



# DHS Dimensions

A semiannual newsletter of the Demographic and Health Surveys project

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## Data Quality Improved with Biomarkers

Current Demographic and Health Surveys often include biological testing for a large variety of health conditions, from HIV infection to nutritional deficiencies and chronic conditions. In the face of emerging pandemic infectious diseases, the demand for biomarker data is growing, and MEASURE DHS continues to develop new ways of measuring disease in population-based demographic surveys.

Biomarkers are biological and physiological measures of health conditions. Since 1986, DHS has been measuring the height, weight and BMI of women and children to evaluate their nutritional status. Anemia testing became a standard component of the DHS survey protocol after the 1995 Kazakhstan survey showed that respondents were comfortable with providing blood specimens for the test. Over the years, more biomarkers have been added to DHS surveys in more than 50 countries. DHS surveys have tested for syphilis, chlamydia, hepatitis B, gonorrhea, bacterial vaginosis and trichomonas, the herpes simplex virus, vitamin A, lead exposure, high blood pressure, diabetes, and immunity from vaccine-preventable diseases like measles and tetanus. As of March 2005, 22 surveys have included anonymous testing for HIV infection.

Traditionally, most of the data gathered in DHS surveys has been self-reported. Biomarkers complement this information by providing an objective profile of a specific disease or

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Photo by Kiersten Johnson, ORC Macro

## Biomarkers in Madagascar

The most recent DHS survey in Madagascar included biomarkers to measure the prevalence of anemia and syphilis, and to estimate the level of protection against tetanus and measles.

Eighty-four percent of children under 5 provided a blood sample for assessing tetanus and measles immunity. The test results showed that 48 percent of Malagasy children are not fully immunized against tetanus, and 34 percent have not been immunized for measles.

Biomarker testing also revealed that more than two-thirds of Malagasy children are anemic, and 34 percent are moderately or severely anemic.

Almost 90 percent of men and women were tested for syphilis. Approximately 6 percent tested positive.

These results are being used to determine future programs, policies and priority areas.

health condition in a population. For example, historically, mothers have reported on the immunizations received by their children. Biomarker data supplement these self-reports by testing children's capillary blood for measles or tetanus immunity.

DHS uses field-friendly equipment and rapid tests, whenever possible, to get reliable results quickly. Many tests can be carried out using only a few drops of blood from a finger or heel. The development of portable analyzers has meant that the results of some tests such as anemia, and referral for treatment if needed, can be provided to the respondent within minutes. Other tests still require specimens to be transported to the laboratory for analysis. Dried blood spots on filter paper are increasingly used for many tests including HIV testing. This has eliminated the need for cold chain and/or refrigeration of specimens, reducing considerably the complexity of storage in the field and transport to the laboratory.

DHS biomarker data have contributed to both policy and program changes in many countries. In Kazakhstan, the Kyrgyz Republic, Turkmenistan, and Uzbekistan, for example, high levels of moderate-to-severe anemia among children under 3 and among women age 15 to 49 led the governments to introduce anemia prevention programs. These programs included both iron supplementation and wheat flour fortification.

Sexually transmitted infections (STIs) such as syphilis can also be detected through biomarkers. Hepatitis B testing using rapid tests has been done in Uganda and Uzbekistan. Chlamydia testing has also taken place in Uzbekistan, while HSV-2 testing was done in Uganda. A small scale study in Ethiopia (1996) included testing for bacterial vaginosis, gonorrhea and trichomonas. Data on the prevalence of these STIs are important tools for planning interventions, establishing health services, and tracking the spread of infectious diseases.

HIV prevalence data collected in a number of DHS surveys are helping policymakers and AIDS program managers to plan more effectively for prevention and treatment interventions. Because the HIV biomarker data are linked to individual and household survey data, DHS provides program- and policy-specific HIV information, such as the ages of those infected, how much education they have, their level of wealth and their sexual behavior. This information enables more targeted education and intervention programs. HIV biomarker data are increasingly becoming one of the most reliable measures of HIV prevalence in a number of countries. In Kenya, HIV estimates derived from HIV testing in the 2003 Kenya DHS survey led the government to adjust the official HIV prevalence rate. ■



Photo by Jasbir Sangha, ORC Macro

**MEASURE DHS** assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Funded by the United States Agency for International Development (USAID), MEASURE DHS is implemented by Macro International Inc., an Opinion Research Corporation company (ORC Macro), in Calverton, Maryland, with the Johns Hopkins University Bloomberg School of Public Health's Center for Communication Programs (Hopkins CCP), PATH, Casals and Associates, and Jorge Scientific Corporation. DHS Dimensions is published twice a year to provide information about the program and the status of DHS surveys. Send correspondence to MEASURE DHS, ORC Macro, 11785 Beltsville Drive, Suite 300, Calverton, MD 20705, USA (tel.: 301-572-0200; fax: 301-572-0999; www.measuredhs.com). Project Director: Martin Vaessen.

# New Research Highlights Infertility, Improvements in Ghana's Family Planning Services, and Female Genital Cutting

## Infertility Common

More than one-fourth of couples in the developing world are believed to have difficulty bearing children, according to a new report released in January 2005. The report, *Infecundity, Infertility, and Childlessness in Developing Countries*, released jointly by the World Health Organization and the MEASURE DHS project, studied ever-married women in 47 developing countries. The report shows that one couple in 40 is childless, while one in four women develops fertility problems after bearing one or more children. Infertility is most common in sub-Saharan Africa and least common in South America.

Infertility rates are highest in parts of sub-Saharan Africa (Central African Republic, Cameroon, Mozambique, Niger), Haiti, Colombia,

and Brazil, where more than 5 percent of ever sexually active women had never had a child at the end of their reproductive years. Secondary infertility – problems having children after having given birth at least once – is surprisingly common, affecting 20 percent or more of women in 22 out of 23 countries surveyed in sub-Saharan Africa. In 2002, more than 186 million ever-married women of reproductive age in the developing countries suffered from primary or secondary infertility.

The inability to have children damages marriages. "Relationships between couples can become very strained when they discover they cannot have children," says Joy Phumaphi, Assistant Director General for Family and Community Health at WHO.

"The burden of infertility in most societies is placed on women," says Dr. Shea Rutstein of DHS, co-author of the report. "Infertility often leads to divorce or, in cultures that permit polygyny, to taking multiple wives."

The study found that infertile women are 14 percent more likely to be divorced or separated than women who have had a child. This difference is most pronounced in Latin America, where infertile women are over 20 percent more likely to be divorced or separated than women with children. In countries that included survey questions on polygyny, husbands in childless marriages are 10 to 20 percent more likely to take a second wife than couples with children.

While infertility remains a serious global concern, in many developing countries childlessness has declined.

The report compares current data from the MEASURE DHS project with data from the mid-1970s. In almost all countries, infertility has gone down.

## Ghana Trends in Family Planning

Family planning service availability has improved in Ghana in the last 10 years according to the recently published report, *Ghana Trend Analysis for Family Planning Services 1993, 1996, 2002*. Almost all family planning facilities now offer services five or more days a week.

Other health facility indicators have shown progress as well. Availability of private rooms for client exams has increased, and infrastructure support (piped water, client toilet, electricity) has improved. Infection control items such as clean gloves and sterile syringes and needles are more available now than in 1993. Client satisfaction with the level of privacy and waiting times has also increased.

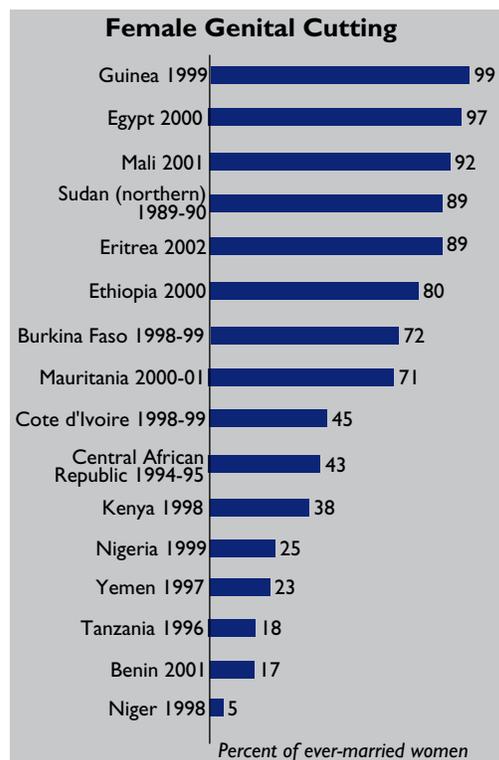
Other indicators remain unchanged. Health centers offer the same number of contraceptive methods, and fewer facilities are offering condoms as a contraceptive method than 10 years ago. Less than half of facilities are fully equipped for exams of family planning clients, the

same percentage as in 1996.

## Female Genital Cutting Compared Across Countries

The rate of female genital cutting (FGC) in Africa ranges from 5 percent of ever-married women in Niger (1998) to 99 percent of ever-married women in Guinea (1999). A new comparative report from MEASURE DHS, *Female Genital Cutting in the Demographic and Health Surveys: A Critical and Comparative Analysis*, examines FGC data from 1989 to 2002 from 20 surveys and 16 countries.

Trend analysis is possible in countries where two surveys have taken place. Outside literature suggests that, overall, FGC prevalence is decreasing and girls are being cut at a younger age. DHS surveys confirm these trends in some countries, but not others. DHS trend data show that the prevalence of FGC has decreased in Eritrea but not in Mali or Cote d'Ivoire. The report also discusses how DHS questions about FGC have changed over time. ■



# Summary of DHS Surveys

## SOUTH/SOUTHEAST ASIA

### Bangladesh 2004

2001 (Maternal Health Services/Maternal Mortality Survey)  
1999/2000  
1999/2000 (modified SPA)  
1996/97  
1993/94

### Cambodia 2005

2000  
1998

### India 2005/06

1998/99  
1992/93

### Indonesia 2002

2002 (Young Adult Reproductive Health Survey)  
1997  
1994  
1991  
1987

### Myanmar 1996 (Special)

### Nepal 2001

1996  
1987 (In-depth)

### Pakistan 1990/91

### Philippines 2003

1998  
1993 (Safe Motherhood Survey)  
1993

### Sri Lanka 1987

### Thailand 1987

### Vietnam 2002

1997

## NORTH AFRICA/WEST ASIA/EUROPE

### Armenia 2000

### Egypt 2005

2004 (SPA)  
2003 (Interim)  
2002 (SPA)  
2000  
1998 (Interim)  
1997 (Interim)  
1996/97 (Reasons for Nonuse in Upper Egypt)  
1995  
1992  
1988

### Jordan 2002

1997  
1990

### Moldova 2005

### Morocco 2003/04

1995 (Panel)  
1992  
1987

### Tunisia 1988

### Turkey 2003 (limited assistance)

1998  
1993

### Yemen 1997

1991/92

## CENTRAL ASIA

### Kazakhstan 1999

1995

### Kyrgyz Republic 1997

### Turkmenistan 2000

Uzbekistan 2002 (Health Examination Survey)  
1996

## LATIN AMERICA & CARIBBEAN

### Bolivia 2003

1998  
1993/94  
1989

### Brazil 1996

1991 (Northeast)  
1986

### Colombia 2004/05 (limited assistance)

2000  
1995  
1990  
1986

### Dominican Rep. 2002

1999 (Experimental)  
1996  
1991  
1986  
1986 (Experimental)

### Ecuador 1987

### El Salvador 1985

### Guatemala 1998/99 (Interim)

1997 (Health Expenditure Survey)  
1997 (SPA)  
1995  
1987

### Guyana 2004/05 (SPA)

2005 (AIS)

### Haiti 2004

2000  
1994/95

### Honduras 2005-06

### Mexico 2000 (SPA)

1987

### Nicaragua 2001

1997/98

### Paraguay 1990

### Peru 2002-06 (Continuous)

2000  
1996  
1992  
1986

1986 (Experimental)

### Trinidad & Tobago 1987

## SUB-SAHARAN AFRICA

### Benin 2001

1996

### Botswana 1988

### Burkina Faso 2003

1998/99  
1992/93

### Burundi 1987

### Cameroon 2004

1998  
1991

### Cape Verde 2004

### Central African Rep. 1994/95

### Chad 2004

1996/97

### Comoros 1996

### Congo-Brazzaville 2005

### Côte d'Ivoire 2005 (AIS)

1998/99  
1994

### Eritrea 2002

1995

### Ethiopia 2005

2000

### Gabon 2000

### Ghana 2003

2002 (SPA)  
1998  
1993/94  
1988

### Guinea 2005

1999  
1992

### Kenya 2004 (SPA)

2003  
1999 (SPA)  
1998  
1993  
1989

### Lesotho 2004

### Liberia 1986

### Madagascar 2003/04

1997  
1992

### Malawi 2004

2000  
1996 (KAP)  
1992

### Mali 2001

1995/96  
1987

### Mauritania 2003 (Special)

2000/01

### Mozambique 2003

1997

### Namibia 2000

1992

AIS: AIDS Indicator Survey  
SPA: Service Provision Assessment

## New Publications

### Niger 2005

1998  
1992

### Nigeria 2003

1999 (limited assistance)  
1990  
1986 (Ondo State)

### Rwanda 2005

2001 (SPA)  
2000  
1992

### Senegal 2005

1999  
1997  
1992/93  
1986

### South Africa 2003/04

1998

### Sudan 1990

### Tanzania 2004/05

2003/04 (AIS)  
1999 (Interim)  
1996  
1995 (Estimation of Adult and Childhood Mortality in a High HIV/AIDS Population)  
1994 (KAP)  
1992

### Togo 1998

1988

### Uganda 2004 (AIS)

2000/01  
1995/96 (Negotiating Reproductive Outcomes)  
1995  
1988/89

### Zambia 2001/02

1996  
1992

### Zimbabwe 2005

1999  
1994  
1988

### Bolivia

2003 DHS Final Report (Spanish)

### Burkina Faso

2003 DHS Final Report (French)

### Egypt

2003 Interim DHS Final Report

### Madagascar

2003 DHS Final Report (French)

### Mauritania

2003–2004 Infant Mortality and Malaria Survey (French)

### Philippines

2003 DHS Final Report

## Analytical Studies

Westoff C. 2005. *Recent Trends in Abortion and Contraception in 12 Countries.* (AS8)

## Comparative Reports

Yoder, P.S., N. Abderrahim and A. Zhuzhuni. 2004. *Female Genital Cutting in the Demographic and Health Surveys: A Critical and Comparative Analysis.* (CR7)

Stallings, R.S. 2004. *Child Morbidity and Treatment Patterns.* (CR8)

Rutstein, S. and I.H. Shah. 2004. *Infecundity, Infertility, and Childlessness in Developing Countries.* (CR9)

Mukuria, A., J. Cushing and J. Sangha. 2005. *Child Nutritional Status: Results from the Demographic and Health Surveys, 1994-2001.* (CR10)

## Qualitative Research Studies

Yoder S. 2005. *Comprehension of Questions in the Tanzania AIDS Indicator Survey.* (QRS10)

## Gender Reports

Kishor, S., ed. 2004. *Focus on Gender: Collected Papers Using DHS Data.* (OD32)

## Further Analysis

Hong, R., N. Fronczak, A. Chinbuah and R. Miller. 2005. *Ghana Trend Analysis for Family Planning Services, 1993, 1996, and 2002.* (TR1)

## Final Reports Coming Soon

**Bangladesh DHS 2004**

**Egypt Service Provision Assessment (SPA) Survey 2004**

**Jayapura City Young Adult Reproductive Health Survey 2002-03**

**Morocco DHS 2003–2004**

**Mozambique DHS 2003**

**Tanzania AIDS Indicator Survey 2003-04**

All DHS publications may  
be downloaded or ordered  
online at  
<http://www.measuredhs.com>

## DHS Data at Work

### Jordanian Ministry of Health Merges DHS and GIS Data on Website

The MEASURE DHS project has assisted the Jordanian Ministry of Health to develop a national website on geographic information systems (GIS) for health information. It is the first GIS website for health information in the Middle East.

The website includes a mapping system that integrates DHS and routine health data. Visitors to the site can create their own maps based on a variety of health indicators: <http://gis.moh.gov.jo/website/moh/eviewer.htm>

### DHS Data Used for Setting Policy and Creating Programs in India

India's Tenth Five Year Plan recently established new nutrition goals based on data from the 1998-99 National Family Health Survey (NFHS-2). Goals for reducing severe undernutrition use baseline NFHS-2 estimates at both the national and regional levels. Targets for timely complementary feeding of children at 6 months of age and exclusive breastfeeding for children up to 6 months are also based on NFHS-2 data.

The 2002 Indian National Health Policy has also refocused efforts in response to NFHS-2 data. New programs are targeted at the poorest segments of society based on the inequalities evident in the data.

The Ministry of Health and Family Welfare also credited NFHS-2 data on unmet need for contraception with giving the ministry the "courage" to revamp the country's family welfare program.

### Philippines University to Use DHS Data in Statistical Training

The University of the Philippines Population Institute will be training students and local researchers in SPSS, a statistical program used to analyze data. Participants will be provided with SPSS software and the Philippines DHS data set, and training attendees will learn SPSS by using DHS data. Several of the participants plan on using their skills for further analysis of the 2003 Philippines Demographic and Health Survey released in November of 2004.

### Repositioning Family Planning Requires DHS Data

The Repositioning Family Planning in West Africa Conference took place in Accra, Ghana from February 15-18, 2005. Two of the major objectives of the conference were to provide data on the expressed need for family planning in West Africa and to identify key facts underlying the gap between need for family planning and use of family planning. Demographic and Health Surveys are a major source for this data. ■

## News Articles Worldwide Feature DHS Data

**Boston Globe:** "Circumcised men less likely to get AIDS," by John Donnelly, November 16, 2004

**Cameroon, Cameroon Tribune:** "SIDA: les vrais chiffres," by Yves Atanga, October 28, 2004

**Nairobi, Kenya, The East African Standard:** "Vaccine programme gets Sh28m boost," August 25, 2004

**Lagos, Nigeria, This Day:** "North-east ranks high in child mortality, says NPC boss," August 5, 2004

**Amman, Jordan, Jordan Times:** "Desired fertility rates surpass demographic goals," by Lindsey Fauss, August 4, 2004

**Kampala, Uganda, New Vision:** "East tops teen pregnancy," by Patrick Jaramogi, August 3, 2004

**New Zealand Scoop:** "Violence against women and role of media," by Kamala Sarup, January 13, 2005

**Maputo, Mozambique, Agencia de Informacao:** "HIV/AIDS programmes budgeted at 54 million dollars," January 14, 2005

**Davao, Philippines, SunStar:** "AIDS: Deadlier than ever," by Henrylito D. Tacio, February 28, 2005

**Dhaka, Bangladesh, Financial Express:** "Performance in poverty alleviation: Declining availability of land per capita is associated with rising poverty, finds a World Bank report," March 4, 2005

## Key Findings from Recent DHS Surveys

### Bolivia 2003

The 2003 DHS highlights marked improvements in maternal and child health. Almost 80 percent of women are being assisted by a medical professional at delivery (compared with 65 percent in 1998). Infant mortality has decreased from 67 deaths per 1,000 live births in 1998 to 54 deaths per 1,000 live births in 2003. Full vaccination coverage has also increased in the past 5 years, with 50 percent of children now receiving BCG, measles, and 3 doses each of DPT and polio.

In addition, the total fertility rate has dropped to 3.8 children per woman, from 4.2 in 1998. The use of family planning has increased from 48 percent to 58 percent since 1998. The use of modern methods has also increased.

### Burkina Faso 2003

The 2003 BDHS shows a decline in fertility from 6.9 children per woman in 1993 to 6.2 in 2003. Almost 10 percent of women now use a modern method of family planning.

Less than 40 percent of women are giving birth in a health facility, and very few women receive postnatal care. Only 44 percent of children have received all recommended immunizations.

HIV testing revealed that slightly less than 2 percent of men and women have HIV (HIV-1 or HIV-2). Although knowledge of AIDS is universal, less than half of women know that using condoms prevents HIV transmission.

### Ghana 2003

According to the GDHS, the decline in fertility in the eighties and nineties has slowed. Women have, on average, 4.4 children, the same rate observed in the 1998 GDHS. This leveling off is surprising since use of modern contraceptive methods has increased. Almost 19 percent of currently married women now use a modern method compared with

13 percent in 1998.

The GDHS also indicates that Ghana has one of the highest percentages of women in sub-Saharan Africa who receive antenatal care from medically trained personnel (92 percent) and one of the highest proportions of children fully vaccinated (69 percent).

HIV testing indicates that 2.2 percent of the adult population is infected with HIV-1 or 2 (2.7 percent among women and 1.5 percent among men). Hemoglobin testing indicates that almost 30 percent of Ghanaian children age 6-59 months are severely anemic.

### Philippines 2003

Fertility in the Philippines has remained relatively stable at 3.5 children per woman. Approximately one-third of married women are using a modern method of contraception. Public sources such as government hospitals and urban and rural health centers continue to provide the majority of contraceptives.

Infant mortality remains low at about 30 deaths per 1,000 live births. However, many children do not receive appropriate treatment for diarrhea or

acute respiratory infections.

The large majority of Filipinos know about HIV/AIDS, but fewer know how it is transmitted, or how to prevent it. Only about half of young men and women age 15-19 know a place to get male condoms.

### Madagascar 2003-04

Major improvements in maternal and child health have taken place in Madagascar, including reduction in fertility and increases in modern family planning use, antenatal care, assistance at delivery, child vaccination, diarrhea treatment and vitamin A supplementation. Fianarantsoa and Antananarivo, two focus regions for USAID interventions, experienced especially large improvements. Problems of undernutrition and anemia remain important challenges.

On February 9, 2005, MEASURE DHS and the Woodrow Wilson International Center for Scholars hosted a presentation on the preliminary findings from the 2003-04 MDHS, highlighting results from USAID's intervention areas. A roundtable discussion followed the presentation and included participants from the Madagascar Cabinet, USAID Madagascar, and UNICEF. ■

Visit the [STATcompiler](http://www.measuredhs.com) and the [HIV/AIDS Survey Indicators Database](http://www.measuredhs.com) at [www.measuredhs.com](http://www.measuredhs.com) for more DHS Data

## DHS Staff Profile

Vinod Mishra, Senior Analyst, joined the MEASURE DHS staff in August, 2004. Formerly a fellow in Population and Health Studies at the East-West Center in Honolulu, Vinod has a PhD in sociology, masters degrees in public health, statistics, and sociology, and graduate certificates in population studies.

His current research interests include social and behavioral aspects of HIV/AIDS, changing lifestyles and emerging health threats, reproductive health, and effects of air pollution on health. Vinod has published numerous papers and reports on these topics. He has experience with population-based survey methods, having worked on India's National Family Health Surveys, WHO Health and Health System Responsiveness Surveys, and analyzed data from several Demographic and Health Surveys.

Vinod was hired to conduct research, coordinate research activities and promote research collaboration. Currently, he is working on a variety of projects, including overseeing further analysis of HIV and nutrition data from a number of Demographic and Health Surveys.

# Selected Statistics From DHS Surveys

SURVEYS	VITAL RATES			USE OF CONTRACEPTION (Currently Married Women 15–49)		MATERNAL CARE (Births in Last 5 Years)		CHILD HEALTH INDICATORS		
	Total Fertility Rate <sup>a</sup>	Total Wanted Fertility Rate <sup>a</sup>	IMR/Under-5 Mortality Rate <sup>b</sup>	% Currently Using Any Method <sup>c</sup>	% Currently Using Any Modern Method <sup>d</sup>	% Women Receiving Antenatal Care <sup>e</sup>	% Women Receiving Assistance at Delivery from Professional <sup>e</sup>	Median Duration (Months) of Breast-feeding <sup>f</sup>	% Children 0–59 Months Stunted <sup>g</sup>	% Children Fully Immunized <sup>h</sup>
<b>CENTRAL ASIA</b>										
Kazakhstan 1999	2.1	1.9	62/71	66	53	94	99	7	10	81
Turkmenistan 2000	2.9	2.7	74/94	62	53	98 <sup>i</sup>	97	18	22	90
Uzbekistan 2002	2.9	†	‡	68	63	†	†	‡	21	†
<b>LATIN AMERICA/CARIBBEAN</b>										
Bolivia 2003	3.8	2.1	54/75	46	26	79	61	20	27	50
Colombia 2000	2.6	1.8	21/25	77	64	91 <sup>i</sup>	86	13	14	52 <sup>m</sup>
Dominican Rep. 2002	3.0	2.3	31/38	70	66	98	98	7	9	35
Guatemala 1999	5.0	4.1	45/59	38	31	60	41	20	46	60
Haiti 2000	4.7 <sup>b</sup>	2.7 <sup>b</sup>	80/119	28	22	79	24	19	23	34
Nicaragua 2001	3.2	2.3	31/40	69	66	86	67	17	20	72 <sup>n</sup>
Peru 2000	2.9	1.8	33/47	69	50	84 <sup>i</sup>	59	22	25	66 <sup>n</sup>
<b>NORTH AFRICA/WEST ASIA/EUROPE</b>										
Armenia 2000	1.7	1.5	36/39	61	22	92 <sup>i</sup>	97	9	13	76
Egypt 2002	3.2	2.5	38/46	60	57	69	69	19	16	88
Jordan 2002	3.7	2.6	22/27	56	41	99	100	13	9	94 <sup>o</sup>
Turkey 2003	2.2	1.6	29/37	71	43	81	83	14	12	54
<b>SOUTH/SOUTHEAST ASIA</b>										
Bangladesh 2000	3.3	2.2	66/94	54	43	33 <sup>i</sup>	12	31 <sup>k</sup>	45	60
Cambodia 2000	4.0 <sup>b</sup>	3.1 <sup>b</sup>	95/124	24	19	38 <sup>i</sup>	32	24	45	40
India 1998-99	2.9	2.1	68/95	48	43	65 <sup>i</sup>	42 <sup>i</sup>	25	47 <sup>i</sup>	42
Indonesia 2003	2.6	2.2	35/46	60	57	92 <sup>i</sup>	66	22	†	51
Nepal 2001	4.1	2.5	64/91	39	35	49	13	33	51	66
Philippines 2003	3.5	2.5	29/40	49	33	88 <sup>i</sup>	60	14	†	70
Vietnam 2002	1.9	1.6	18/24	79	57	86 <sup>i</sup>	85 <sup>i</sup>	18	†	67
<b>SUB-SAHARAN AFRICA</b>										
Benin 2001	5.6	4.6	89/160	19	7	87	73	22	31	59
Burkina Faso 2002-2003	6.2	5.4	81/184	14	9	73	57 <sup>i</sup>	25	39	44
Cameroon 2004	5.0 <sup>b</sup>	‡	74/142	26	13	83 <sup>i</sup>	62 <sup>i</sup>	‡	32 <sup>i</sup>	48
Côte d'Ivoire 1999	5.2	4.5	112/181	15	7	84	47	21	25	51
Eritrea 2002	4.8	4.4	48/93	8	7	70	28	22	38	76
Ethiopia 2000	5.9 <sup>b</sup>	4.9 <sup>b</sup>	97/166	8	6	27 <sup>i</sup>	6	26	52	14
Gabon 2000	4.3 <sup>b</sup>	3.5 <sup>b</sup>	57/89	33	12	95 <sup>i</sup>	87	12	21	17
Ghana 2003	4.4 <sup>b</sup>	3.7 <sup>b</sup>	64/111	25	19	92	47 <sup>i</sup>	23	30	69
Guinea 1999	5.5	5.0	98/177	6	4	71	35	22	26	32
Kenya 2003	4.9	3.6	77/115	39	32	90	42 <sup>i</sup>	21	30	57
Madagascar 2003-04	5.2	4.7	‡	27	18	80	51 <sup>i</sup>	22	48	53
Malawi 2000	6.3	5.2	104/189	31	26	91 <sup>i</sup>	56	24 <sup>i</sup>	49	70
Mali 2001	6.8	6.1	113/229	8	6	57 <sup>i</sup>	41	23	38	29
Mauritania 2001	4.7 <sup>b</sup>	4.3 <sup>b</sup>	74/116	8	5	65 <sup>i</sup>	57	21	35	32
Mozambique 2003	5.5	4.9	101/153	17	12	85	48	22	41	63
Namibia 2000	4.2	3.4	38/62	44	43	91	78	15	24	65
Niger 1998	7.5 <sup>b</sup>	7.2 <sup>b</sup>	123/274	8	5	40 <sup>i</sup>	44 <sup>i</sup>	21	41 <sup>i</sup>	18
Nigeria 2003	5.7	5.3	109/217	13	8	63	36	18	38	13
Rwanda 2000	5.8	4.7	107/196	13	4	92 <sup>i</sup>	31	33 <sup>i</sup>	43	76
South Africa 1998	2.9	2.3	45/59	56	55	94	84	16	†	63
Tanzania 1999	5.6	4.8	99/147	25	17	93 <sup>i</sup>	36	21	44	68
Uganda 2001	6.9	5.3	88/152	23	18	92 <sup>i</sup>	39	22 <sup>i</sup>	39	37
Zambia 2002	5.9	4.9	95/168	34	23	93	43	21	47	70
Zimbabwe 1999	4.0	3.4	65/102	54	50	93 <sup>i</sup>	73	20	27	75

† Not available from survey data.

‡ Not available until publication of final report.

a Based on 3 years preceding survey (women 15–49).

b Based on 5 years preceding survey.

c Excludes prolonged abstinence.

d Excludes periodic abstinence, withdrawal, "other."

e Care provided by medically trained personnel.

f Children <3 years old (any breastfeeding).

g Height-for-age z-score is below -2 SD based on the NCHS/CDC/WHO reference population.

h Children 12–23 months vaccinated (BCG, measles, three doses each DPT and polio).

i Based on last birth.

j Based on births in the preceding 3 years.

k Based on births in the preceding 4 years.

l Children 0–35 months old.

m Excludes measles.

n Children 18–29 months old.

o Excludes BCG.