

UZBEKISTAN

INEQUALITIES IN HEALTH, NUTRITION AND POPULATION

NANDINI OOMMAN, ELIZABETH LULE, DEBORAH VAZIRANI, RITU CHHABRA

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Health, Nutrition, and Population (HNP) Discussion Paper

UZBEKISTAN Inequalities in Health, Nutrition, and Population

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Abstract: This paper focuses on the inequalities in health, nutrition, and population in Uzbekistan. It presents data on disaggregated health status and health services utilization that is organized by asset or wealth quintiles, a form that enables readers to better understand the distribution of these indicators from the poorest sections to the richest sections of society. That is, the profile takes data on population as well as on reproductive and child health and nutrition from tables presented in the Uzbekistan version of *Socio-Economic Differences in Health, Nutrition and Population* (Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2000) and presents them in a more easily accessible format designed to call attention to the inequalities that exist among socioeconomic groups. These kinds of disaggregated data have great potential value for the design and implementation of efforts to achieve the Millennium Development Goals (MDGs) for health in a manner that can bring about the greatest possible gains for the poor. By focusing attention on the problems suffered by the disadvantaged groups that are of greatest concern, these data can increase the likelihood that MDG initiatives will effectively deal with those problems and reach those groups. The profile also provides evidence of successful interventions that have reached those who are poor. The hope is that this attention will stimulate thought about how best to reach the neediest groups with health services and other programs.

Keywords: Inequality, Nutrition, Population, Reproductive Health, Uzbekistan

Disclaimer: The findings, interpretations, and conclusions expressed in the paper are entirely those of the authors and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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Foreword

Improving health, nutrition, and population conditions among disadvantaged population groups has become an increasingly important development objective for many development agencies, including the World Bank. In the case of the Bank, this focus comes through clearly in its recent policy documents. For example, the Bank's 1997 health, nutrition, and population policy paper stated that priority one is "improving the health, nutrition, and population status of the world's poor." This priority was reinforced by Bank President James D. Wolfensohn's 2001 overall mission statement, which said that the Bank's principal objective is "to fight poverty with passion and professionalism" and with lasting results.

An initial step toward achieving these objectives is obtaining adequate baseline information about health, nutrition, and population conditions among the population groups that are of greatest concern. To this end, the Bank has been encouraging the production of disaggregated data that would go beyond the societal averages featured in most statistical compendia and would permit identification of conditions prevailing among disadvantaged segments of the societies concerned. Among other things, it has produced a series of reports, drawing on data collected by the Demographic and Health Surveys program, for 45 countries¹ and several Indian states. A second set of these surveys, covering 54 countries, is currently under preparation.

These kinds of disaggregated data have great potential value for the design and implementation of efforts to achieve the Millennium Development Goals (MDGs) for health in a manner that can bring about the greatest possible gains for the poor. By focusing attention on the problems suffered by the disadvantaged groups that are of greatest concern, these data can increase the likelihood that MDG initiatives will effectively deal with those problems and reach those groups.

The profile presented here constitutes an effort to help realize the potential just described. That is, the profile takes data on population as well as on reproductive and child health and nutrition from tables presented in the Uzbekistan report on socioeconomic differences (Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2000) and presents them in a more easily accessible format that is designed to call attention to the inequalities that exist among socioeconomic groups. The profile also provides evidence of successful interventions that have reached those who are poor. The hope is that this attention will stimulate thought about how best to reach the neediest groups with services and other programs.

Davidson R. Gwatkin

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¹ The full texts of all 45 country reports are available at the Bank's health and poverty Web site: www.worldbank.org/poverty/health/data/index.htm

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Part I—Introduction

The consensus and commitment among many countries and the international community to the achievement of the Millennium Development Goals (MDGs) implicitly recognizes the substantial positive repercussions that the attainment of these goals would have on the reduction of poverty and gains in welfare for millions of households. As in other areas of human development, progress in meeting the health-related goals will also contribute to poverty reduction. Poverty and health are intimately related, and poverty is both a cause and consequence of ill health (World Bank, 2001). The relationship is fairly straightforward and obvious: Poor health and nutritional conditions compromise a household's ability to generate a sufficient livelihood, triggering a process of impoverishment; conversely, being impoverished causes ill health because household members are improperly nourished, are unable to access health services to treat illnesses, or both. At the macro level, infectious diseases like malaria and AIDS can take off a few points in the GDP growth rate (WHO, 2001). At a micro level, serious illnesses can make the difference between poverty and living well for individual families.

Although any progress toward the MDGs (as currently stated in terms of societal averages) might be expected to benefit disadvantaged groups within society to at least some degree, the benefits accruing to poor people would be many times larger if the progress could be concentrated among those most in need. For this progress to happen, a change of course will be required. Previously, health status and health service indicators were provided at an aggregate level either by country or by region but rarely by economic class. More recently, data from national surveys highlight the distribution of health conditions and the use of health services across economic classes (Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2000). Recent results comparing survey data from the 1980s and 1990s in India show that, during this period, inequity by economic class has become worse and that the divide between those who are poor and those who are rich—in terms of untreated illness and expenditure on health services as well as in the utilization of public and private health care—has increased. Furthermore, the study found that untreated morbidity remains significantly higher in women than in men (Sen, Iyer, & George, 2002). Incidence analyses findings show that public spending on health and education are not particularly well targeted to the poor, as seen in Africa (Castro-Leal, Dayton, Demery, & Mehra, 1999) and in India (Mahal, Singh, & Afridi, 2000).

Presented below is a profile of the Poverty and Reproductive Health situation in Uzbekistan that is provided as an evidence base for policy recommendations for Poverty Reduction Strategy Papers (PRSP) and for Country Assisted Strategies (CAS) at the World Bank. This profile highlights new evidence on reproductive health and poverty links.

The data for this profile are obtained from the Uzbekistan report on *Socio-Economic Differences in Health, Nutrition and Population* (Gwatkin, Rustein, Johnson, Pande & Wagstaff, 2000), which uses data from the *Demographic and Health Surveys* (Macro International, 1995). The Poverty and Health Thematic Group at the World Bank compiled reports from the demographic and health survey (DHS) data for 45 countries. These reports present data on disaggregated health status and health services utilization that is organized by asset or wealth quintiles, a form that enables readers to better understand the distribution of these indicators from the poorest sections to the richest sections of society. Wealth is measured by means of an asset index that is based on principal component analysis of more than 40 asset variables. These variables include durable housing goods (e.g., refrigerator, television, car), housing facilities (e.g., drinking water, toilet), and housing materials (e.g., type of roof and floor).

MDGs that have direct implications for health form the basis of the discussion contained in this chapter. Box 1 displays the associated targets and indicators.

Box 1. Millennium Development Goals for Reproductive and Child Health

Goal 1: Eradicate extreme poverty and hunger

Target 2: Between 1990 and 2015, halve the proportion of people who suffer from hunger.

Indicators: (i) Prevalence of underweight children (under 5 years of age)

Goal 4: Reduce Child Mortality

Target 5: Between 1990 and 2015, reduce the Under-5 Mortality Rate (U5MR) by two-thirds.

Indicators: (i) Under-5 Mortality Rate
(ii) Infant Mortality Rate
(iii) Proportion of 1-year-olds immunized against measles

Goal 5: Improve Maternal Health

Target 6: Between 1990 and 2015, reduce the Maternal Mortality Ratio by three-quarters.

Indicators: (i) Maternal Mortality Ratio
(ii) Proportion of births attended by skilled health personnel

Goal 7: Combat HIV/AIDS, Malaria, and other diseases

Target 7: By 2015, have halted and begun to reverse the spread of HIV/AIDS.

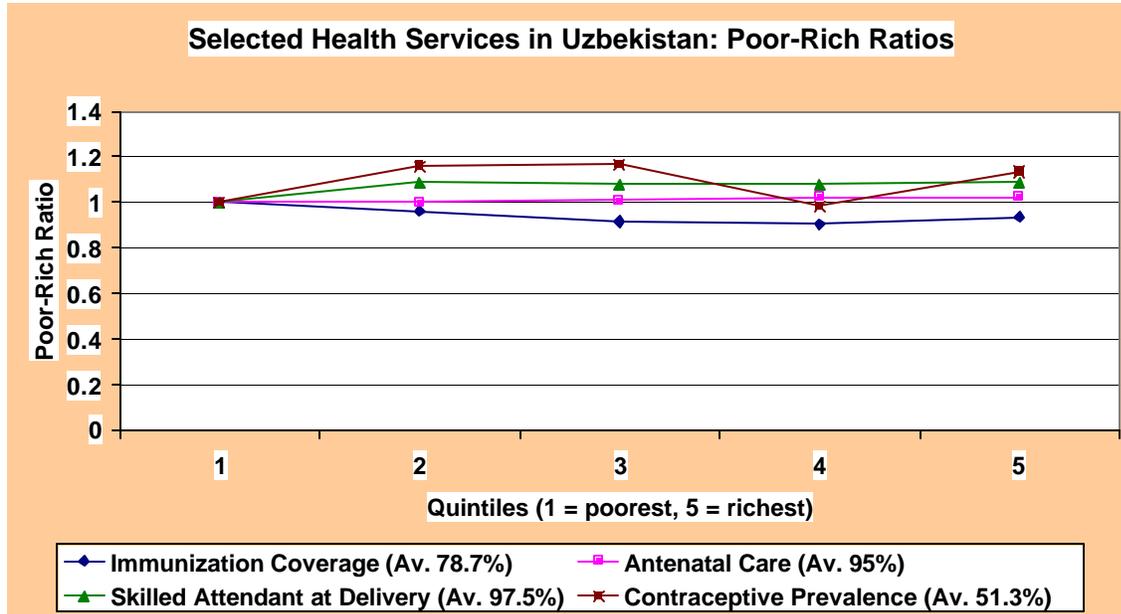
Indicators: (i) HIV prevalence among 15–24-year-old pregnant women
(ii) Contraceptive Prevalence Rate

The rest of the profile is organized as follows. Section II presents data on indicators and use of reproductive health services and nutrition of women in Uzbekistan. Section III focuses on issues related to child health and nutrition. The profile concludes with a discussion in Section IV of the evidence on successful interventions that have reached the poor. Annex A demonstrates a stylized example of how the MDGs may be reached more equitably.

Part II—Maternal Nutrition and Reproductive Health

Selected Health Services

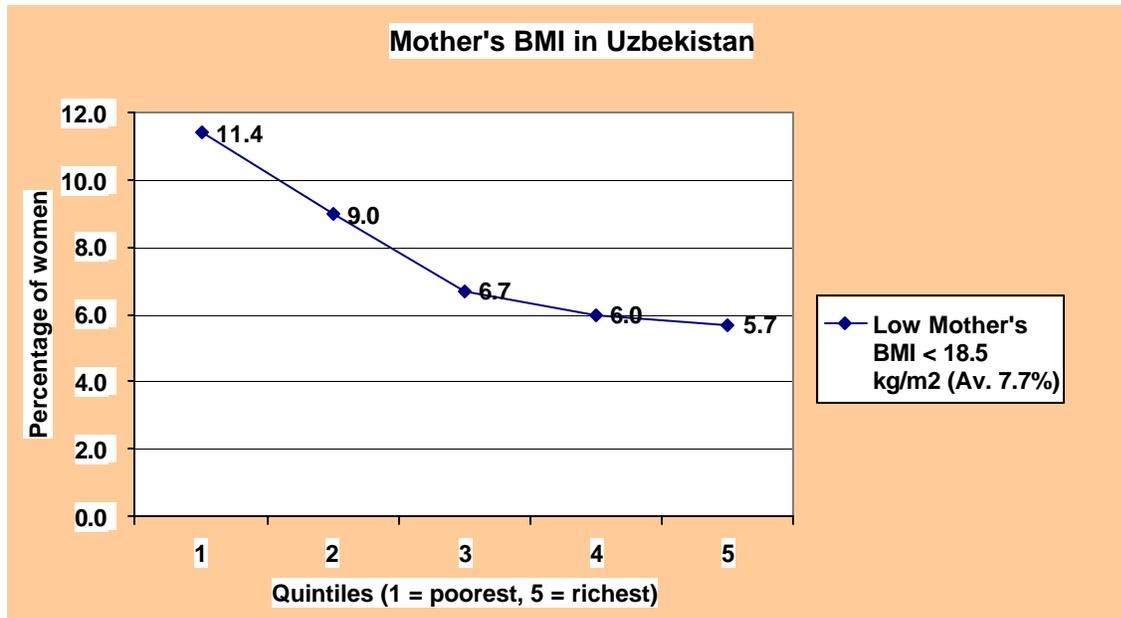
Figure 1 Selected health services utilization in Uzbekistan.



Differences between the poor and the rich exist for all services, but the biggest disparity is seen in contraceptive prevalence between the richest and poorest women in Uzbekistan. The inter-quintile disparity (ratio between poorest [reference] and richest quintiles) is 1.13 for contraceptive prevalence as seen in Figure 1. A recent World Report that was done to assess living standards in Uzbekistan suggests that these average indicators hide significant differences in health and nutritional outcomes between rural and urban areas, among different geographical regions, and between low income and higher income households (World Bank, 2002b, p. 75).

Maternal Nutrition

Figure 2. Prevalence of low mother's Body Mass Index (BMI)* in Uzbekistan.

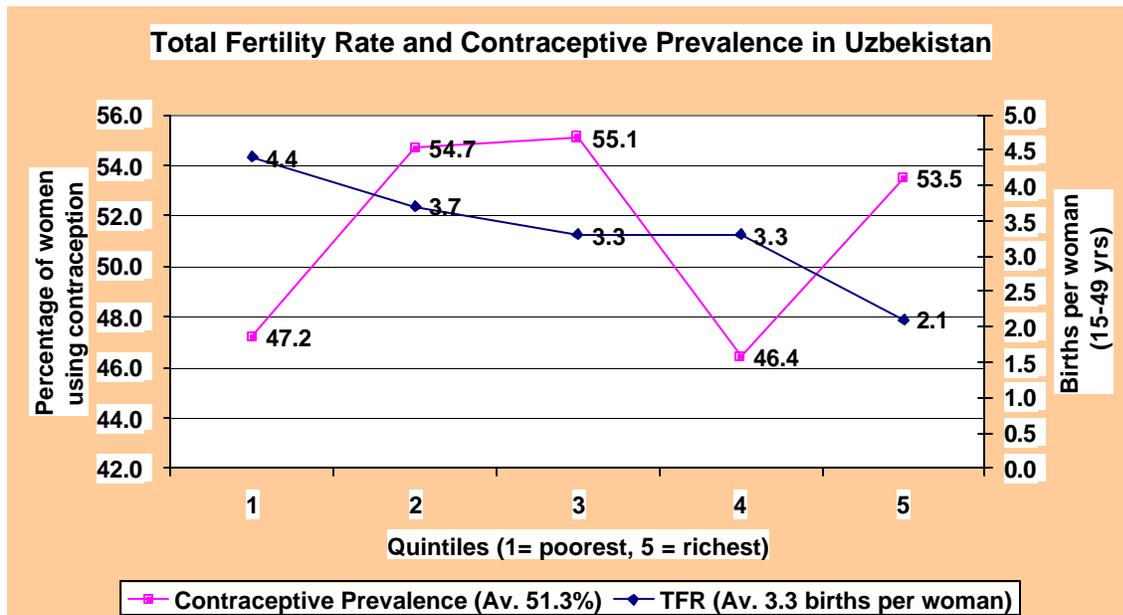


*Low mother's BMI refers to the BMI of mothers of children under the age of 3 years.

The proportion of women with low Body Mass Index (BMI) drops across asset quintiles, showing higher levels of low BMIs for women in the poorest quintile (see Figure 2). Women in the poorest quintile are twice as likely as women in the richest quintile to have low BMI.

Fertility and Family Planning

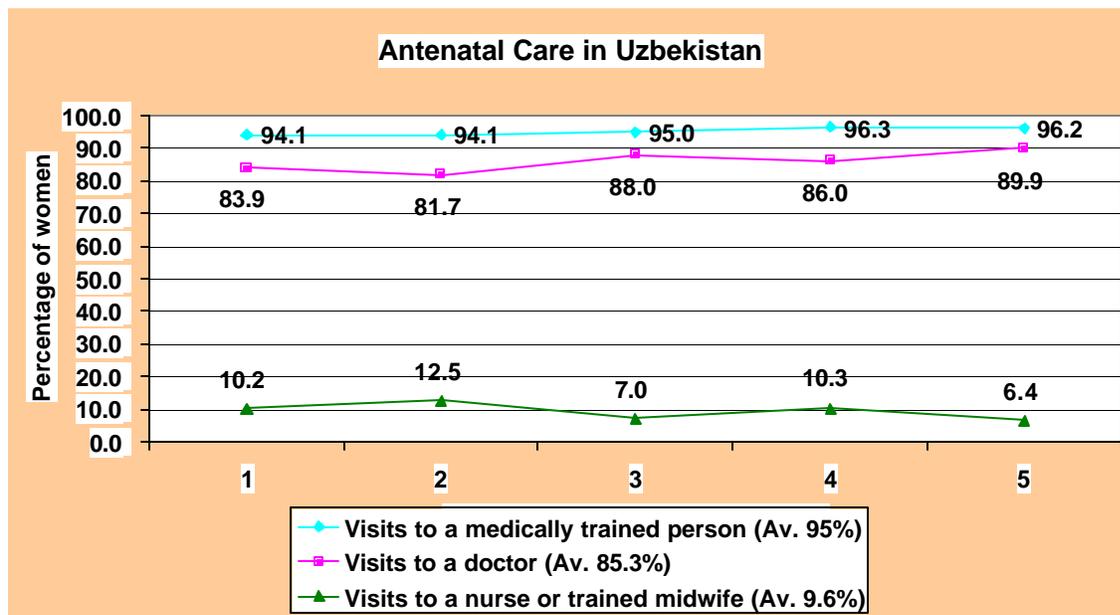
Figure 3. Rates of fertility and contraceptive use in Uzbekistan.



The Total Fertility Rate (TFR), which is measured in this profile by births per woman, is about 3.3, and it decreases across quintiles. Figure 3 shows that women in the poorest quintile have a total fertility rate of 4.4 births per women whereas women in the richest quintile have a total fertility rate of 2.1 births per women. On average, 50% of women in Uzbekistan use modern contraception. Of interest is that Figure 3 shows that contraceptive prevalence increases dramatically from the poorest women to women in Quintiles 2 and 3, then drops dramatically in Quintile 4, and dramatically rises once again among the wealthiest women, although the percentage of wealthy women using modern contraception is not as high as women in the near-poor quintiles. The poor-rich ratio for TFR is 2.

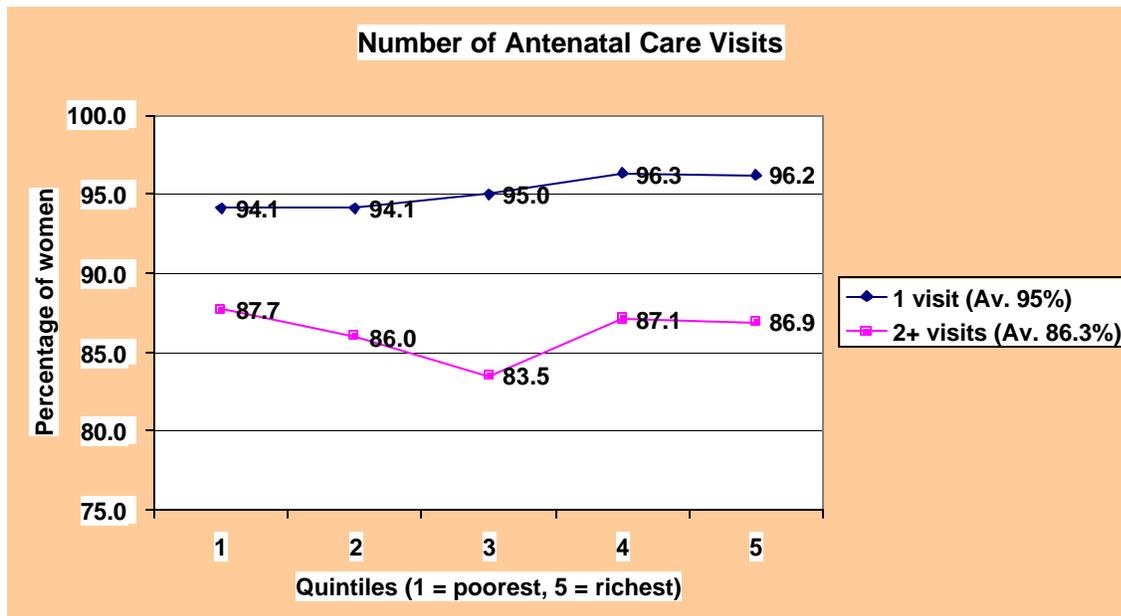
Antenatal Care

Figure 4. Antenatal care in Uzbekistan.



Overall, inequity in the use of antenatal care between each successive quintile is not extreme, and the average for antenatal care use is high (95%). A larger proportion of women in all quintiles appear to visit a doctor (Av. 85.3%) than visit a nurse or trained midwife (9.6%) for antenatal care. Women in the poorest quintile are 1.5 times more likely than women in the richest quintiles to seek antenatal care from a nurse or trained midwife (see Figure 4).

Figure 5. Antenatal care visits in Uzbekistan.



Similar proportions of women in both the poorest and richest quintiles have had two or more antenatal care visits whereas a slightly larger percentage of the wealthiest women than the poorest women have had at least one antenatal care visit (see Figure 5).

Delivery Care

Figure 6. Skilled attendance at delivery in Uzbekistan.

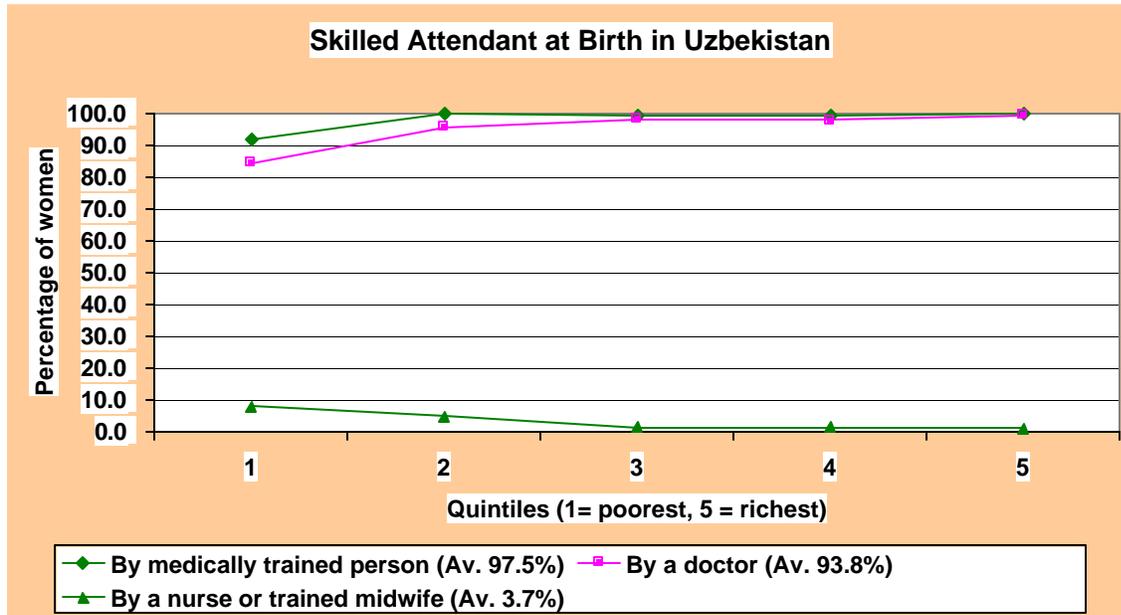
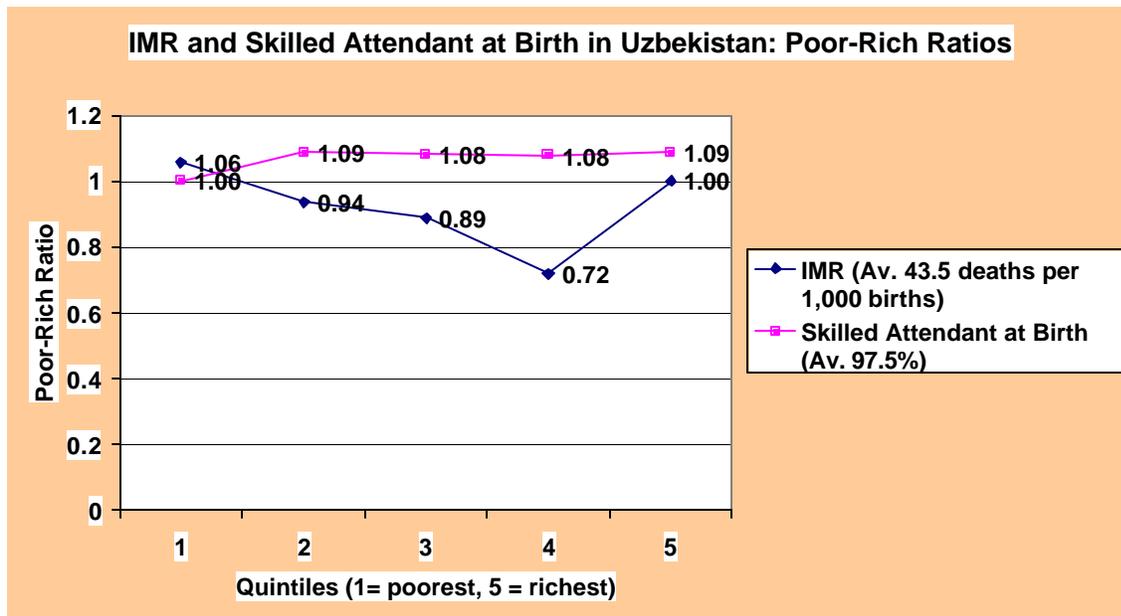


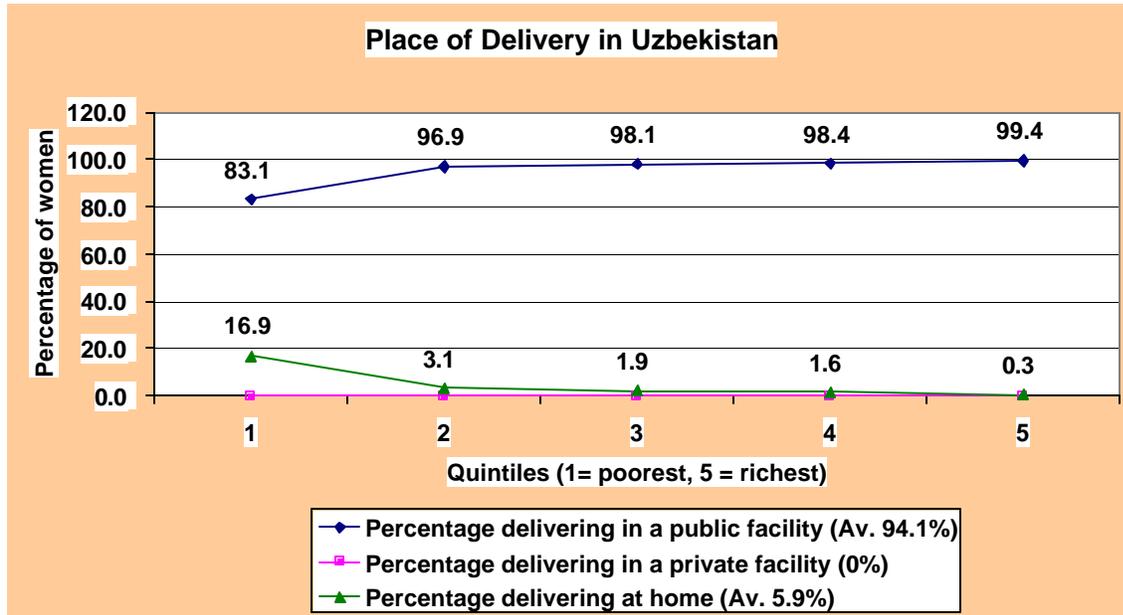
Figure 6 shows that skilled attendance at birth is high in Uzbekistan; about 97.5% of women have skilled attendance at delivery. Nevertheless, inequity exists between the poorest and richest women for this indicator in that the proportion of women who have skilled attendants at birth increases from the poorest to the richest quintile. Women in the wealthiest quintile are about 1.2 times more likely than women in the poorest quintile to have a physician present during delivery. However, women in the poorest quintile were more than 8.5 times more likely than the wealthiest women to have a nurse or trained midwife as a skilled attendant.

Figure 7. Poor-rich ratios of infant mortality and of the presence of a skilled attendant at birth.



As Figure 7 shows, even though the differences between the poorest and richest populations are small when looking at infant mortality rates and skilled attendance at birth for the five asset quintiles, differences do exist. Of interest is that poor-rich ratios for infant mortality are lowest in Quintiles 2, 3, and 4 and are similar for skilled attendance at birth in Quintiles 2, 3, 4, and 5.

Figure 8. Site of delivery.



The majority of women in Uzbekistan (Av. 94.1%) deliver in a public facility (see Figure 8). The data suggest that private facilities are rarely used for deliveries. A higher percentage of poorer women deliver at home (16.9%) compared with only .3% of women in the wealthiest quintile. The rich-poor ratio for delivery in a public facility is 1.2, supporting the data that the majority of women in Uzbekistan deliver in a public medical facility. However, women in the poorest quintile are more than 56 times more likely than women in the richest quintile to deliver at home, even though the proportions of women delivering at home are low.

Part III—Child Health and Nutrition

Nutritional Status of Children in Uzbekistan

Figure 9. Prevalence of moderate and severe stunting in children under 3 years.

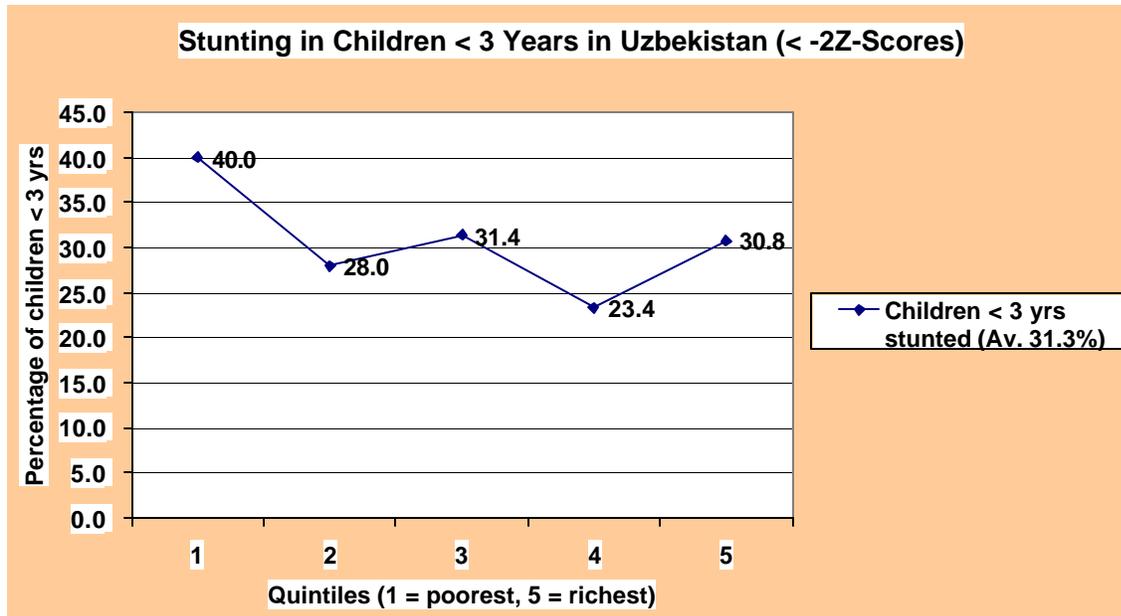
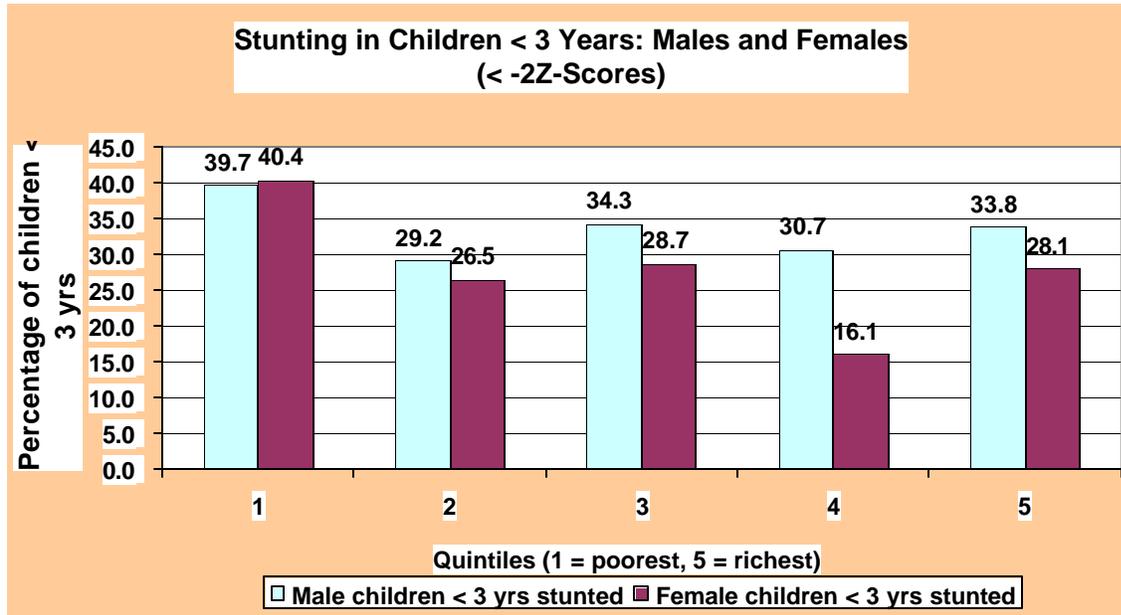


Figure 9 shows clearly that the prevalence of stunting in children under the age of 3 years decreases from the poorest to the richest quintile; however, lower proportions of children in Quintiles 2 and 4 tend to be stunted compared with children in the richest quintile. Children in the poorest quintile have the highest rates of stunting (40%) compared with rates of 30.8% in the richest quintile. Prevalence rates in the poorest quintile suggest a high degree of malnutrition² within that group. The poor-rich ratio is 1.3.

² Classification of malnutrition by prevalence of stunting [$< -2Z$ -Scores] (WHO): $< 20\%$ = Low degree of malnutrition; $20\text{--}29\%$ = Medium degree of malnutrition; $30\text{--}39\%$ = High degree of malnutrition; and $\geq 40\%$ = Very high degree of malnutrition.

Figure 10. Prevalence, by gender, of moderate and severe stunting in Uzbekistan.



Disaggregation, by gender, of moderate and severe stunting rates shows a higher prevalence of stunting in boys compared with girls, except in the poorest quintile where there is a slightly higher prevalence of girls than boys who are moderately or severely stunted (see Figure 10). The poor-rich ratio is 1.2 for boys and 1.4 for girls.

Figure 11. Moderate and severe underweight rates for children less than 3 years.

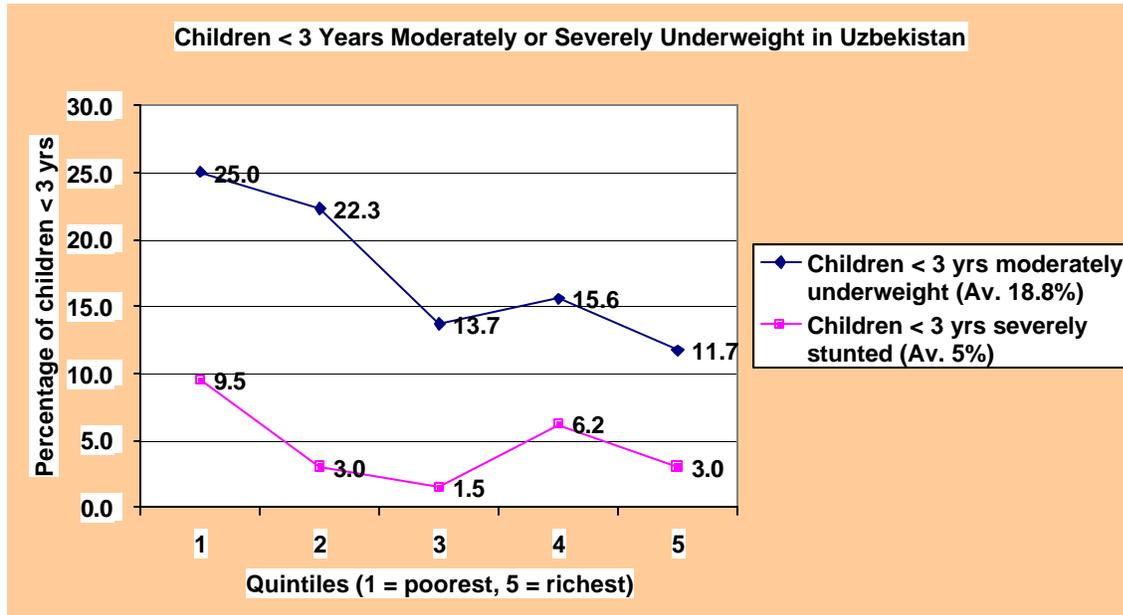
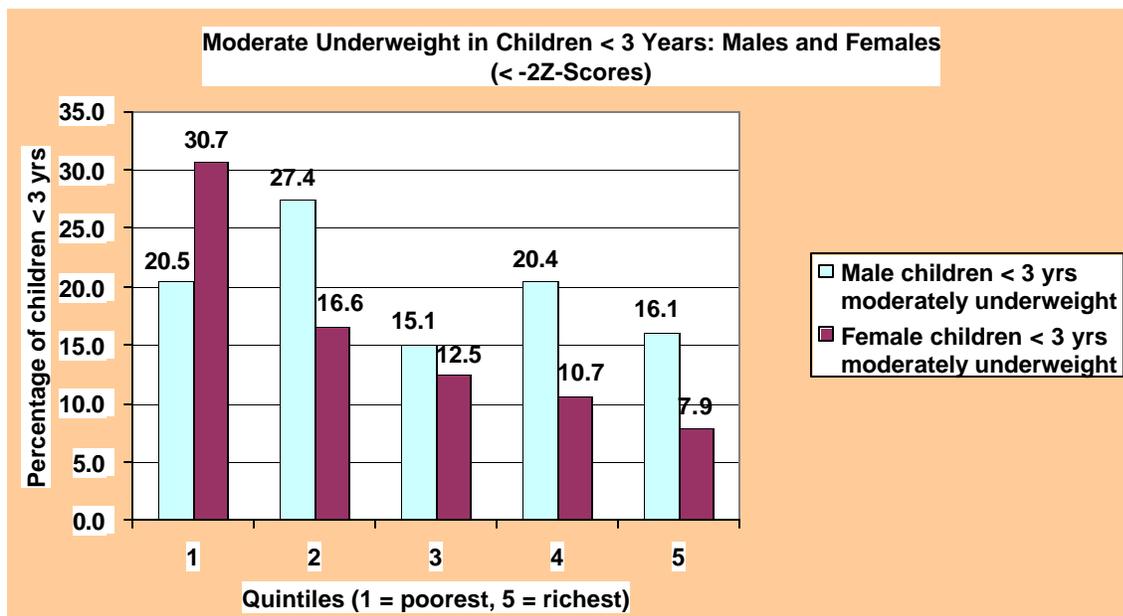


Figure 11 shows prevalence of moderate ($< -2Z$ -scores) and severe ($< -3Z$ -scores) underweight rates, or low weight for age. Prevalence declines from the poorest to the richest quintile for moderate underweight. The poor-rich ratio for moderate underweight prevalence is 2.1. Severe underweight rates also decline from the poorest to the richest quintile. The poor-rich ratio for severe underweight rates is 3.2, suggesting that children under the age of 3 years in the poorest quintile are 3 times more likely than those in the richest quintile to be severely underweight. Figure 11 also shows higher prevalence of moderate and severe stunting in children in the near-rich quintile (Quintile 4) compared with children in Quintiles 2 and 3.

Figure 12. Moderate underweight by gender in Uzbekistan.



The underweight data, disaggregated by gender, for children under the age of 3 years show a higher prevalence of moderate underweight in boys for all quintiles, except the poorest quintile in which moderate underweight is higher for girls (see Figure 12). Differences in prevalence of underweight are seen between boys and girls, favoring girls in the second, fourth, and richest quintile where the prevalence of moderate underweight in boys is more than double the prevalence in girls. Within each gender category, boys in the poorest quintile are 1.3 times more likely than boys in the richest quintile to be moderately underweight, but girls in the poorest quintile are almost 4 times more likely to be moderately underweight compared with girls in the richest quintile.

Figure 13. Severe underweight prevalence, by gender, in Uzbekistan.

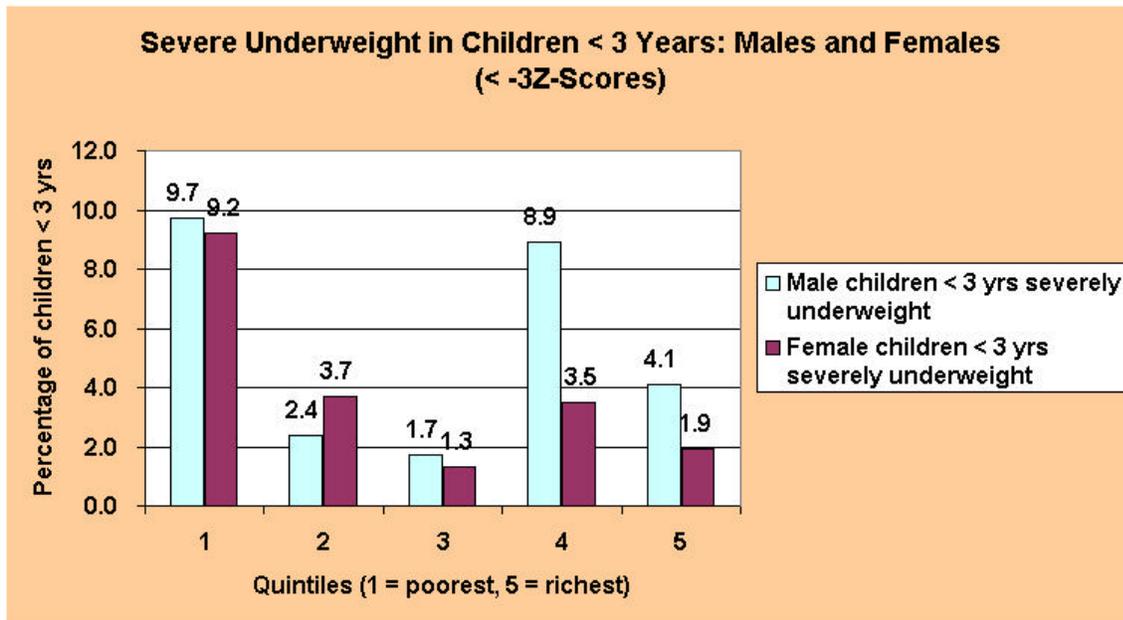
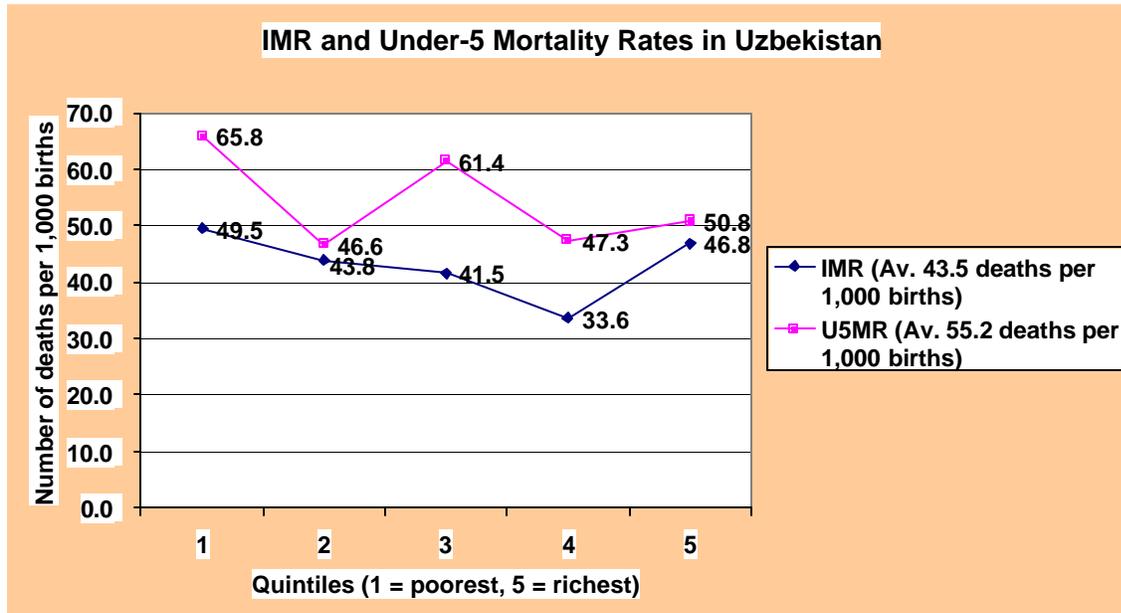


Figure 13 displays data for severe underweight rates and in all quintiles except quintile 2, shows a higher prevalence of boys who are severely underweight than girls. This finding is a reverse of what is seen in the prevalence of moderate underweight proportions seen in Figure 12, suggesting that a larger proportion of boys in the second quintile are moderately underweight than severely underweight. Huge variations in prevalence exist for boys and girls, favoring the girls in the fourth and the richest quintiles.

Boys in the poorest quintile are 2.4 times more likely than boys in the richest quintile to be severely underweight whereas the poor-rich ratio for severe underweight in girls is 4.8. In Quintiles 4 and 5 (the near-rich and richest quintiles), boys are more than twice as likely as girls to be severely underweight. A recent report on living standards in Uzbekistan (World Bank, 2002b, p. 21) suggests that the disparities in nutritional outcomes reflect the hardships faced by poor households in meeting their basic needs.

Child Mortality

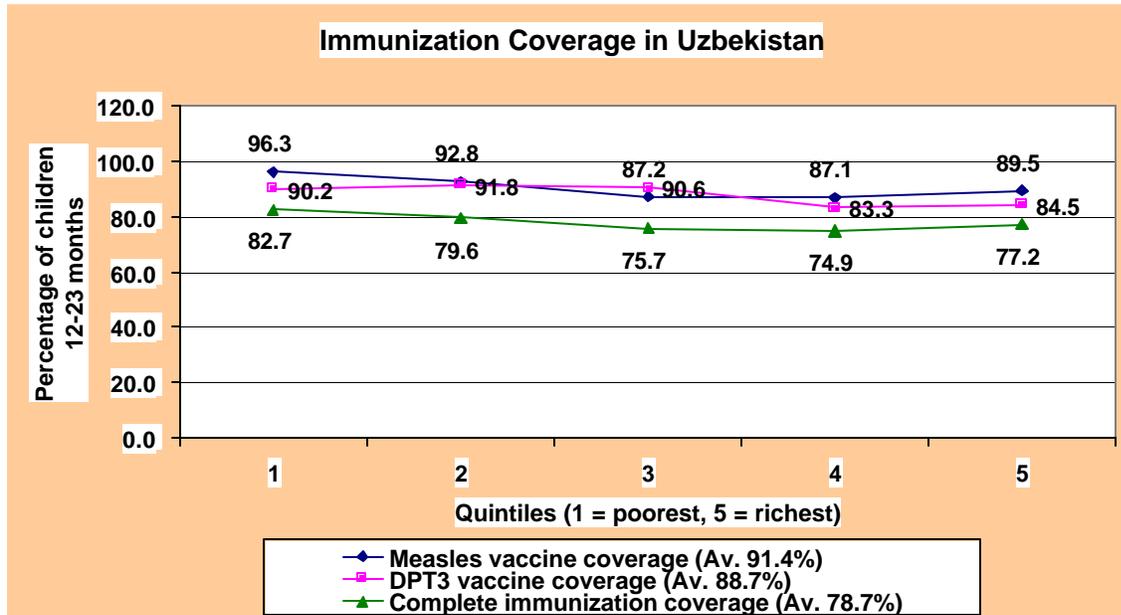
Figure 14. Infant and child mortality in Uzbekistan.



Infant mortality is highest in the poorest quintile. Infant mortality decreases from Quintile 1 to Quintile 4 but then increases dramatically in the richest quintile. Under-5 child mortality is also highest in the poorest quintile, then decreases in Quintile 2, increases in Quintile 3, and then decreases again in Quintile 4. However, what is most interesting is that under-5 child mortality increases in the richest quintile (see Figure 14). In spite of this trend, the poor-rich ratio is 1.2 for under-5 child mortality. A recent World Bank report (World Bank, 2002b, p. vi) stated that high infant and child mortality rates are a source of concern because these rates are among the highest of the former Soviet republics.

Immunization Coverage

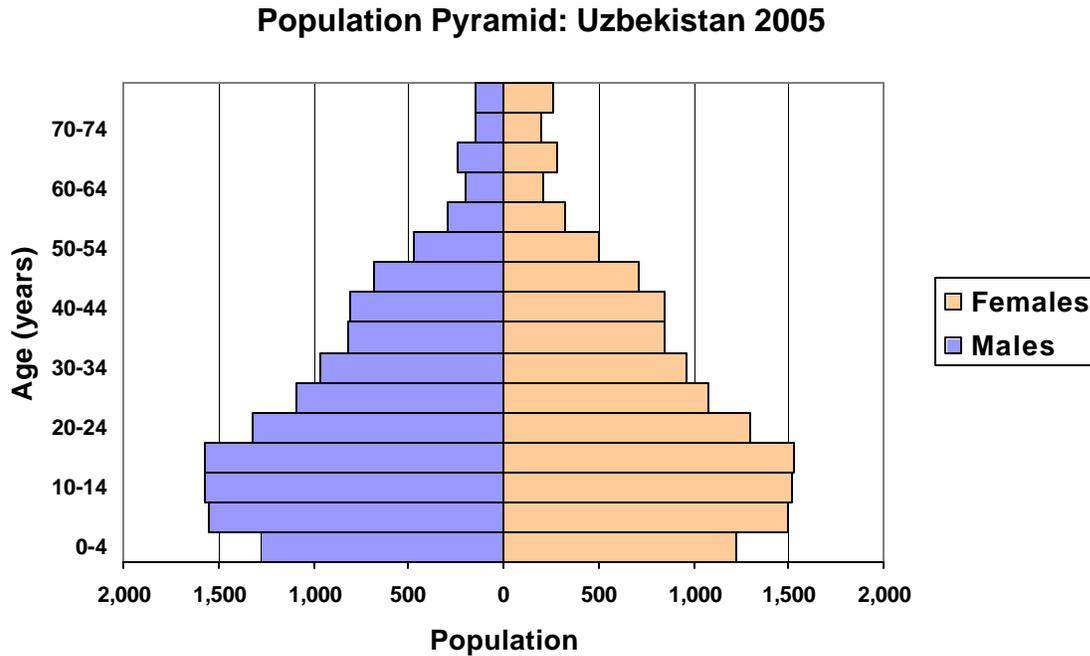
Figure 15. Immunization coverage in Uzbekistan.



Immunization coverage is high in Uzbekistan (see Figure 15). Slight disparities exist in immunization coverage for children across asset quintiles in Uzbekistan where higher proportions of children in the poorest quintile have immunization coverage compared with children in the richest quintile.

Data were not available for other child health indicators, and thus, further analysis of disparities in child health in Uzbekistan is not possible. Additionally, sufficient data are not available to provide insight as to whether other gender disparities and rural-urban disparities exist.

Figure 16. Projected age-sex population pyramid, Uzbekistan (2005).



Uzbeki stan is experiencing the third stage of the demographic transition in which fertility and mortality decline. Thus, as fertility drops, the base narrows producing a demographic bulge in the adolescent age groups. By 2005, this temporary bulge will occur in Uzbekistan (see Figure 16). This “demographic bonus” offers the country an opportunity to build human capital and to spur long-term development if investments are made in education, job creation, and health services, including reproductive health care. This advantageous time period, allows Uzbekistan to prepare to invest now in young people’s health and education to ensure the overall well-being of an economically productive section of the population in the near future. It also offers an opportunity to break the cycle of poverty if investments are targeted in the poorer quintiles.

However, it is important to note that Uzbekistan suffers from a double burden of disease: The incidence of mortality and morbidity occurs both from infectious diseases that are characteristic of poor countries and from noninfectious diseases that are characteristic of most developed countries. Death rates from cardiovascular and circulatory diseases remain high, possibly as a result of the psychological effect of the transition, while communicable diseases remain a big problem. Acute respiratory infections remain the primary cause of death and morbidity among children (World Bank, 2002b, p. 74).

Part IV—Reaching the Poor With Health Services

A common conclusion that emerges from this analysis is that a strong association exists between socioeconomic status on the one hand and health status and utilization of services on the other. A consistent observation across almost all indicators is that the poor have worse health status relative to the rich and, thus, are less likely to use health services. These results are not unexpected; however, the extent of disparities is glaring. Without a doubt, significant improvements will have to be brought about in the ways that health services are delivered and targeted among the poor if Uzbekistan is to achieve its MDG targets. The presentations of the previous sections suggest that, when inequality in health indicators is as high as it is in Uzbekistan, health objectives and targets can be reached more aggressively and more effectively if the poor are targeted first. Uzbekistan will thus have to invest considerably in reaching the poorest sections of society with health services to reduce the high levels of maternal and child mortality as well as morbidity in youth. The following sections describe barriers and strategies to provide to poor people services related to maternal and child health as well as nutrition.

Maternal and Reproductive Health

Why Maternal and Reproductive Health Services Are Not Reaching Poor People

Socioeconomic and Cultural Factors

A formidable combination of social, economic, and cultural barriers prevent poor women from obtaining easy access to health services and care, even when quality health services are geographically within reach. Being poor limits access to information, demand, and utilization of appropriate health care. Although a major proportion of developing countries' populations live below the poverty line, women who live in rural, remote areas and pockets of urban areas tend to be worse off than their wealthier counterparts. They have the least access to health care, are usually unable to pay for services, hold the lowest status in their communities, and are subject to strict social and cultural norms that shape their perceptions about illness and their ability to seek health care. Furthermore, although public health facilities are established to serve the most needy, they rarely are able to reach the poorest of women. Data that highlight the reasons for differentials between rich and poor people, as shown in the first half of this profile, are limited. Therefore, although the socioeconomic and cultural factors described in the following sections affect women's demand and utilization of health services in general, poor women are indeed worse off.

Accessibility for poor people. Distance and travel time are critical factors in the utilization of health-care services but especially for maternal and reproductive health services. The majority of poor women live in rural areas and underserved regions where coverage of health facilities is very sparse. Poor regions and rural areas often have low-quality road infrastructure and lack public transport, making access difficult, especially when women develop pregnancy complications and need timely emergency obstetric care. Poor women in rural areas often walk more than an hour to the nearest health facility and tend to seek health care from less-trained providers who are more accessible in rural areas and urban slums. For example, in Malawi, 90% of women in a study wanted to deliver in a health-care facility, but only 25% of them did, with participants citing distance and time as major obstacles (Lule & Ssembataya, 1996).

Several studies reveal that use of maternal health and reproductive health services declines with distance. One study in Zimbabwe showed that 50% of maternal deaths from hemorrhage could be attributed to the absence of emergency transport (Fawcus, Mbizvo, Lindmark, & Nystrom, 1996). Distance is also cited as the reason why women prefer to deliver at home rather than at a health facility in studies in Philippines, Uganda, and Thailand (Amooti-Kaguna & Nuwaha, 2000; Raghupathy, 1996; Schwartz, Akin, & Popkin,

1993). A study in Burkina Faso suggested that transport costs accounted for 28% of the total costs of using hospital services (Sauerborn, Ibrango, & Nougara, 1994).

Unaffordable services. Even when services are available, they are often unaffordable. Formal and informal user fees in many settings reduce and delay the use of reproductive and maternal-newborn health services. Exemption mechanisms rarely work properly. This problem is particularly the case for delivery and other pregnancy-related emergencies. The unpredictability of total costs for pregnancy and possible complications deter poor people from seeking skilled attendance. The cost of a normal delivery at a hospital ranges from \$10 to \$35, and a cesarian section for complicated deliveries can escalate costs to \$50–\$100 (Gelband, Liljestrand, Nemer, Islam, Zupan, & Jha, 2001), often resulting in catastrophic financial consequences for a poor family. In addition to fees for services, women also are required to pay other, hidden costs. Women and their families often bear out-of-pocket costs for maternity care supplies such as gloves, syringes, and drugs (Nahar & Costello, 1998). Because the majority of poor women lack health insurance, high out-of-pocket expenditures on health care force families to slide into deeper poverty. Opportunity costs of sickness and its treatment is onerous on poor people; they must give up time that they would normally spend on household chores such as collecting water and fuel, cooking, and cleaning as well as on agricultural work and trade or other daily employment.

Utilization of health care improves with higher household incomes, and likelihood of using reproductive health services similarly increases (Barbhuiya, Hossain, Hakim, & Rahmana, 2001). However, although household income is important, the lack of control that poor women have over household expenditures limits use of reproductive and maternal health services such as family planning, antenatal care, and delivery at a health facility (Beegle, Frankenberg, & Thomas, 2001).

Low status of girls and women. In poor countries, women's status is low for the majority of women because of gender inequities, but it is even lower for poor women; their access to resources such as land, credit, and education limits their engagement in productive work and their ability to seek health care. Low status of women denies them the power to make decisions that affect their lives, and it can impede progress in improving maternal health outcomes among poor people. Socioeconomic dependency makes poor women more vulnerable to physical and sexual abuse, to unwanted pregnancy, and to sexually transmitted diseases, including HIV/AIDS. Women cannot control when, with whom, and in what circumstances they have sex. Many women have to exchange sex for material favors and for daily survival (WHO, 2000b). The World Health Organization reports that, in every country where reliable, large-scale studies have been conducted, results indicate that between 10% and 50% of women report they have been physically abused by an intimate partner in their lifetime (WHO, 2000a).

Lower education level. Literacy rates for women remain very low in poor developing countries, and poor girls and women are less likely to have access to education. Scarce household resources are more likely to be spent on boys' education rather than girls'. Gender disparities persist, especially for secondary school education, with poor girls less likely to attend secondary school and more likely to drop out of school. A strong association exists between level of women's education and use of reproductive-maternal health services. Education improves women's status, increases age at marriage, reduces unwanted fertility, and improves utilization of health services (Pebbley, Goldman, & Rodriguez, 1996) by contributing to women's self-confidence, improving their maternal skills, increasing their exposure to information, and thereby altering the way others respond to them (Das Gupta, 1990). Poor women tend to start childbearing at younger ages, have more children too close together, and prolong childbearing. These behaviors put them at greater risk of birth- and pregnancy-related complications. Female schooling improves the chances that women will obtain employment, reduces their demand for children, and improves health-seeking behaviors.

Cultural norms and practices. Cultural norms and practices may negatively affect maternal and reproductive health of poor women and limit demand for services. In many cultures, women are not expected to mix freely with men and are not permitted to be attended to by male providers. In Asia and Africa, women commonly cite the presence of male obstetricians and nurses as the reason for not using these services (Whiteford & Szilag, 2000). The limitations of Purdah in many Asian countries limits the mobility of women to seek health care. Cultural modesty and lack of privacy are also limiting factors that put off poor women from using health facilities. The perceptions of health and risks during pregnancy, birth, and postpartum-newborn periods strongly influence both health-seeking behavior and appreciation of the quality of the available services. For example, pregnant women may substantially reduce their food intake during pregnancy because of the belief that eating too much during pregnancy will result in a larger baby, putting them at a higher risk for complications during delivery (SEWA Rural Research Team, 1994). High fertility is still encouraged, particularly in poor families within societies where child and maternal mortality are still high. And in some cultures, the preference for sons influences both fertility choices and health-seeking behavior for infants. In a study in rural China, 36% of the 301 women who reported induced abortions acknowledged them to be sex-selective abortions (Junhong, 2001). Poor women are also more likely to suffer from harmful traditional practices like female genital mutilation and domestic violence.

Dysfunctional Health Systems

Health systems are supposed to improve the health of the population they serve by providing services; providing financial protection against the cost of illness by raising, pooling, and allocating financial resources for services; responding to people's expectations of how health is delivered by providing skilled providers, equipment, drugs, and supplies; and providing overall stewardship or oversight through regulation, other policies, and the collection and dissemination of information. Health systems often fail to reach the poor, even in some developed countries, and do not function at full capacity in many poor countries. The rich often benefit from government health financing more than do the poor, and subsidies and safety nets to protect the poor from catastrophic illness do not exist. The following sections describe ways that health systems fail the poor.

Limited skilled human resources. A shortage of skilled providers to provide emergency obstetric care is the norm in public facilities, especially in rural areas, urban slums, and geographically poor remote regions. Many places lack incentives for skilled workers to work and live in rural areas, small urban areas, and remote regions. In Asia and sub-Saharan Africa, only one skilled attendant is available for every 300,000 people, resulting in a ratio of one skilled attendant for every 15,000 births (MacDonald & Starrs, 2002). HIV/AIDS mortality and morbidity has decimated trained health providers and worsened absenteeism. Poor countries are unable to retain and pay adequately their qualified staff members and are losing them to richer countries.

Poor quality of services. Poor quality of care and deficient services are the most common reasons that women and their families give for not using available health services. Clinic opening hours are often inconvenient for those traveling from remote areas. Poor women often receive the worst treatment by health providers, are stripped of their dignity and privacy, and often wait long hours because they have no voice or alternatives. Logistics and distribution of drug supplies is often a barrier to quality of care. Facilities in poor areas are more likely not to have trained health providers, drugs and supplies, electricity, or running water.

Poor referral systems and lack of emergency care. In countries with high maternal mortality, referral systems are weak and emergency care coverage is limited. Lack of blood, drugs, and other supplies for emergency care contribute to maternal mortality. Yet even in settings where a referral site is nearby, delays in seeking care are often a problem. A study from Pakistan shows that, in a large referral hospital

in Karachi, 118 mothers who had been brought dead to the hospital had lived within an 8-km. range of the hospital. Social and cultural factors (of patients and first-line providers) played the most significant role in preventing timely referral to the hospital (Jafarey & Korejo, 1993).

Policy Constraints

Many countries with poor reproductive health and high maternal mortality lack appropriate policies to improve girls' education, health services, transport, and energy. The political commitment to reach poor regions and provide safety nets, health insurance, and risk pooling or to provide free maternal and child services for poor women is often lacking. Policies to address human resource issues and increase skilled provider coverage in rural areas are weak. The poor are disproportionately affected by inadequate policies.

Evidence-Based Interventions That Have Improved Access and Use of Basic Maternal and Reproductive Health Services for Poor People

Evidence of successful interventions that reach the poor is very limited, and many of the interventions are small and are often limited to a district, a region, or a group of villages. Very few of the studies on effectiveness of interventions have matched controls or have used multivariate analysis to establish causality or have examined confounding factors. Nevertheless, the following examples indicate that some interventions have had some success in making services more accessible and more affordable for poor people.

Making Services Accessible for Poor People

Health sector reform and Sector Wide Approach (SWA) are increasingly addressing barriers to access, ways to improve quality of services, and ways to equitably distribute facilities. Successful interventions that have improved accessibility and utilization have improved coverage of facilities to reach underserved groups and geographical areas, have reduced time for travel, and have taken the services from out of facilities and directly to poor people while improving quality at the same time. The following sections describe key areas in which successful interventions have been carried out.

Improving transport and communication. Good transportation and road infrastructure can reduce the time it takes to travel to facilities and can reduce opportunity costs. For example, in Vietnam, improving the road infrastructure reduced walking time to the hospital, especially for the poorest people (van de Walle & Cratty, 2002). Availability of reliable transport is vital when obstetric emergencies arise. UNFPA initiated a successful Life Saving Skills project in Uganda to reduce maternal mortality. They trained Traditional Birth Attendants (TBAs) to recognize danger signs and make timely referrals to health facilities, and they provided transport and radios to improve communication (UNFPA, 1998). A project in Sierra Leone provided radios to call and obtain transport from the district hospital. This equipment improved referrals and reduced the case fatality rate (Samai & Sengeh, 1997).

Providing health information. Providing health information has a positive effect on improving utilization of services. In Malawi, health education increased the level of knowledge of the need for antenatal care and postdelivery care as well as the danger of complications, which led to an increase in the use of services (Gennaro, Thyangathyanga, Kershabaumer, & Thompson, 2001). Postpartum care increased from 26% to 72%, and delivery at the district hospital went up from 29% to 59%.

Fostering community participation. Fostering community participation is key to giving voice and agency to poor women, and it assists in addressing some of the demand barriers. Community health workers can play an important role in helping women understand and recognize childbirth-related

complications and in making them more receptive to using health facilities for delivery. For example, in Maharashtra, India, the SEARCH project established a very successful network of community health workers to reduce pregnancy complications and neonatal mortality. Village women with 5–10 years of education were selected as village health workers. They were trained to take medical histories from pregnant women, observe labor and delivery, examine newborns, and record all the findings; assistance was provided by trained birth attendants and medical supervisors (Bang, Bang, Baitule, Reddy, & Deshmukh, 1999). Communities can also participate by establishing community loan funds to pay for transport. For example, in Sierra Leone, a community loan fund was financed through community tax, and it paid for transport and other costs of poor rural women. Communities can become effective agents of change by playing an active part in monitoring health care and exerting pressure on the public sector (UNICEF, 2002).

Establishing Community-Based Distribution (CBD) programs. CBD programs for family-planning programs have been successful in taking information and services to the doorstep of poor families. CBD programs have been successful in increasing contraceptive use in several countries, including Peru, Bangladesh, Zimbabwe, Kenya, Thailand, and Indonesia (FHI, 1999). For example, the family-planning program in Zimbabwe that began nearly a half century ago initially offered clinic-based services, but by the mid-1970s, the first CBD workers, known as “pill agents,” began working to increase access to contraception. Zimbabwe’s fertility rate decreased from 6.6 births per woman in the late 1970s to 4.3 in 1994, and 48% of married women of reproductive age are using a modern method of contraception. These high levels of contraceptive use, in part, are because of the CBD program, which serves nearly a quarter of the country’s family-planning clients.

In Bangladesh, workers called “family welfare assistants” have been critical agents in increasing contraceptive use by taking contraceptives to women. Without the household program, contraceptive prevalence in 1993 would have been about 25% in Bangladesh instead of 40%, according to a Population Council study (Phillips, Hossain, & Arends-Kuenning, 1996). Although CBD programs were successful in increasing contraceptive use in several countries, they have not always been cost-effective, so some programs have combined family-planning services with other health services, including disease prevention, prenatal and antenatal care, and oral rehydration therapy (FHI, 1999). A study in Bangladesh shows that community family-planning workers can also contribute to better maternal health. Door-to-door family-planning workers were trained to counsel pregnant women to recognize obstetric emergencies and seek treatment promptly if the symptoms appear. The workers used visual aids such as pictorial cards to communicate more effectively with poorly educated women (Ashraf, Ahmed, & Phillips, 1997).

Although community distribution programs have been criticized to be among the most expensive options (Barberis & Harvey, 1997), the Couple Year Protection (CYP) measurement used in these cost calculations has important limitations. Although all program costs are generally included in this indicator, the cost burden to clients—for example, travel expenses to a clinic—are not. Also, CYP cost calculations do not take into account the different failure rates among methods, the preferences of clients, the decisions made by informed choice, or a client’s need to use condoms for disease prevention (FHI, 1999).

Providing outreach services. Taking services directly to poor people is an effective intervention to mitigate distance and lost work time. Services that have used mobile clinics and community health workers to provide antenatal, postnatal, family-planning, and child health services have been successful in reaching the poor. Sri Lanka and Malaysia, through increased community outreach by means of a national network of health centers in each country, successfully reduced maternal mortality. Government-employed midwives were deployed in this widespread network of community-based clinics hospitals, and home visiting programs and were closely assisted by supervisory nurse-midwives or public health nurses (Pathmanathan, Liljestrand, Martins, et al., 2003). In Mexico, the expansion of the Basic Health Services

Program (PAC in Spanish), supported by a \$310 million World Bank loan, sought to reach remote villages. An unprecedented collaboration between the federal and local governments enabled hundreds of mobile units to deliver a basic health-care package comprising 13 cost-effective interventions such as basic sanitation, diarrhea control, family planning, prevention and treatment of parasitic diseases, health and nutrition information, immunizations, child delivery, and prevention and control of tuberculosis and cervical cancer. As a result of this massive outreach effort, the number of Mexicans with no health coverage has decreased from 10 million in 1995 to 1.5 million in 1999, according to the Pan-American Health Organization (World Bank, 2000).

Contracting with nongovernmental organizations (NGOs). Contracts with NGOs can increase accessibility to poor areas because NGOs have a comparative advantage over the government in targeting poor people in the specific areas that the NGO covers. Governments have acknowledged the numerous challenges in providing health services to geographically remote areas and marginalized groups of people and are now successfully contracting local, national, and international NGOs to increase the coverage of reproductive, maternal, and child health-care services. Contracting can also create competition among private providers to increase the overall coverage and quality of services. For example, Colombia is one of the few countries in Latin America that supports public contracting of private health care. Contracting reforms have initiated the inclusion of reproductive health care on the list of covered services, and this development in turn has created competition for the delivery of reproductive health services by several private organizations. Profamilia, the largest private provider of reproductive health care in Colombia, has dominated family planning in Colombia for more than three decades. However, with increased competition, Profamilia has had to expand its services to also include primary health services, converting itself into a more comprehensive health-care center and thereby becoming more attractive to health insurance groups and to patients (Rosen, 2000). Although contracting reforms have been successful on many counts, these reforms can present several challenges to NGOs like Profamilia, including delayed government payments to the private providers and mismatch between facility records and larger information systems (Rosen, 2000). Building a contracting network can be time-consuming and complicated. In India, the government has contracted 58 Mother NGOs who in turn have contracted 650 local NGOs for the delivery of reproductive health services through the Reproductive and Child Health Project loan from the World Bank. This initiative took a while to get off the ground mainly because government and NGOs had to build trust among themselves and devise an impartial system of selecting Mother NGOs (Rosen, 2000).

Instituting social franchising. Instituting social franchising can increase accessibility to reproductive health services for poor people. Although social franchising is being promoted for a range of services, the majority of experiences have emerged from the providing of family-planning services (Montagu, 2002). Franchises for family-planning services, reproductive health services, or both now exist in Mexico, India, Pakistan, and the Philippines and are currently being developed in several other countries, including Kenya, Ecuador, Honduras, Burma, and Ethiopia. Family-planning franchises adapt a commercial franchising model to provide a standard set of services through a network of private providers. The members receive several benefits such as training, advertising support, on-site technical support, subsidized equipment, and medicines and may have to reciprocate by maintaining a particular standard of quality of services and paying franchise fees (Montagu, 2002). For example, the Green Star Network in Pakistan provides a range of family-planning services through a franchise network of 2,000 private physicians. The doctors receive subsidized supplies; signage to advertise the clinic as well as the products and services provided; and start-up training and monthly visits from Green Star doctors to maintain and improve their skills. Although most Green Star members are not making a profit, they find the side benefits of the network—such as ongoing upgrading of skills—an attractive feature of the program (Agha, Squire, & Ahmed, 1997). No blueprint for a successful social franchise system exists, and it is not the only mechanism to mobilize the private sector to provide reproductive health services. However,

franchising may catalyze private practitioners to provide better quality services and raise standards of care for clients who are willing to pay for services.

Creating maternal waiting homes. The creation of maternal waiting homes can increase accessibility to essential obstetric care for poor women who are at higher risk for complications. This intervention can be particularly effective in increasing accessibility for women who have to travel long distances to delivery facilities that provide skilled care. Although this approach may work for a proportion of women who can be identified as being high risk during pregnancy, the majority of complications occur without early warning signals, and therefore, many women may not qualify to attend a maternity waiting home. Countries like Cuba use “social risk” (rather than obstetric risk) as their criteria, admitting into maternal waiting homes any woman who lives in a geographically remote location. Although this strategy has contributed to reducing maternal mortality in Cuba, it is not necessarily a practical solution for countries with large numbers of poor women living in remote areas (Safe Motherhood Technical Consultation Report, 1997). Furthermore, in some countries like Ghana, women complain of additional costs to purchase food and other items while using the waiting homes (Wilson et al., 1997).

Promoting pro-poor referral systems. Referral systems that do not disadvantage poor people are required to ensure that referral of patients who are poor starts at the first warning sign of a complication. Effective referral can be supported by three strategies: (a) strengthening referral facilities to provide quality obstetric care; (b) establishing effective communication between frontline providers such as TBAs and referral facilities, and (c) creating cost-effective methods to transport women with complications to referral facilities. Honduras reduced its maternal mortality ratio by making essential obstetric care available in rural and urban health centers and district hospitals. Birthing centers were also set up in remote areas, and the number of skilled providers was also increased (Danel & Rivera, 2003). In China, rural birth attendants were linked to health centers and hospitals providing essential obstetric care, and this approach contributed to a significant reduction in maternal mortality (Koblinsky, 2003). The Rescuer Project in Uganda provides motorized vehicles to each referral facility to transport women with complications to an appropriate center (Safe Motherhood Technical Consultation Report, 1997). Effective partnerships with local organizations such as women’s groups and other NGOs may also be established to foster the speedy transport of women to referral centers (MacIntyre & Hotchkiss, 1999).

Making Services Affordable and Providing Safety Nets

Several interventions either mitigate the cost barriers of health-care utilization or lower the cost of services for poor people. Some of these interventions do not reach poor people, and benefit incidence studies show that rich people may benefit from public sector subsidies more than those who are poor. In the following sections, a few examples are presented that describe interventions that target subsidies to the poor, provide finances, lower the cost of services, and provide safety nets.

Providing cash transfers. Poorer areas need more financial and human resources to improve accessibility and improve quality of services, and poor people need income to pay for services. Mexico’s innovative program, Programa Nacional de Education, Salud y Alimentation (PROGRESA), provided cash transfers to poor women (up to 25% of household income to the extreme poor) if their family members accepted preventive care and if pregnant women and lactating women attended health facilities to receive information, skilled health care, and nutrition supplements. The cash transfers to women not only improved utilization of services and health outcomes for the women and their children but also improved their status and decision-making power over their health (Behrman & Hoddinott, 2000; Gertler, 2000). In Honduras, another innovative program, The Family Allowance Program (PRAF in Spanish), targets the poorest of poor people and includes incentives on both the demand and supply sides. It consists of a targeting system for selecting beneficiaries and interventions to stimulate demand for and supply of education, nutrition, and health services by paying cash incentives. With respect to health and

nutrition, it encourages the consumption of foods that can substantially improve the diet of children and pregnant women living in conditions of extreme poverty, and it promotes the use of mother and child health services (IFPRI, 2003).

Using Social Investment Funds (SIFs). These funds have been used in Nicaragua and Bolivia to improve health facilities in poor regions, targeting poor people with somewhat mixed results. A Social Investment Fund (SIF) was used in both countries to construct and repair health facilities and provide equipment, drugs, furniture, ambulance, and communication. The Bolivia SIF improved antenatal care and deliveries by skilled attendance and contributed to a 25% decline in under-5 mortality (Pradhan & Rawlings, 2002; Pradhan, Rawlings, & Ridder, 1998). The Nicaragua SIF was demanding in its conditions for cash transfer, and this aspect was monitored carefully by school and health personnel, leading to a high compliance rate of 95% of all beneficiaries. An impact evaluation of the Nicaragua SIF indicates impressive results that include major reductions (43% to 28% in a period of 1 year) in the proportion of children aged 0–2 who were at risk in terms of weight and growth and an increase (80% in intervention group compared with 66% in control group) in immunization rates for children ages 0–3 (Vermehren, 2002).

Allocating resources geographically. Although geographical resource allocation has been used in developed countries to address geographical inequities, in many poor countries, the better-off regions, capital cities, and tertiary facilities get disproportionately higher resource allocations than poorer regions. Some developing countries such as Mexico (Lozano et al., 2001), Pakistan (Green, Ali, Nazeera, & Ross, 2000), and Bangladesh (Ensor, Hossain, Ali, Begum, & Moral, 2001) have experimented or have plans to introduce geographical resource allocation as a strategy to target poor regions.

Providing health insurance. Providing health insurance can eliminate economic barriers to access and use of services. However, evidence from Vietnam shows that health insurance schemes may lower the costs of care but do not equally cover poor people (Wagstaff, 2003). An example of successful health insurance use is the Bolivian National Insurance for Mothers and Children (SNMN) that provides maternal and child health services free of charge. The government allocated 20% of national revenues on a per capita basis to municipalities, and they in turn reimbursed facilities for treatment services that were provided but not for labor of providers. An evaluation of the scheme (Dmytraczenko & Scribner, 1999) showed that use of maternal and child health services by poor people and adolescents increased, and primary-level facilities improved drug availability. On the less positive side, offering services free of charge shifted private sector users to the public sector, and quality of care suffered because service providers were not remunerated for the increase in clients and workload (Dmytraczenko & Scribner, 1999). In Asia and Africa, community health insurance schemes are increasingly being used to protect poor people albeit with mixed results. A review of community health financing schemes in Asia concluded that poor people did not benefit equally from these schemes (Hsiao & Liu, 2001). A study of the results of the effect of community-based health insurance on financial accessibility to health care in Rwanda showed that insurance members report using health services up to 5 times more than nonmembers, that insurance has increased equity among members, and that out-of-pocket expenditures per episode of illness have decreased (Schneider & Diop, 2001). However, almost 90% of the population in the study area had not enrolled in the scheme and reported abysmal use of health services. The majority of nonmembers reported that they lacked available funds to pay the annual membership fee (Schneider & Diop, 2001).

Using vouchers, health cards, and fee waivers. Vouchers, health cards, and fee waivers can be used to pay for maternal and child health services. For example, a Poverty Alleviation Fund (PAF) was established in Yunnan province in China through a voucher scheme. The scheme targeted poor people who were identified by village councils through a participatory process. Vouchers could be used (instead of a cash fee) for antenatal care, hospital delivery, emergency obstetric care, postnatal care, and medical

treatment for infants under 3 years, and facilities were reimbursed for the number of vouchers they received by PAF (Kelin, Kaining, & Songuan, 2003). In Nicaragua, vouchers were used for treatment of sexually transmitted diseases of female sex workers. The vouchers enabled sex workers to access health services at selected private, NGO, and public clinics, and the clinics were reimbursed by the voucher agency for an agreed-on fee per voucher. The prevalence of gonorrhea decreased by 5.25% a year and the incidence in repeat users, by 11.5% a year. The prevalence of syphilis fell by an average of 10.25% a year. However, voucher schemes can be expensive to establish and are prone to misuse in terms of counterfeiting of vouchers and black market sale of vouchers (Sandiford, Gorter, & Salvetto, 2002), although the Nicaragua voucher project did not experience these problems. The Indonesia health card program, initiated in 1998 as a response to the economic crisis, provided to the owners of health cards subsidized health care at public providers. The program resulted in a net increase in use for poor beneficiaries; for non-poor beneficiaries, the program resulted in a substitution from private to only public providers. However, the major effect of the program seems to have come from a general increase in the quality of public services resulting from the budgetary support they received through this program (Saadah, Pradhan, & Sparrow, 2001). Fee-waiver schemes appear to be successful when countries like Indonesia and Thailand have carefully designed and put into effect a fee-waiver system and where providers are compensated for the revenue they lose by granting waivers (e.g., Thailand, Indonesia, and Cambodia). On the demand side, beneficiaries should be made aware of the availability of the fee-waiver program and should be offered financial assistance to cover nonfee costs of care such as food and transportation to maximize use of this kind of scheme (Bitrán & Giedion, 2003).

Improving Status of Women

Improving the low status of poor women can yield substantive results with respect to health seeking behavior for poor woman and their families. A few examples of interventions that enhance women's knowledge and decision-making power are presented.

Improving access and knowledge. Interventions that improve access to education for girls of poor families to delay early child bearing and that improve women's knowledge of their health as well as equip them to seek appropriate health care for themselves and their children are important. Sri Lanka and Malaysia are examples of countries that have invested in girls' education and have improved maternal health outcomes (Pathmanathan et al., 2003). Countries have also adopted policies and programs to increase enrollment of girls in school. For example, The Bangladesh Female Secondary Scholarship program project is an example of a project that is designed to increase the number of girls enrolled in Grades 6–10 and enable them to further continue their education. The project has managed to successfully mobilize community support for girls' education, and in 1996, the number of girls enrolled had surpassed 500,000 (Gender Net, 2003). In China, three education sector projects—Basic Education in Poor and Minority Areas, the Third Basic Education Project, and a follow-up to the latter—focus on increasing girls' participation in education. These projects focus on efforts to (a) increase girls' enrollment (especially in primary school), (b) decrease dropout rates, and (c) increase the transition rate from primary to lower-secondary school. Girls in poor and minority areas are especially targeted by means of student assistance programs that provide incentives of financial support and materials (i.e., textbooks) to girls and their families (Gender Net, 2003).

Empowering women to make decisions that affect their lives. Evidence from South Asia indicates that interventions that improve women's access to land, credit, education, and productive work bring immediate benefits to their lives. Women who participate in microcredit programs exhibit higher levels of knowledge about health care (Hadi, 2001) and have children who are more likely to be completely immunized (Amin & Li, 1997). The women who participate longer in these programs are more likely to be using contraceptives (Schuler, Hashemi, & Riley, 1997). Nanda (1999) found that women who

participated in microcredit programs in Bangladesh had a greater demand for formal health-care services, suggesting that they have greater control over their own resources after participation.

Improving Quality of Services for the Poor

Strengthen policies. When countries adopt policies that are comprehensive, efforts focus not only on maternal mortality reduction but also on the equity of health care for all. Sri Lanka, Malaysia, and China are examples of countries that strengthened their government policies to provide frontline providers close to women's homes and that provided a health-care infrastructure to support frontline providers for effective referral and management of complications (Koblinsky, 2003).

Strengthen capacity of health care providers. In addition, the poor benefit when health-care providers upgrade staff members' skills through regular training; ensure adequate staffing of facilities for improved quality of care; improve availability of drugs, equipment, and supplies; and improve the availability of essential obstetric care (EOC).

Many EOC procedures can be performed by health personnel other than specialist physicians if they are adequately trained and work in a system that provides adequate equipment and supplies. Several Asian and African countries (e.g., Ethiopia, Malawi, South Africa, and Indonesia) have set up upgrading training for "General Practitioners" in rural areas. Some other countries have trained paraprofessional health staff members to provide a set of surgical and obstetric interventions and anesthesia. Examples include medical assistants in Tanzania, assistant anesthetists in Burkina Faso and Malawi (Adeloye, 1993), and nurses in Democratic Republic of Congo and Zaire (Duale, 1992; Rosenfield, 1992). In Mozambique, medical assistants with 3-year training and an internship in a provincial hospital performed surgical procedures, including cesarian sections (da Luz Vaz & Bergstorm, 1992).

Strengthening Monitoring and Evaluation

Monitoring and evaluation of reproductive health interventions that target poor women and their children are critical for successful implementation of these projects. The Honduras Ministry of Health was shocked by a high MMR assessed by a Reproductive Age Mortality Survey (RAMOS) that was conducted in 1990, and immediately targeted specific geographic areas to reduce the maternal mortality levels among the poor. Knowledge of MMR also triggered maternal health policy formation in several countries like Bolivia, Indonesia, and Jamaica (Koblinsky, 2003). Required are more appropriate tools such as benefit-incidence analyses that will provide information to assess whether poor people are in fact benefiting from services directed toward them. Along this line, one study of Vietnam's Family Planning Program suggested that rich women may be disproportionately receiving more family-planning subsidies than poorer women (Behrman & Knowles, 1998).

Differentiated process indicators (e.g., availability of EOC services, deliveries by skilled attendants) and outcome indicators (e.g., maternal deaths, gynecological and obstetric morbidity levels) by socioeconomic level are indicators that would be ideal to use in monitoring and evaluating whether equity in reproductive and child health-care use is being achieved. However, in reality, the collection of outcome data such as maternal deaths and reproductive morbidity present several challenges in developing-country settings that make relying on these data for a valid inequity analysis virtually impossible. Instead, countries could use existing data sources such as the DHS quintile data developed by Gwatkin and others (<http://www.worldbank.org/poverty/health/index.htm>) and the Living Standards Measurement Study (LSMS) household surveys (World Bank, 2003), which have become important tools in measuring and understanding poverty and socioeconomic inequalities in health and education in developing countries.

These data sets include data that can be used to develop intermediate reproductive health indicators that are more easily assessed than mortality and morbidity. WHO, UNICEF, UNFPA, and The World Bank have recommended a core list of intermediate indicators to track progress in maternal and reproductive health (World Bank, 2002a), which include the following:

- Contraceptive prevalence rate with additional data on the quality of care, contraceptive methods, adherence to technical standards, and client satisfaction
- Percentage of women with any antenatal care (ANC), with additional data on the number of ANC visits, gestational age at first and last visit, and the quality of ANC
- Percentage of births with a skilled attendant, institutional deliveries, or both
- Delivery of emergency obstetric care
- Syphilis in pregnant women and the proportion that are properly treated

Nutrition

Why Nutrition Services and Food Are Not Reaching Poor People

Malnutrition is a combination of social, economic, and cultural factors that limit the use and availability of nutrition and health services, interventions, and food to the community, family, and individual. Because malnutrition is “the collective failure of a number of sectors” (Haddad, 2003), reducing high rates of malnutrition in developing countries involves the adequate functioning of several important sectors (e.g., health, education, and agriculture). Poor people usually identify lack of food as an important defining factor for poverty. For example, in Bolivia, “well-being” is associated with “food,” being “well fed,” “not lacking food,” and “not to be worried because we know we will have food every day” (McGuire & Lopez, 2002). Although severe malnutrition is recognized by families and health workers, less severe forms of malnutrition and its causes are not. The following sections describe some of these causes.

Poor accessibility to nutrition services and interventions as well as to food. The direct causes of malnutrition are poor food intake, high rates of infection and disease, and poor behavior (UNICEF, 1990). Accessibility to adequate foods (in quality and quantity) may be a chronic or seasonal problem for either families or individuals. Although lack of food is often misstated as the major cause of malnutrition in developing countries, the International Food Policy Research Institute (IFPRI) estimates that improved food availability is responsible for 26% of the reduction in underweight conditions from 1970 to 1995 (Gillespie & Haddad, 2001).

Inaccessibility to quality health and sanitation services to prevent and control infectious diseases will cause or exacerbate malnutrition. In Bolivia, living a greater distance from water is associated with child stunting whereas access to adequate sanitation was found to reduce the risk of malnutrition (McGuire & Lopez, 2002). IFPRI estimates that 19% of the reduction in underweight rates over the period 1970 to 1995 was because of improved water, sanitation, and health services (Gillespie & Haddad, 2001).

In addition, people need access to effective nutrition programs not only to prevent or correct malnutrition but also to reduce morbidity and mortality from disease. A known relationship exists between malnutrition and disease, with an estimated 50% of childhood deaths associated with malnutrition (WHO, 1998). In other words, half of the children in developing countries would not die from a childhood disease if they were well nourished. A good example of the synergistic effect of poor health and food intake on nutritional status is the interaction of vitamin A and measles. Mortality from measles is 50% greater in children with poor vitamin A status, and vitamin A status deteriorates even in well-nourished children when they contract measles (West C. E., 2000; West, K.P., Jr., 1991).

Accessibility to effective nutrition interventions remains a problem in most developing countries. Although vitamin A supplementation has improved in recent years because it is being distributed through National Immunization Days (NID), the coverage for delivering vitamin A through routine health services—even though it is a national policy in many countries—is poor. In a recent review of routine health services in Nigeria, only 3% of health workers in one state had ever given vitamin A to a child 6–59 months or postpartum to a woman (Akinyele, forthcoming). In a study in eight developing countries (Galloway et al., 2002), the poor supplies of iron-folate (IFA) tablets to women receiving antenatal care was the main reason women were not taking IFA tablets—not the side effects to which noncompliance is often attributed. Effective counseling on infant feeding is rarely available at health services or in the community. In Bolivia, though parents agreed nutrition education was important, they found that the delivery by health workers was boring, irrelevant, and condescending (McGuire & Lopez, 2002).

Unaffordable nutrition services and interventions as well as food. Food may be a limiting factor determining malnutrition in some families and in crisis situations, but many families have enough food to adequately feed young children. Giving adequate amounts of food to young children is unaffordable in the sense that good practices are often limited by women’s need to work. For example, cooking for and feeding a young child the required 3–5 times a day may be difficult for some women who work away from home.

Some types of food may be limited by seasonal variation or cost. Animal products, for example, may not be available in some families, and plants with high vitamin A activity may be only seasonally available. Intakes of vitamins C and A are often high in low income groups because they rely on collected fruits and vegetables, although the availability may be related to season. As incomes increase, these collected foods have less value and status to families, and consumption of these foods and vitamins may decrease. Higher income groups, however, resume high intakes of vitamin A as animal products become more affordable. In contrast, iron intake is highly income-elastic, and intakes of bioavailable iron increase with income (World Bank, 1994).

The cost of health services may limit the accessibility of some services. For example, receiving iron tablets is contingent on women paying for and obtaining a test for anemia that they often cannot afford. Some countries have overcome this problem by asking women to purchase the entire antenatal care package, which includes the test for anemia and iron tablets.

Low status of girls and women. Because of their low status in some countries, girls and women suffer disproportionately from poor health, malnutrition, and poverty. Girls may receive less of the family’s food, attend school less often because they have to care for younger siblings, and are taken infrequently to health services when they sick (Gillespie & Haddad, 2001). Even though women may have higher nutritional requirements for some micronutrients such as iron, they are seldom given preference for iron-rich foods such as animal products when they are available to the family. Nutrition programs that can help address high rates of malnutrition in women, particularly in Asia, are limited. For example, providing iron supplementation to address anemia is a policy in many countries throughout the world, but few countries have purchased or received contributions from donors to provide adequate supplies to pregnant women (Galloway et al., 2002). Poor nutritional status of women in Ghana is associated with poor care of their children (Ruel, Levin, Armar-Klemesu, Maxwell, & Morris, 1999), so the problem of women’s low status translates to her poor nutritional status and is passed on to the next generation of girls.

Lower education level. An IFPRI analysis (Haddad, Hoddinott, & Alderman, 1997) finds a strong relationship between investing in mother’s education and improvements in nutritional status. However, an interdependency exists between educational level and nutritional status. Stunted children are less likely to enroll in and complete school, and micronutrient deficiencies are associated with poor performance in

school (Behrman, 1996; Del Rosso & Marek, 1996), which affects girls' capacity to care for and feed their infants when they become mothers. Increased capacity is probably not mediated by increased knowledge about care obtained in school curriculums because nutrition is rarely included as a subject but, instead, is mediated through the example obtained from parents who care enough to ensure that their daughters enroll and complete school and through their daughters' increased self-confidence and earning power from completing school (McGuire & Lopez, 2002).

Cultural norms and practices. Cultural beliefs, norms, and practices may negatively affect nutritional status of vulnerable groups. For example, women often have traditional beliefs about what they should or should not consume in pregnancy and while breastfeeding. In one study in Lao Peoples Democratic Republic, staples after delivery appeared to be rice with salt and ginger chicken and "boiled root water" whereas some women limited protein-rich foods such as white buffalo, white pig, and wild animals as well as spicy, sour, or raw foods (Gillespie, Creed-Kanashiro, & Galloway, forthcoming). In the same study, a number of beliefs limited food intake in young children. For example, colostrum was withheld about one-third to two-thirds of the time because parents believed it to be hot, dirty, sour, and bad tasting and to cause diarrhea and stomachache as well as prevent the "real" milk from coming in. Animal foods were often restricted in children under the age of 1 year because parents believed that those foods may cause cough, parasites, diarrhea, or tooth disease.

Anemia control in women has been unsuccessful mainly because of lack of available iron-folate (IFA) tablets, but beliefs about anemia and taking IFA tablets may affect programs where IFA tablets are available. Studies in eight countries showed that, although the signs and symptoms of anemia (e.g., fatigue, problems with blood) were recognized, these symptoms were often thought of as "normal during pregnancy" (Galloway et al., 2002). Although women liked taking IFA tablets when the pills were offered to them, beliefs about the tablets making the baby bigger and causing a difficult delivery limited the number of tablets women would take. In many developing countries, the concept of preventing anemia was not common, and only in Burkina Faso did women suggest that a cultural norm was to "maintain family health" (Meda, Kanki, Cousens, & Graham, 1993).

Dysfunctional nutrition interventions through health and other services. The demand for quality health care and other services is evident, even from poor people. However, poor people often choose other services outside public systems because the quality of care in these systems is low or the method of payment in the private sector is more convenient for poor families. The way clients are treated by private sector providers may be better, or the type of care they receive may be more relevant to their belief systems. Quality of nutrition services is dependent on the quality of training given to nutrition workers either at health services or at other services (e.g., agriculture extension) and in the community. Training needs to attend to a number of crosscutting issues outside of the actual technical content of interventions provided to clients (e.g., giving vitamin A to children) and include training to build capacity to consult the client about intervention and message development, the design and management of interventions, and the monitoring and evaluating of the effect of nutrition interventions (Heaver, 2002). Coordinating across sectors so nutrition interventions and messages are consistent and so they mitigate competition and confusion also are important aspects of improving dysfunctional nutrition services.

Policy constraints. Some constraints are directly related to nutrition services and food; other constraints have direct influence on nutrition but are outside of the control of the people devising nutrition policies. For example, policies that discourage market development, free trade, and diversification of food crops affect the availability of the diverse food base needed for food of adequate quality and quantity. Policies that influence women's status (e.g., female literacy and laws forbidding control of land by women) will affect the income base of women and the way they are able to feed and care for their young children.

Weak policies about staffing, job design, supervision, and incentives also may influence capacity to plan, design, and manage nutrition interventions but are usually systemic problems in public systems (Heaver, 2002). Revising these systems in the context of decentralization adds an additional challenge for public health and other systems.

Evidence-Based Interventions That Have Increased or Improved Access and Use of Nutrition Services and Interventions for Poor People

As governments move toward more decentralized systems with lower organizational units making more decisions over what programs to carry out and how much to spend on them, more opportunities arise to direct resources and programs to those who really need them. Districts or regions are better able to identify those in most need, but they need the capacity to direct effective programs to them (McGuire & Lopez, 2002). The following sections describe interventions that can improve poor people's access to and use of nutrition services.

Making Nutrition Services and Interventions Accessible for Poor People

Improving transport, communication, and other infrastructure. Improving the quality of infrastructure and a number of services can help address the underlying causes of malnutrition. Rates of malnutrition are often lower in people who have access to roads that make health services and food markets closer (Gillespie & Haddad, 2001; McGuire & Lopez, 2002), and in most countries, rural malnutrition is higher than urban malnutrition because people living in urban areas have better access to services. However, in an analysis of data from Pakistan and Bangladesh, access is greatly determined by socioeconomic status. The lowest income groups in urban areas had more diarrhea than the lowest income groups in rural areas (Ruel, Haddad, & Garrett, 1999). Improving water and sanitation are particularly important to poor people in Bolivia who are the last to attain access to them (McGuire & Lopez, 2002). These programs will have a greater effect on nutritional status if they are linked to targeted nutrition interventions to improve the nutritional status of vulnerable groups.

The expanded role of the food industry in improving nutritional status through fortified foods holds great potential. Currently, many of the products produced by food industries in developing countries, where they exist, reach only high-income groups in urban areas. These foods do not reach poor people in rural areas because the assumption is that these areas have little demand because of cost. However, as food processing is moved from rural areas to urban areas, the availability of centrally processed and fortified staples will become more widespread. In Venezuela, precooked corn flour, precooked wheat flour, and wheat flour used for making bread were identified as the best food products to fortify with iron and other micronutrients because they make up a large proportion of the diet of Venezuela's poor population (Garcia-Casal, 2003).

Providing nutrition information. Much of malnutrition is caused by poor practices resulting from lack of knowledge about how much and what types of foods vulnerable groups should be consuming. Nutrition information or behavior-change communications to improve knowledge and practices as well as mitigate beliefs and taboos about certain foods can be provided through a number of channels, and the use of these different approaches should be determined by conducting a communication situational analysis leading to the development of a comprehensive communications strategy (Favin & Griffiths, 1999). In Honduras, improved counseling of mothers participating in a community-based growth promotion program significantly improved rates of exclusive breastfeeding and complementary feeding practices (Van Roekel et al., 2002). In Indonesia, mothers receiving messages on infant feeding through radio, one-on-one counseling, and take home "action posters" reduced rates of malnutrition in children of participating mothers by one-half (Favin & Griffiths, 1999).

Community nutrition interventions. Health workers, agriculture extension workers, and teachers can be agents for nutrition change if they work in the community. Health outreach is becoming more frequent, although it is limited by lack of money for transport to communities. Agriculture is usually the most extensive outreach network in developing countries. In Africa, many countries use home economists to conduct training on growing food crops and preparing these foods. Nutrition education is often included in the job descriptions of a number of different workers, but often, the nutrition messages that workers are giving are not specific enough to change the way caregivers feed their children. Teachers can work with the community through school committees to educate and sensitize about the importance of good nutrition for school children, particularly, eating a meal before coming to school. In Madagascar, school children are dewormed to improve their iron status and are sensitized about other nutrition problems through their involvement in the process to test the salt that they bring from home for iodine (Personal communication from Claudia Rokx to Rae Galloway, June 2003).

In the past, government sectors have not appreciated the role communities can have in improving their own standard of living. However, as it has become clear that governments cannot do everything to improve the situation of citizens, the development community and, more recently, governments themselves have turned to civil society to find solutions to a number of development problems. Empowering communities to carry out nutrition programs can either reinforce what is already being delivered at health centers or substitute for that work completely. Thailand reduced rates of malnutrition by 2.9 percentage points per year between 1982 and 1991, reducing underweight conditions (low weight for age) in children under 5 years of age from 25% in 1986 to 15% in 1996. An important component of Thailand's national program was to identify and train community volunteers to involve communities in solving nutrition problems, to monitor the health and nutritional status of young children, and to effect change in the way parents feed children and give them care (Heaver & Kachondam, 2002). These volunteers also were responsible for identifying women early in pregnancy to ensure they received antenatal care early. As a result, coverage rates for 4–5 antenatal care visits reached more than 90%. Antenatal care (ANC) provided a number of quality services, including effective anemia control through preventive and curative measures, and rates of anemia fell from 40% in 1986 to 15.5% in rural areas and to 20% in urban areas by 1996–97 (Winchagoon, 2002). Community-based growth monitoring and promotion (GMP) is an effective activity not only to organize monthly growth monitoring but also to ensure that effective behavior-change messages are received by caregivers to improve the way they feed and care for their infants and young children. The AIN program in Honduras is a community-based health and nutrition project using GMP as the focus to improve infant and child growth, micronutrient status, and health. It has been effective at rallying community participation in the program; achieving high rates of coverage; improving infant feeding practices; providing better care of infants during episodes of diarrhea; and increasing delivery of vitamin A, iron, and immunizations (Van Roekel et al., 2002).

Making Nutrition Services and Interventions Affordable

Subsidies for the poor. General subsidies on staple foods have been a path many countries have followed—but at great cost. These subsidies have taken the form of food price stabilization, domestic procurement of foods, and government control of imports (Gillespie & Haddad, 2001). Approaches that move toward more targeted subsidies are less costly and potentially have greater effect if they effectively target poor people (Gillespie & Haddad, 2001). Measham and Chatterjee (1999) provide an analysis of India's Public Distribution System (PDS), which was not well directed at poor people. In 1997, India introduced the Targeted Public Distribution System, which provided special-identity care for poor families to make their access to food easier; however, Measham and Chatterjee argue that greater change is needed and is possible only if the food subsidy is provided solely to families living below the poverty line.

Providing cash transfers. Cash transfers are safety net programs commonly used in Latin America. The Progresa program in Mexico provides a cash transfer to low-income families and has effectively reduced poverty as well as improved the nutritional status of children and school enrollment (Skoufias & McClafferty, 2000). In Bangladesh, a food-based cash transfer through the provision of wheat to poor families helped improve enrollment at a reasonable cost, particularly, enrollment of girls (Gillespie & Haddad, 2001).

Income and food for work. Income-generating programs have been promoted as a way to increase food availability to families. Work is provided by poor families in exchange for cash or food. The logic is that poverty is often measured by the proportion of income that households spend on food. However, food expenditure does not always equate to improved nutritional status. Although a greater proportion of malnutrition is evident in the lowest income group, the highest income group in many developing countries also has a significant share of malnutrition. A microfinance program in Ghana was effective at improving infant feeding practices and nutritional status if targeted nutrition messages were provided along with a family's improving income (MkNelly & Dunford, 1998).

School feeding. Providing universal school feeding is not something that donors or governments can sustain. Once instituted, however, these programs are often difficult to terminate because ending them is politically unpopular. Because these programs are rarely evaluated, little evidence is available to show that providing meals at school improves nutritional status of school children. As an example, a program in India covering 91 million children is thought to have improved attendance, but a large-scale evaluation is needed to confirm this assumption and other effect indicators (Measham & Chatterjee, 1999). Providing a school meal or snack can improve attention span if it is given at the beginning of the day, and it may provide an incentive for children, particularly poor and female children, to enroll in and attend school (Del Rosso, 1999). In some countries, it may prove most cost-effective to provide school meals only during "hungry months" when children are often kept from school to look for food for the family.

Improving Status of Women

Improved earning power or control of family income has long been associated with improved nutritional status in young children. An analysis by Quisumbing and Maluccio (1999) found that increasing female asset holding in Ethiopia and Bangladesh increased the amount of household income spent on child education whereas increasing male asset holding decreased it (as reported in Gillespie & Haddad, 2001). IFPRI estimates that female status and education are responsible for 50% of the reduction in infant and young child malnutrition in the last 25 years (Smith & Haddad, 2000). A program in Ghana to improve nutritional status of children through a credit with education program increased mother's self-confidence to feed their children good food, prevent them from becoming ill, and earn more money next year than this year (MkNelly & Dunford, 1998).

Improving Quality of Nutrition and Other Services for Poor People

Improving the quality of nutrition and other services for poor people is key to improving nutritional status of vulnerable groups. Focusing on the most cost-effective nutrition interventions to deliver through health services is a first step (Sanghvi & Murray, 1997). Moving quality services closer to communities can increase the number of people affected by these programs. For example, distributing iron-folate (IFA) tablets by traditional birth attendants in Indonesia improved the quality of this program by training TBAs to counsel women to take the IFA tablets they provided. This program increased the average number of tablets taken during pregnancy from 24 to 62 tablets, with 92% of women taking at least some tablets (Galloway et al., 2002). Adding vitamin A distribution to National Immunizations Days (NID) has been an opportunistic but successful way of improving coverage and the quality of vitamin A capsule distribution. For example, in 2000, several countries in West Africa (e.g., Benin, Burkina Faso,

Cameroon, Chad, Guinea, Niger) where health services are weak, more than 90% of children received at least one dose of vitamin A because it was distributed through NID (Goodman, Dalmiya, de Benoist, & Schultink, 2000). The program has also sensitized health workers and caregivers about the importance of vitamin A and about when to distribute or return for more.

Strengthening Monitoring and Evaluation in Nutrition Programs

Monitoring and evaluation has been weak in most nutrition programs. The vast number of nongovernment organizations, though good at carrying out community-based programs, have not fully determined and documented the effect of their programs. In many programs, both in the public and private sectors, monitoring for nutrition indicators is rarely conducted. Evaluation is not planned for, and the attempts these programs make to evaluate a promising nutrition intervention are likely to be ad hoc. In many countries, clinic-based anthropometric data are collected and collated at the national level, but little is done either at the point where it is collected or nationally to improve the nutritional status of young children.

Some programs have carefully monitored and evaluated progress and effect. The control of iodine deficiency disorders (IDDs) worldwide is one example where many countries have had quantitative and time-bound goals that are supported through budgetary allocations (McGuire & Lopez, 2002) to improve coverage for iodized salt and iodine status. In China, for example, coverage of iodized salt increased from 40% in 1995 to 89% in 1990 because of national efforts to achieve universal salt iodization. The effect of the program was also evaluated and the findings showed that goiter prevalence, measured by palpitation, declined in school children from 20% to 9% over the same period (Goh, 2001). The opportunistic distribution of vitamin A capsules through polio campaigns has been tracked in the countries where this type of delivery has been conducted, but less is known about the delivery of vitamin A (particularly for disease targeting) through routine health services because indicators on vitamin A distribution are not included in national health information systems.

Conclusion

Information presented in this profile has important policy implications for health, nutrition, and population in developing countries. Accelerating achievement of the Millennium Development Goals (MDGs) and ensuring equitable provision of information and services will depend on a particular country's capacity to (a) provide strong political commitment to ensure that services reach the poor; (b) reorganize its health system to reach the poor and strengthen accountability in the service delivery chain—between poor people and providers, between poor people and policy makers, and between the policy makers and providers; (c) regulate the quality of services provided to the poor in the public and private sector; and (d) provide voice and agency to the poor through enhanced community participation. The strategies by which a particular country will achieve equity in the provision of health and nutrition services will vary. Evidence cited in this profile indicates that successful ways to reach poor people can be accomplished, and different countries must adopt and innovate interventions to better achieve health for all.

Annex A

Reaching the MDGs and Ensuring Equity

Top-Down and Bottom-Up Strategies

The Millennium Development Goals (MDGs) may be met by carrying out two kinds of strategies:

- A top-down strategy refers to directing policy and program efforts to the richer quintiles first and then progressively to the poorer quintiles.
- A bottom-up strategy refers to directing policy and program efforts to the poorer quintiles first and then progressively upward to the richer quintiles.

Table A1 presents a stylized example highlighting the difference in achievement levels using the two approaches and is based on the assumption that, in either case, all households are included in the three targeted income quintile groups. Thus, the bottom-up approach includes 100% of the target population in the lowest three quintiles whereas status quo is maintained in other quintile groups. Similarly, in the top-down approach, 100% of the target population is covered in the top three quintiles, and status quo is maintained elsewhere. Thus, as shown in Table A1, the MDGs for reproductive health for Uzbekistan might be met in the following ways:

- Antenatal care coverage is high among women in Uzbekistan in the five asset quintiles. Thus, when the top-down strategy (column 3) is utilized, where wealthier quintiles were targeted first, the population average would reach 95.5%. By comparison, the bottom-up strategy would increase the population average to 96.9%. Furthermore, the distribution of services would be even more inequitable across asset quintiles than before.
- Similarly, raising the average levels of skilled attendance at birth to 100% would be more effectively achieved by a bottom-up strategy (column 7) than by a top-down strategy (column 6). A bottom-up strategy would also ensure less inequity across asset quintiles in the levels of skilled attendance at birth.
- Contraceptive prevalence averages 50% among women in Uzbekistan. Thus, both the top-down and bottom-up approaches will yield a similar increase to above 61% from 51%.

Reaching the MDGs and Ensuring Equity

The following two strategies will most effectively reach the MDGs and ensure equity:

- Targeting the poor first will more effectively raise the national averages for these health indicators.
- A bottom-up strategy will also ensure a more equitable distribution of reproductive health services across socioeconomic strata.

The stylized example presented in Table A1 shows that significant gains could be achieved in the population averages using the bottom-up approach. A bottom-up strategy will also ensure a more equitable distribution of reproductive health services across socioeconomic strata. In Table A1, the concentration index—which provides a means of quantifying the degree of inequality across income groups—improves when either strategy is adopted, but it improves substantially when the bottom-up strategy is used. The implications with respect to the above analysis are clear: To achieve the MDGs for health, Uzbekistan must redesign the delivery of health services so those services reach poor people much more aggressively than the present trends and practices suggest.

The Maternal Mortality Ratio (MMR) for Uzbekistan is currently 60.³ The MDG is to reduce this ratio by 75%, bringing it down to about 15. However, because the data for MMR are not available by asset quintile, we can look at the closest proxy maternal health indicators such as antenatal care use and delivery attendance. The target levels for these indicators have been set at 90% for the year 2015. The MDG target indicator to increase contraceptive prevalence does not indicate a maximum target level for 2015. The HIV prevalence among 15–24-year-old pregnant women by asset quintile is unavailable at this time.

Table A1
Top-Down and Bottom-Up Strategies

Indicator/ Population Asset Quintile	Antenatal Care Visits (%)			Proportion of Births attended by skilled personnel (%)			Contraceptive Prevalence Rate (%)		
	Current Level	Level After Attaining MDG		Current Level	Level After Attaining MDG		Current Level	Level After Attaining MDG	
		Top- Down Strategy	Bottom- Up Strategy		Top- Down Strategy	Bottom- Up Strategy		Top- Down Strategy	Bottom- Up Strategy
Top 20%	96.2	100	96.2	100	100	100	53.5	100	53.5
Next Highest 20%	96.3	96.3	96.3	99	99	99	46.4	46.4	46.4
Middle 20%	95	95	95	99.3	99.3	99.3	55.1	55.1	55.1
Next Lowest 20%	94.1	94.1	94.1	100	100	100	54.7	54.7	54.7
Bottom 20%	94.1	94.1	100	91.9	91.9	100	47.2	47.2	100
Population Average	95	95.52	96.9	97.5	97.6	99.7	51.3	61.1	61.9

Source. Table constructed from data from *Socio-Economic Differences in Health, Nutrition and Population (Uzbekistan)* by Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2000, Washington, DC: World Bank.

³ The national estimate for MMR in 1995 is between 17 and 190 whereas a modeled estimate for 1995 is 60 (World Bank, 2002c).

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