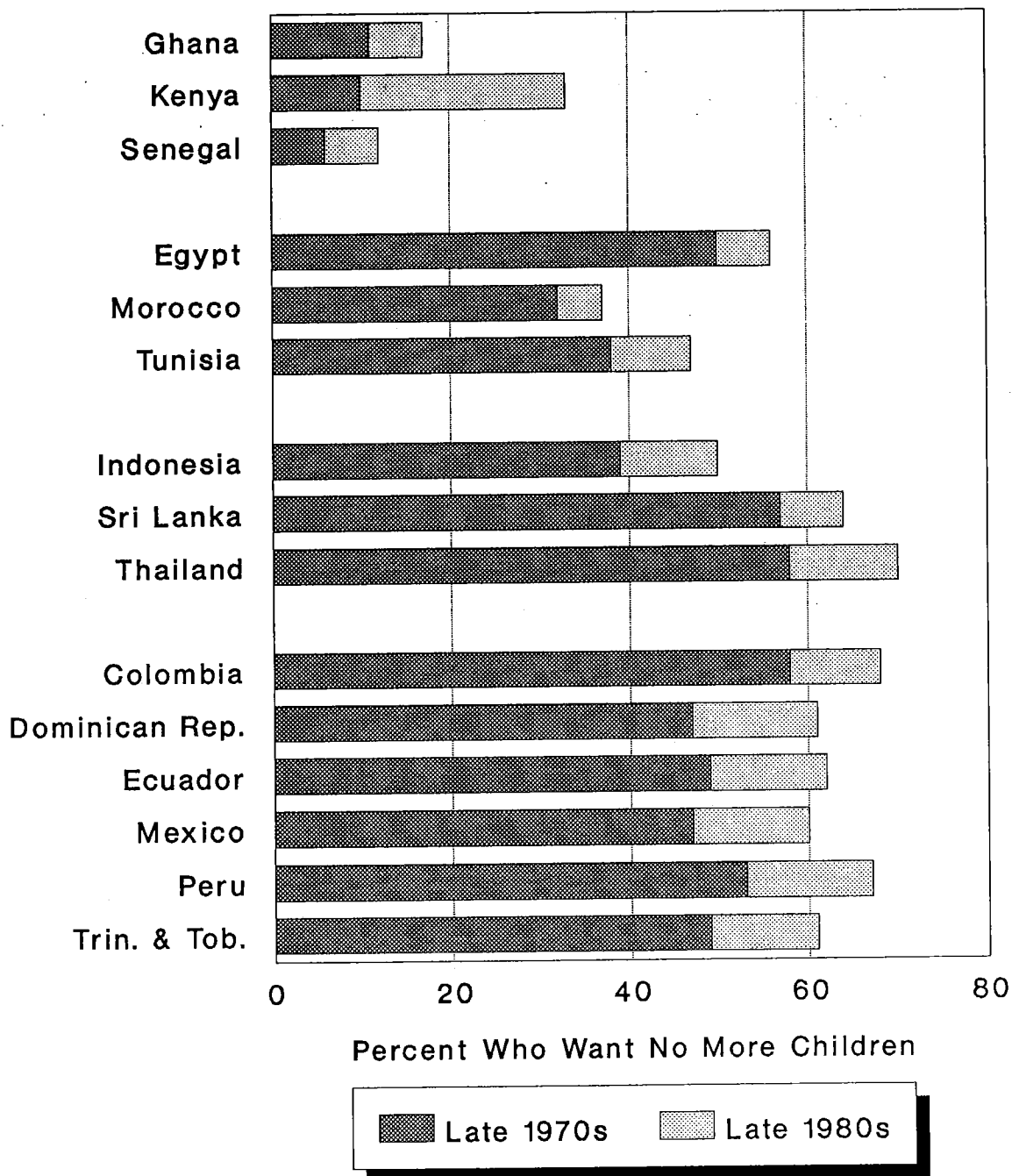
^b For Mexico, "rural" is defined as under 20,000 population.

Table 3.4 Trends in the percentage of women who want no more children, among fecund married women, from the late 1970s to the late 1980s, selected WFS and DHS surveys

Country	Married (Fecund) Women Who Want No More Children					
	Adjusted Percentage ^a			Unadjusted Percentages		
	WFS	DHS	Absolute Increase	WFS	DHS	Absolute Increase
<u>SUB-SAHARAN AFRICA</u>						
Ghana	11	17	6	12	22	10
Kenya	10	33	23	17	49	32
Senegal	6	12	6	8	17	9
<u>NORTH AFRICA</u>						
Egypt	50	56	6	54	64	10
Morocco	32	37	5	42	48	6
Tunisia	38	47	9	49	57	8
<u>ASIA</u>						
Indonesia	39	50	11	39	50	11
Sri Lanka	57	64	7	61	65	4
Thailand	58	70	12	61	67	6
<u>LATIN AMERICA/CARIBBEAN</u>						
Colombia	58	68	10	61	70	9
Dominican Republic	47	61	14	52	64	12
Ecuador	49	62	13	56	65	9
Mexico	47	60	13	57	64	7
Peru	53	67	14	61	73	12
Trinidad and Tobago	49	61	12	47	56	9

^a Standardized on the distribution of the number of living children (including current pregnancy) among fecund women in Indonesia (1987).

Figure 3.2 Percentage (standardized) of married, fecund women who want no more children, selected Demographic and Health Surveys, late 1970s and late 1980s



Note: Standardized by number of living children.

4 Preferred Length of Birth Interval

In populations with high rates of growth, the time intervals between births can have a significant impact on the rate of growth. In theory, this effect can occur over and above the number of births because it determines the length of the generation. Of course, "later" probably also means "fewer" since the tempo and quantum of fertility will interact. The primary adoption of family planning in the populations of sub-Saharan Africa has been for purposes of spacing rather than for limiting births (except in Kenya, where the two objectives are more balanced) (Westoff and Ochoa, 1991). Thus, the question of the average intervals that might be preferred assumes even greater significance in that part of the world.

The information collected on this topic in the DHS surveys is limited. The only question directly bearing on the issue is asked to married women who say they want more children:

"How long would you like to wait from now before the birth of another child?"

The responses, in years and months, are followed with the probe:

"How old would your youngest child be?"

The length of the preferred interval can be estimated by adding the time elapsed since the last birth (or the date of marriage for first intervals) to the women's initial responses. Since the objective is to estimate the average woman's preferred birth interval, we have excluded from the analysis subfecund women who, by definition, would contribute long open intervals of at least five years duration.

The results indicate that, on average, women prefer fairly long intervals (see Table 4.1). In the sub-Saharan countries, there is a considerable range, from a low of (a median of) 30 months in Uganda to a high of 54 months in Botswana. Egypt, Morocco, and Tunisia also fall within this range, with average preferred intervals between three and four years.

The longest preferred interval is observed in Indonesia (66 months), while in Sri Lanka, Thailand, and most of the Latin American countries, the median length of the preferred interval lies between four and five years. In the Dominican Republic and Guatemala, the average preferred interval is a few months over three years.

The estimated length of the preferred interval is, to some degree, negatively correlated with the fertility rate. The average length of the preferred interval in all of these countries is just under four years, which seems long considering that women who currently want no more children and subfecund women are, by definition, excluded from the calculations. Some women, of course, have waited longer to conceive than they would have wished, and they contribute the full length of the interval that has elapsed since they last gave birth. More importantly, it should be kept in mind that the statistic being estimated here is the average woman's preference, not the average preferred birth interval. Some experimental calculations suggest that the average preferred interval inferred for births is some 20-30 percent shorter than the average preferred by women, but these are at best approximations. Modifications in the DHS-II questionnaire will make it possible to explore this subject more thoroughly in the future.

Table 4.1 Percent distribution of preferred length of next birth interval, among currently married women who want another child, Demographic and Health Surveys, 1986-1989

Country	Length of Birth Interval (Months)							Total	Percent Median
	<24	24-35	36-47	48-59	60-71	72-83	84+		
<u>SUB-SAHARAN AFRICA</u>									
Botswana	10	14	16	15	16	10	19	100	54
Burundi	3	18	43	22	8	3	2	100	43
Ghana	4	14	28	26	14	7	7	100	49
Kenya	9	18	28	19	12	6	7	100	44
Liberia	24	28	19	11	8	3	6	100	34
Mali	12	41	25	11	4	2	3	100	33
Ordo State	7	26	35	19	9	3	2	100	41
Senegal	8	41	33	11	4	1	1	100	36
Togo	7	18	29	18	11	6	11	100	45
Uganda	25	40	22	8	2	1	2	100	30
Zimbabwe	4	19	27	17	15	8	11	100	49
<u>AFRICA</u>									
Egypt	22	28	23	13	7	3	3	100	36
Morocco	10	27	19	15	10	7	12	100	42
Tunisia	14	19	20	15	13	12	8	100	44
<u>ASIA</u>									
Indonesia	5	7	12	13	20	12	31	100	66
Sri Lanka	10	13	17	18	20	8	13	100	53
Thailand	11	15	18	12	11	10	23	100	52
<u>LATIN AMERICA/CARIBBEAN</u>									
Bolivia	10	18	21	16	12	8	14	100	49
Brazil	12	17	19	15	12	9	16	100	49
Colombia	11	16	18	14	14	7	19	100	53
Dominican Republic	20	23	21	9	12	6	9	100	39
Ecuador	10	14	16	15	15	9	21	100	56
Guatemala	8	28	29	18	8	3	5	100	40
Mexico	8	15	21	18	16	9	13	100	51
Peru	10	15	14	12	14	9	25	100	57
Trinidad and Tobago	7	12	14	18	15	11	23	100	59

5 Desired Fertility Rates

5.1 CALCULATING DESIRED FERTILITY RATES

This section presents estimates of what the total fertility rate (TFR) would be in different populations if women were to realize their wishes and bear exactly the number of children they prefer. This hypothetical fertility rate is termed the "desired" total fertility rate (DTFR).

The measurement of desired fertility has evolved over time and is currently the subject of continuing methodological evaluation (Bongaarts, 1990). In the final reports for the DHS surveys, a different measure was used than that employed in this report. In the final reports, recent births were classified as wanted or unwanted based on the woman's responses to questions about all births in the past five years. The measure used here, however, relies on the woman's response to the standard ideal or desired family size question discussed earlier. That ideal number is compared to the actual number of living children, and births in excess of the number desired are subtracted from the appropriate numerators of the age-specific fertility rates. The DTFR is the sum of the age-specific fertility rates after these deletions. This is the same measure used by Lightbourne (1985, 1987) in analyzing the WFS data. Comparison of the DTFR and the TFR for the same two-year period thus yields an estimate of what the fertility rate of the population would be under the hypothetical condition that women's preferences were perfectly realized.⁴ This offers family planning and population programs and policy-makers some insight into the potential demand for family planning and the potential for decline in fertility in the near future.

Using the DTFR rather than the previous measure relying on the retrospective reporting of wanted and unwanted births permits direct comparison with WFS estimates and thus makes it possible to estimate trends in desired fertility over the intervening decade. In actuality, the DTFR yields somewhat lower estimates than the measure based on deleting unwanted births—an average of 0.3 of a birth lower—probably because there is less rationalization of unwanted births as wanted. A new measure proposed by Bongaarts offers still a third alternative. This measure, however, yields results very similar to the DTFR (the average difference between the two rates for 25 DHS countries

is only 0.1 of a birth) is more complicated to describe, and requires various additional assumptions.⁵

5.2 DHS RESULTS

The DTFR is lower than the TFR in every country (see Table 5.1 and Figure 5.1). The rates are most similar in the sub-Saharan region, where the DTFR averages .84 of the TFR, indicating less promise of any imminent decline in fertility. The outstanding exception is Kenya, in which the DTFR is 4.5 compared with the 6.4 estimate of the TFR (a ratio of .70). Botswana and Zimbabwe, which have the lowest DTFRs in the region (4.1 and 4.3, respectively), also have the lowest TFRs.

In the Asian and North African countries, the DTFR averages three-quarters of the TFR. The rates implied for Indonesia, Sri Lanka, and Thailand are close to the replacement levels seen in many Western countries.

In the Latin American region, the average DTFR is only about two-thirds of the TFR—a strong indication of the demand for family planning and the likelihood that fertility in this region will decline substantially in the future. The lowest DTFRs in the region—Brazil, Colombia, and Peru as well as in Trinidad and Tobago—are approximately at replacement levels. At the opposite extreme is Guatemala, which at its current preference level would still show a very high fertility rate (4.5).

5.3 TRENDS IN DESIRED FERTILITY RATES

Table 5.1 and Figure 5.2 show the TFR and DTFR that prevailed a decade earlier for those DHS countries in which a WFS survey was also conducted. While the levels of both measures were generally higher, the ratios between them were similar. In most of these countries, the DTFR has declined at a greater rate than the TFR, suggesting that normative change is leading the achievement of lower

⁴ Since the preferences are assessed on a current status basis and the births are during the preceding two years, some disjuncture could occur.

⁵ One problem that bears on the comparability of DHS and WFS estimates is that in WFS surveys only fecund women were asked the question about reproductive intentions. This question lies at the heart of the Bongaarts measure. Also, there are several corrections or adjustments that have to be made in the Bongaarts measure that are unnecessary for the DTFR.

Table 5.1 Trends in the total fertility rate (TFR) and desired fertility rate (DTFR) over the past decade, selected WFS and DHS surveys

Country	WFS			DHS			Percent Decline	
	Year	TFR	DTFR	Year	TFR	DTFR	TFR	DTFR
SUB-SAHARAN AFRICA								
Botswana				1988	5.0	4.1		
Burundi				1987	6.7	5.7		
Ghana	1979/80	6.1	6.0	1988	6.4	5.3	+5	12
Kenya	1977/78	7.9	7.6	1988/89	6.4	4.5	19	41
Liberia				1986	6.9	6.3		
Mali				1987	7.6	7.1		
Ondo State				1986/87	6.1	5.8		
Senegal	1978	7.1	6.9	1986	6.6	5.6	7	26
Togo				1988	6.6	5.1		
Uganda				1988/89	7.5	6.5		
Zimbabwe				1988/89	5.2	4.3		
NORTH AFRICA								
Egypt	1980	5.0	3.6	1988/89	4.4	2.8	12	22
Morocco	1979/80	5.5	4.4	1987	4.6	3.3	16	25
Tunisia	1978	5.5	4.1	1988	4.1	2.9	25	29
ASIA								
Indonesia	1976	4.3	4.0	1987	2.9	2.4	32	40
Sri Lanka	1975	3.4	2.9	1987	2.6	2.2	23	24
Thailand	1975	4.3	3.2	1987	2.2	1.8	49	44
LATIN AMERICA/CARIBBEAN								
Bolivia				1989	5.1	2.8		
Brazil				1986	3.3	2.2		
Colombia	1976	4.6	3.4	1986	3.1	2.1	33	38
Dominican Republic	1975	5.2	3.8	1986	3.6	2.6	31	32
Ecuador	1979	5.2	4.1	1987	4.3	2.9	17	29
Guatemala				1987	5.5	4.5		
Mexico	1976	5.7	4.5	1987	4.0	2.9	30	38
Peru	1977/78	5.3	3.5	1986	4.0	2.3	26	34
Trinidad & Tobago	1977	3.2	2.5	1987	3.0	2.2	6	12

Note: The total fertility rate is based on the period 1-24 months prior to the survey. The desired fertility rate is calculated by deleting births (in the two years preceding the interview) of women whose actual number of living children exceeds the number desired.

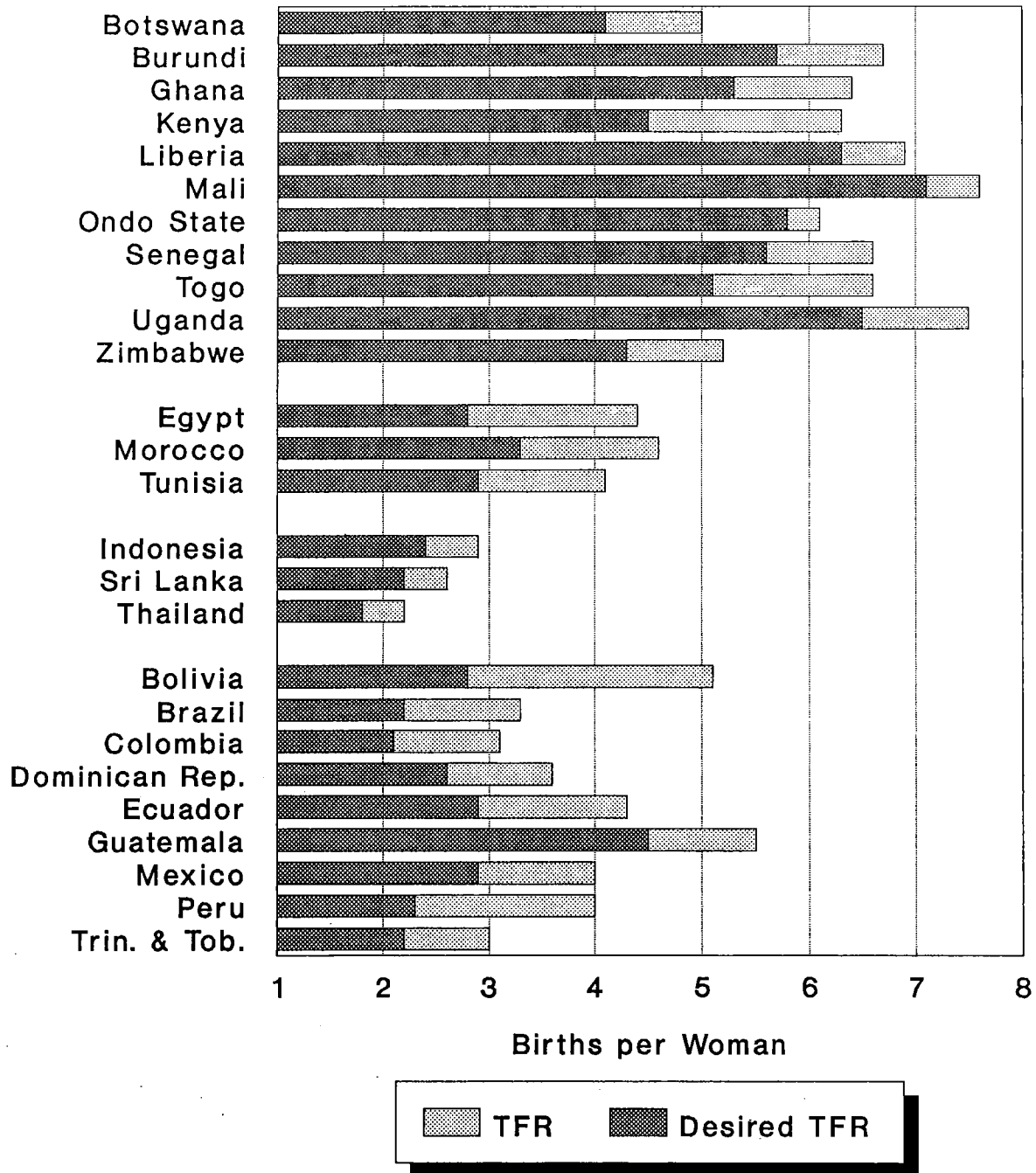
fertility. This is yet another indication of the unmet need for family planning.

5.4 UNWANTED FERTILITY

The difference between the TFR and the DTFR in many of these countries indicates the existence of a considerable amount of unwanted fertility. Indeed, the proportion of women who have had more children than they desire is, on average, close to a third in Latin America; it ranges from a low of 18 percent in Guatemala to 42 and 44 percent in

Bolivia and Peru, respectively. In the Asian countries, an average of 20 percent of women report more children than they desire. In the three North African countries, the average is a third, while in sub-Saharan Africa, the percentage is much lower (an average of 12 percent) except in Kenya, where it reaches 30 percent. As can be seen in Table 5.2, there is little evidence of unwanted fertility in this region for women with fewer than five births. In the other regions, substantial percentages of women with three or more births report having had more than the desired number of children.

Figure 5.1 Total fertility rate and desired total fertility rate, Demographic and Health Surveys, 1986-1989



Note: Rates are based on the two years prior to the survey.

Figure 5.2 Trends in the total fertility rate (TFR) and desired total fertility rate, selected Demographic and Health Surveys, 1970s and 1980s

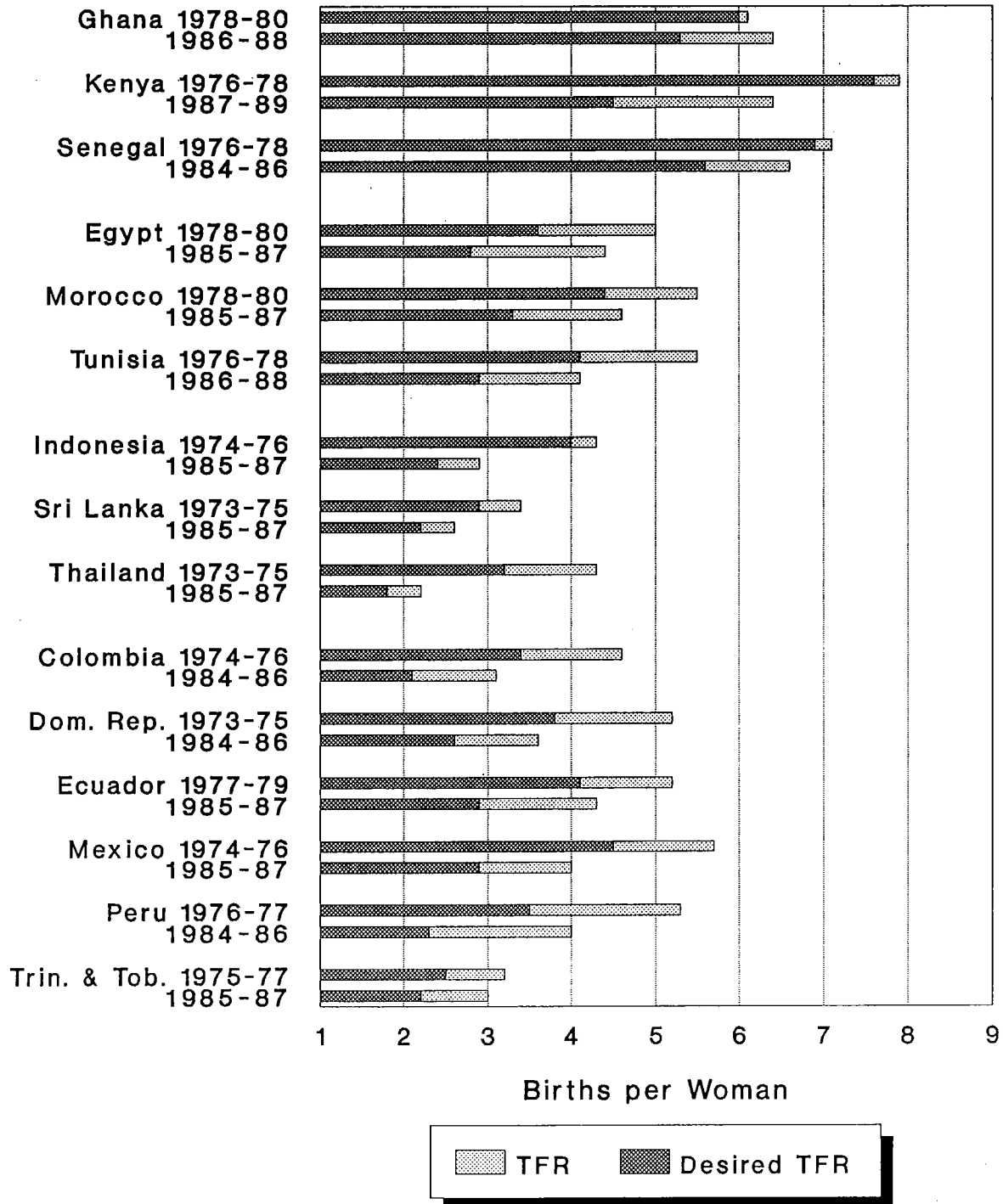


Table 5.2 Percentage of currently married women who have more children than they desire, by number of living children, Demographic and Health Surveys, 1985-1989

Country	Number of Living Children ^a								Total
	1	2	3	4	5	6	7	8+	
<u>SUB-SAHARAN AFRICA</u>									
Botswana	b	1	5	4	24	27	49	62	14
Burundi	b	b	2	8	20	37	54	63	12
Ghana	b	b	1	5	30	31	64	61	13
Kenya	b	1	5	14	42	51	76	77	30
Liberia	b	b	2	3	16	19	26	41	6
Mali	b	b	1	5	12	20	17	30	5
Ondo State	b	b	b	1	5	13	15	21	5
Senegal	b	b	2	5	14	32	44	54	9
Togo	b	b	5	6	38	43	72	78	18
Uganda	b	b	b	1	7	19	37	46	9
Zimbabwe	b	2	4	8	23	29	45	51	15
<u>NORTH AFRICA</u>									
Egypt	b	3	40	59	71	72	66	64	37
Morocco	b	2	18	23	43	56	63	62	27
Tunisia	b	2	22	36	71	72	76	80	34
<u>ASIA</u>									
Indonesia	b	1	19	33	48	55	63	60	19
Sri Lanka	b	2	18	43	57	65	65	65	21
Thailand	1	4	27	42	68	81	84	79	21
<u>LATIN AMERICA/CARIBBEAN</u>									
Bolivia	4	12	38	57	76	80	92	89	42
Brazil	2	7	26	47	69	71	71	73	25
Colombia	1	6	33	51	69	77	78	76	31
Dominican Republic	2	4	16	41	59	71	75	83	28
Ecuador	1	7	28	45	65	63	74	76	30
El Salvador	b	2	12	26	41	45	50	57	17
Guatemala	b	3	14	26	31	40	43	45	18
Mexico	b	4	22	43	54	65	62	73	29
Peru	b	10	39	64	80	83	93	92	44
Trinidad and Tobago	1	5	34	43	73	67	87	89	24

^a Includes current pregnancy

^b <0.5 percent

6 Forecasts of Future Fertility

6.1 FORECASTING PROCEDURES

The strong statistical links connecting reproductive intentions, contraceptive practice, and fertility provide a basis for making short-term forecasts of these parameters (Westoff, 1990). These roughly five-year forecasts are based on regression equations specifying the relationships among the three variables over time. The equations are drawn from data gathered in 137 surveys conducted since the early 1970s in 86 different (almost all national) populations. The primary focus is a subset of 33 developing countries which have been surveyed more than once; these pairs of surveys were conducted, on average, at intervals of five years.⁶

The forecasting procedure begins with estimating, for five years from the most recent survey, the percentage of women who will want no more children (WNM at t_i). Since we have no basis from which to predict this parameter from other variables, we have relied on the regression of WNM at the time of a survey with its lagged value at an earlier survey. The estimated equation based on those countries with successive surveys is:

$$\text{WNM}_{t_i} = 14.419 + 0.804(\text{WNM}_{t_{i-1}}) + \text{error} \quad (1)$$

with an R^2 of .93. Inserting the latest available observations of WNM on the right-hand side of equation (1) gives predicted future values of WNM for approximately five years hence.

It is known from earlier work (Westoff, 1990; Mauldin and Segal, 1988) that reproductive intentions are highly correlated with the contraceptive prevalence rate (CPR) showing an R^2 of .78.⁷ The next step in the procedure is to model the CPR, which we have done by capitalizing both on this contemporaneous relationship with reproductive intentions and on the association of the current with the past CPR:

$$\text{CPR}_{t_i} = 0.124 + 0.192(\text{WNM}_{t_i}) + 0.859(\text{CPR}_{t_{i-1}}) + \text{error} \quad (2)$$

This equation was estimated using data from successive surveys in the same countries and yields an R^2 of .89. To predict future values of CPR, we use the latest available CPR and the predicted value of WNM obtained from equation (1).

These estimates of the future percentage of married women wanting no more children and the future percentage of women practicing contraception are shown in columns 4 and 5 of Table 6.1. In most African countries, where the percentage of women wanting no more children is currently low, the estimates for the future are, on average, eight points higher than the prevailing rates. The increase is far smaller in most Latin American and Asian countries, usually only one or two points, although Guatemala shows a rise of five points. The forecast of the contraceptive prevalence rates shows a rise averaging around five to six points, slightly more in the sub-Saharan countries.

Earlier research on the interrelationships of reproductive intentions, contraceptive prevalence, and fertility rates showed a very high correlation with the TFR across time. Some 86 percent of the variance of the TFR measured on average five years later is accounted for by a combination of the percentage of women who want no more children and the contraceptive prevalence rate.⁸

When the value of the earlier TFR is included in the equation, the R^2 rises to 93 percent for the subset of 33 countries. Since the inclusion of the earlier TFR absorbs virtually all of the predictive force of reproductive intentions, the final forecasting equation actually used here includes only the earlier TFR and the contraceptive prevalence rate estimated from equation (2). The estimated forecasting equation is:

$$\text{TFR}_{t_i} = 1.434 - 0.016(\text{CPR}_{t_i}) + 0.728(\text{TFR}_{t_{i-1}}) + \text{error} \quad (3)$$

⁸ Path analysis indicates that 70 percent of the correlation between the percentage who want no more births and the total fertility rate operates through the intervening variable of the contraceptive prevalence rate, with the remaining 30 percent operating directly (presumably through abortion and possibly prolonged breastfeeding) (Westoff, 1990).

⁶ Altogether some 80 surveys are represented; 19 of the 33 different countries conducted two surveys and 14 had three surveys. The surveys occurred between the late 1970s and 1990; most are from the World Fertility Survey (WFS), the Contraceptive Prevalence Surveys (CPS), and the Demographic and Health Surveys (DHS). The countries are listed in Table A.1 in the Appendix. The analysis was conducted first with the 33 most recent paired surveys and then repeated with 48 paired surveys in which 15 countries were represented twice (at three intervals of time). There was little difference in the results. The equations in the text are for the 33 most recent pairs of observations in which countries are only represented once.

⁷ In 25 DHS countries, the percentage of women using contraception among those who want no more children exceeds the percentage of users among women who want more children (see Table A.2 in the Appendix).

Table 6.1 Current estimates and forecasts of the percentage of women who want no more children (WNM), the contraceptive prevalence rate (CPR), and the total fertility rate (TFR), Demographic and Health Surveys, 1985-1990

Country	Current Estimates			Forecasts ^a		
	WNM (1)	CPR (2)	TFR (3)	WNM (4)	CPR (5)	TFR (6)
SUB-SAHARAN AFRICA						
Botswana	38	33	5.0	45	37	4.5
Burundi	24	9	6.7	34	14	6.1
Ghana	23	13	6.4	33	18	5.8
Kenya	49	27	6.4	54	34	5.5
Liberia	17	7	6.9	28	11	6.3
Mali	16	5	7.6	27	10	6.8
Ondo State	23	6	6.1	33	12	5.7
Senegal	19	11	6.6	30	15	6.0
Sudan ^b	26	9	5.0	35	15	4.8
Togo	25	12	6.6	34	17	6.0
Uganda	23	5	7.5	33	11	6.7
Zimbabwe	33	43	5.2	41	45	4.5
NORTH AFRICA						
Egypt	60	38	4.4	63	45	3.9
Morocco	47	36	4.6	52	41	4.1
Tunisia	58	50	4.1	61	55	3.5
ASIA						
Indonesia	51	48	2.9	55	52	2.7
Sri Lanka	64	62	2.6	66	66	2.3
Thailand	66	66	2.2	67	70	1.9
LATIN AMERICA/CARIBBEAN						
Bolivia	68	30	5.1	69	39	4.5
Brazil	64	66	3.3	66	69	2.7
Colombia	69	63	3.1	70	68	2.6
Dominican Republic	63	50	3.6	65	55	3.2
Ecuador	65	44	4.3	67	51	3.7
El Salvador	63	47	4.7	65	53	4.0
Guatemala	47	23	5.5	52	30	5.0
Mexico	65	53	4.0	67	58	3.4
Peru	75	46	4.0	75	54	3.5
Trinidad & Tobago	54	53	3.0	58	57	2.7

^a The procedures are described in the text.

^b Based on preliminary data

In order to forecast the TFR for individual countries roughly five years in the future, the forecast values of CPR shown in column 5 of Table 6.1⁹ and the most recent TFR have been used in equation (3).¹⁰

⁹ The CPR forecasts are based on equation 2, which in turn uses the value of the percentage of women who want no more children forecast in equation 1 and listed in column 4 of Table 6.1.

¹⁰ Using the relationship of the earlier with the later TFR alone as a basis for forecasting yields very similar values in most of the countries but shows some differences close to 10 percent. The fact that the equation connecting the fertility rates at two different points in time captures most of the predictive capability should not be interpreted to mean that reproductive intentions and contraceptive prevalence are unimportant. They are clearly important in understanding the causal sequences of fertility change; the earlier fertility rates are included here simply to make the actual forecasts more realistic.

6.2 PROJECTED TOTAL FERTILITY RATES

The projected five-year declines in the TFR range from an average of close to 10 percent in sub-Saharan Africa to an average of 13 percent in the Latin American region (see Table 6.1 and Figure 6.1). These forecasts for individual countries can only be as accurate as the assumptions underlying the prediction equation:

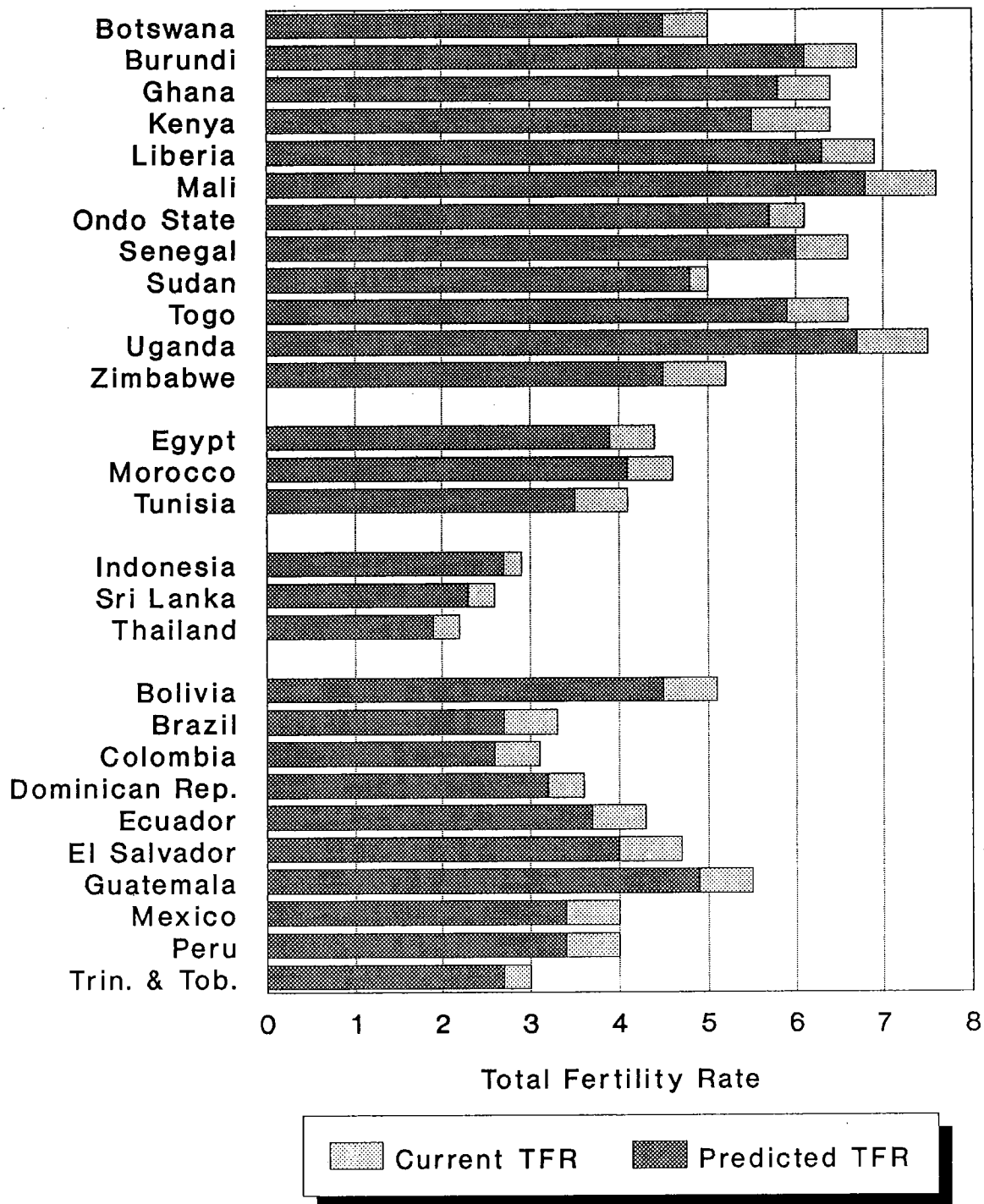
- that the percentage of women who want no more children five years hence is predictable from the association between those percentages across earlier five-year intervals;¹¹
- that the percentage of women practicing contraception can be predicted from a combination of the percentage who want no more children and the association over time with earlier contraceptive prevalence rates;
- and, finally, that the TFR five years ahead can be predicted from the projected values of contraceptive prevalence rates in combination with the association between fertility rates at successive times.

The fact that this prediction equation can explain 93 percent of the variance in the recent past is encouraging, but there are many factors exogenous to the system that could affect future fertility rates. For example, a decrease in the proportion of young women married will reduce the TFR, since this rate is for all women, not only married women. Age at marriage has increased in many of these countries in recent years; if this continues, their TFRs will be lower than forecasted.

By comparing the forecast TFRs with the desired total fertility rates (DTFRs) listed in Table 5.1, we can get some indication of how successful women will be in realizing their reproductive wishes over the next five years. In most of the sub-Saharan countries, the two rates are quite close but both remain at high levels. The chief exceptions are Kenya, which shows a projected rate of 5.5 and a DTFR of 4.5, and Togo, with the two rates at 6.0 and 5.1, respectively. In Mali, the projected rate is lower than the DTFR, which probably reflects an error either in the estimation of the two-year fertility rates or in the measurement of desired fertility. In the Asian countries, the two rates are also quite similar, but the countries of North Africa still show a considerable gap between the DTFR and the forecast TFR. In the Latin American region, the TFR forecast remains appreciably higher than the DTFR, particularly in Bolivia and Peru.

¹¹ When the actual time interval, which ranges from three to eleven years (with five years being the average), was added to these equations as a variable, the results were very similar to those without this addition.

Figure 6.1 Current total fertility rate and predicted total fertility rate after five years, Demographic and Health Surveys, 1986-1989



7 Summary and Conclusions

This is a comparative analysis of data on reproductive preferences for the countries participating in the first round of the Demographic and Health Surveys (DHS). The average number of children desired or considered ideal, which is a measure of the fertility norms in a society, is highest in the countries of sub-Saharan Africa. Comparisons with data collected in the World Fertility Survey (WFS) a decade earlier reveal significant declines—averaging about 10 percent—in all of the countries common to both survey projects.

The measures of reproductive intentions show high percentages of women who want no more children in all countries except in sub-Saharan Africa, where more traditional interests in the spacing of births generally predominate. Intentions to terminate childbearing tend to be slightly higher in urban areas and to increase with education, but the associations are weak. The trend over the decade is clearly toward increasing percentages wanting no more children.

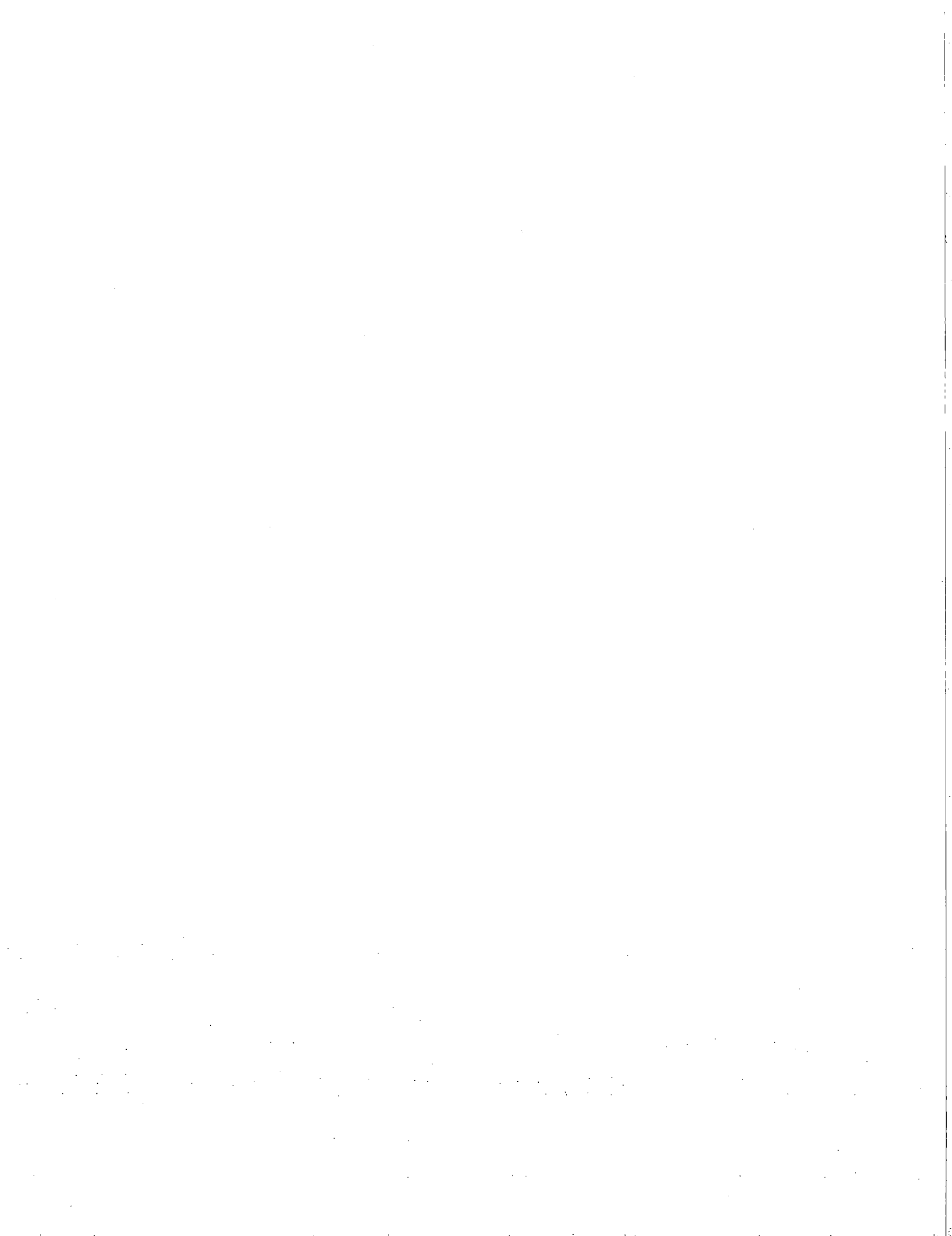
The report attempts to estimate women's preferred length of birth interval, which overall for DHS countries averages just under four years.

To assess the demographic significance of reproductive preferences, the recent total fertility rate was compared with the desired total fertility rate. There is a wide gap between these two rates for many of the countries; on average, the TFR exceeds the DTFR by 22 percent. The gap is greatest in Latin America, where close to a third of women are having more children than they want. In most countries, the DTFR shows more of a decline over the preceding decade than the TFR.

Based on earlier research that examined the interrelations among reproductive preferences, contraceptive prevalence, and total fertility rates, forecasts of each of these parameters over the next five years are offered. The projected declines in the TFR range from an average of nearly 10 percent in sub-Saharan Africa to an average of 13 percent in Latin America.

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Appendix A

Table A.1 Developing countries in which at least two surveys were conducted

Country	Survey Dates			
SUB-SAHARAN AFRICA				
Botswana	1984	1988		
Ghana	1979/80	1988		
Kenya	1977/78	1984	1988/89	
Senegal	1978	1988		
Sudan	1978/79	1990		
Zimbabwe	1984	1988/89		
NORTH AFRICA				
Egypt	1980	1984	1988/89	
Morocco	1979/80	1987		
Tunisia	1978	1983	1988	
ASIA				
Bangladesh	1979	1983		
Indonesia	1976	1987		
Hong Kong	1977	1984		
Jordan	1976	1983		
Korea	1974	1979	1985	1988
Nepal	1976	1981		
Pakistan	1975	1984/85		
Philippines	1978	1986		
Sri Lanka	1975	1982	1987	
Thailand	1975	1981	1987	
Turkey	1978	1983	1988	
LATIN AMERICA/CARIBBEAN				
Colombia	1976	1980	1986	
Costa Rica	1981	1986		
Dominican Republic	1975	1980	1986	
Ecuador	1979	1982	1987	
El Salvador	1978	1985	1988	
Guatemala	1978	1983	1987	
Haiti	1977	1983		
Jamaica	1975	1983	1989	
Mexico	1976	1987		
Panama	1976	1980		
Paraguay	1979	1987		
Peru	1977	1981	1986	
Trinidad & Tobago	1977	1987		

Table A.2 Percentage currently using contraception among fecund married women who are neither pregnant nor amenorrheic, by reproductive intentions, Demographic and Health Surveys, 1985-1989

Country	Want More Children			Want No More Children
	Within 2 Years	After 2+ Years	Anytime ^a	
SUB-SAHARAN AFRICA				
Botswana	26	38	33	41
Burundi	5	9	8	14
Ghana	10	13	12	22
Kenya	17	23	21	39
Liberia	2	8	5	21
Mali	3	5	6	6
Ondo State	7	7	6	20
Senegal	16	12	12	12
Togo	13	12	12	18
Uganda	1	4	3	15
Zimbabwe	28	53	44	51
NORTH AFRICA				
Egypt	12	34	21	66
Morocco	21	37	30	55
Tunisia	27	44	37	68
ASIA				
Indonesia	29	52	45	71
Sri Lanka	33	46	42	83
Thailand	44	60	52	83
LATIN AMERICA/CARIBBEAN				
Bolivia	42	31	36	38
Brazil	52	63	59	77
Colombia	50	63	58	76
Dominican Republic	29	37	33	70
Ecuador	39	42	40	56
El Salvador	27	33	30	74
Guatemala	10	13	12	41
Mexico	59	67	48	68
Peru	50	56	53	54
Trinidad and Tobago	43	60	54	73

^a Includes women who want more children but are unsure about the timing.

Appendix B

Summary of DHS-I surveys, 1985-1990

Region and Country	Date of Fieldwork	Implementing Organization	Respondents	Sample Size	Supplemental Studies, Modules, and Additional Questions
AFRICA					
Botswana	Aug-Dec 1988	Central Statistics Office	All women 15-49	4,368	AIDS, PC, adolescent fertility
Burundi	Apr-Jul 1987	Département de la Population, Ministère de l'Intérieur	All women 15-49	3,970	AM, SAI, adult mortality
Burundi (Husband Survey)	Apr-Jul 1987	Département de la Population, Ministère de l'Intérieur	Husbands	542	KAP study
Ghana*	Feb-May 1988	Ghana Statistical Service	All women 15-49	4,488	AM, SM, WE
Kenya**	Dec-May 1988/89	National Council for Population and Development	All women 15-49	7,150	H
Liberia	Feb-Jul 1986	Bureau of Statistics, Ministry of Planning and Economic Affairs	All women 15-49	5,239	H, TBH, employment status
Mali	Mar-Aug 1987	Institut du Sahel, USED/CERPOD	All women 15-49	3,200	AM, VC, childhood physical handicaps
Mali (Male Survey)	Mar-Aug 1987	Institut du Sahel, USED/CERPOD	Men 20-55	970	KAP study
Ondo State, Nigeria	Sep-Jan 1986/87	Ministry of Health, Ondo State	All women 15-49	4,213	AM, H, TBH
Senegal	Apr-Jul 1986	Direction de la Statistique Ministère de l'Economie et des Finances	All women 15-49	4,415	AM, CD
Sudan	Nov-May 1989/90	Department of Statistics Ministry of Economic and National Planning	EMW 15-49	5,860	H, M, MM, female circumcision, family planning services
Togo	Jun-Nov 1988	Unité de Recherche Démographique Université du Bénin	All women 15-49	3,360	AM, H, SAI, marriage history
Uganda	Sep-Feb 1988/89	Ministry of Health	All women 15-49	4,730	AM, H, SAI
Zimbabwe	Sep-Jan 1988/89	Central Statistical Office	All women 15-49	4,201	AIDS, AM, H, PC, SAI, WE
ASIA/NEAR EAST/NORTH AFRICA					
Egypt	Oct-Jan 1988/89	National Population Council	EMW 15-49	8,911	AM, CD, H, MM, PC, SAI, WE, women's status
Indonesia	Sep-Dec 1987	Central Bureau of Statistics National Family Planning Coordinating Board	EMW 15-49	11,844	PC, SM
Morocco	May-Jul 1987	Ministère de la Santé Publique	EMW 15-49	5,982	AM, CD, H, S
Nepal (In-depth)	Feb-Apr 1987	New Era	CMW 15-49	1,623	KAP-gap survey
Sri Lanka	Jan-Mar 1987	Dept. of Census and Statistics Ministry of Plan Implementation	EMW 15-49	5,865	AM, H, NFP
Thailand	Mar-Jun 1987	Institute of Population Studies Chulalongkorn University	EMW 15-49	6,775	AM, S, SAI
Tunisia	Jun-Oct 1988	Office National de la Famille et de la Population	EMW 15-49	4,184	AM, CD, H, S, SAI

Region and Country	Date of Fieldwork	Implementing Organization	Respondents	Sample Size	Supplemental Studies, Modules, and Additional Questions
LATIN AMERICA & CARIBBEAN					
Bolivia	Mar-Jun 1989	Instituto Nacional de Estadística	All women 15-49	7,923	AM, CD, H, MM, PC, S, WE
Bolivia (In-depth)	Mar-Jun 1989	Instituto Nacional de Estadística	All women 15-49	7,923	Health
Brazil	May-Aug 1986	Sociedade Civil Bem-Estar Familiar no Brasil	All women 15-44	5,892	AM, H, PC, SM, abortion, young adult use of contraception
Colombia	Oct-Dec 1986	Corporación Centro Regional de Población Ministerio de Salud	All women 15-49	5,329	AM, PC, SAI, SM
Dominican Republic	Sep-Dec 1986	Consejo Nacional de Población y Familia	All women 15-49	7,649	NFP, S, SAI, SM family planning communication
Dominican Rep. (Experimental)	Sep-Dec 1986	Consejo Nacional de Población y Familia	All women 15-49	3,885	
Ecuador	Jan-Mar 1987	Centro de Estudios de Población y Paternidad Responsable	All women 15-49	4,713	SAI, CD, H, employment
El Salvador	May-Jun 1985	Asociación Demográfica Salvadoreña	All women 15-49	5,207	S, TBH
Guatemala	Oct-Dec 1987	Instituto de Nutrición de Centro América y Panamá	All women 15-44	5,160	H, S, SAI
Mexico	Feb-May 1987	Dirección General de Planificación Familiar Secretaría de Salud	All women 15-49	9,310	H, NFP, S, employment
Peru	Sep-Dec 1986	Instituto Nacional de Estadística	All women 15-49	4,999	H, NFP, employment, cost of family planning
Peru (Experimental)	Sep-Dec 1986	Instituto Nacional de Estadística	All women 15-49	2,534	
Trinidad and Tobago	May-Aug 1987	Family Planning Association of Trinidad and Tobago	All women 15-49	3,806	AM, NFP, breastfeeding

CMW = currently married women
EMW = ever-married women

AIDS = acquired immune deficiency syndrome
AM = anthropometric measurements
CD = causes of death (verbal reports of symptoms)
H = additional health questions
M = migration
MM = maternal mortality
NFP = natural family planning
PC = pill compliance
S = sterilization
SAI = service availability information
SM = social marketing
TBH = truncated birth history
VC = value of children
WE = women's employment

* Data available for 943 husbands interviewed with a husband's questionnaire
** Data available for 1,133 husbands interviewed with a husband's questionnaire