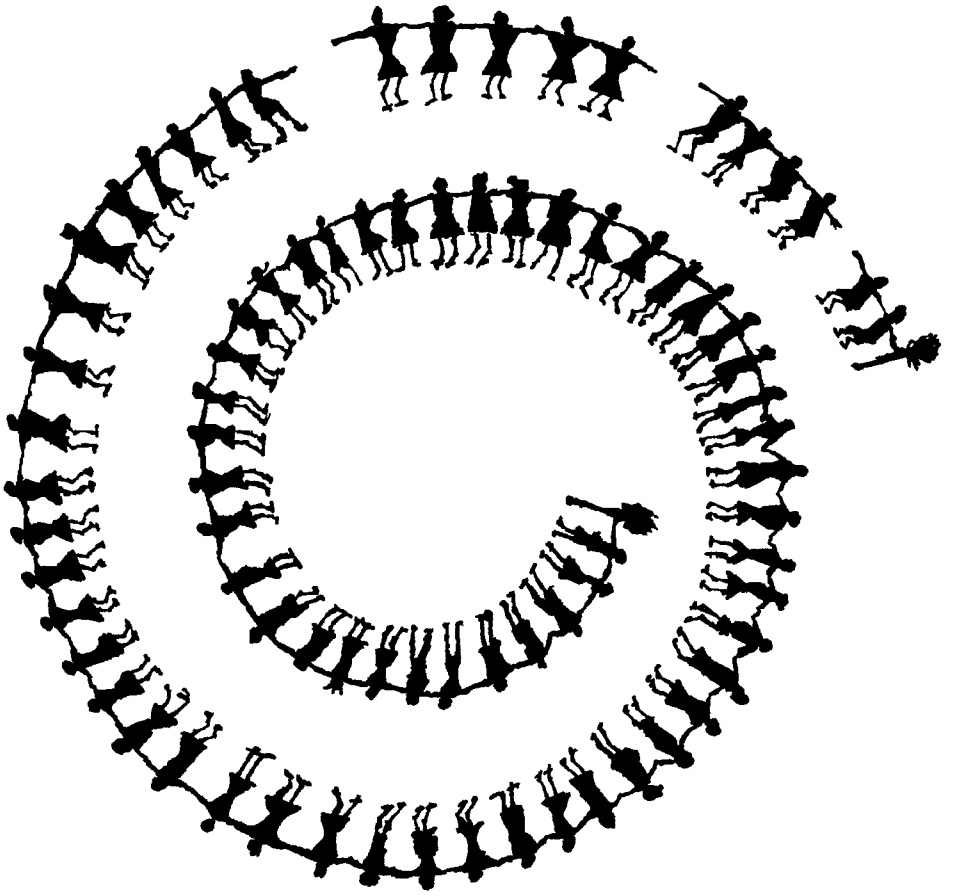
Report No. 8

South Asia Human Development Sector

Attaining the Millennium Development Goals in Pakistan

How Likely and What Will it Take to Reduce Infant Mortality, Child Malnutrition, Gender Disparities and to Increase School Enrollment and Completion?

May, 2005



Discussion Paper Series

ATTAINING THE MILLENNIUM DEVELOPMENT GOALS IN PAKISTAN

How Likely and What Will it Take to Reduce Infant Mortality, Child Malnutrition, Gender Disparities and to Increase School Enrollment and Completion?

South Asia Human Development Sector
South Asia Region
The World Bank

May 2005

ABBREVIATIONS AND ACRONYMS

CCT	Conditional Cash Transfers
CPRID	Center for Poverty Reduction and Income Distribution
CWIQ	Core Welfare Indicators Questionnaire
DHS	Demographic and Health Survey
ESR	Education Sector Reforms
FATA	Federally Administered Tribal Areas
FBS	Federal Bureau of Statistics
GER	Gross Enrollment Rate
GDP	Gross Domestic Product
GOP	Government of Pakistan
HD	Human Development
IMR	Infant Mortality Rate
LHW	Lady Health Workers
MCH-FP	Maternal & Child Health – Family Planning
MD	Millennium Development
MDG	Millennium Development Goal
NER	Net Enrollment Rate
NNS	National Nutrition Survey
NRB	National Reconstruction Bureau
NWFP	North West Frontier Province
PIDE	Pakistan Institute of Development Economics
PIHS	Pakistan Integrated Household Survey
PRHFS	Pakistan Reproductive Health and Fertility Survey
PRHS	Pakistan Rural Household Survey
PSES	Pakistan Socio-Economic Survey
SAP	Social Action Program
U5MR	Under-Five Mortality Rate
UPE	Universal Primary Education

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

1818 H Street N.W.
Washington, D.C. 20433
U.S.A.

(202) 473-1000
Cable Address: INTBAFRAD
Cable Address: INDEVAS

June 28, 2005

Pakistan: Attaining the Millennium Development Goals in Pakistan

Corrigendum

The text below was inadvertently left out of Report No. 8, Discussion Paper Series, South Asia Human Development Sector, entitled "Pakistan: Attaining the Millennium Development Goals in Pakistan – How Likely and What Will it Take to Reduce Infant Mortality, Child Malnutrition, Gender Disparities and to Increase School Enrollment and Completion?"

ACKNOWLEDGEMENTS

This Discussion Paper was prepared by Anil B. Deolalikar (Consultant, SASHD), with analytical inputs from G. M. Arif and Faiz Bilquees of the Pakistan Institute of Development Economics (consultants), Shahnaz Kazi (SASHD); assistance from Amna Mir (SASHD); and under the overall guidance of Julian F. Schweitzer (Sector Director, SASHD), Mansoora Rashid (Sector Manager, SASHD), John Wall (Country Director for Pakistan), and Rasmus Heltberg (TTL, SASHD). Comments from Manuela Ferro, Inaam Haq, Rasmus Heltberg, Kseniya Lvovsky, Zareen Naqvi, Ambar Narayan, Miria Pigato, Tahseen Sayed, Tara Vishwanath, and Salman Zaidi were helpful in revising the document.

CONTENTS

EXECUTIVE SUMMARY

Pakistan's progress in improving its MD indicators during the 1990s has been uneven. The indicator which has seen some progress is infant/under-five mortality, which, by all indications, has fallen by about 3.5% annually during the 1990s – nowhere near the performance of Bangladesh, which has seen a decline of 4.8% annually in its infant mortality, but considerably better than India's sluggish 2.2% annual decline. However, at 82 deaths per 1,000 live births, Pakistan still has the highest *level* of infant mortality among the large countries of South Asia.

Pakistan's record in reducing child malnutrition has been dismal. There are indications that child malnutrition has been stagnant, and may actually have increased, during the 1990s. Nearly half of all children under the age of 5 are underweight. While this prevalence rate is not significantly different than that observed in India or Bangladesh, those countries have seen a decline in child malnutrition during the 1990s. For instance, child underweight rates in Bangladesh declined sharply from 68% in 1992 to 51% in 2000. In India, the decline has been slower – from 53% in 1992-93 to 47% in 1998-99.

Likewise, despite their low levels, education indicators in Pakistan have seen little progress during the 1990s. Both the gross and the net primary enrollment rate have stagnated between 1995-96 and 2001-02, and only 42% of primary school-aged children attended primary school in 2001-02. In comparison, net primary enrollment rates were 53% in India (in 1999-2000) and 65% in Bangladesh (in 2000). Primary completion rates are no better in Pakistan, with only about half of the children entering primary school actually completing five years of the primary course. With the exception of Sindh, most provinces have seen the primary completion rate stagnant or decline in the 1990s.

However, Pakistan has seen some progress in narrowing the gap between male and female school enrollments. The share of female to male students in primary school increased substantially during the 1990s – from about 50% in 1990-91 to 75% in 1999-2000. Of course, these levels pale in comparison to the performance of Bangladesh, which has virtually eliminated the gender gap in enrollments not only at the primary level but also, remarkably, at the secondary level.

Pakistan's generally slow progress in reducing child malnutrition and increasing primary school enrollment and completion is worrisome in light of the fact that it already ranks very low on these indicators – both relative to its neighbors in South Asia as well as relative to its per capita income.

This report concludes that even though it will be very challenging for Pakistan to attain the MDGs, it should nevertheless be possible for it to make substantial progress on the four MD indicators with a package of interventions that include economic growth, improved infrastructure coverage, expansion of schooling (particularly female schooling), and sector-specific policies (such as increased immunization coverage). For instance, the simulation results suggest that

increasing the child immunization coverage from its current level to a level of 100% (i.e., universal coverage) could be associated with a very large reduction in infant mortality of 28 infant deaths per 1,000 live births. A full 'package' of three interventions (expanded female schooling, child immunization coverage, and sanitation coverage) would bring the infant mortality rate in the country down from its current level of 77 deaths per 1,000 live births to a level of 42 deaths per 1,000 live births by 2015. While this would still be considerably above the MDG level (33 deaths per 1,000 live births), it would represent tremendous progress. Likewise, a package of economic growth, expansion of adult female schooling, and expanded electricity, sanitation and immunization coverage could together result in a large decline in the child underweight rate – from a level of 47% currently to 31% by 2015. Again, this level would still be well above the MD goal of no more than 20% of Pakistani children aged 0-59 months being underweight, but it would represent dramatic progress in comparison to what Pakistan has been able to achieve in the past.

The same conclusions apply to the other indicators. The projections in this report suggest that, with a package of 3-4 interventions, the net primary enrollment rate in the country would likely increase from a level of 49% in 2000-01 to 66% in 2015 and that the primary completion rate would likely increase from a level of 51% to 65% – both rates being well below the 100% rate called for by the MDGs. Finally, the projections show a slight narrowing of the gender gap in the net primary enrollment rate from 6.5 percentage points to 6.1 percentage points by 2015.

It should be noted that these simulations are based on the assumption that mean real consumption expenditure per capita in Pakistan will grow annually at about 5.4% between now and 2015, which is consistent with the GDP growth targets espoused by the Medium-Term Development Framework of the Planning Commission. Such an improvement in real consumption per capita would represent a marked shift from the situation prevailing in the 1990s, when real per capita consumption was largely stagnant. However, the Pakistani economy has gained significant momentum during the last couple of years, with real GDP growth averaging 5.0-6.5% per annum or 2.5-4% on a per capita basis. For the simulation exercises, this report thus assumes that Pakistan's growth prospects over the next decade will resemble its growth experience during the last two years – not its performance during the decade of the 1990s.

It is rather discouraging then to find out that, despite this stepped-up growth in the economy and despite the increase in adult female schooling that this report assumes will occur over the next decade, Pakistan will still find it difficult to attain any of the four MDGs considered here. There are three possible implications of these findings. First, the empirical simulations indicate the need for additional large targeted interventions in child survival, malnutrition and schooling (over and above the more general interventions considered in this report). What could these interventions be? There is considerable evidence from many developing countries that demand-side interventions – such as conditional cash transfer (CCT) programs that provide financial assistance to poor households conditional on their making investments in their children's human capital (school attendance or regular use of preventive health care services) – are effective in improving child schooling, health and nutritional outcomes. Pakistan has introduced a few demand-side incentives, such as involving communities in social service delivery (e.g. school committees in the Punjab) and introducing stipends for girls aged 6-8 years (only in Sindh and Punjab). Free textbooks are also available to all children. Other safety net programs, such as *Zakat* and *Bait-ul Maal*, also target school meals, stipends, health care, and food subsidies. However, these programs are small relative to the size of the problem, focus on particular provinces, are not integrated (and sometimes overlapping) and their targeting and administration is weak.

Second, this report has not considered the potential effects on the MD indicators of qualitative changes in governance and in the institutional modes of delivery of public services. Clearly, poor governance is at the heart of many social-sector problems in Pakistan. Corruption and nepotism in the recruitment, promotion and transfer of public health and education officials; widespread absenteeism of teachers and health workers; lack of accountability of front-line public officials to clients and communities; scandals in textbook or drug procurement; and capture of local institutions of service delivery by the elite are all examples of poor governance that impact adversely on social outcomes. Broad-ranging institutional reform, incorporating, among other things, empowerment of citizens and communities who can hold the state accountable for performance, devolution of administrative and financial powers to communities, greater autonomy to schools, involvement of parents in school management, and ensuring the motivation of front-line workers, could potentially further improve the MD indicators beyond the levels projected in this report. In this regard, it would be important to assess the impact of the recent and ongoing 'devolution of power' legislation in Pakistan on various MD outcomes.

Third, the findings of this report also indicate the limitations of public-sector interventions in improving the MD indicators in Pakistan. The private and non-government sector can play an important role in raising household demand for child schooling and health services, in extending the coverage of health and educational services, and in improving the quality of social services. The experience of Bangladesh highlights the very important role that NGOs can play in expanding micro-credit and other income-generating opportunities to the poor, improving educational opportunities for girls, and disseminating child survival interventions in remote rural areas. There is some evidence from within Pakistan itself that the private sector has played a key role in increasing female school enrollments and in bridging the gender gap in schooling opportunities. While it is beyond the scope of this report to identify the mechanisms by which the non-governmental sector in Pakistan could play a greater role in the delivery of social services, it is clear that there is an urgent need for policies that encourage public-private partnerships and non-governmental participation in social initiatives.

This report has also highlighted the tremendous regional disparities in the MD indicators in Pakistan. For instance, the infant mortality rate in some districts is 3-4 times as high as in other districts. The youth literacy rate in some districts is six times as high as the level found in other districts. While the provinces of Punjab and NWFP saw their measles immunization coverage levels expand impressively during the 1990s, Sindh saw a virtual stagnation while Balochistan experienced a sharp decline. Not surprisingly, Sindh and Balochistan saw their under-five mortality rate increase over this period. In general, these two provinces have the worst social indicators, and have seen the least progress in these indicators, in the country. It will thus be important to focus on lagging provinces, and districts within these provinces, in developing an overall MDG strategy for the country.

Finally, the importance of systematically and regularly monitoring MD outcomes at disaggregated levels and of evaluating the impact of public interventions cannot be overemphasized. There is a paucity of reliable, time-series data on most MD indicators at the district and lower levels. The lack of such data makes it virtually impossible to monitor progress toward attainment of the MDGs at lower levels of administration. However, current survey plans by the Federal Bureau of Statistics will help address this problem. A new Pakistan Social and Living Standards Measurement Survey (which will replace the old PIHS) is to be undertaken each year beginning in 2004-05. In every alternate year, the PSLM survey will be fielded with a greatly-expanded sample of 77,000 households, so as to provide MD indicator estimates that are representative at the district level. (The questionnaire to be used to obtain district-level estimates of MD indicators will be the Core Welfare Indicators Questionnaire or CWIQ.) During other

years, the PSLM will be conducted with a sample of 17,000 households and thus be able to provide provincial-level estimates.

Another persistent problem in Pakistan, as in many other countries, is that very few public programs and interventions are subjected to rigorous, independent evaluation. In order to choose the right set of interventions with which to attain the MDGs, it is critical to know which programs have been successful in improving MD indicators and which have not. It is therefore imperative that every public program and intervention in the country be assessed in terms of its contribution to MDG targets. For this to happen, however, a culture of evaluation research needs to be inculcated and nurtured.

1. INTRODUCTION

THE MILLENNIUM DEVELOPMENT GOALS

Since the launch of the Millennium Development Goals (MDGs) at the Millennium Summit held in New York in September 2000, the MDGs have become the most widely-accepted yardstick of development efforts by governments, donors and NGOs. The MDGs are a set of numerical and time-bound targets related to key achievements in human development. They include halving income-poverty and hunger; achieving universal primary education and gender equality; reducing infant and child mortality by two-thirds and maternal mortality by three-quarters; reversing the spread of HIV/AIDS; and halving the proportion of people without access to safe water. These targets are to be achieved by 2015, from their level in 1990 (United Nations 2000).

Almost all the countries in the world, including Pakistan, have committed themselves to attaining the targets embodied in the Millennium Declaration by 2015. Unfortunately, there is little understanding of whether Pakistan will be able to attain all of the MDGs, and whether there are some MDGs that Pakistan will be able to attain. There is even less understanding of what it will take – by way of economic growth, infrastructural investments, and social-sector interventions – to attain the different MDGs. Further, this report argues the importance of disaggregating the MDGs for Pakistan, given the large geographical and socioeconomic variations in millennium development (MD) indicators across the country.

This report focuses on the attainment of four major human development-related MDGs by Pakistan and its main sub-national units – infant mortality, child malnutrition, schooling enrollment and completion, and gender disparities in schooling. The selection of these MDGs for detailed analysis was based in large part on the availability of reliable sub-national data. For example, reliable data on disease prevalence at the district or divisional level are simply not available, and this hampers useful sub-national analysis of the communicable disease-related MDG. The same is true of another important MD indicator – maternal mortality.

METHODOLOGY, DATA, AND CAVEATS

Methodology and Assumptions. The methodological approach adopted in this report is as follows. We first describe the status of the selected MD indicators in 2000, paying consideration to regional and other variations in these indicators. We also consider the changes in the MD indicators over time (typically during the 1990s). We then apply econometric estimation techniques to unit record data (typically at the individual or household levels) in order to analyze the socioeconomic and policy correlates of the selected MD indicators. These estimates are then used to simulate the likely trajectory of the MD indicators under alternative scenarios of change between now and 2015.

For projecting the time-path of the different MD outcomes to 2015, we consider a few common scenarios. One of these is that mean real consumption expenditure per capita in Pakistan will grow annually at about 3% between now and 2015. This would be a stark change from the situation during the 1990s, when real per capita consumption growth was largely stagnant. However, the Pakistani economy has gained significant momentum during the last couple of years, with real GDP growth averaging 5.0 - 6.5% per annum or 2.5 – 4% on a per capita basis.

Thus, we assume for the purposes of the simulation exercises that Pakistan's growth prospects over the next decade will resemble its growth experience during the last two years – not its performance during the decade of the 1990s. The other assumption that is common to virtually all the simulations is an increase in adult female schooling. Here our assumption is that the percentage of women with primary schooling will rise by an average of 2 percentage points annually and that the percentage of women with post-primary schooling will increase by 0.5 percentage points annually. Such growth would result in approximately 40% of adult women having primary schooling and 16% having 10 or more years of schooling by 2015. Admittedly, these assumptions are arbitrary, but, given the recent trends in female enrollment, they appear feasible over the coming decade. More importantly, as is noted throughout the report, none of the assumptions made is sacrosanct; the assumptions are only meant to illustrate the range of MD outcomes under a set of possible scenarios. The projections could be undertaken for any combination of changes in the policy or environmental variables.

Additional sector-specific assumptions are made for projecting the individual MD out-comes.[1] For instance, in the infant mortality and child underweight simulations, we assume that child immunization coverage will expand by 2.1 percentage points annually to reach universal coverage by 2015. For the schooling-related simulations, we assume that electricity coverage will expand by 1.5 percentage points annually to reach 100% coverage by 2015. Prior to each simulation, the full set of assumptions made for the simulation is detailed in the text.

Data. To accomplish the objectives of the study, we have relied on a number of different data sources, especially when describing the status of and time trends in MD indicators.[2] The main data sources used are the 2000-01 round of the Pakistan Socioeconomic Survey (PSES) undertaken by the Pakistan Institute of Development Economics (PIDE) and the 2001-02 round of the Pakistan Integrated Household Survey (PIHS) conducted by the Federal Bureau of Statistics (FBS). However, an attempt is made to use data from other sources as well for comparison purposes. For instance, we use data from the 2001-02 National Nutrition Survey (NNS) on child malnutrition. Annex 2 contains a detailed discussion of the sampling design of the PSES and the PIHS, as well as of other data sets from Pakistan, such as the NSS.

For the multivariate analysis of selected MD correlates, this report has made exclusive use of the 2000-01 round of the PSES. There are two reasons for the use of the PSES. First, it is the only nationally-representative data set that provides information on all of the four MDGs addressed in this report: infant and child mortality, child malnutrition, schooling enrollment and completion, and gender disparity in schooling opportunities.[3] It is true that data on these indicators are also available from the PRHS, but that survey is limited to the rural areas of the country. Second, the other two nationally-representative data sets – the NSS and the PRHFS – did not obtain data on economic variables, such as income and consumption expenditure, and this severely limits their usefulness.

[1] The choice of 'policy' variables to use in the simulations is largely dictated by the econometric model used. In other words, only policy or environmental variables that have statistically significant associations with the MD outcome variable in the econometric analysis are used in the projections.

[2] The Government of Pakistan's own MDG report – *Pakistan Millennium Development Goals Report 2004* – follows this approach as well, using data from several different sources for comparing different MD indicators over time.

[3] The PIHS, which has a larger sample, did not obtain anthropometric information on children, so one cannot use those data to analyze child malnutrition.

Caveats. By its very nature, any empirical analysis is predicated on assumptions about data quality and measurement, inferences of causality between variables, and potential biases of statistical and econometric estimates. The analysis presented in this report is not immune to these same concerns. It is therefore important to note at the outset that while the results and simulations presented in this report may give an impression of precision, they are not that.[4] They should be treated as indicative of possible broad trends, and could usefully be complemented with other analyses using different methodological approaches. As long as the results are used with this understanding, they can be helpful in 'rough-order' planning for MDG attainment.

Finally, it is important to note an important limitation of the simulations performed in this report. The simulations are based on statistical analysis of household survey data. By its very nature, such analysis tends to over-emphasize readily-measurable variables, such as household income or consumption, adult schooling levels, and access to infrastructure, and under-emphasize qualitative variables, such as the quality of institutions, governance, and empowerment. Obviously, this does not imply that the latter variables are irrelevant to the MD indicators; indeed, institutional reform and good governance are critical to the attainment of the MDGs. It is therefore important to view the messages of this report as complementing those from the numerous qualitative (and detailed) studies of health, nutrition, schooling and poverty that have been conducted in the past.

[4] In addition to lack of precision, the estimates presented in this report, like other econometric estimates, may be subject to systematic biases arising from measurement errors in the independent variables and from the omission of important variables and unobserved heterogeneity from the analysis.

2. INFANT AND CHILD MORTALITY IN PAKISTAN

Infant and child mortality rates are widely considered as good indicators of the overall health and socio-economic status of a country's population. Child mortality accounts for about three-fourths of overall mortality in Pakistan, and the reduction in infant and child mortality has been generally slow. The millennium development goal is to reduce the infant mortality rate by two-thirds from 1990 to 2015. For Pakistan, this would mean an infant mortality rate of 33 deaths per 1,000 live births and an under-five mortality rate of 47 deaths per 1,000 live births.

OVERALL LEVELS AND TRENDS

Infant and child mortality estimates are usually derived from the birth history of women in reproduction ages, obtained from household surveys. These estimates are often affected by the under-reporting of either births or deaths of children. Another common reporting error is heaping of children's ages at death, commonly at 6, 12 and 18 months. In an effort to avoid this problem, many household surveys record a child's age at death in months, especially when a child has died below the age of two years. Even then, errors in age reporting cannot be ruled out.

Estimates of infant mortality in Pakistan are available since the 1960s. These data show that the infant mortality rate declined from 140 deaths per 1,000 live births in the 1960s to 105 in the mid-1980s, and further to 85 deaths per 1,000 live births in the mid-1990s. However, the pace of infant mortality decline appears to have slowed down since then.

Data from administrative records – those at health and family planning facilities – indicate that, between 1993 and 2002, the infant mortality rate declined from 95 to 85 deaths per 1,000 live births – an annual rate of decline of 1.2% (Table 2.1). However, the same data show the under-five mortality rate declining by more than two times as much – from 128 to 100 deaths per 1,000 live births over the same period. For this to occur, child mortality (i.e., mortality between ages 1 and 5) would have had to decline at even faster rates.

Table 2.1: Infant and under-five mortality rates, 1993-2002

	1993	1998	1999	2000	2002
Infant mortality rate	95	90	90	85	85
Under-five mortality rate	128	120	111	103	100

Source: *Health & Population Welfare Facilities Atlas*, December 2002, CRPRID, Islamabad.

Data on infant and under-five mortality from four different household surveys conducted during the past decade are shown in Table 2.2. According to the PSES, the infant mortality rate was 77 deaths per 1,000 live births. The 2000 Pakistan Demographic Survey also indicates the same figure. However, it is worth nothing that the Pakistan Demographic Survey provides estimates for the year preceding the survey while the PSES estimates are based on a much longer reference period (of the past 8 years). Infant mortality was 85 and 82, respectively, according to the PRHFS and the 2001-02 PIHS. It is beyond the scope of this study to determine the reliability of all these estimates that are based on different data sources. However, the differences can largely be attributed to differences in the reference period. More importantly, the estimated rate of infant mortality in Pakistan appears to be in a narrow range of 77-85 deaths per 1,000 live births. The

under-five mortality rate is in the range of 96-105 deaths per 1,000 live births, depending upon the source.

However, survey data from three rounds of the PIHS (over the period 1995-96 to 2001-02) show a sharper decline in infant mortality than suggested by administrative data. According to the PIHS 1995-96, the infant mortality rate for the country was 101 deaths per 1,000 live births during that year. It had fallen to 89 deaths by the time of the 1998-99 PIHS and further to 82 deaths per 1,000 live births by 2001-02.[5] Thus, over the period 1995-2001, infant mortality had declined at an annual rate of 3.5% – considerably faster than the 1.2% rate suggested by the administrative data.[6]

Gender Differences. Until recently, infant mortality in Pakistan was higher for females than for males, reflecting a trend common in South Asia (especially India and Bangladesh). However, according to both the PSES and the PRHFS, this trend has reversed; the PRHFS shows female infant mortality to be considerably lower than male infant mortality (Table 2.2). Child mortality – i.e., mortality in the age group 1-4 years – is, however, significantly higher among females than among males, likely reflecting intra-household discrimination against girls in the allocation of nutrition and health-care opportunities.

Table 2.2: Infant and child mortality rate

Source	Survey year	Reference period	Infant mortality rate			Under-five mortality rate		
			Total	Male	Female	Total	Male	Female
PSES	2000-01	1991-99	77	79	75	96	95	99
PDS	2000	1999-2000	77	-	-	-	-	-
PRHFS	2000-01	1997-99	85	99	71	105	114	95
PIHS	2001-02	1997-99	82	84	81	-	-	-

Note: PDS refers to Pakistan Demographic Survey carried out regularly by the FBS.

Data from the PIHS over the period 1995-96 to 2001-02 suggest that the phenomenon of excess female infant mortality is largely an urban phenomenon (Table 2.3). In the rural areas of the country, females have consistently enjoyed a lower rate of infant mortality than males. The reverse has been true in the urban areas throughout the 1995-2002 period. Again, this pattern is consistent with the pattern of gender differentials in infant mortality observed in neighboring India.

Table 2.3: Infant mortality rate, by sex and by rural/urban areas, 1995-96 to 2001-02

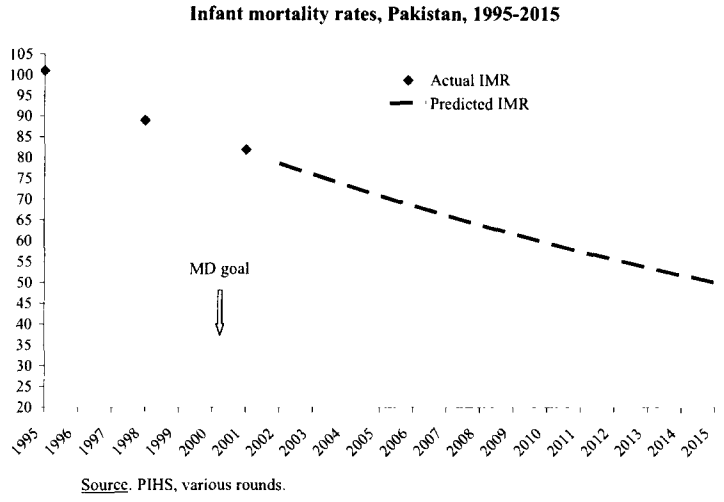
	1995-96			1998-99			2001-02		
Sector	Male	Female	Both	Male	Female	Both	Male	Female	Both
Urban	77	85	81	67	80	73	60	70	65
Rural	115	101	108	98	91	95	92	84	88
Overall	105	97	101	90	89	89	84	81	82

Note: Infant mortality rates are calculated for births occurring in the three years preceding the survey.
Source: PIHS, various rounds.

[5] Indirect estimates of infant mortality based on the PIHS show a similar declining trend during the 1990s. The indirectly-estimated infant mortality fell from 105 per 1,000 live births during 1990-95 (based on the PIHS 1998-99 round) to 96 during 1993-98 (based on the PIHS 2001-02 round) (World Bank 2004).

[6] The *Pakistan Millennium Development Goals Report 2004* indicates an infant mortality rate of 102 deaths per 1,000 live births in 1990-91 (using data from the Planning Commission) and of 77 in 2000-01 (from the Pakistan Demographic Survey). These two figures would amount to a decline of 2.9% annually.

As noted earlier, infant mortality in Pakistan has declined at a respectable rate of 3.5% per annum over the latter half of the 1990s (if one goes by the PIHS figures). Figure 2.1 shows that even if this relatively rapid rate of infant mortality decline is maintained in the future, the infant mortality rate for the country could be expected to fall to a level of only 50 deaths per 1,000 live births by 2015 – about 50% more than the MD goal of 33 infant deaths per 1,000 live births. However, as argued later in the chapter, this is a simplistic projection that does not recognize the underlying factors that determine infant mortality.



Source. PIHS, various rounds.

Figure 2.1

INTERNATIONAL COMPARISONS

How does Pakistan's level of infant mortality and its rate of infant mortality reduction during the 1990s compare to that of the other large countries in South Asia? According to the National Family Health Surveys in India, infant mortality in that country fell from 79 deaths per 1,000 live births in 1992-93 to 68 in 1998-99 – an annual rate of decline of 2.5% (Figure 2.2). In Bangladesh, the infant mortality rate fell even faster – from 87.4 deaths per 1,000 live births in 1989-93 to 66 in 1995-99, representing an annual rate of decline of 4.8% (various Demographic and Health Surveys). Using data from the 1995-96 and 2001-02 rounds of the PIHS, the infant mortality rate in Pakistan declined from 101 deaths per 1,000 live births in 1995-96 to 82 deaths in 2001-02 – an annual rate of decline of 3.5%. Thus, during the 1990s, Pakistan's performance on infant mortality reduction has been better than India's performance but worse than Bangladesh's achievement. However, at about 82 deaths per 1,000 live births, Pakistan still has the highest *level* of infant mortality among the large countries of South Asia.

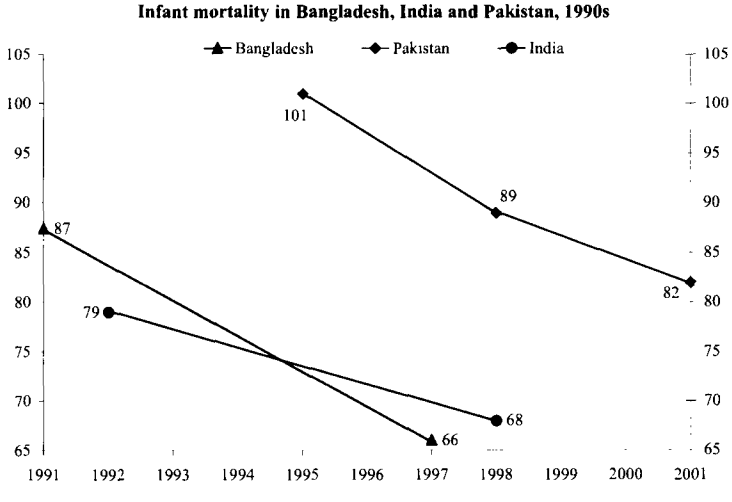
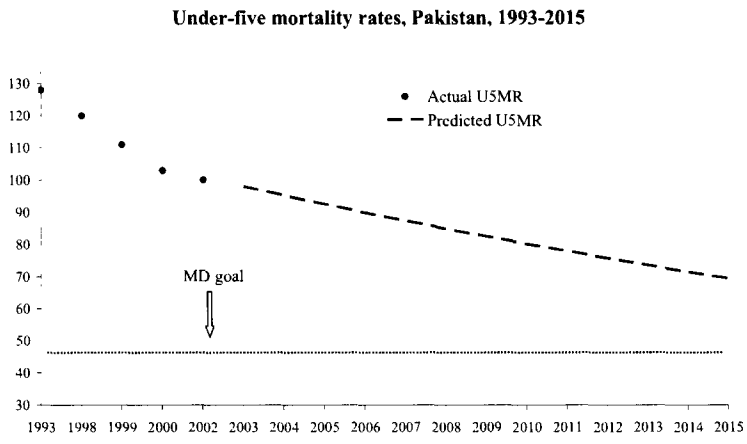


Figure 2.2

Under-Five Child Mortality. As noted earlier, between 1993 and 2002, under-five mortality fell by 2.9% annually. If this rate of decline were to be continued into the future, the under-five mortality rate is likely to reach a level of 69 child deaths per 1,000 live births by 2015 – nearly 50% higher than the MD goal of 47 (Figure 2.3). Thus, simple projections of the infant and under-five mortality rates yield very similar results about the likelihood of Pakistan reaching the child mortality-related MDG.



Source: Various issues of the CRPRID Health & Population Welfare Facilities.

Figure 2.3

SPATIAL VARIATIONS

Table 2.4 presents infant and child mortality rates by urban-rural residence from a number of different sources. While the estimates of mortality differ across the various data sets, the gap in mortality between rural and urban areas is consistent, with infant mortality in the rural areas typically 33-39% greater than in the urban areas. The rural-urban disparity in under-five mortality is even greater, with the under-five mortality rate in the rural areas being nearly 50% larger than in the urban areas.

Table 2.4: Infant and child mortality rates by place of residence

Place of residence/province	PSES		PRHFS	PIHS
	Infant mortality rate	Under-five mortality rate	Infant mortality rate	Under-five mortality rate
Urban	61	73	48	65
Rural	85	109	64	88

Table 2.5, which shows the infant mortality rate in the urban and rural areas of the country during the 1990s, indicates that the rural/urban disparity in infant mortality has not changed significantly between 1995-96 and 2001-02. The infant mortality rate in the rural areas has been consistently 30-35% higher than the corresponding rate in the urban areas.

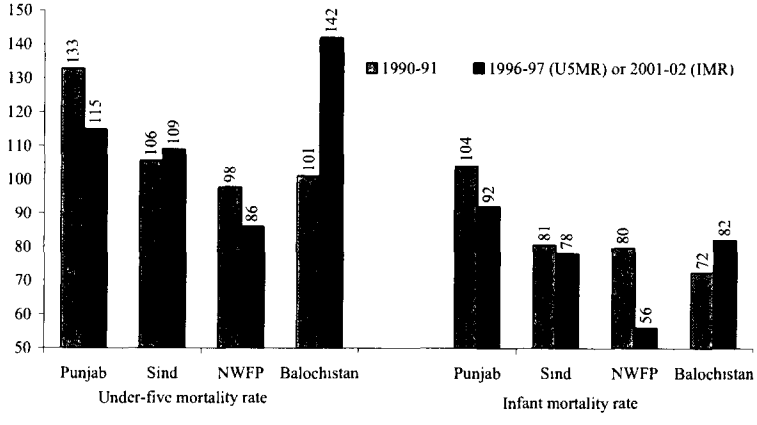
Table 2.5: Infant mortality rate, by rural/urban areas, 1995-96 to 2001-02

Year	Rural	Urban	Rural/Urban Ratio
1995-96	108	81	133.3
1998-99	95	73	130.1
2001-02	88	65	135.4

Source: Three rounds of the PIHS

As would be expected, there are wide variations in infant and under-five mortality across provinces. In 2001-02, the infant mortality rate ranged from a low of 56 in the Northwest Frontier Province (NWFP) to a high of 92 in Punjab (Figure 2.4). The inter-provincial variations in under-five mortality are even greater – from a low of 86 in the NWFP to a high of 142 in Balochistan in 1996-97.

Infant and under-5 mortality decline across provinces, 1990-2001



Source. PDHS 1990-91, Pakistan Fertility & Family Planning Survey 1996-97, and PIHS 1998-99 & 2001-02

Figure 2.4

How have the different provinces performed in terms of reducing their infant and under-five mortality rates? The data shown in Figure 2.4 are surprising, since they show that both infant and under-five mortality actually increased sharply in Balochistan during the 1990s.[7] In Sindh, both rates were more-or-less stagnant. The largest decline in infant mortality was seen in the NWFP (30%), followed by Punjab (12%). Indeed, the large decline in Thus, the inter-provincial disparity in infant and child mortality increased very sharply during the 1990s.[8]

Provincial MDGs for infant and under-five mortality, 2015

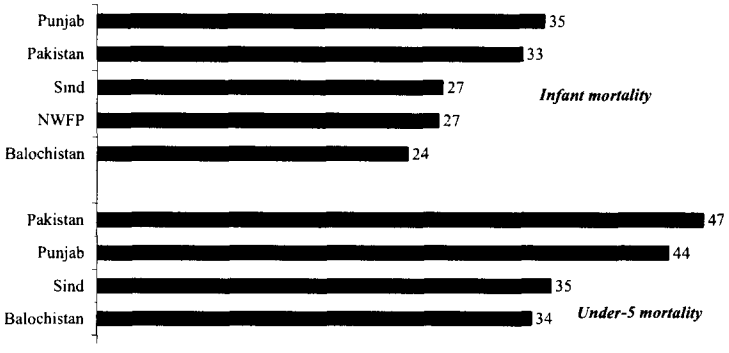


Figure 2.5

Source: PDHS 1990-91

While the discussion on MDGs to date has focused on individual countries reaching the MD goals by 2015, there is no reason why the MDGs should not be applied to individual provinces within countries. Indeed, a national MD goal of reducing infant mortality by two-thirds (between 1990 and 2015) could be achieved by each province reducing its infant mortality by two-thirds. Figure 2.5, which shows the implied 2015 MD goals for each of the provinces, indicates that the range of infant mortality rates that will need to be attained by each state by 2015 for the country as a whole to meet its MD goals is wide – from a low of 24 for NWFP to a high of 35 for Punjab.

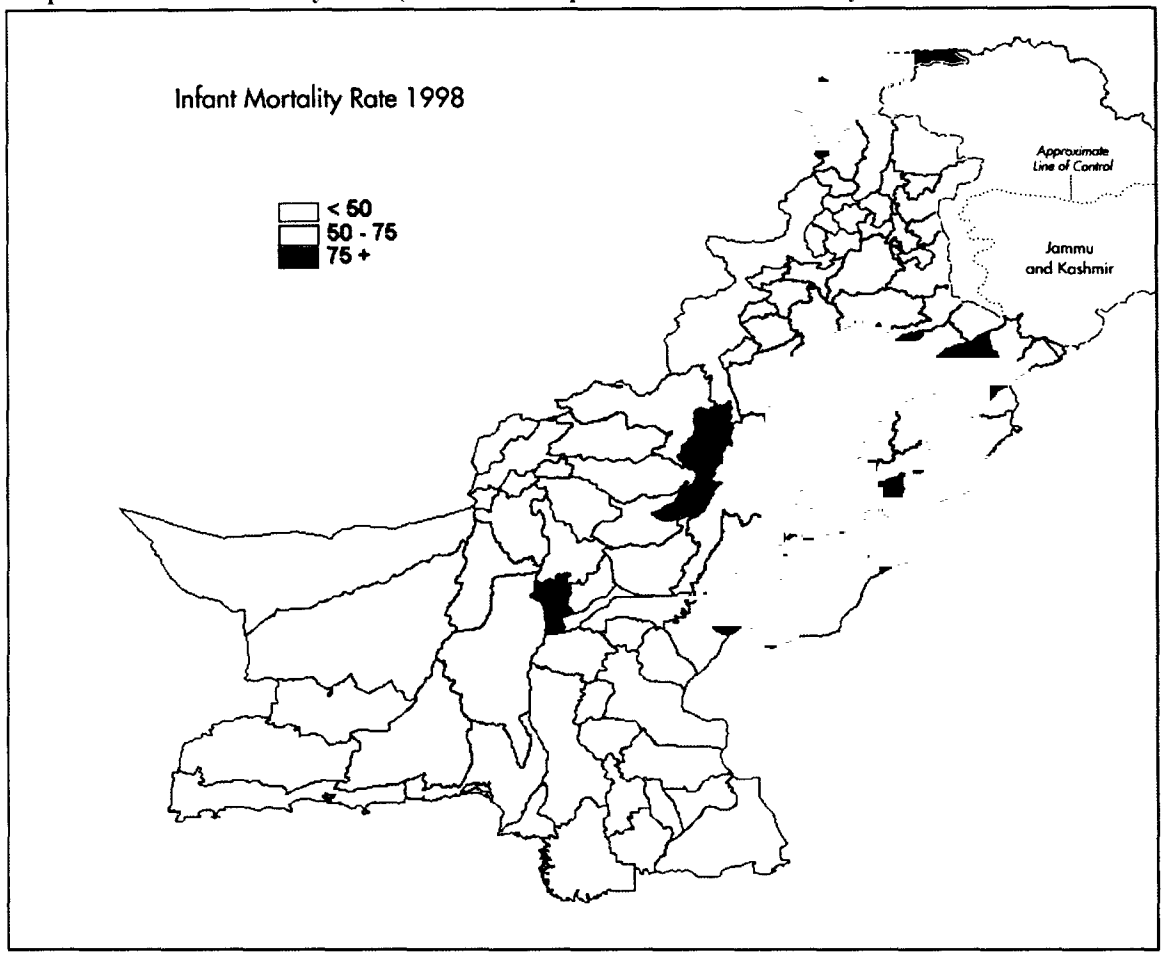
[7] The increase of 41% in the under-five mortality rate in Balochistan is likely an over-estimate, reflecting the less-than-precise estimation of under-five mortality by the Pakistan Fertility and Family Planning Survey of 1996-97. Because of widely-dispersed populations residing in difficult-to-reach areas, many household surveys are unable to obtain precise estimates for Balochistan.

[8] The variance of the infant mortality rate across provinces increased from 190 in 1990-91 to 231 in 2001-02 and that of the under-five mortality rate increased from 256 to 530 between 1990-91 and 1996-97.

INTRA-PROVINCIAL VARIATIONS

The provincial averages of infant mortality mask substantial intra-provincial variation. District estimates of infant mortality are available from the Census for 1998. These estimates show considerable variation even within provinces. For instance, within the province of Punjab, which

Map 2. 1: Infant Mortality Rate (infant deaths per 1,000 live births), by district, 1998



had an average infant mortality rate of 72 infant deaths per 1,000 live births in 1998, the district-level infant mortality rate varied from a low of 39 infant deaths per 1,000 live births in Islamabad to a high of 95 in Pakpattan. While some of these differences reflect rural/urban differences, there are large variations in infant mortality even among largely rural districts.[9] Map 2.1, which shows district-level estimates of infant mortality for the country, suggests that the high-mortality districts are concentrated in the interior of the country. For the country as a whole, the infant mortality rate ranges from a low of 32 infant deaths per 1,000 live births (in Shikarpur, Jacobabad, Peshawar, Punjgoor, Killa Abdullah, Pishin, Sibi) to a high of 95 in Pakpattan. Map 2.1 suggests that the interior of the country generally has the highest rates of infant mortality.

[9] Several non-urban districts, such as Mianwali, Faisalabad, Chakwal and Attock, had infant mortality rates of 60 or fewer infant deaths per 1,000 live births.

The increase in infant and child mortality rates in Balochistan, and the stagnancy of these rates in Sindh, can in large part be explained by the declining or stagnant levels of immunization of children in those provinces. According to the PIHS, for instance, only 38% of the children in Balochistan were immunized against measles in 2001-02 – down from 60% in 1995-96 (Figure 2.6).[10] In Sindh, measles vaccination coverage remained stagnant between 1995-96 and 2001-02.

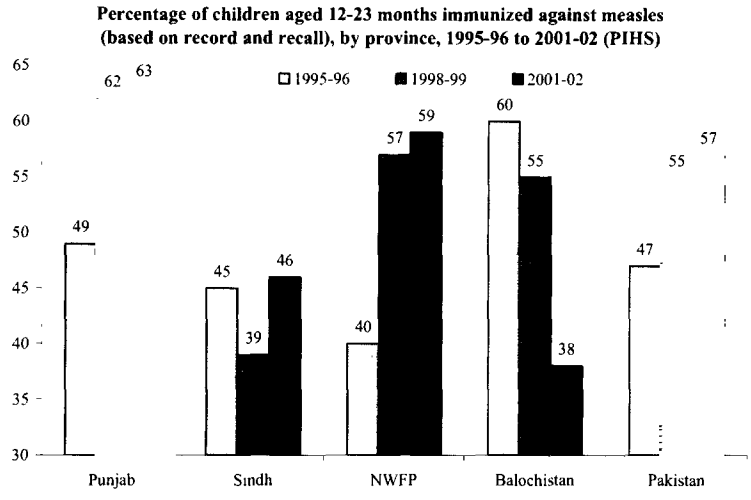


Figure 2.6

DEMOGRAPHIC VARIATIONS

A large number of studies based on data from the World Fertility Surveys provide evidence of the strong association between short birth intervals and child mortality. The PSES data likewise show a very clear negative association between infant and under-five mortality and the preceding birth interval (Table 2.6). Children born at an interval of one year were at significantly higher risk than children born about 3-4 years apart. It is evident from Table 2.4 that birth spacing is associated with significantly reduced infant and under-five mortality.

The survival status of the previous child also has a strong association with mortality. Infant and under-five mortality rates are approximately three times higher among children whose older (previous) sibling was dead as compared to those whose previous sibling was still alive. No consistent pattern between birth order and infant and under-five mortality is observed, although Table 2.4 shows the lowest rate of infant mortality for children of the second birth order. The association between infant and under-five mortality and the mother's age is also unclear from the bivariate analysis. Infant mortality is highest for children of mothers aged 35-39 years, followed by children of mothers aged 45-49. This mixed pattern has also been observed in other recent studies (Bennett, 1999; Ahmad and Mir, 2003).

[10] While such a sharp decline in immunization coverage almost seems implausible, it is consistent with the increase in under-five mortality in Balochistan from 101 to 142 child deaths per 1,000 live births over the same period.

Table 2.6: Infant and under-five mortality rates by various demographic characteristics		
	PSES 2000-01	
Demographic factors	Infant mortality rate	Under-five mortality rate
Birth Interval (previous child)		
First child	86	105
1 year	132	172
2 years	100	124
3 years	56	68
4 or more years	31	44
Survival status of the previous child		
Alive	61	77
Dead	173	225
Birth order of child		
1	77	96
2	67	84
3	74	90
4	76	93
5+	82	106
Mother's age at child's birth (years)		
15-19	60	-
20-24	83	100
25-29	70	88
30-34	66	85
35-39	94	118
40-44	79	93
45-49	92	130
Source: 2000-01 PSES		

SOCIOECONOMIC VARIATIONS

Throughout the world, better-schooled mothers tend to have lower rates of infant and under-five mortality than less-schooled mothers. This pattern is also observed in the PSES data from Pakistan. The infant mortality rate is 27 deaths per 1,000 live births for children of women with secondary or higher schooling, as compared to 83 deaths per 1,000 live births for illiterate women (Table 2.7). A similar pattern is observed in the PIHS and PRHFS, suggesting that each incremental year of schooling is associated with significant gains in infant survival. The data indicate that even a few years of mother's schooling can help improve child survival and significantly lower the death rate of children in their early years of life. These findings are consistent with those found in other studies carried out in Pakistan and in other developing countries (Azam and Karin, 2001), and reflect the fact that a better-schooled mother is quicker to notice a child's health problem and obtain treatment for him or her relative to a less-schooled mother (Bennett, 1999).

Table 2.7: Maternal schooling and infant and child mortality				
Mother's schooling level	PSES 2000-01		PIHS 2001-02	PRHFS 2000-01
	IMR	U5MR	IMR	U5MR
Illiterate	83	105	89	153
Primary school	79	96	80	137
Middle school	57	80	61	128
High school	27	30	49	56

DELIVERY OF HEALTH SERVICES

The delivery of health services – in particular, antenatal care, child immunization, and curative care – is critical to achieving low infant mortality rates. In Pakistan, not only is there inadequate access to health services – as evidenced by the generally low and stagnant rates of child immunization in at least two provinces – the quality of service delivery in the public health sector is poor. There is widespread absenteeism of doctors and paramedics at government health centers and sub-centers; most government health facilities are in disrepair; and the availability of drugs and medical supplies at public health facilities is very limited.

In 2002, the Government's National Reconstruction Bureau (NRB) commissioned a baseline social audit of governance and delivery of public services. The baseline survey was undertaken by CIET International, with financial support from the Canadian International Development Agency (Cockcroft *et al.*, 2002). The baseline social audit explored people's perceptions on issues such as utilization of and experience with health, education, police and judiciary services. Less than a third (31%) of all households in the country, with large variations across provinces, reported using government health facilities for medical treatment (Figure 2.7). Nearly one-half (47%) reported using private qualified practitioners and 21% reported using private unqualified practitioners. In Sindh and Punjab, less than a quarter of households reported using government health facilities.

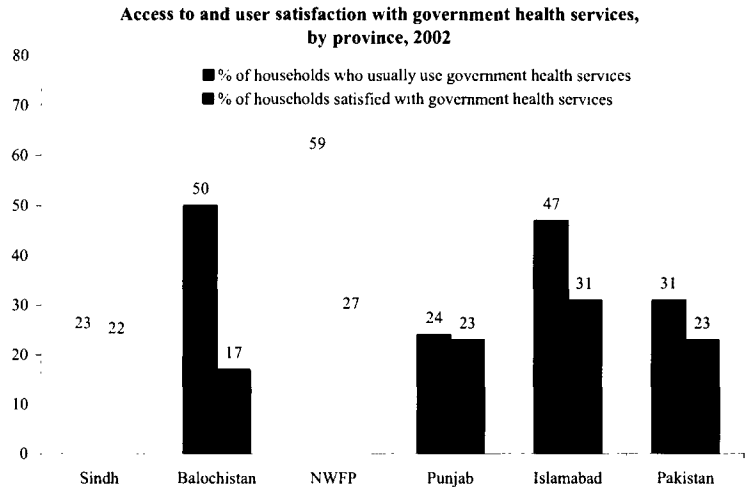


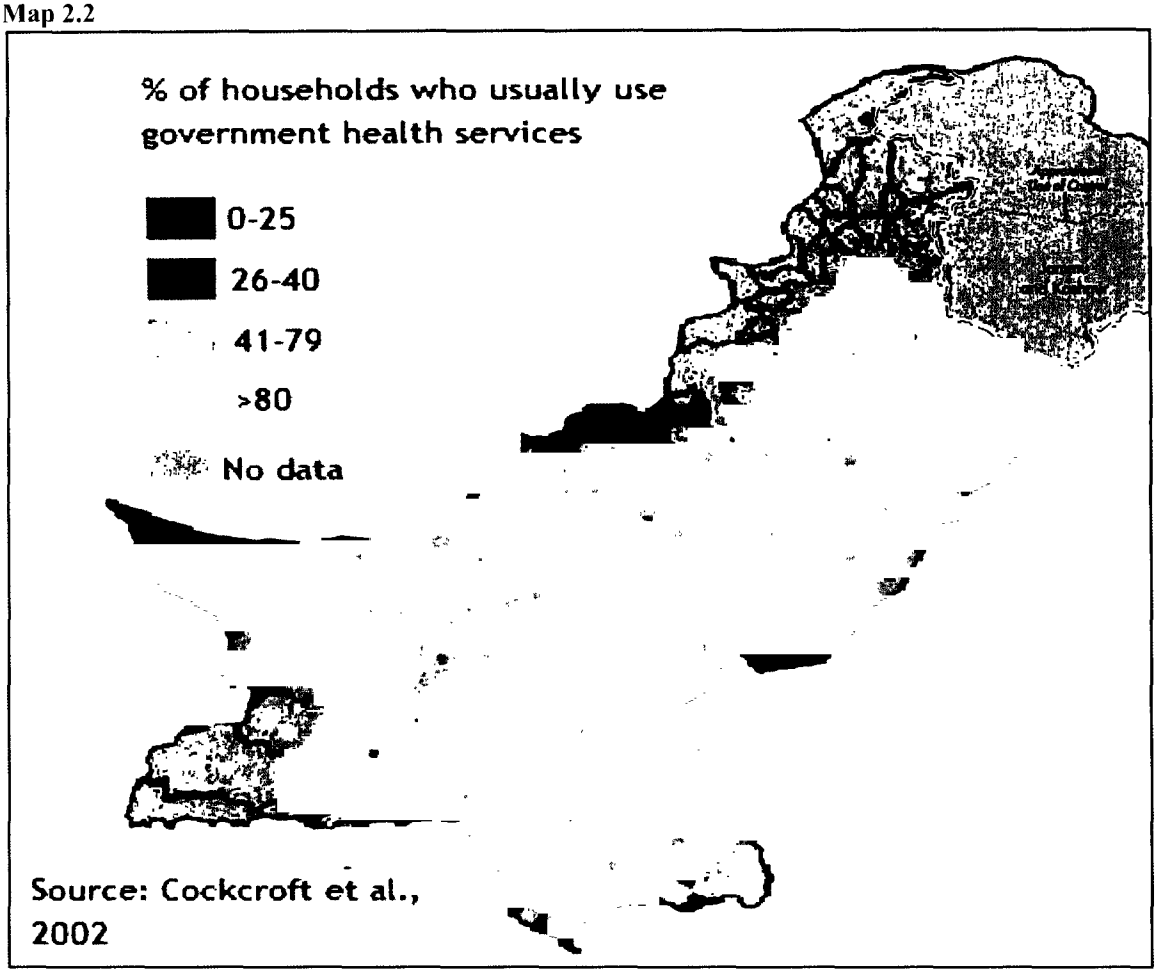
Figure 2.7

Less than a quarter of surveyed households were satisfied with the available public health services. Interestingly, this number did not vary much across the provinces. Islamabad had the highest proportion (31%) of households who reported being satisfied with government health services. In Balochistan, a mere 17% expressed satisfaction.

The CIET survey found that households with the opportunity to use private health services often chose the private option. Those who could not afford to use private services, typically the poor, had no choice but to use the government services. The contrast is evident in urban Sindh, where there is a greater availability of private health providers, and in urban areas in general, where private health services are generally more easily available. As shown Map 2.2, a lower proportion of households in Sindh and much of Punjab used government health facilities than elsewhere in the country.

The major reasons for dissatisfaction with government health services was poor treatment, high price, non-availability of medicines in the facility, non-availability of doctors, and bad attitude of staff.

Map 2.2



Reducing health provider absenteeism and making government health facilities accountable to the community is no simple task, however. As the *World Development Report 2004* points out, it requires broad-ranging institutional reform, incorporating, among other things, empowerment of citizens and communities who can hold the state accountable for performance, devolution of administrative and financial powers to communities, and ensuring the motivation of front-line workers. In this context, it is worth noting that the ongoing devolution process in Pakistan will qualitatively change the relationships between service providers and clients. The devolution is likely to bring about greater accountability among service providers and improve their incentives to provide better-quality services by bringing them closer to the clients they serve.

MULTIVARIATE ANALYSIS

In order to undertake further simulations about the likelihood of Pakistan meeting the infant mortality MDG, we have estimated a multivariate model of infant mortality using the PSES unit record data (at the child level).[11] The multivariate model has the advantage of controlling for several variables that may be simultaneously associated with infant mortality. The estimation results are reported in Annex Table 1, while only the broad findings of the empirical analysis are discussed here.

[11] Since the dependent variable is dichotomous (viz., whether or not a child dies within 12 months of its birth), the model has been estimated by the maximum-likelihood probit method.

After controlling for the other factors associated with infant mortality, urban areas are not observed to have significantly lower infant mortality than rural areas. Among the provinces, Punjab is observed to have a significantly higher infant mortality rate than Sindh (which is the excluded province in the regression). Within households, infant mortality rates are not observed to vary significantly by gender. However, birth order plays some role in mortality risk. Infants of birth order four or greater are observed to have an elevated risk of mortality, but surprisingly this is observed only for males. Indeed, females of higher parity tend to have a lower risk of mortality. These results are in stark contrast to the findings from other parts of South Asia (viz., India and Bangladesh) which indicate that females of higher birth-order are most vulnerable to the risk of death during infancy.

The presence of a flush toilet is strongly associated with reduced risk of infant death, with the infant mortality rate in households having a flush toilet being 22% lower than in households without such a toilet. However, the availability of piped water inside the household is not observed to have a significant (independent) association with infant mortality. A number of recent studies have found that sanitation is more important to mortality than water supply (Arif and Ibrahim, 1998; Bennett, 1999; World Bank, 2004a). The results might also reflect the fact that piped water is highly correlated with toilet access and may not have an independent association with infant mortality once there is control for toilet access. Another infrastructural variable – the availability of electricity – is also observed to have no significant association with infant mortality.

As in other studies from around the world, maternal schooling is observed to be significantly and inversely associated with infant mortality. For instance, children born to mothers who had matriculated (10 years of schooling) have a 68% lower probability of dying during infancy than children born to mothers having fewer than 10 years of schooling. Interestingly, mother's schooling of fewer than 10 years does not appear to make much of a difference to the risk of infant mortality. This finding is in contrast to several other studies, based on other data sets, which have shown that even a few years of mother's schooling significantly lowers the death rate of children in their early years of life (Shah *et al.*, 1997; Azam and Karin, 2001; Ahmad and Mir, 2003).

Another puzzling finding relates to the association between infant mortality and mean consumption expenditure per capita. The risk of infant death is observed to be positively and significantly correlated with the log of per capita consumption expenditure of a household, once there is control for maternal schooling and infrastructure. As reported earlier, this has also been found in other data sets from Pakistan, such as the PIHS. A recent study for India also found a perverse positive association between infant mortality and household consumption expenditure per capita after controlling for other household and community characteristics (World Bank 2004a). This finding is most likely a spurious correlation, resulting from the omission of other important variables in the infant mortality regression, and should not be interpreted as demonstrating that improvements in living standards will result in higher rates of infant mortality.

Health Interventions. Since the mid-1990s, an extensive program for family planning and primary health care has been operating in Pakistan, aimed at providing health services on a large scale in both the rural and the urban areas. Lady health workers (LHWs) have been recruited to provide these services at the community level. By 2003, more than 70,000 workers were providing services to their communities in the field of child health, nutrition, family planning, and treatment of minor diseases. However, only one-half of the Pakistani population is currently covered by the LHWs (GOP, 2003). An independent evaluation of this scheme indicates that, by

bringing family planning and primary health care services to the poor at their doorstep, the program has been associated with higher rates of child immunization.

Other major regular efforts to improve child survival include: control of diarrheal diseases, management of acute respiratory infections, and the Expanded Program on Immunization (EPI). The EPI for the period 1999-2004 aims to reduce infant and child mortality by immunizing children 0-11 months and women of child-bearing age against preventable diseases. Immunization coverage has been around 80% for children (GOP, 2003).

Unfortunately, district-level information on all of these interventions and expenditures on these interventions are not available. However, we have used information that is available on the number of LHWs in a district and the percent of children that are immunized in a district as indicators of intervention effort at the district level. These data were merged with the PSES to analyze the association between infant mortality and health services, with control for household socioeconomic factors.

The results do not show a significant association between infant mortality and the number of LHWs in a district. However, the proportion of children immunized in a district has a very strong and significant association with infant mortality, with the estimated elasticity of infant mortality with respect to district-level immunization coverage being close to unity. This implies that a one percent increase in district immunization effort is associated with a one percent decline in infant mortality in that district. These results demonstrate that large reductions in infant mortality in Pakistan are possible with a modest expansion of child immunization efforts.

SIMULATIONS TO 2015

Based on the multivariate probit model estimated above, we have undertaken simulations of the infant mortality rate under different intervention scenarios.[12] Since the explanatory power of the estimated probit model is low, the simulations discussed below should be treated as indicative of possible trends in the future – not as definitive predictions.[13]

Figure 2.8 shows the projected decline in the infant mortality rate in Pakistan with three selective interventions being pursued simultaneously and gradually to 2015.[14] The scope and magnitude of the assumed interventions, which are shown in Table 2.8, are merely meant to illustrate the likely reduction in infant mortality under one possible scenario. There is obviously no suggestion that the assumed interventions will indeed take place, and, even if they do, whether the interventions will proceed at the pace assumed in Table 2.8.

---

[12] As noted in chapter 1, the simulations undertaken throughout this report are based on inferences of one-way causality from the independent variables (e.g., household consumption expenditure per capita, immunization coverage, maternal schooling, etc.) to the dependent variables (viz., infant mortality, child malnutrition, school enrollment, etc.).

[13] The pseudo R-squared measure for the estimated probit model is 0.07, suggesting that the included explanatory variables 'explain' only 7% of the cross-sectional variation in infant mortality. It is not uncommon, however, for econometric models estimated with cross-sectional data to have low explanatory power, in large part due to the importance of unobserved individual and household heterogeneity and idiosyncratic 'shocks' in determining household outcomes. The explanatory power of regression models typically declines with sample size.

[14] The simulations are undertaken only for those variables that are significantly associated with infant mortality in the probit model. In addition, no simulations have been done with respect to increasing consumption expenditure per capita owing to the perverse positive association obtained between infant mortality and this variable.

Table 2.8: Assumptions about various interventions to reduce the infant mortality rate, 2000-01 to 2015

Intervention	Starting value in 2000-01	Assumed change per year	Ending value in 2015
Women with 10 or more years of schooling (%)	8.3	0.5 percentage point	15.8
Households having access to toilet (%)	44.5	1.8 percentage points	71.5
Population coverage of immunization in district (%)	68.5	2.1 percentage points	100.0

An expansion of female schooling and increased sanitation coverage are each associated with modest declines in infant mortality of 3-4 deaths per 1,000 live births. On the other hand, expanded immunization coverage is associated with a very large decline in infant mortality of 28 deaths per 1,000 live births. The effect of expanded immunization coverage swamps all the other effects.

Projected infant mortality rate to 2015, under different intervention scenarios (graph shows cumulative effect of each additional intervention)

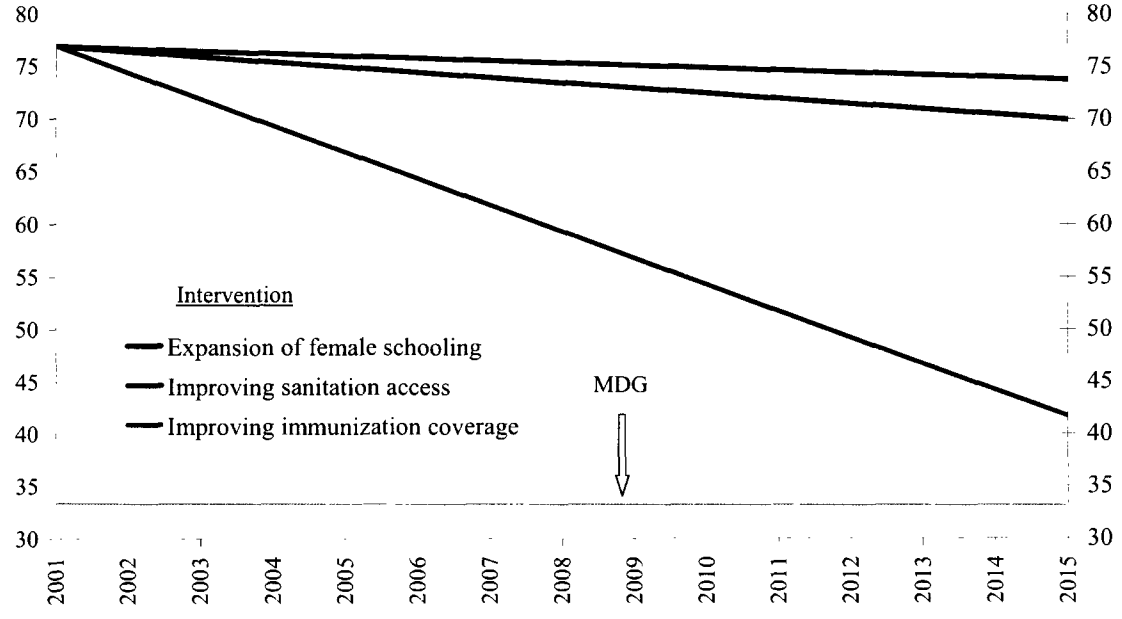


Figure 2.8

With the full 'package' of interventions, the infant mortality rate in the country is projected to decline by 35 infant deaths per 1,000 live births by 2015 – to a level of 42 infant deaths per 1,000 live births. This would still be significantly above the MD goal of no more than 33 deaths per 1,000 live births for Pakistan. This suggests that, although it will be possible to bring down the infant mortality rate in Pakistan significantly over the next decade with a package of child

immunization services, improved sanitation coverage, and increased female schooling, attainment of the infant mortality MDG is likely to remain extremely challenging.

3. CHILD MALNUTRITION

Malnutrition in young age increases the risks of death and also impairs cognitive development in children, affecting their future productivity and earnings. Malnourished children also lack essential micronutrients such as iodine, iron and vitamin A, whose deficiency has serious consequences on health and learning ability. South Asia faces one of the severest problems of child malnutrition in the world, with nearly one-half of children being underweight and stunted (United Nations, 2003). The millennium development goal is to reduce, by 2015, the percent of children who are underweight by one-half (relative to 1990). For Pakistan, this would imply a child underweight rate of about 20%.

OVERALL LEVELS AND TRENDS

According to the PSES, 47% of children aged 0-59 months were underweight at the time of survey and approximately half of the children were stunted (Table 3.1).[15] The corresponding percentages in the National Nutrition Survey (NNS) were 38 and 37 respectively. The PRHS data show that by the time a child reaches the age 5, he/she has a 62% probability of being stunted and 45% probability of being underweight. The results of these recent surveys, all of which were carried out roughly over the same period, differ considerably. However, there are several methodological differences among the surveys that may account for their different estimates of child malnutrition. First, the PRHS is a rural survey conducted in 14 districts across the four provinces of the country, while both the NNS and the PSES are nationally-representative surveys covering rural as well as urban areas. Second, the sample size of the NSS is much larger than that of the PSES. Third, the PRHS collected data on heights and weights of children born in the 6 years preceding the survey, which implies that children aged 0-71 months were included in the analysis. Thus, the ages of the reference population vary across the different surveys. Despite differences in the estimates of underweight prevalence, all the surveys show very high levels of child malnutrition in Pakistan.

Table 3.1: Prevalence of child malnutrition

Source	Survey year	% under weight	% stunted
PSES	2000-01	47.5	51.2
NNS	2001-02	41.5	31.0
PRHS (rural only)	2001	44.6	61.9

There are relatively few estimates of the trend in child malnutrition over time. The Pakistan Demographic and Health Survey in 1990-91 indicated 40.4% of children being underweight. The PRHS estimated this ratio to be 44.6% in 1999-2000. Although the two surveys might not be strictly comparable, the fact that the prevalence of underweight shows an increase over the decade is troubling.

[15] As in the literature, a child is considered underweight when his or her weight-for-age is more than two standard deviations below the NCHS reference weight. A child is stunted when his or her height-for-age is more than two standard deviations below the NCHS reference. Severe underweight and stunting occur when the relevant nutrition indicator is more than three standard deviations below the NCHS reference.

However, the NNS, which was conducted both in 1985-87 and in 2001-02, paints a different picture. It shows the child underweight rate as having declined from 51.5% in the earlier period to 41.5% in the latter period (Figure 3.1). Over a 15-year period, however, this decline is modest, amounting to an annual decline of only 1.4% in the underweight rate.[16]

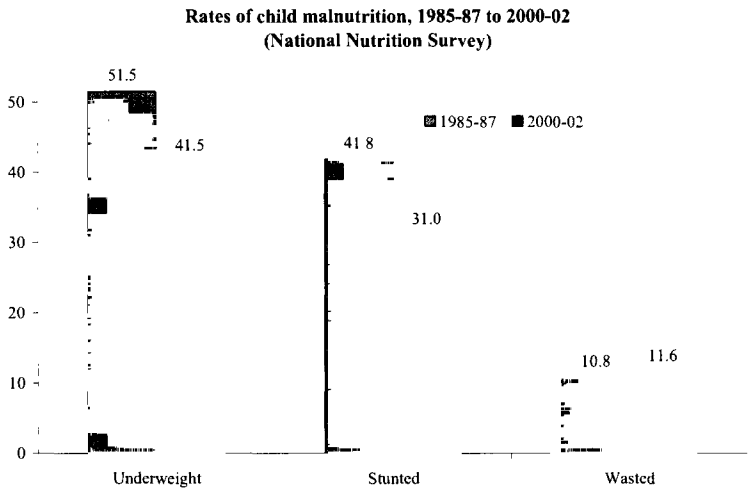


Figure 3.1

Table 3.2 Prevalence of child malnutrition by rural/urban residence

Place of residence	PSES		NNS		PRHS (rural only)	
	Under-weight	Stunted	Under-weight	Stunted	Under-weight	Stunted
Urban	41.3	44.7	35.0	30.8	-	-
Rural	50.6	53.4	38.3	36.9	44.6	61.9

SPATIAL VARIATIONS

Table 3.2 also shows differences in the levels of child malnutrition between rural and urban areas. Interestingly, however, these differences are significantly smaller than those observed for infant or under-five mortality. For instance, while infant mortality in the rural areas is 33-39% greater – and under-five mortality rate is 50% higher – than in the urban areas, the rural-urban disparity in child underweight or stunting rates is only about 20%.

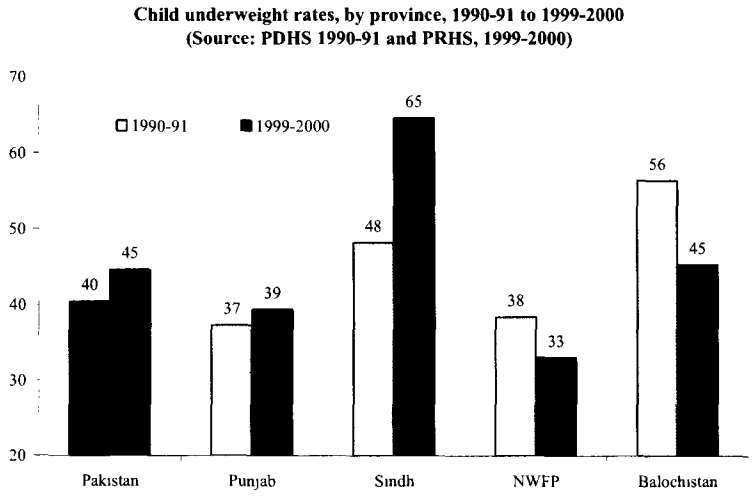


Figure 3.2

There are large inter-provincial variations in child malnutrition. For instance, while a third of the children in NWFP are underweight, the corresponding proportion in the Sindh is nearly two-thirds. A comparison of the data from the PDHS (1990-91) and the PRHS (1999-2000) shows

[16] The *Pakistan Millennium Development Goals Report 2004* also indicates a slight increase in the proportion of underweight children in Pakistan – from a level of 40% in 1990-91 to 41.5% in 2000-01.

that there was a large increase in the prevalence of child malnutrition in Sindh during the 1990s (Figure 3.2). Punjab saw a small increase as well, while NWFP and Balochistan saw declines of 14-20% in the child underweight rate between 1990-91 and 1999-2000.

The high rates of child malnutrition in Punjab are surprising, since it is an agriculturally prosperous state that is likely to have greater availability of food. Indeed, data on calorie intake by province shows good per capita availability of calories in all the provinces, but particularly in Punjab (Figure 3.3) (Qureshi and Arif, 2001). These data thus suggest that low food intake is unlikely to be the main cause of child malnutrition, and that child malnutrition probably occurs due to a number of factors, such as low birth-weight, poor breastfeeding practices, and high rates of infection among children.

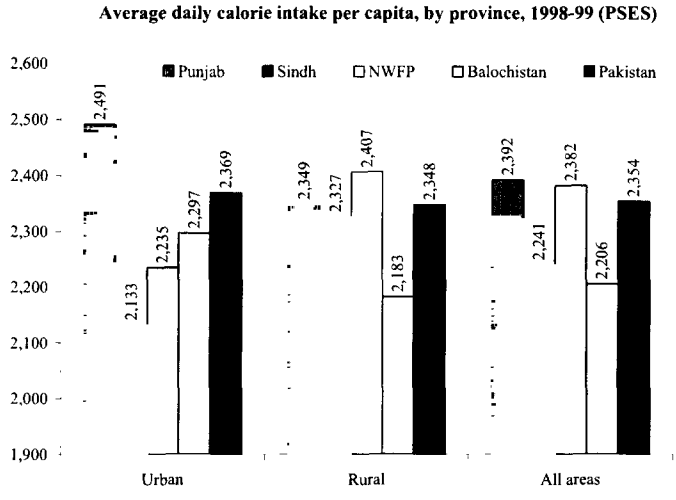


Figure 3.3

INTERNATIONAL COMPARISONS

How does Pakistan compare to other countries in the region in terms of the prevalence of child malnutrition? Figure 3.4 shows child underweight rates in four countries of South Asia during the 1990s. While Pakistan's child underweight rates are not the highest in the region (Pakistan and India have higher underweight rates), it is the only country that appears to have seen child underweight rates increase during the 1990s. Both Sri Lanka and Bangladesh managed to reduce their child underweight rates by about 3.5% annually, while India reduced its underweight rate at the rate of 1.9% annually.

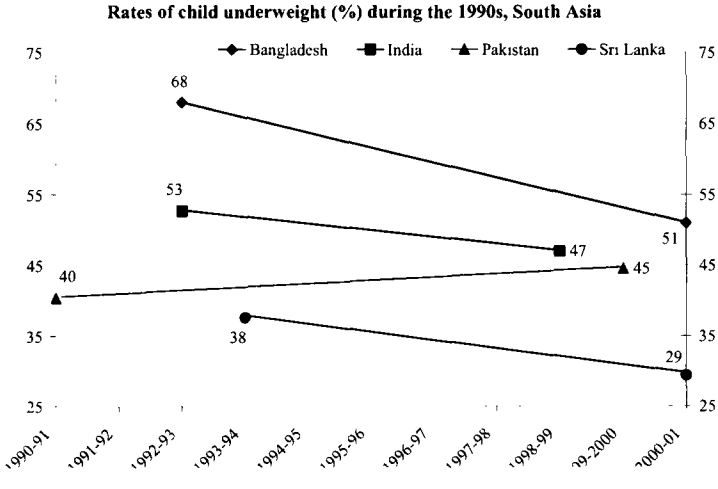


Figure 3.4

DEMOGRAPHIC VARIATIONS

Table 3.3 shows malnutrition rates by gender and age obtained from three surveys: PSES, NNS and PRHS. All the data sets show similar results. The prevalence of child malnutrition – both underweight and stunting – is lowest for children less than six months old. The prevalence grows

dramatically until children reach two year of age. This may be explained by the dependence of infants on breast milk during the first year and inadequate food supplementation thereafter. The largest increase in malnutrition, according to the PSES and PRHS, occurs between 6 and 23 months – the period when children are being weaned. The weaning period, when infants makes the transition from being exclusively fed with breast milk to a diet of solid and liquid foods, is a critical period for the baby's nutritional status. The risk of malnutrition increases during this time, especially for children from low-income households who not get adequate nutrients from the solid foods they are given (Marini and Gragnolati, 2003). This age pattern of child malnutrition is widely observed in other countries, and documents the importance of nutrition in early childhood and the relative inefficiency of nutritional interventions after the second year of a child's life.

Table 3.3: Prevalence of malnutrition by age and sex, 2000-01

	PSES		NNS		PRHS (Rural only)	
	Under-weight	Stunted	Under-weight	Stunted	Under-weight	Stunted
Age (months)						
<6	20.3	31.2	-	-	28.3	44.2
6-11	42.9	52.0	31.5	24.1	48.7	58.3
12-23	57.9	57.0	41.7	39.5	55.3	76.4
24-35	55.1	50.7	38.7	32.6	55.0	70.3
36-47	46.7	50.9	36.7	35.0	42.2	57.5
48-59	43.0	52.0	35.2	36.8	39.3	5.4
60-71	-	-	-	-	38.5	60.9
Gender						
Male	50.3	52.6	37.9	35.8	-	-
Female	44.6	49.0	37.7	35.1	-	-

Interestingly, both the PSES and NNS data show no evidence of girls being at greater risk of malnutrition than boys. Indeed, if anything, the PSES data show a slightly higher proportion of boys being underweight and stunted relative to girls. The nutritional advantage of girls over boys is consistent across all ages (Figure 3.5).

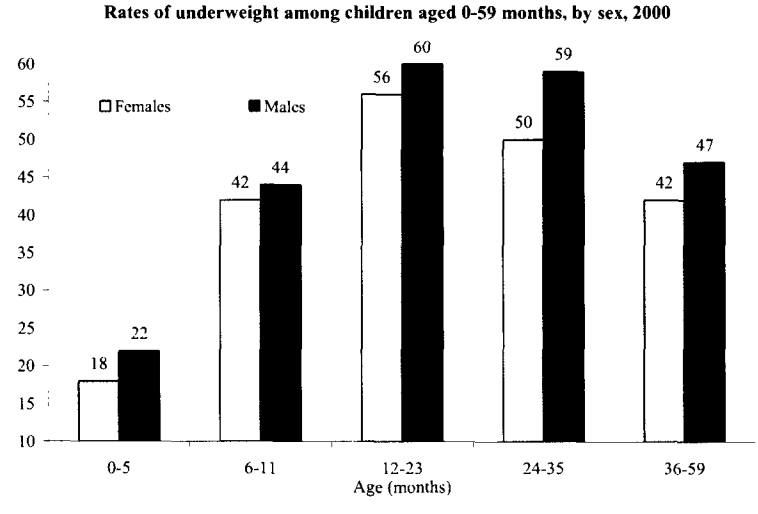


Figure 3.5

SOCIOECONOMIC VARIATIONS

Mother's Schooling. Differentials in the prevalence of child malnutrition across levels of completed schooling by the mother are very large; both the PSES and the NNS show this pattern (Table 3.4). The NNS data show a steeper gradient between child malnutrition rates and mother's schooling than the PSES data, with children of post-matriculate mothers having nearly one-half the probability of being malnourished compared to children of illiterate mothers. But even in the PSES, the variations in child malnutrition rates across levels of maternal schooling are significant.

Table 3.4: Prevalence of malnutrition by mother's education				
	PSES		NNS	
Mother's schooling	underweight	Stunted	Underweight	stunted
Illiterate	50.2	54.9	41.0	38.3
Primary	40.2	43.2	35.5	34.5
Middle	41.3	36.3	34.1	31.8
Matriculate	38.8	36.1	24.6	22.9
Post-matriculate	36.8	32.0	23.4	20.8

Household Living Standards. Unlike infant and under-five mortality, which show a (perverse) positive association with per capita consumption expenditure, child malnutrition shows an expected inverse association (Table 3.5). In the top consumption quintile, 38% of children are underweight and 41% stunted, as compared to 52% and 60% of children in the top consumption quintile being underweight and stunted, respectively. The fact, however, that 38-41% of children in the top consumption quintile – a group that is most unlikely to suffer from inadequate food availability – are under-nourished once again suggests that child malnutrition in Pakistan is the result not of inadequate availability (or even intake) of food but of socio-cultural factors such as low birth weights, poor breast- and infant feeding practices, and high rates of infection among children.

Table 3.5: Malnutrition rates among children under 5 years of age, by per capita consumption expenditure quintiles

Per capita consumption expenditure quintile	Underweight	Stunted
Bottom	52.2	59.5
Second	50.1	51.1
Third	52.3	53.4
Fourth	45.1	48.5
Top	38.0	40.5
Source: 2000-01 PSES		

MULTIVARIATE ANALYSIS

In order to undertake simulations about the likelihood of Pakistan meeting the child underweight MDG, we have estimated a multivariate model of child underweight rates, using the PSES unit record data (at the child level).[17] The multivariate model has the advantage of controlling for several variables that may be simultaneously associated with child malnutrition. The estimation results are reported in Annex Table 2, while only the broad findings of the empirical analysis are discussed here.

After controlling for the other factors associated with child malnutrition, Sindh and Punjab are observed to have significantly higher child underweight rates than NWFP (which is the excluded provincial dummy). However, children in Balochistan are no more likely than those in NWFP to be underweight. As in the case of infant mortality, once there is control for other socioeconomic variables, urban areas are no longer observed to have significantly lower child underweight rates than rural areas.

Within households, male children are significantly more likely to be underweight than female children. Using the 1990-91 Pakistan Demographic and Health Survey, Mahmood (2001), too,

[17] Since the dependent variable is dichotomous (viz., whether or not a child aged 0-59 months is moderately or severely underweight), the model has been estimated by the maximum-likelihood probit method.

found that boys were at a significantly higher risk of stunting than girls. These results are in contrast to several studies from India and Bangladesh which have typically found intra-household discrimination against girls in the allocation of food intake and medical care and therefore higher levels of malnutrition among girls relative to boys. Marini and Gragnolati (2003), who observed gender bias in nutritional status in favor of girls in the urban areas of Guatemala, reasoned that boys in urban areas are more likely to work outside the home (relative to girls), and this puts them at a nutritional disadvantage, since working children not only have higher nutritional needs but also spend more time away from home, where there is better access to food. However, this explanation is unlikely to explain the Pakistan results, since child labor is uncommon among children under 5 years of age.

The empirical results also show that the risk of malnutrition is significantly greater for children aged 6 months and older than for children aged 0-5 months. Children aged 12-35 months are at the greatest risk of malnutrition, followed by children aged 36-47 months, those aged 6-11 months, and those aged 48-59 months (in that order), respectively.

The presence of a flush toilet is strongly associated with a reduced risk of child malnutrition, with the child underweight rate in households having a flush toilet being about 10% lower than in households without such a toilet. However, the availability of piped water inside the household is not observed to have a significant (independent) association with child malnutrition. These results are identical to those observed for infant mortality. As noted in the earlier chapter, the non-significance of piped water might reflect the fact that piped water is highly correlated with toilet access and may not have an independent association with infant mortality once there is control for toilet access. However, unlike the infant mortality results, the availability of electricity is observed to have a significant inverse association with child underweight rates. Children in households having an electricity connection are 12% less likely to be underweight than children in households not having an electricity connection.[18]

As in the case of infant mortality, child malnutrition is significantly and inversely associated with maternal schooling. Children born to mothers with formal schooling have a 10% lower probability of being underweight than children born to mothers with no formal schooling. Maternal age also plays an important role in influencing child malnutrition, with children born to young mothers at significantly greater risk of being underweight than children born to older mothers. The maternal age variable likely reflects older mothers' greater experience in better feeding practices for their children.

In contrast to the perverse finding of a positive association between infant mortality and log consumption expenditure per capita, the empirical results indicate an expected inverse and significant association between child malnutrition and log consumption expenditure per capita. The estimated income (or, more appropriately, consumption expenditure per capita) elasticity of child underweight rates is about -0.16, indicating that child underweight rates fall by about 0.16% for every 1% increase in consumption expenditure per capita.

Nutritional Interventions. To improve the nutritional status of the children, a few government programs have been designed to create awareness among mothers about the importance of exclusive breastfeeding of infant for the first six months and appropriate supplementary feeding for children aged 6-24 months (GOP, 2003). Under the Tawana Pakistan Project, school nutrition packages for girls have been introduced. But the Tawana project is a very recent program, and its

[18] Electricity is not available to all rural localities in Pakistan, particularly in Sindh and Balochistan (Arif, 2003).

coverage is limited to a few districts of the country. In addition, as noted earlier in the chapter on infant mortality, the lady health workers (LHW) program has been introduced since the mid-1990s to provide family planning and primary health services in both the urban and rural areas. In addition to their other responsibilities, LHWs are expected to engage in activities such as micronutrient supplementation, growth monitoring, maternal and child nutrition, and counseling on breast-feeding and complementary feeding. However, the LHW program covers only one-half of the country's population.

We have included two intervention variables in 'explaining' child underweight status – the number of LHWs and the percent of children that are immunized in a district. Since childhood diseases and infections are often an important cause of malnutrition in developing countries, child immunization coverage, which protects children from infections and preventable diseases, is often associated with lower rates of child malnutrition.

As with infant mortality, no significant association is observed between child underweight rates and the number of LHWs in a district. However, the proportion of children immunized in a district has a very strong and significant association with child malnutrition, with the estimated elasticity of child underweight rates with respect to district-level immunization coverage being about 0.50. In other words, a one percent increase in district immunization effort is associated with a one-half percent decline in child underweight rates in that district. Thus, immunization coverage is observed to be strongly associated with both lower levels of child malnutrition and infant mortality.

SIMULATIONS TO 2015

Based on the multivariate probit model estimated above, we have undertaken simulations of the child underweight rate under different intervention scenarios. Since the explanatory power of the estimated probit model is low, the simulations discussed below should be treated as indicative of possible trends in the future – not as definitive predictions.

Figure 3.6 shows the projected decline in the child underweight rate in Pakistan with five selective interventions being pursued simultaneously and gradually to 2015.[19] The scope and magnitude of the assumed interventions, which are shown in Table 3.6, are merely meant to illustrate the likely reduction in child malnutrition under one possible scenario. There is obviously no suggestion that the assumed interventions will indeed take place, and, even if they do, whether the interventions will proceed at the pace assumed in Table 3.6.

Table 3.6: Assumptions about various interventions to reduce the child underweight rate, 2001 to 2015

Intervention	Starting value in 2000-01	Assumed change per year	Ending value in 2015
Women with some formal schooling (%)	20.5	2% point	51
Household consumption expenditure per capita (Rs.)	775	5.4%	1,704
Households having an electricity connection (%)	78.0	1.45% point	100
Households having access to toilet (%)	44.5	1.8% point	71.5
Population coverage of immunization in district (%)	68.5	2.1% point	100

[19] The simulations are undertaken only for those variables that are significantly associated with child malnutrition in the probit model.

In the simulations, we assume that real per capita consumption expenditure in Pakistan will increase at an annual rate of 5.4% annually to 2015. This rate is consistent with the GDP growth targets espoused by the Medium-Term Development Framework of the Planning Commission (GOP 2005). However, owing to the weak association between child malnutrition and consumption expenditure per capita, even this rapid growth in living standards is associated with a modest reduction of 2.4 percentage points in the child underweight rate. Expansion of female schooling and increased sanitation and electricity coverage each are associated with even smaller declines in the child underweight rate of about 1-1½ percentage points. However, as with infant mortality, expanded immunization coverage is associated with a very large decline in child malnutrition of about 10 percentage points, and swamps the effect of the other interventions. With the full 'package' of interventions, the child underweight rate in the country is projected to decline by 16 percentage points by 2015 – to a level of 31%. This level is still well above the MD goal of no more than 20% of Pakistani children aged 0-59 months being underweight. This suggests that, although it will be possible to bring down the child underweight rate in Pakistan significantly over the next decade, attainment of the child underweight MDG, like the attainment of the infant mortality MDG, will remain very challenging.

Projected child underweight rate to 2015, under different intervention scenarios (graph shows cumulative effect of each additional intervention)

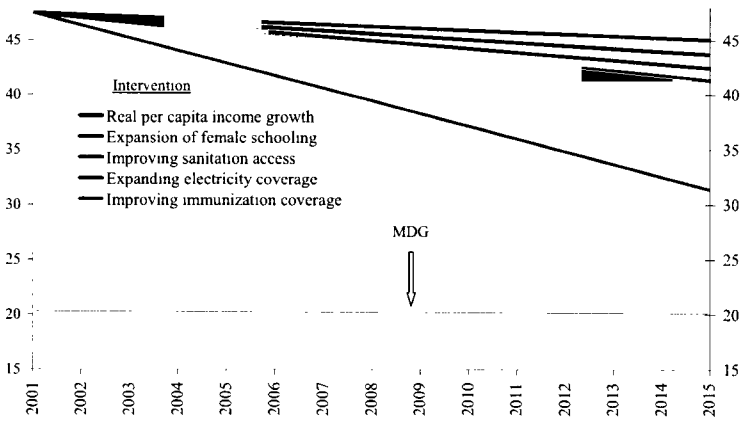


Figure 3.6

4. PRIMARY SCHOOL ENROLLMENT

One of the important millennium development goals is universal primary education. The specific targets are for countries to attain a net primary enrollment rate of 100% and to ensure that all children complete five years of basic schooling.

Despite the high priority assigned to universal primary education (UPE) since Pakistan's Independence, the country has been unable to achieve this target even half a century later. All the educational policies that followed the first education conference in 1947 simply postponed the achievement of UPE to a later date. Education Sector Reforms (ESR), an action plan introduced in 1998 to implement the more recent education policy, has now pushed the achievement of the target of 100% gross (not net) primary enrollment to the end of this decade.

In Pakistan, a large proportion of children who enter school do not complete even the basic primary-level course. There has also been little improvement in middle and secondary level enrollment.

OVERALL LEVELS

Levels. Table 4.1 shows data on two commonly used indicators – the gross enrollment rate (GER) and the net enrollment rate (NER) – at the primary school level by gender. The PSES estimates the GER for the country to be 84%, while the PIHS estimates show it to be a full 12 percentage points lower. The PIHS estimates on enrollment have been recently called into question because they show a decline in the GER between 1995-96 and 2001-02 – a period during which an improvement was expected because of initiatives launched by the Social Action Program (SAP) initiated in the early 1990s.

Table 4.1: Gross and net primary level enrollment rates, by gender and place of origin, 2000-01 and 2001-02

Indicator	Male	Female	Both Sexes
Gross enrollment			
PSES (2000-01)	90.7	77.7	84.3
PIHS (2001-02)	83.0	61.0	72.0
Net enrollment rate			
PSES (2000-01)	49.1	48.0	48.6
PIHS (2001-02)	46.0	38.0	42.0

As in other developing countries, the net primary enrollment rate in Pakistan is observed to be considerably lower than the corresponding gross rate largely because of the late entry of children (i.e., beyond age 6) into primary school and the resulting enrollment of overage children (i.e., those above age 11) at the primary level. Interestingly, the net primary enrollment rates estimated by the PIHS and the PSES are much closer to each other than the corresponding gross rates.

Gender Variations. The gender gap in gross enrollment is evident in both data sources; the PSES estimates the gap at 13 percentage points, while the PIHS estimates it at is 22 percentage points (Table 4.1). However, the gender gap in net enrollments is much smaller; indeed, the PSES suggest virtually no gender disparity in the net enrollment rate, while the PIHS indicates a gender

gap of 8 percentage points. This suggests that boys are more likely than girls to start school late and be in primary school at older ages.

SPATIAL VARIATIONS

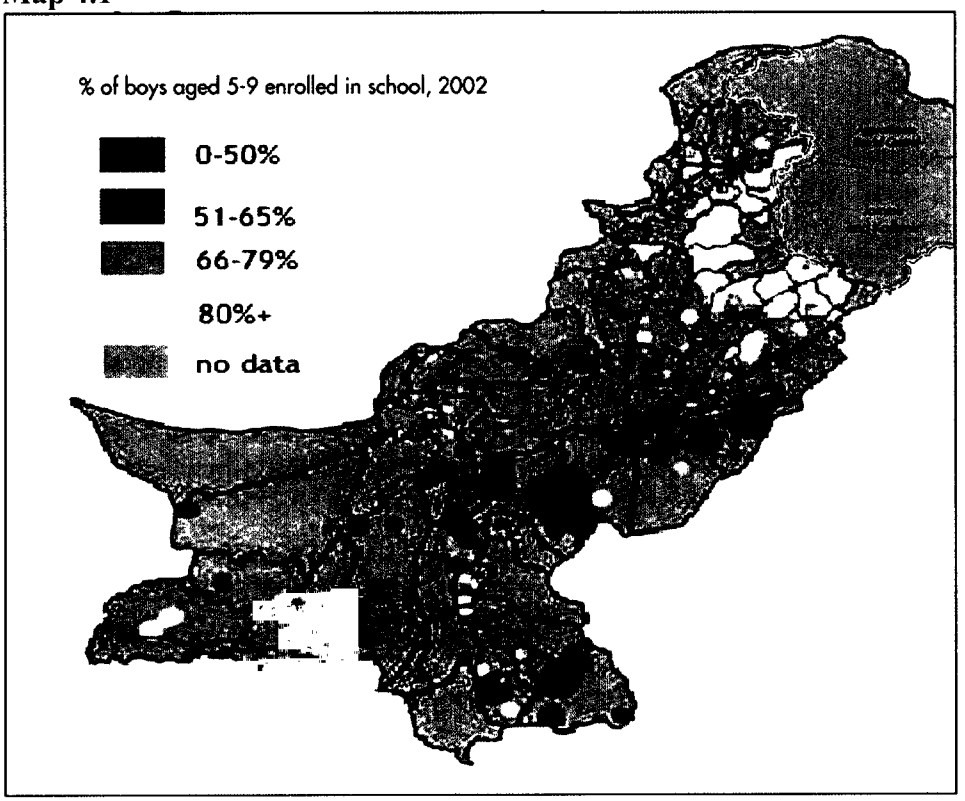
Table 4.2 shows enrollment rates by province and place of residence. The GER in the urban areas of the country is quite high: 96% according to the PSES and 91% according to the PIHS. However, as in other countries of the region (and indeed, most developing countries), the gap between the GER and the NER is large, reflecting overage enrollment (in turn the result of late entry in school and high rates of repetition). Even in the urban areas, there is a difference of almost 40 percentage points between the NER and the GER. The rural-urban disparity in enrollment rates is also very large; for instance, the NER in the rural areas is only about two-thirds of the NER in the urban areas, according to the PIHS. Girls in the rural areas appear to be particularly disadvantaged; both the PIHS and PSES indicate that only 33-42% of primary school-aged girls in the rural areas attend primary school. Gender disparity in the urban areas is much less pronounced; indeed, the PSES show higher GER and NER for girls than for boys in the urban areas.

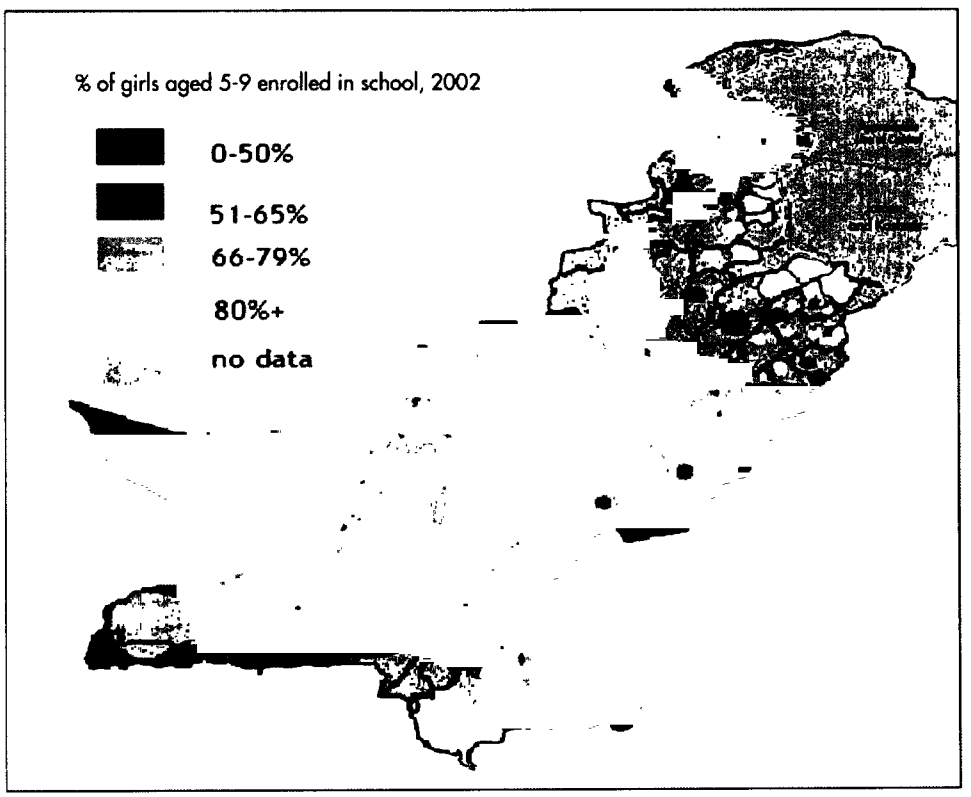
Table 4.2: Gross and net primary level enrollment rate (%), by province and gender

Province/place of origin	PSES (2000-01)			PIHS (2001-02)		
	Male	Female	Both	Male	Female	Both
By Province						
Gross enrollment rate						
Punjab	99.1	89.6	94.3	80	61	70
Sindh	74.7	54.1	65.1	69	37	53
NWFP	92.5	59.1	81.3	96	52	74
Balochistan	60.7	50.0	55.3	73	38	57
Net enrollment						
Punjab	54.3	54.9	54.6	47	43	45
Sindh	38.9	36.2	37.7	46	34	40
NWFP	50.3	41.2	45.9	48	33	41
Balochistan	32.9	29.2	31.0	39	24	32
By Place of residence						
Gross enrollment rate						
Urban	91.9	99.9	96.1	94	87	91
Rural	90.3	68.7	79.7	80	52	66
Net enrollment rate						
Urban	53.8	63.2	58.7	57	54	56
Rural	47.5	41.8	44.7	43	33	38

Both the PSES and the PIHS show large provincial variations in enrollment (Table 4.2). The GER and the NER are highest in Punjab and NWFP and lowest in Sindh and Balochistan. The PSES indicates that the NER in Balochistan is only slightly more than one-half of the NER in Punjab. Indeed, the NER in Balochistan for girls is as low as 24-29%, while that for boys is not much higher (33-39%).

Map 4.1





Source: Cockcroft *et al.*, 2002

Intra-provincial disparities in enrollment are even greater. Map 4.1 shows district-level variations in the percentage of boys and girls aged 5-9 enrolled in school in 2002.[20] For instance, even within Punjab, which generally has the highest proportion of primary school-aged children in school, there are districts that have more than 80% enrollment and other districts having enrollment rates that are in the 51-65% range.

Trends. Although there has been some question about the 2001-02 PIHS estimates, the PIHS is one of the few surveys to offer a consistent comparison of enrollment rates over time. Figure 4.1 shows the stagnancy of enrollment rates in Pakistan over time. Over the period 1995-2001, net enrollment rates have hardly changed at all. Tables 4.3 and 4.4 show the changes in both the gross and the net primary enrollment rates for each population subgroup. Table 4.3 shows that some groups, such as girls in Sindh, saw their gross primary enrollment rate decline sharply – from 62% to 51% – over the period 1995-96 to 2001-02.[21]

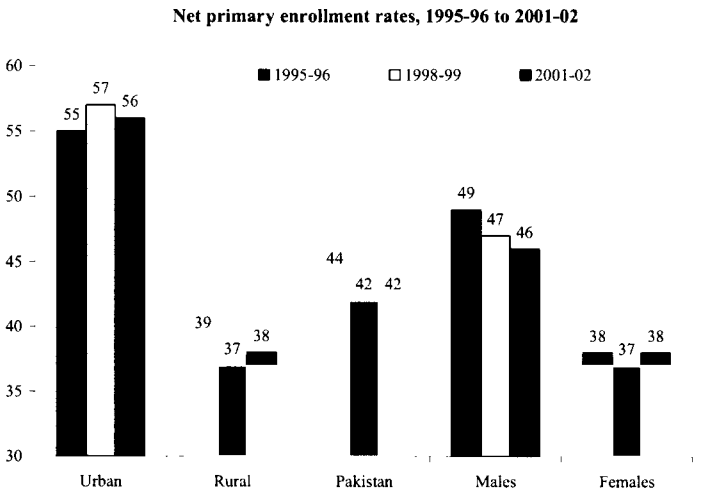


Figure 4.1

Table 4.3: Gross primary enrollment rate, by sex and residence, 1995-96 to 2001-02

	1995-96			1998-99			2001-02		
Province	Male	Female	Both	Male	Female	Both	Male	Female	Both
Pakistan	85	64	75	80	61	71	83	61	72
Rural areas	81	54	68	75	50	63	80	52	66
Urban areas	95	90	92	95	92	94	94	87	91
Punjab	85	70	78	82	68	75	84	69	76
Sindh	86	62	74	75	54	64	76	51	63
NWFP	80	49	65	84	54	70	97	56	77
Balochistan	86	63	75	79	46	64	77	44	62

Source: PIHS, various rounds.

The net primary enrollment rates are remarkably low for some population subgroups. Thus, only a third of primary school-aged girls in NWFP and Sindh attended primary school even in 2001-02. Even the group having the highest enrollment rates – males residing in urban areas – the net primary enrollment rates are no more than 57%.

[20] These district-level data are from a special social audit survey conducted by the National Reconstruction Bureau in 2001-02 of 57,321 households in all the provinces of Pakistan (Cockcroft *et al.* 2002).

[21] The *Pakistan Millennium Development Goals Report 2004* cites the net primary enrollment rate for Pakistan as being 46% in 1990-91 and 51% in 2000-01. However, the source for the 2000-01 number is cited as "Sub-Committee headed by the Director, Pakistan Institute of Development Economics."

Table 4.4: Net primary enrollment rate, by sex and residence, 1995-96 to 2001-02									
	1995-96			1998-99			2001-02		
Province	Male	Female	Both	Male	Female	Both	Male	Female	Both
Pakistan	49	38	44	47	37	42	46	38	42
Rural areas	47	31	39	43	30	37	43	33	38
Urban areas	56	55	55	58	56	57	57	54	56
Punjab	50	39	45	47	40	44	47	43	45
Sindh	50	39	45	47	35	41	46	34	40
NWFP	42	28	35	47	30	39	48	33	41
Balochistan	51	39	45	44	28	36	39	24	32
Source: PIHS, various rounds.									

SOCIOECONOMIC DIFFERENTIALS

Parental Schooling. A strong association is observed between parental schooling and enrollment rates of children, with the association being generally stronger for mother's schooling than for father's schooling (Table 4.5). For example, the NER is 63% among the children of mothers with primary schooling, but only 46% among children with fathers who have had primary schooling. The NER is 80% among children having middle-schooled mothers but only 60% among children having middle-schooled fathers.

Table 4.5: Gross and net primary level enrollment rates by parental education and child gender

Education	Gross enrollment			Net enrollment		
	Male	Female	Both sexes	Male	Female	Both sexes
Mother's education						
Illiterate	87.8	71.3	79.7	45.1	42.0	43.6
Primary	110.0	95.1	102.0	62.9	63.1	63.0
Middle	101.0	130.0	115.0	75.9	84.5	80.0
Secondary	112.0	107.0	109.0	74.3	81.2	78.1
Post-secondary	80.3	99.5	90.6	62.4	74.8	69.1
Father's education						
Illiterate	79.6	67.8	73.8	38.1	40.2	39.2
Primary	90.5	75.2	83.2	52.0	39.8	46.2
Middle	114.0	81.9	93.2	62.1	57.1	59.6
Secondary	105.0	91.7	97.5	65.3	61.9	63.4
Post-secondary	104.0	116.0	110.0	68.1	75.8	71.6
Source: 2000-01 PSES.						

Interestingly, the data suggest that girls benefit more than boys (in terms of their school attendance) from their mother's schooling, while the opposite is generally true for father's schooling (Figure 4.2). Indeed, girls consistently have a higher NER than boys for all post-primary levels of mother's schooling. This is also the case with father's schooling, but only when the father has post-secondary schooling.

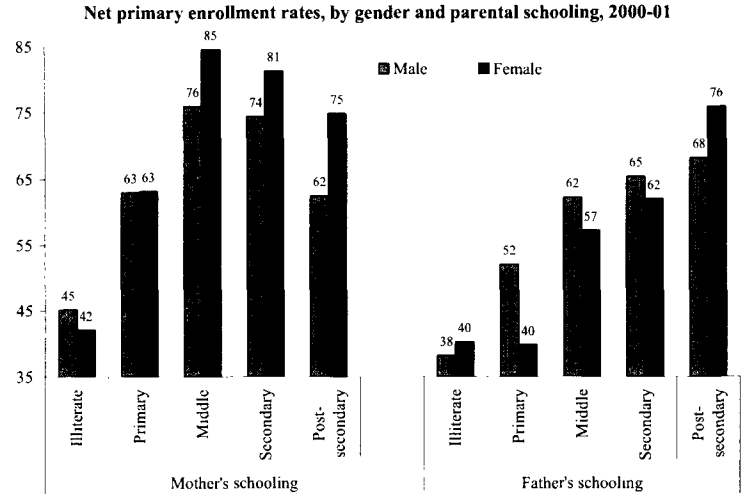


Figure 4.2

Household Living Standards. What is the association between net primary enrollment and household living standards? Table 4.6 and Figure 4.3 show average GERs and NERs by per capita consumption expenditure quintile. The NER is observed to increase monotonically with per capita expenditure in both rural and urban areas. The strong positive association between enrollment and living standards suggests that schooling in Pakistan has large direct and opportunity costs which constrain the poor from sending their children to school. Furthermore, the economic disparity in schooling access observed in Figure 4.3 and Table 4.6 does not reflect the full economic disparity in schooling opportunities, because better-off households are also likely to send their children to higher-quality schools and spend more on each school-going child than poor households (World Bank, 2002).

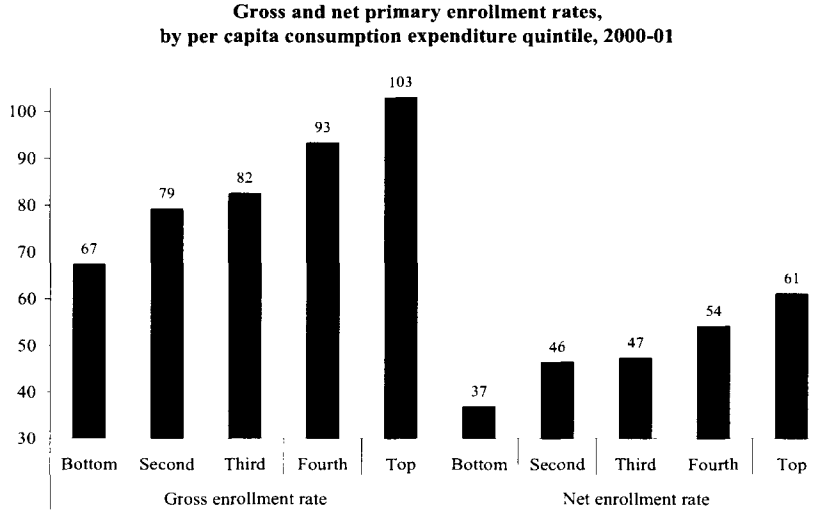
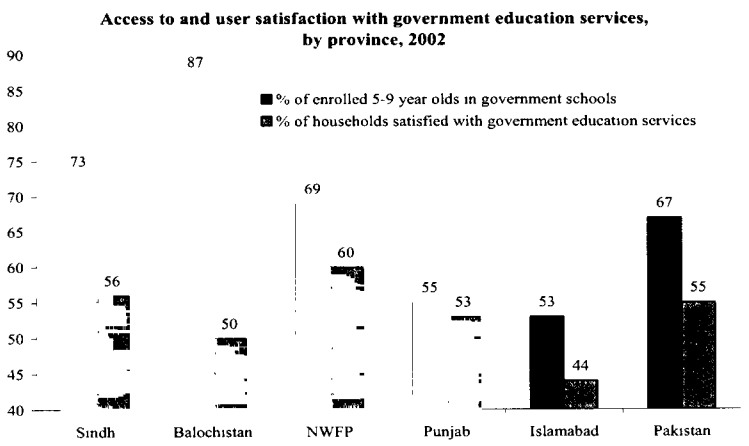


Figure 4.3

Table 4.6: Gross and net primary attendance rates, by consumption quintiles, 2000-01					
Per capita consumption expenditure quintile	PSES			PIHS	
	Rural	Urban	Total	Rural	Urban
Gross enrollment rate					
Bottom	63.7	89.0	67.2	48	65
Second	79.5	77.9	79.1	61	75
Third	75.9	106.7	82.4	74	95
Fourth	94.4	90.4	93.2	82	106
Top	101.1	104.3	102.8	129	105
All	79.7	96.1	82.3	66	91
Net enrollment rate					
Bottom	35.1	45.9	36.7	27	34
Second	45.6	48.8	46.3	35	48
Third	44.2	58.6	47.2	41	52
Fourth	52.6	57.4	54.0	46	62
Top	54.2	66.9	61.0	56	72
All	44.7	58.7	48.6	38	56
Source: 2000-01 PSES and 2001-02 PIHS					

ROLE OF SERVICE DELIVERY

School enrollment and attendance and, even more importantly, student learning depend upon the delivery of effective schooling services by government schools. In Pakistan, not only is there inadequate access to schools, the quality of service delivery in the public education sector is poor. There is widespread absenteeism of teachers at government schools; many government schools do not have a proper building; and learning materials and textbooks in government schools are very limited.



Source: Cockcroft *et al.*, 2002

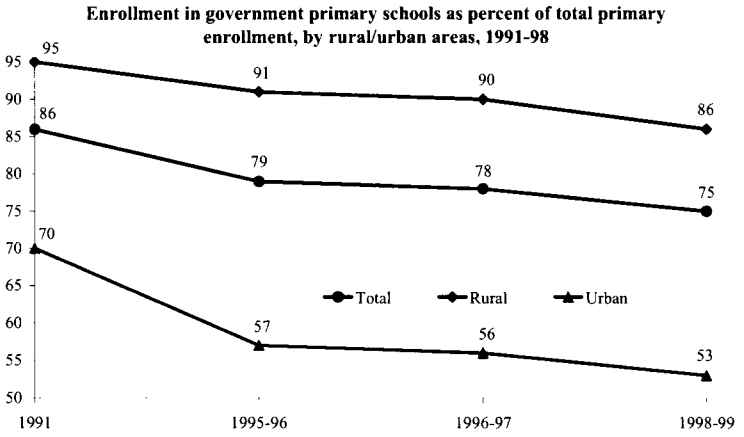
Figure 4.4

As noted earlier, the Government's National Re-construction Bureau (NRB) commissioned a baseline social audit of governance and delivery of public services in 2002. The baseline survey, undertaken by CIET International, asked households to provide their perceptions of publicly-provided services (Cockcroft *et al.*, 2002). Unlike the case of health, where fewer than a third of households in the survey reported using government health facilities for medical treatment, about two-thirds of all children aged 5-9 years enrolled in school reported attending government schools (Figure 4.4). There are, however, large variations in this ratio. In Islamabad and Punjab, which are the most prosperous regions, only 53-55% of school-going children attend government schools, whereas the corresponding ratio is 73-87% in Sindh and Balochistan. Thus, households in better-off areas rely to a much lesser extent on government schools than households in poor areas. A

comparison of Figures 4.4 and 2.7 suggests that there is generally greater public satisfaction with government schools than with government health clinics. Over one-half (55%) of all households surveyed reported being satisfied with government schools (as opposed to only a quarter of households being satisfied with government health services). There were fewer inter-provincial variations in household satisfaction with government schools.

ROLE OF PRIVATE SCHOOLS

A natural question to ask in the context of sluggish growth in primary school enrollment in Pakistan is the role that private schools could play in expanding enrollment. There has been huge growth in the number of private schools in the country in the last two decades. For instance, between 1983 and 2000, the number of private primary and secondary schools in the four provinces of Sindh, NWFP, Punjab and Balochistan increased from 3,300 to 32,000 – more rapid growth than the population of school-aged children (Andrabi *et al.*, 2002). Much of the private-school enrollment in the country is at the primary level (75%). Andrabi *et al.* (2002) note that as many as 18% of children aged 5-10 years attend private primary schools in the country. This ratio falls to 9% for children aged 11-13 years and only 4% for children aged 14-16 years. It thus appears that private schools have played an important role in expanded enrollments during the last two decades.[22]



Source: Arif and Saqib (forthcoming)
Note: Enrollment in *kachi* or pre-primary is excluded.

Figure 4.5

Figure 4.5 shows the enrollment in government primary schools as percentage of total primary enrollment by rural and urban sectors for the period 1991 to 1998-99 (Arif and Saqib, forthcoming). These figures show a large drop in the share of government schools in primary enrollment over the period. The decline has been greater in the urban areas (17 percentage points) than in the rural areas (11 percentage points). These data suggest a large increase in private school enrollments at the primary level.

Another interesting feature of private schools in the Pakistani context is that they are not used by every segment of the population, not just the better-off households. Using data from Lahore and Quetta, Alderman *et al.* (2001) show that private schooling is used extensively by the poor. For instance, even among the lowest quintile in Lahore, more children attend private schools than public schools. Based on a national survey of private schools, Andrabi *et al.* (2002) also find that the vast majority of private schools in the country charge relatively low tuition fees that are affordable to lower and middle income groups, rather than a rich elite. Thus, there is considerable heterogeneity among private schools, with a few private schools catering to the rich but most private schools targeting themselves to middle- and low-income children.

[22] Of course, this is difficult to establish since one does not know the counterfactual – viz., the likely growth in overall school enrollment at the primary level had there been no expansion in the number of private schools in the country.

What type of quality of schooling do private schools provide? One would expect a higher level of client accountability among private schools, since they charge for their services. In the nationwide CIET survey on household perceptions, parents of children attending schools were asked how satisfied they were with their child's school. Parents of children attending a government school were only a third as likely to be satisfied with their child's school than parents whose children were attending private schools (Cockcroft *et al.*, 2002).

MULTIVARIATE ANALYSIS

To examine the likelihood of Pakistan attaining the child education-related MDGs, we have estimated a multivariate model of net primary school attendance, using unit record data from the PSES.[23] The multivariate model has the advantage of controlling for several variables that may be simultaneously associated with primary school attendance. The estimation results are reported in Annex Table 3, while only the broad findings of the empirical analysis are discussed here.

After controlling for the other factors associated with primary attendance, Sindh and Balochistan are observed to have significantly lower (20-26%) rates of primary school attendance than Punjab (which is the excluded province in the regression). Children in the NWFP also have a significantly lower probability of attending primary school relative to children in Punjab, but the numerical difference is more modest (about 8%). With control for other socioeconomic variables, urban areas are no longer observed to have significantly higher primary school attendance rates than rural areas.

The multivariate model confirms many of the bivariate relationships discussed earlier. Older children are observed to have a higher probability of primary school attendance, with primary school attendance peaking at age 10. Girls start falling behind boys in terms of their net enrollment rates at age 8, with 11-year old girls being 23% less likely than boys to attend primary school.

Household living standards, as measured by the log of monthly consumption expenditure per capita, have a strong positive association with primary school attendance, with a one-percent increase in per capita consumption expenditure being associated with a 16% increase in the net primary school attendance. These findings are consistent with the results of Arif *et al* (1999), who examined the impact of poverty and household income on enrollment.

Another variable strongly associated with net enrollment is maternal schooling. Children with primary-schooled mothers are 17% more likely (and children with middle-schooled mothers are 22% more likely) to attend primary school than children having illiterate mothers. Surprisingly, post-middle schooling has a numerically smaller association with children's school attendance, but this is likely to reflect the fact that there are relatively few mothers with post-middle schooling in the sample.

As in the case of other MD indicators, the availability of electricity has a strong and significant association with primary school attendance. Children in households having an electricity connection are 47% more likely to be attending primary school than children in households not having an electricity connection.

---

[23] Since the dependent variable in the model is a dichotomous variable (i.e., whether or not a child aged 5-12 years is attending primary school), the model has been estimated by the maximum-likelihood probit method.

Because there is some anecdotal evidence that Pakistani households receiving remittances invest a significant portion of these remittances on their children's education, we have included the receipt of remittances by a household during the past year (as a dichotomous variable) in the primary school attendance equation. The coefficient on this variable is not statistically significant, indicating that remittances have no independent association with primary school attendance (over and above any association that may take place via remittances improving a household's overall living standards).

The multivariate analysis thus suggests that demand-side factors, such as household income and parental schooling, are associated positively and significantly with net primary enrollment. But what about the role of supply-side factors in influencing school enrollment? This issue has seldom been examined in Pakistan. It is an important issue because the SAP, initiated in the early 1990s, focused on expanding the number of schools and training more teachers.

To explore these issues, district-level data on two supply-side indicators – viz., the number of primary schools per 1,000 children aged 5-12 and the pupil-teacher ratio at the primary level – were merged with the household PSES data. The empirical results suggest that the availability of schools relative to the population of school-age children has no significant association with primary school attendance. The lack of significance of access is surprising, but perhaps reflects the fact that most villages in Pakistan already have a primary school located in the village. On the other hand, lowering the pupil-teacher ratio at the primary level in a district – an indicator of increased schooling quality – is significantly and inversely associated with higher rates of primary school attendance. The results imply that, controlling for household socioeconomic status, a one-percent reduction in the pupil-teacher ratio at the primary level is associated with an increase of roughly 0.5% in the net primary attendance rate. Thus, primary school attendance does not appear to be currently constrained by the availability of primary schools,[24] but there is some evidence that primary school attendance would likely increase from school quality improvements in the form of a reduction of the pupil-teacher ratio.

SIMULATIONS TO 2015

Based on the multivariate probit model estimated above, we have undertaken simulations of the net primary attendance rate under different intervention scenarios. Since the explanatory power of the estimated probit model is low, the simulations discussed below should be treated as indicative of possible trends in the future – not as definitive predictions.

Figure 4.6 shows the projected increase in the net primary attendance rate in Pakistan with four selective interventions being pursued simultaneously and gradually to 2015.[25] The scope and magnitude of the assumed interventions, which are shown in Table 4.7, are merely meant to illustrate the likely increase in net primary attendance under one possible scenario. There is obviously no suggestion that the assumed interventions will indeed take place, and, even if they do, whether the interventions will proceed at the pace assumed in Table 4.7.

[24] Naturally, given the linear prediction, this result would hold only up to some limit.

[25] The simulations are undertaken only for those variables that are significantly associated with net primary attendance in the probit model.

Table 4.7: Assumptions about various interventions to increase the net primary attendance rate, 2000-01 to 2015

Intervention	Starting value in 2000-01	Assumed change per year	Ending value in 2015
Women with primary schooling (%)	9	2 percentage points	39
Household consumption expenditure per capita (Rs.)	775	5.4%	1,704
Households having an electricity connection (%)	78.0	1.45 percentage points	100
Average pupil-teacher ratio at the primary level	28	0.5 units	20

Economic growth (proxied by a 5.4% annual increase in real household consumption expenditure per capita) is associated with a modest increase of 2.5 percentage points in net primary school attendance over the period 2001-15. Expansion of female schooling, improved electricity coverage, and an increase in the pupil-teacher ratio each are associated with fairly large increases in primary school attendance of 5-6 percentage points over the period 2001-15. With the full 'package' of interventions, the net primary school attendance in the country is projected to increase by 17 percentage points by 2015 – from a level of 49% to 66%. This level would still be significantly below the MD goal of universal net primary enrollment (i.e., a net primary enrollment rate of 100%). This suggests that, although it will be possible to raise primary attendance rates in Pakistan appreciably over the next decade, the increase is unlikely to allow Pakistan to attain the universal primary enrollment MDG.

Projected net primary enrollment rate to 2015, under different intervention scenarios (graph shows cumulative effect of each additional intervention)

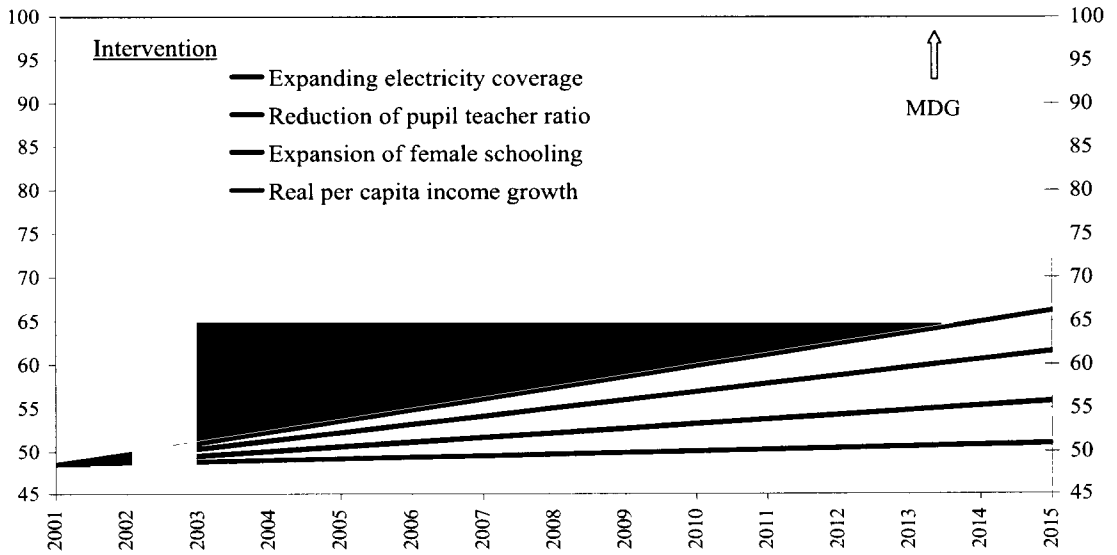


Figure 4.6

5. PRIMARY SCHOOL COMPLETION

The foregoing analysis has focused on primary-level enrollment/attendance. But the schooling-related MD goal is not limited to the universal enrollment of children in primary school. Rather, the goal is to ensure that all children are retained in school and complete a full course (typically five years) of primary school. School retention is an indicator – albeit imperfect – of the quality of schooling. It is possible that in the rush to expand access to schooling, policy makers might compromise the quality of schooling. The compromise in quality would likely show up in high rates of student drop-out and correspondingly lower rates of primary school completion.

LEVELS AND TRENDS

Administrative school data show relatively low rates of primary school completion in the country (Table 5.1). In 1995, for instance, only 21% of children in Balochistan starting grade 1 completed grade 5, representing a decline of 4 percentage points compared to the situation in 1990. Even in Punjab – the best-performing state in terms of primary completion rates – the completion rate was only 55% – virtually unchanged from 1990. Only Sindh showed an increase in the primary completion rate between 1990 and 1995.

Table 5.1: Percentage of pupils starting grade 1 who complete grade 5, by province, 1990 and 1995

Province	*1990*	*1995*
Punjab	55.6	55.0
Sindh	45.6	53.5
NWFP	31.6	32.1
Balochistan	24.9	20.7

Note: Figures refer to the percentage of children starting primary school who complete grade 5.

Source: SPDC 1999, Social Development in Pakistan: Annual Review.

The low rates of retention at the primary level can largely be attributed to poverty, because even if school fees and tuition are waived, there are large expenses, such as those incurred for textbooks, school uniforms, and stationery, which poor households find difficult to afford. These expenses typically increase with grade. In addition, the opportunity cost of school in terms of the wage foregone by children also increases with the age of the child. As a result, school dropout rates increase at older ages, and are very large for children from poor households. Table 5.2 and Figure 5.1, which use PSES panel data over a number of years to calculate grade-specific dropout rates by consumption quintile, suggest that nearly 40% of children belonging to the poorest consumption quintile drop out of school by grade 4. The comparable figure for children belonging to the richest quintile is only 12%.

Table 5.2: Dropout ratio (%) by grade and by per capita consumption expenditure quintile

	Per capita consumption expenditure quintile				
Grade	Bottom	Second	Third	Fourth	Top
1	7.4	7.8	8.3	6.0	7.2
2	7.9	9.3	7.3	9.4	12.0
3	19.1	14.4	12.3	2.9	11.5
4	39.4	25.8	19.4	14.1	11.8
5	46.4	31.0	31.1	16.1	17.6
6	32.8	33.9	26.3	34.5	17.5
7	40.6	39.5	23.9	31.8	20.2
8	48.7	40.5	39.2	34.8	18.7
9	58.3	60.0	36.4	40.0	20.3
10	68.0	68.6	55.4	51.7	38.7
Sample size	676	672	673	683	672

Source: PSES panel data.

SPATIAL VARIATIONS

Another indicator of school quality is the literacy rate among 15-24 year olds. Data from the 1998 Census show wide variations across districts in youth literacy (Table 5.3). Even in Punjab, the youth literacy rate varies from a low of 28% in Rajanpur to a high of around 80% in the three *barani* districts of Chakwal, Jehlum and Rawalpindi (which also have the lowest incidence of poverty). In Sindh, the district of Karachi has a youth literacy rate of 80%, but more than half of the districts have youth literacy rates of less than 40%. Balochistan and NWFP have the lowest rates of youth literacy, with districts such as Kohistan, Musa Khel and Dera Bugti having only about 15% of youth aged 15-24 years being literate.

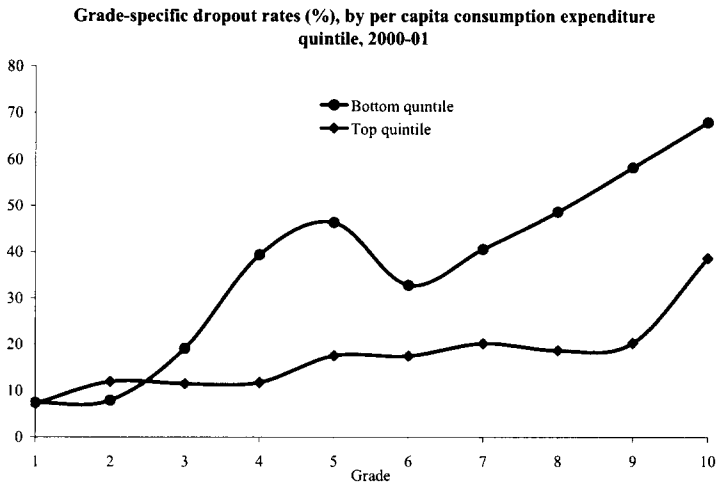


Figure 5.1

Table 5.3: Literacy rates of 15-24 year olds, by district, 1998

Punjab		*Sindh*		*NWFP*		*Balochistan*	
Rajanpur	27.5	Tharparkar	24.9	Kohistan	14.3	Musa Khel	15.1
Muzaffargarh	35.6	Thatta	25.1	Shangla	21.2	Dera Bugti	15.7
D.G.Khan	39.3	Jacobabad	29.0	Battagram	24.4	Kohlu	17.3
Lodhran	39.8	Badin	30.0	Buner	30.1	Killa Abdullah	17.8
Rahim Yar Khan	42.6	Umerkot	30.4	Upper Dir	30.3	Nasirabad	18.3
Bhakkar	44.2	Ghotki	34.9	Tank	33.0	Jhal Magsi	18.3
Bahawalpur	44.6	Shikarpur	36.5	Swat	37.1	Kharan	19.5
Pakpattan	46.5	Sanghar	37.0	Lakki Marwat	37.5	Awaran	20.8
Bahawalnagar	46.9	Nawabshah	40.1	Hangu	38.4	Zhob	21.1
Kasur	47.7	Dadu	40.9	Bannu	39.0	Bolan	22.0
Jhang	48.0	Larkana	40.9	Charsadda	40.0	Khuzdar	22.3
Vehari	48.6	Khairpur	41.5	D.I.Khan	40.1	Killa Saifullah	22.5
Okara	49.3	Mirpurkhas	43.4	Lower Dir	40.4	Barkhan	23.3
Layyah	49.9	Naushahro Feroze	45.2	Mardan	45.8	Loralai	24.0
Khanewal	51.6	Hyderabad	50.9	Mansehra	46.5	Kalat	24.6
Khushab	52.4	Sukkur	52.0	Swabi	46.7	Jaffarabad	25.4
Multan	52.8	Malir	59.8	Peshawar	48.8	Lasbela	30.0
Mianwali	53.3	Karachi West	64.2	Malakand	50.1	Sibi	31.7
Hafizabad	54.3	Karachi South	74.6	Nowshera	51.7	Gwadar	32.3
Sheikhupura	55.6	Karach East	78.8	Karak	54.0	Mastung	33.9
Sahiwal	56.8	Karachi Central	81.2	Kohat	54.4	Chagai	34.0
Sargodha	59.5			Chitral	55.1	Pishin	34.9
Attock	63.9			Haripur	69.7	Kech (Turbat)	35.8
Mandi Bahauddin	64.6			Abbottabad	71.2	Panjgur	38.9
Faisalabad	64.7					Ziarat	41.9
T.T.Singh	64.9					Quetta	63.5
Gujaranwala	69.9						
Narowal	70.1						
Lahore	73.1						
Chakwal	73.2						
Sialkot	74.5						
Jhelum	78.8						
Gujrat	79.6						
Rawalpindi	82.1						

Source: Population Census, 1998.

SOCIOECONOMIC VARIATIONS

While calculation of the true primary retention rate or completion rate requires longitudinal data on school-going children, one can use cross-sectional household survey data on the age of a child, current and ever-attendance in school, and the last completed grade in school to obtain a rough estimate of the primary completion rate. We have used such a proxy here with the 2000-01 PSES data. A child aged 13 or 14 years is considered to have completed primary school if he/she reported having completed the 5th grade at the time of the survey and if he/she was *not* reported as

never having attended school. In 2000-01, the primary completion rate thus calculated was 51.3% – remarkably close to the 50.3% completion rate obtained for 1995 from administrative data (SPDC 1999, Social Development in Pakistan: Annual Review).[26] A similar calculation for India and Bangladesh for 1999-2000 and 2000 yielded completion rates of 61.4% and 66.3%, respectively (World Bank 2004a, 2004b).

The completion rate so calculated is considerably higher in the urban areas than in the rural areas (67% versus 44%) (Table 5.4). While there is no appreciable difference between male and female completion rates at the national level, primary completion rates for girls in NWFP and Balochistan are significantly lower than comparable rates for boys. For both boys and girls, primary completion rates are consistently higher among better-off households than among poor households, with the top consumption quintile having a primary completion rate that is more than two times as large as the rate among the poorest quintile of children.

Table 5.4: Primary school completion rates (proportion of 15-19 year old cohort who ever attended school and completed 5 years of schooling), by place of origin and gender, 2000-01

Characteristics	Sex		
	Male	Female	Both Sexes
Place of origin			
Urban	69.4	64.6	67.2
Rural	51.6	34.8	44.0
Province			
Punjab	57.5	47.2	52.7
Sindh	51.1	36.2	44.9
NWFP	71.4	46.7	59.8
Balochistan	42.4	23.9	33.8
Per capita expenditure quintile			
Bottom			36.0
Second			42.7
Third			50.5
Fourth			62.7
Top			78.3
All quintiles			51.3

Source: 2000-01 PSES.

As would be expected, maternal schooling is observed to have a strong association with primary completion rates. While the primary completion rate is only 47% for children of illiterate mothers, it is as high as 82% for children of mothers with some formal schooling (Figure 5.2).

[26] The *Pakistan Millennium Development Goals Report 2004* also cites the primary completion rate in 2000-01 to be 51%.

Interestingly, while there is a large gender gap in primary completion rates for children of illiterate mothers, the gap is completely erased (in fact, reversed) for children of mothers with some formal schooling. Thus, girls benefit a lot more than boys (in terms of the likelihood of their completing primary school) when their mother has any formal schooling.

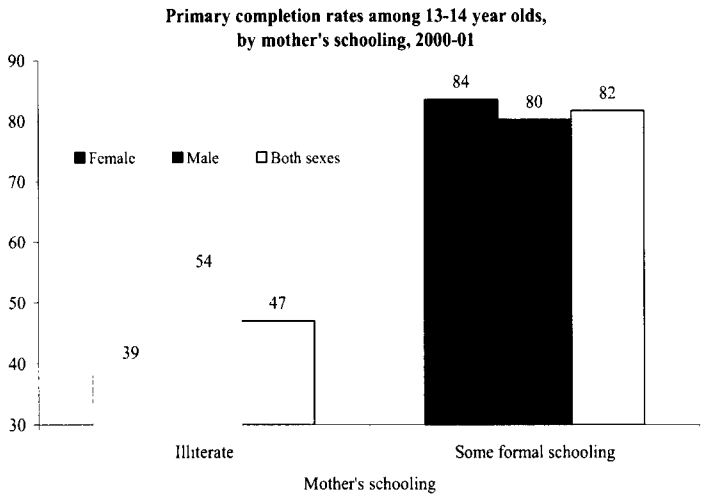


Figure 5.2

SERVICE DELIVERY ISSUES

Poor governance is pervasive in the Pakistani public educational system. Teacher recruitment, promotions and transfers are often subject to personal influence and corruption. The phenomenon of non-functional, even non-existent, "ghost" schools and teachers that exist only on paper but make demands on a limited budget is widespread. Teacher absenteeism is rampant, with teachers placing much greater emphasis on private tutoring than on teaching at public schools. For instance, in surprise visits to schools, Gazdar (2000) found that one-quarter of the schools surveyed were not open; 19% had no teachers present at all, and 35% had only one teacher present.

Provincial education departments often do not have the clout or resources to monitor and control corruption and manipulation at the local level. Reforms such as the Devolution of Power Plan have not accomplished a real decentralization of authority in decision-making (ICG, 2004; Khan *et al.*, 2003).

Over the years, there have been numerous textbook production and procurement scandals. Corruption in procurement has also resulted in poor quality of school construction. These types of governance problems contribute to the poor quality of education in Pakistan, and undermine any gains made in expanding access.

Reducing teacher absenteeism and making schools accountable to students and the community is no simple task. As the *World Development Report 2004* points out, it requires broad-ranging institutional reform, incorporating, among other things, empowerment of citizens and communities who can hold the state accountable for performance, devolution of administrative and financial powers to communities, greater autonomy to schools, involvement of parents in school management, and ensuring the motivation of front-line workers.

MULTIVARIATE ANALYSIS

To examine the likelihood of Pakistan attaining the child education-related MDGs, we have estimated a multivariate model of primary school completion, using unit record data from the PSES 2000-01.[27] The multivariate model has the advantage of controlling for several variables

[27] Since the dependent variable in the model is a dichotomous variable (i.e., whether or not a child aged 13-14 years has completed primary school), the model has been estimated by the maximum-likelihood probit method.

that may be simultaneously associated with primary school completion. The estimation results are reported in Annex Table 4, while only the broad findings of the empirical analysis are discussed here.

After controlling for the other factors associated with primary completion, Sindh and Balochistan are observed to have significantly lower (16-21%) primary completion rates than Punjab (which is the excluded province in the regression). Surprisingly, children in the NWFP have a significantly greater probability of completing primary school than children in Punjab. Unlike net primary school attendance, where there was no urban-rural disparity after control for other socioeconomic variables, primary completion rates are significantly higher in the urban than in the rural areas of Pakistan.

The multivariate model confirms many of the bivariate relationships discussed earlier. Girls, especially 14 years of age, are 21% less likely than boys to complete primary school. Household living standards, as measured by the log of monthly consumption expenditure per capita, have a even stronger association with primary school completion than with enrollment, with a one-percent increase in per capita consumption expenditure being associated with a 40% increase in the primary school completion (as opposed to only a 16% increase in net primary attendance). This is not surprising, as living standards typically have a stronger association with school quality (which is what is indicated by primary completion rates) than with school quantity (which is measured by the net primary school attendance rate). These results also imply that poverty is a very important reason for children dropping out of school.

Another variable strongly associated with primary completion is maternal schooling. Children having primary-schooled mothers are 14% more likely to complete primary school than children having illiterate mothers, with the difference being even larger (31-36%) in the case of mothers with middle and post-middle schooling.

As in the case of primary school attendance, the availability of electricity has a strong and significant positive association with the probability of completing primary school. Children in households having an electricity connection are 45% more likely to complete primary school than children in households not having an electricity connection.

Neither receipt of remittances by a household nor the availability or quality of schools in a district – proxied by the number of primary schools per 1,000 children aged 5-12 and the pupil-teacher ratio at the primary level – has a significant association with primary school completion. The results thus suggest that while an improvement of school quality in the form of lowering the pupil-teacher ratio at the primary level will likely raise school attendance, it is unlikely to influence primary completion rates.

SIMULATIONS TO 2015

Based on the multivariate probit model estimated above, we have undertaken simulations of the primary completion rate under different intervention scenarios. Since the explanatory power of the estimated probit model is low, the simulations discussed below should be treated as indicative of possible trends in the future – not as definitive predictions.

Table 5.5: Assumptions about various interventions to increase the primary completion rate, 2000-01 to 2015

Intervention	Starting value in 2000-01	Assumed change per year	Ending value in 2015
Women with post-middle schooling (%)	8.3	0.5% point	15.8
Household consumption expenditure per capita (Rs.)	775	5.4%	1,704
Households having an electricity connection (%)	78.0	1.45% point	100

Figure 5.3 shows the projected increase in the primary completion rate in Pakistan with three selective interventions being pursued simultaneously and gradually to 2015.[28] The scope and magnitude of the assumed interventions, which are shown in Table 5.5, are merely meant to illustrate the likely increase in primary completion under one possible scenario. There is obviously no suggestion that the assumed interventions will indeed take place, and, even if they do, whether the interventions will proceed at the pace assumed in Table 5.5.

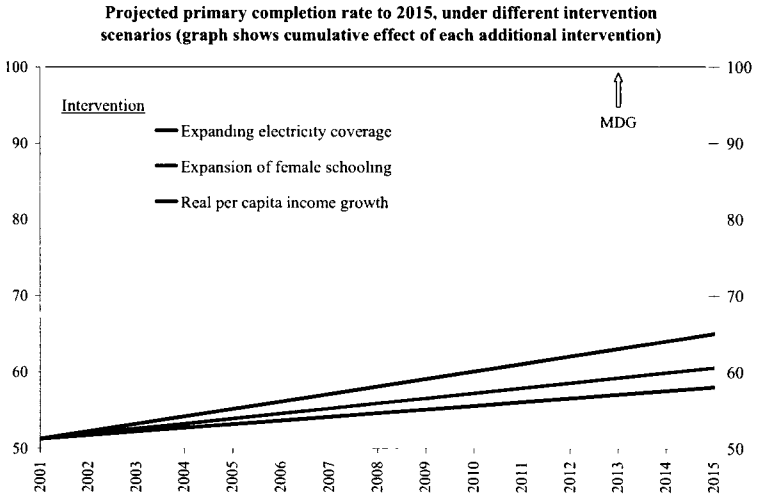


Figure 5.3

Economic growth (proxied by a 5.4% annual increase in household consumption expenditure per capita) is associated with an increase of about 7 percentage points in the primary completion rate over the period 2001-15. (This effect is considerably larger than the effect of economic growth on the net primary enrollment rate observed in the earlier chapter.) Expansion of female schooling adds another 2.5 percentage points to the primary completion rate, while improved electricity coverage is associated with an increase of 4.4 percentage points in the rate. With all three interventions, the primary completion rate in the country is projected to increase by about 14 percentage points by 2015 – from a level of 51% to 65%. This level would be significantly below the MD goal of 100% primary completion. This suggests that it will be very difficult to double the primary completion rate in Pakistan by 2015, which is what would be required to attain the MDG.

[28] The simulations are undertaken only for those variables that are significantly associated with primary completion in the probit model.

6. GENDER DISPARITY IN CHILD SCHOOLING

One of the Millennium Development Goals is to reduce gender disparities in schooling, such that the ratio of girls to boys enrolled at all schooling levels – primary and secondary – is 100%. This report focuses on the gender disparity situation in Pakistan and explores how far the country is from attaining this MDG.

LEVELS AND TRENDS

Administrative data on enrollments from the *Economic Surveys* shows primary-level enrollment in the country increasing from about 11 million in 1990-91 to 20 million in 1999-2000 (Table 6.1). The share of females in total primary enrollment increased from 34% in 1990-91 to 43% in 1999-2000.

It is widely believed that an increase in the number of non-government schools has been an important factor in bridging the gender gap in primary schooling in Pakistan. Much of the increase in enrollment at the primary level during the 1990s has occurred at non-government schools. This is observed in the sharp decline in the enrollment share of government schools, particularly in the urban areas where the share of government schools in total primary enrollment fell from 70% in 1991 to 53% in 1998-99 (Figure 4.5). The private sector has presumably played an important role in bridging the gender gap in schooling in the urban areas (World Bank, 2002; Arif and Saqib, forthcoming).

Table 6.1: Number of children enrolled in primary schools (grades 1-5) in Pakistan, 1990s

Year	Total enrollment (' 000)	Female as % of total
1990 – 91	10,837	33.9
1991 – 92	10,736	34.6
1992 – 93	12,726	36.1
1993 – 94	13,288	38.0
1994 – 95	14,264	39.5
1995 – 96	14,527	39.3
1996 – 97	15,395	40.0
1997 – 98	17,063	41.0
1998 – 99	18,731	41.8
1999 – 2000	20,399	42.5
Source: GoP, 2001b.		

SPATIAL VARIATIONS

Table 6.2 presents PSES 2000-01 data on enrollment (more appropriately, attendance) at different schooling levels, disaggregated by rural/urban residence and by province. The share of females in total enrollment declines from 45% at the primary level to 39% at the secondary level. Thus, secondary schools have, on average, only two female students for every three male students. These overall figures hide very important regional differences. One obvious difference is between rural and urban areas. In the urban areas, female enrollment exceeds male enrollment at the primary level but is at parity with male enrollment at the middle and secondary school levels. It is thus primarily in the rural areas where gender disparity persists. As reported earlier, it is believed

that the expansion of non-government schools has played an important role in raising female enrollment in the urban areas.

There are large provincial differences in gender disparity as well (Table 6.2). The ratio of female to male primary students ranges from merely 60% in Sindh to 92% in Punjab. The differences are even greater at the secondary level; for instance, female secondary enrollment is only one-third of male secondary enrollment in NWFP but as much as two-thirds of male secondary enrollment in Punjab.

Table 6.2: Female share in school enrollment, by level, place of origin, and province, 2000-01

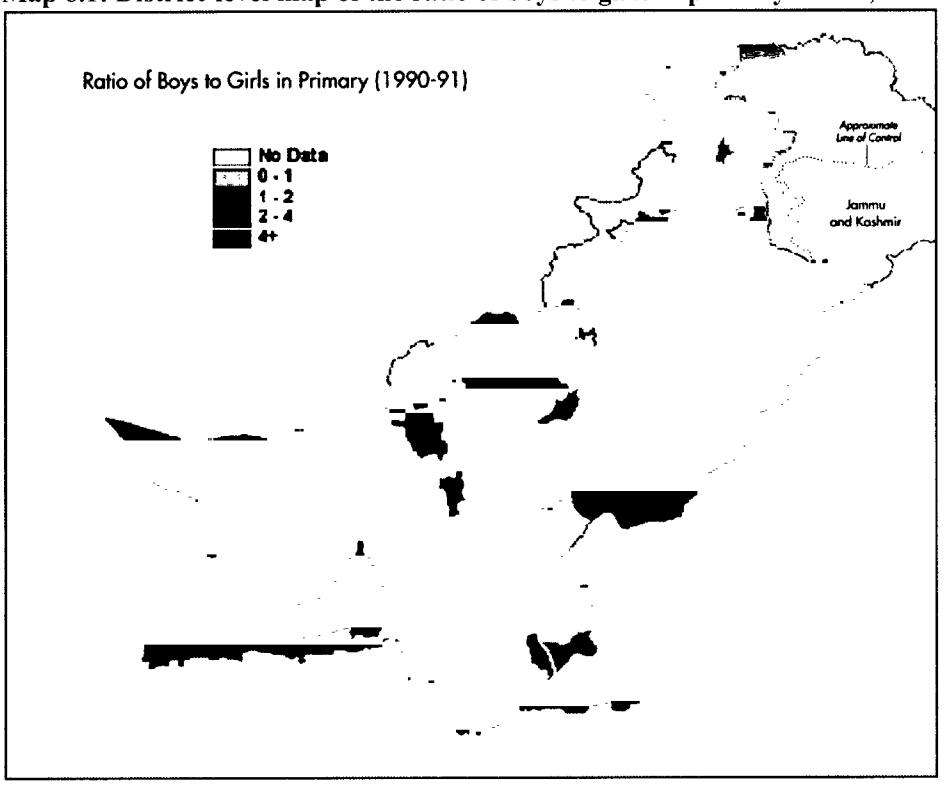
Place of origin/province	Female as % of total enrollment			Female as % of male students		
	Primary level	Middle level	Secondary level	Primary level	Middle level	Secondary level
Place of region						
Urban	52.8	49.4	50.1	112.0	97.7	100.2
Rural	41.4	34.8	29.7	70.5	53.4	42.3
Province						
Punjab	47.9	44.3	40.5	92.0	79.6	68.1
Sindh	37.6	35.7	43.0	60.2	55.5	75.5
NWFP	39.8	36.6	27.0	66.1	57.7	36.9
Balochistan	44.3	32.2	31.4	79.6	47.5	46.7
Total	45.0	41.3	38.9	82.0	70.3	63.7

Source: 2000-01 PSES.

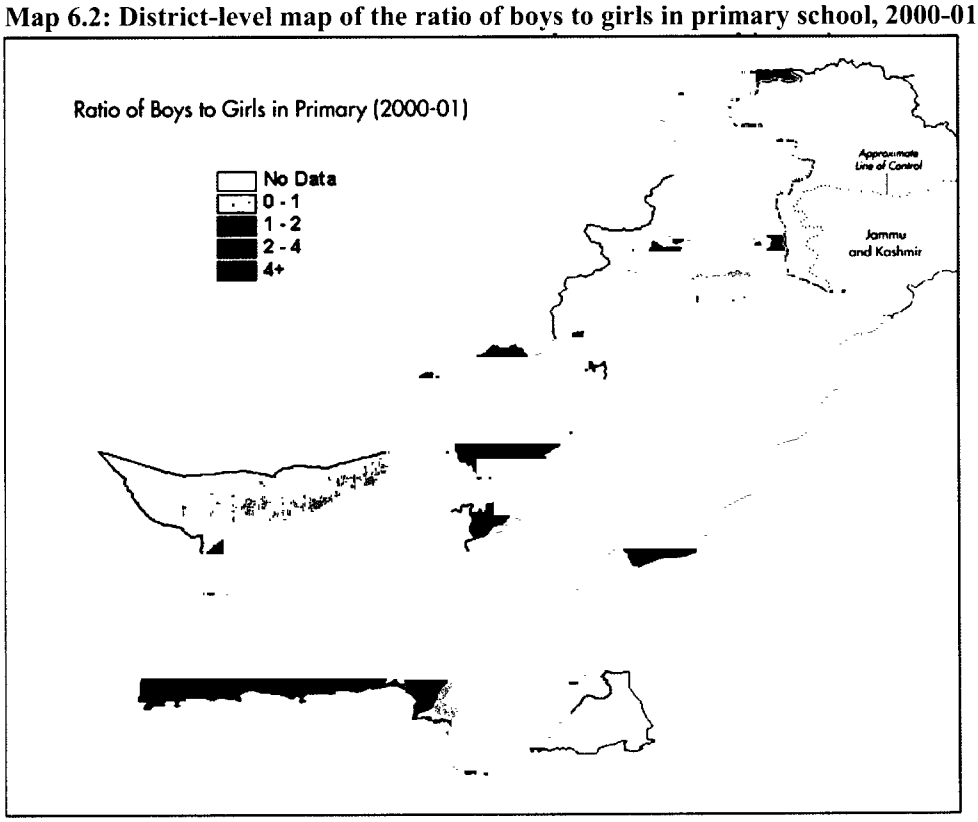
The variations in gender disparity in schooling at the sub-provincial level are even greater. District-level ratios of male to female primary students are shown for 1990-91 and 2000-01 in Maps 6.1 and 6.2. (All district-level data are obtained from *Socioeconomic Indicators of Provincial Governments.*) The maps show that, in 2000-01, there were four districts in the country (Ghotki in Sindh, Kohistan in NWFP, and Khuzdar and Dera Bugti in Balochistan) where the ratio of boys to girls at the primary level was nearly 4 or more (which implies that female students constituted fewer than one fifth of all students). A comparison with the data for 1990-91 suggests, however, that gender disparity in primary schooling has narrowed in the vast majority of districts over time. In 1990-91, as many as 31 districts in the country, mostly in Balochistan, had a ratio of male to female primary students of 4 or more. In some districts, such as Kohistan and Dera Bugti, female students constituted fewer than 10% of all primary-level students.

Gender disparity at the secondary school level is even more widespread. In 2000-01, there were 19 districts in the country that had a ratio of male to female secondary students of 4 or more, and three districts that had a ratio of 10 or greater (Map 6.3). But even here, the vast majority of districts appear to have seen a marked reduction in gender disparity from the levels prevailing in 1990-91 (Map 6.4).

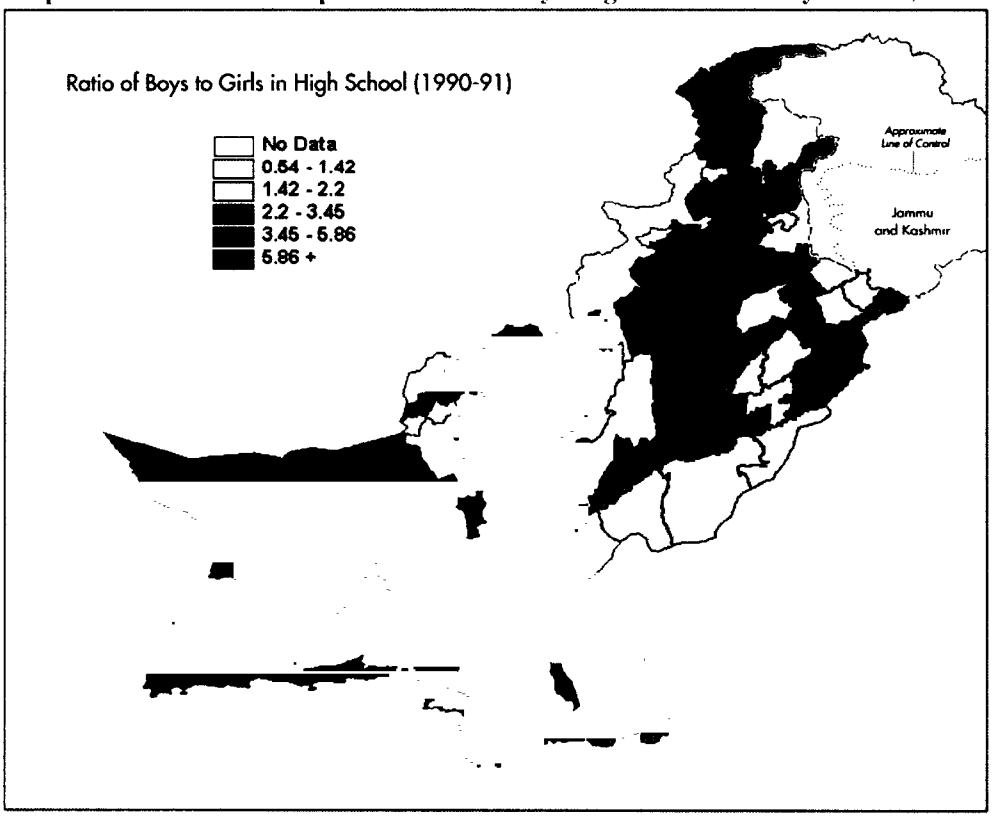
Map 6.1: District-level map of the ratio of boys to girls in primary school, 1990-91



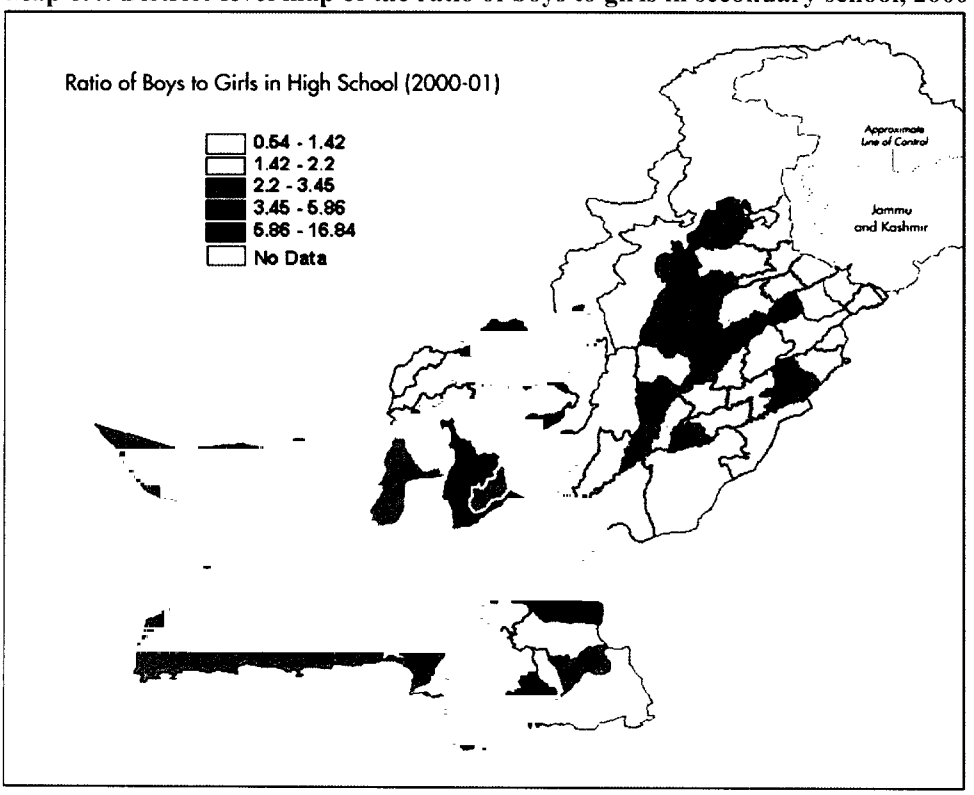
Map 6.2: District-level map of the ratio of boys to girls in primary school, 2000-01



Map 6.3: District-level map of the ratio of boys to girls in secondary schools, 1990-91



Map 6.4: District-level map of the ratio of boys to girls in secondary school, 2000-01



INTERNATIONAL COMPARISONS

How does Pakistan's record at gender disparity compare to that of other countries in the region? Figure 6.1 shows the percent of girls aged 6-12 years who report attending primary school in three countries – Bangladesh, India and Pakistan. Data for all three countries refer to either 1999-2000 or 2000-01. Until age 8, India has higher net primary attendance rates for girls than does Pakistan, but between the ages of 8 years and 12 years, the net primary attendance rate for girls is higher in Pakistan. The differences, however, are small, and the net primary attendance rates of girls are broadly similar in both countries. However, Bangladesh's female primary attendance rates are much higher than those in Pakistan and India. For instance, while the percent of 9-year old girls attending primary school is 62% in India and 63% in Pakistan, it is as high as 83% in Bangladesh. At age 11, the corresponding figures in the three countries are 35%, 32% and 58%, respectively. Clearly, primary schooling for girls is much more widespread in Bangladesh than in Pakistan or India.

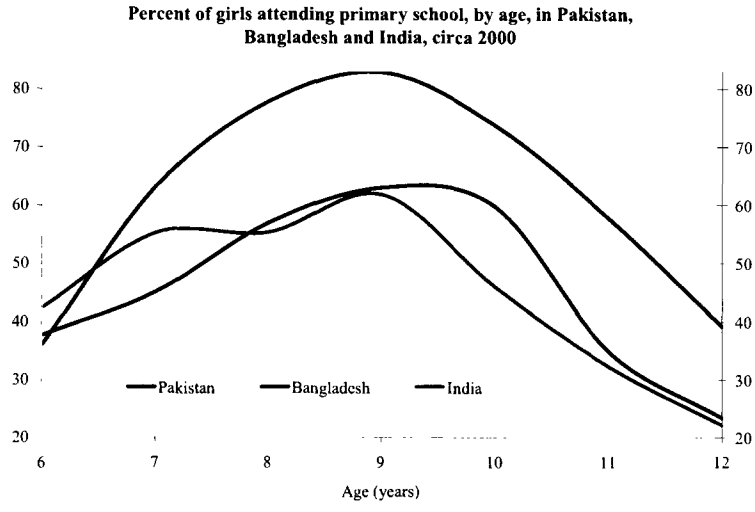


Figure 6.1

Figure 6.2 shows the ratio of girls to boys aged 6-12 years attending primary school in each of the three countries. Beginning at age 10, Pakistani girls appear to be at a significant disadvantage relative to boys in terms of primary schooling opportunities. For instance, at age 10, the ratio of girls to boys attending primary school in Pakistan is only 80%, and this drops to 62% by age 11. The corresponding ratio for India is 85%, while in Bangladesh boys and girls are at parity in terms of primary schooling attendance. Gender disparity in schooling is thus clearly more pronounced in Pakistan than in India or Bangladesh even at the primary level.[29]

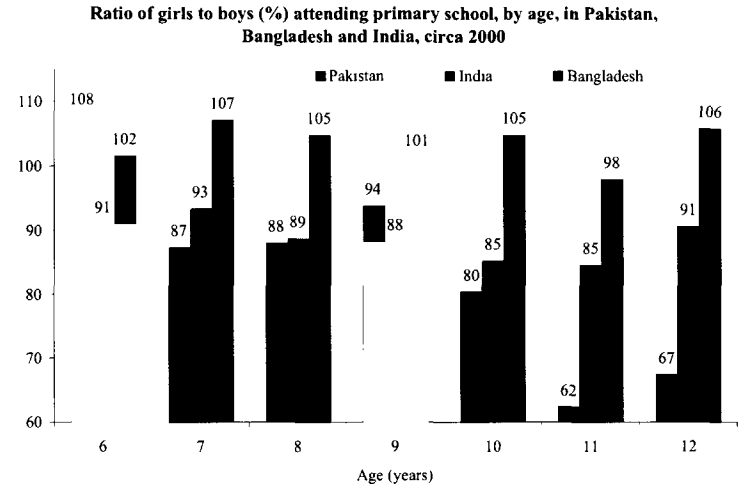


Figure 6.2

[29] Obviously, the disparity is even wider at the middle and secondary school levels.

SOCIOECONOMIC VARIATIONS

It has been argued that the gender gap in enrollment in Pakistan, particularly at the primary level, is less a function of poverty than of other factors (World Bank, 2003). This argument is borne out by data from the PSES (Table 6.3), which do not show large differences across economic groups in the ratio of female to male students. It is possible that social norms and practices, combined with a shortage of schools for girls and a lack of women teachers, could conspire to reduce girls' enrollment, particularly in the rural areas (World Bank, 2002). The PSES data clearly indicate that parental schooling is associated with reduced gender disparity in school opportunities for their children (Table 6.3). The ratio of girl to boy students at all levels is generally higher when either parent has some schooling. Indeed, when mothers have secondary or higher schooling, the gender disparity in secondary schooling opportunities reverses in favor of girls.

Table 6.3: Female share in total school enrollment by per capita consumption expenditure quintile and by parental schooling, 2000-01

	Female as % of total enrollment			Female as % of male in school		
	Primary level	Middle level	Secondary level	Primary level	Middle level	Secondary level
Per capita consumption expenditure quintile						
Bottom	45.5	42.2	36.2	83.4	72.9	56.8
Second	41.9	41.2	31.7	72.9	70.0	46.3
Third	45.1	38.0	34.3	82.1	61.4	52.3
Fourth	43.3	38.1	46.6	76.5	61.5	87.4
Top	48.4	44.6	38.8	93.8	80.4	63.5
All	45.0	41.3	38.9	82.0	70.3	63.7
Father's schooling						
Illiterate	43.7	33.9	34.1	77.8	51.3	51.7
Primary	42.9	43.7	27.3	75.1	77.7	37.5
Middle	42.8	50.9	35.8	74.8	103.7	55.8
Secondary & above	50.8	43.3	50.5	104.0	76.3	102.1
Mother's schooling						
Illiterate	42.9	36.5	33.4	75.0	57.5	50.2
Primary	48.0	62.2	44.1	96.1	164.0	78.8
Middle	54.0	42.8	43.9	118.0	74.9	78.4
Secondary & above	55.0	50.5	62.5	122.0	102.0	166.7

Source: 2000-01 PSES

ROLE OF PRIVATE SCHOOLS

As noted earlier, it is widely believed that the expansion of private schools has played an important role in bridging the gender gap in primary schooling in Pakistan. Is there evidence to substantiate this claim? Andrabi *et al.* (2002) note that private primary, middle and secondary schools have a lower ratio of enrolled boys to girls than comparable public schools. In fact, male and female enrollments for the age group 5-16 years are roughly equal in Punjab and Sindh, the two provinces that account for over 70% of the total population of Pakistan. In Punjab gender disparities in private enrollment rates are very low, with female enrollment exceeding 90% of that of males in many districts. For example, in Lahore, Gujranwala, Sialkot, Gujrat, Narowal and Sheikhupura, there are equal numbers of boys and girls aged 5-16 enrolled in school. These numbers are remarkable in light of the fact that only about 37.4% of overall *public* school enrollment is girls. There is thus clear evidence that private schools have been partly responsible for bridging the gender gap in enrollment.

What is even more striking is that private schools have achieved a more balanced male/female ratio than public schools despite the fact that a larger proportion of them are co-educational schools. Public schools in Pakistan have historically been single-sex schools, since there is a perception that parents would feel uncomfortable about sending their daughters to co-educational institutions. For instance, 72% of villages in the PIHS 1998-99 sample reported having a public primary girls' school, while only 9% reported having a public primary co-educational school. On the other hand, 22% of the villages reported having a private primary co-educational school, and only 3% reported having a private primary girls' school.

Thus, the experience of private schools suggests that parents are willing to send their girls to a co-educational school. The more important factor in parents' decisions to send their daughters to school is the distance to the nearest school (Alderman *et al.* 2001). If single-sex schools are farther apart and girls need to travel alone to these schools, female enrollment could actually rise with the establishment of co-educational schools that are closer and to which male and female siblings could travel together.

Another factor that plays an important role in whether parents send their daughters to school is the presence of a female teacher in the school. Andrabi *et al.* (2002) report convincing evidence that more female teachers attract more female students. For instance, in schools with no female teachers, girls' enrollment as a share of total enrollment is only 22%; however, this share increases to 52% for schools staffed only by female teachers. Here, again, private schools have an advantage over public schools. Except in rural Federally Administered Tribal Areas (FATA) and Sindh, the majority of teachers in private schools are women. In some regions, such as Punjab, females represent more than 70% of the instructional staff (Andrabi *et al.*, 2002).

MULTIVARIATE ANALYSIS

To understand the correlates of gender disparity in schooling opportunities, we have estimated a multivariate model of net primary school attendance separately for boys and girls aged 5-12 years, using the PSES 2000-01 unit record data (at the child level).[30] The multivariate model has the advantage of controlling for several variables that may be simultaneously associated with child schooling. In addition, it readily allows us to test if the associations between the independent variables and school attendance are significantly different for boys than for girls. The estimation results are reported in Annex Table 5, while only the key findings of the empirical analysis are discussed here.

The empirical results indicate that, for the most part, the associations between school attendance and the right-side variables being considered do not differ significantly by gender. The only variables whose estimated coefficients are significantly different for boys and girls are urban residence, the log of monthly household consumption expenditure per capita, electricity coverage in a district, and residence in the NWFP. The results suggest that primary school attendance is greater in urban than in rural areas, but only for girls. In addition, the results indicate a stronger positive association between primary attendance and household living standards (as proxied by the log of monthly consumption expenditure per capita) for boys than for girls, implying that improvements in living standards would be associated with widening gender disparity in primary school attendance. On the other hand, the association between primary attendance and electricity

[30] A single equation with separate intercept and slope female dummy variables was estimated. Since the dependent variable is a dichotomous variable (i.e., whether or not a child of that age is attending primary school), the model has been estimated by the maximum-likelihood probit method.

coverage is significantly stronger for girls than for boys, implying that increasing electricity coverage would be associated with reduced gender disparity in primary schooling. Finally, the results indicate that children, both boys and girls, are significantly less likely to attend school in Sindh and Balochistan than in Punjab, but that girls are not any more disadvantaged than boys in these two provinces relative to Punjab. However, girls in the NWFP are significantly less likely to attend primary school than girls in other provinces (although this result does not hold for boys).

Figure 6.3 shows the projected trajectory of net primary attendance of boys and girls through 2015 under the assumption that the Pakistani economy experiences annual growth of 5.4% in real consumption expenditure per capita from 2001 to 2015. Given the relatively low estimated growth elasticity of net primary attendance, the net primary attendance rate of boys is projected to increase merely from 52% in 2001 to 59% in 2015. The net primary attendance rate for girls is projected to increase even less – from 45% in 2001 to 50% in 2001. Thus, the gender gap in net primary attendance is projected to widen from 6.5 percentage points to 8.7 percentage points by 2015.

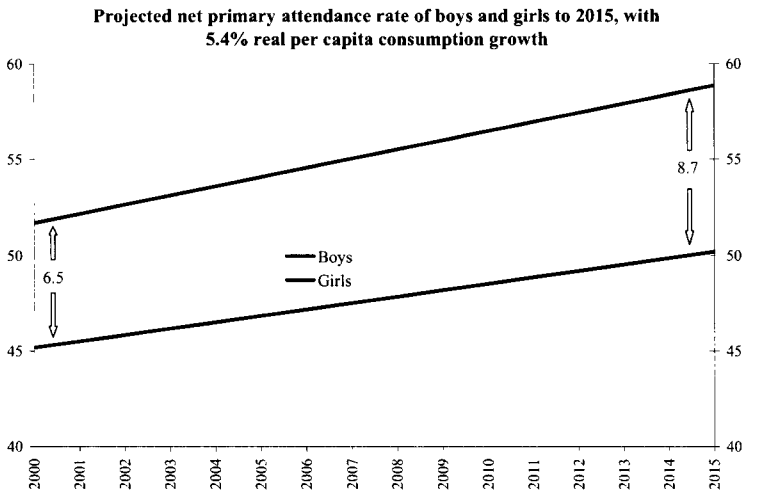


Figure 6.3

Figure 6.4 shows the projected trajectories for male and female net primary attendance under the assumption that electricity coverage in the country expands from 78% in 2001 to 100% in 2015. Since the positive association between electricity coverage and primary attendance is larger for girls than for boys, the gender disparity in net primary attendance rates is projected to decline from 6.5 percentage points in 2001 to 4.9% in 2015. Together, the two interventions – growth of the economy and growth in electricity coverage – would result in a very small narrowing of the gender gap in primary enrollments – from 6.5 percentage points to 6.1 percentage points.

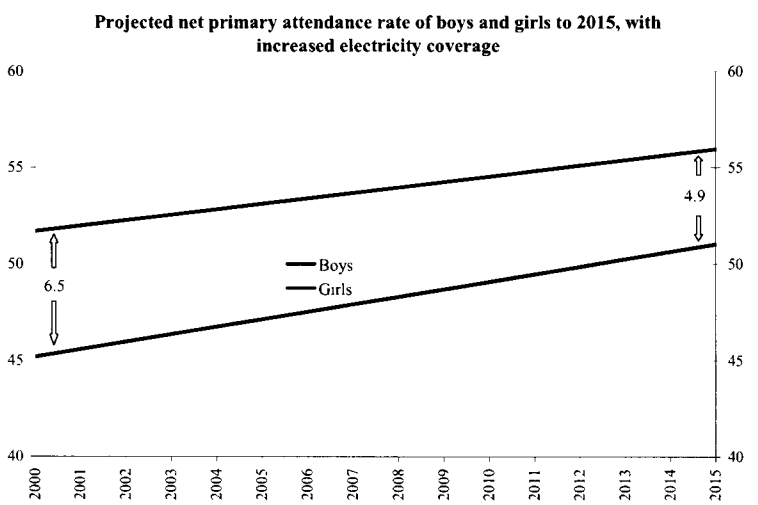


Figure 6.4

Thus, it appears that even with more rapid growth of the Pakistani economy and increased infrastructural (electricity) coverage, it will be challenging for the country to close the gap in primary enrollments between boys and girls. This highlights the need for special interventions to increase the school enrollment of girls. This is especially critical at the middle and secondary school levels, where the gender disparity is much greater than at the primary level. This chapter has discussed what some of these special interventions could be. For instance, increasing the representation of female teachers in schools is much more important for raising female enrollments than the establishment of girls-only schools. Indeed, the rapid rise and popularity of private schools, most of which are co-educational in nature, suggests that Pakistani parents, even in the rural areas, are willing to send their daughters to co-educational schools as long as those schools have a female teacher. There is some evidence suggesting that private schools do a much better job than public schools in having a larger proportion of female teachers, and this may be one reason why there is much less gender disparity in private than in public school enrollment.

Conditional cash transfer (CCT) programs – public interventions that provide financial assistance to poor households conditional on their making investments in their children's human capital, such as school attendance or regular use of preventive health care services – have not been used much in Pakistan. Such programs are a powerful means of raising parental demand for girls' schooling, especially among the poor. CCT programs, although relatively new, have increasingly become popular, and have been shown to raise school enrollment and retention in a number of countries, such as Mexico, Colombia, Nicaragua and Brazil (Rawlings 2004). In Bangladesh, there is convincing evidence that the Female Secondary Stipend program is largely responsible for closing the gender gap in secondary enrollments in that country (see Box 6.1). It might be worthwhile exploring the greater use of such programs in Pakistan.

Box 6.1: Bangladesh Female Secondary School Stipend Program

The attendance of girls relative to boys in secondary schools started to grow at a record rate in Bangladesh after the government decided to exempt fees and give cash incentives to girl students, under the Female Secondary School Stipend program launched by the Government of Bangladesh in 1994, with assistance from the World Bank, Asian Development Bank, and the Government of Norway. (Unlike primary school, which is free, secondary schooling requires payment of tuition fees in Bangladesh. In addition, households have to incur all other costs, such as transportation, books, uniforms, school supplies, and examination fees.) The program has been successful in its twin objectives of increasing the number of girl students entering secondary school as well as keeping them in school until graduation. With this program, Bangladesh has become a pioneer in increasing female secondary enrollments and in narrowing gender disparities at the secondary level among the nations of South Asia.

Although the project was initially implemented in 118 *thanas* in 1994, it was later expanded to all rural *thanas* in the country and converted to a national female secondary stipend program. Under the program, stipends covering full tuition, examination costs, and an increasing proportion of school fees, textbooks, school supplies, uniforms, shoes, transport and kerosene (for lamps) are available to girls as they progress from Grades 6 to 10. The coverage of other costs rises with grade because extra incentives are needed in the upper grades to reduce high dropout rates.

The project is also simultaneously increasing the number of teachers – especially female teachers – in secondary school; providing occupational skills training to girls who are about to graduate; making schools more attractive to provide a healthier and safer setting for girls; and strengthening government institutions for secondary education.

7. CONCLUSIONS

Pakistan's progress in improving its MD indicators during the 1990s has been uneven. The indicator which has seen some progress is infant/under-five mortality, which, by all indications, has fallen by about 3.5% annually during the 1990s – nowhere near the performance of Bangladesh, which has seen a decline of 4.8% annually in its infant mortality, but considerably better than India's sluggish 2.2% annual decline. However, at 82 deaths per 1,000 live births, Pakistan still has the highest *level* of infant mortality among the large countries of South Asia.

Pakistan's record in reducing child malnutrition has been dismal. There are indications that child malnutrition has been stagnant, and may actually have increased, during the 1990s. Nearly half of all children under the age of 5 are underweight. While this prevalence rate is not significantly different than that observed in India or Bangladesh, those countries have seen a decline in child malnutrition during the 1990s. For instance, child underweight rates in Bangladesh declined sharply from 68% in 1992 to 51% in 2000. In India, the decline has been slower – from 53% in 1992-93 to 47% in 1998-99.

Likewise, despite their low levels, education indicators in Pakistan have seen little progress during the 1990s. Both the gross and the net primary enrollment rate have stagnated between 1995-96 and 2001-02, and only 42% of primary school-aged children attended primary school in 2001-02. In comparison, net primary enrollment rates were 53% in India (in 1999-2000) and 65% in Bangladesh (in 2000). Primary completion rates are no better in Pakistan, with only about half of the children entering primary school actually completing five years of the primary course. With the exception of Sindh, most provinces have seen the primary completion rate stagnant or decline in the 1990s.

However, Pakistan has seen some progress in narrowing the gap between male and female school enrollments. The share of female to male students in primary school increased substantially during the 1990s – from about 50% in 1990-91 to 75% in 1999-2000. Of course, these levels pale in comparison to the performance of Bangladesh, which has virtually eliminated the gender gap in enrollments not only at the primary level but also, remarkably, at the secondary level.

Pakistan's generally slow progress in reducing child malnutrition and increasing primary school enrollment and completion is worrisome in light of the fact that it already ranks very low on these indicators – both relative to its neighbors in South Asia as well as relative to its per capita income.

This report concludes that even though it will be very challenging for Pakistan to attain the MDGs, it should nevertheless be possible for it to make substantial progress on the four MD indicators with a package of interventions that include economic growth, improved infrastructure coverage, expansion of schooling (particularly female schooling), and sector-specific policies (such as increased immunization coverage). For instance, the simulation results suggest that increasing the child immunization coverage from its current level to a level of 100% (i.e., universal coverage) could be associated with a very large reduction in infant mortality of 28 infant deaths per 1,000 live births. A full 'package' of three interventions (expanded female schooling, child immunization coverage, and sanitation coverage) would bring the infant mortality rate in the country down from its current level of 77 deaths per 1,000 live births to a level of 42 deaths per 1,000 live births by 2015. While this would still be considerably above the

MDG level (33 deaths per 1,000 live births), it would represent tremendous progress. Likewise, a package of economic growth, expansion of adult female schooling, and expanded electricity, sanitation and immunization coverage could together result in a large decline in the child underweight rate – from a level of 47% currently to 31% by 2015. Again, this level would still be well above the MD goal of no more than 20% of Pakistani children aged 0-59 months being underweight, but it would represent dramatic progress in comparison to what Pakistan has been able to achieve in the past.

The same conclusions apply to the other indicators. The projections in this report suggest that, with a package of 3-4 interventions, the net primary enrollment rate in the country would likely increase from a level of 49% in 2000-01 to 66% in 2015 and that the primary completion rate would likely increase from a level of 51% to 65% – both rates being well below the 100% rate called for by the MDGs. Finally, the projections show a slight narrowing of the gender gap in the net primary enrollment rate from 6.5 percentage points to 6.1 percentage points by 2015.

It should be noted that these simulations are based on the assumption that mean real consumption expenditure per capita in Pakistan will grow annually at about 5.4% between now and 2015, which is consistent with the GDP growth targets espoused by the Medium-Term Development Framework of the Planning Commission. Such an improvement in real consumption per capita would represent a marked shift from the situation prevailing in the 1990s, when real per capita consumption was largely stagnant. However, the Pakistani economy has gained significant momentum during the last couple of years, with real GDP growth averaging 5.0-6.5% per annum or 2.5-4% on a per capita basis. For the simulation exercises, this report thus assumes that Pakistan's growth prospects over the next decade will resemble its growth experience during the last two years – not its performance during the decade of the 1990s.

It is rather discouraging then to find out that, despite this stepped-up growth in the economy and despite the increase in adult female schooling that this report assumes will occur over the next decade, Pakistan will still find it difficult to attain any of the four MDGs considered here. There are three possible implications of these findings. First, the empirical simulations indicate the need for additional large targeted interventions in child survival, malnutrition and schooling (over and above the more general interventions considered in this report). What could these interventions be? There is considerable evidence from many developing countries that demand-side interventions – such as conditional cash transfer (CCT) programs that provide financial assistance to poor households conditional on their making investments in their children's human capital (school attendance or regular use of preventive health care services) – are effective in improving child schooling, health and nutritional outcomes. Pakistan has introduced a few demand-side incentives, such as involving communities in social service delivery (e.g. school committees in the Punjab) and introducing stipends for girls aged 6-8 years (only in Sindh and Punjab). Free textbooks are also available to all children. Other safety net programs, such as *Zakat* and *Bait-ul Maal*, also target school meals, stipends, health care, and food subsidies. However, these programs are small relative to the size of the problem, focus on particular provinces, are not integrated (and sometimes overlapping) and their targeting and administration is weak.

Second, this report has not considered the potential effects on the MD indicators of qualitative changes in governance and in the institutional modes of delivery of public services. Clearly, poor governance is at the heart of many social-sector problems in Pakistan. Corruption and nepotism in the recruitment, promotion and transfer of public health and education officials; widespread absenteeism of teachers and health workers; lack of accountability of front-line public officials to clients and communities; scandals in textbook or drug procurement; and capture of local institutions of service delivery by the elite are all examples of poor governance that impact

adversely on social outcomes. Broad-ranging institutional reform, incorporating, among other things, empowerment of citizens and communities who can hold the state accountable for performance, devolution of administrative and financial powers to communities, greater autonomy to schools, involvement of parents in school management, and ensuring the motivation of front-line workers, could potentially further improve the MD indicators beyond the levels projected in this report. In this regard, it would be important to assess the impact of the recent and ongoing 'devolution of power' legislation in Pakistan on various MD outcomes.

Third, the findings of this report also indicate the limitations of public-sector interventions in improving the MD indicators in Pakistan. The private and non-government sector can play an important role in raising household demand for child schooling and health services, in extending the coverage of health and educational services, and in improving the quality of social services. The experience of Bangladesh highlights the very important role that NGOs can play in expanding micro-credit and other income-generating opportunities to the poor, improving educational opportunities for girls, and disseminating child survival interventions in remote rural areas. There is some evidence from within Pakistan itself that the private sector has played a key role in increasing female school enrollments and in bridging the gender gap in schooling opportunities. While it is beyond the scope of this report to identify the mechanisms by which the non-governmental sector in Pakistan could play a greater role in the delivery of social services, it is clear that there is an urgent need for policies that encourage public-private partnerships and non-governmental participation in social initiatives.

This report has also highlighted the tremendous regional disparities in the MD indicators in Pakistan. For instance, the infant mortality rate in some districts is 3-4 times as high as in other districts. The youth literacy rate in some districts is six times as high as the level found in other districts. While the provinces of Punjab and NWFP saw their measles immunization coverage levels expand impressively during the 1990s, Sindh saw a virtual stagnation while Balochistan experienced a sharp decline. Not surprisingly, Sindh and Balochistan saw their under-five mortality rate increase over this period. In general, these two provinces have the worst social indicators, and have seen the least progress in these indicators, in the country. It will thus be important to focus on lagging provinces, and districts within these provinces, in developing an overall MDG strategy for the country.

Finally, the importance of systematically and regularly monitoring MD outcomes at disaggregated levels and of evaluating the impact of public interventions cannot be overemphasized. There is a paucity of reliable, time-series data on most MD indicators at the district and lower levels. The lack of such data makes it virtually impossible to monitor progress toward attainment of the MDGs at lower levels of administration. However, current survey plans by the Federal Bureau of Statistics will help address this problem. A new Pakistan Social and Living Standards Measurement Survey (which will replace the old PIHS) is to be undertaken each year beginning in 2004-05. In every alternate year, the PSLM survey will be fielded with a greatly-expanded sample of 77,000 households, so as to provide MD indicator estimates that are representative at the district level. (The questionnaire to be used to obtain district-level estimates of MD indicators will be the Core Welfare Indicators Questionnaire or CWIQ.) During other years, the PSLM will be conducted with a sample of 17,000 households and thus be able to provide provincial-level estimates.

Another persistent problem in Pakistan, as in many other countries, is that very few public programs and interventions are subjected to rigorous, independent evaluation. In order to choose the right set of interventions with which to attain the MDGs, it is critical to know which programs have been successful in improving MD indicators and which have not. It is therefore imperative

that every public program and intervention be assessed in terms of its contribution to MDG targets. For this to happen, however, a culture of evaluation research needs to be inculcated and nurtured.

ANNEX 1: ESTIMATION RESULTS

Annex Table 1: Maximum likelihood probit estimates of the probability of an infant dying during the first 12 months of its life during the 10 years preceding the survey, 2000-01

Independent Variable	*Parameter*	*Asymp. z-ratio*
Whether urban resident?*	-0.0078	-0.96
Whether child female?*	0.0127	1.55
Whether child first-born?*	0.0108	1.00
Whether child's birth order is 2?*	-0.0019	-0.13
Whether child's birth order is 3?*	0.0109	0.73
Whether child's birth order is 4 or higher?*	**0.0249**	1.64
Whether child's birth order is 2?* x Whether child female?*	0.0001	0.00
Whether child's birth order is 3?* x Whether child female?*	-0.0143	-0.85
Whether child's birth order is 4 or higher?* x Whether child female?*	**-0.0293**	-1.86
Mother's age (years)	0.0003	0.54
Whether mother has primary schooling?*	-0.0071	-0.63
Whether mother has middle schooling?*	-0.0180	-1.28
Whether mother has post-middle schooling?*	**-0.0446**	-3.82
Whether household head female?*	-0.0024	-0.14
Log of household consumption expenditure per capita	**0.0217**	3.03
Whether household has electricity connection?*	-0.0021	-0.25
Whether household has piped water inside house?*	0.0062	0.77
Whether household has toilet with any type of flush system?*	**-0.0151**	-1.89
Number of lady health workers in district	0.0000	1.12
% of children immunized in district	**-0.0963**	-1.88
Whether resident in Punjab?*	**0.0200**	1.88
Whether resident in NWFP?*	-0.0170	-1.20
Whether resident in Balochistan?*	-0.0017	-0.12
Number of observations	6,013	
Chi squared test	59.28	
Pseudo R-squared	0.0204	
Log likelihood	-1,422	

Notes: Estimation employs unit record data from the 2000-01 PSES, merged with relevant district-level data. Standard errors are corrected for heteroscedasticity using the Huber-white method. All coefficients are expressed as marginal effects (i.e., the change in probability of being poor with a one-unit change in the right-side variable.) An "*" implies the variable is dichotomous. Figures in bold indicate statistically significance of the marginal effect at the 10% or lower level.

Annex Table 2: Maximum likelihood probit estimates of the probability of a child aged 0-59 months being underweight, 2000-01

Independent Variable	*Parameter*	*Asymp. z-ratio*
Whether urban resident?*	-0.0339	-1.35
Whether child male?*	**0.0539**	2.85
Whether child aged 6-11 months?*	**0.2584**	5.62
Whether child aged 12-23 months?*	**0.3791**	9.82
Whether child aged 24-35 months?*	**0.3608**	9.46
Whether child aged 36-47 months?*	**0.2822**	7.06
Whether child aged 48-59 months?*	**0.2463**	6.08
Mother's age (years)	**-0.0045**	-2.99
Whether mother has any formal schooling?*	**-0.0486**	-1.92
Whether household head is female?*	0.0004	0.01
Log of household consumption expenditure per capita	**-0.0760**	-3.67
Whether household has piped water inside house?*	0.0321	1.17
Whether household has electricity connection?*	**-0.0556**	-2.14
Whether household has toilet with any type of flush system?*	**-0.0495**	-2.02
Number of lady health workers in district	**0.0000**	1.84
% of children immunized in district	**-0.0034**	-2.15
Whether resident in Sindh?*	**0.1155**	2.76
Whether resident in Punjab?*	**0.0574**	1.86
Whether resident in Balochistan?*	-0.0128	-0.23
Number of observations	2,955	
Chi squared test	252.97	
Pseudo R-squared	0.0619	
Log likelihood	-1,918	

Notes: Estimation employs unit record data from the 2000-01 PSES, merged with relevant district-level data. Standard errors are corrected for heteroscedasticity using the Huber-white method. All coefficients are expressed as marginal effects (i.e., the change in probability of being poor with a one-unit change in the right-side variable.) An "*" implies the variable is dichotomous. Figures in bold indicate statistically significance of the marginal effect at the 10% or lower level.

Annex Table 3: Maximum likelihood probit estimates of the probability of a child aged 5-12 years attending primary school, 2000-01

Independent Variable	*Parameter*	*Asymp. z-ratio*
Whether child aged ...		
... 6 years?*	**0.1768**	4.21
... 7 years?*	**0.3285**	8.08
... 8 years?*	**0.4517**	12.60
... 9 years?*	**0.4797**	12.92
... 10 years?*	**0.5207**	14.91
... 11 years?*	**0.3630**	8.96
... 12 years?*	**0.1595**	3.75
Whether child female?* x Whether child aged ...		
... 5 years?*	0.0631	1.36
... 6 years?*	0.0123	0.31
... 7 years?*	-0.0682	-1.55
... 8 years?*	**-0.0945**	-2.69
... 9 years?*	**-0.0981**	-2.33
... 10 years?*	**-0.1973**	-5.13
... 11 years?*	**-0.2315**	-5.23
... 12 years?*	**-0.1115**	-2.62
Whether urban resident?*	0.0281	1.52
Log of household consumption expenditure per capita	**0.0772**	5.16
Whether mother has primary schooling?*	**0.1727**	6.58
Whether mother has middle schooling?	**0.2171**	4.97
Whether mother has post-middle schooling?	**0.1374**	3.31
Whether household receives any remittances?*	0.0281	1.11
Whether household head is female?*	**-0.0824**	-2.10
Pupil-teacher ratio in district	**-0.0083**	-3.98
Population of children aged 5-12 per primary school in district	**-0.0004**	-0.17
% of households in district having electricity connection	**0.2284**	12.22
Whether resident in Sindh?*	**-0.2663**	-8.56
Whether resident in NWFP?*	**-0.0794**	-3.48
Whether resident in Balochistan?*	**-0.2010**	-5.53
Number of observations	5,335	
Chi squared test	1,182	
Pseudo R-squared	0.1599	
Log likelihood	-3,105	

Notes: Estimation employs unit record data from the 2000-01 PSES, merged with relevant district-level data. Standard errors are corrected for heteroscedasticity using the Huber-white method. All coefficients are expressed as marginal effects (i.e., the change in probability of being poor with a one-unit change in the right-side variable.) An "*" implies the variable is dichotomous. Figures in bold indicate statistically significance of the marginal effect at the 10% or lower level.

Annex Table 4: Maximum likelihood probit estimates of the probability of a child aged 13-14 years having completed primary school (class 5), 2000-01

Independent Variable	*Parameter*	*Asymp. z-ratio*
Whether child aged 14 years?*	**0.1190**	2.56
Whether child female?* x Whether child aged 13 years?*	-0.0477	-0.89
Whether child female?* x Whether child aged 14 years?*	**-0.2095**	-4.85
Whether urban resident?*	**0.1168**	2.83
Log of household consumption expenditure per capita	**0.2120**	5.30
Whether mother has primary schooling?*	**0.1400**	1.92
Whether mother has middle schooling?	**0.3060**	2.70
Whether mother has post-middle schooling?	**0.3599**	2.89
Whether household receives any remittances?*	**0.0971**	1.65
Whether household head is female?*	-0.0538	-0.59
Pupil-teacher ratio in district	-0.0019	-0.42
Population of children aged 5-12 per primary school in district	0.0042	0.87
% of households in district having electricity connection	**0.2185**	5.04
Whether resident in Sindh?*	**-0.2050**	-2.83
Whether resident in NWFP?*	**0.1394**	2.67
Whether resident in Balochistan?*	**-0.1578**	-1.88
Number of observations	1,020	
Chi squared test	207.91	
Pseudo R-squared	0.1471	
Log likelihood	-603	

Notes: Estimation employs unit record data from the 2000-01 PSES, merged with relevant district-level data. Standard errors are corrected for heteroscedasticity using the Huber-white method. All coefficients are expressed as marginal effects (i.e., the change in probability of being poor with a one-unit change in the right-side variable.) An "*" implies the variable is dichotomous. Figures in bold indicate statistically significance of the marginal effect at the 10% or lower level.

Annex Table 5: Maximum likelihood probit estimates of primary school attendance among 5-12 year olds, by sex, 2000-01

	Equation (1)				*Equation (2) (after dropping interactions not significantly different from zero)*			
			Interacted with female dummy:				*Interacted with female dummy:*	
Independent variable	*Parameter*	*Asym. z-ratio*	*Parameter*	*Asym. z-ratio*	*Parameter*	*Asym. z-ratio*	*Parameter*	*Asym. z-ratio*
Whether child aged ...								
... 5 years?*			**0.3137**	1.74			**0.1641**	3.40
... 6 years?*	**0.1727**	4.11	0.2777	1.25	**0.2296**	6.18		
... 7 years?*	**0.3244**	7.96	0.2118	0.93	**0.3431**	9.48		
... 8 years?*	**0.4486**	12.48	0.1848	0.80	**0.4541**	13.88		
... 9 years?*	**0.4764**	12.75	0.1913	0.83	**0.4839**	15.04		
... 10 years?*	**0.5177**	14.73	0.0859	0.37	**0.4948**	15.54		
... 11 years?*	**0.3601**	8.87	0.0280	0.12	**0.3130**	8.40		
... 12 years?*	**0.1601**	3.76	0.1573	0.68	**0.1547**	4.00		
Whether urban resident?*	-0.0313	-1.17	**0.1137**	3.08	-0.0296	-1.14	**0.1047**	3.02
Log of household consumption expenditure per capita	**0.1012**	4.63	**-0.0485**	-1.71	**0.0910**	6.00	**-0.0276**	-5.54
Whether mother has primary schooling?*	**0.1739**	4.36	0.0080	0.15	**0.1796**	6.85		
Whether mother has middle schooling?	**0.1677**	2.79	0.1343	1.47	**0.2269**	5.20		
Whether mother has post-middle schooling?	**0.1546**	2.49	-0.0398	-0.47	**0.1324**	3.19		
Whether household receives any remittances?*	0.0073	0.20	0.0411	0.80	0.0224	0.89		
Whether household head is female?*	**-0.1211**	-2.32	0.0966	1.22	**-0.0873**	-2.24		
Pupil-teacher ratio in district	**-0.0084**	-2.82	-0.0004	-0.10	**-0.0087**	-4.19		
Population of children aged 5-12 per primary school in district	0.0013	0.47	-0.0036	-0.85	-0.0005	-0.25		
% of households in district having electricity connection	**0.1996**	7.59	**0.0652**	1.68	**0.1955**	7.57	**0.0726**	1.92
Whether resident in Sindh?*	**-0.2490**	-5.54	-0.0482	-0.74	**-0.2669**	-8.57		
Whether resident in NWFP?*	-0.0173	-0.53	**-0.1207**	-2.65	-0.0287	-0.92	**-0.1035**	-2.42
Whether resident in Balochistan?*	**-0.2055**	-3.96	0.0087	0.11	**-0.2025**	-5.58		
Number of observations	5,335				5,335			
Chi squared test	1215.21				1181.28			
Pseudo R-squared	0.1644				0.16			
Log likelihood	-3,089				-3,106			

Notes: Estimation employs unit record data from the 2000-01 PSES, merged with relevant district-level data. Standard errors are corrected for heteroscedasticity using the Huber-white method. All coefficients are expressed as marginal effects (i.e., the change in probability of being poor with a one-unit change in the right-side variable.) An "*" implies the variable is dichotomous. Figures in bold indicate statistically significance of the marginal effect at the 10% or lower level.

ANNEX 2: DATA SOURCES

PAKISTAN SOCIOECONOMIC SURVEY

The PSES was carried out in 1998-99 and 2000-01. It is a panel data set; households covered during the Round I (1998-99) were revisited in Round II (2000-01). To make the PSES Round II representative, a sample of new households was also added. The universe of the Round I consisted of all urban and rural areas of the four provinces of Pakistan, as defined in the 1981 Population Census but excluding FATA, military restricted areas, the districts of Kohistan, Chitral, and Malakand, and protected areas of the NWFP. The population of the excluded areas constitutes about 4 per cent of the country's population.

The listing of villages published by the Population Census in 1981 was used to draw up the sampling frame for rural areas. For urban areas, the sampling frame developed by the Federal Bureau of Statistics (FBS) was used. In this frame, each city/town has been divided into enumeration blocks of approximately 200 to 250 households. Cities having a population of half a million or more were treated as self-representing cities (SRCs). Islamabad and Quetta, being federal and provincial capitals respectively, were also considered as SRCs. The remaining urban population in each division of all the four provinces was grouped together to form a stratum. For the rural sample, each district in Punjab, Sindh and NWFP was grouped together to form a stratum. For Balochistan province, a division was treated as a stratum.

A two-stage stratified sampling design was adopted for the PSES. Enumeration blocks in urban domain and *mouzas/dehs*/villages in rural domain were taken as primary sampling units (PSUs). Households within the sampled PSUs were taken as secondary sampling units (SSUs). Within a PSU, a sample of 8 households from each urban domain and 12 households from each rural domain was selected. Distribution of the 1998-99 PSES sample, by province and rural/urban disaggregation, is reported in the table shown below.

Distribution of sample households, by urban rural residence and province, 2000-01 PSES Round II

Province	Total	Rural	Urban
Punjab	2318	1610	708
Sindh	835	462	373
NWFP	500	310	190
Balochistan	368	195	173
Pakistan	4,021	2,577	1,296

Source: Arif and Bilquees (forthcoming)

As noted earlier, households covered during the Round I of the PSES were revisited during the Round II carried out in 2000-01. Out of the 3,564 households visited in Round I, 2,862 were successfully traced in the second round. Thus, the attrition rate for the second round of the PSES was 20%. Households that moved out of the sampled PSUs between the 1998-99 and 2000-01 period were not traced due to cost constraints. To make the PSES Round II data representative at the national as well as at the rural/ urban level, 1,170 new households were included in the sample by using the FBS sampling frame, making the total sample size for Round II of the PSES 4,021 households (2,577 rural and 1,444 urban households).

PAKISTAN INTEGRATED HOUSEHOLD SURVEY

The PIHS was designed for monitoring and evaluating the impact of the Social Action Program (SAP) initiated in the early 1990s. Four rounds of the PIHS have been completed. In the present analysis, results of the Round IV of the PIHS, carried out in 2001-02, have been compared with the PSES. The sample size of the 2001-02 PIHS survey was fixed at a level high enough to allow estimates to be obtained for the rural/urban areas of each province. A two-stage, stratified random sampling strategy was adopted for each of the rounds. At the first sampling stage, a number of Primary Sampling Units (PSUs) were selected from different strata. Enumerators then compiled lists of all households residing in the selected PSUs. At the second sampling stage, these lists were used to select a fixed number of households from each PSU for interviews, using a systematic sampling procedure with a random start. Twelve households were selected in each urban PSU, and sixteen in each rural PSU. The sample size for the 2001-02 PIHS was 16,182 households, approximately one-third of which was urban. Each sampled household was visited twice. In the first visit, information on social services covered under the earlier PIHS rounds was collected. In the second visit, data on consumption expenditure were collected. The sampling frame used for the rural areas was revised between the 1996-97 and 2001-02 rounds, using information compiled by the 1998 Population and Housing Census. The urban sampling frame was not updated, as it had been updated in 1995 (FBS, 2002).

NATIONAL NUTRITION SURVEY

The sample design for the NNS was prepared by the FBS. The universe of this survey comprised of all urban and rural areas of the four provinces, Azad Jammu & Kashmir, and the Northern Areas. The FBS used the updated frame for the sampling of enumeration blocs in urban areas. For the rural sample, the village/*mouza/deh* list published by the 1998 Population Census was taken as the sampling frame. (Note that the PSES used the village listing of the 1981 Census to draw its sampling frame.) In the NSS, a two-stage stratified sampling design was also adopted. PSUs were selected first, followed by the selection of SSUs. A fixed number of households – viz., 14 and 16 households – were drawn from each sample enumeration bloc and village, respectively, by the method of systematic sampling technique with random start. In total, 10,656 households were interviewed.

REFERENCES

Ahmad, F. D. and Ali M. Mir (2003). Contextual determinants of infant mortality in Pakistan, paper presented at Annual Population Research Conference held in Failsailabad on 9-11 December, 2003.

Alderman, Harold, Jere R. Behrman, David R. Ross, and Richard Sabot (1997). "Decomposing the Gender Gap in Cognitive Skills in a Poor Rural Economy". *The Journal of Human Resources*. 31: 1, 229-254.

Alderman, Harold, Jere R. Behrman, Victor Lavy, and Rekha Menon (2001). "Child Health and School Enrollment: A Longitudinal Analysis". *The Journal of Human Resources*. 36, 1, 185-205.

Alderman, Harold, Peter F. Orazem, and Elizabeth M. Paterno (2001). "School Quality, School Cost, and the Public/Private School Choices of Low-Income Households in Pakistan." *Journal of Human Resources* 36(2): 304-326.

Ali, Syed Mubashir (2001). *Poverty and Child Mortality in Pakistan*. Pakistan Institute of Development Economics, Islamabad. (MIMAP Technical Paper Series No. 6)

Andrabi, Tahir; Jishnu Das; Asim Ijaz Khwaja (2002). "The Rise of Private Schooling in Pakistan: Catering to the Urban Elite or Educating the Rural Poor?" Working paper, Kennedy School of Government, Harvard University, mimeo.

Arif, G. M. (2003). Urbanization in Pakistan: Trends, Growth and Evaluation of the 1998 Census.

Arif, G. M. and Faiz Bilquees (forthcoming). Pakistan Socio-economic Survey: Sampling, Attrition and Selected Characteristics, PIDE, Islamabad.

Arif, G. M. and Sabiha Ibrahim (1998). Diarrhoea morbidity differentials among children in Pakistan, the Pakistan Development Review, 37:3, 205-330.

Arif, G. M. Najam us Saqib, and G. M. Zahid (1999). "Poverty, Gender, and Primary School Enrollment in Pakistan". *The Pakistan Development Review* 38: 4, 979-992.

Arif, F. M. and Njam us Saqib (forthcoming). Production of cognitive Skill among primary school children in Public, Private and NGO School, the Pakistan Development Review (forthcoming).

Azam, Syed Iqbal and Mehtab S. Karim (2001). *Socio Economic, Demographic and Birth Related Factors Associated with Infant Mortality in Karachi*. Pakistan Population Stabilization Prospects (2nd Conference Proceedings of Population Association of Pakistan, 31st Oct – 2nd Nov.) 515-522.

Bennett, Jannifer (1999). "Correlates of Child Mortality in Pakistan: A Hazards Model Analysis". *The Pakistan Development Review* 38: 1, 85-118.

Bhatti, Mansoor ul Hassan, Abdul Hakim, and Faateh ud din (2001). *Correlates of Infant Mortality in Pakistan. Pakistan Population Stabilization Prospects (2nd Conference* Proceedings of Population Association of Pakistan, 31st Oct – 2nd Nov.). 495-513.

Center for Research in Poverty and Income District (CRPRID) (2004). *Pakistan Millennium Development Goals Report 2004*, Islamabad (monograph).

Cockcroft, A., N. Andersson, K. Omer, N. Ansari, A. Khan, and U.U. Chaudhry (2002). "Social Audit of Governance and Delivery of Public Services: Baseline Survey 2002 Report," National Research Bureau, Islamabad.

Federal Bureau of Statistics (1998). PIHS: Schooling Sector Performance in the 1990s, Analysis from the PIHS, FBS, Government of Pakistan, Islamabad.

Federal Bureau of Statistics (2002). 2001-02 Pakistan Integrated Household Survey, FBS, Government of Pakistan, Islamabad.

Government of Pakistan (GoP) (2003). *Economic Survey 2002-03*, Government of Pakistan, Finance Division, Economic Adviser's Wing, Islamabad.

Government of Pakistan (GoP) (2005). *Working Draft of the Medium Term Development Framework 2005-10*, Planning Commission, March.

Haddad, Bhattarai, Immimnk and Kumar (1996). Managing Interaction between Household Food Secutity and Preschool Health, IFPRI, 2020 Vision Discussion Paper No. 16, Washington, D.C.

Hamid, Shahnaz and Rehana Siddiqui (2001). Gender Differences in Demand for Schooling. *The Pakistan Development Review* 40: 4, 1077-1092.

Holmes, Jessica (1999). Measuring the Determinants of School Completion in Pakistan: Analysis of Censoring and Selection Bias. Jessica Economic Growth Center, Yale University, Connecticut. (Discussion Paper No. 794).

Ibrahim, Sabiha (1999). Anthropometric Patterns and Correlates of Growth Attainment in Under-Five Pakistani Children. *The Pakistan Development Review,* 38: 2 131-152.

International Crisis Group (ICG) (2004). "Pakistan: Reforming the Education Sector," Asian Report No. 84, Islamabad, mimeo.

Jalil, Fehmida and Zeba Sathar (2000). Infant Mortality in Pakistan: Trends and possible Explanations. Pakistan's Population Issues in the 21st Century. Population Association of Pakistan, Conference Proceedings Oct 24th – 26th, Karachi. 469-484

Khan, Aliya H. and Lubna Shahnaz (2001). Trade-off Patterns between Work and Schooling of Adolescents: Evidence from PIHS 1998-99. Pakistan Population Stabilization Prospects (2nd Conference Proceedings of Population Association of Pakistan, 31st Oct – 2nd Nov.). 207-231.

Khan, Shahrukh R. and Rehana Siddiqui (1996-1997). Landed Power and Rural Schooling in Pakistan. *Pakistan Journal of Applied Economics*, 13: 1, 127-142.

Khan, Shahrukh Rafi, Sajid Kazmi and Zainab Latif (2003). "A Comparative Institutional Analysis of Government, NGO and Private Rural Primary Schooling in Pakistan," Working Paper No: 2003-11, mimeo.

Khan, Shahrukh Rafi (1999). An Assessment of Basic Schooling under the Social Action Plan in Pakistan. *The Lahore Journal of Economics* 4: 1. 35-50.

Khan, Sharukh Rafi and Sajid Kazmi (1998). Structural Adjustment and Health in Pakistan. *The Lahore Journal of Economics* 3: 2, 1-19.

Kim, Jooseop, Harold Alderman, and Peter F. Orazem (1999). Can Private School Subsidies Increase Enrollment for the Poor? The Quetta Urban Fellowship Program. *The World Bank Economic Review*. 13: 3, 443-65.

Lawrence Haddad, Saroj Bhattarai, Maarten Immimnk, and Shubh Kumar (1996). Managing Interactions between Household Food Security and Preschooler Health. IFPRI, 2020 Vision. Washington, D.C. (Discussion Paper No. 16).

Marini, A. and M. Gragnolati (2003). Malnutrition and Poverty in Guatemala, Policy Research Working paper 2967, the World Bank.

Mahmood, M. Arshad (2001). Determinants of Growth Retardation in Pakistani Children under Five Years of Age. *The Pakistan Development Review* 40: 4, 1009-1031.

Najeeb, Qazi, Rehman and Rizwan Tahir (1995). Impact of Foreign Aid on Primary School Participation in Pakistan. *Pakistan Economic and Social Review* 33: 1&2, 103-115.

National Nutrition Survey (2001-2002). Report prepared by Pakistan Institute of Development Economics Islamabad and Micronutrient Laboratories, Aga Khan University and Medical Center, Karachi.

Qureshi, Sarfraz Khan, Hina Nazli,Ghulam Yasin Soomro (2001). Nutritional Status in Pakistan. Pakistan Institute of Development Economics, Islamabad. (MIMAP Technical Paper Series No. 8).

Rawlings, Laura B. (2004). "A New Approach to Social Assistance: Latin America's Experience with Conditional Cash Transfer Programs." Social Protection Discussion Series No. 0416, Human Development Network, World Bank, Washington D.C.

Sathar, Zeba, Cynthia B. Lloyd, and Minhaj ul Haque (2000). Children's Schooling and family Building Strategies: The Case of Pakistan. Pakistan's Population Issues in the 21st Century. Population Association of Pakistan, Conference Proceedings Oct 24th – 26th, Karachi. 431- 466.

Sawada, Yasuyuki (1997). "Human Capital Investments in Pakistan; Implications of Micro Evidence from Rural Households," *The Pakistan Development Review* 36: 4, 695-712.

Sawada, Yasuyuki and Michael Lokshin (2001). Household Schooling Decisions in Rural Pakistan. (World Bank Policy Research Working Paper No. 2541).

Shah, Gulzar H., Michael B. Toney and Brian L. Pitcher (1997). Consanguinity and Child Mortality: The Risk Faced By Families in Pakistan. Carolina Population Center. www.cpc.unc.edu/pubs/paa_papers/1997.

Shahnaz, Lubna and Abid A. Burki (2001). An empirical Analysis of Child Labour and Child Schooling in Rural and Urban Areas of Pakistan. Pakistan Population Stabilization Prospects (2nd Conference Proceedings of Population Association of Pakistan, 31st Oct – 2nd Nov.). 261-282.

United Nations (2003). Promoting the Millennium Development Goals in Asia and the Pacific, ESCAP/UNDP, UN, New York.

Wagstaff, Adam and Naoko Watanabe (n.d.). Socioeconomic Inequalities in Child Malnutrition in the Developing World. Washington, D. C. (World Bank Policy Research Working Paper No. 2434).

World Bank (2002). "Pakistan Poverty Assessment - Poverty in Pakistan: Vulnerabilities, Social Gaps and Rural Dynamics," World Bank, Poverty Reduction and Economic Management Sector Unit.

Wagstff, Adam (2000). "Socioeconomic Inequalities in Child Mortality: Comparisons across Nine Developing Countries," *Bulletin of the World Health Organization* 78: 1, 19-29.

Zahid, Ghulam Mustafa (1996). "Mother's Health-seeking Behaviour and Childhood Mortality in Pakistan," *The Pakistan Development Review* 35:4, 719-731.

Zaidi, Salman and Simon Hunt (n.d.). Schooling Sector Performance in the 1990s: Analysis from the PIHS. Federal Bureau of Statistics, Govt. of Pakistan, Islamabad.