

Population Reports



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New Survey Findings

The Reproductive Revolution Continues

Fertility fell in almost all developing countries surveyed since 1990, as use of modern contraception rose. These trends continue a long-term change in attitudes and behavior. Findings from more than 100 surveys conducted since 1990 suggest that, as family planning programs have become widespread, more and more people want smaller families, and more succeed in having the size of family that they want.

Since 1990, 120 surveys of women (many also including men) have taken place in 71 countries as part of the Demographic and Health Surveys (DHS) and the Reproductive Health Surveys (RHS) programs. These surveys report on contraceptive use, child survival, and other key reproductive health topics.

What Surveys Find

Contraceptive use and fertility rates vary substantially among developing countries. In a few countries of Asia and Latin America, at least three-fourths of married women use a contraceptive method—levels equal to those in developed countries. In contrast, in some sub-Saharan African countries fewer than 10% of married women use contraception. Fertility rates range from just 2.3 children per woman in Vietnam to 7.2 in Niger.

Although fertility is higher and contraceptive use less common in sub-Saharan Africa than elsewhere, surveys suggest that parts of Africa have started down the path already taken in other regions. Fertility fell by more than 1% per year in 9 of 16 sub-Saharan countries with more than one survey since 1990.

Use of contraception: Around the world, over 600 million married women are using contraception—nearly 500 million in developing countries. Among married women, contraceptive use rose in all but two developing countries surveyed more than once since 1990. Among unmarried sexually active women contraceptive use rose in 21 of 25 countries.

Four modern contraceptive methods—female sterilization, oral contraceptives, injectables, and IUDs—are the most widely used methods among married women in developing countries. Together they account for almost three-fourths of all contraceptive use. Male condoms rank just behind IUDs. Since 1990 use of injectables has increased substantially, and they have become the third most commonly used method in developing countries surveyed.

Reproductive intentions: A growing share of married women want to stop having more children. Outside sub-Saharan Africa, nearly 60% of married women surveyed since 1990 want to end childbearing. As new reproductive attitudes spread, the family sizes that women consider ideal are falling.

Unmet need: An estimated 105 million married women, about 1 in every 5, have an unmet need for family planning—that is, they are sexually active and want to avoid pregnancy, but are not using contraception. The percentage of women with unmet need fell since 1990, but the number changed little because populations grew.

Unmarried youth: In many countries a growing share of unmarried women ages 15 to 24 are sexually active before marriage. These young women increasingly use contraception, and in particular, condoms. Still, many unmarried young women have unintended pregnancies, and many are at risk for HIV/AIDS and other sexually transmitted infections.

Child survival and health: Infant and child survival rates improved by nearly 30% in surveyed developing countries as a whole since 1990. But infant and child mortality increased in some sub-Saharan countries, particularly in those hardest hit by the HIV/AIDS epidemic. Few surveyed countries have met the goal set by WHO and UNICEF of immunizing at least 80% of children against the common childhood diseases by 2000.

Maternal health care: In general, the percentage of married women who gave birth in a medical facility increased somewhat since 1990. Nevertheless, in much of North Africa and Asia and in some parts of sub-Saharan Africa, women are still much more likely to deliver at home than in a medical facility. One-fourth of women surveyed in developing countries received no antenatal care from a skilled attendant during their most recent pregnancy.

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Fertility Continues To Decline

The fertility decline in developing countries that began in the 1960s and 1970s and that picked up speed in the 1980s continued through the 1990s, according to recent surveys. Among 38 developing countries with more than one survey since 1990, the total fertility rate (TFR)¹ fell in almost all.

The surveys are part of the Demographic and Health Surveys (DHS) program and the Reproductive Health Surveys (RHS) program (see box, p. 14). In all, 71 countries have had one or more DHS or RHS survey since 1990—including 60 in developing countries and 11 in the former members of the Soviet bloc. Another five countries have conducted Young Adult Reproductive Health Surveys (YARHS), comparable to the DHS and RHS in content but focused on youth (see Appendix Table, p. 40).

Among the 60 developing countries surveyed since 1990, the TFR varies from 2.3 children per woman in Vietnam to 7.2 in Niger. The average is 4.5 children per woman for these 60 countries as a whole. (As are most averages

in this report, this average is unweighted—that is, it does not reflect differences in population among the countries. It is calculated by summing the national TFRs and dividing the total by the number of countries.)

Behind fertility declines is the continued increase in contraceptive use, particularly use of modern methods (see p. 9). **Population Reports** estimates that in 2000 about 55% of married women of reproductive age—defined in surveys as ages 15 to 44 or ages 15 to 49—in developing countries were using a contraceptive method (see Table 1). This estimate includes China and other countries not surveyed by the DHS or RHS. This level of contraceptive use is well below the level in Northern Europe, North America, Australia and New Zealand of 75% to 84% of married women (see Web Table 1²). This is the level of contraceptive use generally considered necessary to achieve replacement-level fertility.

Replacement-level fertility is the fertility rate at which each generation has only enough children to replace itself and thus is the level at which the population eventually stops growing. In industrialized countries, where mortality is lower than in most developing countries, the replacement fertility level is a TFR of about 2.1. In developing countries higher mortality levels, particularly among children, can push replacement-level fertility higher—to as high as a TFR of 3.5 or 4.0 (86).

Fertility Differences and Declines

Fertility varies among regions. Among developing countries surveyed since 1990, fertility is highest in sub-Saharan Africa, at an average of 5.3 children per woman, and lowest in Asia and Latin America and the Caribbean at 3.5 (unweighted averages calculated from the most recent data for each country, see Table 2, next page). In the Near East and North Africa, the average TFR is 4.3 children per woman. In surveyed countries of Eastern Europe and Central Asia, fertility averages 2.1 children, nearly as low as in Western Europe and North America.

Table 1

Estimate of Contraceptive Use Worldwide

Among Married Women
Ages 15–49, 2000

² Includes periodic abstinence and withdrawal

Methodology and data sources: Data for the number of females ages 15–49 for each country were obtained from population projections for 2000 by Bos, 1994 (25). Percentages are weighted by population size and use the most recent data from the DHS and RHS and, for countries without these surveys, data from the United Nations, 2002 (114), the US Census Bureau's International Database (<http://www.census.gov/ipc/www/idbnew.html>), and other nationally representative surveys.

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Region	% Currently Using		
	Any Method	Any Modern Method	Traditional ^a
DEVELOPING AREAS	55	50	5
Sub-Saharan Africa	15	12	4
Near East & North Africa	45	35	10
Asia	60	57	4
Latin America & Caribbean	68	59	9
Pacific (Oceania)	30	24	6
DEVELOPED AREAS	68	56	12
Australia & New Zealand	76	72	3
Europe	72	61	11
Eastern Europe & Central Asia	62	41	21
Japan	59	54	5
North America	75	71	4
WORLD	57	51	6

Table 2

Total Fertility Rates^a

Among Women Ages 15–49, 1974–2001

Data for 1974 to 1984 are from the World Fertility Survey, predecessor to the DHS and RHS.

Data for 1985 to 2001 are from the DHS and RHS.

^a TFR: the average number of children a hypothetical group of women would have over their childbearing years if they survived to age 50 and experienced current age-specific fertility rates. These TFRs are for three to five years preceding the survey date and include all surveyed women.

^b Data for women ages 15–44.

^c The TFRs calculated for the 1992–93 and 1998–99 India surveys may be low estimates, as evidence exists for the omission of recent births. Adjusted TFRs for the two surveys have been calculated at 3.9 and 3.4, Rutstein, 2002 (98).

SUB-SAHARAN AFRICA

Benin 1981–82	7.0
1996	6.0
2001	5.6
Botswana 1988	4.9
Burkina Faso 1993	6.5
1998–99	6.4
Burundi 1987	6.9
Cameroon 1978	6.3
1991	5.8
1998	4.8
Cape Verde 1998	4.0
Central African Rep. 1994–95	5.1
Chad 1996–97	6.4
Comoros 1996	4.6
Côte d'Ivoire 1980–81	7.3
1994	5.3
1998–99	5.2
Eritrea 1995	6.1
Ethiopia 2000	5.5
Gabon 2000	4.2
Ghana 1979–80	6.3
1988	6.4
1993	5.2
1998	4.4
Guinea 1999	5.5
Kenya 1977–78	8.2
1989	6.7
1993	5.4
1998	4.7
Lesotho 1977	5.6
Liberia 1986	6.7
Madagascar 1992	6.1
1997	6.0
Malawi 1992	6.7
2000	6.3
Mali 1987	7.1
1995–96	6.7
2001	6.8
Mauritius 1985	2.0
1991 ^b	2.4
Mozambique 1997	5.2
Namibia 1992	5.4
Niger 1992	7.0
1998	7.2
Nigeria 1981–82	6.4
1990	6.0
Rwanda 1983	8.5
1992	6.2
2000	5.8
Senegal 1978	7.1
1986	6.4
1992–93	6.0
1997	5.7
South Africa 1998	2.9
Swaziland 1988	5.0
Tanzania 1991–92	6.2
1996	5.8
1999	5.6
Togo 1988	6.4
1998	5.2
Uganda 1988–89	7.4
1995	6.9
2000–01	6.9
Zambia 1992	6.5
1996	6.1
Zimbabwe 1988	5.4
1994	4.3
1999	4.0

NEAR EAST & NORTH AFRICA

Egypt 1980	5.3
1988	4.4
1992	3.9
1995	3.6
2000	3.5
Jordan 1976	7.8
1983	6.6
1990	5.6
1997	4.4
Mauritania 1981	6.2
2000–01	4.5
Morocco 1980	5.9
1987	4.6
1992	4.0
Syria 1978	7.3
Tunisia 1978	5.7
1988	4.2
Turkey 1978	4.6
1993	2.5
1998	2.6
Yemen 1979	8.5
1991–92	7.7
1997	6.5

ASIA

Bangladesh 1975–76	6.1
1993–94	3.4
1996–97	3.3
1999–2000	3.3
Cambodia 2000	3.8
Fiji 1974	4.2
India 1992–93 ^c	3.4
1998–99 ^c	2.8
Indonesia 1976	4.7
1987	3.1
1991	3.0
1994	2.9
1997	2.8
Korea, Rep. of 1974	4.2
Malaysia 1974	4.6
Nepal 1976	6.1
1996	4.6
2001	4.1
Pakistan 1975	6.3
1990–91	4.9
Philippines 1978	5.1
1993	4.1
1998	3.7
Sri Lanka 1975	3.7
1987	2.7
Thailand 1975	4.5
1987	2.2
Vietnam 1997	2.3

LATIN AMERICA & CARIBBEAN

Belize 1991 ^b	4.5
1999	3.7
Bolivia 1989	5.0
1994	4.8
1998	4.2
Brazil 1986	3.4
1996	2.5
Colombia 1976	4.6
1986	3.2
1990	2.8
1995	3.0
2000	2.6
Costa Rica 1976	3.8
1993	3.1

LATIN AMERICA & CARIBBEAN (continued)

Dominican Rep. 1975	5.7
1980	4.3
1986	3.7
1991	3.3
1996	3.2
Ecuador 1979–80	5.3
1987	4.2
1989	3.8
1994	3.6
1999	3.4
El Salvador 1979	6.3
1985	4.2
1988 ^b	4.2
1993	3.9
1998	3.6
Guatemala 1987	5.5
1995	5.1
1998–99	5.0
Guyana 1975	4.9
Haiti 1977	5.4
1989	6.0
1994–95	4.8
2000	4.7
Honduras 1996	4.9
2001	4.4
Jamaica 1975–76	5.0
1983	3.5
1989	2.9
1993 ^b	3.0
1997	2.8
Mexico 1976–77	6.1
1987	4.0
Nicaragua 1992–93	4.6
1998	3.6
2001	3.2
Panama 1975–76	4.4
1984	3.7
Paraguay 1979	4.9
1987	5.4
1990	4.7
1995–96	4.3
1998 ^b	4.3
Peru 1977–78	5.5
1986	4.1
1991–92	3.5
1996	3.5
2000	2.8
Puerto Rico 1996	2.3
Trinidad & Tobago 1977	3.2
1987	3.1
Venezuela 1977 ^b	4.4

EASTERN EUROPE & CENTRAL ASIA

Armenia 2000	1.7
Azerbaijan 2001 ^b	2.1
Czech Republic 1993 ^b	1.9
Georgia 1999 ^b	1.7
Kazakhstan 1995	2.5
1999 ^b	2.0
Kyrgyz Republic 1997	3.4
Moldova 1997 ^b	1.8
Romania 1993 ^b	1.6
1999 ^b	1.3
Turkmenistan 2000	2.9
Ukraine 1999 ^b	1.4
Uzbekistan 1996	3.3

Fertility differs widely among countries within regions, as well. In six countries surveyed in the Near East and North Africa since 1990, the TFR ranges from 2.6 children per woman in Turkey to 6.5 in Yemen. Among eight countries surveyed in Asia since 1990, the TFR ranges from 2.3 in Vietnam to 4.9 in Pakistan. (Survey data in Pakistan are now more than 10 years old, however.) Among 16 recent surveys in Latin America and the Caribbean, the TFR ranges from 2.3 in Puerto Rico and 2.5 in Brazil to 5.0 in Guatemala.

In the 11 countries of Eastern Europe and Central Asia surveyed since 1990, the TFR is less than 2.0 children per woman in all Eastern European countries and between 1.7 and 2.1 in the Caucasus region. In Central Asia the TFR ranges from 2.0 children per woman in Kazakhstan to 3.4 in the Kyrgyz Republic.

Differences in declines. As mentioned, fertility declined in almost all countries with two or more surveys since 1990 except in Mali, Niger, and Turkey, where apparent increases were slight. The TFR fell by almost 2% per year, on average, in the five Asian countries surveyed more than once since 1990. The decline was largest in India, at one-half of one child per woman between surveys in 1992–93 and 1998–99 (see Web Table 2).

In the four countries in the Near East and North Africa surveyed more than once since 1990, fertility fell by over 1% annually, on average. Fertility fell by nearly 2% per year in the 13 countries in Latin America and the Caribbean with at least two surveys since 1990.

In several developing countries—including Bangladesh, Egypt, Indonesia, and Turkey—fertility declines slowed and in some cases appeared to reverse direction in the 1990s compared with the 1980s. This trend reflects changes in many factors, including people's family size preferences and socioeconomic circumstances, as well as

a country's stage in the demographic transition—the historic change from high levels of mortality and fertility in a population to lower levels. Measurement issues may also affect the data (20, 21, 29) (see box, next page).

Fertility in sub-Saharan Africa. While fertility remains higher in sub-Saharan Africa than in any other region, recent surveys provide evidence that the demographic transition is underway in parts of Africa (35, 124, 125). For instance, fertility declined by more than 1% per year in 9 of 16 sub-Saharan countries with more than one survey since 1990. The TFR declined most in Cameroon—1.0 child per woman between 1991 and 1998.

Compared with earlier demographic transitions elsewhere, the transition in sub-Saharan Africa is much slower (29). Many factors—cultural, economic, political, and demographic—help explain the difference. Some researchers point to continued strong cultural preference for large families, to large rural populations relying on subsistence farming, and to low levels of economic development (28, 35, 46, 61, 80). In addition, continued high rates of infant and child mortality (see p. 32) have contributed to high fertility levels, because many couples may have “extra” children to make up for those who die young (28, 35).

In the past, lack of government commitment to family planning programs in some countries limited access to the range of contraceptive methods and services needed to meet people's needs. Moreover, some sub-Saharan countries have faced internal conflicts that have made it difficult to provide family planning (28).

Nevertheless, if recent fertility trends in sub-Saharan Africa are any indication, fertility rates in the region will fall in the future as they already have elsewhere. Reflecting such an expectation, the latest medium variant UN projection shows a TFR in Africa of 2.4 children per woman by 2045–2050 (126).



Surveys provide growing evidence that in parts of sub-Saharan Africa, including Cameroon, fertility rates have started to decline. While fertility remains higher in sub-Saharan Africa than elsewhere, recent trends suggest that rates could fall in the future, as more family planning programs improve access to information and services and improve the quality of care.

The Pace of Fertility Decline

Fertility has fallen by an average of 1% per year in the 38 developing countries surveyed more than once since 1990. The pace of change varies widely among countries, however—from Yemen, where the TFR fell by 1.2 children per woman in five years, to Niger, where the TFR rose by 0.2 children per woman in six years. Although generally fertility has been falling, surveys conducted since 1990 suggest that the pace of decline has been slowing compared with fertility declines in the 1970s and 1980s. Considering all countries that have had more than one survey, including surveys before 1990 as well as after, instances of slowing in the rate of fertility decline outnumber accelerations in the rate of decline by two to one.

Many factors help to explain why the pace of fertility decline appears to be slowing. Fertility declines faster when fertility rates are high (21), as was the case in many developing countries in the 1970s and 1980s. Meanwhile, economic and social changes, new information and ideas, new reproductive attitudes, smaller family size ideals, and access to effective contraception were spreading rapidly.

At the same time, infant and child mortality was falling in response to better public health measures in most countries. Family sizes increased as more children survived their first few years of life. Thus demand for fewer children and use of contraception grew, resulting in rapid declines in fertility.

By the start of the 1990s, in contrast, family planning information and services had become widespread throughout much of the developing world. Most people already knew about contraception and where to obtain it. Moreover, the influence of new social norms favoring smaller families had already been reflected in lower fertility rates. Much of the latent demand for family planning had been met. Given these trends and smaller family sizes compared with the 1970s and 1980s, it should not be surprising that, while fertility continued to decline in the 1990s in most countries, the pace of decline has been slower.

Prospects for further decline. Despite fertility declines, in a number of developing countries women still are having more children than they say they would prefer, and many still prefer larger families than women in developed

countries. Thus there remains substantial scope for further fertility declines. Fertility can be expected to fall further as more women become better able to prevent unwanted births. In addition, future fertility levels are likely to depend increasingly on changes in social and economic factors that lead people in developing countries to desire fewer children (21).

In the coming years fertility is likely to decline fastest where it is now highest—that is, in sub-Saharan Africa. So far, the pace of fertility decline in sub-Saharan Africa has been considerably slower than in other developing regions, since on average African couples prefer to have more children than do couples elsewhere (29).

In the 1980s fertility started to decline in a few sub-Saharan countries—the beginning of a trend to smaller family preferences and more contraceptive use in the region. Nevertheless, during the 1990s many sub-Saharan countries were only starting their fertility transitions, leaving room for more rapid declines than elsewhere, where the fertility transition was more advanced (29).

The “tempo effect.” Recently, fertility appears to have stopped falling altogether in some developing countries (52). One reason is a demographic “tempo effect.” This effect results from changes in the timing of childbearing rather than the overall demand for children. It probably explains some of the apparent stalling of fertility decline in such countries as Bangladesh, Colombia, Egypt, Indonesia, and Turkey, although the magnitude of the tempo effect is difficult to estimate (18).

The tempo effect operates as follows: When the average age at which women give birth rises, the TFR appears to decline temporarily, even if women continue eventually to reach the same completed family size as before. When completed family size is falling at the same time that the average age at first birth is rising, as has been the case in the past few decades until recently, the TFR declines even faster (18).

But when the average age at which women have their first birth stops rising, as was the case in some countries during the 1990s, the TFR can temporarily stop its decline or even rise somewhat. This effect is completely independent of any changes in family size preferences or levels of contraceptive use.

The impact of AIDS. HIV/AIDS is another crucial factor affecting fertility. Sub-Saharan Africa faces some of the highest levels of HIV/AIDS anywhere in the world. AIDS, which has raised mortality levels substantially in hard-hit countries (see p. 34), also can affect fertility in a number of ways, both biological and behavioral. These include deaths to people of reproductive age, reductions in coital frequency, more spontaneous abortions and stillbirths, increased amenorrhea, and lower fecundity (the ability to

conceive) (47). In addition, as more and more people become aware of HIV/AIDS and of how to avoid infection (56), they may delay the onset of sexual relations, curtail extramarital relations, use condoms, or avoid sexual relations entirely, all of which could reduce fertility levels.

While the possible links between HIV and fertility seem clear, the actual impact is less certain (47, 72, 104). No studies have come to firm conclusions about the overall fertility effect of AIDS on national populations (47).

Age Differences in Fertility

Fertility rates differ by women's ages. These differences reflect reproductive preferences, the ability to act on these preferences, sexual behavior, and fecundity. Age patterns of fertility vary considerably among regions, countries, and different groups within countries (26).

In most countries fertility peaks among women ages 20 to 24. In nearly half of surveyed countries of sub-Saharan Africa, however, this peak extends to age 29. In addition, in sub-Saharan Africa women continue to have children at older ages than elsewhere. In sub-Saharan countries women over age 40 contribute an average of 0.5 children to the TFR (98) (see Web Table A). The lack of availability and use of contraceptive sterilization throughout much of the region may help to explain this pattern (93).

In most regions fertility has fallen first among the youngest and the oldest age groups. In sub-Saharan Africa, however, the pattern is somewhat different. In most sub-Saharan countries fertility has fallen rather uniformly across age groups. An exception is Senegal, where most of the 1.5 child decrease in the TFR between 1978 and 1997 occurred among women age 30 and younger, caused partly by a rise in the age at marriage (124).

Where fertility is highest, women generally have their first births by age 20. High fertility among adolescents (ages 15 to 19), however, does not necessarily mean that a country's TFR will be high (113). In Bangladesh, for example, most women have their first birth around age 18, but the TFR of 3.3 children per woman is among the lowest in Asia because many women end their childbearing at relatively young ages (69).

Fertility Among Different Groups

Fertility levels vary according to women's educational attainment, residence, and other social and economic characteristics. Such differences often are substantial.

Women's education. In most surveyed countries, the more years of school that women have completed, the lower their fertility. Women's educational attainment has a stronger effect on fertility than does men's education or other characteristics of households, such as wealth (5, 57).

In Malawi, among women with no education the TFR is 7.3, while among women who have completed secondary education, it is only 3.0. Similarly, in the Dominican Republic fertility among women with no education is twice as high as among those with a secondary education, at TFRs of 5.0 and 2.5, respectively (see Web Table B).

In general, women's level of education tends to affect fertility levels at all ages (115). Education affects fertility through a number of interrelated factors, including women's social and economic status, status within the household, age at marriage, family size desires, access to family planning information and services, and use of contraception (61).

Women with more education usually have higher aspirations for themselves, and education can open the door to greater achievement and personal growth (53) and less

emphasis on having children as life's central reward. Education improves women's status (5, 30). Women who have more education usually have more control over resources and more autonomy in decision-making (53, 57).

Education can transform attitudes and lead to questioning of traditional beliefs and practices, such as those supporting high fertility (30, 53). For example, in India women with more education are less likely to report a preference for male children (33) (see next page).

Surveys confirm that women with more education generally want to have fewer children than do women with less education. They are more likely to use family planning and thus to succeed in having no more children than they want (30, 100, 115, 131).

Fertility declines have tended to occur first among women with more education and later spread to those with less education (5, 57, 69, 89, 115). Currently, however, around the world millions of women with little formal schooling are using contraception and are having fewer children—a fact that refutes the contention that widespread increases in formal education are necessary for substantial declines in fertility (97).

Rural or urban residence. Along with women's education, the most consistent fertility differences between groups reflect where women live—whether in urban or rural areas (35, 69, 76). In all countries surveyed since 1990, the TFR is lower in urban areas—from a difference of just 0.1 child per woman in Mauritius to as much as 3.4 children in Uganda (see Web Table B).

Historically, in countries where fertility was high and the demographic transition had not yet begun, fertility differences between urban and rural areas were generally small. In countries making the transition, however, urban-rural differences grew because fertility declines usually began in urban areas.



In Bangladesh most women have their first child at a young age. But many also end childbearing at young ages, as family planning is widespread. Thus fertility has fallen substantially.

Urban residents usually have more interest in family planning, more access to modern contraception, and better education. Children in urban areas are less of an economic asset to the family, living costs are higher, and social norms that favor large families are weaker than in the countryside.

Later in the demographic transition, urban-rural differences in fertility decrease. The small family norm diffuses throughout the country, and family planning information and services become more widely available. Thus fertility declines spread from urban to rural areas, and fertility falls throughout the country (34, 87, 90, 91).

Among 30 sub-Saharan countries surveyed, in only 3—Chad, Mali, and Niger—does fertility in urban areas remain high enough to be considered “pre-demographic transition”—that is, a TFR above 5.2 children per woman (124) (see Web Table B).

In rural areas, however, the TFR remains above 5.2 in all but seven sub-Saharan countries—Cape Verde, Central African Republic, Comoros, Kenya, Mauritius, South Africa, and Zimbabwe. Thus, in sub-Saharan countries where lower percentages of the population live in urban areas, national fertility declines have been slower than in the region’s more urbanized countries (28).

Gender preferences. In sub-Saharan Africa, Southeast Asia, and Latin America and the Caribbean, fertility levels are

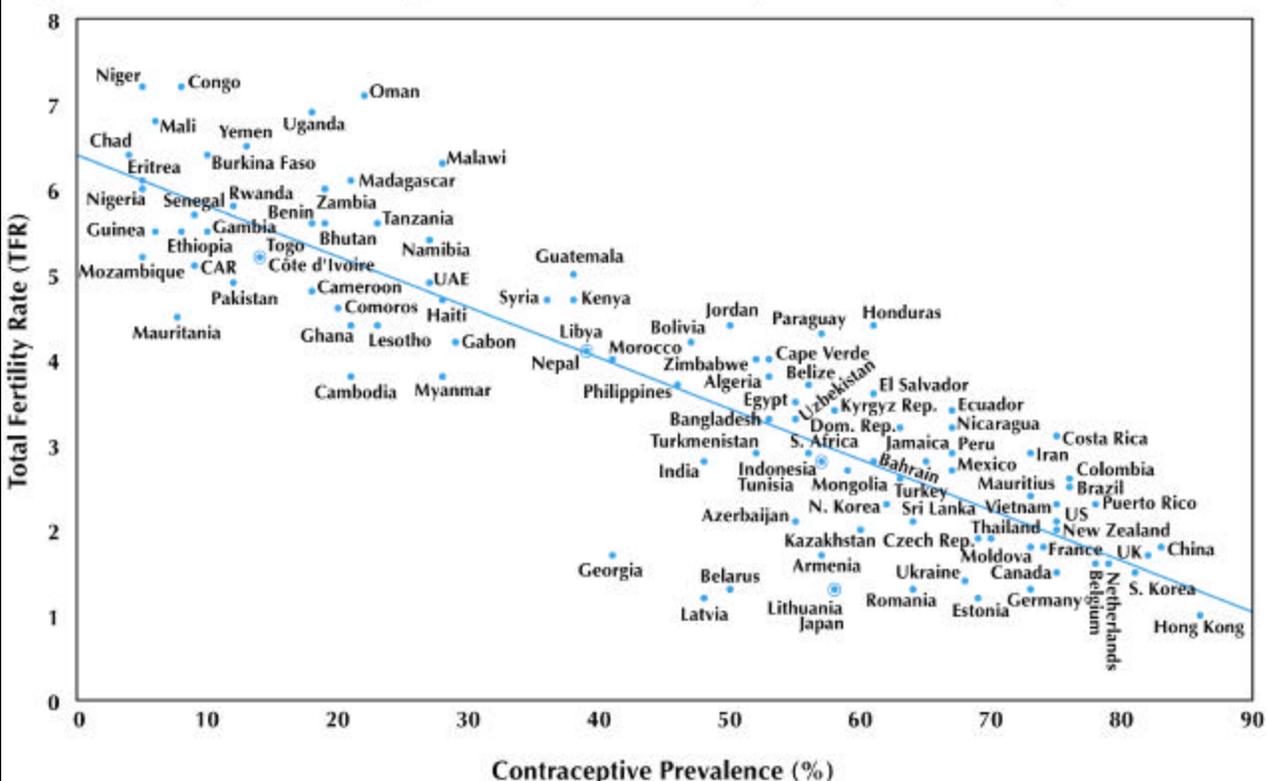
relatively unaffected by couples’ desire to have a child of a specific sex (8). In parts of the Near East and North Africa and parts of South Asia, however, preference for male children puts upward pressure on fertility levels. Because many couples continue to have children until a son is born, fertility is higher than would be the case without gender preference.

For example, a study of data from six countries with strong son preference—Bangladesh, Egypt, India, Nepal, Pakistan, and Turkey—estimated that the number of women pregnant at the time of the survey would be lower by 9% to 21% in the absence of son preference (8). In India, if there were no son preference, the national fertility rate would fall 8% (78).

Contraceptive Use

Among developing regions, levels of contraceptive use vary widely, from an average of 15% in sub-Saharan Africa to 68% in Latin America and the Caribbean (see Table 1, p. 3). Fertility levels closely correspond to levels of contraceptive use. In countries where contraceptive use is widespread, fertility is low, and where contraceptive use is uncommon, fertility is high (see Figure 1).

Figure 1. Relationship Between Fertility and Contraceptive Use



105 countries surveyed between 1990–2001
 TFR: The average number of children a woman would have during her lifetime if current age-specific fertility rates remained constant over her reproductive years.
 Contraceptive prevalence: The percentage of married women ages 15–49 using any method of contraception (not including folk or traditional methods other than withdrawal and periodic abstinence).

Sources: Demographic and Health Surveys, Reproductive Health Surveys, and other comparable surveys Population Reports

Contraceptive Use Grows in Developing Countries

Increases in the use of contraception have been the principal direct cause of the fertility declines in the developing world (31, 44, 61, 131). In developing countries around the world, a growing percentage of women—both married and unmarried—are using contraception.

Currently, an estimated 55% of married women in the developing world are using some sort of contraception, and 50% are using a modern method (see Table 1, p. 3). By contrast, in 1990 an estimated 41% of married women in developing countries were using contraception, and in 1983 about 33% (111, 112). These levels of contraceptive use are weighted by population size and thus are heavily influenced by levels of use in China and India, the world's two most populous countries. Without these two countries, the percentage of married women of reproductive age currently using any contraceptive method in the developing world would be an estimated 42% instead of 55%.

Data from the 38 developing countries with multiple DHS or RHS surveys since 1990 show that use of any family planning methods among married women rose by at least 10% in all except 7 countries—El Salvador, Ghana, Jamaica, Mali, Rwanda, Turkey, and Zimbabwe (see Web Table 3). Levels of contraceptive use fell only in Rwanda, and there by more than 40%, as civil war and ethnic strife in the 1990s disrupted family life.

The increases in contraceptive use in developing countries since 1990 continue a longer trend. Between 1975 and 1995 contraceptive use among married women rose in 30 of 31 developing countries with two or more surveys (62). Moreover, levels of contraceptive use among *unmarried* sexually active women also rose in the 1990s—by 10% or more in all but 6 of 24 developing countries with such data³ (see Web Table C).

While other direct factors—the proportion of women married, postpartum insusceptibility, infertility, and induced abortion—are also important influences on fertility levels (see p. 19), none of these has changed as much as contraceptive use has changed in developing countries in recent years. Thus none has contributed as much to fertility decline as have rising levels of contraceptive use (23, 44, 61).

³ Most surveys taken since 1990 in the Near East and North Africa and in Asia were limited to ever-married women. The exceptions were Mauritania, Morocco, Cambodia, and the Philippines. Surveys in these countries, as in all of those in sub-Saharan Africa, in Latin America and the Caribbean, and in Eastern Europe and Central Asia, collected information on all women, that is, on never-married women as well as ever-married women.



H. Kalamoni/ODHII Project

In Uganda as in other countries, more and more women are using contraception. Increases in contraceptive use have been the principal direct cause of declines in fertility. In developing countries about half of all married women use modern methods.

An increase in modern method use—in particular injectables, but also female sterilization, oral contraceptives (OCs), and the intrauterine device (IUD)—accounts for half or more of the increase in total contraceptive use among married women in all countries but Burkina Faso, Cameroon, and Ecuador, among the 38 developing countries with multiple surveys since 1990 (31, 131) (see Web Table 3).

Current Contraceptive Use

Worldwide, more than 620 million married women of reproductive age—57% of all such women—were using contraception in 2000, **Population Reports** estimates⁴. The percentage of women using contraception is higher in the developed world, at 68%, than in the developing world, at 55% (see Table 1, p. 3). The absolute number of contraceptive users is much larger in the developing world, however, at almost 500 million women compared with 120 million in the developed world.

On average worldwide, nearly 9 in every 10 contraceptive users rely on modern methods, while only about 1 in every 10 rely on the traditional methods of withdrawal and periodic abstinence. Contrary to what might be expected, in developed countries a much higher percentage of women (12%) use traditional methods than in developing countries (5%) (see Table 1, p. 3).

In the developing world as a whole, about half of married women of reproductive age use modern contraceptive methods. This figure falls to 35% if India and, especially,

⁴ These percentages are weighted by population size and use both DHS and RHS data and, for countries without these surveys, other nationally representative surveys (see Table 2 for methodology). Results from surveys in this report, beginning with Table 3, are not weighted by population size; that is, simple averages and medians of country data are taken.

China are omitted, both because of their large populations and their above-average reliance on long-term contraceptive methods. In developing countries other than India and China, an estimated 7% of women use traditional contraceptive methods. (For more on contraceptive method mix, see p. 13.)

Based on statistics about contraceptive prevalence, developing countries as a group are about halfway through the demographic transition from higher to lower fertility. Levels of contraceptive use of 75% to 84%, as found in North America and Northern Europe, reflect the completion of the transition. The highest contraceptive prevalence rate found in any country with a population over 3 million is 87%, in Hong Kong and 86%, in the United Kingdom (see Web Table 1).

While the discussion above mostly includes all developing and developed countries, the following discussion of contraceptive use is based only on data for the 71 countries with DHS and RHS surveys since 1990.

Regional patterns among married women. Among 30 countries surveyed in sub-Saharan Africa since 1990, contraceptive prevalence varies substantially. In five countries—Cape Verde, Kenya, Mauritius, South Africa, and Zimbabwe—over one-third of married women use contraception. In seven other countries—Chad, Eritrea, Guinea, Mali, Mozambique, Niger, and Nigeria—contraceptive prevalence is 6% or lower (see Table 3).

Among six surveyed countries in the Near East and North Africa, at least half of married women in Egypt, Jordan, and Turkey use contraception. In contrast, prevalence is lowest in Mauritania (8%) and Yemen (13%). Among the eight surveyed countries in Asia, prevalence is highest in Vietnam (75%) and lowest in Pakistan's 1990–91 survey (12%). (Recent estimates are that contraceptive prevalence has risen to almost 30% in Pakistan (85).)

Among 16 surveyed countries in Latin America and the Caribbean, contraceptive prevalence is 75% or higher in Brazil, Colombia, Costa Rica, and Puerto Rico. In contrast, in Haiti prevalence is 28%. Among 11 countries surveyed in Eastern Europe and Central Asia, contraceptive prevalence is more than 50% in all but Georgia (41%).

Regional patterns among unmarried sexually active women. In 35 of 45 developing countries with applicable survey data, contraceptive use among unmarried sexually active women ages 15 to 49 is higher than among married women by five percentage points or more. Like married women, most unmarried women who use contraception rely on modern methods (see Web Table C).

In sub-Saharan Africa contraceptive use among unmarried sexual-

ly active women of reproductive age is at least twice as high as among married women, on average. More than half of the difference is due to higher levels of condom use among unmarried women. Contraceptive use among unmarried women reaches 50% or more in 8 of 28 surveyed sub-Saharan countries. (For discussion of contraceptive use among young unmarried women, see p. 29.)

Similarly, in all but 3 of 17 countries surveyed in Latin America and the Caribbean, and in all 4 countries in Eastern Europe and Central Asia for which data are available, levels of contraceptive use among sexually active unmarried women are equal to or higher than among married women. The differences are less than in sub-Saharan Africa, however, because contraceptive use among married women elsewhere is much more widespread than in sub-Saharan Africa. Comparable data are not available for Asia or the Near East and North Africa.

Differences in Contraceptive Use Among Groups

Differences in contraceptive use are primarily responsible for the differences in fertility among various groups of women—whether grouped by age, education, or residence.

Age and number of children. Much like age differences in fertility (see p. 7), contraceptive use among married women usually rises from low levels at ages 15 to 19 to peak at ages 30 to 39 and then falls (see Web Table D).

Contraceptive use tends to rise with parity (the number of living children a woman has), but in some countries contraceptive use declines with increasing parity. Lower use among women with five or more children can reflect lower fecundity—and thus less chance of becoming preg-



In Egypt a provider counsels a family planning client. Among six surveyed countries in the Near East and North Africa, including Egypt, contraceptive prevalence averages 45%. It is highest in Latin America, at 68%, and lowest in sub-Saharan Africa, at 15%.



Village women talk on a street in rural Bolivia. Almost everywhere contraceptive use is lower in rural than in urban areas. In countries where contraceptive use is widespread, however, differences between rural and urban areas tend to be smaller than where contraceptive prevalence is lower—reflecting the spread of ideas, information, and services.

As with differences in contraceptive use by level of education, differences by rural or urban residence vary among countries. In countries where contraceptive use is widespread, rural-urban differences are smaller than where contraceptive prevalence is low (36) (see Web Table D).

Intentions To Use Contraception

Surveys ask married women who are not currently using contraception, including pregnant women, whether they intend to use it in the future. The percentage who say that they intend to use contraception varies among regions, from about 41% in the Near East and North Africa to 57% in Latin America and the Caribbean (see Web Table E).

In sub-Saharan countries levels of intention to use contraception average 44%, ranging from 14% in Chad to 74% in Malawi. Among countries of Eastern Europe and Central Asia, the lowest percentage of women who intend to use contraception is 36% in Armenia, and about 46% in the region overall. About half of married women in Asia intend to use family planning in the future, from 15% in Pakistan to 73% in Nepal.

nant—as women near the end of their reproductive lives. In addition, many women with large families probably rarely or never did use contraception in the past.

Women's education. Women's education is closely related to contraceptive use (80), as it is to fertility (see p. 7). Even after taking account of other factors, researchers consistently have found that better educated women are more likely to use contraception (38). While a husband's education also has a positive effect, it is less important than the wife's education (5, 11).

In all developing countries surveyed since 1990, contraceptive use is higher among women with more education (see Web Table D). Differences in contraceptive use by education are greatest in sub-Saharan Africa, where total contraceptive use is the lowest of any region (36). In contrast, in countries where contraceptive use already has spread among virtually all groups—as in Bangladesh, Colombia, Jamaica, and Mauritius—differences in contraceptive use by level of education are relatively small.

Increases in formal education are not always necessary for levels of contraceptive use to increase. Word of mouth and mass communication often make people aware of contraception and can spread the small-family norm widely throughout a society.

Rural or urban residence. Perhaps the most consistent difference in levels of contraceptive use among groups is between rural and urban women (75). In 59 of 60 surveyed developing countries, rates of contraceptive use among married women in rural areas are lower than in urban areas. The exception is Jamaica, where rural and urban levels of use are equal. In surveyed countries of Eastern Europe and Central Asia, differences in contraceptive use between rural and urban areas are quite small, and in Armenia and Azerbaijan, use is higher in rural than urban areas.

Intentions to use contraception vary among different groups of married women. Women with more children are more likely to intend to use contraception soon. Also, while women early in their childbearing years may plan to use contraception eventually, they are less likely to say that they plan to use it soon, presumably because many want to have more children.

Reasons for not intending to use contraception. Surveys also ask married women not currently using contraception and not intending to use it for the main reason that they do not intend to do so. They do not ask for reasons considered second or third but that nevertheless may be important (92).

Except in sub-Saharan Africa, the main reason women give for not using contraception is that they are at little risk of becoming pregnant—that is, they are subfecund, infecund, menopausal, or sterilized (see Web Table F). As might be expected, many women say they do not intend to use contraception because they are pregnant or because they want more children—the most frequent reason given in sub-Saharan Africa.

Other main reasons often given include concerns with contraceptive side effects—the single main reason that women give in Ghana, Haiti, and the Philippines. In a few countries reasons related to religion or opposition to family planning by the respondents or others are also important.

Relatively few married women who are not using contraception point to lack of knowledge of family planning methods or their sources as the reason they do not intend to use it in the future. Such responses are most common in sub-Saharan Africa, averaging 10% and as high as 29% in Chad. In developing countries as a whole, fewer than 1% of married women give reasons related to lack of access to family planning, cost, or difficulties obtaining specific contraceptive methods.

Contraceptive Method Mix

The specific contraceptive methods that women use vary substantially from country to country. The method mix in a country reflects many factors, including the availability of various contraceptive methods and people's awareness of them, their cost, and where they can be obtained (see p. 19). In addition, personal preferences, social norms, and perceived acceptability of family planning use affect contraceptive choices.

Four modern contraceptive methods—female sterilization, oral contraceptives (OCs), injectables, and the intrauterine device (IUD)—are the most widely used methods among married women in surveyed developing countries. Together they account for almost three-fourths of all contraceptive use (see Table 3, p. 10).

Female Sterilization

In surveyed developing countries, female sterilization is the most popular method of contraception overall: an unweighted average of 9% of married women have been sterilized (see Table 3, p. 10). Female sterilization is the most widely used method, however, in only 14 of the 60 developing countries surveyed, all of them in Asia or in Latin America and the Caribbean.

Sterilization is little used in the Near East and North Africa or in sub-Saharan Africa. As might be expected, in most countries where its use is low, access to female sterilization is limited or even nonexistent (32, 93).

Levels of female sterilization remained about the same between surveys in most of the 38 developing countries with multiple surveys since 1990 (see Web Table 3). In three surveyed countries, however—India, Colombia, and Nicaragua—use of female sterilization grew by six or more percentage points between surveys. In India this increase accounted for the entire increase in prevalence of modern contraceptive use between surveys.

Among unmarried women of reproductive age, use of sterilization is substantial in a few countries of Latin America and the Caribbean—including El Salvador at 26% of unmarried sexually active women of reproductive age and the Dominican Republic at 24% (see Web Table C). These data include many sexually active widowed or divorced women who chose sterilization after they completed their fami-

lies. In surveyed countries of sub-Saharan Africa and Eastern Europe and Central Asia, virtually no sexually active unmarried women rely on sterilization.

Oral Contraceptives

OCs are the second most widely used contraceptive method among married women in developing countries surveyed by the DHS and RHS. They are the most widely used method in sub-Saharan Africa and the second most used method in the Near East and North Africa, Asia, and Latin America and the Caribbean (see Table 3, p. 10).

OCs are the most widely used contraceptive in one-third of surveyed sub-Saharan countries, although in only Cape Verde, Mauritius, and Zimbabwe do more than 15% of married women of reproductive age use this method. Nonetheless, the level of OC use in Zimbabwe, at 36%, is the highest of any country worldwide, reflecting the emphasis that the national family planning program has put on distribution of OCs throughout the country.

OC use among married women remained about the same among most of the 38 developing countries surveyed more than once since 1990 (see Web Table 3). Use in-



Overall, four modern contraceptive methods—female sterilization, oral contraceptives, injectables, and IUDs—are the most widely used among married women in surveyed developing countries. Traditional methods are little used.

Reporting 30 Years of Survey Data

This report is the latest in a series of **Population Reports** issues covering survey findings on fertility, family planning, and health topics in developing countries. This report focused on data from 71 countries and 120 DHS or RHS surveys.

These surveys, which collect information from women (and sometimes from men) on fertility, contraceptive use, fertility desires, and other key reproductive health topics, provide the best available evidence on levels and trends in these indicators in the developing world and in some countries of the former Soviet bloc. Some 40 countries (38 in developing regions) were surveyed more than once since 1990, allowing examination of trends. Data from the YARHS are included here when appropriate.

In this issue of **Population Reports**, 60 developing countries are covered, representing nearly 50% of the population of the developing world. Excluding China, these surveys represent about 71% of the developing world. (Although Puerto Rico is a commonwealth freely associated with the United States, it is included in the report because it is part of the RHS survey program. It is reported in the Latin America and Caribbean region because of its geographic location.) The report treats separately the 11 surveyed countries in Eastern Europe and Central Asia that were part of the Soviet bloc.

About the Data

The data presented here come principally from special tabulations that the DHS and RHS programs produced for this report and from on-line DHS STATcompiler tabulations. Some data differ slightly from the data in published Final Country Reports. Differences are mainly due to additional cleaning of the data sets since publication of the final reports. In some cases final report data have been used. (STATcompiler data and many final country reports are available at <http://www.measuredhs.com/>).

Not all surveys include questions on all of the topics discussed in this report, nor are the respondents defined the same way in all surveys. As a result, the number of countries reported in different sections and tables sometimes varies.

Surveys are conducted in different years in different countries; the year each survey was conducted is shown in the tables. The comparisons in this report generally use the most recent survey data from each country. Unavoidably, for a few countries the most recent data are as much as 12 years old. The surveys included in this report are listed on p. 40.

DHS and RHS surveys do not cover all developing countries. Therefore, some tables and discussions at the beginning of this report include estimates of fertility levels and contraceptive prevalence for other countries calculated and published by the United Nations (<http://www.un.org/esa/population/unpop.htm>) and the United States Bureau of the Census (<http://www.census.gov/ipc/www/idbnew.html>).

A forthcoming issue of **Population Reports** will contain information about men's family planning attitudes and behavior and about HIV/AIDS-related knowledge and behavior among both men and women.

Earlier survey findings can be found in previous issues of **Population Reports**. Survey findings from the 1980s appear in *The Reproductive Revolution: New Survey Findings*, Series M, No. 11, December 1992. Findings from the 1970s can be found in *Fertility and Family Planning Surveys: An Update*, Series M, No. 8, September–October 1985, *Contraceptive Prevalence Surveys: A New Source of Family Planning Data*, Series M, No. 5, May–June 1981, and *The World Fertility Survey: Current Status and Findings*, Series M, No. 3, July 1979. All five issues are available on CD-ROM (to order, see p. 27).

creased most in Bangladesh, rising five percentage points in the six years between surveys.

Among unmarried sexually active women, OC use is often more common—and in many countries, much more common—than among married women (see Web Table C). In almost all surveyed countries with such data, unmarried women are more likely to use OCs than are married women. This statistic reflects the fact that few unmarried women rely on sterilization.

Injectables

Injectables have become the third most commonly used contraceptive method among married women in surveyed developing countries, although still used by only about 5% of married women. In 15 countries surveyed since 1990, mostly in sub-Saharan Africa, injectables are the most popular modern contraceptive method among married women (see Table 3, p. 10).

Use of injectables is highest in South Africa, at 23% of married women. Other countries in which injectables are widely used include Indonesia, at 21% of married women, and Malawi, at 16%. Among unmarried sexually active women of reproductive age, use of injectables exceeds 10% in Kenya, Guatemala, Namibia, Niger, and Paraguay.

Among married women in developing countries with multiple surveys since 1990, use of injectables rose in every country but Rwanda, by an average of three percentage points. Use increased most in Malawi, by 14 percentage points, in Peru, by 13 points, and in Haiti and Indonesia, by 9 points (see Web Table 3).

The IUD

The IUD ranks fourth among family planning methods used by married women in surveyed developing countries. IUD use appears to have increased in 14 of the 38

the increases were small, on average less than half a percentage point.

The IUD is the most widely used method in the Near East and North Africa (see Table 3, p. 10). In surveyed countries in Asia and sub-Saharan Africa, the IUD is little used. The one exception is Vietnam, where 39% of married women use the method, reflecting the government's emphasis on providing it. China—which has not been part of the DHS or RHS program but has conducted its own surveys of contraceptive use—has high levels of IUD use, at 36% of all married women of reproductive age (114). The IUD is the most widely used method in most of the surveyed countries of Eastern Europe and Central Asia.

Among unmarried sexually active women in surveyed countries, levels of IUD use are generally low. Exceptions are Kazakhstan and Moldova, and several Latin American countries including Ecuador, Honduras, and Nicaragua.

Male Condoms

Despite the importance of condoms for protection against HIV and other sexually transmitted infections (STIs), reliance on the male condom for family planning is rare among married women in developing countries.⁵ Levels of condom use reported by married women have not changed substantially in recent years, based on data from the 38 developing countries surveyed more than once since 1990.

Among 60 surveyed developing countries, an average of only 3% of married women say they rely on the male condom for contraception (see Table 3, p. 10). In only three countries do more than 10% of married women report condom use for contraception—Mauritius at 13%, Costa Rica at 16%, and Jamaica at 17%.

Among surveyed countries in Eastern Europe and Central Asia, in the Czech Republic 19% of married women use condoms for family planning, and in Ukraine 14%.

Condom use among unmarried women. Sexually active unmarried women of reproductive age are much more likely to report condom use than married women—on average, 16 times more likely in sub-Saharan Africa, and 3 times more likely in Latin America and the Caribbean. In 11 developing countries, levels of condom use are at or above 20% among unmarried sexually active women (see Web Table C).

In countries with at least two surveys of unmarried women since 1990, condom use rose an average of seven percentage points. Increases have been considerable in Paraguay, from 3% to 35% of unmarried women between surveys in 1990 and 1998, and in Burkina Faso, from 12% to 36% between 1993 and 1998–99.

Other Modern Methods

In surveyed developing countries relatively few women, married or unmarried, use other modern contraceptive

⁵ Reported levels of condom use for family planning often differ from levels reported for protection from STIs. This difference is partially due to extramarital use of condoms. In recent surveys both men and women are increasingly likely to report use of condoms for protection against HIV/AIDS and other STIs (see forthcoming **Population Reports** issue on findings from men's surveys).

methods—including male sterilization, vaginal methods (diaphragm, cervical caps, and spermicides), implants, or female condoms. Use of vaginal methods averages less than 1% of total contraceptive use among women in all regions. Implant use is highest among married women in Indonesia, at 6%, and second highest in Haiti, at just 1%. In no surveyed country do as many as 1% of married women use the female condom for contraception.

Male sterilization. Aside from China and India, less than 1% of women surveyed in developing countries rely on male sterilization for contraceptive protection. In India the figure is 2%, and in China 8%. Male sterilization is virtually nonexistent in surveyed countries of sub-Saharan Africa and in the Near East and North Africa. Nepal, at 6%, has the highest level of male sterilization among all countries surveyed by the DHS or RHS (see Table 3, p. 10).

Traditional Family Planning Methods

Use of the two traditional contraceptive methods, periodic abstinence and withdrawal, varies widely among surveyed countries. While levels of use generally are much lower than for modern methods, in some countries substantial numbers of women use traditional methods.

Periodic abstinence. Among all surveyed countries, periodic abstinence is most widely used in Bolivia, at 20% of married women (see Table 3, p. 10). Despite low levels of use in developing countries overall, periodic abstinence is the most widely used method among married women in 12 of 30 countries in sub-Saharan Africa—nevertheless averaging only 4%. In addition, in sub-Saharan Africa about 10% of sexually active unmarried women of reproductive age report use of periodic abstinence.

Withdrawal. In sub-Saharan Africa use of withdrawal among married women averages only 2% but reaches 16% in Mauritius. In the Near East and North Africa use of withdrawal averages 7% but reaches 24% in Turkey. In Asia use of withdrawal averages 4% but reaches 12% in Vietnam. In Latin America and the Caribbean use of withdrawal averages 3%, with little variation among countries (see Table 3, p. 10).

In Eastern Europe and Central Asia, withdrawal is the most widely used method, traditional or modern, in 6 of 11 countries surveyed. Levels of use are as high as 41% in Azerbaijan. Many unmarried women in these countries also report relying on withdrawal for contraception (see Web Table C).

Lactational Amenorrhea Method (LAM)

Many women report using LAM as a contraceptive method. Although women may believe they are using breastfeeding as a means of contraception, studies show that in fact the correct use of LAM is limited. For a mother to practice LAM, she must fulfill three criteria: fully or nearly fully breastfeeding; less than six months postpartum; and not menstruating (41, 63). If a sexually active woman does not meet all of these criteria, she is not correctly practicing LAM and is thus at risk of unintended pregnancy, unless she is using another contraceptive method as well.

Table 4. Knowledge of Contraceptives Among Married Women Ages 15-49, 1990-2001

Region, Country & Year	% Who Know				% Who Know								
	Any Method	Any Modern Method	Any Traditional Method	Female Sterilization	Any Method	Any Modern Method	Any Traditional Method	Female Sterilization					
SUB-SAHARAN AFRICA													
Benin 2001	92	91	62	56	21	78	37	85	79	13 ^d	Infertiles	Widow	Menstrual
Burkina Faso 1998-99	79	77	42	30	15	65	33	68	57	21			
Cameroon 1998	77	77	62	57	11	60	38	68	58	20			
Cape Verde 1998	100	100	73	97	38	99	99	92	98	44			
Central African Rep. 1994-95	79	69	57	49	26	45	13	59	36	11			
Chad 1996-97	46	43	18	26	5	28	6	25	26	7			
Comoros 1996	98	98	77	89	26	94	63	90	94	15			
Côte d'Ivoire 1998-99	89	87	62	41	15	74	30	83	69	18			
Equatorial Guinea 1995	61	62	31	21	6	60	17	35	51	7			
Ethiopia 2000	86	85	24	34	5	62	10	29	70	4 ^e			
Gabon 2000	95	95	86	54	18	86	48	92	57	17 ^d			
Ghana 1998	94	93	73	70	29	83	55	86	85	46			
Guinea 1999	70	69	26	33	4	63	15	55	55	6			
Kenya 1998	98	98	72	88	53	97	80	93	95	37			
Madagascar 1997	72	69	49	43	21	55	29	50	60	13			
Malawi 2000	99	98	61	80	60	95	70	92	96	26 ^d			
Mali 2001	78	76	19	33	13	68	21	62	57	11 ^d			
Mauritius 1991 ^f	100	100	NA	93	88	99	88	95	94	73			
Mozambique 1997	62	60	13	28	4	57	43	40	53	3			
Namibia 1992	90	90	60	60	27	82	41	71	85	15			
Niger 1998	80	75	23	42	11	68	33	40	63	18			
Nigeria 1998	44	41	16	19	7	34	20	23	34	7			
Rwanda 2000	97	97	78	61	18	83	48	80	88	9			
Senegal 1997	86	83	54	58	7	74	54	67	58	21			
South Africa 1998	98	98	46	78	44	95	80	89	97	21			
Tanzania 1999	95	95	62	69	30	93	60	87	88	23			
Togo 1996	97	93	91	83	23	77	75	86	87	31			
Uganda 2000-01	98	98	62	79	39	94	53	88	93	20 ^d			
Zambia 1996	98	98	70	74	20	93	48	94	88	10			
Zimbabwe 1999	99	99	66	64	43	98	70	94	93	13 ^d			
mean (unweighted)	91	91	61	58	21	80	39	84	69	17			
median	85	84	53	57	24	76	45	71	71	18			
NEAR EAST & NORTH AFRICA													
Egypt 2000	100	100	78	75	16	100	100	68	99	58			
Jordan 1997	100	100	99	96	31	100	100	84	92	72			
Mauritania 2000-01	71	68	38	16	6	64	34	57	4				
Morocco 1997	99	99	72	85	7	99	87	72	62	31			
Turkey 1998	99	99	91	83	45	96	97	85	76	51			
Yemen 1997	84	79	60	40	24	76	64	74	56	19			
mean (unweighted)	99	99	75	79	20	97	92	70	69	41			
median	92	91	74	67	21	89	80	61	74	39			
ASIA													
Bangladesh 1999-2000 ^g	100	100	79	90	77	100	90	90	98	90			
Cambodia 2000	96	95	81	64	47	98	115	79	90	1			
ASIA (continued)													
India 1998-99	99	99	97	98	80	98	80	80	80	80			
Indonesia 1997	97	97	32	61	36	94	85	66	94	12			
Nepal 2001	100	100	54	99	90	93	55	91	97	40 ^d			
Pakistan 1990-91	78	77	25	70	20	62	52	53	62	13			
Philippines 1990	98	98	94	93	70	97	97	95	89	NA			
Vietnam 1997	93	93	61	91	90	98	98	93	93	10			
mean (unweighted)	96	96	56	81	67	88	78	78	81	20			
LATIN AMERICA & CARIBBEAN													
Bolivia 1999	97	97	37	78	43	97	67	85	88	37			
Colombia 1998	89	86	78	65	31	79	80	72	63	40			
Brazil 1996	100	100	91	97	80	99	77	99	89	11			
Colombia 2000	100	100	95	98	80	99	98	99	98	83 ^d			
Costa Rica 1993	100	100	91	84	64	100	97	99	89	60			
Dominican Rep. 1996	100	100	91	98	57	94	93	93	91	63			
Ecuador 1994	96	93	71	89	30	98	88	81	78	45			
El Salvador 1998	99	99	58	94	60	96	83	94	95	49			
Guatemala 1998-99	85	85	50	76	58	79	54	60	73	33			
Haiti 2000	99	99	70	72	52	97	40	95	97	23 ^d			
Honduras 2001	100	100	59	99	59	99	96	99	98	46			
Jamaica 1997	100	100	88	97	61	100	86	99	99	61			
Nicaragua 2001	99	99	67	91	65	98	90	95	97	37 ^d			
Paraguay 1998 ^f	93	93	95	85	26	96	88	95	93	55			
Peru 2000	99	98	87	93	80	95	91	92	96	72 ^d			
Puerto Rico 1996	100	100	95	98	92	99	88	99	81	90			
mean (unweighted)	99	99	83	92	60	98	88	95	92	40			
median	97	97	76	88	59	95	82	91	89	53			
ALL DEVELOPING COUNTRIES													
mean (unweighted)	98	97	62	74	31	92	67	86	87	23			
median	91	90	62	70	39	84	63	76	78	31			
EASTERN EUROPE & CENTRAL ASIA													
Armenia 2000	99	98	91	48	20	83	93	90	49	22 ^d			
Azerbaijan 2001 ^h	88	87	65	38	8	58	83	58	10	11			
Czech Republic 1993 ⁱ	100	100	97	82	67	99	97	99	NA	89			
Georgia 1999	98	97	85	51	14	73	96	91	5	14			
Kazakhstan 1999	100	100	89	58	31	89	99	95	60	37			
Kyrgyz Republic 1997	100	100	81	59	NA	73	100	85	67	30			
Moldova 1997 ^j	100	99	96	77	27	67	100	97	25	32			
Romania 1999 ^k	100	99	98	79	10	92	95	98	NA	51			
Turkmenistan 2000	99	99	60	42	11	79	99	68	75	10 ^d			
Ukraine 1999	100	100	96	71	40	91	99	99	51	62			
Uzbekistan 1996	96	96	99	77	NA	96	95	94	64	10			
mean (unweighted)	100	99	89	58	27	79	97	91	51	22			
median	98	98	82	57	30	80	96	85	45	36			

Notes: ^a Rows do not add to 100 because women could answer many methods as they know. ^b Figures in parentheses are percentages. ^c Figures in parentheses are percentages. ^d Data for women ages 15-49. ^e Data for women ages 15-49. ^f Data for women ages 15-49. ^g Data for women ages 15-49. ^h Data for women ages 15-49. ⁱ Data for women ages 15-49. ^j Data for women ages 15-49. ^k Data for women ages 15-49. ^l Data for women ages 15-49. ^m Data for women ages 15-49. ⁿ Data for women ages 15-49. ^o Data for women ages 15-49. ^p Data for women ages 15-49. ^q Data for women ages 15-49. ^r Data for women ages 15-49. ^s Data for women ages 15-49. ^t Data for women ages 15-49. ^u Data for women ages 15-49. ^v Data for women ages 15-49. ^w Data for women ages 15-49. ^x Data for women ages 15-49. ^y Data for women ages 15-49. ^z Data for women ages 15-49. ^{aa} Data for women ages 15-49. ^{ab} Data for women ages 15-49. ^{ac} Data for women ages 15-49. ^{ad} Data for women ages 15-49. ^{ae} 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for women ages 15-49. ^{ew} Data for women ages 15-49. ^{ex} Data for women ages 15-49. ^{ey} Data

Most breastfeeding women surveyed—from 50% in Peru to 94% in Mali—said they were relying on breastfeeding to avoid pregnancy. Yet in 12 countries studied, few breastfeeding women met the LAM criteria—from 3% in Haiti to 20% in Mali (50).

Awareness and Availability of Contraception

In order to use contraception, people must know about it, regard its use as beneficial, and be able to obtain the methods that they want to use. Surveys find that awareness of contraception is nearly universal among married women in developing countries and that most people approve of family planning.

In most countries the mass media, especially television and radio, are a key source of information about family planning. Most women who know about contraception also know where to obtain it. Sources of contraception, whether public, private, or other, vary widely from country to country.

Awareness and Approval

In 37 of 60 developing countries surveyed, at least 95% of married women know of at least one contraceptive method (modern or traditional).⁶ In 36 countries, at least 95% know of at least one modern method (see Table 4).

Even in rural areas, 70% or more of married women are aware of at least one modern contraceptive method except in several African countries. Urban-rural differences in awareness of contraception tend to be smaller than urban-rural differences in contraceptive use. In 13 of the 60 surveyed countries, women in rural areas are as likely as women in urban areas are to know of at least one modern method. In 17 countries, however, awareness of a modern method ranges from 15 to 42 percentage points higher among urban women than among rural women. Of these 17 countries, 12 are in sub-Saharan Africa, the others being Bolivia, Guatemala, Mauritania, Pakistan, and Yemen (see Web Table G).

Awareness of specific contraceptive methods varies substantially among surveyed countries (see Table 4). For instance, awareness of OCs is widespread, but in a few countries fewer than half of married women know about OCs. Similarly, male condoms are among the best-known contraceptive methods in the world, but in eight surveyed countries fewer than half of married women know of this method.

⁶ In the DHS respondents are first asked to name all contraceptive methods that they have heard of. They are then asked if they recognize any of the methods that they did not mention spontaneously. Data in this report include both spontaneous and prompted responses.

While awareness of at least one contraceptive method is necessary for use, knowledge of a range of effective methods is essential to informed choice of family planning and makes contraceptive use more likely. The option to switch methods is central to continued use of family planning. Having a range of methods helps people switch methods when their needs change, rather than use one that has become inappropriate or unsatisfactory or else discontinue use of contraception altogether (128).

The average number of contraceptive methods that women know about varies substantially among countries. At one extreme, among countries surveyed by the DHS, in Chad women know of an average of only 1.4 methods. At the other extreme, in Bangladesh, Colombia, the Dominican Republic, Jordan, and Peru, women are aware of an average of nine methods.

Approval of family planning. In 27 of 50 countries with survey data, more than half of married women say that they approve of family planning and think that their husbands also approve of it (see Web Table H). Among 24 developing countries outside sub-Saharan Africa, only in Mauritania, Pakistan, and Yemen does joint approval fall below 50%.

Many women approve of family planning, while they believe their husbands may not approve. In sub-Saharan Africa approval among women, regardless of husband's approval, averages 74%. Elsewhere, women's approval ranges from 76% in the Near East and North Africa to 88% in Latin America and the Caribbean.

The Mass Media

Family planning programs often rely on mass media campaigns to inform people about contraception and influence social norms concerning family planning. Television, radio, and other mass media have a powerful influence on people's attitudes and behavior concerning family planning and fertility (13, 83).

In every surveyed sub-Saharan African country, radio reaches far more women with family planning messages



In Zambia two young men read for a peer education radio show. Radio, television, and other mass media have a powerful influence on people's attitudes and behavior and on social norms concerning family planning.

Table 5. Exposure to Mass Media

Exposure to and Acceptability of Family Planning Messages, All Women Ages 15-49, 1990-2001

Region, Country & Year	% Wn										Total Cases/100k	Women's Rate/100k	Men's Rate/100k	Total Cases/100k	Women's Rate/100k	Men's Rate/100k		
	Least Cases/100k	Least Rate/100k	Health TV at least	Least Case/100k	Least Rate/100k	Health TV at least	Least Case/100k	Least Rate/100k	Health TV at least	Least Case/100k								
AFRICA																		
S/FR. SAHARAN AFRICA																		
Burkina Faso 1996-99	NA	16	33	7	16	14	40	NA	29	35	10	25	14	29	15	NA	NA	
Cameroon 1990	NA	15	21	3	9	7	26	46	NA	16	10	14	3	69	64	NA	NA	
Central African Rep. 1994-95	65	NA	14	35	17	12	88	NA	NA	46	10	38	16	44	28	NA	NA	
Chad 1996-97	NA	23	5	21	0	7	82	NA	140	48	4	23	20	38	19	667	418	
Comoros 1996	NA	23	5	21	0	4	41	NA	NA	23	37	37	4	77	18	NA	NA	
Cote d'Ivoire 1994-98	NA	26	19	76	1	7	11	11	NA	30	5	16	3	16	11	NA	NA	
Egypt 1995	NA	30	18	76	0	77	18	NA	100	100	11	67	14	71	16	181	187	
Ethiopia 2000	11	NA	4	13	1	4	NA	64	NA	77	11	77	9	69	40	89	91	
Ghana 2000	NA	10	11	47	6	44	19	median	45	51	10	47	11	41	23	111	111	
Ghana 1996	NA	59	19	51	3	31	82	43	58	53	12	47	11	46	35	85	85	
Guinea 1999	NA	25	25	45	3	21	18	73	76	73	13	46	11	45	34	87	87	
Kenya 1990	NA	53	26	52	2	18	16	91	NA	89	1	16	46	9	39	78	78	
Madagascar 1997	NA	40	14	17	0	6	67	NA	NA	NA	21	47	1	27	26	NA	NA	
Malawi 2000	NA	31	24	31	3	20	27	NA	NA	NA	14	23	6	15	9	NA	NA	
Malawi 1997	NA	37	10	13	1	3	37	NA	NA	NA	15	61	9	56	49	NA	NA	
Mali 2001	67	NA	30	24	1	4	37	NA	NA	NA	13	57	13	55	42	NA	NA	
Mozambique 1997	NA	NA	14	16	1	5	37	NA	NA	NA	14	46	11	40	32	NA	NA	
Nigeria 1996	NA	14	25	70	1	11	11	NA	NA	NA	21	47	1	27	26	NA	NA	
Nigeria 1990	51	NA	26	25	NA	NA	NA	NA	NA	NA	14	23	6	15	9	NA	NA	
Rwanda 2000	39	NA	6	31	0	4	NA	NA	NA	NA	15	61	9	56	49	NA	NA	
Senegal 1997	NA	NA	NA	12	24	5	18	71	NA	65	63	15	57	13	55	42	NA	NA
South Africa 1990	72	NA	61	24	66	7	49	91	NA	62	71	60	14	46	11	40	32	NA
Tanzania 1999	28	NA	4	27	42	1	3	NA	NA	62	67	10	44	83	31	91	91	
Togo 1998	NA	17	13	71	3	11	18	NA	NA	NA	14	39	3	22	16	61	61	
Uganda 2000-01	38	NA	10	33	0	19	9	NA	NA	NA	10	40	0	30	22	NA	NA	
Zambia 1996	NA	36	29	74	39	7	10	17	NA	NA	42	40	0	30	22	NA	NA	
Zimbabwe 1999	NA	43	32	22	47	3	28	NA	NA	NA	1	47	46	11	40	32	NA	NA
Zimbabwe 1999	NA	33	25	20	30	2	10	NA	NA	NA	1	47	46	11	40	32	NA	NA
Zimbabwe 1999	NA	36	26	25	30	2	16	NA	NA	NA	1	47	46	11	40	32	NA	NA
mean (unweighted)	53	NA	19	1	31	36	NA	NA	NA	NA	43	39	3	22	16	61	61	
mean (unweighted)	50	NA	19	1	31	36	NA	NA	NA	NA	43	39	3	22	16	61	61	
NEAR EAST & NORTH AFRICA																		
Egypt 2000	47	NA	19	7	36	10	16	NA	NA	43	1	47	46	11	40	32	NA	NA
Jordan 1997	44	NA	19	7	36	10	16	NA	NA	43	1	47	46	11	40	32	NA	NA
Mauritania 2000-01	NA	21	27	10	31	2	21	NA	NA	NA	3	23	31	31	20	91	91	
Morocco 1992	76	NA	65	7	14	6	12	7	NA	NA	70	34	41	33	14	18	18	
Yemen 1990	NA	NA	1	11	36	48	10	88	NA	NA	63	63	49	39	30	NA	NA	
Yemen 1997	NA	NA	11	25	8	22	14	61	NA	NA	1	13	23	39	14	NA	NA	
mean (unweighted)	50	21	63	4	20	19	35	89	NA	NA	NA	NA	37	NA	NA	NA	NA	
mean (unweighted)	51	21	61	5	23	21	48	88	NA	NA	NA	NA	37	NA	NA	NA	NA	
mean (unweighted)	51	21	61	5	23	21	48	88	NA	NA	NA	NA	37	NA	NA	NA	NA	

Population Reports

* Data not available

† On referral

‡ On-referral

§ Women ages 15-44

¶ Ever married women

than television (see Table 5). Elsewhere, however, in 20 of 32 countries, especially in Eastern Europe and Central Asia, more women get family planning information from television. The reach of family planning messages broadcast through the mass media including both radio and television has grown since 1990 (see Web Table 5).

Approval of family planning messages. Throughout the developing world most women find family planning messages in the mass media acceptable, and levels of approval are rising. In all surveyed countries except Chad and Pakistan, more than half of women say that mass media family planning messages are acceptable—from an average of 74% in sub-Saharan Africa to 91% in Latin America and the Caribbean (see Table 5). The level of acceptability increased in 8 of 10 countries with at least two surveys since 1990 (see Web Table 5).

Availability of Family Planning

Recently, the DHS has begun the Service Provision Assessment (SPA) surveys. These collect information on the availability and quality of care for family planning, sexually transmitted infections, HIV/AIDS, child health, and maternal health. The SPA surveys differ from their predecessors, the Service Availability surveys, in that they collect data from a nationally representative sample of all types of facilities—from dispensaries to hospitals—in the public and private sectors rather than from health officials and community leaders.

The first two of these new assessments, in Kenya in 1999 and in Bangladesh in 1999–2000, found that 88% and 85%, respectively, of all health facilities in the two countries provided family planning services. In both countries 89% of health facilities provided injectables. In Kenya 88% provided condoms, and in Bangladesh, 96%. In Kenya 51% provided the IUD, and in Bangladesh, 87%. In Kenya only 11% of health facilities offered female sterilization compared with 37% in Bangladesh (74, 99). Service provision reports are near completion in Egypt, Ghana, Mexico, and Rwanda and are planned elsewhere.

Knowledge of sources. The DHS household surveys measure individual *perceptions* of family planning availability. In countries with such information, most women say they know where to obtain a contraceptive method (36). For example, in 9 of 11 developing countries outside sub-Saharan Africa with applicable survey data, 90% or more of married women know where to obtain at least one modern method. The exceptions are Pakistan and Yemen, where the figures are 45% and 27%, respectively (36).

In sub-Saharan Africa knowledge of sources varies widely among surveyed countries. In four countries over 80% of married women know a source of modern contraception. In six other countries, however, fewer than half know a source.

While most women who know about contraception also know where to obtain it, in some countries there is a large gap between awareness of a method and knowledge of its source. In Burkina Faso, for example, 63% of married women know of a modern contraceptive method, but only 28% know a source for it. Substantial gaps also exist in Niger, Pakistan, Senegal, and Yemen (36).

Public, private, and other sources. The public sector is the main supplier of contraception in developing countries as a whole (36). Nevertheless, in the Near East and North Africa and in Latin America and the Caribbean, private providers supply more than half of OCs and injections. In sub-Saharan Africa and in Asia, private sources supply more than half of condoms.

Sources vary by type of contraceptive. In many countries more than half of users of clinical methods, such as IUDs and injectables, obtain them at a stationary government facility. In contrast, outside sub-Saharan Africa private pharmacies are a major source of methods such as condoms and OCs (36).

Other Direct Influences on Fertility

Along with contraceptive use, several other factors influence fertility levels directly (17). These “proximate determinants” of fertility include women’s age at first marriage or first entry into any union (legal, consensual, or otherwise), the length of the period of postpartum insusceptibility to conception, and induced abortion.

These factors are especially important in explaining fertility levels and fertility declines where access to family planning information and services is poor and thus contraceptive use has not played an important role (15). Some researchers contend that, as contraceptive use becomes so widespread that substantial further increases are unlikely, the other proximate determinants will play relatively more important roles in future fertility changes (48).

In addition to these direct factors, of course, many other factors—social, economic, and cultural factors and family planning program effort—influence fertility. These, however, are indirect in their influence. They affect fertility by affecting one or more of the proximate determinants. For example, increases in women’s status and educational achievement are indirect factors. They often increase the age at first marriage and the use of contraception, two of the factors that affect fertility directly.

Age at First Marriage

The age at which a woman first experiences sexual intercourse and is thus at risk of pregnancy and childbearing has an important effect on fertility: the older her age, the lower her potential lifetime fertility. Although some childbearing occurs before marriage, the age at marriage (or, in some countries, age at the start of a consensual union) often represents the beginning of regular sexual activity.

Among surveyed countries, in North Africa and the Near East the average age at first marriage has risen from below 18 for the oldest women (ages 45 to 49 at the time of survey) to 20.6 for women ages 25 to 29 (see Web Table I). Less dramatic downward pressures on fertility are apparent in sub-Saharan Africa and Asia, but not in Latin

America and the Caribbean, where the median age at first marriage seems to have been steady at almost exactly 20 years for two decades or more.

A rising age at first marriage helps lower the birth rate, especially where there is little control of fertility within marriage. While the precise relationship of age at marriage to fertility is difficult to measure, surveys reveal a strong inverse relationship between the average age at marriage and the TFR in a country.

Not every married woman is at risk of pregnancy, while some unmarried women are at risk of pregnancy because they are sexually active (see p. 27). In a study of Nigerian women in 1990, for example, 36% of married women reported that they were not sexually active—over 80% due to postpartum sexual abstinence. At the same time, 38% of unmarried women reported that they *were* sexually active (26).

■ Postpartum Insusceptibility

Postpartum insusceptibility to pregnancy includes postpartum amenorrhea, which occurs between the birth of a child and the resumption of ovulation, and postpartum abstinence from sexual intercourse. The length of postpartum amenorrhea depends primarily on the intensity and length of breastfeeding (61, 105).

The period of postpartum insusceptibility is longest by far in sub-Saharan Africa; the median duration averages over 15 months. This long duration reflects mainly postpartum amenorrhea in all but 5 of 28 countries with data. The length of postpartum insusceptibility is much shorter in other regions (see Web Table J). In all surveyed countries outside sub-Saharan Africa, the period of postpartum amenorrhea is longer than the period of postpartum abstinence.

Worldwide, in 30 countries with data from two surveys since 1990, declines in the duration of postpartum insusceptibility to pregnancy have typically been small (averaging only one-half of one month). The changes have had little effect on fertility levels.

In Nepal a young woman awaits her marriage ceremony. Women's age at marriage is one of several important factors that, along with contraceptive use, affect fertility levels directly.

■ Induced Abortion

In countries where women are trying to limit their fertility but where family planning services are inadequate, many pregnant women seek abortions to avoid unintended births (24, 58). In countries where abortion is legal and well reported, as in Eastern Europe and Central Asia, surveys find that the percentage of women who report having had at least one abortion varies widely.

Rates of abortion are high in some countries. For example, 47% of women in Armenia, 43% in Georgia and

Ukraine, and 40% in Kazakhstan have had at least one abortion (see Web Table K). At the other extreme, in Haiti only 7% of surveyed women report that they have had at least one abortion. Reliable estimates of the level of abortion do not exist for most countries, however.

Generally, the percentages of women who report at least one abortion are higher in urban areas and among more educated women. Also, as might be expected, the percent of women who have ever had an abortion rises with women's age. Analysis of DHS data from Kazakhstan, the Kyrgyz Republic, and Uzbekistan however, found evidence of declines in abortion: young women were more likely to have used contraception after the birth of their first child than the older generations, thus reducing abortion levels among younger ages (137).

Rising contraceptive use eventually reduces the abortion rate in countries where abortion has been widely practiced (54, 67). In Central Asia and in some countries of Eastern Europe, for instance, as contraception becomes more widely available, it appears to be replacing abortion as a means of birth control (101). Analysis of data from three Central Asian republics estimated that abortion rates would decrease between 13% and 20% for every 10% increase in contraceptive prevalence (132, 137).

In Romania between 1993 and 1999, the percentage of married women using modern contraceptive methods increased from 14% to 30% (see Web Table 3). At the same time, the total induced abortion rate (that is, the number of abortions a woman would have in the course of her reproductive years at today's age-specific abortion rates) fell from 3.4 to 2.2 abortions per woman (102, 103) (see Web Table K).

Reductions in abortion rates can occur without increases in overall contraceptive use if couples switch to more effective family planning methods. In Turkey abortion rates declined because many women switched from traditional contraceptive methods, with high failure rates, to modern contraceptive methods. The result was fewer contraceptive failures and thus less recourse to induced abortion (54, 101).

■ Infertility

Surveys suggest that problems of infertility are especially serious in sub-Saharan Africa. Infertility is hard to define (16), however, and even harder to measure. The level of "primary infertility" can be defined as the percentage of women who have never given birth and who are unable to produce a live birth. The minimum level of primary infertility is estimated at about 3% (22). The level of "secondary infertility" represents the percentage of women of reproductive age who have given birth but who are no longer able to do so (16).

Levels of primary infertility are measured by the percentage of women who are childless after a given number of years of marriage (usually seven) or, for women who have reached the end of their childbearing years, the percentage who are childless. Levels of primary infertility are highest in Central and West Africa—including Cameroon, Central African Republic, Chad, Niger, and Nigeria (65).

Levels of secondary infertility are measured by the percentage who have given birth but have not had a child within a given number of years (usually seven) (65). Levels of secondary infertility vary more among countries than do levels of primary infertility. They are considerably higher, as well. For example, levels of secondary infertility for women ages 20 to 44 are above 20% in Cameroon, Central African Republic, Lesotho, Mauritania, and Mozambique (65). Levels among surveyed sub-Saharan countries are lowest in Burundi, Rwanda, and Togo, at about 5%.

Widespread infertility can have a substantial effect on a country's fertility rates. For example, if the low infertility levels of Burundi were found in the countries that currently have much higher levels, fertility rates in those countries might be as much as one child or more higher (65).

Comparing the Direct Influences

Of all the direct influences on fertility, contraceptive use is the single most important for reproductive health policy-makers and program managers. Nevertheless, other proximate determinants are important influences on fertility and could affect future fertility levels. For example, a rising age at first marriage has contributed to recent declines in fertility in many countries, especially in Asia and in the Near East and North Africa (124).

One study of the relative importance of the different proximate determinants of fertility in four sub-Saharan countries found that fertility declines were larger than would be expected based upon increases in contraceptive use rates alone. While increases in contraceptive prevalence accounted for the largest proportion of the declines, other factors also contributed directly (15).

These factors included use of more effective contraceptives, some delay in initiation of marriage and sexual relations, and lower coital frequency among women wanting no more children or wanting to delay the next child. The mix of these factors was different in the different countries, but all played a role to some degree in reducing fertility levels (15, 58).

Fertility Preferences

Increasingly, married women of reproductive age in developing countries want to stop having children. More women, too, are having the number of children they want at the time they want them and are avoiding unintended pregnancies. Still, many women have more children than they want, and many who do not want to become pregnant are sexually active but nevertheless not using any contraceptive method—despite the risk of pregnancy.

Reproductive Intentions

The DHS and RHS programs ask nonsterilized women whether they want to have more children and, if so, whether they want to have another child soon or to delay childbearing for at least two years. Replies to these questions provide the basis for data on reproductive intentions—whether a woman does not want to have any more children (limit births), wants to have a child but not for at least two years (space births), or to have a child within two years. Data on reproductive intentions can help programs estimate future demand for family planning services and are useful in making projections of population growth (135).

Overall, the percentage of married women in developing countries who want to continue having children is about equal to the percentage who want to stop having children. In 27 of 60 developing countries surveyed, more than 50% of married women of reproductive age want to end childbearing. In sub-Saharan Africa, however, only in Cape Verde, Kenya, Mauritius, and South Africa do a majority of surveyed women want no more children. In the region an average of one-third of married women want to end childbearing (see Table 6, next page).

Among 30 surveyed developing countries outside sub-Saharan Africa, only in Mauritania do a majority of married women want to continue having children, whether soon or after at least two years. In Latin America and the Caribbean three women in every five want to end childbearing; nearly as many women in Asia report the same. In the Near East and North Africa about half no longer want to have children. In Eastern Europe and Central Asia this level is 63%.

Trends. The percentage of married women who want to end childbearing rose at least 10% in 13 of 37 developing countries with multiple surveys since 1990. Half of such countries are in sub-Saharan Africa. In most other countries reproductive intentions changed little since 1990. A few countries saw dramatic increases in the percentage of women who want to stop having children, especially considering the short time between surveys since 1990. In Malawi in 1992, 25% of women reported that they did not want to have any more children; in 2000, 42% (see Web Table 6).

Desired Family Size

In the DHS (but not the RHS) women with children⁷ are asked, "If you could return to the time when you did not have any children and could choose the number of children you have in your whole life, how many would that be?" Women without children⁷ are asked, "If you could choose exactly the number of children to have in your whole life, how many would that be?" Responses to these questions provide data about desired family size. Changes in desired family size can indicate how social norms about fertility are changing (9, 135).

⁷ Ever-married women are asked this question in countries that do not survey unmarried women (in Asia and the Near East and North Africa). Data in this section, Table 6, and Web Table 6 report these data only for married women in order to facilitate cross-national comparisons.

Table 6. Desire for More Children
Among Married Women Ages 15–49, 1990–2001

Region, Country & Year	% Who						Region, Country & Year	% Who					
	Want to Have Another Within 2 Years	Want to Have Another in More Than 2 Years	Are Undecided If or When	Want No More	Are Sterilized	Want to End Childbearing ^a		Want to Have Another Within 2 Years	Want to Have Another in More Than 2 Years	Are Undecided If or When	Want No More	Are Sterilized	Want to End Childbearing ^a
SUB-SAHARAN AFRICA							ASIA (continued)						
Benin 2001	24	37	10	26	0	26	India 1998–99	15	13	3	28	36	64
Burkina Faso 1998–99	20	44	12	20	0	20	Indonesia 1997	16	25	9	46	3	50
Cameroon 1998	34	31	10	18	2	20	Nepal 2001	12	17	3	44	21	66
Cape Verde 1998	8	9	9	61	13	74	Pakistan 1990–91	23	18	16	36	4	40
Central African Rep. 1994–95	36	27	17	12	0	12	Philippines 1998	12	19	5	51	10	62
Chad 1996–97	33	39	12	10	0	10	Vietnam 1997	5	16	5	66	7	73
Comoros 1996	24	31	9	30	3	33	median	12	17	5	45	7	60
Côte d'Ivoire 1998–99	29	39	7	21	0	21	mean (unweighted)	13	18	9	45	11	56
Eritrea 1995	21	51	6	18	0	18	LATIN AMERICA & CARIBBEAN						
Ethiopia 2000	22	36	6	32	0	32	Belize 1999	NA	NA	NA	28	18	46
Gabon 2000	26	29	18	22	1	23	Bolivia 1998	9	13	3	65	7	71
Ghana 1998	18	35	8	34	1	35	Brazil 1996	7	12	3	32	43	74
Guinea 1999	35	31	6	21	0	21	Colombia 2000	11	15	2	42	28	70
Kenya 1998	14	25	5	47	6	53	Costa Rica 1993	8	29	3	39	21	60
Madagascar 1997	21	32	6	37	1	38	Dominican Rep. 1996	14	18	2	22	41	63
Malawi 2000	16	37	2	38	5	42	Ecuador 1999	11	17	3	46	23	69
Mali 2001	26	38	12	21	0	22	El Salvador 1998	8	24	3	33	32	65
Mauritius 1991 ^b	3	3	2	85	7	92	Guatemala 1998–99	11	22	6	41	18	58
Mozambique 1997	35	29	14	16	1	17	Haiti 2000	13	21	6	54	3	57
Namibia 1992	26	30	7	26	8	34	Honduras 2001	7	35	1	39	18	57
Niger 1998	33	46	8	10	0	10	Jamaica 1997	10	28	11	39	12	51
Nigeria 1990	31	33	16	15	0	15	Nicaragua 2001	10	22	1	39	26	65
Rwanda 2000	15	45	5	33	1	34	Paraguay 1998 ^b	12	37	4	40	8	48
Senegal 1997	24	39	10	23	1	23	Peru 2000	9	19	2	55	13	67
South Africa 1998	16	12	7	44	18	62	Puerto Rico 1996	10	18	2	20	50	70
Tanzania 1999	28	36	4	27	2	29	median	10	21	3	39	20	64
Togo 1998	19	35	14	28	0	29	mean (unweighted)	10	22	3	39	22	62
Uganda 2000–01	19	35	5	36	2	38	ALL DEVELOPING COUNTRIES						
Zambia 1996	25	39	4	26	2	29	median	16	28	6	36	3	47
Zimbabwe 1999	19	32	7	38	3	41	mean (unweighted)	18	27	7	36	9	45
median	24	35	8	26	1	29	EASTERN EUROPE & CENTRAL ASIA						
mean (unweighted)	23	33	9	29	3	32	Armenia 2000	8	9	6	72	3	74
NEAR EAST & NORTH AFRICA							Azerbaijan 2001 ^b	14	9	2	68	1	69
Egypt 2000	13	14	6	64	1	65	Czech Rep. 1993 ^b	13	8	8	68	3	71
Jordan 1997	16	27	3	47	4	51	Georgia 1999 ^b	21	7	7	63	2	65
Mauritania 2000–01	28	32	12	19	0	19	Kazakhstan 1999	12	13	12	55	3	58
Morocco 1992	18	24	3	49	3	52	Kyrgyz Rep. 1997	12	26	10	45	2	47
Turkey 1998	11	14	5	62	4	66	Moldova 1997 ^b	22	13	4	58	3	61
Yemen 1997	17	22	7	48	2	49	Romania 1999 ^b	18	9	4	66	3	69
median	17	23	5	48	2	52	Turkmenistan 2000	13	17	10	53	2	55
mean (unweighted)	17	22	6	48	2	51	Ukraine 1999 ^b	6	8	11	74	1	75
ASIA							Uzbekistan 1996	13	24	10	51	1	52
Bangladesh 1999–2000 ^c	12	24	3	52	7	59	median	13	9	8	63	2	65
Cambodia 2000	9	13	30	35	1	37	mean (unweighted)	14	13	8	61	2	63

Rows may not add to 100 because some categories (self-reported infertile, don't know) were not included; also due to rounding.

^aWomen who want no more and those who are sterilized.

^bData for married women ages 15–44.

^cData for married women ages 10–49.

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Desired number of children. Among 50 developing countries surveyed since 1990, married women say they want an average of 4.7 children (see Table 7). This average conceals a large difference between sub-Saharan Africa and other regions. Outside sub-Saharan Africa desired family size averages 3.3 children. In contrast, among the

28 sub-Saharan African countries surveyed, desired family size averages 5.7 children.

In all sub-Saharan countries with data except South Africa, women's desired number of children exceeds 4, reaching as many as 8.5 in Chad and Niger. Elsewhere, women want more than four children only in Jordan, Mauritania,

Table 7

Desired Family Size

Among Married Women Ages 15–49, 1990–2001

Desired and wanted fertility data not available for RHS countries.

^a The difference between the total and wanted fertility rates.

^b Data for women ages 10–49.

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Region, Country & Year	Desired Family Size	Wanted Fertility Rate	Total Fertility Rate	Total Unwanted Fertility ^a	Region, Country & Year	Desired Family Size	Wanted Fertility Rate	Total Fertility Rate	Total Unwanted Fertility ^a
SUB-SAHARAN AFRICA					ASIA				
Benin 2001	5.2	4.6	5.6	1.0	Bangladesh				
Burkina Faso 1998–99 ..	5.9	5.7	6.4	0.7	1999–2000 ^b	2.5	2.2	3.3	1.1
Cameroon 1998	6.5	4.3	4.8	0.5	Cambodia 2000	3.9	3.0	3.8	0.8
Central African					India 1998–99	2.7	2.1	2.8	0.7
Rep. 1994–95	6.7	4.7	5.1	0.4	Indonesia 1997	2.9	2.4	2.8	0.4
Chad 1996–97	8.5	6.1	6.4	0.3	Nepal 2001	2.6	2.5	4.1	1.6
Comoros 1996	5.7	3.7	4.6	0.9	Pakistan 1990–91 ..	4.1	4.3	4.9	0.6
Côte d'Ivoire 1998–99 ..	5.9	4.5	5.2	0.7	Philippines 1998 ..	3.5	2.7	3.7	1.0
Eritrea 1995	6.6	5.7	6.1	0.4	Vietnam 1997	2.5	1.9	2.3	0.4
Ethiopia 2000	5.8	4.7	5.5	0.8	median	2.8	2.4	3.5	1.1
Gabon 2000	5.4	3.5	4.2	0.7	mean				
Ghana 1998	4.6	3.6	4.4	0.8	(unweighted)	3.1	2.6	3.5	0.9
Guinea 1999	5.9	5.0	5.5	0.5	LATIN AMERICA & CARIBBEAN				
Kenya 1998	4.1	3.5	4.7	1.2	Bolivia 1998	2.8	2.5	4.2	1.7
Madagascar 1997	5.7	5.2	6.0	0.8	Brazil 1996	2.5	1.8	2.5	0.7
Malawi 2000	5.3	5.2	6.3	1.1	Colombia 2000	2.5	1.8	2.6	0.8
Mali 2001	6.5	6.1	6.8	0.7	Dominican				
Mozambique 1997.....	6.2	4.7	5.2	0.5	Rep. 1996	3.4	2.5	3.2	0.7
Namibia 1992	5.7	4.8	5.4	0.6	Guatemala				
Niger 1998	8.5	7.0	7.2	0.2	1998–99	3.7	4.1	5.0	0.9
Nigeria 1990	6.2	5.8	6.0	0.2	Haiti 2000	3.3	2.8	4.7	1.9
Rwanda 2000	5.0	4.7	5.8	1.1	Nicaragua 2001	3.2	2.3	3.2	0.9
Senegal 1997.....	5.7	4.6	5.7	1.1	Peru 2000	2.6	1.8	2.8	1.0
South Africa 1998	3.3	2.3	2.9	0.6	median	3.0	2.4	3.2	0.8
Tanzania 1999.....	5.7	4.8	5.6	0.8	mean				
Togo 1998	4.9	4.2	5.2	1.0	(unweighted)	3.0	2.4	3.5	1.1
Uganda 2000–01	5.1	5.3	6.9	1.6	ALL DEVELOPING COUNTRIES				
Zambia 1996	5.7	5.2	6.1	0.9	median	4.8	4.1	4.8	0.7
Zimbabwe 1999	4.3	3.4	4.0	0.6	mean				
median	5.7	4.7	5.5	0.8	(unweighted)	4.7	3.9	4.7	0.8
mean (unweighted)	5.7	4.7	5.5	0.8	EASTERN EUROPE & CENTRAL ASIA				
NEAR EAST & NORTH AFRICA					Armenia 2000	2.8	1.5	1.7	0.2
Egypt 2000	2.9	2.9	3.5	0.6	Kazakhstan 1999 ..	3.0	1.9	2.0	0.1
Jordan 1997	4.2	2.9	4.4	1.5	Kyrgyz Rep. 1997 ..	3.9	3.1	3.4	0.3
Mauritania 2001–01	6.8	4.1	4.5	0.4	Turkmenistan 2000	3.7	2.7	2.9	0.2
Morocco 1992	3.9	2.7	4.0	1.3	Uzbekistan 1996 ..	3.8	3.1	3.3	0.2
Turkey 1998	2.5	1.9	2.6	0.7	median	3.7	2.7	2.9	0.2
Yemen 1997	4.5	4.6	6.5	1.9	mean				
median	4.1	2.9	4.2	1.3	(unweighted)	3.4	2.4	2.7	0.3
mean (unweighted)	4.1	3.2	4.3	1.1					

Pakistan, and Yemen. In no surveyed country do married women report their desired family size at or below replacement-level fertility (for a definition see p. 3).

Trends. On average, desired family size fell about 0.2 children among married women in 32 developing countries with more than one survey since 1990 (see Web Table 7). Declines were 0.5 children or more in six sub-Saharan African countries and in Yemen. The only substantial increase between surveys was in Rwanda; desired family size rose from 4.4 children in 1992 to 5.0 in 2000.

Changes in desired family size in the 1990s reflect a continued long-term trend of wanting smaller families. In the 1980s surveys in many countries reported substantial declines in women's family size preferences compared with data from the World Fertility Survey in the 1970s (97, 136). Still, in many countries, desired family size—and, concurrently, fertility rates—remain substantially above the rates in developed countries.

Wanted and unwanted fertility. Despite increases in contraceptive use, many women still do not achieve their fertility goals. Among 50 developing countries surveyed since 1990, married women have an average of nearly one child more than they want (see Table 7, last column). A birth is considered wanted if the number of living children at the time of conception is less than the desired number of children reported by a respondent.

Levels of unwanted fertility depend on the proportion of women who want no more children and how many of them succeed in preventing another birth (19). These data are used to calculate the “wanted fertility rate”—the fertility rate in a country if there were no unwanted births—and also the “unwanted fertility rate.” The wanted fertility rate is calculated the same way as the total fertility rate (TFR) (see p. 3 for calculation of the TFR) but does not count unwanted births. The unwanted fertility rate is the difference between the TFR and the wanted fertility rate.

Why are married women having more children than they desire? Unwanted fertility tends first to rise and then to fall as countries move through the demographic transition (19). During early stages of the transition, when fertility is high, most women want many children and thus little unwanted fertility exists. In Niger, for example, unwanted fertility rates are among the lowest of all developing countries, at 0.2, while the TFR is the highest found in the surveys, at 7.2, and only 5% of married women use contraception.

Unwanted fertility levels tend to be particularly large in the middle stages of the transition to lower fertility. As more women want to have smaller families, levels of unwanted fertility rise. This trend occurs because desired family size falls faster than contraceptive use increases. In Haiti, for instance, women have about two more children than they say they want, the TFR is 4.7, and 28% of married women use contraception.

Then, in the later stages of the transition, as more and more women use contraception, unwanted fertility falls along with fertility itself. In Indonesia, for example, unwanted fertility averages 0.4 children per woman, the TFR is 2.8, and 57% of married women use contraception.



In Indonesia an outreach agent poses outside a health clinic. Despite rising levels of contraceptive use, programs need to reach millions of women with unmet need—that is, those who want to avoid pregnancy but do not use contraception.

Unmet Need for Family Planning

Around the world more than 620 million married women were using contraception in 2000, **Population Reports** estimates—almost 500 million in developing countries. Millions of other women, married and unmarried, are not using contraception, however, even though they are sexually active and want to avoid pregnancy. Such women are considered to have unmet need for family planning (133, 134).

The DHS and RHS calculate unmet need somewhat differently, but these differences are small and thus data on unmet need are comparable. As calculated in the DHS, the unmet need category includes: fecund women (women who are able to produce live offspring) who are sexually active and are not using contraception but who say they want to limit or space their births; women who are pregnant but whose pregnancies are unwanted or mistimed due to lack of contraceptive use at the time of conception (not including contraceptive failures); and postpartum women who are not yet menstruating and whose pregnancies were unintended. The RHS calculation is similar but does not include women who are currently pregnant with an unintended pregnancy, nor does the calculation include postpartum women.

In 1996 an estimated 102 million married women of reproductive age in developing countries had unmet need for family planning (88). In 2000 a new estimate calculated that 105 million married women and 8 million unmarried women in developing countries had unmet need (94).

While the percentage of women with unmet need fell in many countries in the 1990s, the number of women of reproductive age increased. Thus the number of women with unmet need changed little (94, 133).

Based on DHS and RHS survey data for 60 developing countries, an estimated unweighted average of 21% of married women of reproductive age have an unmet need for family planning: 12% for limiting births and 9% for spacing. Among developing regions, the level is highest in sub-Saharan Africa, at 24%. It is lowest in Latin America and the Caribbean, at 16% (see Table 8).

Unmet need among married women is greatest in Haiti, at 40%, and Yemen, at 39%. At the other extreme, unmet need among married women falls below 10% in Brazil, Colombia, Costa Rica, Indonesia, Mauritius, Puerto Rico, and Vietnam.

In sub-Saharan Africa about two-thirds of unmet need among married women is for spacing births, a statistic that reflects the fact that the majority of married women want to continue having children (see p. 21). In other developing regions levels of unmet need for spacing births are about half of total unmet need. (For more on spacing births, see

Table 8

Unmet Need^a for Family Planning

Percentage
Among Married
Women
Ages 15–49,
1990–2001

NA = Not available

Rows may not add due to rounding.

^a Unmet need defined as fecund, sexually active married women who are not using contraception but who say they want to limit or space their births; women who are pregnant but whose pregnancies are unwanted or mistimed; and postpartum women who are not yet menstruating and whose pregnancies were unintended.

^b Unmet need defined as fecund, sexually active married women who are not using contraception but who say they want to limit or space their births.

^c Unmet needs for spacing and limiting are indirect estimates based on a declared desire for additional children or not.

^d Data for women ages 15–44.

^e Data for women ages 10–49.

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Region, Country & Year	For Spacing	For Limiting	Total	Region, Country & Year	For Spacing	For Limiting	Total
SUB-SAHARAN AFRICA				ASIA (continued)			
Benin 2001	18	10	27	Cambodia 2000.....	17	15	33
Burkina Faso 1998–99	19	7	26	India 1998–99	8	8	16
Cameroon 1998.....	13	6	20	Indonesia 1997	4	5	9
Cape Verde 1998 ^{b,c}	4	10	14	Nepal 2001	11	16	28
Central African Rep. 1994–95	12	5	16	Pakistan 1990–91	16	15	32
Chad 1996–97	7	3	10	Philippines 1998	8	11	19
Comoros 1996	22	13	35	Vietnam 1997	4	4	7
Côte d'Ivoire 1998–99	20	8	28	median	8	9	17
Eritrea 1995	21	6	28	mean (unweighted)	10	10	20
Ethiopia 2000	22	14	36	LATIN AMERICA & CARIBBEAN			
Gabon 2000	20	8	28	Belize 1999 ^b	NA	NA	21
Ghana 1998	11	12	23	Bolivia 1998	7	19	26
Guinea 1999	16	8	24	Brazil 1996	3	5	7
Kenya 1998	14	10	24	Colombia 2000	3	4	6
Madagascar 1997.....	14	11	26	Costa Rica 1993 ^b	2	3	5
Malawi 2000	17	13	30	Dominican Rep. 1996 ..	7	5	13
Mali 2001	21	8	29	Ecuador 1999 ^b	13	6	19
Mauritius 1991 ^{b,c,d}	1	5	6	El Salvador 1998 ^b	11	12	23
Mozambique 1997.....	17	6	23	Guatemala 1998–99	12	11	23
Namibia 1992	15	7	22	Haiti 2000	16	24	40
Niger 1998	14	3	17	Honduras 2001 ^b	NA	NA	11
Nigeria 1990	16	5	21	Jamaica 1997 ^b	7	7	14
Rwanda 2000	24	12	36	Nicaragua 2001.....	6	9	15
Senegal 1997	26	9	35	Paraguay 1998 ^{b,d}	9	8	17
South Africa 1998	5	10	15	Peru 2000	4	7	10
Tanzania 1999	14	8	22	Puerto Rico 1996 ^b	2	2	4
Togo 1998	21	11	32	median	7	7	14
Uganda 2001	21	14	35	mean (unweighted)	7	9	16
Zambia 1996	19	8	27	FOR ALL DEVELOPING COUNTRIES			
Zimbabwe 1999.....	7	6	13	median	12	8	21
median	16	8	25	mean (unweighted)	12	9	21
mean (unweighted)	16	8	24	EASTERN EUROPE & CENTRAL ASIA			
NEAR EAST & NORTH AFRICA				Armenia 2000	3	9	12
Egypt 2000	3	8	11	Azerbaijan 2001 ^{b,d}	3	9	12
Jordan 1997.....	7	7	14	Czech Rep. 1993 ^{b,d}	4	11	15
Mauritania 2000–01 ..	23	9	32	Georgia 1999 ^{b,d}	6	17	23
Morocco 1992	9	11	20	Kazakhstan 1999	4	5	9
Turkey 1998	4	6	10	Kyrgyz Rep. 1997	5	7	12
Yemen 1997	17	21	39	Moldova 1997 ^{b,d}	3	3	6
median	8	8	17	Romania 1999 ^{b,d}	2	4	6
mean (unweighted)	10	10	21	Turkmenistan 2000	5	5	10
ASIA				Ukraine 1999 ^{b,d}	5	12	17
Bangladesh 1999–2000 ^e	8	7	15	Uzbekistan 1996	7	7	14
				median	4	7	12
				mean (unweighted)	4	8	12

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Unmarried women. Among unmarried women, whether or not sexually active, unmet need for family planning is substantially higher in sub-Saharan Africa than in other regions, at 10%, compared with 1% to 2% in Asia, the Near East and North Africa, and Latin America and the Caribbean (94). Unmet need among unmarried women is lower than for married women because many unmarried women are not sexually active, while those who are sex-

ually active tend to use contraception more than married women (94) (see p. 11).

Trends. Among 37 countries surveyed more than once since 1990, unmet need fell an average of 14%. As noted, levels of unmet need typically rise as more and more women want to control their fertility and then fall as more and more women use contraception to do so (134). In Senegal and Uganda, for example, unmet need grew about 20% between surveys. In contrast, declines of 40% or more took place in Colombia, Egypt, Ghana, and Honduras (see Web Table 8).

Table 9. Young Adult Premarital Sexual Activity and Marriage, 1990-2001

Region, Country & Year	% Reporting Any Premarital Intercourse ^a		Median Age at First Sexual Intercourse ^b		% Reporting Sexual Activity in the Last 4 Weeks		Median Age at First Sexual Intercourse ^c		Median Age at First Marriage ^d		
	All	Women 15-19	All	Women 20-24	All	Unmarried Women 15-19	All	Women 20-24	All	Women 20-24	
	Women 20-24	20-24	Women 15-19	20-24	Unmarried Women 15-19	Unmarried Women 20-24	Women 15-19	20-24	Women 15-19	20-24	
SUB-SAHARAN AFRICA											
Benin 2001	41	55	17.2	19.1	28	28	68	7	19	17.0	18.0
Burkina Faso 1998-99	23	31	17.3	17.6	22	22	39	2	6	19.6	20.9 ¹
Cameroun 1998	42	57	16.3	18.6	45	45	47	10	23	18.7	21.0 ¹
Cape Verde 1998 ^e	39	78	17.1	19.0	37	37	59	10	28	18.4	21.4 ¹
Central African Rep.											
1994-95	32	49	16.0	17.4	40	40	45	2	8	19.3	21.3
Chad 1996-97	13	18	16.0	16.1	20	20	42	2	3	18.7	20.3
Comoros 1996	8	16	19.7 ^h	20.4 ^h	8	8	24	0	2	19.0	19.5
Côte d'Ivoire											
1998-99	47	68	16.2	19.7 ^h	46	46	38	2	7	18.2	20.6 ¹
Ethiopia 1995	1	6	17.9	17.6	1	1	18	2	7	18.2	19.0
Ethiopia 2000	3	10	18.1	18.1	4	4	90	11	15	17.1	17.0 ¹
Gabon 2000	56	73	16.2	20.4 ^h	25	25	22	3	9	18.1	18.7
Ghana 1998	27	54	17.5	19.3	21	21	62	8	15	17.0 ^h	20.2 ^h
Guinea 1999	21	29	16.0	16.6	11	11	44	4	11	19.6	21.9 ^h
Kenya 1998	37	66	17.3	20.2 ^h	16	16	25	6	21	NA	18.0
Madagascar 1997	35	54	17.0	18.8	16	16	46	5	10	18.7	20.3
Malawi 2000	34	40	17.1	18.2	7	7	47	5	12	18.5	19.9
Mali 2001	24	50	15.9	16.7	12	12	24	0	0	17.5	19.1
Mozambique 2001 ^f	31	61	16.0 ^h	17.4 ^h	33	33	46	8	16	17.5	19.1
Namibia 1992	36	68	16.6	24.9 ^g	29	29	42	9	19	17.9	19.3
Niger 1998	20	31	15.7	15.7	4	4	25	6	21	NA	18.0
Nigeria 1998	20	30	17.0	17.8	16	16	47	5	12	18.5	19.9
Rwanda 2000	8	20	20.3 ^h	21.0 ^h	2	2	1	0	0	19.7 ^h	19.8 ^h
Senegal 1997	8	15	19.1	19.9	5	5	97	NA	NA	21.5 ^h	21.5 ^h
South Africa 1998	42	79	17.0	24.7 ^h	37	37	54	NA	NA	17.7	21.0
Tanzania 1999	36	54	16.9	19.0	15	15	26	4	11	20.9 ^h	20.9 ^h
Togo 1998	51	69	17.2	18.8 ^h	20	20	17	0	1	20.0	20.7 ^h
Uganda 2000-2001	31	44	16.7	17.7	17	17	2	0	1	19.5	19.5
Zambia 1996	44	54	16.6	18.5	20	20	40	3	21	NA	20.0
Zimbabwe 2001 ^f	26	56	18.9 ^h	19.7 ^h	5	5	58	12	32	19.5	22.1
mean (unweighted)	32	54	17.1	18.8	12	12	46	1	6	21.9 ^h	22.0 ^h
median (unweighted)	29	45	17.2	18.9	11	11	30	1.5	3.6	17.8	20.0
ASIA											
Cambodia 2000	1	5	19.9 ^h	19.9 ^h	1	1	2	0	0	19.7	19.8
Philippines 1998	2	9	22.0 ^h	22.7 ^h	1	1	28	4	10	19.7	20.7

Median age at first sexual intercourse: the age by which half of the population in that age group had sex at least once. Median age at first marriage: the age at which half of the population in that age group was married. ^a First intercourse is a condition premarital if the age of first sexual intercourse is less than the age at marriage. ^b Countries marked with ^h the marital, pre-, and post-relationship with partner is asked about first intercourse. If the partner is reported as husband, intercourse is classified as premarital if it occurred at least one month before marriage. ^c Data from 1991 survey. ^d Data from 1991 survey. ^e Data from 1995-96 survey. ^f Data from 1995-96 survey. ^g Data from 1999 survey. ^h Data from 1991 survey. ⁱ Data from 1991 survey. ^j Data from 1995-96 survey. ^k Data from 1995-96 survey. ^l Data from 1995-96 survey. ^m Data from 1995-96 survey. ⁿ Data from 1995-96 survey. ^o Data from 1995-96 survey. ^p Data from 1995-96 survey. ^q Data from 1995-96 survey. ^r Data from 1995-96 survey. ^s Data from 1995-96 survey. ^t Data from 1995-96 survey. ^u Data from 1995-96 survey. ^v Data from 1995-96 survey. ^w Data from 1995-96 survey. ^x Data from 1995-96 survey. ^y Data from 1995-96 survey. ^z Data from 1995-96 survey. ^{aa} Data from 1995-96 survey. ^{ab} Data from 1995-96 survey. ^{ac} Data from 1995-96 survey. ^{ad} Data from 1995-96 survey. ^{ae} Data from 1995-96 survey. ^{af} Data from 1995-96 survey. 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Young Women

The DHS and RHS programs increasingly are surveying unmarried youth⁸ in addition to married couples. The great majority of survey data about unmarried young women in developing countries come from sub-Saharan Africa and Latin America and the Caribbean.⁹ Few comparable surveys in other developing countries include unmarried women. Surveys in Eastern Europe and Central Asia include data for unmarried women as well as married women.

Such surveys since 1990 show that, in sub-Saharan Africa and Latin America and the Caribbean, although the proportion of young women having premarital sex has changed very little, the average length of time between young women's onset of sexual activity and marriage is increasing. In sub-Saharan Africa the gap is widening because women are marrying later. In Latin America and the Caribbean women are starting to have sex at younger ages than in the past. Surveys also find that a growing percentage of sexually active unmarried young women are using contraception, especially condoms, which protect against both pregnancy and most sexually transmitted infections (STIs), including HIV/AIDS.

Sexual Activity

Surveys ask women ages 15 to 24 whether they have ever had sex. Answers provide information about the proportion who have ever been exposed to the risks of pregnancy and STIs. Surveys also ask whether young women have been sexually active within four weeks before the survey (as an indication of whether they are currently sexually active).

Premarital sexual experience. Among adolescent women (ages 15 to 19), reported levels of premarital sexual experience are slightly higher in sub-Saharan Africa (29%) than in Latin America and the Caribbean (24%). Half or more of surveyed adolescent women in Belize, Gabon, Jamaica, and Togo report having sexual experience before marriage. In contrast, in the three Asian countries whose surveys include comparable data, levels of premarital intercourse among women ages 15 to 19 are negligible (see Table 9).

Among 30 developing countries with more than one survey since 1990, levels of adolescent premarital sexual experience remained about the same. Repeat surveys in Colombia and Paraguay reported increases of 18 and 12 points respectively. In contrast, levels in Ghana fell 19 points—nearly by half—between 1993 and 1998 (see Web Table 9).

⁸ The terms "youth," "adolescents," and "young people" are defined variously. For example, WHO refers to people between the ages of 10 and 19 as adolescents and the larger age group 10 to 24 as young people. This issue of **Population Reports** uses the term "adolescents" for women ages 15 to 19, and "youth" or "young women" for those ages 15 to 24.

⁹ The standard DHS questionnaire covers all married and unmarried women ages 15 to 49 except where countries restrict coverage by age or marital status. The RHS program conducts the Young Adult Reproductive Health Surveys (YARHS) in countries that request such a survey. Also, a young adult module is part of the standard RHS, including unmarried women where requested.

Additional Survey Data Online

For readers who are interested in obtaining all of the data used for this issue of **Population Reports**, supplementary data tables are available for download and printing from the World Wide Web at <http://www.infoforhealth.org/pr/m17/m17tables.shtml>

A "surveys package" is also available upon request. This package includes a CD-ROM with Excel files of all tables used in preparing this report (including those below), scanned PDF files of all five of the **Population Reports** survey data issues (see box p. 14), and POPLINE abstracts of the most useful bibliographic items in these issues.

Requests for this CD-ROM package can be addressed to: Orders Department (Surveys CD-ROM) Information and Knowledge for Optimal Health Project 111 Market Place, Suite 310, Baltimore, MD 21202, USA Phone: 410-659-6300 Fax: 410-659-6266 or by e-mail to: Orders@jhucpp.org (Please include your full name and address and e-mail.)

All data tables published in this report (Tables 1–14) also appear as Web Tables on the Internet with additional data included from earlier DHS and RHS surveys for countries with more than one survey since 1990. Thus, for example, "Web Table 5" is comparable to "Table 5" in this report but with data from earlier surveys as well as the most recent. In addition, the following 11 supplementary data tables appear on the Internet but not in the printed report, as follows:

Supplementary Data Tables

Web Table A. Total Fertility Rates and Age-Specific Fertility Rates, All Women Ages 15–49, 1990–2001

Web Table B. Total Fertility Rates, All Women Ages 15–49, by Education and Residence, 1990–2001

Web Table C. Contraceptive Use, Unmarried, Sexually Active Women Ages 15–49, 1990–2001

Web Table D. Contraceptive Use by Women's Characteristics, Married Women Ages 15–49, 1990–2001

Web Table E. Intention to Use Contraception, Married Women Ages 15–49, 1990–2001

Web Table F. Reasons for Nonuse of Contraception, Married Women Ages 15–49, 1990–2001

Web Table G. Knowledge of Modern Contraceptives, Married Women 15–49, by Women's Characteristics, 1990–2001

Web Table H. Attitudes of Couples Toward Family Planning, 1990–2001

Web Table I. Age at First Marriage, Married Women Ages 15–49, 1990–2001

Web Table J. Breastfeeding and Postpartum Insusceptibility, Married Women Ages 15–49, 1990–2001

Web Table K. Abortion Rates, Married Women Ages 15–49, 1990–2001



In many surveyed sub-Saharan countries, married women under the age of 20 have low levels of contraceptive use, at an average 13%. In this region sexually active unmarried women ages 15 to 19 are three times as likely as married women in the same age group to use contraception. Around the world, most young women become sexually active only after they marry or enter a union. Nevertheless, many become sexually active beforehand.

As might be expected, unmarried women ages 20 to 24 are more likely than women ages 15 to 19 to be sexually experienced. In sub-Saharan Africa and in Latin America and the Caribbean, nearly half of surveyed women ages 20 to 24 report having had premarital intercourse. Levels reach nearly four of every five such women in Cape Verde and South Africa. In Latin America and the Caribbean women ages 20 to 24 are two to three times more likely to have had premarital sex than women ages 15 to 19 in every country except Belize (see Table 9, p. 26).

Among women ages 20 to 24, the percentage reporting premarital intercourse increased only slightly (an average of four points) in sub-Saharan Africa in the 16 countries with trend data since 1990. In Latin America and the Caribbean premarital sexual activity among women ages 20 to 24 increased about 8 percentage points during the 1990s, rising in all 13 surveyed countries except Jamaica (see Web Table 9).

Eastern Europe and Central Asia differ substantially in levels of premarital intercourse among young women. In Central Asia and the Caucasus the levels are negligible except in Kazakhstan. In Eastern Europe half of women ages 15 to 19 in the Czech Republic and half or more of women ages 20 to 24 in the Czech Republic, Romania, and Ukraine had sex before marriage (see Table 9, p. 26).

Recent sexual activity among unmarried women. Few unmarried women ages 15 to 19 report recent sexual activity (that is, in the four weeks before being surveyed), according to data for 47 countries—11% in sub-Saharan Africa and 5% in Latin America and the Caribbean. Levels of recent sexual activity among adolescent women are highest in Cameroon, Côte d'Ivoire, Gabon, and Togo,

at between 20% and 25%. In contrast, the highest levels among unmarried adolescents in Latin America and the Caribbean are 10% in Brazil and Colombia, and 11% in Jamaica (see Table 9, p. 26).

Recent sexual activity is considerably more common among unmarried women ages 20 to 24 than among younger unmarried women. The level averages 24% in sub-Saharan Africa and 12% in Latin America and the Caribbean.

While average regional levels of recent sexual activity among unmarried youth changed little since 1990, a few countries reported large changes. Levels of current sexual activity fell by one-half among adolescents in Ghana between 1993 and 1998. In Colombia the levels rose from 3% to 10% between 1990 and 2000 among unmarried adolescents and from 10% to 28% among the older group (see Web Table 9).

Ages at Sexual Debut and Union

Most young women become sexually active only after they marry or enter a formal union, but, as noted, many become sexually active beforehand. Even in conservative settings couples who are about to marry often start sexual intercourse before the marriage date (140).

First intercourse. Among women ages 20 to 24 in 46 developing countries surveyed since 1990, the median age at first intercourse is about 18 years. The median age at first intercourse is the age at which half of the women in this age group became sexually active.

The lowest median age at first sexual experience among all surveyed countries is in Niger, at age 15.7, while the average for 29 sub-Saharan African countries surveyed is approximately 17 years. In Latin America and the Caribbean the median age at first intercourse is between 18 and 19 among women. In Eastern Europe and Central Asia the median age at first intercourse is about 20 (see Table 9, p. 26).

The median age at first intercourse increased by about two months, on average, among 15 sub-Saharan African countries with more than one survey since 1990 (see Web Table 9). In Senegal, however, the median rose 18 months between surveys in 1992–93 and 1997. Senegal has launched a number of programs focusing on youth, including promoting safe sex through the media and street theater, providing HIV prevention and health education in schools, offering life skills training, and trying to reach out-of-school youth and youth in the military (4, 110, 127).

In Latin America and the Caribbean the median age at first intercourse fell by about seven months overall in the 12 countries with multiple surveys. The only increases were in Bolivia and Guatemala.

First union. In sub-Saharan Africa as a whole, about half of women ages 20 to 24 have married by about age 19 (or have entered a legal, consensual, or similar union). Among sub-Saharan countries the median age at marriage is lowest in Niger at age 15.7. In surveyed countries of Latin America and the Caribbean, the median age at

first marriage is about 20, and in Eastern Europe and Central Asia nearly 21 (see Table 9, p. 26).

In sub-Saharan Africa overall the median age at marriage rose by about four months among 15 countries with more than one survey since 1990. It increased most in Senegal (see Web Table 9).

Time between sexual debut and marriage. In sub-Saharan Africa the average time between median age at first sexual intercourse and the median age at marriage is 1.7 years. In South Africa, where the median age of marriage is nearly 25, the time between onset of sexual activity and marriage is 6.9 years, the longest time among countries surveyed in any region.

In Latin America and the Caribbean the average difference between the median ages at sexual debut and marriage is 1.4 years. It is longest in Colombia, at 3.0 years. In Eastern Europe the average difference is between two and three years, while in most of Central Asia there is little or no difference.

Among 14 sub-Saharan countries with repeat surveys since 1990, the average time between median age at first intercourse and median age at first marriage increased by three months, largely because women are delaying marriage. Among 12 Latin American and Caribbean countries surveyed, the average increase was eight months, largely because women are starting sex younger (see Web Table 9).

In Eritrea the median age at marriage is younger than that at first intercourse. In some cultures girls traditionally are married at young ages, and the couple waits to consummate the marriage until the wife reaches menarche (73, 82).

ried women (ages 15 to 19). Particularly in sub-Saharan Africa and South Asia, young married women often face cultural expectations and social pressure to “prove” their childbearing abilities to their families and their husbands’ families immediately (73, 82). As a result, few married adolescents use contraception.

Conversely, sexually active young unmarried women have strong motivation to avoid pregnancy, and so they tend to use contraception (70). Still others—married or unmarried—may want to use contraception but face barriers to obtaining family planning because of their young age and unmarried status (51, 60, 106).

In sub-Saharan Africa married women ages 15 to 19 have particularly low levels of contraceptive use, at about 13% (see Table 10). Among unmarried sexually active adolescents, however, the level of contraceptive use reaches 39%. In the region some 20% of married women ages 20 to 24 use contraception compared with 49% of sexually active unmarried women in the same age group. Unmarried women most often use condoms, while married women most often use OCs or traditional methods.

In Latin America and the Caribbean an average of 39% of married women ages 15 to 19 use contraception. By comparison, 60% of sexually active unmarried women this age use contraception. Women ages 20 to 24 are even more likely to use contraception, at 51% of married women and 68% of sexually active unmarried women. Among married women, pills and injectables are the most widely used; among unmarried women, pills, condoms, and traditional methods.

In Eastern Europe and Central Asia about one-third of married adolescents use family planning, mostly traditional methods. Eight of every 10 unmarried sexually active adolescents use a family planning method; half use condoms. Among married women ages 20 to 24, IUDs and traditional methods are most used, while unmarried women this age rely on condoms as well as traditional methods.

Young Adult Contraceptive Use

In surveyed countries the highest levels of contraceptive use are among unmarried, sexually active women ages 20 to 24; the lowest levels are among adolescent mar-

Table 10

Contraceptive Use Among Young Women

Unweighted Averages of Country Data, 1990–2001

Sub-Saharan Africa: Data for 30 countries.
 Near East & North Africa: Data for 6 countries.
 Asia: Data for 8 countries.
 Latin America & Caribbean: Data for 16 countries.
 Eastern Europe & Central Asia: Data for 11 countries.

* Withdrawal and periodic abstinence.
 * Oral contraceptives.
 * Includes injectables, implants, vaginal methods, and female condom.

Numbers may not add due to rounding.

Region	% Currently Using					
	Any Method	Traditional*	OCs [†]	IUD	Condom	Other Modern [‡]
SUB-SAHARAN AFRICA						
Married 15–19	13	4	4	0	2	3
Unmarried 15–19	39	10	5	0	20	4
Married 20–24	20	5	7	0	2	5
Unmarried 20–24	49	15	10	0	17	6
NEAR EAST & NORTH AFRICA						
Married 15–19	18	5	6	5	1	1
Married 20–24	29	7	9	11	2	1
ASIA						
Married 15–19	19	3	6	2	2	6
Married 20–24	34	6	9	6	2	11
LATIN AMERICA & CARIBBEAN						
Married 15–19	39	8	15	3	6	7
Unmarried 15–19	59	17	11	2	21	8
Married 20–24	52	8	18	6	6	13
Unmarried 20–24	69	13	20	6	18	10
EASTERN EUROPE & CENTRAL ASIA						
Married 15–19	28	13	2	7	6	1
Unmarried 15–19	79	17	11	0	50	2
Married 20–24	47	19	4	17	7	1
Unmarried 20–24	49	16	8	6	16	2

Population Reports

Table 11

Adolescent Childbearing, 1990–2001

Percentage of
Women Ages
15–19 Who
Have Begun
Childbearing^a

Countries in Asia and
in the Near East and North
Africa are excluded because
only ever-married women
were surveyed.

NA = Not available

^a Women who are pregnant
or have had a child.

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Region, Country & Year	Currently Married/ In Union	Un- married	Total	Region, Country & Year	Currently Married/ In Union	Un- married	Total
SUB-SAHARAN AFRICA				LATIN AMERICA & CARIBBEAN			
Benin 2001	82	3	22	Belize 1999	78	NA	15
Burkina Faso 1998–99	69	2	25	Bolivia 1997	89	3	14
Cameroon 1998	69	10	31	Brazil 1996	82	5	18
Cape Verde 1998	79	13	18	Colombia 2000	84	8	19
Central African Rep. 1994–95	67	14	36	Costa Rica 1993	77	7	17
Chad 1996–97	77	3	39	Dominican Republic 1996	76	2	23
Comoros 1996	78	1	9	Ecuador 1999	85	6	20
Côte d'Ivoire 1998–99	80	16	31	El Salvador 1998	83	9	25
Eritrea 1995	61	0	23	Guatemala 1998–99	78	2	22
Ethiopia 2000	63	2	16	Haiti 2000	86	5	18
Gabon 2000	69	25	33	Honduras 2001	66	9	23
Ghana 1998	74	3	14	Jamaica 1997	61	7	24
Guinea 1999	75	6	37	Nicaragua 2001	77	10	25
Kenya 1998	78	9	21	Paraguay 1998	71	7	16
Madagascar 1997	78	14	36	Peru 2000	84	5	13
Malawi 2000	79	11	33	Puerto Rico 1996	100	7	18
Mali 2001	76	11	40	median	80	7	19
Mauritius 1991	74	1	9	mean (unweighted)	80	6	19
Mozambique 2001	65	9	28	ALL DEVELOPING COUNTRIES			
Namibia 1992	78	17	22	median	77	6	22
Niger 1998	68	3	43	mean (unweighted)	75	7	23
Nigeria 1990	71	2	28	EASTERN EUROPE & CENTRAL ASIA			
Rwanda 2000	79	2	7	Armenia 2000	NA	NA	6
Senegal 1997	65	5	22	Azerbaijan 2001	40	0	4
South Africa 1998	50	15	16	Georgia 1999	67	0	10
Tanzania 1999	74	10	26	Kazakhstan 1999	70	1	7
Togo 1998	77	5	19	Kyrgyz Republic 1997	71	0	9
Uganda 2000–01	84	10	31	Moldova 1997	65	1	9
Zambia 1996	84	11	31	Romania 1999	64	1	7
Zimbabwe 2001	78	7	21	Ukraine 1999	64	1	8
median	75	8	26	Uzbekistan 1996	73	0	10
mean (unweighted)	73	8	26	median	66	0	8
NEAR EAST & NORTH AFRICA				mean (unweighted)	64	0	8
Mauritania 2000–01 ..	54	0	14				
Morocco 1992	58	0	7				
ASIA							
Cambodia 2000	64	1	8				
Philippines 1998	79	1	7				

Comparable survey data for Asia and for the Near East and North Africa are available only for married youth. In both regions about one-fifth of married adolescent women use contraception, as do nearly one-third of married women ages 20 to 24.

Trends in contraceptive use. Contraceptive use among unmarried sexually active young women has increased substantially since 1990, according to repeat surveys in 23 developing countries. Contraceptive prevalence among unmarried women ages 15 to 19 increased by an average of 7 percentage points in sub-Saharan Africa and by 20 points in Latin America and the Caribbean.

In particular, sexually active unmarried adolescents were twice as likely to use condoms at the time of the later survey than at the earlier one (see Web Table 10). Increases in condom use accounted for 90% of the increase of contraceptive use in sub-Saharan Africa and 64% in Latin America and the Caribbean.

Levels of contraceptive use grew 8 percentage points among sexually active unmarried women ages 20 to 24 in sub-Saharan Africa and 18 points in Latin America and the Caribbean. Condom use was responsible for 80% of the increase in contraceptive use in sub-Saharan Africa and 60% in Latin America and the Caribbean.

In the face of the HIV/AIDS epidemic, many countries have focused on increasing young people's access to and use of condoms. In Colombia, for example, the nationwide family planning program PROFAMILIA has increasingly integrated sexual and reproductive health services into their clinics, including focusing on the needs of youth (55). Between 1990 and 2000 condom use in Colombia grew from 3% to 28% among unmarried sexually active adolescent women, and from 4% to 28% among unmarried sexually active women ages 20 to 24 (see Web Table 10).

Similarly, in Senegal condom use increased from 15% to 29% among unmarried sexually active adolescent

women and from 7% to 41% among such women ages 20 to 24 between the 1992–93 survey and the 1997 survey. Recently, Senegal has made substantial efforts to promote condom use among young people (4). (For more information on HIV/AIDS among young people, see *Population Reports, Youth and HIV/AIDS: Can We Avoid Catastrophe?*, Series L, No. 12, Fall 2001.)

Adolescent Childbearing

Worldwide, each year an estimated 15 million births take place among women ages 15 to 19 (7). Adolescent childbearing can pose particular health risks to mothers and their newborn children. Women under 20 years of age are more likely to experience maternal complications than women ages 20 and above (40, 143). Early childbearing can be especially perilous where anemia and malnutrition are common and where access to trained obstetrical care is poor (61, 107).

Unintended pregnancies, particularly among unmarried women, may lead to unsafe abortions (70). Complications of unsafe abortion account for 40% to 54% of all maternal deaths in Ethiopia, Myanmar, Senegal, and Trinidad and Tobago, for example (1).

Among 50 developing countries surveyed, an average of 23% of adolescent women, including both married and unmarried women, have given birth or are pregnant (see Table 11). Adolescent childbearing is most common in sub-Saharan Africa, at 26% of women ages 15 to 19. In the Central African Republic, Chad, Guinea, Madagascar, Mali, and Niger, over one-third of adolescent women are pregnant or have had a child.

On average, among 16 surveys in Latin America and the Caribbean, 19% of all adolescent women have begun childbearing. The levels are highest in El Salvador and Nicaragua, at 25%. In nine countries surveyed in Eastern Europe and Central Asia, about 8% of adolescent women are mothers. (Survey data for most countries in Asia, North Africa, and the Near East are available only for married adolescents and thus are not comparable.)

Most adolescents who are married or in a union have begun childbearing. In Latin America and the Caribbean, on average, 80% of married adolescents have begun childbearing, and in sub-Saharan Africa, 73%. Among all developing countries surveyed, South Africa has the lowest proportion of married adolescents who have begun bearing children, at 50%.

Among unmarried adolescents in 49 developing countries with data, an average of about 7% have started childbearing. In 13 of 30 sub-Saharan countries with data since 1990, however, between 10% and 25% of unmarried adolescents were pregnant or had had a child. Elsewhere, the highest level of childbearing among unmarried women ages 15 to 19 is in Nicaragua, at 10%.

Trends. Average levels of childbearing among adolescents, whether married or unmarried, have remained virtually unchanged, according to data from 29 countries with multiple surveys since 1990. Levels of adolescent childbearing have declined substantially, however, in Ghana, Mozambique, and Uganda (see Web Table 11).

Announcement from the Publisher USAID Awards 5-Year Global Information Project

The INFO Project succeeds and expands on the Population Information Program (PIP), which operated out of the Johns Hopkins Center for Communication Programs for over 20 years. The INFO Project will continue to offer widely used resources produced under PIP, including:

- Population Reports
- The Essentials of Contraceptive Technology
- The Pop Reporter e-zine
- The POPLINE bibliographic database
- Reproductive Health Gateway—www.rhgateway.org
- Photoshare, a collection of photographs of international reproductive health activities

A number of innovative knowledge management approaches have been added to The INFO Project's family of services. These include:

- Emphasis on cutting-edge Information Technology (IT) for sharing knowledge and facilitating information exchange in all directions, particularly among southern participants.
- Working with counterparts to assure that global content is locally relevant and that local content is globally accessible.
- Extensive collaboration with a partnership of global organizations working in developing countries to leverage resources, avoid duplication, and maximize impact and sustainability.

Key personnel for the INFO Project are:

Ward Rinehart, Project Director,
John Robinette, Deputy Project Director,
John A. Kerechek, Financial Officer, and
Tara Sullivan, Monitoring and Evaluation Specialist.

The INFO Project launched its new website July 1 at <http://www.infoforhealth.org>. The website offers access both to comprehensive information resources and to selected new information in international family planning and related reproductive health.

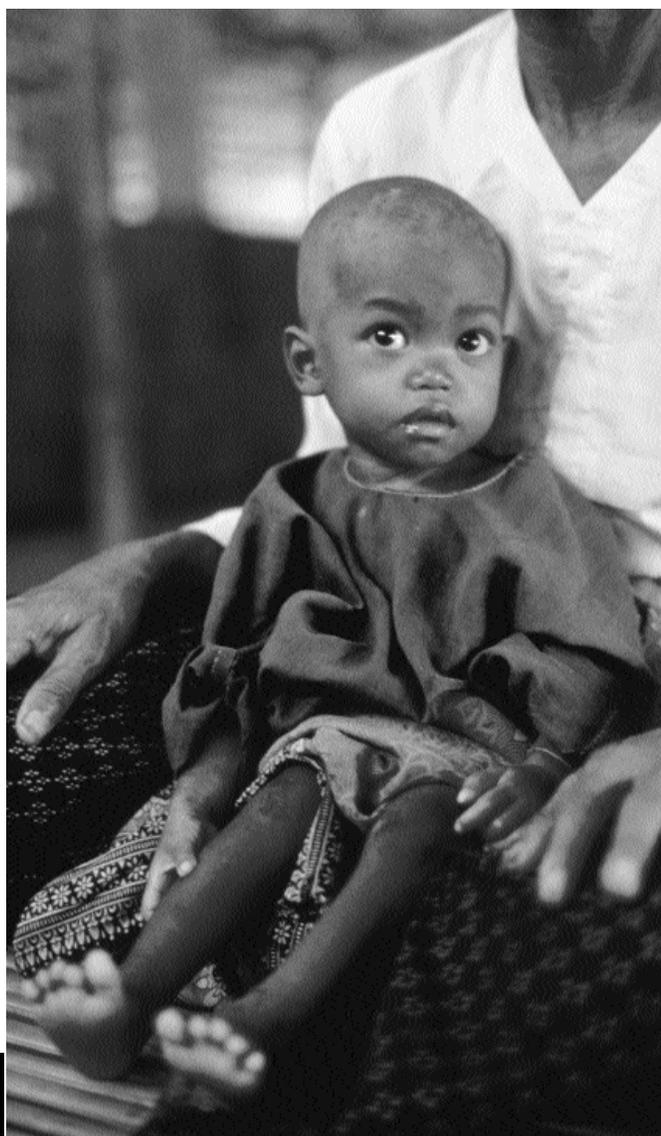


In Ghana reducing levels of adolescent childbearing has been a high priority in recent years. The government adopted a national Adolescent Reproductive Health Policy, and youth centers opened to provide information on family planning, reproductive and sexual health, and STIs and their treatment (6, 45, 84).

Child Survival and Health

During the 1990s an average of 11 million children under age five died each year in developing countries, down from 20 million annually four decades earlier. In sub-Saharan Africa, however, deaths to children under five nearly doubled during this time, rising from an estimated 2.3 million per year to 4.5 million per year (117). In 2000, 43% of the world's child deaths were among children living in sub-Saharan Africa, compared with 14% in 1960 (118).

Despite improvements in child survival in many developing countries, other countries have yet to meet the goals for reducing infant and child mortality set for 2000 at the 1990 World Summit for Children. Among these



During the past decade an average of 11 million children under the age of five died each year in developing countries.

goals was reducing levels of infant mortality (the probability of a child dying between birth and age one) and under-five mortality (the probability of a child dying between birth and age five) either by one-third or to between 50 and 70 deaths per 1,000 births, whichever was less, by 2000 (123).

In surveys conducted from 1990 to 2001, 30 of 56 countries had achieved the World Summit goal for infant mortality, and for under-five mortality, just 19. In Cameroon, Kenya, and Haiti infant mortality levels fell to between 50 and 70 deaths per 1,000 births in their first surveys of the 1990s, but then rose above these levels by the next surveys.

Countries have failed to reach the World Summit goals for various reasons. Among them are reduced commitment to childhood immunization programs, conflicts and civil strife, and mother-to-child transmission of HIV (130, 142). In contrast, breastfeeding practices have improved in many countries since 1990, with more mothers adhering to feeding practices beneficial to infant and child health and survival.

Infant and child survival rates are linked to fertility rates (10, 43, 59). A study of 23 sub-Saharan African countries concluded that differences in child survival rates accounted for much of the differences in fertility rates among countries in the 1980s and 1990s (61). One reason is that when many of their children die, couples have strong motivation to have many children.

Before the demographic transition occurs in a country, mortality levels among infants and children alike are high. Deaths to children between one and five years account for most of under-five mortality levels. When mortality and fertility rates fall during the transition, deaths to children between one and five years decrease more rapidly than among infants under twelve months.

As countries make improvements in child health care, infant deaths will begin to account for most of the under-five mortality. Thus programs that have substantially improved child survival—immunization, oral rehydration therapy, treatment for acute respiratory infections—will need to be joined with greater efforts to improve infant survival, such as improved maternal health services and better nutrition during the early weaning period (14).

■ Infant Mortality

Among 56 developing countries surveyed since 1990, for every 1,000 children born, an average of 68 die by age one. Infant mortality rates vary widely within and among developing regions. On average, infant mortality levels are highest in sub-Saharan Africa (at 87 infant deaths per 1,000 births) and lowest in Latin America and the Caribbean (at 39 per 1,000). Among countries, infant mortality is highest in Mozambique, at 135 deaths per 1,000 births, and lowest in Colombia, at 21 deaths per 1,000 births (see Table 12).

Among 37 developing countries with more than one survey since 1990, infant mortality rates improved in 12 but worsened in 6. (Changes of fewer than 10 deaths per 1,000 births are not statistically significant and thus cannot be considered to reflect real changes in the mortality

rate (96.) In sub-Saharan Africa infant mortality improved only in Ghana and Malawi; it deteriorated most in Côte d'Ivoire and Rwanda (see Web Table 12).

Elsewhere, average regional levels of infant mortality improved by between 16% and 19% from one survey to the next. In Bangladesh, Belize, Indonesia, Nicaragua, and Peru, infant mortality rates fell between 20 and 29 deaths per 1,000 births in the 6 to 9 year period between subsequent surveys. Of 28 surveyed countries outside sub-Saharan Africa, all except Cambodia, Haiti, Mauritania, Pakistan, and Yemen have reduced infant mortality to levels set as goals for 2000 at the World Summit for Children.

Infant mortality levels range widely among the nine countries with data in Eastern Europe and Central Asia, from as few as 14 deaths per 1,000 births in Ukraine to

as many as 74 in Azerbaijan and Turkmenistan. Infant mortality is higher in Central Asia and the Caucasus than in Eastern Europe. With the exception of Kazakhstan, where infant mortality rates may have increased, infant mortality levels generally have decreased in the region since 1990.

Under-Five Mortality

During the 1990s under-five mortality levels and trends were similar to those in infant mortality. The same diseases that cause the deaths of many infants also kill many children after infancy but before they reach the age of five. Differences in under-five mortality among 56 developing countries surveyed, however, are greater than differences in infant mortality.

Table 12

Infant and Childhood Mortality and Immunization Rates, 1990–2001

NA = Not available

^a For the five-year period preceding the survey.

^b According to immunization cards and mother's reporting.

^c Data for 1992–93 (immunization data NA for 1997).

^d For children 18–29 months.

^e For the ten-year period preceding the survey; data for 1998 survey NA.

Region, Country & Year	Deaths per 1,000 births ^a		% of Children 12–23 Months Fully Immunized ^b	Region, Country & Year	Deaths per 1,000 births ^a		% of Children 12–23 Months Fully Immunized ^b
	Ages 0–1	Ages 0–5			Ages 0–1	Ages 0–5	
SUB-SAHARAN AFRICA				ASIA			
Benin 2001	89	160	59	Bangladesh 1999–2000	66	94	60
Burkina Faso 1998–99 ..	105	219	29	Cambodia 2000.....	95	124	40
Cameroon 1998	77	151	36	India 1998–99.....	68	95	39
Cape Verde 1998	31	42	37	Indonesia 1997	46	58	55
Central African Rep. 1994–95	97	158	37	Nepal 2001	64	91	66
Chad 1996–97	103	194	11	Pakistan 1990–91	86	112	35
Comoros 1996	77	104	55	Philippines 1998	35	48	73
Côte d'Ivoire 1998–99 ..	112	181	51	Vietnam 1997	29	38	50
Eritrea 1995	66	136	41	median	65	93	53
Ethiopia 2000.....	97	166	14	mean (unweighted)	61	83	52
Gabon 2000	57	89	15	LATIN AMERICA & CARIBBEAN			
Ghana 1998	57	108	62	Belize 1999.....	22	26	NA
Guinea 1999	98	177	32	Bolivia 1998	67	92	26
Kenya 1998	74	112	60	Brazil 1996	39	49	73
Madagascar 1997.....	96	159	36	Colombia 2000	21	25	52
Malawi 2000	104	189	70	Dominican Rep. 1996.....	47	57	39
Mali 2001.....	113	229	29	Ecuador 1999	30	39	77
Mozambique 1997	135	201	47	El Salvador 1998.....	35	43	77
Namibia 1992	57	84	58	Guatemala 1998–99	45	59	60
Niger 1998.....	123	274	18	Haiti 2000.....	80	119	34
Nigeria 1990	87	193	29	Honduras 2001	34	45	89
Rwanda 2000	107	196	76	Nicaragua 2001	31	40	72 ^d
Senegal 1997	68	139	49 ^e	Paraguay 1995–96 ^e	27	33	50
South Africa 1998	45	59	63	Peru 2000	33	47	56
Tanzania 1999	99	147	68	median	34	45	58
Togo 1998	80	146	31	mean (unweighted)	39	52	59
Uganda 2000–01	88	152	37	ALL DEVELOPING COUNTRIES			
Zambia 1996	109	197	78	median	67	104	50
Zimbabwe 1999.....	65	102	64	mean (unweighted)	68	111	49
median	89	158	41	EASTERN EUROPE & CENTRAL ASIA			
mean (unweighted)	87	154	45	Armenia 2000	36	39	71
NEAR EAST & NORTH AFRICA				Azerbaijan 2001	74	88	NA
Egypt 2000	44	54	92	Georgia 1999	43	46	NA
Jordan 1997	29	34	21	Kazakhstan 1999.....	62	71	73
Mauritania 2001.....	70	104	32	Kyrgyz Republic 1997.....	61	72	70
Morocco 1992	57	76	76	Romania 1999.....	30	32	NA
Turkey 1998	43	52	46	Turkmenistan 2000	74	94	85
Yemen 1997	75	105	28	Ukraine 1999	14	14	NA
median	50	65	39	Uzbekistan 1996	49	59	79
mean (unweighted)	53	71	49	median	49	59	73
				mean (unweighted)	49	57	76

Population Reports

In sub-Saharan Africa under-five mortality is two to three times the average for any other region, at 154 deaths per 1,000 births. Poverty, the spread of infectious diseases including an upsurge in TB and HIV/AIDS, increases in levels of malnutrition, and limited medical services contribute to the continued high levels of under-five mortality in the region (118).

In over half of the 29 countries surveyed in sub-Saharan Africa, under-five mortality rates exceed 150 deaths per 1,000 births. Under-five mortality levels are over 200 in Burkina Faso, Mali, and Mozambique and reach 274 per 1,000 births in Niger. Among 27 surveyed countries in other regions, the highest under-five mortality rates are between 104 and 124 deaths per 1,000 births in Cambodia, Haiti, Mauritania, Pakistan, and Yemen (see Table 12, p. 33).

Among 37 developing countries with more than one survey since 1990, under-five mortality rates fell in 17, increased in 6, and remained about the same in 14. In Asia under-five mortality in the five countries with multiple surveys decreased substantially. In Latin America and the Caribbean, where under-five mortality rates are lower than in other developing regions, mortality declined substantially in 7 of 12 countries with two or more surveys since 1990.

The six countries with increases in under-five mortality rates are in sub-Saharan Africa: Burkina Faso, Cameroon, Côte d'Ivoire, Kenya, Rwanda, and Zimbabwe. In three other sub-Saharan countries, however—Malawi, Niger, and Uganda—substantial improvements in child survival occurred in the 1990s (see Web Table 12).



In Morocco and several other surveyed countries, over three-fourths of young children have been fully immunized. But in many countries immunization levels still fall far below the WHO recommendations.

Impact of HIV/AIDS

AIDS will take the lives of 3.7 million children before age five in Africa between 1995 and 2015, the UN estimates. In countries hit hardest by AIDS—Botswana, Kenya, Lesotho, Malawi, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe—projected under-five mortality rates are as much as two to three times higher than they would be in the absence of AIDS (113). Even in countries where the full impact of the HIV/AIDS epidemic has yet to be felt, further reductions in child mortality are unlikely as AIDS deaths overwhelm advances made against other causes of death (3).

One study using DHS trend data for 25 countries since 1990 estimated that in countries with high HIV prevalence rates, HIV was responsible for a substantial proportion of under-five deaths—from 13% in Tanzania to 61% in Zimbabwe (2). Other researchers have estimated that increases in the prevalence of HIV/AIDS offset improvements in child survival in Tanzania between surveys in the 1990s (71).

In all 25 countries studied, however, HIV/AIDS was not the most important factor affecting under-five mortality rates. A family's social and economic circumstances and the country's medical infrastructures were more important (2). Another study, covering 39 sub-Saharan countries, found that in Botswana, Namibia, Swaziland, Zambia, and Zimbabwe over 30 deaths per 1,000 births among children under five were due to HIV, while in 18 other countries HIV caused fewer than 10 deaths per 1,000 births (130).

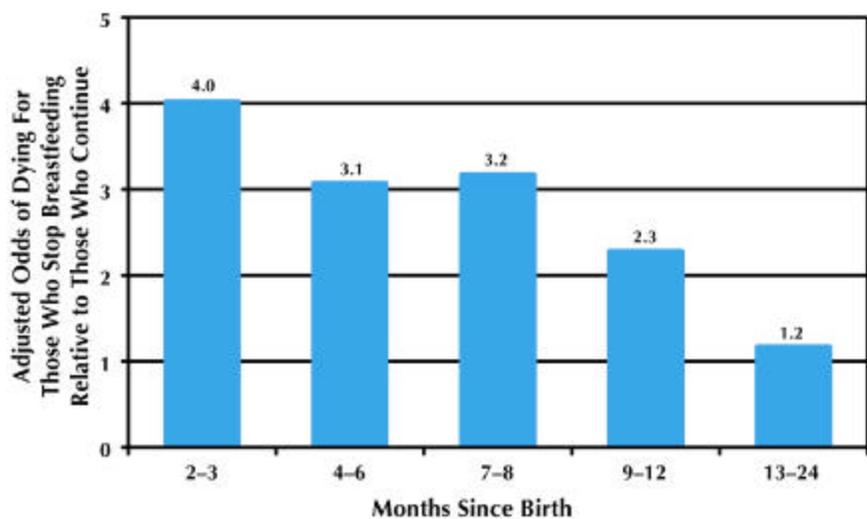
Child Immunization

The 1990 World Summit for Children set a goal of immunizing 90% of the world's children under one year of age by 2000 (123). As of the most recent survey, however, levels of full immunization for children ages 12 to 23 months reach 90% or higher only in Egypt, with Honduras close, at 89%. Full immunization among children averaged only 49% among 55 surveyed developing countries. Low levels of immunization have affected child survival in sub-Saharan African countries in particular (118).

The World Health Organization (WHO) Expanded Program on Immunization focuses on six common childhood diseases that can be prevented by immunization: diphtheria, pertussis, and tetanus (DPT), measles, polio, and tuberculosis (BCG). Full immunization includes three doses of the DPT vaccine, three doses of the oral polio vaccine, a measles vaccination, and a BCG vaccination.

Among 29 sub-Saharan countries surveyed, full childhood immunization coverage varies widely, from only 11% of children ages 12 to 23 months in Chad to 78% in Zambia. Similarly, among six North African and Near Eastern countries, immunization levels vary from 21% in Jordan to 92% in Egypt. Among eight Asian countries surveyed, lev-

Figure 2. Effect of Stopping Breastfeeding on Infant and Child Mortality



Source: Rutstein, 2002 (95)

Population Reports



Harvey Nathanson

Breastfeeding can save young lives. It offers important benefits to infants and children in health and nutrition.

els of full immunization range from one-third of children in Pakistan to about three-fourths in the Philippines. Average levels of full immunization are highest in Latin America and the Caribbean at 59%. Levels are as low as 26% in Bolivia but over 75% in Ecuador, El Salvador, and Honduras (see Table 12, p. 33).

In some countries, missing the third dose of vaccine in the DPT and polio series is the reason that complete immunization levels are low. In Uganda, for example, fewer than half of children received the third DPT and polio vaccines, although over 70% received the first in the series (109). In other countries missing a specific vaccine explains why full immunization is not achieved (37). Incomplete vaccinations can reflect flawed service delivery and logistics systems, as well as lack of health services in remote locations, and conflicts or civil unrest that disrupt health services (116, 121).

Breastfeeding and Infant and Child Health

Breastfeeding practices in developing countries appear to have improved since 1990. The level of exclusive breastfeeding among infants to three months of age increased an average of 10 percentage points for 35 countries with more than one survey since 1990, chiefly because mothers stopped introducing non-milk foods to children too early. Substantial increases in exclusive breastfeeding since 1990 took place in some countries, including an increase of 59 percentage points in Malawi (see Web Table 13).

The practice of introducing complementary foods at the appropriate time increased an average of six percentage points among 35 countries with multiple surveys. In three countries the increases were much greater—28 points in Ghana, 30 points in Bangladesh, and 38 points in Uganda.

Overall, the level of continued feeding for children 12 to 15 months and 20 to 23 months remained about the same in developing countries with multiple surveys since 1990. In El Salvador, Malawi, Nicaragua, and Peru, however, levels of continued feeding rose between 12 and 28 percentage points between surveys.

In several surveyed countries breastfeeding practices deteriorated. The level of exclusive breastfeeding fell from 32% to 15% in Jordan between surveys, as did complementary feeding in Benin (from 83% to 64%) and Turkey (from 45% to 33%). In Niger and Rwanda continued breastfeeding among children 20 to 23 months fell by 26% and 40% between surveys.

Benefits of breastfeeding. Breastfeeding provides valuable health benefits to infants and children, conferring immunity from certain diseases, avoiding exposure to unclean drinking water, and helping ensure adequate nutrition. A study of recent survey data from 17 countries illustrates the impact that breastfeeding has on infant survival. When other factors that affect mortality are accounted for, an infant is four times more likely to die if a mother stops any breastfeeding at age 2 to 3 months than an infant whose mother continues breastfeeding (see Figure 2).

Breastfeeding protects even older infants from death. For instance, infants who stop any breastfeeding between 9 and 12 months are 2.3 times more likely to die than infants who continue any breastfeeding at this time (95).

Almost all infants in developing countries receive some breastfeeding during their first three months. Survey data since 1990 from 56 developing countries show that one-third of infants under four months are exclusively breastfed—from 44% in Asia to 29% in sub-Saharan Africa. In Latin America and the Caribbean an average of 37% of

Table 13. Breastfeeding to 24 Months of Age, 1990-2001

Region, Country & Year	% of Infants of Age:				% of Infants of Age:			
	0-3 Months		6-9 Months		12-15 Months		18-23 Months	
	Not BF	Exclusive ^a	Partial ^b	Complete ^c	Exclusive ^a	Partial ^b	Complete ^c	Continued BF ^d
SUB-SAHARAN AFRICA								
Benin 2001	2	47	23	64	60	60	60	86
Burkina Faso 1998-99	1	5	88	49	86	86	86	86
Cameroun 1998	3	16	35	71	85	30	NA	54
Cape Verde 1998	2	57	15	64	60	NA	NA	69
Central African Rep. 1994-95	1	4	63	93	54	54	86	66
Chad 1995-96	3	2	82	71	91	63	98	85
Comoros 1996	3	5	48	86	80	44	78	51
Cote d'Ivoire 1998-99	2	4	77	63	91	55	48	23
Eritrea 1995	1	65	20	45	91	60	80	23
Ethiopia 2000	1	62	20	42	94	77	87	60
Gabon 2000	13	7	28	62	44	8	82	57
Ghana 1998	1	36	48	63	97	57	NA	23
Guinea 1999	2	17	68	77	73	73	76	31
Kenya 1998	1	17	33	88	54	54	33	17
Madagascar 1997	2	61	25	88	49	15	30	17
Malawi 2000	2	62	15	92	72	15	60	73
Mali 2001	2	28	62	32	93	65	31	8
Mozambique 1997	4	38	37	83	59	59	70	25
Namibia 1992	2	22	52	66	75	27	65	40
Niger 1998	2	1	85	71	95	48	83	45
Nigeria 1990	4	1	60	51	44	44	79	27
Rwanda 2000	2	88	2	75	61	61	76	34
South Africa 1998	16	10	15	62	33	33	62	36
Senegal 1997	2	14	63	62	30	30	40	15
Tanzania 1999	2	40	39	63	49	49	59	46
Togo 1998	2	15	54	80	96	77	83	27
Uganda 2000-01	2	74	5	73	44	44	62	29
Zambia 1996	3	25	45	93	91	43	60	27
Zimbabwe 1999	1	39	26	40	37	37	64	45
mean (unweighted)	2	22	45	66	93	54	70	45
mean (unweighted)	3	29	43	68	88	53	60	45
NEAR EAST & NORTH AFRICA								
Egypt 2000	4	66	18	64	79	10	29	13
Jordan 1997	6	15	32	63	42	12	NA	NA
Mauritania 2000-01	1	28	38	62	88	52	61	18
Morocco 1992	6	67	15	35	61	19	55	18
Turkey 1998	7	9	50	33	51	21	76	27
Yemen 1997	8	22	30	51	59	37	64	34
mean (unweighted)	6	25	31	57	61	25	64	18
mean (unweighted)	5	34	30	64	64	29	60	22
ALL DEVELOPING COUNTRIES								
mean (unweighted)	3	29	28	64	70	48	64	45
mean (unweighted)	4	34	35	64	70	48	60	45
EASTERN EUROPE & CENTRAL ASIA								
Armenia 2000	6	44	29	51	44	29	29	13
Azerbaijan 2001	5	NA	NA	NA	NA	NA	NA	NA
Kazakhstan 1999	1	47	38	64	47	38	61	18
Kyrgyz Republic 1995	5	30	45	55	30	45	73	18
Turkmenistan 2000	5	16	68	70	16	68	76	27
Uzbekistan 1996	5	4	60	57	4	60	64	34
mean (unweighted)	5	30	45	57	30	45	64	18
mean (unweighted)	4	28	48	59	28	48	60	22

NA - not available.

^a Exclusive - breast milk only.

^b Pre-extended - breast milk and water, and other non-milk liquids.

^c Complete - breast milk and solid or semi-solid foods.

^d Continued - any breastfeeding, independent of type of supplements.

Pre-extended = breast milk and water, and other non-milk liquids.

Complete = breast milk and solid or semi-solid foods.

Continued = any breastfeeding, independent of type of supplements.

Pre-extended = breast milk and water, and other non-milk liquids.

Complete = breast milk and solid or semi-solid foods.

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infants under four months are exclusively breastfed, and 34% in the Near East and North Africa (see Table 13).

Initiating complementary feeding too late could malnourish an infant. At about six months, infants need solid or semi-solid foods to supplement nutrients in breast milk (120). Surveys indicate that 64% of infants ages six to nine months receive complementary feeding, with substantial variation among countries (see Table 13).

Breastfeeding up to age two, in conjunction with appropriate complementary feeding, helps maintain good nutrition and also continues to help prevent diarrhea (120). Among children ages 12 to 15 months, 78% of mothers in surveyed developing countries continue any amount of breastfeeding. Levels of continued breastfeeding drop considerably between 20 and 23 months of age, to 45%. Mothers in sub-Saharan Africa and Asia are almost twice as likely to continue any breastfeeding late into the second year of a child's life as those in other developing regions (see Table 13).

Maternal Health

Skilled medical assistance during childbirth, whether at home or in a medical facility, can save women's lives. Untreated or improperly treated complications of pregnancy, delivery, and the postpartum period are a leading cause of death for women in developing countries (77). To prevent maternal complications, skilled attendants are needed to provide assistance with delivery and monitoring of the postpartum period (66, 68, 108, 129, 139). Skilled attendants include doctors, nurses, and midwives trained to manage normal deliveries and who can also diagnose and refer or else manage obstetric complications.

Antenatal care can identify and treat conditions such as malnutrition, tuberculosis, syphilis, severe anemia, pre-eclampsia, and eclampsia. Skilled attendants can supply tetanus injections and iron and folate supplements and can advise women on health and nutrition during pregnancy. Also, they can help women make preparations for the birth and plan what to do if complications arise (68).

Maternal health practices often fall short, surveys show. One-fourth of women surveyed in developing countries received no antenatal care from a skilled attendant during their most recent pregnancy within the past five years. Over one-third did not obtain any tetanus toxoid injections, and nearly one-half had no skilled attendant at delivery. Only a few countries have made substantial improvements in these maternal health indicators since 1990.

Antenatal Care

Women in developing regions vary widely in access to antenatal care, based on 60 countries surveyed. In Asia and in the Near East and North Africa, nearly 60% of pregnant women received one or more visits from a skilled provider during their most recent pregnancies. In Bangladesh, Morocco, and Yemen, however, only one-third of women received such care, and in Pakistan just

one-fourth. In contrast, in Indonesia and Jordan 9 women in every 10 received antenatal care from a skilled provider (see Table 14, next page).

In sub-Saharan Africa an average of 77% of women saw a skilled attendant for antenatal care during their last pregnancy. In each of 30 surveyed countries except Chad, Ethiopia, and Niger, at least half of pregnant women received antenatal care, and in 11 of the countries, 90% or more. In Latin America and the Caribbean the average was 86%, with much lower rates in Bolivia (65%) and Guatemala (60%). In all surveyed countries of Eastern Europe and Central Asia, 90% or more of women received antenatal care from a skilled attendant during pregnancy, except in Azerbaijan and Kazakhstan.

Since 1990 the percentage of women who received skilled antenatal care increased slightly in Asia (6 percentage points), North Africa and the Near East (8 points), and Latin America and the Caribbean (7 points), but remained about the same in sub-Saharan Africa. Among 38 countries with repeated surveys, increases of 10 points or more in antenatal care coverage occurred in Bolivia, Haiti, Jordan, Mali, Nepal, Nicaragua, and Peru. In no developing country did the percentage of women receiving skilled antenatal care decrease by more than 3 percentage points (see Web Table 14).

Tetanus Toxoid Injections

Maternal tetanus killed an estimated 150,000 to 300,000 women during the 1990s (42). Tetanus spores infect women and children through unsafe or unclean deliveries, accounting for an estimated 5% of maternal deaths and 14% of neonatal deaths (119).

Tetanus toxoid vaccines can prevent infections and save the lives of mothers and infants alike. Pregnant women should receive at least two doses of tetanus toxoid, which provide one to three years of protection (122).



In Guatemala women await antenatal care at a rural clinic. Women in developing countries vary widely in access to skilled medical assistance during pregnancy and childbirth.

Table 14

Maternal Health Indicators, 1990–2001

Percentage of Women Receiving Services

^a For pregnancies during the five years preceding the survey.

^b Doctor, nurse, or midwife.

^c One or more injections.

^d For pregnancies during the three years preceding the survey.

NA = Not available.

Population Reports

Region, Country & Year	Skilled Ante-natal Care ^{a,b}	Tetanus Toxoid Injection ^{a,c}	Gave Birth in Medical Facility ^a	Skilled Attendants at Birth ^{a,b}	Region, Country & Year	Skilled Ante-natal Care ^{a,b}	Tetanus Toxoid Injection ^{a,c}	Gave Birth in Medical Facility ^a	Skilled Attendants at Birth ^{a,b}
SUB-SAHARAN AFRICA					ASIA (continued)				
Benin 2001.....	87	71	76	73	India 1998–99 ^d	65	75	34	42
Burkina Faso					Indonesia 1997.....	89	72	21	49
1998–99.....	61	54	32	31	Nepal 2001.....	49	55	8	13
Cameroon 1998.....	79	69	54	58	Pakistan 1990–91....	26	30	13	19
Cape Verde 1998....	97	77	93	97	Philippines 1998.....	86	69	34	56
Central African Rep.					Vietnam 1997.....	71	71	62	77
1994–95.....	67	70	50	46	median	57	70	17	37
Chad 1996–97.....	32	31	11	15	mean (unweighted)	57	62	23	38
Comoros 1996.....	85	57	43	52	LATIN AMERICA & CARIBBEAN				
Côte d'Ivoire					Belize 1999.....	96	80	85	84
1998–99.....	84	75	47	47	Bolivia 1998.....	65	46	53	57
Eritrea 1995.....	49	33	17	21	Brazil 1996.....	86	59	92	88
Ethiopia 2000.....	27	26	5	6	Colombia 2000.....	91	83	88	86
Gabon 2000.....	95	80	85	87	Costa Rica 1993.....	95	NA	98	98
Ghana 1998.....	88	81	43	44	Dominican Rep.				
Guinea 1999.....	71	68	29	35	1996.....	98	96	95	95
Kenya 1998.....	92	90	42	44	Ecuador 1999.....	81	NA	69	69
Madagascar 1997....	77	50	34	47	El Salvador 1998.....	76	90	58	58
Malawi 2000.....	93	82	55	56	Guatemala 1998–99	60	56	40	41
Mali 2001.....	57	49	23	39	2000.....	80	71	17	24
Mauritius 1991.....	91	NA	92	93	Honduras 2001.....	85	94	55	55
Mozambique 1997..	71	34	44	44	Jamaica 1997.....	99	77	90	95
Namibia 1992.....	87	61	67	68	Nicaragua 2001.....	86	83	66	67
Niger 1998.....	39	34	18	18	Paraguay 1998.....	88	89	56	61
Nigeria 1990.....	59	52	32	33	Peru 2000.....	84	80	58	59
Rwanda 2000.....	92	70	27	31	Puerto Rico 1996....	99	NA	99	NA
Senegal 1997.....	82	83	48	47	median	86	80	68	67
South Africa 1998..	94	59	83	84	mean (unweighted)	86	77	70	69
Tanzania 1999.....	93	83	44	44	ALL DEVELOPING COUNTRIES				
Togo 1998.....	82	61	49	51	median	83	70	48	51
Uganda 2000–01....	92	70	37	38	mean (unweighted)	75	64	50	53
Zambia 1996.....	96	85	47	47	EASTERN EUROPE & CENTRAL ASIA				
Zimbabwe 1999.....	93	79	72	73	Armenia 2000.....	92	NA	91	97
median	84	69	44	46	Azerbaijan 2001.....	70	NA	74	89
mean (unweighted)	77	63	47	49	Czech Rep. 1993....	99	NA	NA	NA
NEAR EAST & NORTH AFRICA					Georgia 1999.....	91	NA	92	93
Egypt 2000.....	56	72	48	61	Kazakhstan 1999....	74	NA	98	99
Jordan 1997.....	96	40	93	97	Kyrgyz Rep. 1997....	97	NA	96	98
Mauritania 2000–01	64	38	49	53	Moldova 1997.....	99	NA	99	NA
Morocco 1992.....	32	54	28	31	Romania 1999.....	89	NA	98	98
Turkey 1998.....	68	44	73	81	Turkmenistan 2000..	98	NA	95	97
Yemen 1997.....	34	17	16	22	Ukraine 1999.....	90	NA	99	NA
median	60	42	48	57	Uzbekistan 1996.....	95	NA	94	98
mean (unweighted)	58	44	51	57	median	92	NA	95	97
ASIA					mean (unweighted)	90	NA	94	96
Bangladesh									
1999–2000.....	33	81	6	12					
Cambodia 2000.....	38	45	10	32					

Among 56 countries with survey data since 1990, nearly two-thirds of women obtained one or more tetanus toxoid injections during a pregnancy within five years of being surveyed (see Table 14). Tetanus immunization and antenatal care are not always linked. For example, in Jordan nearly all women surveyed received antenatal care during their last pregnancy, but only about 40% received tetanus toxoid injections. Conversely, in Egypt about half of women received antenatal care, while nearly three-fourths received tetanus toxoid injections. Nearly 30% of women receiving a tetanus toxoid injection sought no other antenatal care (39).

On average, tetanus toxoid coverage is lowest in the Near East and North Africa, at 44%. In sub-Saharan Africa and in Asia, about three pregnant women of every five have had at least one tetanus toxoid injection, as have almost four of every five in Latin America and the Caribbean.

The percentage of women who received a tetanus toxoid injection during pregnancy increased by an average of 5 percentage points among 36 countries with multiple surveys since 1990. Increases were greatest in Colombia and Peru. In four countries, however—Burkina Faso, Madagascar, Rwanda, and Uganda—tetanus toxoid immunization rates fell (see Web Table 14).

Delivery Care

When women develop obstetric emergencies or medical complications during or immediately after delivery, skilled attendants are crucial to managing the problem quickly and effectively (138). Surveys measure skilled delivery care in two ways: by the percentage of women giving birth in a health facility rather than at home and by the proportion of all births that are attended by skilled personnel, whether at home or in a health facility. Usually, the higher the level of home deliveries, the lower the level of skilled assistance. In countries where many women deliver in health facilities, skilled assistance at delivery is also high.

Delivery in a medical facility. In much of Asia and some parts of sub-Saharan Africa and the Near East and North Africa, women are far more likely to deliver at home than in a medical facility. In Asia an average of about one-fourth of pregnant women delivered in a medical facility. The range across countries is wide, from 10% or fewer in Bangladesh, Cambodia, and Nepal to 62% in Vietnam (see Table 14).

Among 30 sub-Saharan countries surveyed in the 1990s, nearly half of women who gave birth did so in a medical facility, from 5% in Ethiopia, the lowest level of all surveyed countries, to more than 90% in Mauritius and Cape Verde, near the highest level anywhere. Similarly, in the six surveyed countries of the Near East and North Africa, about half of pregnant women gave birth in a medical facility, from 16% in Yemen to 93% in Jordan.

In Latin America and the Caribbean an average of 70% of pregnant women gave birth in a medical facility. The level was lowest in Haiti, at 17% and highest in Costa Rica, at 98%, and Puerto Rico, at 99%. In every surveyed country of Eastern Europe and Central Asia, over 90% of women gave birth in a medical facility except in Azerbaijan, at 74%.

Countries in the Near East and North Africa had the greatest increases in the proportion of births in medical facilities during the 1990s, rising an average of 30% between surveys. Most striking was the increase in Egypt, where in the 2000 survey 48% of women reported that their most recent delivery was in a medical facility compared with 27% reported in 1992 (see Web Table 14).

Among sub-Saharan African countries with multiple surveys since 1990, gains in delivery care in some countries were outweighed by decreases in others. A study in eight sub-Saharan African countries with repeat surveys in the 1990s found a decline in caesarean section rates. This decline was linked partly to a decline in access to health services (27).

Skilled attendants at birth. In surveyed countries of Eastern Europe and Central Asia, nearly all women deliver with assistance from skilled attendants. In developing countries surveyed, however, skilled attendants are present at an average of only about half of births.

Women are most likely to have skilled delivery assistance in Latin America and the Caribbean, at an average of 69% of births. In Costa Rica, the Dominican Republic,

and Jamaica, skilled assistance at delivery is nearly universal. The only countries in the region where fewer than half of women deliver with the help of skilled attendants are Guatemala (41%) and Haiti (24%) (see Table 14).

Among the 30 countries surveyed in sub-Saharan Africa, about half of women deliver with skilled assistance. This average conceals wide variation, however. Sub-Saharan countries report some of the highest and the lowest levels of skilled delivery assistance, from more than 9 women in every 10 in Cape Verde and Mauritius to fewer than 1 in every 10 in Ethiopia.

The level of delivery care differs between Southeast Asia and South Asia. For example, in the Philippines 56% of women have skilled attendants during childbirth, but in Bangladesh, Nepal, and Pakistan, fewer than 20%. Among the six countries surveyed in the Near East and North Africa, the level of delivery with skilled attendants ranges from 97% in Jordan to 22% in Yemen.

Among 37 countries surveyed more than once during the 1990s, the average percentage of women who delivered with skilled assistance remained largely unchanged. In Asia and some countries in other regions, however, substantial increases occurred. A few countries had decreases in levels of skilled delivery assistance, including Burkina Faso and Yemen (see Web Table 14).

The Value of Surveys

The DHS and RHS programs provide unique survey data that are valuable in a number of ways. They fill an information gap, since many developing countries lack vital registration systems capable of producing reliable data. Even where such systems exist, they do not necessarily produce all the information needed about contraceptive use, maternal care, child mortality, and other key topics.

DHS and RHS not only provide reproductive health data useful for program and policy planning and for comparisons across countries, they also allow analytical studies to explore potentially causal relationships. In other words, surveys allow analysts to go beyond description to explanation, and especially when they are used with data from other sources, as well.

Surveys are also used for evaluating programs, measuring their effects, and improving the design of health care programs. For example, survey data have helped show the role of family planning programs in the fertility declines in developing countries.

Over the past two decades DHS and RHS surveys have substantially deepened understanding of the levels, trends, and determinants of fertility, documented the growing use of contraception in the developing world, and pointed to the need for better reproductive health services. These surveys are continually being improved to address the questions that policy-makers and program managers ask about how to deal with HIV/AIDS, how to focus on young people, how to reach the unmarried as well as the married, and other issues. As they do now, surveys will continue to offer important guidance in the future for providing access to good-quality health care for all.

Appendix Table. Surveys Covered in This Report

Region, Country & Year	Survey Type	Respondents ^a	Region, Country & Year	Survey Type	Respondents ^a
SUB-SAHARAN AFRICA			ASIA		
Benin 1996	DHS	All women ages 15-49	Bangladesh 1993-94 ..	DHS	Ever-married women ages 10-49
2001.....	DHS	All women ages 15-49	1996-97	DHS	Ever-married women ages 10-49
Burkina Faso 1993..	DHS	All women ages 15-49	1999-2000	DHS	Ever-married women ages 10-49
1998-99.....	DHS	All women ages 15-49	Cambodia 2000	DHS	All women ages 15-49
Cameroon 1991	DHS	All women ages 15-49	India 1992-93	DHS	Ever-married women ages 13-49
1998	DHS	All women ages 15-49	1998-99	DHS	Ever-married women ages 15-49
Cape Verde 1998 ..	RHS	All women ages 15-49	Indonesia 1991.....	DHS	Ever-married women ages 15-49
Central African			1994	DHS	Ever-married women ages 15-49
Rep. 1994-95	DHS	All women ages 15-49	1997	DHS	Ever-married women ages 15-49
Chad 1996-97.....	DHS	All women ages 15-49	Nepal 1996	DHS	Ever-married women ages 15-49
Comoros 1996	DHS	All women ages 15-49	2001	DHS	Ever-married women ages 15-49
Côte d'Ivoire 1994	DHS	All women ages 15-49	Pakistan 1990-91	DHS	Ever-married women ages 15-49
1998-99.....	DHS	All women ages 15-49	Philippines 1993	DHS	All women ages 15-49
Eritrea 1995	DHS	All women ages 15-49	1998	DHS	All women ages 15-49
Ethiopia 2000	DHS	All women ages 15-49	Vietnam 1997.....	DHS	Ever-married women ages 15-49
Gabon 2000	DHS	All women ages 15-49	LATIN AMERICA & CARIBBEAN		
Ghana 1993	DHS	All women ages 15-49	Belize 1991	RHS	All women ages 15-44
1998	DHS	All women ages 15-49	1999	RHS	All women ages 15-49
Guinea 1999.....	DHS	All women ages 15-49	Bolivia 1994	DHS	All women ages 15-49
Kenya 1993	DHS	All women ages 15-49	1998	DHS	All women ages 15-49
1998	DHS	All women ages 15-49	Brazil 1996	DHS	All women ages 15-49
Madagascar 1992 ..	DHS	All women ages 15-49	Colombia 1990	DHS	All women ages 15-49
1997.....	DHS	All women ages 15-49	1995	DHS	All women ages 15-49
Malawi 1992	DHS	All women ages 15-49	2000	DHS	All women ages 15-49
1996	DHS	All women ages 15-49	Costa Rica 1991	YARHS	All women ages 15-24
2000.....	DHS	All women ages 15-49	1993	RHS	All women ages 15-49
Mali 1995-96	DHS	All women ages 15-49	Dominican Rep. 1991 ..	DHS	All women ages 15-49
2001	DHS	All women ages 15-49	1992	YARHS	All women ages 15-24
Mauritius 1991	RHS	All women ages 15-44	1996	DHS	All women ages 15-49
Mozambique 1997..	DHS	All women ages 15-49	Ecuador 1994	RHS	All women ages 15-49
2001	YARHS	All women ages 15-24	1999	RHS	All women ages 15-49
Namibia 1992	DHS	All women ages 15-49	El Salvador 1993.....	RHS	All women ages 15-49
Niger 1992	DHS	All women ages 15-49	1998	RHS	All women ages 15-49
1998.....	DHS	All women ages 15-49	Guatemala 1995	DHS	All women ages 15-49
Nigeria 1990 ^b	DHS	All women ages 15-49	1998-99	DHS	All women ages 15-49
Rwanda 1992	DHS	All women ages 15-49	Haiti 1994-95	DHS	All women ages 15-49
2000	DHS	All women ages 15-49	2000	DHS	All women ages 15-49
Senegal 1992-93	DHS	All women ages 15-49	Honduras 1996	RHS	All women ages 15-49
1997.....	DHS	All women ages 15-49	2001	RHS	All women ages 15-49
South Africa 1998 ..	DHS	All women ages 15-49	Jamaica 1993	RHS	All women ages 15-44
Tanzania 1991-92 ..	DHS	All women ages 15-49	1997	RHS	All women ages 15-49
1996	DHS	All women ages 15-49	Nicaragua 1992-93	RHS	All women ages 15-49
1999	DHS	All women ages 15-49	1998	DHS	All women ages 15-49
Togo 1998.....	DHS	All women ages 15-49	2001	DHS	All women ages 15-49
Uganda 1995	DHS	All women ages 15-49	Paraguay 1990	DHS	All women ages 15-49
2000-01	DHS	All women ages 15-49	1995-96.....	RHS	All women ages 15-49
Zambia 1992	DHS	All women ages 15-49	1998	RHS	All women ages 15-44
1996	DHS	All women ages 15-49	Peru 1991-92.....	DHS	All women ages 15-49
Zimbabwe 1994	DHS	All women ages 15-49	1996	DHS	All women ages 15-49
1999	DHS	All women ages 15-49	2000	DHS	All women ages 15-49
2001	YARHS	All women ages 15-29	Puerto Rico 1996	RHS	All women ages 15-49
NEAR EAST & NORTH AFRICA			EASTERN EUROPE & CENTRAL ASIA		
Egypt 1992	DHS	Ever-married women ages 15-49	Armenia 2000	DHS	All women ages 15-49
1995	DHS	Ever-married women ages 15-49	Azerbaijan 2001	RHS	All women ages 15-44
2000	DHS	Ever-married women ages 15-49	Czech Republic 1993 ..	RHS	All women ages 15-44
Jordan 1990	DHS	Ever-married women ages 15-49	Georgia 1999.....	RHS	All women ages 15-44
1997.....	DHS	Ever-married women ages 15-49	Kazakhstan 1995	DHS	All women ages 15-49
Mauritania 2000-01	DHS	All women ages 15-49	1999	DHS	All women ages 15-49
Morocco 1992	DHS	All women ages 15-49	Kyrgyz Republic 1997..	DHS	All women ages 15-49
Turkey 1993	DHS	Ever-married women ages 15-49	Moldova 1997	RHS	All women ages 15-44
1998	DHS	Ever-married women ages 15-49	Romania 1993	RHS	All women ages 15-44
Yemen 1991-92	DHS	Ever-married women ages 15-49	1996	YARHS	All women ages 15-24
1997.....	DHS	Ever-married women ages 15-49	1999	RHS	All women ages 15-44
			Turkmenistan 2000	DHS	All women ages 15-49
			Ukraine 1999.....	RHS	All women ages 15-44
			Uzbekistan 1996	DHS	All women ages 15-49

^a Not all respondents are included in all tables reporting data from these surveys.

^b A 1999 Nigeria survey was collected with limited technical assistance from the DHS program. DHS provides the results of that survey as a courtesy to data users, but the data from that survey are not included in this report.

DHS: Demographic and Health Survey

RHS: Reproductive Health Survey

YARHS: Young Adult Reproductive Health Survey

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An asterisk (*) denotes an item that was particularly useful in the preparation of this issue of **Population Reports**.

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