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DHS+ Dimensions

A semiannual newsletter of the Demographic and Health Surveys project

The use of Geographic Information Systems (GIS) and collection of locational data allow for new uses and comparisons of DHS data.

MEASURE *DHS+*

Contents

New Directions: DHS Surveys Incorporate Geographic Data

Researchers, policymakers, and program managers have long recognized geographic location as an important factor in population and health outcomes. Knowing how the health of women and children may differ by where they live can lead to a better understanding of where and why events occur and how interventions can be implemented effectively. But demographic and health data collection has not traditionally included the detailed locational information needed to incorporate geography into complex analyses. To broaden the uses of its data, MEASURE *DHS+* has expanded the Demographic and Health Surveys (DHS) to include geographic data. With this new locational information, DHS data can be analyzed within a ***geographic information system (GIS)*** to gain new perspective on the health and well-being of communities around the world.

What is a GIS?

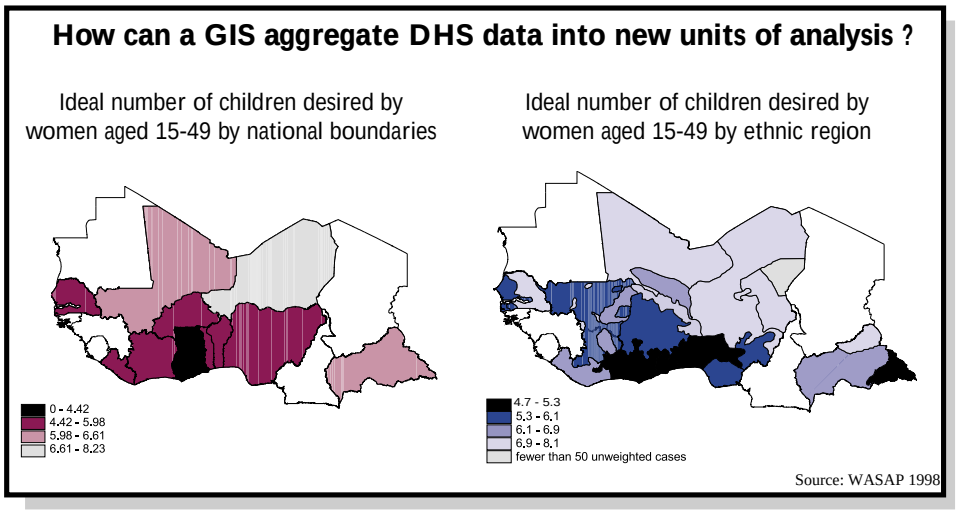
Significant advances in computer technology and the proliferation of geographic data collection have led to more widespread use of geographic information systems to analyze data. A GIS consists of hardware and software used to store, manipulate, analyze, and display multiple data sets, such as population density, arable land, and DHS data, that are ***georeferenced***, or registered to a common coordinate system, such as latitude/longitude degrees.

DHS locational data is computed through the use of the ***global positioning system (GPS)***, a system of 24 satellites that orbit and send radio signals to Earth. A GPS receiver unit tracks these satellites and computes location and elevation using geometry. Latitude and longitude readings are taken for each sample cluster, pro-

Continued on page 2

GPS *continued from page 1*

viding a set of point locations that are linked to all of the household and individual level attributes contained in the full DHS data set. Rather than constraining a geographic analysis to national or provincial levels, point data for the sample clusters can now be aggregated to new units of analysis, such as climatic zones or ethnic regions.



How can locational data be used?

The most powerful feature of a geographic information system is the ability to combine data sets on the basis of common geographic attributes. For example, DHS data can be combined with climatic zones, population density, road and transportation routes, etc. Analyses can then be performed on multiple sources of data simultaneously. Until now, DHS data users have been restricted to analyses based on administrative boundaries (e.g. national or provincial boundaries) which do not always correspond to meaningful geographic units of analysis.

For example, environmental factors such as climate and agricultural production may have an effect on children's nutritional status. But without a GIS and spatially referenced DHS data, anthropometric data collected for children could only be analyzed at the national or provincial levels. With georeferenced data in a GIS, the wealth of information collected in the DHS on other health behaviors, socioeconomic status, and anthropometry can be aggregated to aridity zones. Using the GIS to identify where children at greatest danger are living will provide a better picture of children's status by environmental area, rather than by administrative area, which does not fully reveal patterns of risk.

How long has DHS been collecting geographic data?

In 1996, Macro International Inc., an Opinion Research Corporation company (ORC Macro), coordinated with the U.S. Bureau of the Census and the World Resources Institute to carry out a prototype model for incorporating geographic data into DHS surveys. The West Africa Spatial Analysis Prototype (WASAP) geocoded DHS sample clusters for 12 West African countries. The geocoded DHS surveys were brought into a GIS along with data from the West Africa Long Term Perspective Study. The data have been used to study the effects of climate on children's nutritional status, and the relationship between economic diversity and reproductive behavior, as well as to study subnational geographic variation in several health indicators.

Following the success of WASAP, DHS surveys began using GPS units to collect locational data in an effort to facilitate cross-disciplinary analyses. The DHS effort represents a major advance in addressing the increasing need for spatially referenced health and demographic data. Although numerous small studies and targeted health data collection efforts have used GPS to add locational information, the data are often unavailable to the public. To date, no other global nationally representative survey has undertaken the task of collecting GPS data consistently.

What are future plans for GIS and DHS?

Most DHS surveys since 1997 have used GPS units to collect latitude and longitude data for each sample cluster. In 1999, the first Service Provision Assessment (SPA) for Kenya collected GPS readings for each health facility surveyed. Under MEASURE *DHS+*, almost all future DHS surveys and SPAs will collect geographic data. Researchers at ORC Macro are currently using DHS and SPA data in a geographic information system for carrying out various analysis projects.

The added dimension of place and the flexibility to evaluate health and demographic indicators at multiple units of analysis will substantially enhance the usefulness of MEASURE *DHS+* data. For example, the catchment areas for health services often do not coincide with administrative boundaries. If the actual catchment area could be evaluated along with transportation routes within a GIS, targeting populations for health interventions could be much more efficient.

Being able to combine DHS data with other georeferenced data sets has the potential to provide a more comprehensive understanding of the patterns and processes of demographic and health changes. And the increasing amounts of multidisciplinary data available to analyze within a GIS will enable national governments and international donors to better evaluate and prioritize a range of interventions more effectively.

Geographic Information System (GIS): a computer system consisting of hardware and software used to store, manipulate, analyze, and display georeferenced data.
Global Positioning System (GPS): a system of 24 satellites that orbit the earth and are used in computing a location on earth. A GPS receiver unit tracks these satellites and using geometry can compute the GPS receiver's location and elevation.
Geocoding or georeferencing: the process of referencing elements in an image to a known coordinate system, such as latitude/longitude.

People and Pixels: Linking Remote Sensing and Social Science. Editors: Diana Liverman, Emilio Moran, Ronald Rindfuss, Paul Stern. Washington, DC: National Academy Press, 1998.

Ghana Dissemination Seminars Highlight Changes and Challenges

The 1998 Ghana Demographic and Health Survey (GDHS), the third in a series of national-level population and health surveys conducted in Ghana, revealed that important strides have been made in improving the level and quality of maternal and child health care in Ghana. The encouraging findings are among the many results reported at the Ghana Demographic and Health Survey's 1998 National Seminar held in Accra and at the Zonal Dissemination Seminars held around the country from October 1999 to January 2000.

The level of antenatal care in the country is high, with nearly 9 out of 10 mothers receiving care from trained medical personnel. The quality of antenatal care is also reasonably good. For about three in four births, mothers were weighed and measured, had their blood pressure taken, had their urine tested, and were given iron tablets and folic acid tablets during their pregnancy. About half of all mothers also received two or more tetanus toxoid injections.

However, the prevalence of delivery in a health facility continues to be low. Only two in five births took place in a facility; a trained professional assisted fewer than half. Noninstitutional deliveries were less likely to be attended by a doctor, nurse or midwife. Furthermore, postnatal care, crucial for monitoring and treating complications in the first 2 days following delivery, was received by only 4 percent of mothers with noninstitutional births.

In combination with data collected in the 1988 and 1993 surveys in Ghana, findings from the 1998 GDHS show a noticeable improvement in child survival. Infant mortality declined by more than 40 percent in the preceding 20 years, from 100 deaths per 1,000 live births to 57 deaths per 1,000 live births. Preventative measures have been taken to ensure the optimum health of Ghanaian children. The proportion of children who have been fully vaccinated against six vaccine-preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, polio, and measles), increased in the five years between 1993 and 1998. About half of all children are now being fully immunized by their first birthday.

Findings from the 1998 GDHS show a noticeable improvement in child survival over the past two decades.

In spite of improvements in maternity care and child survival over the past two decades, statistics show that child mortality remains high. According to the 1998 GDHS survey, one in nine children born in Ghana will die before reaching the age of five, and about half of the deaths will occur during the first year of life.

Results from the 1998 GDHS also indicate that fertility in Ghana declined during the 1990s. The rate went from more than 6 births per woman in the mid-1980s to 4.6 births per woman during the five years preceding the 1998 survey. Fertility declined in every age group, with levels among women under age 35 declining by about 25 percent during the period. Geographic differences were marked, with rural women having had two-and-a-half children more than urban women. Fertility was two-and-a-half times higher in the Northern region than in the Greater Accra Region.

The decline in fertility cannot be wholly attributed to the use of family planning. Although knowledge of contraceptive methods is universal in Ghana, use is low, with only one in five women using a method of family planning and 13 percent using a modern method. Moreover, there was only a small increase in the contraceptive prevalence rate during the period between 1993 and 1998.

The 1998 GDHS also provides insight into the level of people's awareness about the spread of HIV/AIDS infections. Although knowledge about AIDS is nearly universal, the depth and level of understanding is limited among some people. Fourteen percent of women and 9 percent of men stated that they did not know whether AIDS was avoidable. One in 5 women and 1 in 9 men did not know of any way to avoid contracting the disease.

Program managers and policymakers in Ghana will continue to face challenges in the new millennium, including raising awareness of AIDS prevention. Participants at the 1998 GDHS Dissemination Seminars discussed the challenges and potential strategies to address them. Some of their goals are to narrow the gap between knowledge and use of family planning; to lower infant and child mortality by improving maternal and child health both during and after delivery; to step up efforts to raise immunization levels; and to improve household and clinical management of common childhood illnesses.

MEASURE *DHS+* assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Funded by the U.S. 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 Population Council and the East-West Center. *DHS+ Dimensions* is published twice a year to provide information about the program and the current 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). Project Director: Martin Vaessen.

DHS+ Analysis Reports Provide New Perspectives on Survey Findings

Analysis of data is an essential component of the MEASURE *DHS+* program. Besides conducting surveys and publishing reports on survey findings, MEASURE *DHS+* is engaged in a number of in-depth analysis activities. The activities range from the further investigation of particular findings from one country to the broader comparison of data across a number of countries. The analyses are published in four types of research reports: Comparative Reports, Analytical Studies, Methodological Reports, and Further Analysis Reports.

Comparative Reports

Comparative reports are descriptive in their approach, contrasting findings from many countries to search for trends and patterns in important health and population indicators. Where warranted, comparative reports include an assessment of data quality and comparisons with external data sources. The reports serve largely as reference documents and typically draw on all available DHS (and sometimes other) data collected over a recent time period. Thirty comparative reports have already been published in the DHS Comparative Studies series; another 10 are planned for completion in the next 3 years.

One upcoming Comparative Report will describe levels and trends in immunization coverage during the past 5 to 6 years. Unlike previous reports on immunization, this report will include examination of the DHS findings in the context of official estimates provided by the WHO/UNICEF database. This analysis project is a collaborative effort involving MEASURE *DHS+*, WHO (Office of Vaccines and Other Biologicals), and MEASURE Evaluation.

Comparative Reports on the topics of childhood mortality, fertility, contraceptive use, nutritional status of children, education, infant feeding patterns, and morbidity are also on the agenda. A special report on HIV/AIDS-prevention indicators will evaluate the data generated by the new HIV/AIDS module developed under MEASURE *DHS+* in collaboration with partners at MEASURE Evaluation and UNAIDS.

Analytical Studies

Analytical Studies emphasize policy and program-relevant themes and research questions. Although these analyses typically involve use of DHS data from fewer countries than Comparative Reports, most are multicountry in approach so as to allow broad interpretation. In the ten Analytical Reports that have been published to date, DHS data have been used to analyze questions of interest to the health and population community. Another 13 reports are proposed for completion in the next 3 years.

New findings from Kazakhstan on the relationship between the increasing use of contraceptive methods and declines in the use of abortion will be published in this series, along with several other innovative works. A new analytical study will tackle the issue of "mapping variations in child survival and child-survival-related factors in sub-Saharan Africa," using subnational geographic areas as units of analysis and spatial analysis to examine correlations between available data on mortality and mortality determinants.

Three analytical studies involve a MEASURE Evaluation/MEASURE *DHS+* partnership: Trends in Adolescent Reproductive Patterns, Inequities in the Use of Health Services, and Source of Contraception and Patterns of Use.

Methodological Reports

Methodological Reports cover issues relating to the collection and analysis of DHS data, especially focusing on new types of data. Many of the lessons that MEASURE *DHS+* learns while conducting surveys and producing survey findings are of interest to collaborating agencies, researchers, and survey organizations. The reports offer insight on the successes and shortcoming of various approaches and recommendations for future data collection activities.

Four Methodological Reports have been completed. Future reports will cover issues such as anemia testing, service provision assessment, use of qualitative data, and survey-based information on malaria and behaviors related to malaria programs.

Further Analysis Reports

Further Analysis Reports provide results emanating from research that is typically based on a single DHS country. The projects usually entail collaborative work, involving both investigators from the host country and analysts from ORC Macro. Further analysis projects are designed with two major objectives:

1) building local capacity in the analysis of survey data, and
2) providing Further Analysis Reports that inform the reader about key program and policy issues within a host country.

Recently, reports on adolescent fertility, maternal and child health, child mortality, unmet need for contraception, and education in Benin have been published. Reports on the continuing emergence of the "two-child norm" in Indonesia and the Philippines have also recently been completed. Several other collaborative analysis projects in Indonesia and the Philippines are due out later in the year. Further Analysis projects are under way in Ghana, Kenya, Bangladesh, and Jordan.

South Africa Survey Includes Innovative Adult Health Questionnaire

The 1998 South Africa Demographic and Health Survey (SADHS) revealed pronounced variations in fertility, contraceptive use, and health among the country's population groups. The survey collected data from almost 12,000 women age 15 to 49, of whom a little over three-fourths were African, 10 percent were colored, 8 percent were white, and 4 percent were Asian. Besides the standard DHS, the SADHS incorporated an innovative Adult Health Questionnaire for all persons age 15 and above. This component involved measuring blood pressure, peak expiratory flow, and height and weight. Almost 14,000 adults were interviewed.

Findings from the survey suggest that fertility rates in South Africa have been declining and that the total fertility rate was 2.9 children per woman for the period 1995 to 1998. However, the total fertility rate among rural women (3.9) is nearly double that for urban women (2.3), and fertility is highest among African women. Adolescent fertility is high, especially among colored and rural African girls. At age 19 one in three girls has been pregnant or has given birth to a child.

The overall fertility decline may be attributed in part to the relatively high level of use of modern contraceptive methods. Sixty-two percent of sexually active women in South Africa are using a contraceptive method, and almost all are using a modern method. Asian women are the most likely to be using family planning, followed by whites, coloreds, and Africans. However, the most popular contraceptive methods (injectables, pills, and female sterilization) do not prevent the transmission of HIV and other sexually transmitted infections (STIs).

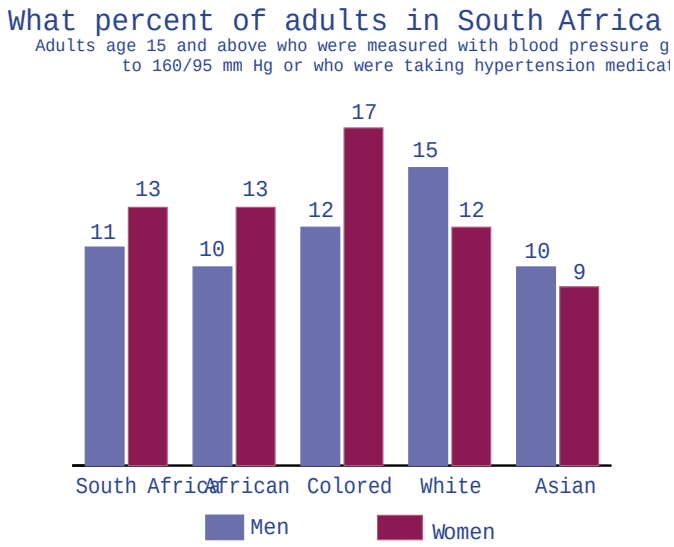
Knowledge of HIV/AIDS is nearly universal in South Africa, and most women are rather well informed about both transmission and prevention. Almost 90 percent of women age 15 to 49 say that staying with one faithful partner, using condoms, using clean needles for injections, and avoiding the sharing of razor blades are valid means of protection against the virus.

However, the knowledge of HIV/AIDS does not always translate into safe sexual behavior. Overall, only 8 percent of women reported that their partner had used a condom during their last sexual intercourse. Condom use is higher in sexual encounters with nonmarital partners: 16 percent of women reported they had used condoms with a boyfriend or casual acquaintance, compared with 6 percent with a husband. Condom use at the last sexual encounter is highest among African women, followed by colored and white women.

A. Cross/ORC Macro

The prevalence of other sexually transmitted infections, including syphilis and gonorrhea, is a serious concern in South Africa. Twelve percent of men age 15 and older reported having had symptoms of a STI during the 3 months prior to the survey. The levels were highest among rural men, men in KwaZulu-Natal and Mpumalanga provinces, and African men.

The survey found an infant mortality rate of 45 deaths per 1000 live births, which means that about one in every 22 children born in South Africa dies before reaching the age of one year. The infant mortality rate is higher among male infants than among female infants and among children with six or more siblings. The children of African mothers in rural areas are also at higher risk of dying than those in other areas.



Exclusive breastfeeding, although recommended for the first 4 to 6 months of life to provide all the essential nutrients and limit infants' exposure to disease agents, is not widely practiced in South Africa. Only 10 percent of children under the age of 4 months are being breastfed with no supplementation. Therefore, for 90 percent of children, the risk of infection and diarrhea, particularly in areas with poor sanitation, is relatively high.

Dehydration brought on by diarrhea, which can be treated by administering oral rehydration therapy (ORT), is a frequent cause of death in young children. Only 58 percent of the children who were reported to have had diarrhea in the 2 weeks prior to the survey had been treated with ORT.

The survey also collected data on adult health, including levels of obesity, smoking, and hypertension. More than one-quarter of all adult men and more than half of all women in South Africa are overweight or obese. Smoking is another common problem: 42 percent of men and 11 percent of women smoke tobacco. Although one in nine adult men and one in eight adult women have high blood pressure, most are not aware that they have hypertension. Moreover, few hypertensives have their blood pressure under control — only 9 percent of men and 23 percent of women. Hypertensive African men, especially those living in rural areas, are the least likely to be diagnosed.

Summary of Demographic and Health Surveys

COUNTRY SURVEY	IMPLEMENTING ORGANIZATION
ASIA	
Bangladesh 1999/00	Mitra & Associates/NIPORT
1996/97	Mitra & Associates/NIPORT
1993/94	Mitra & Associates/NIPORT
Cambodia 2000	National Institute of Statistics/MOH
1998[1]	SAWA Cam./Nat. Inst. of Public Health
India 1998-00*	Various Organizations
1998/99	International Inst. for Population Sciences
1992/93	International Inst. for Population Sciences
Indonesia 1997	Central Bureau of Statistics/NFPCB/MOH
1994	Central Bureau of Statistics/NFPCB/MOH
1991	Central Bureau of Statistics/NFPCB/MOH
1987	Central Bureau of Statistics/NFPCB
Kazakhstan 1999	Academy of Preventive Medicine
1995	National Institute of Nutrition
Kyrgyz Republic 1997	Inst. of Obst. & Ped., MOH
Myanmar 1996/97[2]	Settlmt. and Land Rec. Dep., Min. of Agr.
Nepal 1996	Ministry of Health/New ERA
1987 (In-Depth)	New ERA
Pakistan 1990/91	National Institute of Population Studies
Philippines 1998	National Statistics Office/Dept. of Health
1993	National Statistics Office
Sri Lanka 1987	Dept. of Cen. & Stat., Min. of Plan Impl.
Thailand 1987	Inst. of Pop. Studies, Chulalongkorn U.
Uzbekistan 1996	Inst. of Obst. & Gynec., MOH
Vietnam 1997[3]	Nat. Comm. on Pop. and Fam. Planning
LATIN AMERICA & CARIBBEAN	
Bolivia 1998	Instituto Nacional de Estadística
1993/94	Instituto Nacional de Estadística
1989	Instituto Nacional de Estadística
Brazil 1996	Soc. Civil Bem-Estar Familiar no Brasil
1991(NE)	Soc. Civil Bem-Estar Familiar no Brasil
1986	Soc. Civil Bem-Estar Familiar no Brasil
Colombia 2000	PROFAMILIA
1995	PROFAMILIA
1990	PROFAMILIA
1986	Corp. Cen. Reg. de Pob./Min. de Salud
Dominican Rep. 1999 (Exp)	CESDEM
1996	CESDEM/PROFAMILIA
1991	PROFAMILIA

COUNTRY SURVEY	IMPLEMENTING ORGANIZATION
LATIN AMERICA & CARIBBEAN	
1986	Consejo Nacional de Población y Familia
1986 (Exp.)	Consejo Nacional de Población y Familia
Ecuador 1987	Cen. de Estud. de Pob. y Paternidad Responsible
El Salvador 1985	Asociación Demográfica Salvadoreña
Guatemala 1998/99 (Interim)	Instituto Nacional de Estadística
1997 (In-Depth 1)*	Instituto Nacional de Estadística
1997 (In-Depth 2)*	Instituto Nacional de Estadística
1995	Instituto Nacional de Estadística
1987	Inst. de Nutrición de Cent. y Panamá
Haiti 2000	Institut Haïtien de l'Enfance
1994/95	Institut Haïtien de l'Enfance
Mexico 1987	Dir. Gen. de Plan. Fam., Sec. de Salud
Nicaragua 1997/98	Instituto Nacional de Estadísticas y Censos
Paraguay 1990	Centro Paraguayo de Estudios de Poblacion
Peru 2000	Instituto Nacional de Estadística
1996	Instituto Nacional de Estadística
1991/92	Instituto Nacional de Estadística
1986	Instituto Nacional de Estadística
1986 (Exp.)	Instituto Nacional de Estadística
Trinidad & Tobago 1987	Family Planning Association of Trinidad/Tobago
NEAR EAST/NORTH AFRICA	
Egypt 2000	National Population Council
1998 (Interim)	El-Zanaty & Associates
1997 (Interim)	El-Zanaty & Associates
1996/97 (In-Depth)*	National Population Council
1995	National Population Council
1992	National Population Council
1988/89	National Population Council
Jordan 1997	Department of Statistics
1990	Department of Statistics
Morocco 1995 (Panel)	Ministère de la Santé Publique
1992	Ministère de la Santé Publique
1987	Ministère de la Santé Publique
Tunisia 1988	Office Nat. de la Fam. et de la Population
Turkey 1998	Hacettepe Inst. of Population Studies
1993	Hacettepe Inst. of Population Studies/MOH
Yemen 1997	Central Statistical Organization
1991/92	Central Statistical Organization


P. Poppe/JHU/CCP


H. Khan/ORC Macro

SUB-SAHARAN AFRICA

COUNTRY SURVEY	IMPLEMENTING ORGANIZATION
Benin 1996	Institut National de la Statistique
Botswana 1988	Ministry of Health
Burkina Faso 1998/99	Inst. Nat. de la Statistique et la Démo.
1992/93	Inst. Nat. de la Statistique et la Démo.
Burundi 1987	Dép. de la Pop., Min. de l'Intérier
Cameroon 1998	Bur. Cen. Recensements et Études de Pop.
1991	Min. du Plan et de l'Amén. du Terr.
Central African Rep. 1994/95	Dir. des Stat. Dém. et Sociales
Chad 1996/97[3,4]	Bureau Central du Recensement
Comoros 1996[4]	Centre National de Doc. et de Rech. Sci.
Côte d'Ivoire 1998/99[5]	Inst. National de la Statistique
1994	Inst. National de la Statistique
Eritrea 1995/96	National Statistics Office
Ethiopia 2000	Central Statistical Authority
Ghana 1998	Ghana Statistical Service
1993/94	Ghana Statistical Service
1988	Ghana Statistical Service
Guinea/Conakry 1999	Direction Nationale de la Statistique
Kenya 1999 (SPA)*	National Council for Population and Dev.[5]
1998	National Council for Population and Dev.
1993	National Council for Population and Dev.
1988/89	National Council for Population and Dev.
Liberia 1986	Min. of Planning & Economic Affairs
Madagascar 1997[4]	Dir. de la Dem. et de la Statistique Sociale
1992	Centre Nat. de Recherches sur l'Env.
Malawi 2000	National Statistical Office
1996 (KAP)	National Statistical Office
1992	National Statistical Office
Mali 1995/96[6]	CPS/MSSPA et DNSI
1987	Inst. de Sahel: USED/CERPOD
Mauritania 2000[3,4]	Office Nat. de la Statistique
Mozambique 1997	Instituto Nacional de Estatística
Namibia 1992[3]	Min. of Health and Social Services
Niger 1998	Care International
1992	Dir. de la Stat. et des Comptes Nat.
Nigeria 1990	Federal Office of Statistics
Ondo State, Nigeria 1986/87	Ministry of Health, Ondo State
Rwanda 2000	Office National de la Population
1992	Office National de la Population

SUB-SAHARAN AFRICA

COUNTRY SURVEY	IMPLEMENTING ORGANIZATION
Senegal (Interim) 1997	Min. de l'Economie et des Finances
1992/93	Dir. de la Prévision et de la Stat.
1986	Min. de l'Economie et des Finances
South Africa 1998	Dept. of Health/Med. Research Council
Sudan 1989/90	Dept. of Stat., Min. of Fin. & Econ. Plan.
Tanzania 1999	National Bureau of Statistics
1996	Bureau of Statistics, Planning Comm.
1995 (In-Depth)*	Bureau of Statistics, Planning Comm.
1994 (KAP)	Bureau of Statistics, Planning Comm.
1991/92	Bureau of Statistics, Planning Comm.
Togo 1998	Direction de la Statistique
1988	Unité de Recherche Dém., U. du Benin
Uganda 2000	Uganda Bureau of Statistics
1995/96 (In-Depth)*	Inst. Stat. & Applied Econ., Makerere U.
1995	Dept. of Stat., Min. Fin. & Econ. Plan.
1988/89	Ministry of Health
Zambia 1996/97	Central Statistical Office
1992	University of Zambia
Zimbabwe 1999	Central Statistical Office
1994	Central Statistical Office
1988/89	Central Statistical Office

1 Funded by ADB and the World Bank
2 Funded by UNDP
3 Funded by the World Bank
4 Funded by UNFPA
5 Funded by UNICEF
6 Funded directly by USAID/Mali

***India:**	12 Uttar Pradesh Benchmark Surveys
***Guatemala 1:**	Health Expenditure Survey
***Guatemala 2:**	Health Provider Survey
***Egypt:**	Reasons for Nonuse in Upper Egypt
***Kenya:**	Service Provision Assessment
***Tanzania:**	Estimation of Adult and Childhood Mortality in a High HIV/AIDS Population
***Uganda:**	Negotiating Reproductive Outcomes

Guatemala Survey Provides Comparisons with Neighboring Countries

Findings from the third Guatemala Maternal and Child Health Survey (ENSMI-98/99) provide a basis for comparing Guatemala with other Latin American countries. The survey indicates several areas of improvement in the health of mothers and children, such as increased vaccination coverage. However, Guatemala is still confronted with issues such as higher levels of malnutrition and lower contraceptive prevalence than its neighbors.

The coverage and quality of antenatal and postnatal care are factors closely associated with maternal and child health. Although 60 percent of mothers in Guatemala had received antenatal care from a trained professional in 1998, only 40 percent received postnatal care. Those figures reflect an improvement since 1995, but are still lower than the corresponding figures in the Dominican Republic, Colombia, Nicaragua, Brazil, Haiti, and Peru. Thirteen percent of women in Guatemala received no antenatal care, and more than 40 percent did not receive a tetanus toxoid vaccination during their pregnancy.

Almost half of Guatemalan children under the age of 4 months are exclusively breastfed. The rate is comparable to that observed in Peru and Bolivia (around 60 percent), higher than that in Brazil (40 percent) and much higher than that in Colombia (16 percent) and the Dominican Republic (25 percent). However, the level of chronic malnutrition in Guatemala is substantially higher than that in Peru, Bolivia, and Haiti, with 46 percent of children under the age of five being too short for their age.

Of every 1,000 live births in Guatemala, 45 children die before reaching their first birthday. That proportion represents a decline from 51 deaths per 1,000 live births in 1995. Rates of infant mortality in Guatemala are lower than those observed in Haiti and Bolivia but higher than in Brazil and Colombia.

The level of complete vaccination coverage (BCG, measles, and three doses of DPT and polio) has improved noticeably in recent years, from 43 percent in 1995 to 60 percent in 1998/99. However, only one third of Guatemala's children are fully vaccinated before the age of one year.

Fertility in Guatemala continues to be among the highest in Latin America, with the total fertility rate for the period 1996-1999 measured at five children per woman. That rate is higher than the level in Haiti (4.8 children) and double the level found in Brazil (2.5). The potential to reduce fertility, defined as the gap between desired and observed fertility, is about one child. Recently, the increases in women's desire to have smaller families have been greatest in rural areas, among indigenous women and among women with no education. That trend is lessening the fertility gap between urban and rural areas and among ethnic and educational groupings.

The use of family planning methods increased between 1995 and 1998 from 31 to 38 percent of women in union. Nevertheless, among Latin American countries only Haiti has levels of use lower than are observed in Guatemala (18 percent). Nine out of 10 users of contraception use modern methods of family planning.

Qualitative Study in Guinea Investigates Controversial Subject

MEASURE *DHS+* has recently published a new report on the findings of a qualitative study of female genital cutting (FGC) in the Republic of Guinea in West Africa. The study was designed primarily to obtain information for better formulating questions about FGC (also known as female genital mutilation and female circumcision) for the Demographic and Health Surveys (DHS). Guinea was chosen for studying FGC because a DHS survey was planned in the country and because the circumcision of girls is known to be a common practice there.

Data collection methods included individual interviews with single and married women and men, interviews with persons who perform FGC, and a small number of discussion groups. More than 400 women were interviewed to obtain personal accounts of their childhood and their experiences with FGC, and approximately 75 men were interviewed for their opinions on the practice.

The study found that almost all of the women interviewed in the Sosso, Fulfulde, and Maninka languages had been subject to some form of FGC, and three-fourths of the Guerze-speaking women interviewed had undergone the procedure. The women interviewed spoke of the different types of FGC they were familiar with and many were able to describe what had been done to them when they were young. The types of FGC are not necessarily identified by specific names or labels in the languages used in the survey (Sosso, Fulfulde, Maninka, Guerze), but can be identified through descriptive phrases. On the basis of those findings, future surveys on FGC in some countries could benefit from asking women about what was done to them instead of asking them to identify a specific type of FGC.

The study also gave new insights into the individual perceptions surrounding the practice of FGC in Guinea. Sosso and Fulani women often explained that FGC was part of a girl's education, designed to teach her how to behave and how to take care of her husband and family. Many explained that FGC promotes abstinence by reducing female desire for men. The opinions on the role religion plays in FGC were divided: some thought that the Quran required women to be circumcised; others maintained that it is not mentioned in the Quran.

A majority of the women interviewed perceived FGC as an acceptable practice that purifies and socializes the unmarried girl through the education and training she receives during her seclusion from society. However, the younger women who were interviewed, particularly those from an urban environment, were far more critical of the custom.

Most of the men interviewed also thought that the practice should continue, although their reasons varied. The men were also divided on the link between religion and FGC. They all declared it was "women's business," and many saw a relationship between FGC and wives' proper behavior. A good number stated that the practice reduced female sexual desire. A minority of men stated that the practice should be abandoned because it harms young women, yet they still gave permission to have their daughters circumcised.

Food for Thought: Africa Nutrition Program Advocates Awareness

Malnutrition, a major problem facing mothers and children in the developing regions of the world, is often a hidden factor in limiting health and development. With funding from USAID's Africa Bureau, the MEASURE *DHS+* Africa Nutrition Program promotes the importance of nutrition among policymakers and program planners. The program seeks to raise awareness of nutrition issues by disseminating and encouraging the use of data from DHS surveys in the region.

Under MEASURE *DHS+*, the data collected on maternal and child nutrition have been expanded to include measures of micronutrient deficiencies (vitamin A and iron), supplementation (vitamin A and iron), and fortification (iodized salt). The measurement of maternal and child anthropometry (height and weight) has been expanded, and data on infant feeding practices (breastfeeding and complementary feeding) are significantly enhanced.

Dissemination

New advocacy tools are being developed to supplement the nutrition chartbooks that have been the mainstay of the Africa Nutrition Program. Prototype wall charts and fact sheets reflecting the nutritional status of mothers and children have been developed using the Togo 1998 DHS findings. The new formats are designed to reach policymakers and program planners with data for decision-making and nutrition advocacy. In August 1999, nutrition experts in Togo met to review and finalize the new materials, and provided input on the language and content of the wallcharts and fact sheets. As part of capacity-building activities, MEASURE *DHS+* will collaborate with Organisation de coordination et de cooperation pour la lutte contre les grandes endémies (CRAN) to develop dissemination materials for other West African countries.

Nutritionists from the Ministry of Health in Mozambique recently visited ORC Macro to complete a nutrition report based on the 1997 DHS. The report includes more in-depth analyses of the nutrition situation in Mozambique, including multivariate analyses of the determinants of infant and maternal malnutrition and childhood diarrhea. The report will be published in Spring 2000. An in-depth nutrition report for Zambia will be published later this year.

The in-depth nutrition reports will be revised for the MEASURE *DHS+* series. A summary approach will be taken to make the nutrition data more accessible to a broader audience of policymakers and program managers.


MOI/Zimbabwe

Research

The Africa Nutrition Program is using qualitative research methods to explore mothers' accounts of infant feeding and complementary feeding between the ages of 4 months and 1 year of age. Even when food is available in a household, children may still be malnourished because of disease or improper feeding. Appropriate complementary feeding plays a critical role in ensuring infants' survival and optimum growth. DHS survey findings indicate that malnutrition rates have not changed in both low and medium income countries in West Africa in the 1990s.

In light of the findings from the Ghana and Mali DHS Surveys, a qualitative study was undertaken in the two countries to clarify the contribution of poor infant feeding practices to the continued high rates of malnutrition in the first year of life. The study was based on observations and in-depth interviews comparing well-nourished children to malnourished ones. The results describe mothers' accounts of important patterns in their infant feeding experiences and decision-making process and will provide insights to better interpret the survey findings and to contribute to the development of program interventions.

Publications

Recently MEASURE *DHS+* published a worldwide report on Breastfeeding and Complementary Infant Feeding that compares nutrition findings across regions and countries. During the coming year, the nutrition program will be preparing two comparative reports. A cross-regional report entitled *Children's Nutritional Status* will be published in late 2001. The first of a series of reports on women's health and nutrition, with a focus on Africa, is expected out in 2002. As MEASURE *DHS+* surveys are completed, a single-page *Micronutrient Update* will be produced on a quarterly basis. It will also be available on the MEASURE *DHS+* web site.

Future Directions

In the future, the nutrition program need not be limited to Africa. Asia and Latin America also have compelling nutrition concerns that could benefit from advocacy to make data more accessible for people working with health and development policy and program interventions. During the MEASURE *DHS+* project, efforts will be made to expand the dissemination of nutrition data in those two regions.

Demographic and Health Survey Findings From Around the World

In Guinea, knowledge of contraceptive methods among women age 15-49 increased from 28 percent in1992 to 71 percent in 1999.

Findings from the1999 Kazakhstan DHS indicate a decline in induced abortions of almost 25 percent since 1995.

In Indonesia, there was a shift in the use of contraceptive methods between 1987 and 1997; currently married women age 15-49 increasingly favored injections (21 percent) over the pill (15 percent) and IUD (8 percent).

Twenty-five percent of children under the age of five in Nicaragua suffer from chronic malnutrition or stunting according to the 1998 DHS.

Fertlity has declined in Côte d'Ivoire from an average of 5.7 children per woman in 1994 to 5.2 children in 1998/99.

What's New on the DHS Web Site?

MEASURE *DHS+* is pleased to announce the release of its newly redesigned web site: www.macroint.com/dhs. Users will find that the changes to content and layout, which was overseen by Quantum Research Corporation (QRC), facilitate navigating the site, downloading data sets, and ordering publications.

New Content

A comprehensive description of the MEASURE *DHS+* project introduces visitors to DHS's unique approach to the collection and analysis of country-specific and comparative data on population, health, and nutrition in developing countries. The *DHS+* web site offers up-to-date information about ongoing and completed surveys, and about specific research activities. Users can access detailed descriptions of survey data sets and are invited to complete a user feedback form.

New Publications Catalog

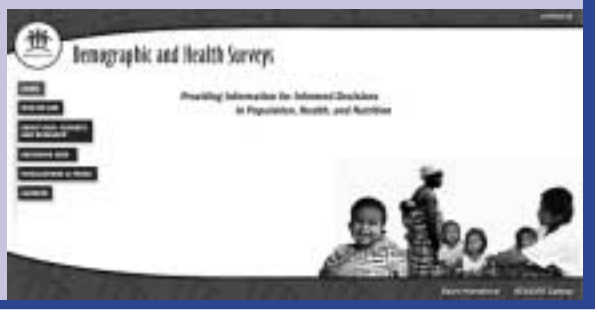
DHS publications provide timely information on results of DHS Surveys. The publications are designed to inform policymakers and program managers in survey countries as well as population and health organizations and researchers throughout the world. Many publications are now viewable in .pdf format on the *DHS+* web site and can be downloaded or ordered at no charge on-line.

New Database

In addition to expanded content and an improved ordering system, *DHS+* plans to release a powerful database-driven search system this spring. An on-line database of indicators will allow for complex searches and data comparisons with numerous variable selection options.

New Software

DHS+ is cooperating with the U.S. Bureau of the Census (BUCEN) and SerPro Ltda to develop a software system to fill the needs of survey and census processing worldwide. The new software, CSPro, is a user-friendly, Windows-based application that emphasizes the visual creation and manipulation of data and limits the need for users to write programming statements. Users can download the software at no charge by visiting the "Surveys and Research" portion of the *DHS+* web site.



DHS+ Visitors and Events

July 1999

■**Mr. Eric Okrah** from Ghana visited the headquarters of ORC Macro in Calverton, MD, to draft and edit the Final Report of the 1998 Ghana Demographic and Health Survey.

■Dr. Ida Bagus Permana, Mrs. Siti Fathonah, Dr. Soeharsono Soemantri, and Dr. Pudjo Rahardjo from Indonesia and Ms. Paz Marquez from the Philippines visited Macro to work on Further Analysis studies.

■Dr. Banu Ergocmen, Dr. Attila Hancioglu and Dr. Sinan Turkyilmaz from Turkey visited ORC Macro to complete the Final Report of the 1998 Turkey Demographic and Health Survey.

August 1999

■**Dr. Oti Boateng** from Ghana visited ORC Macro to draft and edit the Final Report of the 1998 Ghana Demographic and Health Survey.

October 1999

■The National Seminar for the 1998 Turkey DHS was held on October 19-20 in Abant, Turkey.
■The National Seminar for the 1998 Ghana DHS was held on October 27 in Accra, Ghana.

November 1999

■A *DHS+* Data Processing Procedures Workshop was held from November 15 to December 3 at ORC Macro headquarters. **Alexander Izmoukhambetov** from Kazakhstan, **Aboubakar Ghapoutsa** from Cameroon, and **Julius Majale** from Kenya participated in the workshop.

■MEASURE *DHS+* participated in the annual meeting of the **American Public Health Association (APHA)** on November 7-10 in Chicago, Illinois.

December 1999

■*DHS+* conducted two one-day data users workshops in Durban, South Africa as part of the Third African Population Conference. A total of 23 participants were trained.

New Publications

Country Reports

Ghana	1998 Final Report (English)
	1998 Summary Report (English)
Guatemala	1998 Final Report (Spanish)
Indonesia	Trend Report (English)
Jordan	Trend Report (English)
Morocco	1996/97 Summary Report (French/ English)
South Africa	1998 Preliminary Report (English)

Further Analysis Reports

Ayad, M. and M. Azelmat. 1999. Regard sur la fécondité, la santé et la planification familiale au Maroc. (French)

Mahan, M., F. H. El-Zanaty and A. Way. 1998. Perspectives on the Population and Health Situation in Egypt. (English)

Marquez, M. P. and C. F. Westoff. 1999. The Two-Child Norm in the Philippines. (English)

Permana, I. B. and C. F. Westoff. 1999. The Two-Child Norm in Indonesia. (English)

Mboup, G. and N. Kodjogbé. 1999. Perspectives sur la planfication familiale et la santé de la reproduction au Bénin. (French)

Qualitative Studies

Yoder, P. S., P. O. Camara, and B. Soumaoro. 2000. Female Genital Cutting and Coming of Age in Guinea. (English/French)

Other Publications

El-Zanaty, F., A. Way, S. Kishor, and J. Casterline. 1999. Egypt Indepth Study on the Reasons for Nonuse of Contraception. (English)

Barrère, B., G. Mboup and M. Ayad. 1999. Enquêtes Démographiques et de Santé en Afrique de l'Ouest: Burkina Faso, Cameroun, Côte d'Ivoire, Togo. (English)

Dissemination Materials

1998 Ghana Fact Sheet (English)
2000 Ghana Family Health Findings (English)
Jordan Family Health Calendar 2000 (English)
Indonesia wall chart (English/Indonesian)

To receive a publications catalogue or *DHS+ Dimensions*, write to
Demographic and Health Surveys
Attn: Publications Clerk
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e-mail: reports@macroint.com

Selected Statistics from DHS Surveys

REGION/ SURVEY COUNTRY	VITAL RATES: Total Fertility Rate[a]	VITAL RATES: Total Wanted Fertility Rate[a]	VITAL RATES: IMR/ Under-5 Mortality[b]	USE OF CONTRACEPTION (Currently Married Women 15-49): % Currently Using Any Method[c]	USE OF CONTRACEPTION (Currently Married Women 15-49): % Currently Using Any Modern Method[d]	MATERNAL CARE (Births in Last 5 Yrs.): % Women Receiving Antenatal Care[e]	MATERNAL CARE (Births in Last 5 Yrs.): % Women Receiving Assistance at Delivery From Professional[e]	CHILD HEALTH INDICATORS: Median Duration (Months) of Breast-feeding[f]	CHILD HEALTH INDICATORS: % Children 0-35 Months Stunted[g]	CHILD HEALTH INDICATORS: % Children Fully Immunized[h]
ASIA										
Bangladesh 1996/97	3.3	2.5	82/116	49[i]	42[i]	26	8	33	55[j]	54
Indonesia 1997	2.8	2.4	46/58	57	55	82	43	24	†	55
Kazakhstan 1999	2.1	††	40/46	66	54	93[k]	100[k]	14	16	†
Kyrgyz Republic 1997	3.4	3.7	61/72	43	35	97	98	17	25	82
Nepal 1996	4.6	2.9	79/118	29	26	39[k]	10[k]	31	48	43
Philippines 1998	3.7	2.7	35/48	47	28	86	56	13	†	73
Thailand 1987	2.2	1.8	35/45	66	64	77	66	15	22[l]	37
Uzbekistan 1996	3.3	3.1	49/59	56	51	95[k]	98[k]	17	31	85
Vietnam 1997	2.7[b]	2.4	28/38	75	56	71	77	17	†	57
LATIN AMERICA/CARIBBEAN										
Bolivia 1998	4.2	2.5	67/92	48	25	65[k]	57[k]	18	26[l]	26
Brazil 1996	2.5	1.8	39/49	77	70	81[m]	78[m]	7	11[j]	73
Colombia 1995	3.0	2.2	28/36	72	59	83	85	11	13	66
Dominican Republic 1996	3.2	2.5	47/57	64	59	98	96	8	11[j]	39
Guatemala 1998/99	5.0	4.1	45/59	38	31	60	41	20	42	60
Haiti 1994/95	4.8	3.0	74/131	18	13	68	46	18	27	30
Nicaragua 1997/98	3.9	2.8	40/50	41	39	82	65	12	25	73
Peru 1996	3.5	2.2	43/59	64	41	66	55	20	26[j]	63
NEAR EAST/NORTH AFRICA										
Egypt 1995/96	3.6	2.6	63/81	48	46	39	46	19	30	79
Jordan 1997	4.4	2.9	29/32	53	38	96	97	12	8	21
Morocco 1995	3.3	2.2	62/80	50	42	45	40	15	21[n]	85
Turkey 1998	2.6	1.9	43/52	64	38	68	81	†	†	46
Yemen 1997	6.5	4.5	90/121	21	10	34	22	18	52[j]	28
SUB-SAHARAN AFRICA										
Benin 1996	6.3[b]	5.0[b]	94/167	16	3	80[k]	64[k]	23	25	56
Cameroon 1998	5.2	4.6	77/151	19	7	79	58	18	29	36
Central African Rep. 1994/95	5.1	4.7	97/157	15	3	67[k]	46[k]	21	34	37
Chad 1996/97	6.6	6.3	103/194	4	1	32	24	21	40[n]	11
Comoros 1996	5.1[b]	3.7[b]	77/104	21	11	85[k]	52[k]	20	34	55
Côte d'Ivoire 1998/99	5.2[b]	††	112/181	15	7	84	47	††	††	51
Eritrea 1995	6.1	5.7	66/136	8	4	49[k]	21[k]	22	38	41
Ghana 1998	4.5[b]	4.2[b]	56/107	22	13	81	39	22	26	51
Guinea 1999	5.5	5.0	98/177	6	4	71	35	22	26[j]	32
Kenya 1998	4.7	3.5	74/112	39	31	92	44	21	33	65
Madagascar 1997	6.0	5.2	96/159	19	10	78	47	21	48	36
Mali 1995/96	6.7	6.0	123/238	7	5	47[k]	40[k]	22	30	32
Mozambique 1997	5.6	5.9	135/201	6	5	71	44	22	36	47
Niger 1998	7.5	7.2	123/274	8	5	40	44	21	41	18
Senegal 1997	5.7	4.6	68/139	13	8	82	47	21	†	†
South Africa 1998	2.9	††	45/59	62	61	94	84	††	††	63
Tanzania 1996	5.8	5.5	88/137	18	13	89	47	22	52	71
Togo 1998	5.4	4.2	80/146	24	7	82	59	24	22[j]	31
Uganda 1995	6.9	5.6	81/147	15	8	91[o]	38[o]	20	38	47
Zambia 1996	6.1	5.3	109/197	26	14	96	47	20	42[j]	67

† = 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/prolonged 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 (BCG, measles, 3 doses each DPT/polio).
i Currently married women 10-49 years old.
j Children 0-59 months old.
k Based on births in the preceding 3 years.
l Children 3-35 months old.
m Care provided by doctor.
n From 1992 ENPS-II.
o Based on births during the preceding 4 years.