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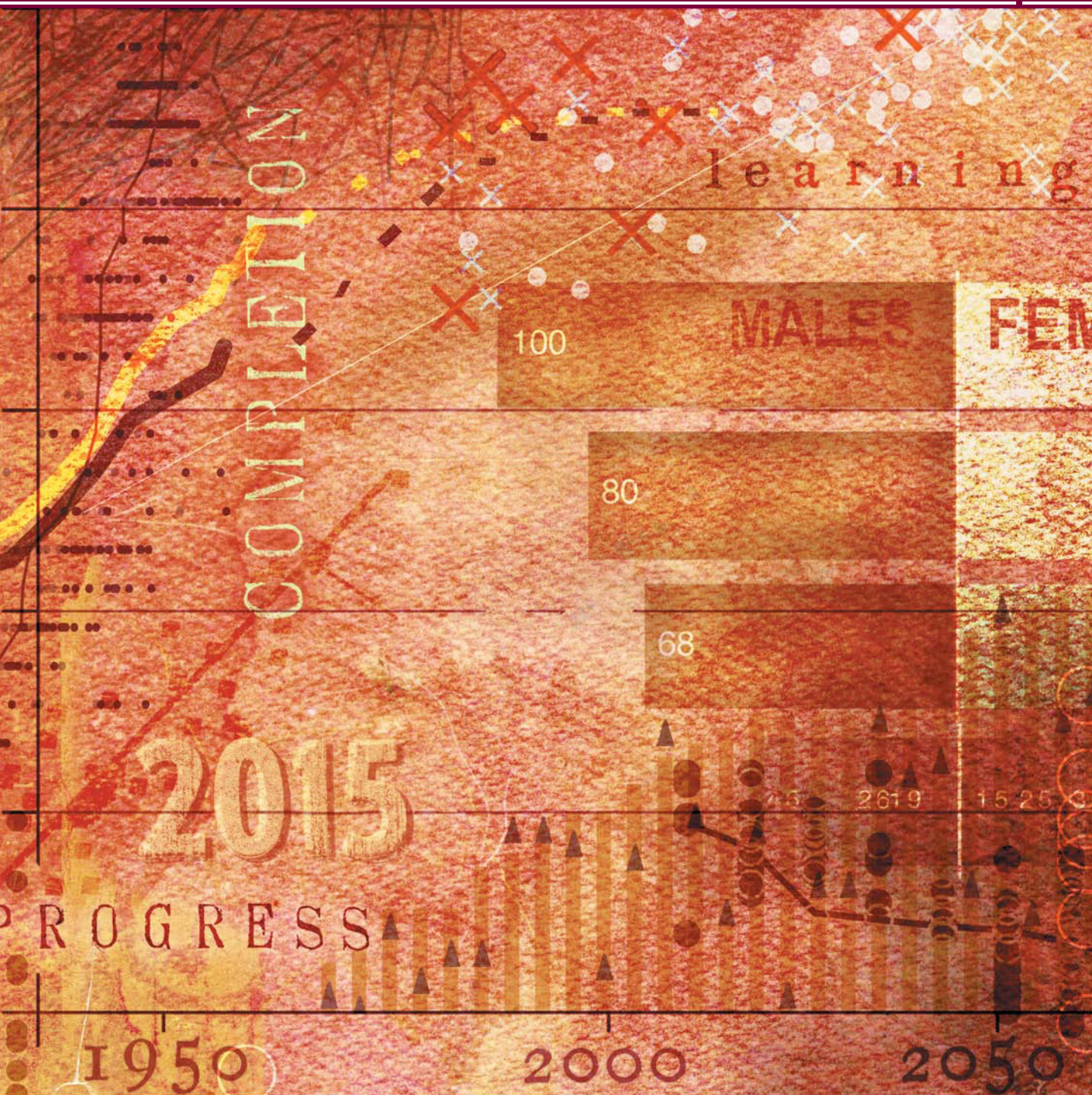
Educating the World's Children:

Patterns of Growth and Inequality



EDUCATION POLICY AND DATA CENTER
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Educating the World's Children:

Patterns of Growth and Inequality

Annababette Wils, Bidemi Carrol, and Karima Barrow

Foreword

Many developing countries have made dramatic progress over the past several decades to enroll their children in school. Still, too many children—especially girls and those in rural areas—are out of school or leave school before graduating from the primary level and have little opportunity to attend secondary school.

In comparison to the history of developed countries, many of which required 150 years to achieve schooling for most children, some developing countries will achieve this goal in less than 50 years. The world's leaders set the goal of achieving universal primary education by 2015. While many countries will attain the goal, many will not. All countries have the opportunity if they apply strong will, good leadership, and concrete planning, with collaboration from international donors, to use innovations and resources to enroll their students.

This study employs multiple sources of data and innovative analytic tools to project when 70 poor countries, given current and historical trends, are likely to achieve the goal of universal primary education. It identifies countries which are unlikely to reach universal primary entry and completion by 2015 but which are moving faster than the historic trend and so should be considered success stories and encouraged and supported. The report highlights as case studies several countries that have made the right choices and moved rapidly to attain universal education.

Many countries have the opportunity to make significant progress toward achieving the Millennium Development and Education for All goals of universal primary education by 2015. This year, 2005, we must make the added commitment and combine the knowledge we have with the political will, technologies, teacher preparation, materials development, and management systems to make more rapid progress.

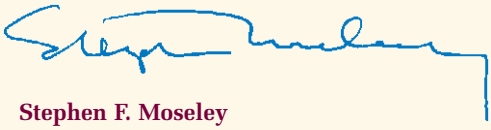
The latest meeting of the G-8 set in motion a leap forward to make available resources for the education goal over the coming decade. We must work together to ensure that these new pledges are committed by parliaments and congresses around the world and that a significant share of resources from debt relief, additional development assistance, and other contributions from communities and from businesses and

governments combine to meet the needs of education. The re-commitment of world leaders at the 2005 Millennium Summit will put us together on a path to a historic level of human, social, and economic development.

AED provides this data and analysis both to encourage all countries to maintain progress and to highlight the path for countries, donors, and development organizations to re-double efforts to achieve this goal. Education has always been the foundation for countries which have achieved social and economic development. It remains so for the future of all countries and all communities. We hope this publication will contribute to moving us toward that goal and the vision we share for greater peace and security. AED is extremely grateful for the opportunity to collaborate with countries across the globe in addressing education needs and development and for the support we receive from USAID and other donor agencies and foundations to provide that assistance.

This publication is made possible by the many donations to the Academy. The views and perspectives expressed are entirely those of the Academy and not of any donor organization or country.

We look forward to the continuing dialogue and collaboration which will enable us to achieve these goals.



Stephen F. Moseley
President and Chief Executive Officer

Academy for Educational Development

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Educating the World's Children: Patterns of Growth and Inequality has engaged the expertise and efforts of many people.

Annababette Wils, Director of Research at the Education Policy and Data Center (EPDC), is the principal author and innovator of several of the analytic tools employed in the report. Her co-authors are EPDC colleagues Bidemi Carrol, who wrote parts of the report and directed the selection and writing of the country case studies, and Karima Barrow, who directed and executed the collection and formatting of the data. Paul Gamill built the data system. Laurie Cameron checked the data and indicators. Interns Yijie Zhao, Stephanie Chantry, Sarah Oliver, Tamara Dorabawila, Zhimin Ma, as well as Tom Arnold, provided valuable assistance with data collection and development of the charts and graphs. Felicity Townsend, from DFID, contributed to the writing of the case studies and reviewing the report.

The projection trend methodology was developed by Annababette Wils jointly with Raymond O'Connor and Mark Somerville. Ash Hartwell and Yijie Zhao coauthored the paper with Annababette Wils that provided much of the information on inequality.

We are particularly appreciative of the numerous individuals who read early drafts of the report and/or participated in a workshop review and provided comments and suggestions: Luis Crouch, Robert Prouty, Nick Burnett, David Plank, Keith Henchliffe, Felicity Townsend, Audrey Schuh Jones, Kurt Moses, John Middleton, Wolfgang Lutz, Michael Bruneforth, Luc Lacougnolle and John Gillies.

This report acknowledges a debt to the pioneering work of Barbara Bruns, Alain Mingat, and Ramahatra Rakotomalala in *Achieving Universal Primary Education by 2015: A Chance for Every Child* and the UNESCO team that produces the annual EFA Monitoring Report.

Finally, without the continuing support and guidance from the U.S. Agency for International Development, particularly Greg Loos, and the Academy for Educational Development, especially Steve Moseley and Beverly Jones, this report and the work of the Center would not be possible.

George M. Ingram
Executive Director

Education Policy and Data Center

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Introduction

Nearly 90 million additional children entered school during the 1990s. Adult illiteracy rates declined worldwide from 37% in 1970 to 20% in 2000, and the gender gap in primary education is closing, with the ratio of girls to boys enrollment rising from 88% in 1990 to 94% in 2000. As we celebrate these successes, however, we must consider that more than 100 million children, some 60% of them girls, are not in a classroom. In Africa only a third of the children who enter actually complete primary school.

This report explores the progress that has been made and identifies where attention must be focused if we are to achieve the goal of universal primary completion.

The report focuses on four areas:

1. Common patterns in education growth among the world's low-income countries
2. Projections showing when countries will reach universal primary school access and completion. Has the global focus on education in recent decades coincided with a noticeable acceleration in long-term growth trends?
3. Population groups that are not keeping up with national trends
4. The relationship between school entry, retention, and learning

This analysis employs new methodology and multiple data sources to build on earlier studies and EFA monitoring reports to estimate completion dates. The report examines patterns of inequalities in attendance and completion in various countries. The results offer an additional understanding of the progress toward universal primary education and the challenges that lie ahead.

The report uses a non-linear projection methodology to estimate when countries are likely to achieve universal primary school entry and completion. Widely available education data from household surveys and population censuses enable calculation of long-term trends and investigation of the extent of educational inequality within countries. Several simple but effective new indicators and tools help monitor progress and identify out-of-school children. The report includes projections for 70 mostly poor, IDA countries, and case studies of countries with distinctive growth patterns.

Most of the data are from household surveys and population censuses, principally from USAID-sponsored Demographic and Health Surveys (DHS) and UNICEF-sponsored Multiple Indicators Cluster Surveys (MICS). These sources can provide education trends, information on education inequality within countries, and rates for intake, attendance, and primary school completion in the year of the survey. All of the data used are from 1999 or later (See appendix 2 for a list of data sources for each country).

Household survey data on school attendance rates have been used before to complement administrative data in some major publications, such as the EFA Monitoring Report and the UIS Annual Digest. We used them to explore differential access to education among population sub-groups, long-term education trends, and the gaps between access and completion.

Morocco

Political will driving education reforms

CASE STUDY

The Kingdom of Morocco, one of the most open countries in the Middle East and North Africa region, initiated a series of political and social reforms in the 1990s, including multi-party parliamentary elections.

The prioritization and modernization of education was a large part of the social reform project. As part of this process, a National Charter on Education was developed with input from key stakeholders, and 1999-2009 was declared the national decade of education. In response to the findings and recommendations of the Charter, the government, with the support of key funding agencies such as the World Bank, the European Union and USAID, has embarked on a series of initiatives to reduce disparities in access and retention by gender, urban-rural residence, and income, and to improve the quality of education. One of the main vehicles for these initiatives was the Basic Education Project of the government's Social Priorities Program (BAJ), which targeted the most disadvantaged children in Morocco.

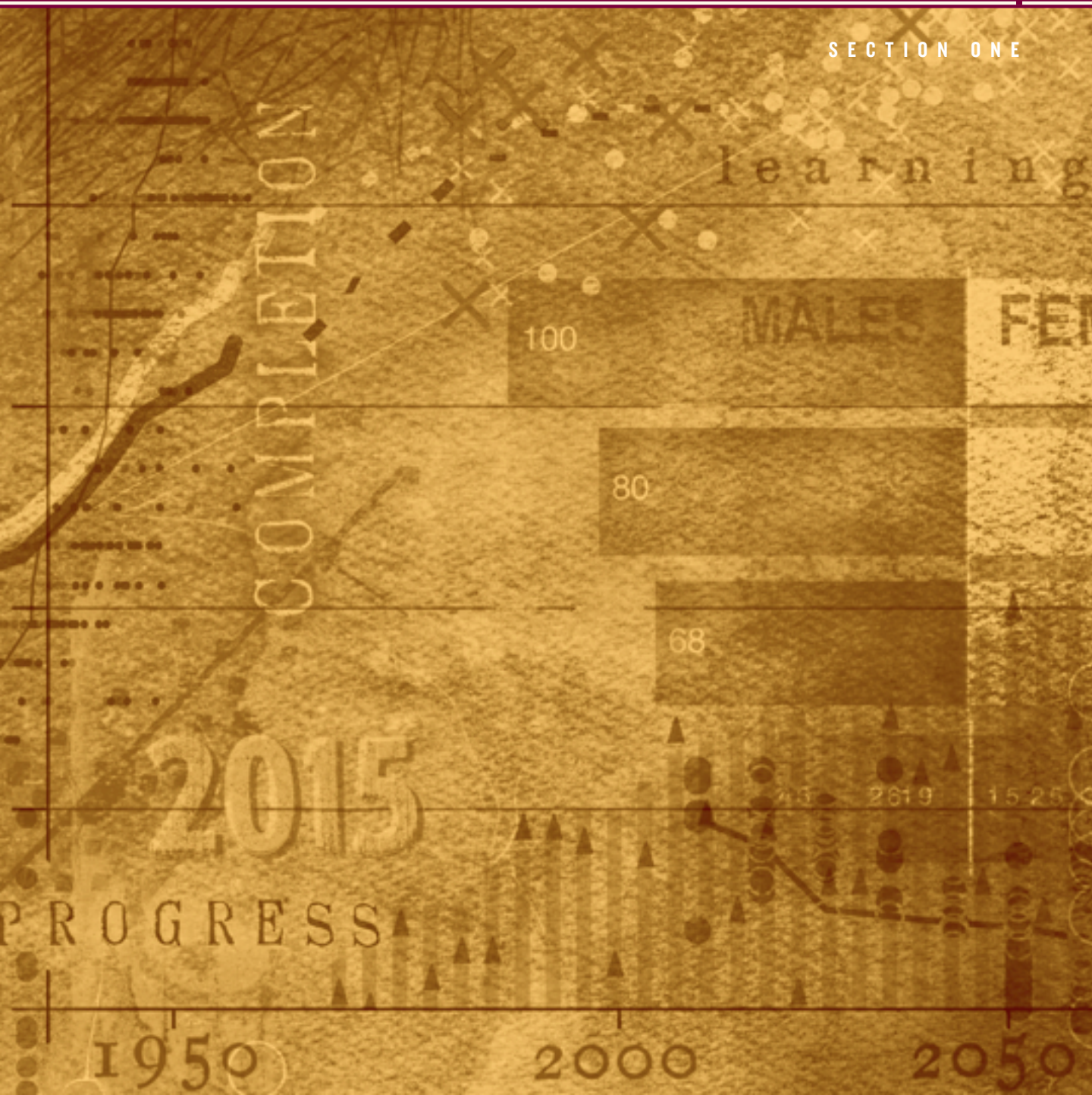
The government embarked on a social mobilization campaign aimed at raising the attendance of girls, by promoting awareness among parents in rural areas about the importance of enrolling girls in school. In addition, the costs to parents of enrolling girls in school were reduced by providing text books and school supplies for the most disadvantaged, particularly girls. Schools were built in many villages and teachers and head teachers were trained. These initiatives were deemed to be successful as primary enrollments increased significantly. When the Charter was drafted in the late nineties, the net enrollment rate for girls was about 67%; by 2002/03, the net enrollment rate for girls was 87%. The gender parity index improved from 0.84 in 1998/99 to 0.94 in 2002/03. Once girls enter school, they perform well. They have a lower repetition rate than boys and a higher rate of transition to secondary school.

If the rapid progress in enrollments experienced over the last decade continues, Morocco is projected to have one of the fastest growths in completion rates among countries in our sample. Furthermore, even as the government improves on the primary sector, projects are already underway to increase access in the secondary sector.

Quality of education remains an issue and is being addressed through reforms in teacher training, decentralization, administrative capacity, and the curriculum.

Fifty Years of Education Growth

SECTION ONE



Knowing the patterns of education growth is critical to projecting future trends. The trend graphs show some clear patterns. Despite temporary setbacks, such as during socio-political upheavals and war, the data show persistent growth in the number of children being educated. However, growth rates differ widely, and reaching the last children in any country is particularly difficult.

Most of the 70 countries included in this study are low-income, IDA eligible, with per-capita incomes under $1500 a year. The presentation on the following pages provides a unique view of 50 years of education growth in developing countries around the world. The actual growth trends from 1950 to 2000 form the basis for projecting when countries will reach the goal of universal primary school completion.

Trend graphs, such as that shown in Figure 1 for Guatemala, have been produced for each of the 70 countries (Figure 2). The historical trends (for which there is actual data) are shown in solid lines—blue for primary school entry[1] and maroon for portion who will complete primary school.[2] These data comprise the historical interval from approximately 1950-2000, a long period of significant school expansion in many of the 70 countries. Extrapolations from the historical trends to 2050 are shown in dashed lines. The average growth path is estimated over the historical and projected period, taking into account that the path does not appear to be linear, but rather, s-shaped (such s-shaped growth is characteristic of social innovations, as established by Hagerstrand, 1967). The methods for projections and estimation of the growth path are explained in Boxes 1 and 2. The graphs are arranged in order of education expansion speed—with fastest countries shown first and the slowest presented last.

Education grows

The trend graphs, developed for this report, dramatically illustrate the worldwide growth in the education of children and the country-by-country disparities as growth in some poor countries has accelerated and in others it has stumbled. More than anything else, the series of graphs strikingly show the consistency of education increases throughout the developing world. For half a century, in all countries the historical trend has been toward universal primary school access and completion. Some countries even attained these goals by 2000. Large differences in the levels of primary school entry and primary school completion clearly remain. While a few countries reached 100 percent primary school completion by the year 2000, others, such as Niger at only 16 percent, lag far behind. The slopes of the curves also vary, with some

1 *Defined as the proportion of people in a particular birth cohort who enter primary school by age 14.*

2 *Defined as the proportion of people in a particular birth cohort who finish primary school by age 19.*

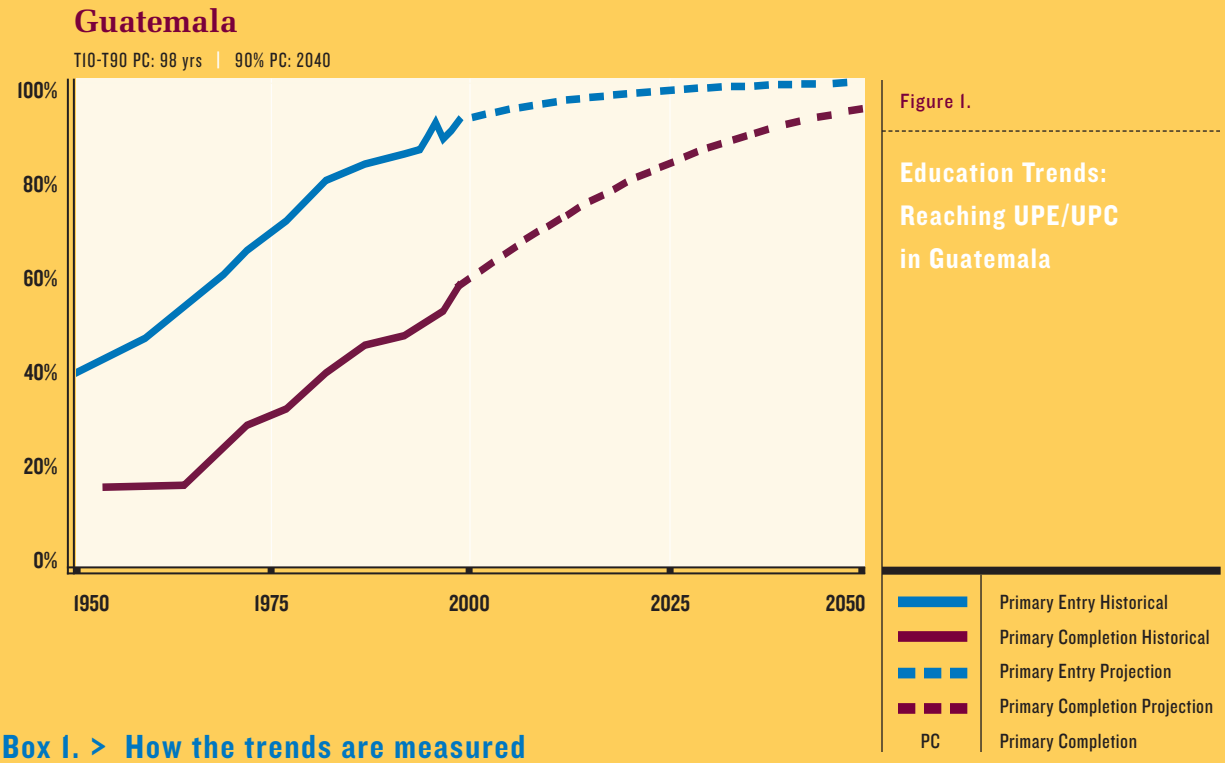


Figure I.

Education Trends: Reaching UPE/UPC in Guatemala

Box I. > How the trends are measured

The trends are measured using age-specific education attainment data. Most people enter primary, finish primary, and enter secondary within reasonably well-defined age intervals. For example, most primary school entry occurs between the ages of 6 and 10 (in some countries up to age 14). Because of this, one can use the educational attainment of each age group to approximate the schooling patterns when that age group was of the age to be entering primary or completing primary. Thus, educational attainment for the current population from ages 15 to 65 provides a time series of schooling trends for 50 years.

For primary school entry trends, the proportion of each age cohort that has had access to at least some primary schooling is used as a measure of the primary school entry pattern when that age cohort was 14 years old (to account for over-age school entry). Similarly, for primary school completion trends, the proportion of each age cohort that has at least completed primary school is used as a measure of the portion completing primary school when that cohort was 19 years old. While these ages may seem high, the best matches between educational attainment by age and rates for entry and primary completion in the survey year are found at these ages.

These measures are proxies, but not necessarily less accurate than commonly used measures such as gross and net enrollment rates, which combine the effect of school entry, retention, and repetition all in one indicator. Two advantages of using cohort education attainment data as a proxy for primary school entry or completion are 1) a long time series of 50 years or more is readily available for a large number of countries and 2) they provide a direct measure of an actual output of school systems (e.g. completers).

T10-90 (top left of graph) measures the number of years taken (or projected) to go from 10% primary completion to 90% primary completion (for Guatemala, 98 years). 90% PC indicates the year in which the country is projected to reach 90% primary completion (for Guatemala, 2040). For a few countries the portion completing primary was not available and in those cases secondary entry trends are shown instead.

countries showing rather steep growth and others more gradual increases. There are a few countries with periods of stagnation, such as Ghana, Guinea, Cambodia, Angola, Lao PDR, and Sierra Leone, but no country has experienced a sustained decline.

Researchers have observed consistent education growth for at least three decades, from Meyer et al. in 1977 and Craig in 1981 to Wils in 2002 and Clemens in 2004. A number of the theories to explain the growth pattern are summarized in "The World's Educational Revolution, 1950-1970" (Meyer et al., 1977:242-245).

Whatever the contextual factors, whether government policy, external support, or demand from the economy, it is individual parents and children who decide whether the benefits of the schooling system are worth the investment and opportunity costs. Schooling can only grow if parents are motivated to provide their children with education and the children are motivated to stay in school. As long as having an education is viewed as better than illiteracy, educational levels will improve, however gradually, even in more rural and under-developed regions. In this view, education grows because it is a dominant social innovation; people pursue it because education improves one's opportunities and prospects.

Growth rates differ by large margins

Even in countries with fast-growing educational trends, it takes at least six decades to produce anything close to basic education for all when a country starts from nearly zero. The trend graphs show a wide spread in the number of years required to approach universal primary entry (UPE) and universal primary completion (UPC). The measure shown in the graphs is the estimated time to proceed from 10% primary school completion to 90% (T10-90). A handful of countries, including Jordan, Gabon, and Indonesia, will have made the leap in about 60 years, whereas the average interval for the 70 countries studied is 88 years. The fastest growth countries already have achieved 90%UPC. The slowest countries, including the Democratic Republic of Congo, Guyana, Mongolia, Brazil, and Mexico, will take more than 120 years to reach the same level if their growth rates do not improve.

Clearly, understanding why some countries experience more rapid education growth than others would be of considerable value. Recent international reports have suggested numerous factors are involved: expanding the demand for schooling by educating mothers and reducing the direct and indirect costs to families (such as by the elimination

of school fees); increasing the number of schools; expanding pre- and post-primary education facilities; increasing the quality of education by encouraging child-based learning and better teacher training; providing targeted offerings for at-risk groups, such as special programs for girls or children in post-conflict regions (Millennium Report, 2005; EFA Monitoring Reports 2002, 2003/4, 2005). To finance these initiatives, the reports say, more national and international resources are required.

To explore possible sources of more rapid education growth, this report presents five brief case studies of countries that have made exceptionally fast progress in recent decades or have been successful in eliminating inequality.

Socio-political context and policy matters

The trends shown in the graphs generally describe smooth upward growth rates, but a number of wiggles, bumps, dips, and jumps in the lines disclose irregularities that may be traced to changes in the overall circumstance of a country, education policy, or the commitment of resources for education. For example, Gabon, Eritrea, Tanzania, and Zimbabwe appeared to follow a smooth growth path for most of the last half of the twentieth century, but had exceptionally high growth rates (shown by a very steep climb in the curve) during one or two decades. Conversely, Ghana, Guinea, Cambodia, Angola, Lao PDR, and Sierra Leone all experienced declines that correspond to periods of war, repression, or gross mismanagement in those countries.[3]

Reaching the last children is more difficult

The graphs also show that even in countries with remarkably fast primary school entry the trend curves flatten and growth slows as the countries approach universal schooling. Therefore, the rate of improvements in access and completion will depend on where the country is on the enrollment curve. Reaching the last ten percent of children and keeping them in school is always a difficult challenge.

For those countries that are near 90% enrollment, new approaches and resources will be needed to get the last 10% of children into schools. Research on capturing the remaining groups shows they are ever more difficult to reach—in remote areas, extremely poor, from an ethnic minority, disabled, or otherwise marginalized (EFA Monitoring 2003/4:125-34; Vandermoortele, 2000; Wils et al., 2005).

3 *In Cambodia the decline corresponds to the time of the Pol Pot regime; in Guinea to the repressive regime of Sekou Toure; in Sierra Leone to periods of economic mismanagement, political instability, and war; in Angola to the civil war; in Ghana, the 1970s were a period of unrest marked by numerous coups; and in Lao PDR, there was a repressive regime and population flight.*

Box 2. > Estimating the speed of the education growth path—T10-90

The trends for the 70 countries in the sample show differences in the average growth rates and a tapering of growth as countries approach universal primary entry and completion. Like most social innovations, education grows as an s-shaped curve (explored in, for example, Hagerstrand, 1967). To measure how fast a country's education system is growing, it is necessary to take into account this non-linear shape. This has been done by applying a log function to all of the historical education levels to transform the s-shaped curve into a linear one:

$$ln(1/v-1),$$

where v is the historical value, and running a regression on these linear curves. From the regression results, we calculate how long the country's path is to transition from low to high schooling levels. Specifically, a country's "speed" is measured as the estimated time needed to transition from 10% of children entering or finishing primary school, to 90% of the children entering or finishing primary school. Our shorthand for this interval is T10-90, and it is depicted in the education attainment graphs.

In those countries where the T10 or T90 (year of 10% or 90% school entry or completion) fall outside the historical rates, we use the projected values. The calculation of projected values is explained in box 5.

However, with the right interventions and resources, it is possible to bring the remaining children into school, although some studies have shown new approaches and models may be required.[4] Recruitment of teachers from within the community, on-the-job training, literacy classes for parents, community participation in education, small classrooms, child-based learning, and flexible school schedules are among the tactics that have proved successful in reaching underserved groups.

Relationship between entry and completion

The trend graphs show primary school entry (blue lines) and primary school completion (maroon lines). The vertical difference between the two curves approximates the dropout rate at any given time.

Two patterns emerge concerning dropouts. In the first, there are large differentials between primary school entry and primary school completion, for example in Uganda, Malawi, Guatemala, and Cambodia. In the second, the two curves are very close together, implying that most children who enter primary school actually finish. Nepal, Nigeria, and India are among those with low dropout rates. Both high and low dropout rates tend

4 *See "Toward Universal Primary Education: Investments, Incentives, and Institutions" by Nancy Birdsall et al., UN Millennium Project 2005.*

to be persistent, which suggests there may be structural factors in some countries that cause children who start school to drop out, while in others they are able to complete their basic education.

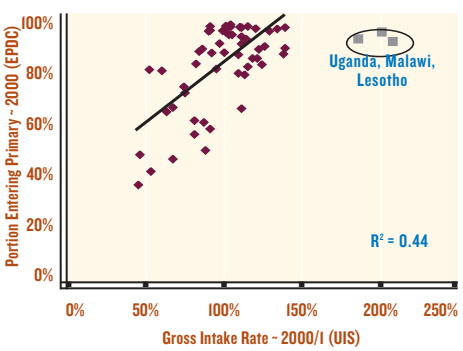
The most extreme cases portray, on the one hand, countries where expansion of access to schools is coupled with high completion and, on the other, countries where universal primary education is pursued (whether consciously or not) in two distinct phases: school entry for all first, followed by completion for all over a longer time.

Box 3. > Are the household survey and census data comparable to administrative sources?

The primary entry and primary completion measures used here for the trends correspond well to values for similar indicators measured by administrative data. That indicates the trends shown in this report can be used as a proxy for trends of entry rates and completion rates.

A comparison of the gross intake rate (GIR) and the portion of the school age cohort entering primary school in the year of the household survey (graph below left) shows that the correspondence is reasonable. Most of the difference occurs where GIR is higher than 100 because there is a backlog of previously unreached older children entering school. The proportion of the school-age cohort entering primary school cannot exceed 100.

Three countries with exceedingly high GIR related to the elimination of school fees or post-war reconstruction are colored grey.
The correspondence between primary completion rates (PCR) and the proportion of the school-age cohort completing primary school is even better than for intake, and is shown in the graph below right.



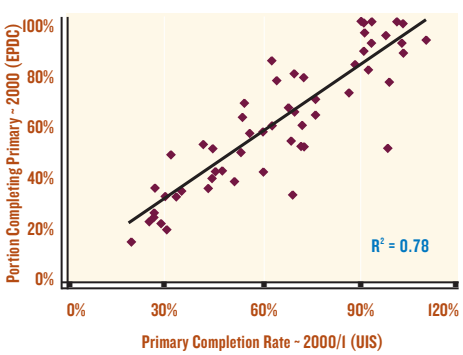


Figure 2.

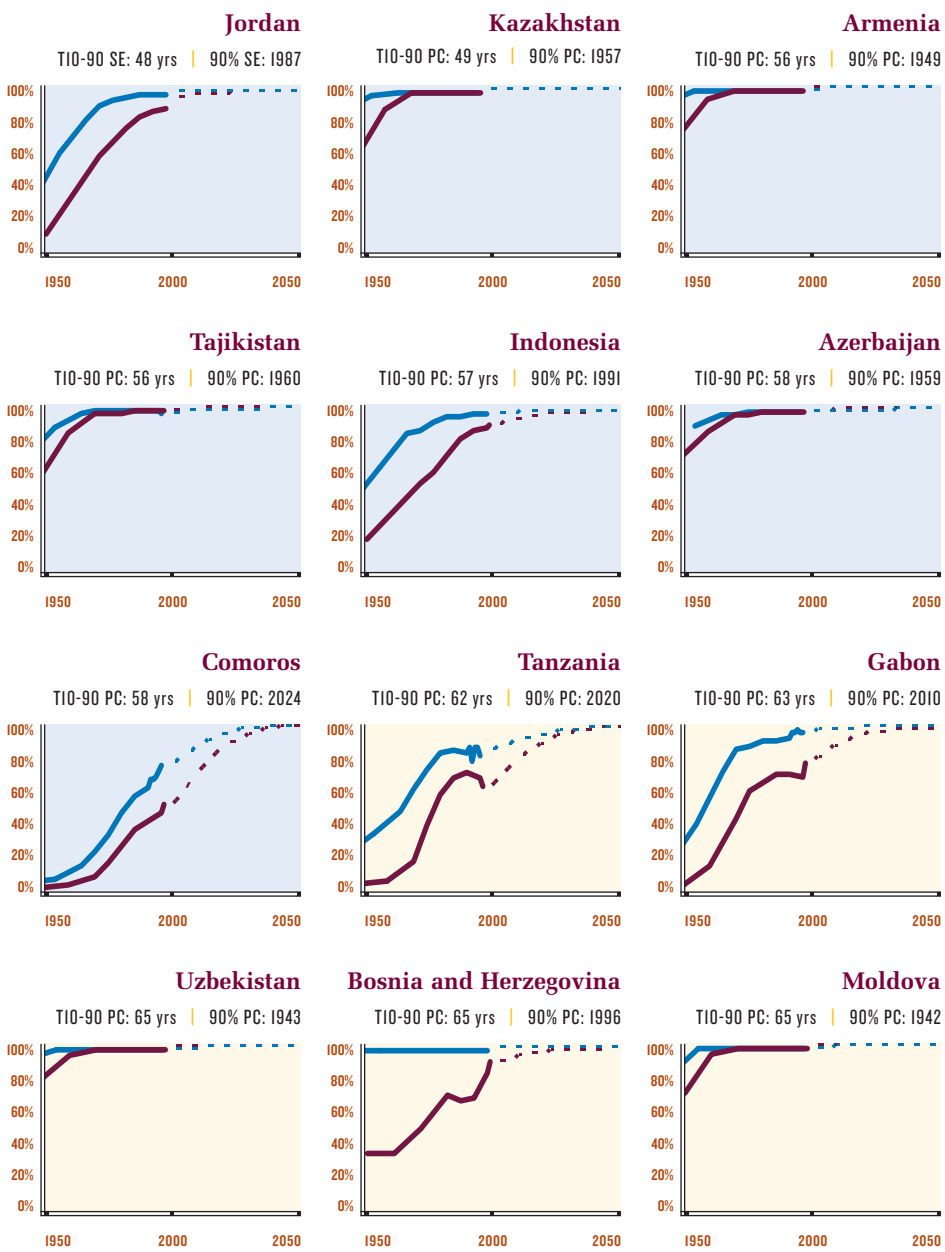
Education Trends: Reaching UPE | UPC in 70 countries

Fast Countries

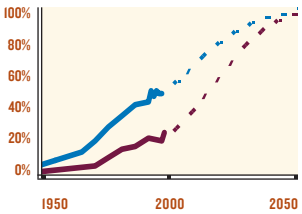
T10-90 PC below one standard deviation from the mean.

Average Countries

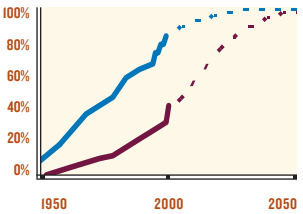
T10-90 PC within one standard deviation from the mean.



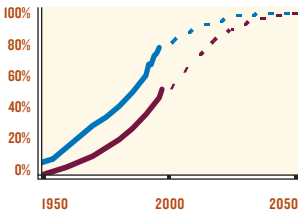
Ethiopia
TIO-90 PC: 66 yrs | 90% PC: 2040



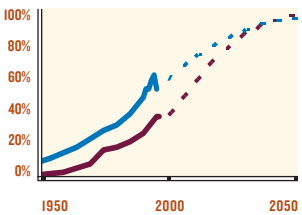
Morocco
TIO-90 PC: 66 yrs | 90% PC: 2031



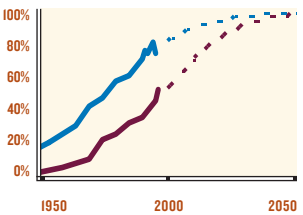
Nepal
TIO-90 PC: 67 yrs | 90% PC: 2026



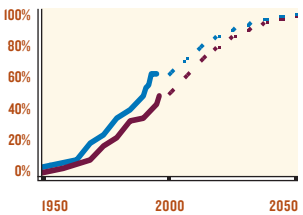
Guinea-Bissau
TIO-90 PC: 67 yrs | 90% PC: 2034



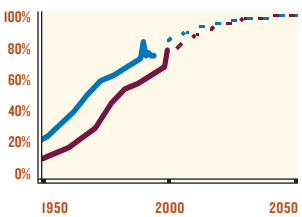
Sudan
TIO-90 PC: 67 yrs | 90% PC: 2027



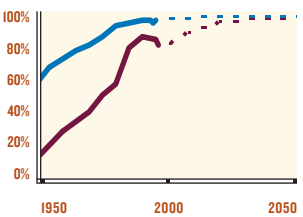
The Gambia
TIO-90 PC: 69 yrs | 90% PC: 2032



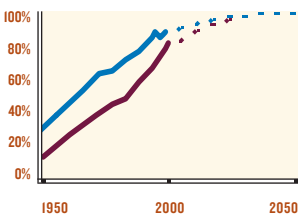
Nigeria
TIO-90 PC: 70 yrs | 90% PC: 2016



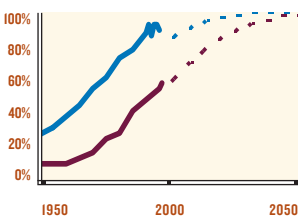
Zimbabwe
TIO-90 PC: 72 yrs | 90% PC: 2007



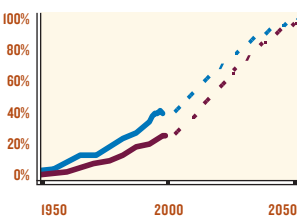
Egypt
TIO-90 PC: 72 yrs | 90% PC: 2013



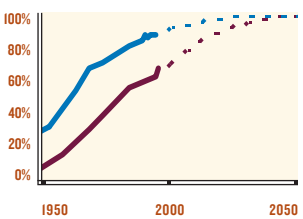
Haiti
TIO-90 PC: 73 yrs | 90% PC: 2029

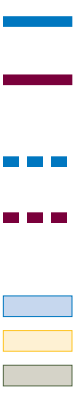


Burkina Faso
TIO-90 PC: 73 yrs | 90% PC: 2049



Cameroon
TIO-90 PC: 74 yrs | 90% PC: 2020





Primary Entry Historical
Primary Completion Historical
Primary Entry Projection
Primary Completion Projection
Fast Countries
Average Countries
Slow Countries

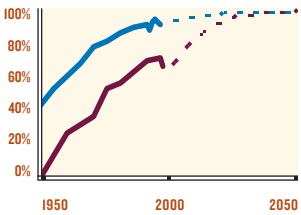
PC Primary Completion
SE Secondary Entry

Average Countries

T10-90 PC within one standard deviation from the mean.

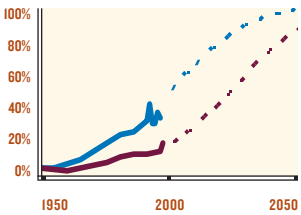
Swaziland

T10-90 PC: 74 yrs | 90% PC: 2016



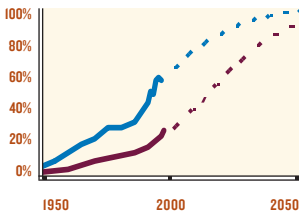
Niger

T10-90 PC: 76 yrs | 90% PC: 2056



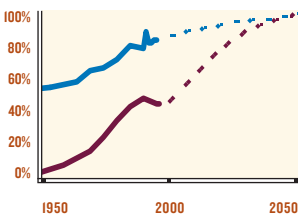
Chad

T10-90 PC: 76 yrs | 90% PC: 2047



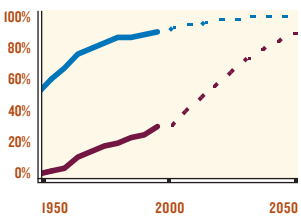
Mauritania

T10-90 PC: 76 yrs | 90% PC: 2035



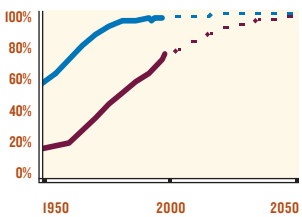
Vanuatu

T10-90 SE: 77 yrs | 90% SE: 2048



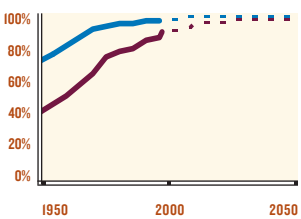
Bolivia

T10-90 PC: 80 yrs | 90% PC: 2017



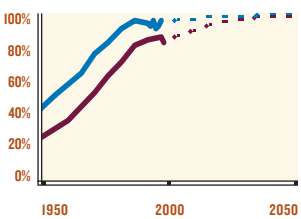
Peru

T10-90 PC: 80 yrs | 90% PC: 1995



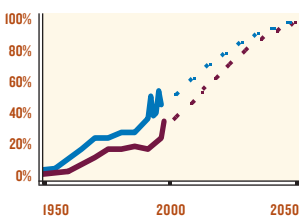
Sao Tome and Principe

T10-90 PC: 80 yrs | 90% PC: 2008



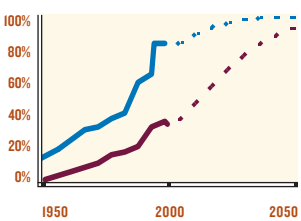
Guinea

T10-90 PC: 80 yrs | 90% PC: 2043



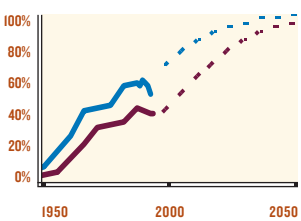
Eritrea

T10-90 PC: 81 yrs | 90% PC: 2043



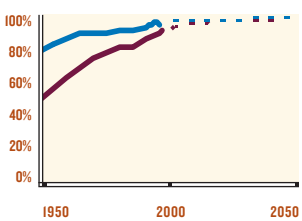
Cote d'Ivoire

T10-90 PC: 81 yrs | 90% PC: 2039

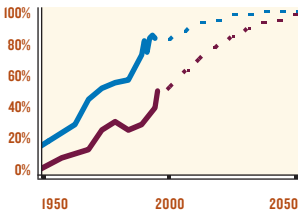


Sri Lanka

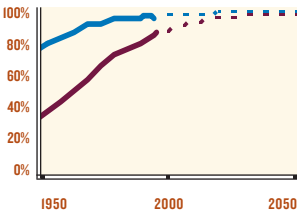
T10-90 PC: 82 yrs | 90% PC: 1989



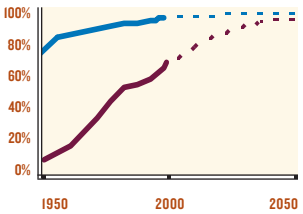
Togo
TIO-90 PC: 82 yrs | 90% PC: 2034



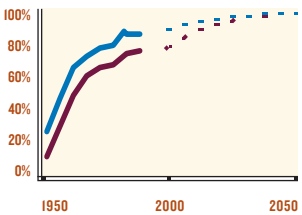
Colombia
TIO-90 PC: 83 yrs | 90% PC: 2003



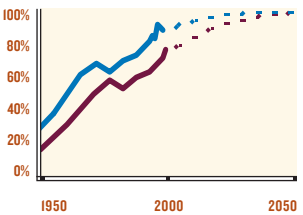
Dominican Republic
TIO-90 PC: 83 yrs | 90% PC: 2023



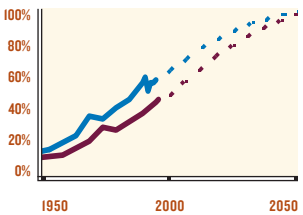
Solomon Islands
TIO-90 PC: 84 yrs | 90% PC: 2015



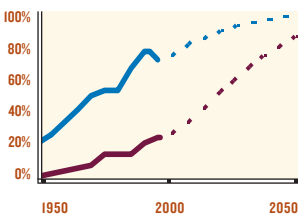
Ghana
TIO-90 PC: 88 yrs | 90% PC: 2020



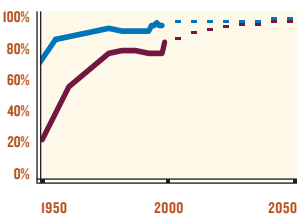
Senegal
TIO-90 PC: 89 yrs | 90% PC: 2046



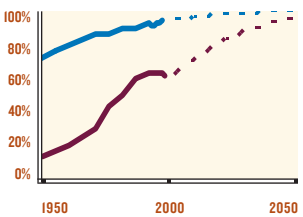
Burundi
TIO-90 PC: 90 yrs | 90% PC: 2057



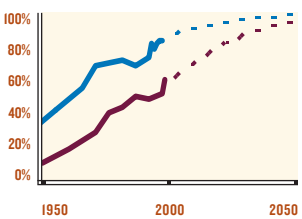
Vietnam
TIO-90 PC: 91 yrs | 90% PC: 2007



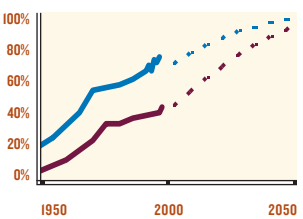
Lesotho
TIO-90 PC: 94 yrs | 90% PC: 2034



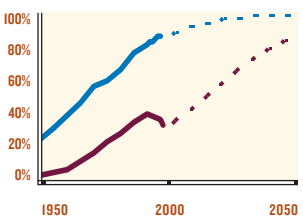
Lao PDR
TIO-90 PC: 95 yrs | 90% PC: 2034



Central African Republic
TIO-90 PC: 96 yrs | 90% PC: 2049



Rwanda
TIO-90 PC: 97 yrs | 90% PC: 2055



Primary Entry Historical

Primary Completion Historical

Primary Entry Projection

Primary Completion Projection

Fast Countries

Average Countries

Slow Countries

PC Primary Completion

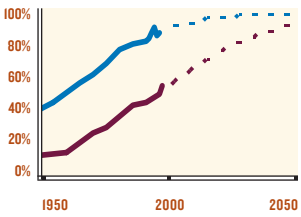
SE Secondary Entry

Average Countries

T10-90 PC within one standard deviation from the mean.

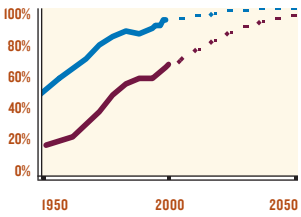
Guatemala

T10-90 PC: 98 yrs | 90% PC: 2040



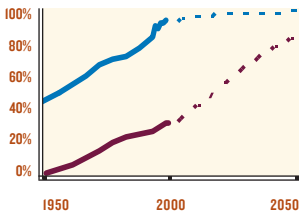
Nicaragua

T10-90 PC: 98 yrs | 90% PC: 2033



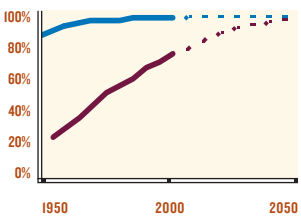
Malawi

T10-90 PC: 99 yrs | 90% PC: 2056



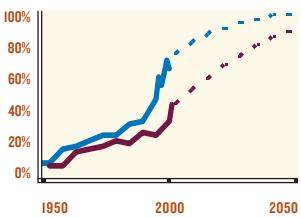
Philippines

T10-90 SE: 99 yrs | 90% SE: 2021



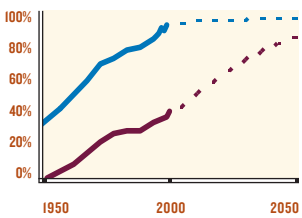
Sierra Leone

T10-90 PC: 99 yrs | 90% PC: 2050



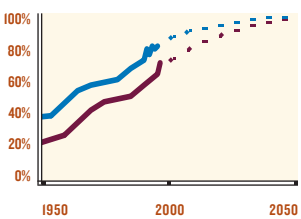
Uganda

T10-90 PC: 99 yrs | 90% PC: 2048



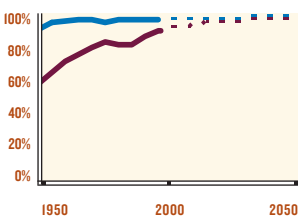
India

T10-90 PC: 100 yrs | 90% PC: 2027



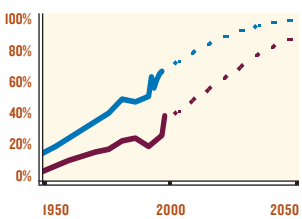
Guyana

T10-90 PC: 104 yrs | 90% PC: 1991



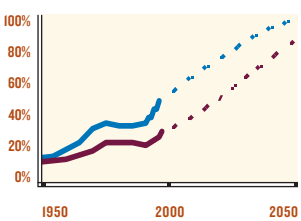
Benin

T10-90 PC: 105 yrs | 90% PC: 2060



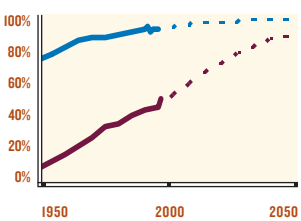
Mali

T10-90 PC: 105 yrs | 90% PC: 2073



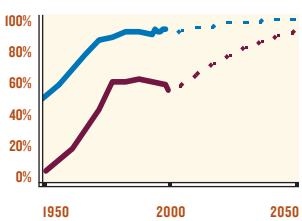
Myanmar

T10-90 PC: 108 yrs | 90% PC: 2046



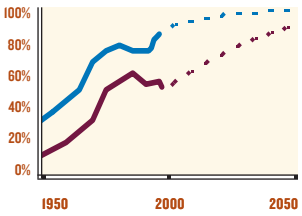
Zambia

T10-90 PC: 109 yrs | 90% PC: 2044



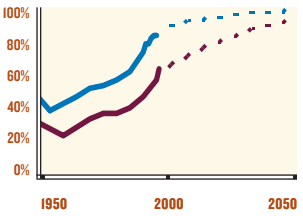
Angola

T10-90 PC: 115 yrs | 90% PC: 2049



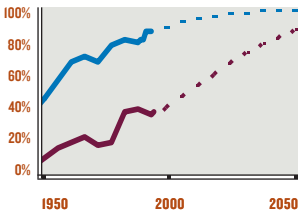
Bangladesh

T10-90 PC: 116 yrs | 90% PC: 2042



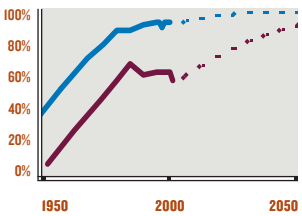
Cambodia

T10-90 PC: 117 yrs | 90% PC: 2059



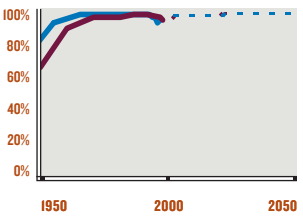
Kenya

T10-90 PC: 118 yrs | 90% PC: 2046



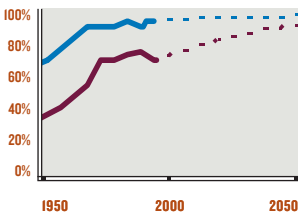
Mongolia

T10-90 PC: 131 yrs | 90% PC: 1953



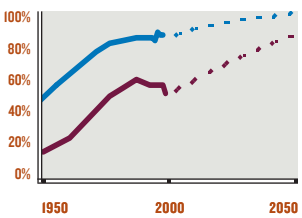
Suriname

T10-90 PC: 135 yrs | 90% PC: 2034



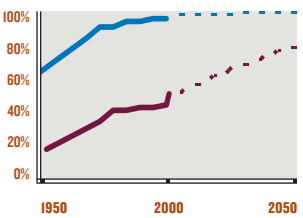
DR Congo

T10-90 PC: 139 yrs | 90% PC: 2066



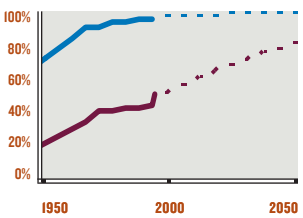
Brazil

T10-90 SE: 148 yrs | 90% SE: 2074



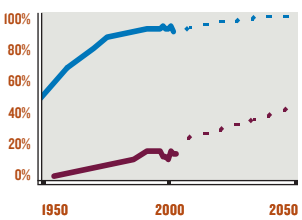
Mexico

T10-90 PC: 164 yrs | 90% PC: 2075



Honduras

T10-90 SE: 216 yrs | 90% SE: 2080



Slow Countries

T10-90 PC above one standard deviation from the mean.

CASE STUDY

Nepal

Steady Progress, Uncertain Future

Nepal, with a GDP per capita of only $240, is one of the poorest countries in South Asia. Despite strong economic growth rates over the last decade, poverty remains high especially in the rural and mountain areas. Furthermore, recent progress in the economy is threatened by civil conflict, which has worsened since 2001.

Nepal has made significant strides in expanding enrollments over the last 50 years, and has one of the fastest growing school entry rates among the countries considered. Schooling has been unequally distributed, and only in more recent years has schooling levels for girls increased. Within the space of 15 years gross enrollment rates for girls grew from 85% in 1990 to 124% in 2004. Moreover, the survival rates for girls are higher than those of boys.

From the first 5-year education plan (1956-61) to the tenth and most recent plan (2002-2007), Nepalese educators have demonstrated a willingness to propose policies and programs to improve the education sector.

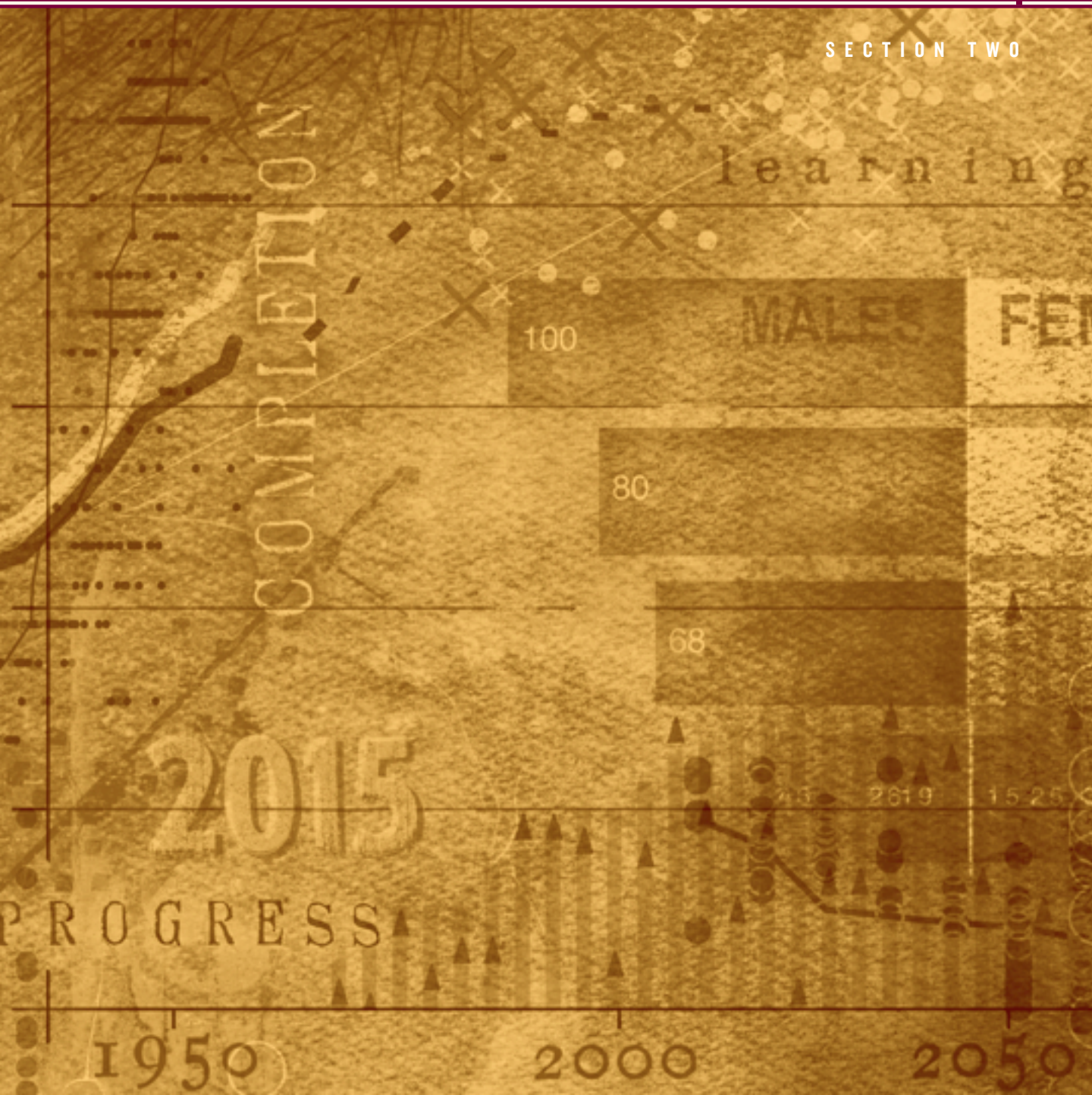
Nepal's Cheli-Beti program, which started in 1981 as part of a larger rural development project (The Seti Project), is often cited as an innovation in promoting girls' education and empowerment. The uniqueness of Cheli-Beti is that it was part of a comprehensive program to develop rural communities, with the participation of members of the communities. Cheli-Beti has become the model for other non-formal literacy projects, and its success inspired the Basic Primary Education Project (BPEP) in 1992.

Through BPEP, the Nepalese government, supported by various international agencies, has focused on improving access to and quality of primary education for all children. Key incentives introduced in the last decade include: free primary education for girls in the most disadvantaged districts, free text books for girls in primary school, literacy programs for women, recruitment and training of female teachers, partnering with communities to provide early child care and to build schools within walking distance, and non-formal education programs for women and young girls who missed out on school.

Despite the progress made in expanding education over the last two decades, many challenges remain. Many children, especially girls from poor and rural backgrounds and those from low castes, still do not have access to school. Gender and regional inequities remain in all aspects of the education system, including teacher recruitment—only 30% of teachers are female. Similarly, quality remains an issue as only 16% of teachers in primary school are trained. Furthermore, there is a risk that with the worsening political situation, progress may stall.

Projected Trends

SECTION TWO



The educational attainment trends shown in the trend-graph series can be used to make projections. The projections indicate that, with present trends, most of the 70 countries analyzed will reach 80% primary school completion by 2025. An acceleration of trends to one of the fastest paces observed in the dataset (Indonesia) would reduce the time to completion for some, but not all, countries. Some countries will take an additional 30 years from 2005 to reach 80% primary school completion, even at the fastest historical growth rate. Many countries that will not meet the Millennium Development Goal (MDG) deadline are nonetheless experiencing rapid growth.

The trend graphs can be used to make projections that will help policy makers and educators better target policies and resources. The projections are a useful tool to show when most children will complete primary school and how long it will take to close the gap. There are some countries that will miss the 2015 EFA/MDG goal of universal primary school completion but are on course to achieve it within the following decade, by 2025. In other countries, if present trends continue, the goal will not be reached until 2035, 2045, or even beyond 2070. The policies and international support needed by the countries with slowest growth are surely different from those countries that are only marginally off track.

Two projections are shown; one for the year in which 80%, 90%, and 95% primary school *entry* will be attained according to present trends (Figure 3a) and the other for the year in which primary school *completion* will be attained (Figure 3b). The year 2015 is noted. The illustration should not be misconstrued as a suggestion that the last 5% or 10% or 20% of children be dropped from the EFA/MDG effort. All children should go to school. However, the trend graphs from the previous section show that once entry and completion rates reach 80% or 90%, there is a strong tendency for the educational system to continue to grow to completion with virtually all children attending school.

The graphs are based on projections that assume no change of long-term trends from 2005 onward. Improved education policies, better targeting of resources, increased political will, and/or increased institutional capacity could speed up the pace.

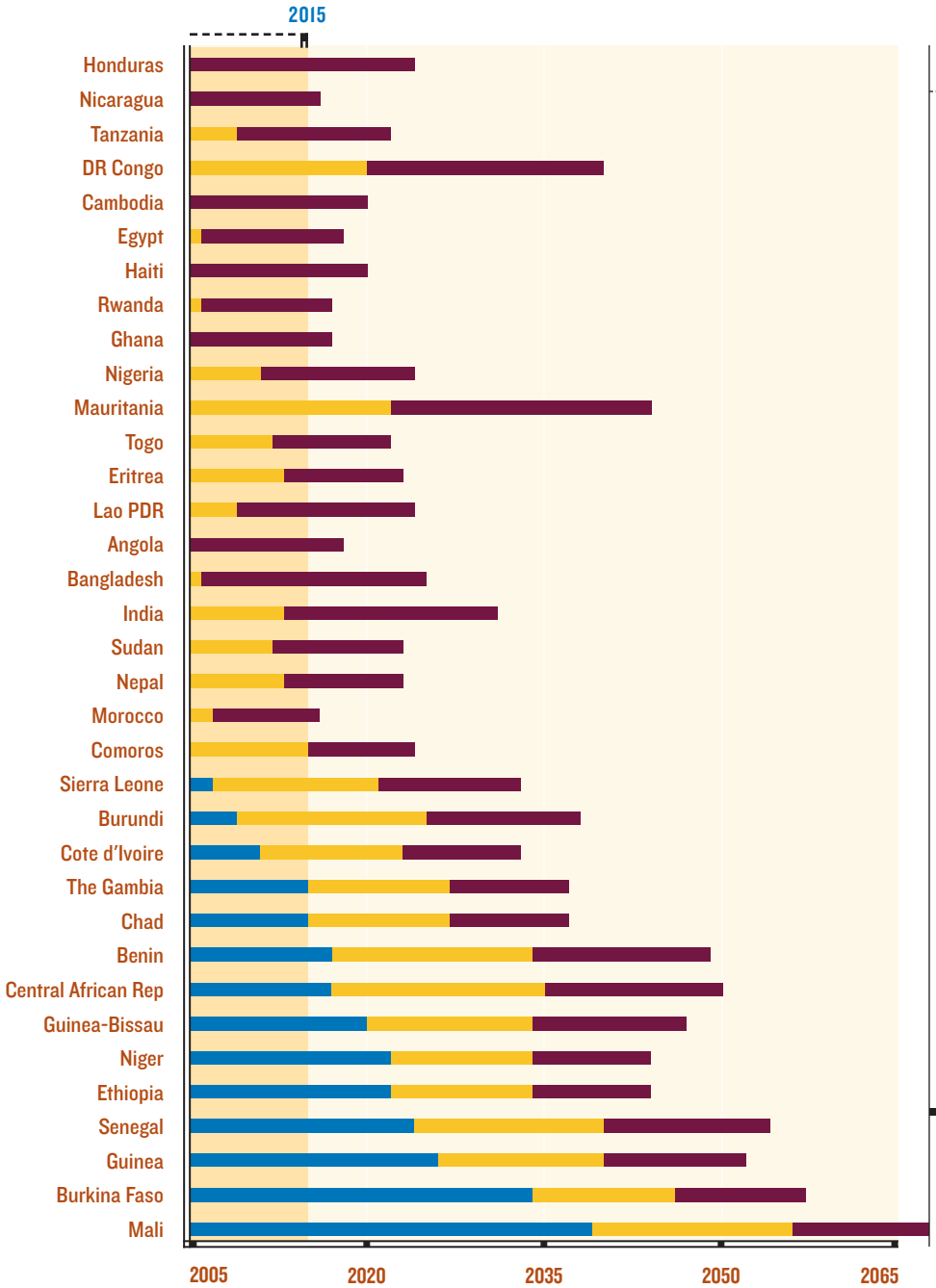


Figure 3a.

Year in which 80%, 90%, and 95% primary school entry is projected

Figure 3b.

Year in which 80%, 90%, and 95% primary school completion is projected

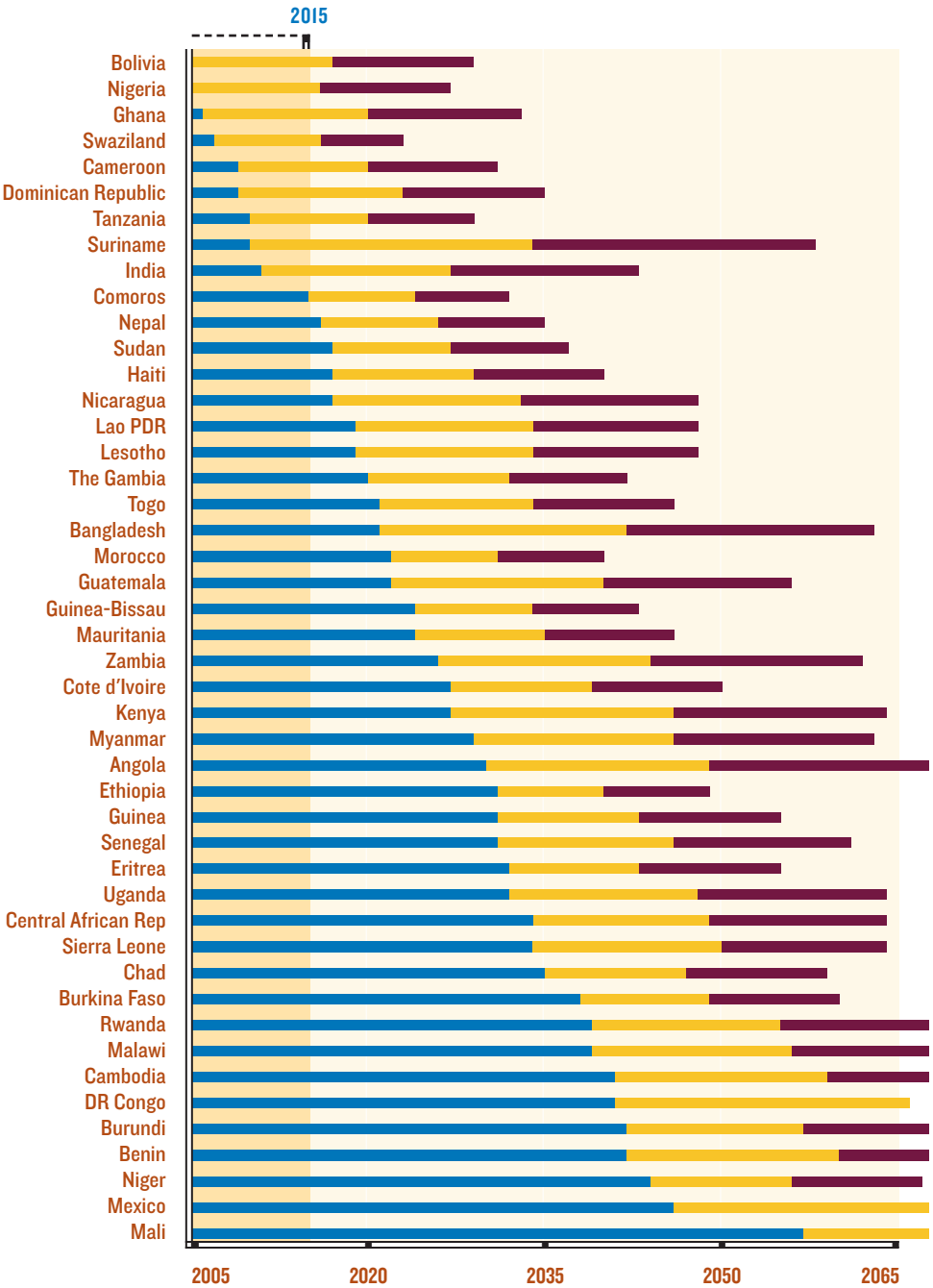


Figure 3a shows the 35 countries not on track to reach 95% entry by 2015. Only 16 countries (of the 70 studied) will fall short of 90% primary school entry by 2015 at their current average growth rate.

Figure 3b shows countries not on track to reach 95% primary school completion by 2015. Thirty-six countries will fail to reach 80% primary school completion by 2015, and none will reach 90%. Figure 3b also indicates that 80% primary school completion will occur by 2025 for most countries and in all but 11 countries by 2035—even without an acceleration of trends.

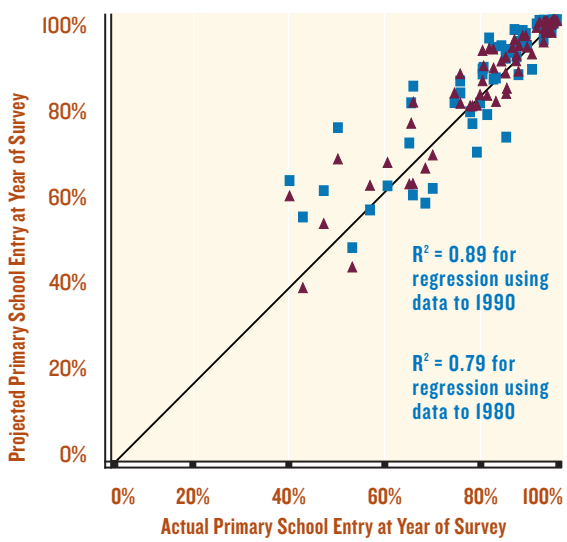
A note of caution—these projections are based on the most recent available and accessible data for each country. If a country has made significant strides in enrollment since the

Box 4. > How reliable are the projections?

The reliability of any projection method can be tested with an historical projection, in which the projection starts at a date 10 or 20 years in the past and is forecasted to the year of the most recent available data. If the historical projection matches the actual trend, this should raise confidence in the method. Two historical projections using the trend projection method are shown here, one based on actual trends up to 1980 and forecasted to the most recent year with data, and the second based on trends up to 1990. The comparison is good. The accompanying figure shows the actual values for the proportion of children who were entering primary school in the year of the survey along the x-axis and the values projected forward from 1980 (blue squares) and 1990 (maroon triangles) lined up vertically on the y-axis for all the countries in the study.

The dots do not align perfectly along the diagonal of the graph. If they did, the projected value would be exactly the same as the actual value. However, for the projection from 1990, the projected value is within 10 percentage points of the actual value for 90% of the countries. The 20-year projection from 1980 is within 10 percentage points for 83% of the countries. In the world of forecasting, this is good.

Another way to evaluate the quality of projections is with a statistical regression of the actual primary intake values and the two projected values. The adjusted R-square value for the projection from 1990 is 0.89 with a standard deviation of just 5.2 percentage points, and for the 20-year projection from 1980 it is 0.79 with a standard deviation of only 7.1 percentage points.



Box 5. > Trend projection methodology

The projection method used here was developed by Wils and O'Connor (2003). To obtain the projection, statistical regressions are run for s-shaped curves on the historical trends—the same regression used to measure the speed of the education growth path TIO-90. Once the slope and intercept for the historical trend have been obtained, these can be used to calculate future growth rates and, hence, an extrapolation of the trend. The future growth rates are a function of the slope found in the regression and the actual level of schooling. The maximum growth is equal to the negative of the regression slope, -s, and occurs when the level of schooling is zero. At all other school levels, the estimated growth rate is equal to:

$$-s+s^{*}v_{t-1},$$

where V_{t-l} is equal to the value of schooling in the previous time period. The estimated future levels of schooling can be calculated with these growth rates as:

$$v_t = v_{t-1}{}^{*}exp(-s+s^{*}v_{t-1}),$$

where Vt is the projected value of schooling at time t. The starting value of the projections is the actual value of schooling as shown by the last point in the trend graphs. To get a longer time series of future values, the calculation is simply repeated for each consecutive future year.

year of the survey, that would have an important effect on the projected completion dates.

What if countries accelerated to the fastest observed growth rate?

A projection experiment enables analysts to see what would happen if a country with relatively low entry or completion were to speed up schooling of its children to the growth path of the fastest countries observed in the study. For primary school entry, the most rapid growth was observed in Jordan. For primary school completion, one of the fastest paths was in Indonesia. Two experiments were conducted: one assuming the Jordan growth path for primary school entry and the second assuming the Indonesia growth path for primary school completion.

The accompanying graphs (Figure 4) show two projections for primary school completion: the present trend projection and the projection assuming the growth path were to accelerate to match Indonesia's. The results of this experiment are shown for four of the case study countries: Indonesia (for comparison), Bangladesh, Guatemala, and Sierra Leone. The maroon solid line shows historical progress; the maroon dashed line the expected progress along the country's historical trend; and the blue dashed line progress if the country accelerated to Indonesia's path. Bangladesh, Guatemala, and Sierra Leone would all be able to reach 90% primary school completion by 2020-2030 if their growth

rates accelerated to match Indonesia's. However, with the slower long-term trends identified in the study, the countries would not attain 90% primary school completion until 2042, 2040, and 2050 respectively.

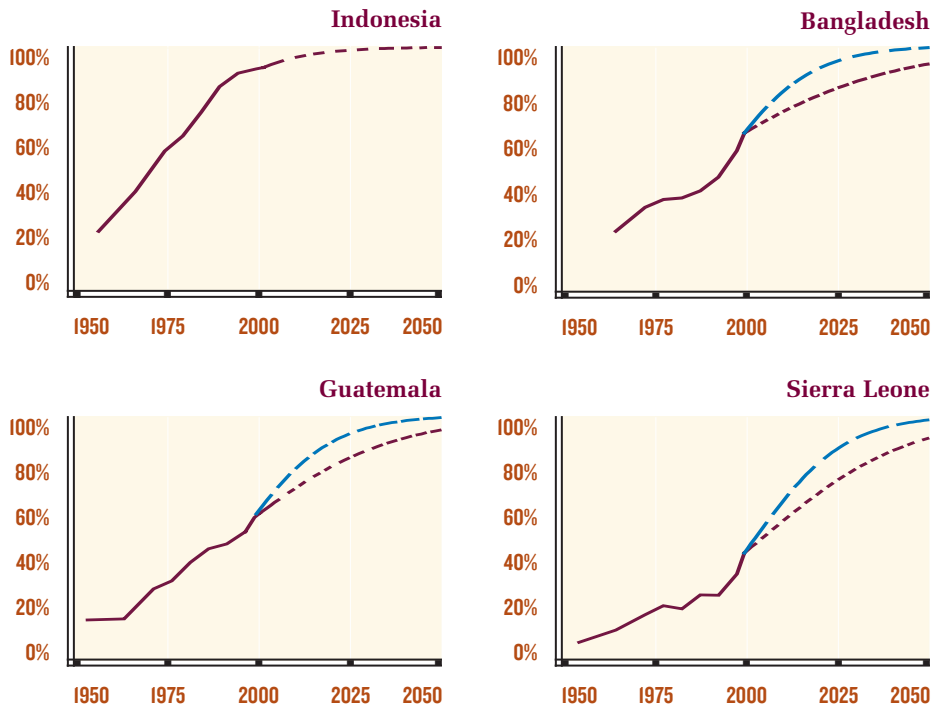


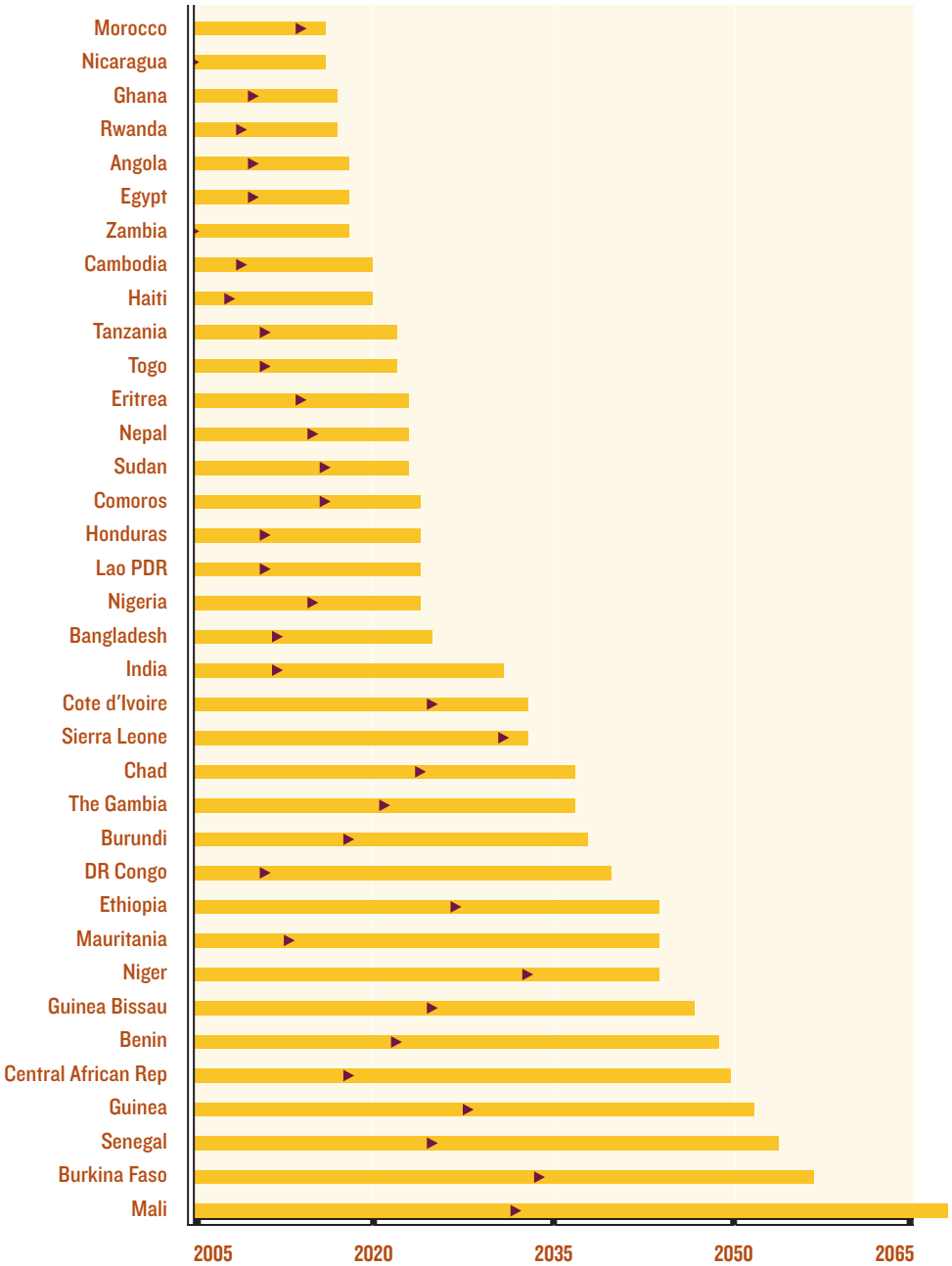
Figure 4.

Four countries: what if one of the fastest growth rates for primary school completion prevailed?

A summary of the experiment, for all of the countries not on track to reach 95% primary school entry or 90% primary school completion by 2015, is shown in Figures 5a & b. The yellow bars show the year in which 95% primary school entry or 90% primary school completion would be reached according to the country's own long-term trend. The maroon triangles show the year those goals would be reached with Jordan's (Figure 5a) and Indonesia's (Figure 5b) paths, respectively. The calculations show that *if the off-track countries accelerate to the fastest historical paths, then 95% primary school entry and 90% primary completion are attainable within the next generation for all but a handful of nations.*

Figure 5a.

Impact of countries adopting fastest historic growth of primary entry



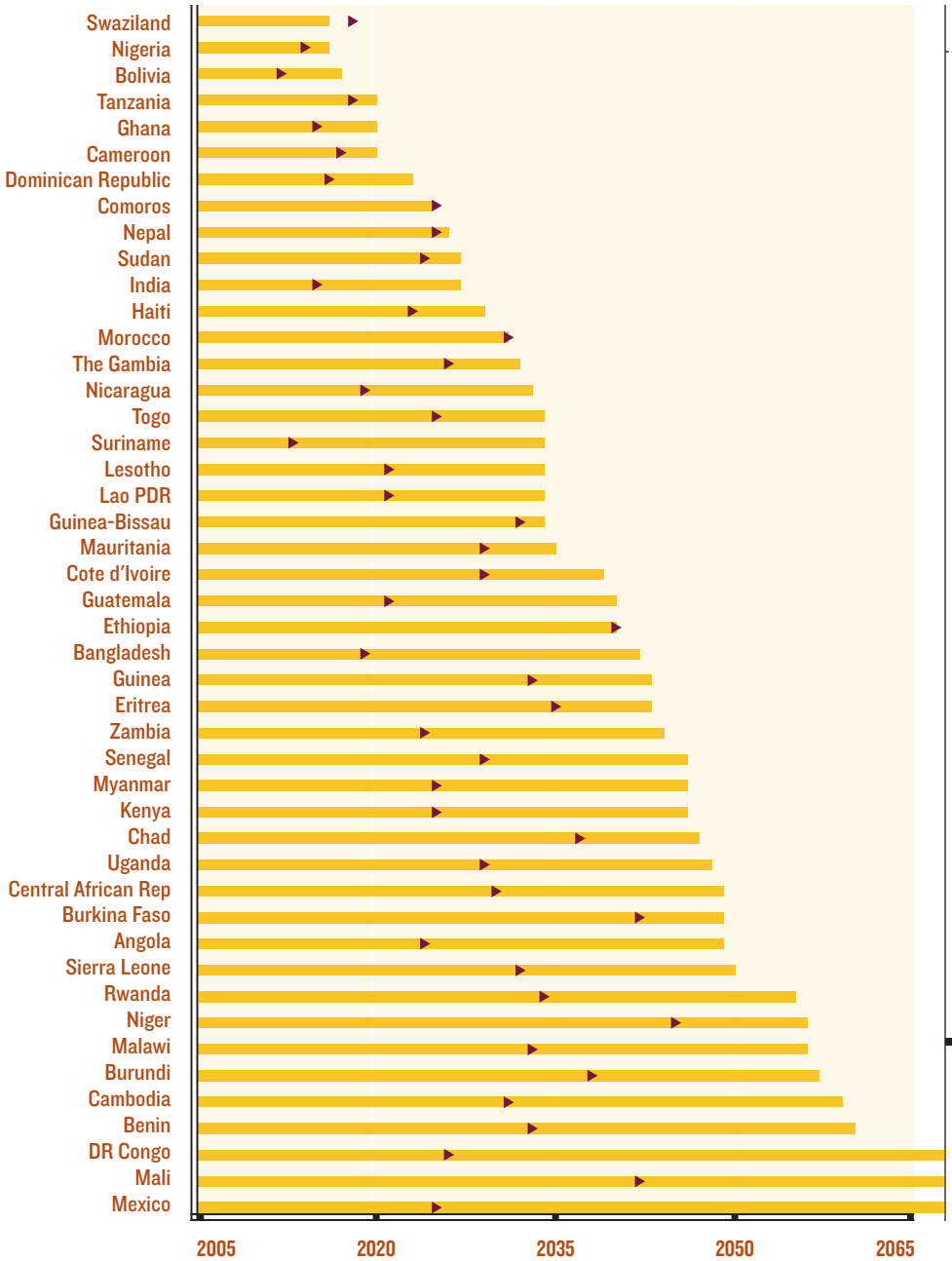


Figure 5b.

Impact of countries adopting fastest historic growth of primary completion

Speed of growth, on-track and off-track

Another way to use projections is to match the expected year of 90% primary completion to speed of growth. Countries approaching UPC are likely to need different kinds of support than those countries still reaching out to a large middle group of out-of-school children. Furthermore, policy makers might propose different interventions for countries with slow education expansion paths than for those with faster growth rates, the former in need of new initiatives, while the latter require support for what they are doing well.

Figure 6 shows countries divided into quadrants according to their speed of education expansion (fast or slow) and their proximity to reaching universal primary education by the 2015 goal (off-track or on-track). Fast countries are on a path of above-average speed (T10-90<88 years). On-track countries are those that will attain 90% primary school completion before 2015 with present trends.

The grouping shows, as expected, that the countries making slow progress are also likely to be furthest from the goal. In fact, no country with slow educational growth is on track to meet even 90% primary school completion by 2015. Almost all of the countries that are on track are also moving at a faster-than-average pace. However, there is also a large group of countries that are off track but proceeding at a good pace. Some of them are on exceptionally fast paths but nonetheless will fail to reach 90% primary school completion by 2015 on their present growth paths. Many of these countries got a late start on education expansion (for example, Ethiopia, Nepal, Burkina Faso, Chad, Niger). All off-track countries need support, but the slow group is in particular need of changed policies and/or additional intervention.

Was there acceleration of trends in the 1990s?

The projection method can also be used to identify changes in a country's historical growth path, for instance, since 1990, the year of the global education conference in Jomtien. Such an historical projection begins in 1990 and is forecasted to the year when the most recent data are available. The “projected” values are then compared to today’s actual values. If the projected values are higher than the actual values, the growth path has slowed down; if the projected values are lower than the actual, the growth path has accelerated. Figures 7a & b compare the actual primary entry and completion values to projected values from 1980 and 1990.

The actual values are shown in yellow bars, the predicted values from the trends to 1990 are shown with maroon triangles, and predicted values from 1980 are shown with blue squares.

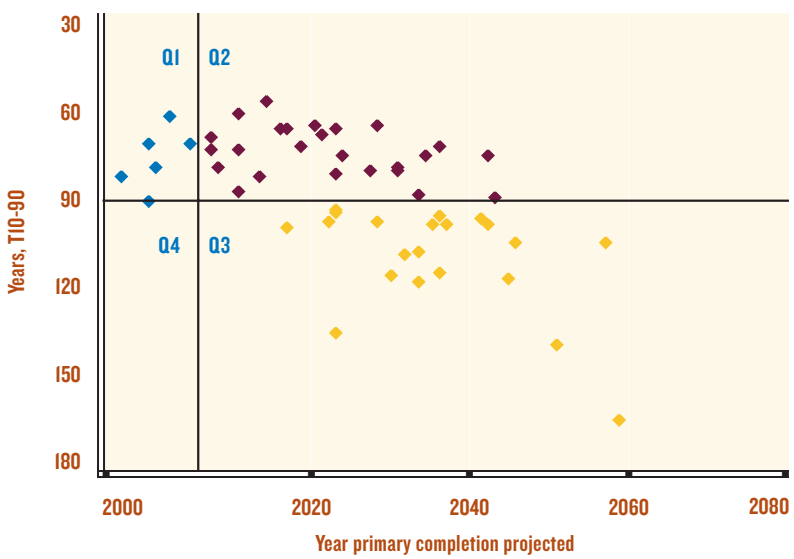
The figures indicate that during the 1990s the *entry* trends in many countries remained unchanged. In those countries where trends changed, countries with slower growth paths outnumbered those with accelerating trends. The "success stories" in terms of accelerating school entry include: Uganda, Malawi, Guatemala, Angola, Bangladesh, Lao PDR, India, Eritrea, Solomon Island, Chad, The Gambia, Niger, Benin, Sierra Leone, and Mali.

Similarly, many countries had slower growths of *completion* post-1990 than pre-1990. The success stories in terms of accelerating primary completion trends post-1990 include: Solomon Islands, Bangladesh, Togo, India, Bosnia, India, Benin, Egypt, Chad, Nepal, Morocco, Ghana, Nigeria, Sri Lanka, Bolivia, Guyana, Guinea, and Sierra Leone.

In comparing the two groups of countries, very few countries accelerated on both indicators. Those that did include: Bangladesh, Benin, Chad, Sierra Leone, Solomon Islands, Nepal and Morocco. Countries that appear to have focused on expanding enrollments and where completion rates suffered include: Angola, Eritrea, The Gambia, Lao PDR, Malawi, Mali, Niger, and Uganda.

Figure 6.

Quadrants of countries—on-track or off-track and speed of progress



Q1—Fast growing "on-track" countries: Colombia, Vietnam, Zimbabwe, Sao Tome, Gabon, Egypt

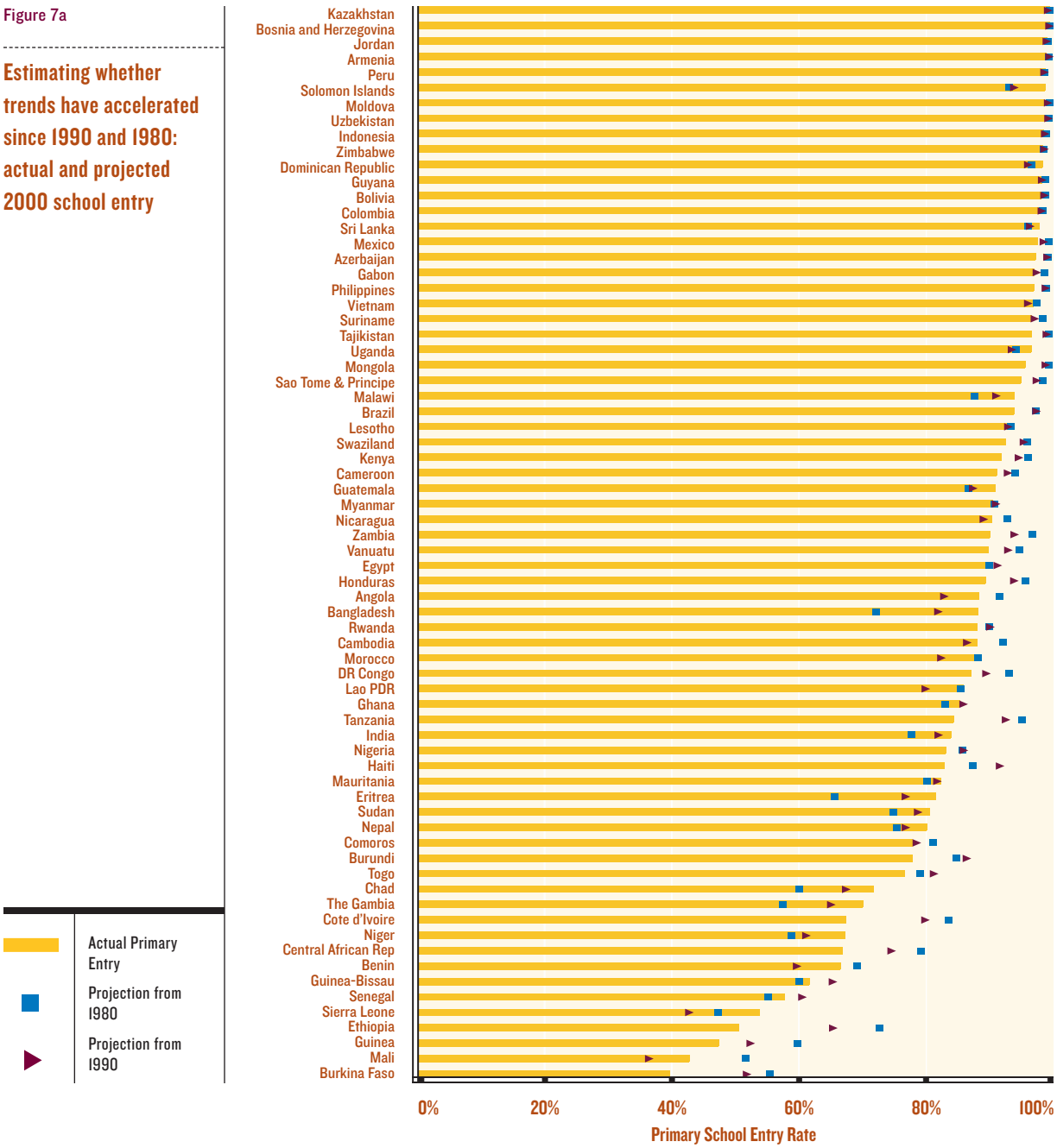
Q2—Fast growing "off-track" countries: Comoros, Tanzania, Morocco, Ethiopia, Nepal, Sudan, Guinea-Bissau, The Gambia, Nigeria, Haiti, Burkina Faso, Swaziland, Cameroon, Mauritania, Chad, Niger, Bolivia, Guinea, Cote d'Ivoire, Eritrea, Togo, Dominican Republic, Ghana

Q3—Slow growing "off-track" countries: Senegal, Burundi, Lesotho, Lao PDR, Central African Rep, Rwanda, Nicaragua, Guatemala, Uganda, Malawi, India, Benin, Mali, Myanmar, Zambia, Angola, Bangladesh, Cambodia, Kenya, Sierra Leone, Suriname, DR Congo, Mexico, Brazil

Q4—Slow growing "on-track" countries: None

Figure 7a

Estimating whether trends have accelerated since 1990 and 1980: actual and projected 2000 school entry



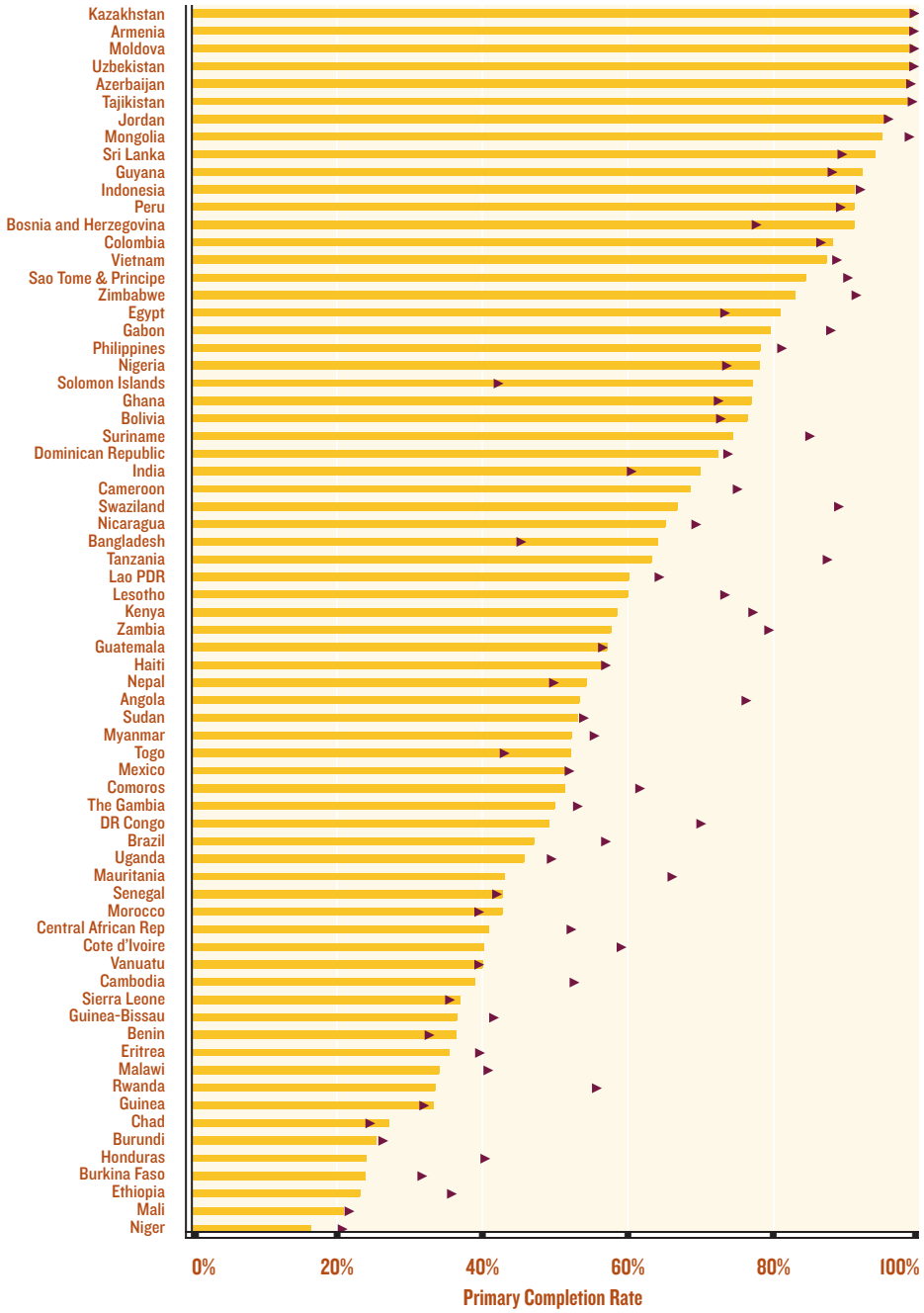


Figure 7b.

Estimating whether trends have accelerated since 1990: actual and projected 2000 school completion

CASE STUDY

Sierra Leone

Post-Conflict Surge in enrollments

After a brief period of economic growth post-independence, Sierra Leone suffered through several decades of economic decline and political instability, which climaxed in a civil war that ended in 2001. The war brought large scale destruction to the land and its people, and worsened a fragile education sector.

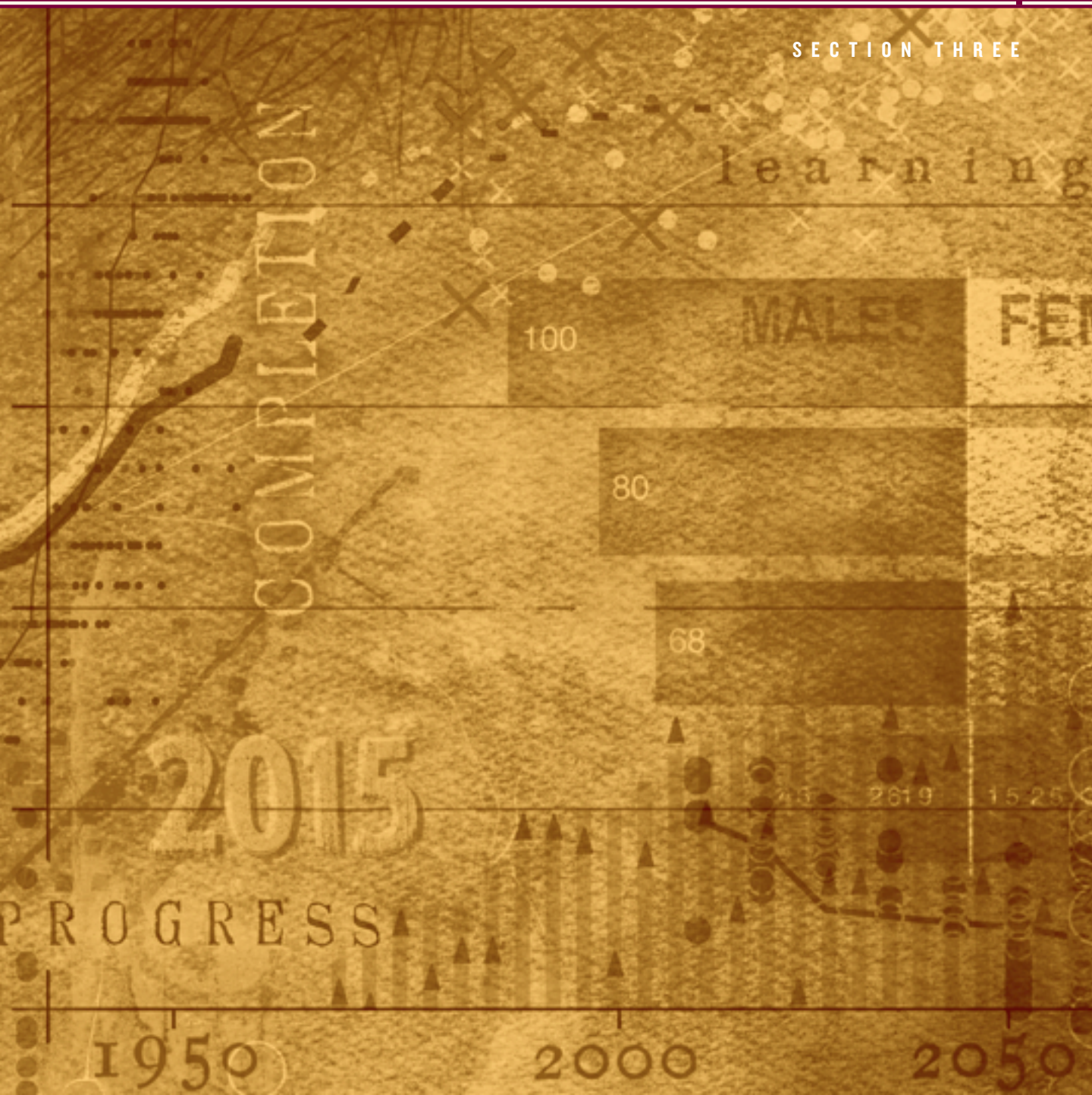
Though expansion in enrollments is the norm, Sierra Leone is one of the few countries where stagnation in educational attainment was apparent. During the civil war, schools were destroyed, teachers and students killed, and education brought to a standstill in much of the country.

But, there is cause for optimism. Since the end of the war, the Sierra Leonean government, with the support of international agencies, has rebuilt damaged schools and constructed new ones, and children are returning to classrooms. enrollment has surged as evidenced by the large increase in gross enrollment ratios—from 50% in 1990 to over 100% in 2003. The GER is over 100% because many over-aged children, who missed out on schooling during the war, have entered school. Programs such as the Complementary Rapid Education for Primary Schools (CREPS), which was designed to allow over-age children to complete the primary school curriculum in three years instead of the normal six years, have helped fuel this growth in enrollment.

The government of Sierra Leone has put in place a number of policies to improve access. These include: the abolishment of school fees for all primary school students, scholarship programs for girls in secondary schools, free textbooks, and free meals in the areas worst affected by the war. Consistent with this commitment, government expenditure on education has risen from 2% of GDP in 1996 to over 5% of GDP in 2003. At the same time, GDP growth rate averaged 6% since 2001.

Despite the recent surge in enrollments, many challenges remain in rebuilding the education sector. In particular, institutional capacity needs to be rebuilt, and the problem of adult illiteracy needs to be addressed. However, because of the high budgetary priority given to education (over 30% of government revenues goes to education), it will be difficult for education allocations to increase in the future given the needs of other sectors.

Population Groups Not Keeping Up With National Trends



Although there is a noticeable gap between girls and boys entry and completion of primary school in some countries and communities, the greater disparities are between urban and rural areas and between sub-national regions.

There are many reasons why children do not attend school, but as a matter of policy, it is unethical to deny people education based on their gender, where they live, or because they were born into a particular ethnic or racial group. Household survey and census data allowed us to identify the children who are not being reached in countries with less than full primary school entry and completion. We looked at several dimensions of inequality, including gender, urban vs. rural residence, and sub-national states or provinces. School attendance (the portion of children who attended school at some point in the present school year) is used in this section to analyze which children are out of school. One can extend the variations in attendance rates to be proxies for sub-national variation in primary school entry and primary school completion. (Entry rates are generally somewhat higher than attendance rates, which are higher than completion rates.)

Inequalities in attendance levels within countries[5]

National averages for attendance can mask large inequalities. The most commonly presented disparity is between males and females. Figure 8a shows the male-female attendance gaps, expressed as percentage point differences, for 57 countries. The countries are arranged in order of the gap. The largest gender gap is in Benin, where attendance for girls is 14 percentage points below that for boys. Only 6 of the 57 countries show discrepancies in double digits. The male-female net attendance gaps are lower than they were a few decades ago, possibly reflecting the international effort to get girls into school (see UNESCO, 2002).

Figure 8b shows the attendance gaps between urban and rural areas, using the same order of countries. For comparison, the male-female gaps are also shown. In most of the countries shown, the attendance gap between urban and rural residents is larger than that between boys and girls. The level of urban-rural inequality is quite large in many countries. Some of the more extreme cases are Burkina Faso (51 percentage point difference), Ethiopia (50), Burundi (50), Guinea-Bissau (45), Niger (43), and Mali (33). In more than one-third of the countries the differential exceeds 20 percentage points.

5 *Much of the text in this section is taken from Wils, Zhao and Hartwell "Looking Below the Surface: Where are the Children Who are Out-of-School?," EPDC 2005.*

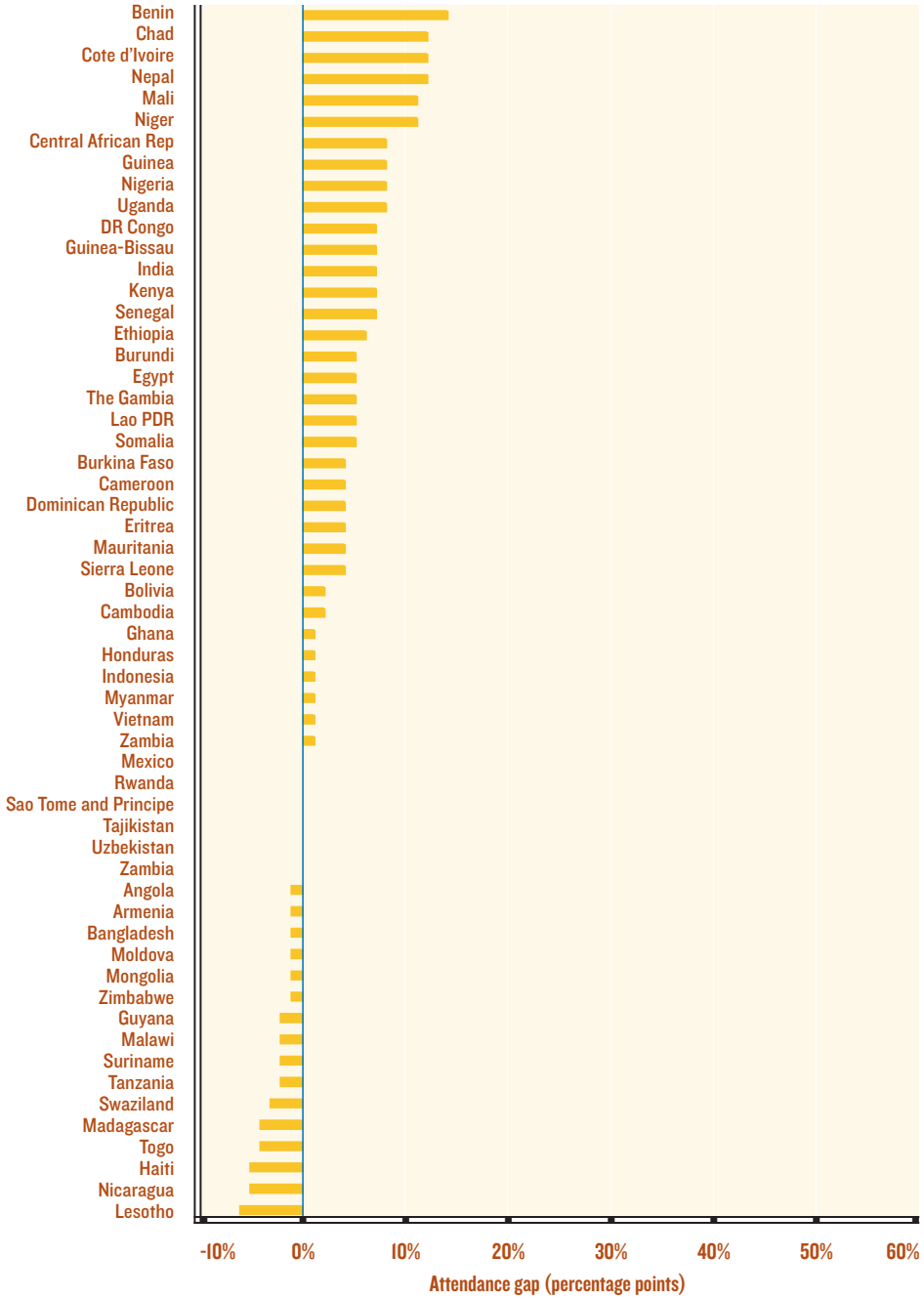
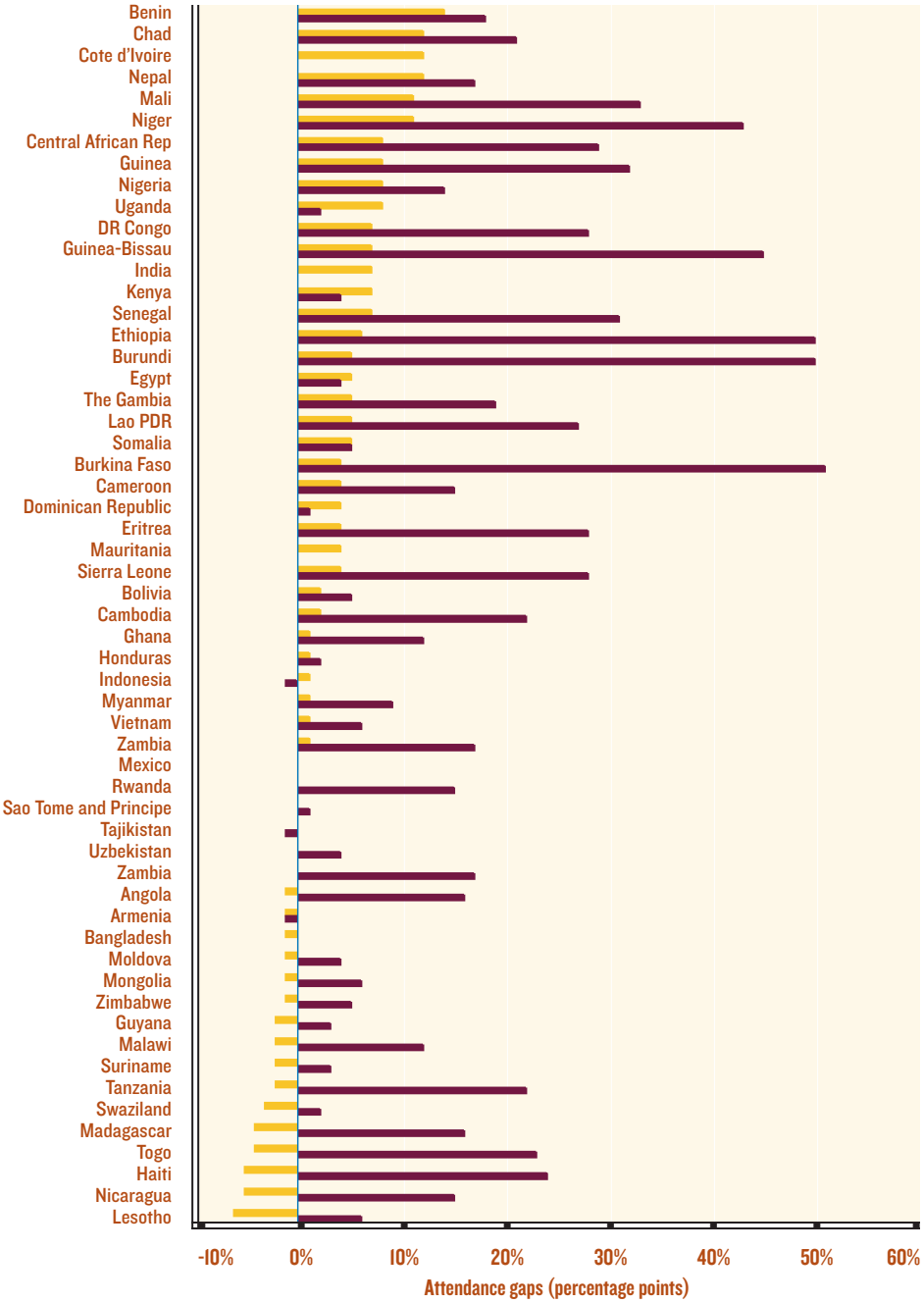


Figure 8a.

Gender net attendance gaps

Figure 8b.

Gender and urban–rural net attendance gaps



Even larger differences appear when the data are disaggregated one level further, by urban and rural areas in regions (provinces or states) within countries. Figure 9 shows the data arranged by sub-national region for the 30 countries for which there are recent DHS surveys. For each country, attendance rates for rural areas are represented by blue dots and attendance rates for urban areas by maroon dots. The countries are arranged in order of *national net attendance* rates. This figure reveals several important patterns.

First, countries with high national attendance levels have dots closely spaced along the right of the figure. In countries with high national attendance rates, all regions have high attendance rates. There is uniformly good access to schools. Conversely, those countries with low national attendance levels have dots spread widely, indicating regional inequality in school attendance. The largest differential was found in Ethiopia, where 91% of children in the urban areas of Harar region go to school compared to only 2% of those in the rural areas of Somalia region. Burkina Faso, Mali, Tanzania, and Cambodia also have large disparities; and there are many countries with smaller, but still substantial, inequalities.

Secondly, the figure shows that in almost all countries, including those with the lowest attendance levels, there are at least some regions with high attendance rates, generally in large urban areas. Examples of areas with high urban attendance rates within countries where schooling is sparse elsewhere are: Harar in Ethiopia (91%), Koulikoro in Mali (84%), Dodoma in Tanzania (96%), and Western Urban (Kathmandu) in Nepal (97%). The figure shows that even within the neediest countries there are certain areas where a high proportion of citizens have access to primary education; the challenge is to reach the underserved areas, not necessarily the entire country.

These regional disparities have received insufficient attention in international education discussions. What is causing children in one part of the country to stay out of school in greater numbers than those in another part of the same country? What policies and strategies can address the development and education conditions in underserved areas? The case studies cited in this report describe some of the strategies to reach underserved children.

Figure 9.

Sub-national net attendance gaps for 30 countries

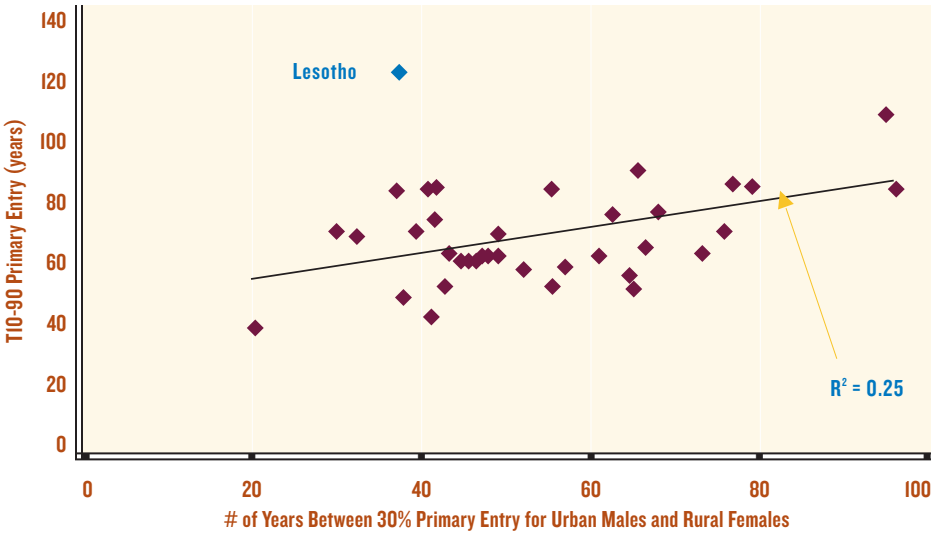


Figure 10.

Inequality and education growth rates

Greater inequality is correlated with slower national growth rates

Inequality in education should be eradicated on grounds of both equity and development effectiveness. It also slows education growth.

The cross-tabulation of inequality and T10-90 is shown in Figure 10 for 37 countries.[6] The measure of inequality used here is the difference between the year in which 30% of the urban males (an advantaged sub-group) entered primary school and the year when 30% of rural females (a doubly disadvantaged group) entered primary school. The measure of education growth is the T10-90 for primary school entry (the interval between 10% and 90% of school-age children entering primary school). Primary school entry is used here because the portions completing primary were too low for rural females in many of the countries to provide a basis for reliable growth estimates.

The relationship is positive: more inequality is associated with a longer growth path, or, conversely, greater inequality is correlated with slower national education growth. A regression of the two variables produces a statistically significant positive relationship, with an R^2 of 0.25. We can conclude that, on average, countries that tolerate large inequalities in education will take longer to achieve UPC.

6 *Lesotho is different from all countries in the sample and is not included in the regression because there males are the disadvantaged sex, so the comparison is between the advantaged urban females and the disadvantaged rural males.*

Growth speeds still may vary widely for countries with similar levels of inequality. For example, the estimated lag in years for urban males and rural females reaching 30% school entry in Nepal is 43 years, and in Mali it is 41 years. The T10-90 for Nepal is 60 years, while for Mali it is 95 years. Despite similar inequality in education, Nepal is moving much faster toward universal primary education. One of the big differences between the two countries, according to the data, is that in Nepal the rate of education growth among women, in particular rural women, is very rapid, while in Mali, that is not the case. The example demonstrates that inequality can and is being overcome in some countries. On the other hand, the high education growth in urban areas of Niger has been sufficient to produce a relatively fast pace nationally, while inequality has actually worsened.

Bangladesh

Increasing Access—Targeting Hard to Reach Children

CASE STUDY

Bangladesh is one of the most densely populated countries in the world, with over 70% of the population living in rural areas and a GDP per capita of only $360.

Faced with the challenge of reaching large, poor, inaccessible rural populations, Bangladesh made remarkable progress in increasing access to primary school during the 1990s. In 1985 primary enrollment was 8.9 million; by 2001 it had doubled to 17.7 million. Bangladesh has significantly improved the net attendance rates by targeting programs to children in rural areas, and in particular, girls. In so doing, they have closed the gender and urban–rural gaps. In 2001, the net enrollment rate for males was 86% compared to 88% for females.

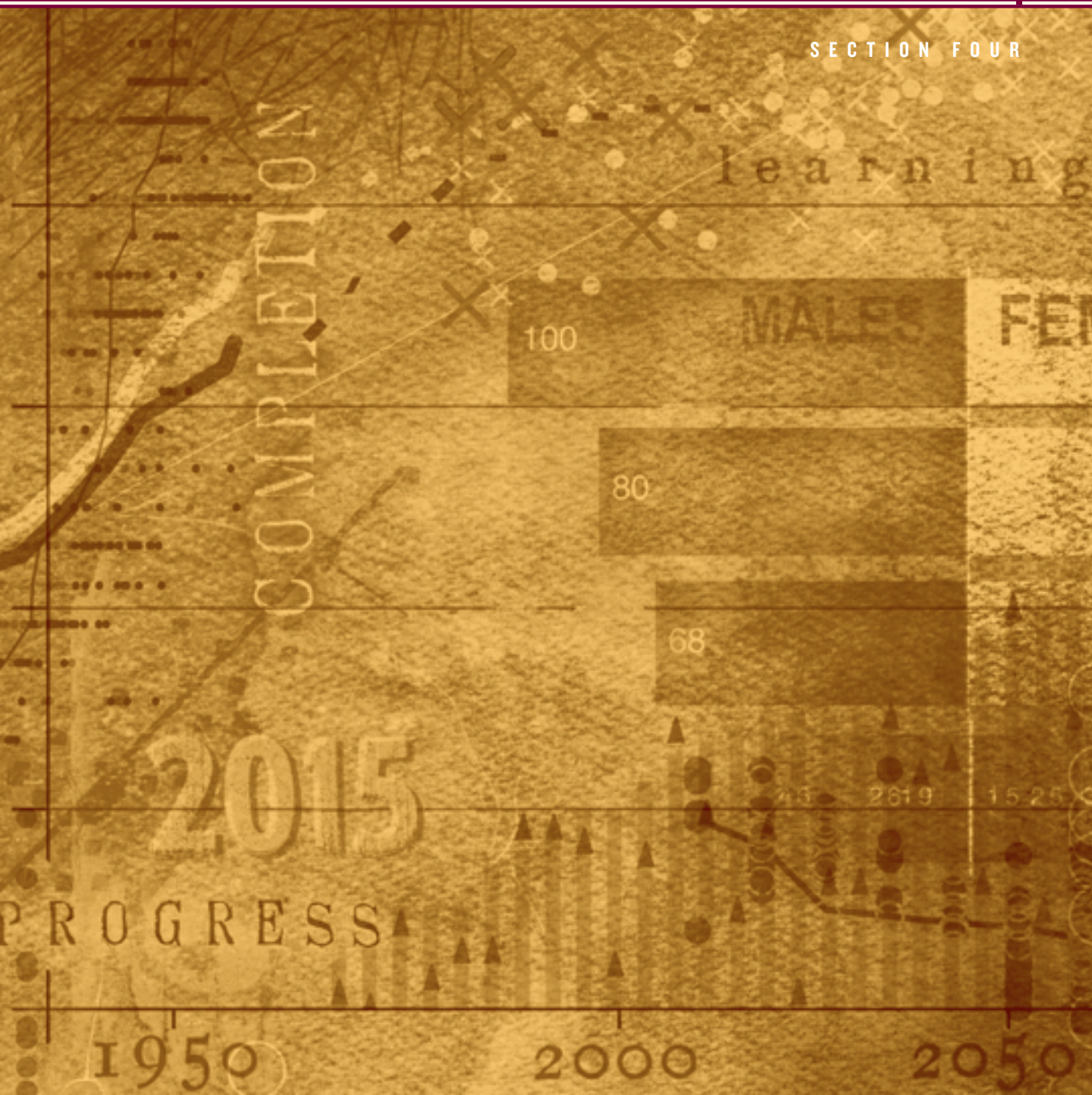
Improvements in access for both males and females in Bangladesh are in part due to the fact that the 1990s was a decade of strong government commitment to Universal Primary Education (UPE), complemented by the targeted efforts of NGOs to provide educational services for underserved populations. The government launched several initiatives to increase enrollment: building new schools, establishing community and satellite schools, improving teacher training, and providing free tuition for female students. Targeting poor underserved communities was central to programs like the Food for Education Program, which provided wheat or rice to poor families as an incentive for children to attend school regularly.

NGOs, like BRAC,* have played a crucial role in targeting the rural poor and girls. The BRAC Education program emerged in response to the needs of the community in 1985 with only 22 schools and expanded to over 31,000 in 2005. Unique features of the program include: schools are located close by children's homes, school hours are short and flexible, parents are encouraged to assist in the management of schools, the curriculum is focused on real life skills, and the pupil teacher ratio is limited to 33. BRAC has strict eligibility requirements to ensure that target populations are reached. One eligibility requirement is that 70% of the enrolled students must be girls. Another remarkable feature is that BRAC schools keep cost extremely low by using a rented one-roomed school house, training community teachers, and using basic materials and equipment. The innovations of the BRAC program have increased both access and attendance for hard to reach children excluded from the formal education system.

* Bangladesh Rural Advancement Committee

School Entry, Retention, and Learning

SECTION FOUR



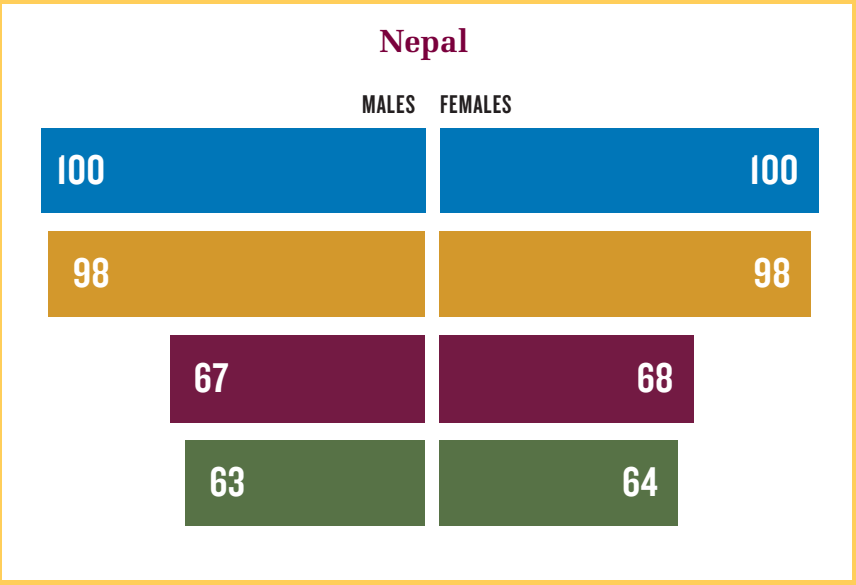
Schooling is not only about the number of children who go to school and stay there; it is also about learning. The quality of a school system is determined by many factors. Accessibility and retention are among them, and so is the teaching of valuable skills. A simple visual tool to present these three facets is the learning pyramid.

Learning pyramids show the portion of a cohort of 6-year-old children who: 1) will enter school, 2) will remain in school through 4th or 5th grade, *and* 3) will learn to read by 4th or 5th grade. The learning pyramids for 48 countries are presented in Figure 11.

Pyramids are regaining favor as tools to present cumulative achievements of a school system. For example, the recent Pôle de Dakar report (2005) uses pyramids of flows through the whole school system from primary through tertiary. Pyramids are useful because they show multiple aspects of a school system and readily expose losses (illustrated by breaks where the pyramid has a clear narrowing).

There are several novelties in the learning pyramids presented here. The first is in the flows the learning pyramids bring together, namely entry, survival, and learning measures, thus showing the reader the necessary steps toward imparting skills through schooling: a child is to enter school, to remain in school, and to learn while being in school. Second, the indicator for school entry is the portion of children who have entered school by age 14 rather than the more commonly used apparent or gross intake rate. The gross intake rate can be a misleading figure particularly in those countries where there is rapid growth of school access—the number is inflated with a backlog of children entering school who previously were unable to do so. The portion of children who have ever entered school by age 14 eliminates the back-log problem. Third, the pyramids distinguish between males and females. A nearly identical approach was developed simultaneously and independently by the EFA Monitoring team and presented in the 2005 EFA Monitoring Report (UNESCO, 2005:227).

While school access and survival to a particular grade are relatively unambiguous, discrete events, learning is not. There is no globally agreed-upon measure of learning that can be applied objectively to all school systems. A series of international tests, such as SACMEQ, PISA, LLECE, DHS, attempt to measure reading ability, but the levels are not entirely comparable. The reading levels reported here are only for the minimum reading ability tested. (See Appendix 3 for sources.)



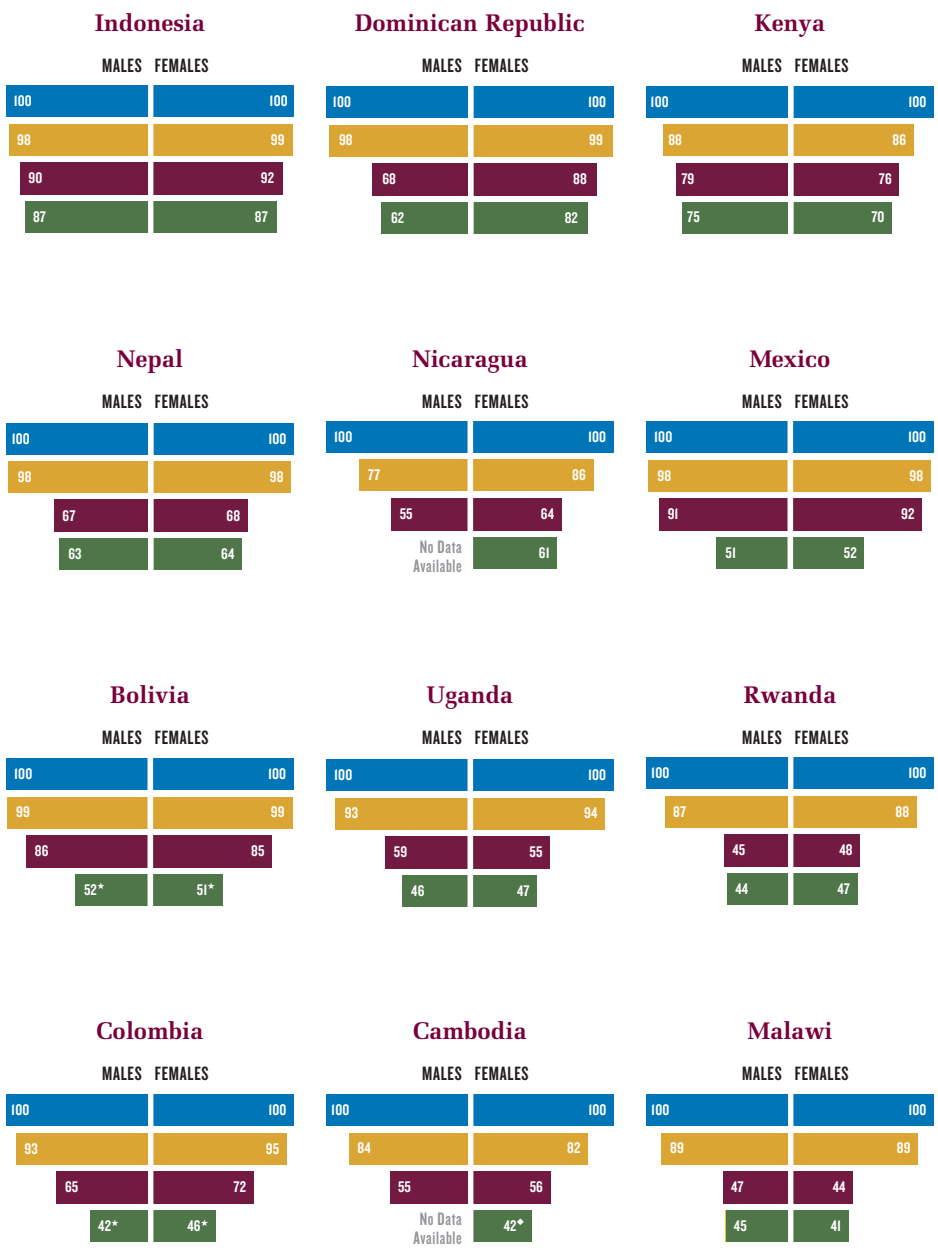
Box 6. > How learning pyramids are structured

Data for the learning pyramid come from multiple sources depending on availability of data. The first bar (which is always at 100%) represents the total population of a cohort. The second bar shows the portion of the cohort that will attend school. It is approximated from the portion of 14 year olds who have ever attended school in the available household survey. The portion of the original cohort that will reach 4th or 5th grade (third bar) is calculated by multiplying the portion who ever enter school and the survival to 4th or 5th grade (taken from the UIS). The final bar shows the proportion of the original cohort that will eventually be able to read (multiplying school entry, survival, and learning together).

The data for learning is taken from various international reading tests, namely Southern and Eastern Africa Consortium for Monitoring Education Quality (SACMEQ), Programme for International Student Assessment (PISA), Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación (LLECE), Demographic and Health Surveys (DHS) and Monitoring Learning Assessment (MLA). Most of these tests are in-depth reading assessments, but one (DHS) is a simple test of the ability of 15-19 year olds to read a sentence. From each of these tests, we have tried to take a very basic reading level—such as being able to read and understand a sentence or simple paragraph. However the scores we have chosen are not necessarily comparable. More work on comparing test scores has been done by Mingat (2003) and Crouch and Fasih (2004). For the purpose of this report, as a first step to using learning pyramids, we have used reading scores from each survey directly.

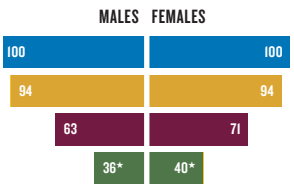
Figure II.

Learning Pyramids

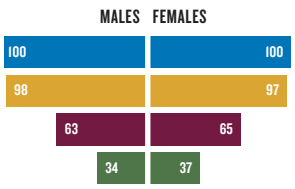


- Total Population of 6 Year Olds
- % of Cohort to Ever Attend School
- % of Cohort to Reach Grade 4 or 5
- % of Cohort Able to Read by End of Primary
- ★ % by Grade 4
- ◆ % by Grade 5

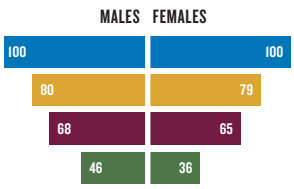
Honduras



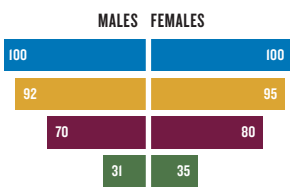
Zimbabwe



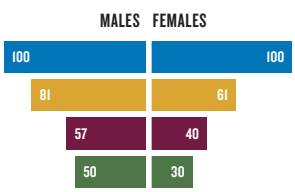
Zambia



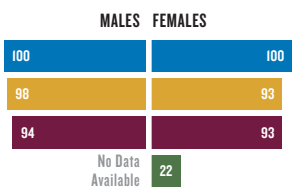
Brazil



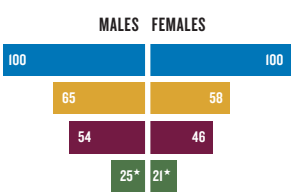
Benin



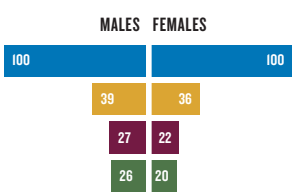
Egypt



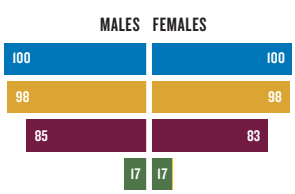
Senegal



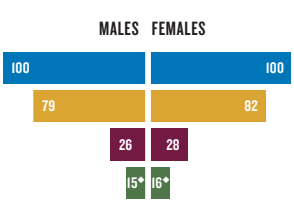
Ethiopia



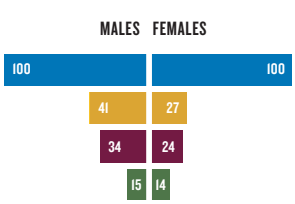
Peru



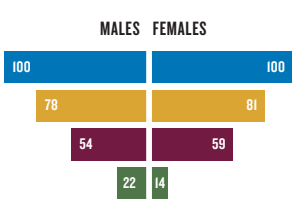
Madagascar



Burkina Faso



Ghana



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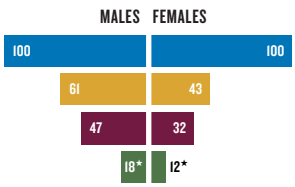
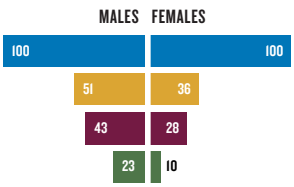
- % of Cohort Able to Read by End of Primary
  - ★ % by Grade 4
  - ◆ % by Grade 5

Learning Pyramids

Niger



Mali



Kazakhstan

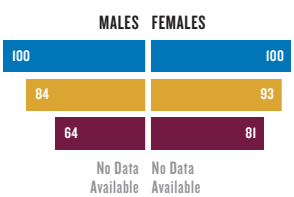
Sri Lanka

Georgia

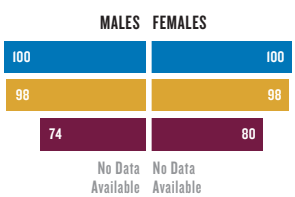
Azerbaijan

Vietnam

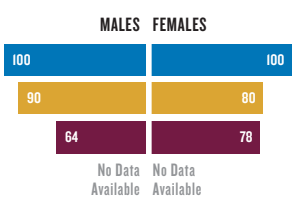
Lesotho



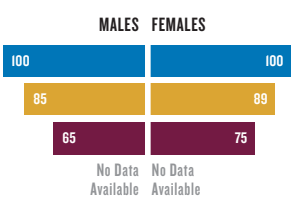
Philippines



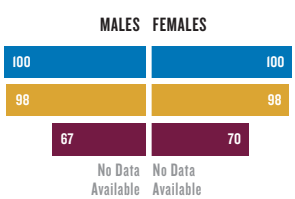
India



Swaziland



Gabon



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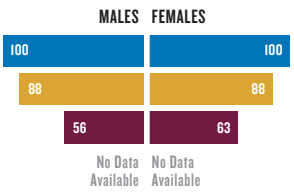
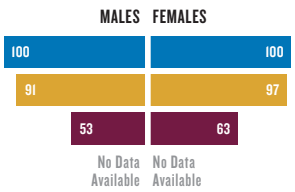
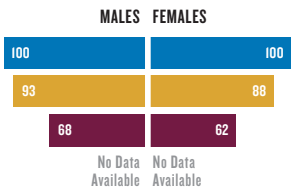
Bangladesh



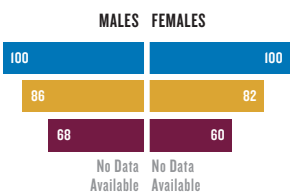
Sao Tome and Principe



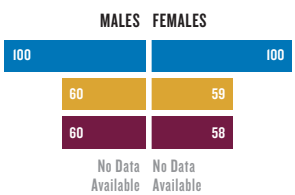
Guatemala



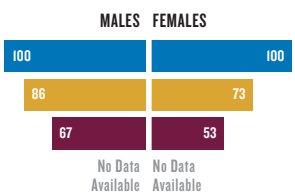
Angola



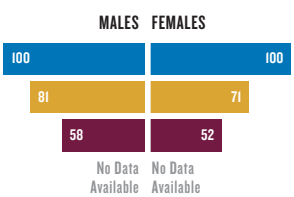
Tanzania



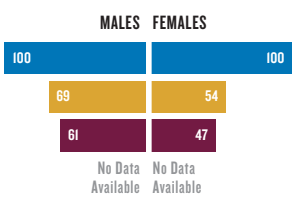
Togo



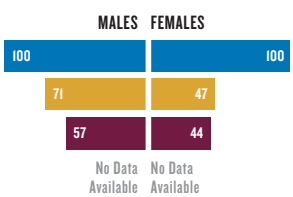
Mauritania



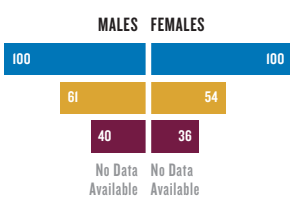
Cote d'Ivoire



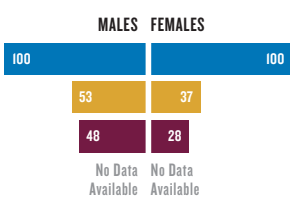
Yemen, Rep.



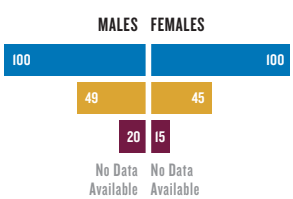
DR Congo



Guinea



Guinea-Bissau



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Despite such limitations, the pyramids are a valuable first step for monitoring progress toward learning. At a single glance, the learning pyramids show where an education system loses children, by gender. Countries with a wide, un-tapered pyramid and few or no losses at any level are those in which most children enter school, remain, and learn to read, such as Indonesia. At the other extreme, the tapered pyramids of Cambodia and Senegal show losses throughout the system and the need for across-the-board improvement.

However, there also are countries where children are lost at just one level—they do not enter school *or* they drop out *or* few learn to read. Countries that are able to reach children and keep them in school, but where the children learn little in the years spent there—the top 3 bars are long, but the last is much shorter—include Mexico, Bolivia, and Egypt. In Nicaragua, Malawi, and Madagascar, most children enter school, and those who stay learn to read, but the dropout is enormous before children reach grade 5. In each of these countries, an intervention that could raise returns at the particular level where the most children are lost would likely provide the most cost-effective benefit.

Relationship between speed of growth and dropout rates

A number of countries have made bold moves to improve school access. Well-known examples are Uganda and Malawi, both of which eliminated school fees to improve school accessibility. Extremely rapid expansion, however, may hurt retention and learning because the schools do not have enough teachers, books, and classrooms to accommodate the sudden growth.

A key policy question is whether a focus on expanding school access, without regard to retention, stalls progress toward the goal that all children should be able to complete primary schooling. In other words, does a strategy to increase access rapidly (by, for example, eliminating tuition fees) have a negative effect on retention?

Figure 12 shows the relationship between primary school entry and the portion completing primary school over time for 65 countries. Countries are grouped (and color-coded) according to their average historical growth rate of school entry, and each line denotes the path of one country from about 1950 to 2000 (with countries moving up and to the right over time). Yellow lines are “exceptionally fast” countries; black are “above average”; blue are “below average”; and the maroon lines are “extremely slow” countries.

A path along the diagonal means that the portion entering school and the portion completing school are equal (retention is 100%). Some lines are close to diagonal depicting countries in which primary school entry and primary school completion grow together. In other countries, access expands first with little completion (the line is flatter) but once high levels of access are reached, completion begins to grow (with the line becoming more vertical). This group is on a sequenced path: with a focus on access first, then on completion. There appears to be no relationship between the speed of growth (represented by the different colors) and the shape or position on the graph. Most countries lie between the two extremes.

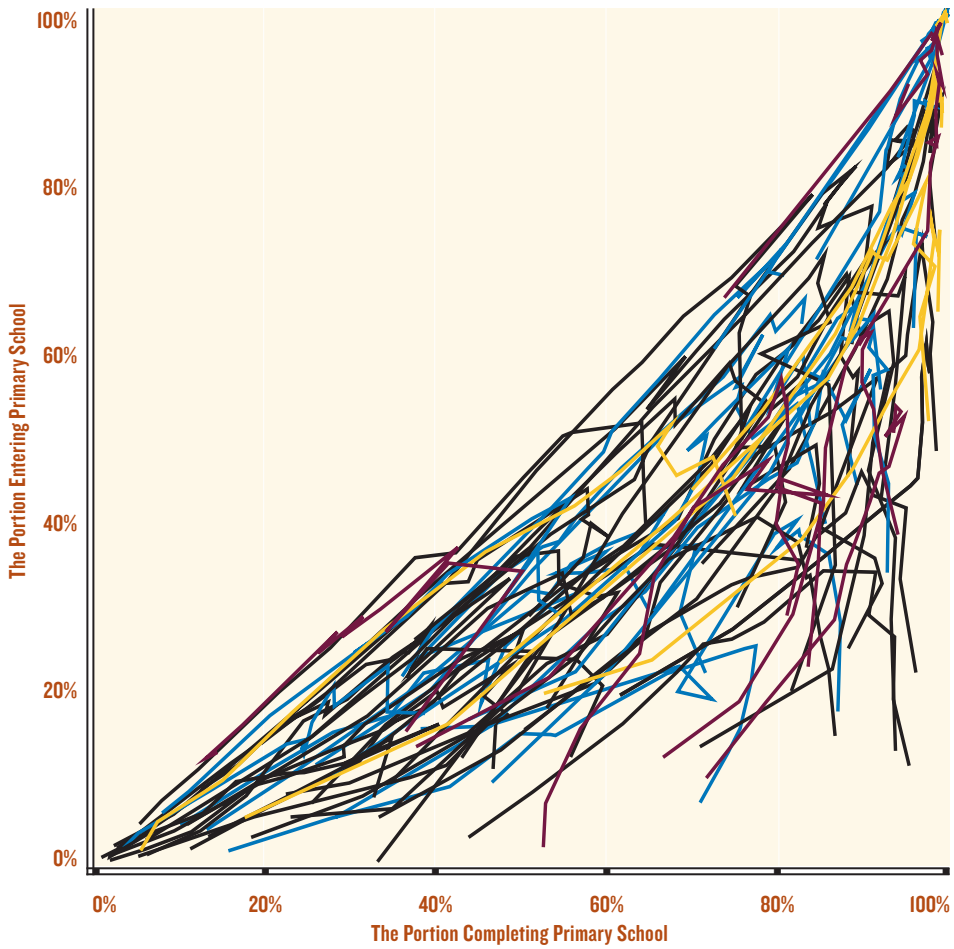
From the point of view of the learning pyramids, the countries in the lower right of the figure experience large losses through dropout (such as Nicaragua, Malawi, and Madagascar). Some countries where school entry grew quickly (Bolivia, Cameroon, Gabon, Indonesia, Peru) experienced moderate to high drop-out rates during their education expansion. Their lines are on the right and below the diagonal. This indicates that rapid growth of entry can be a setback for primary school completion in the short run. Eventually, however, all five countries also experienced rapid primary school completion.

On average, there appears to be little correlation between speed of reaching universal primary completion and a period of high dropout rates for our sample of countries. A statistical regression of the projected year of primary completion and the time lag (in years) between universal primary entry and universal primary completion proved positive but not statistically significant. Therefore, one may conclude that whether a country proceeds on a path with parallel increases in school entry and completion, or on a sequential path, reaching universal entry first followed by growth in primary completion, on average does not affect the rate at which universal primary completion is approached. However, there may be other reasons why the sequential path is less desirable—for example, it may discourage children from completing school and result in a cohort of dropouts with inadequate learning.

Figure 12.

Relationship among the portion entering primary school, the portion completing primary school, and speed of growth of primary entry rates from 1950 to 2000.

- Armenia, Brazil, Burkina Faso, Cameroon, Chad, Colombia, Cote d'Ivoire, Dominican Republic, Egypt, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Haiti, Kenya, Malawi, Mexico, Morocco, Nepal 2001, Niger, Nigeria, Rwanda, Sao Tome, Sudan, Swaziland, Tanzania, Togo, Uganda, Zimbabwe
- Angola, Azerbaijan, Bangladesh, Benin, Burundi, Cambodia, Central African Rep, Guatemala, India, Lao PDR, Mali, Moldova, Nicaragua, Senegal, Sri Lanka, Suriname, Tajikistan, Uzbekistan, Vietnam, Zambia
- Bolivia, Comoros, Gabon, Indonesia, Kazakhstan, Peru
- DR Congo, Guyana, Lesotho, Mauritania, Mongolia, Myanmar, Sierra Leone



T10-90 Primary School Entry

- Above Average
- Below Average
- Exceptionally Fast
- Extremely Slow

Uganda

Successes and Risks in Declaring Free Primary Education

CASE STUDY

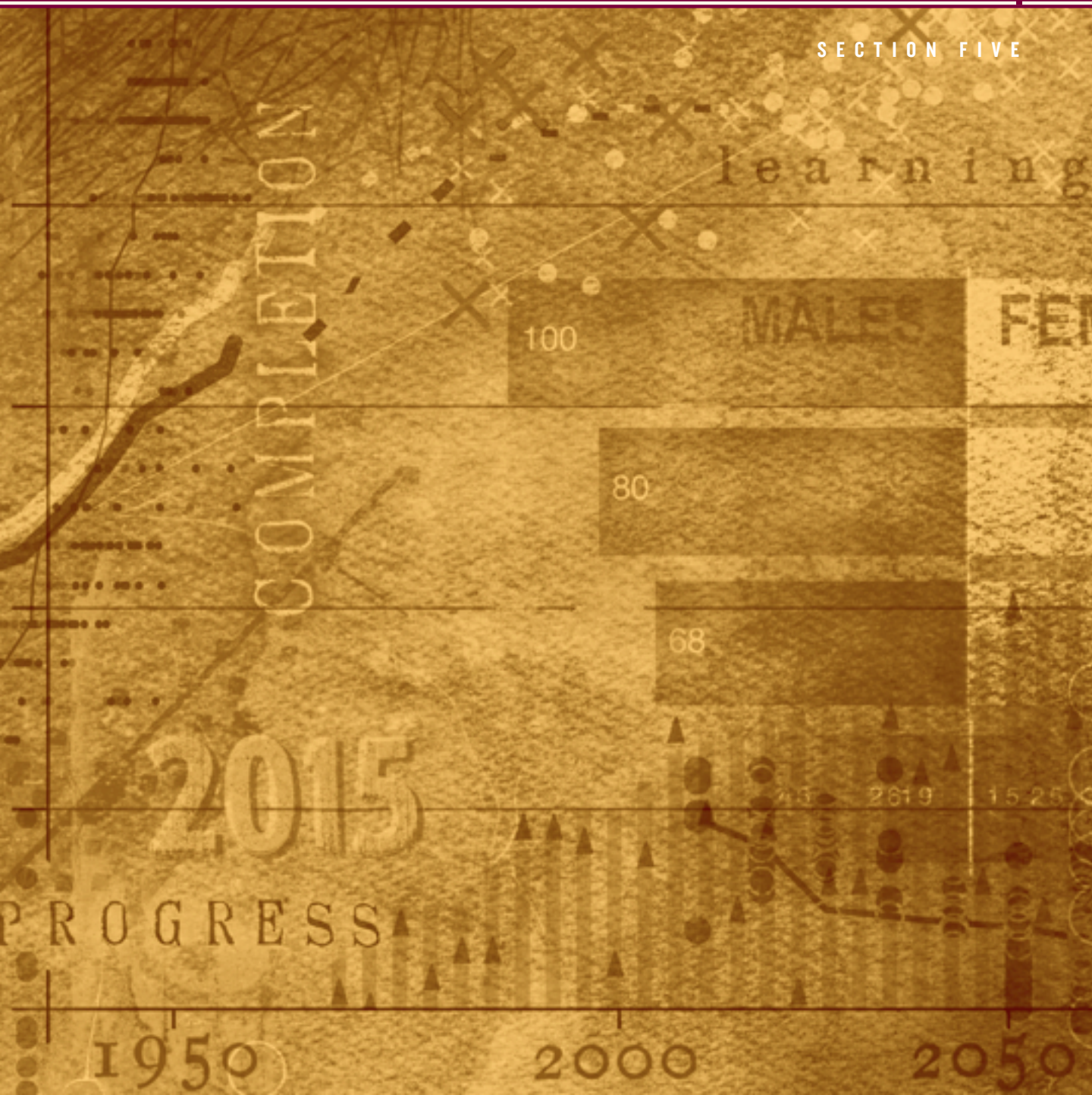
The National Resistance Movement assumed power in Uganda in 1986 following a tragic period of conflict and collapse. UPE was adopted as a goal soon after and a 1992 Government White Paper set forth the reforms necessary to transform an education system it condemned as discriminatory and elitist. In the 1996 elections, Free Primary Education (FPE) was a prominent and popular pledge, culminating in the President's abolition of primary school tuition fees, especially targeting girls and disabled children. enrollment surged, rising immediately from 2.3 million to 5.7 million in 1997 and 6.9 million in 2001, showing that direct costs to households had been a key constraint on access for the poor.

As well as dramatically expanding enrollment, Uganda has made major strides toward equity, virtually eliminating the enrollment gaps between rich and poor, girls and boys, and rural and urban areas. The use of public information to tackle corruption and mismanagement has helped ensure that over 90% of the greatly increased central funding reaches schools instead of a dire 28% in 1996. But such dramatic expansion put the education system under huge strain. Survival rates fell dramatically following FPE.

Political leadership at the highest level has played a critical role, from the initial abolition of primary school tuition fees to the continuing follow through on resources, implementation, and monitoring. The focus on equity has been a keynote throughout, with increased and reliable government financing of education prioritizing primary education over other levels of education. The mobilization and support of other domestic and international stakeholders has been notable but never guaranteed. HIV/AIDS remains a threat to the considerable achievements in spite of Uganda's much praised efforts to address this terrible pandemic.

Simultaneous reforms in the areas of decentralization, financial, and teacher management strained capacity, but the initial focus on increasing access did not preclude immediate and continuing efforts to increase quality. More teachers, more classrooms, and more textbooks have so far been insufficient. Too many children are still struggling to learn in a situation of overcrowded or non-existent classrooms, with teachers using ineffective methods and textbooks locked away for safekeeping. Participatory Poverty Assessments (PPAs) show that remaining direct costs to families (such as uniforms and stationery) cause 55% of drop outs. Too many girls drop out of school at puberty, and some rural districts, especially in the North, are badly affected by conflict and extreme poverty. The success in increasing primary enrollment and completion is creating the pressure of increased demand on secondary education.

Conclusion


SECTION FIVE
learning
COMPLETION
100
MALES
80
68
2015
PROGRESS
1950
2000
2050

The aims of this report were to explore the progress that has been made towards achieving universal primary education, and for those countries that would not achieve the goal by 2015, to project when they will achieve it given historical trends. The report uses a new projection methodology and data on educational trends from household surveys and population censuses to contribute to the ongoing international discussion on progress and strategies towards achieving universal primary education for all children.

This report adds to existing studies in this field by providing new evidence of education growth trends using data from household surveys and population censuses, and by presenting a projection methodology that is different from others that have been employed recently.

We find that for the last half of the 20th century, enrollment and completion growth has been consistently upward, although some countries have suffered temporary setbacks. Nevertheless, there is substantial variation in education growth, with the fastest countries taking less than 50 years to move from 10% to 90% primary school entry and the slowest taking over 120 years.

Long-term growth often has been accompanied by inequality between genders, regions, wealth groups, and urban/rural areas. Whereas there has been real progress in reducing the gender gap, gender disparities remain a serious matter in many countries, and the bigger gap is between rural and urban areas and between regions within a country.

While there are many developing countries that will not reach the EFA and MDG education goals by 2015, there is a group of countries that will reach the goals within the following decade, many of which are moving at a faster pace in recent years and should be considered education success stories and supported in their efforts. There is another group of countries for whom the goals are much further off but whose progress could be more rapid with changes in country circumstances and policies.

Education projection is still a developing methodology and we hope that this effort contributes to its refinement. Projections can be useful in identifying trends and helping assess progress nationally. Nonetheless, these projections, as others, are subject to error due to exogenous factors, an inability to predict future events and policy changes, and poor data quality.

> Recommendations

1 **Use educational attainment indicators, a better measure of educational outcomes, where relevant.** The present focus on a limited group of indicators to measure flows (such as intake rates, primary school completion rates, survival, and test scores) can provide an incomplete picture of reality, in particular in cases where there is considerable late school entry and slow progress through schools. Use of indicators that measure educational attainment by a certain age (for example: "ever went to school by age 14") and the use of cumulative and multiple measures of education in the form of pyramids can provide a clearer picture of what a child of school age today can expect in terms of school tenure and learning.

2 **Use and improve education data from household surveys and population censuses where relevant to supplement administrative data.** Administrative data are the most important source of information available to policy makers and managers. However, other reliable sources are available. Between household surveys and population censuses, most countries produce a regular flow of valuable data that should compliment administrative information. Surveys and censuses can be used as a complementary source for the rates of intake, enrollment, completion, and repetition. They provide a unique source of information to profile out-of-school children and long-term trends, and often are the only source of sub-national data. Further, it is important for education policy makers and managers to have input into household surveys and population censuses in order to collect data that is relevant to the education sector.

3 **Recognize and support countries that are making progress toward the goal of universal primary school completion.** Countries should be monitored according to the rate of education growth, not simply on whether they will reach universal primary school completion by 2015 in order to ensure that those countries making rapid progress are adequately recognized and supported.

4 **Target resources to underserved populations.** In most countries with incomplete school access and completion, children of privileged groups attend and complete primary school, while children in other well-defined sub-groups are left behind. These groups are often children in rural areas, in particular states or provinces, girls, and the poor. To attain UPE and UPC, those groups should be identified and targeted.

5 **Provide long-term support to countries that need it.** Some countries will need help for several decades, even under the most optimistic scenarios, to reach the goal of universal primary school education for all. Even if their growth rates accelerate to match the fastest historically observed rates—and some already have—these countries will require long-term support.

References

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APPENDIX I

A comparison of three projection methodologies

Education projections are an evolving methodology. As they have become more common in education in recent years, we compare our methodology and results to two recent international publications that have employed different projection methodologies to determine which countries will reach universal primary completion by 2015.

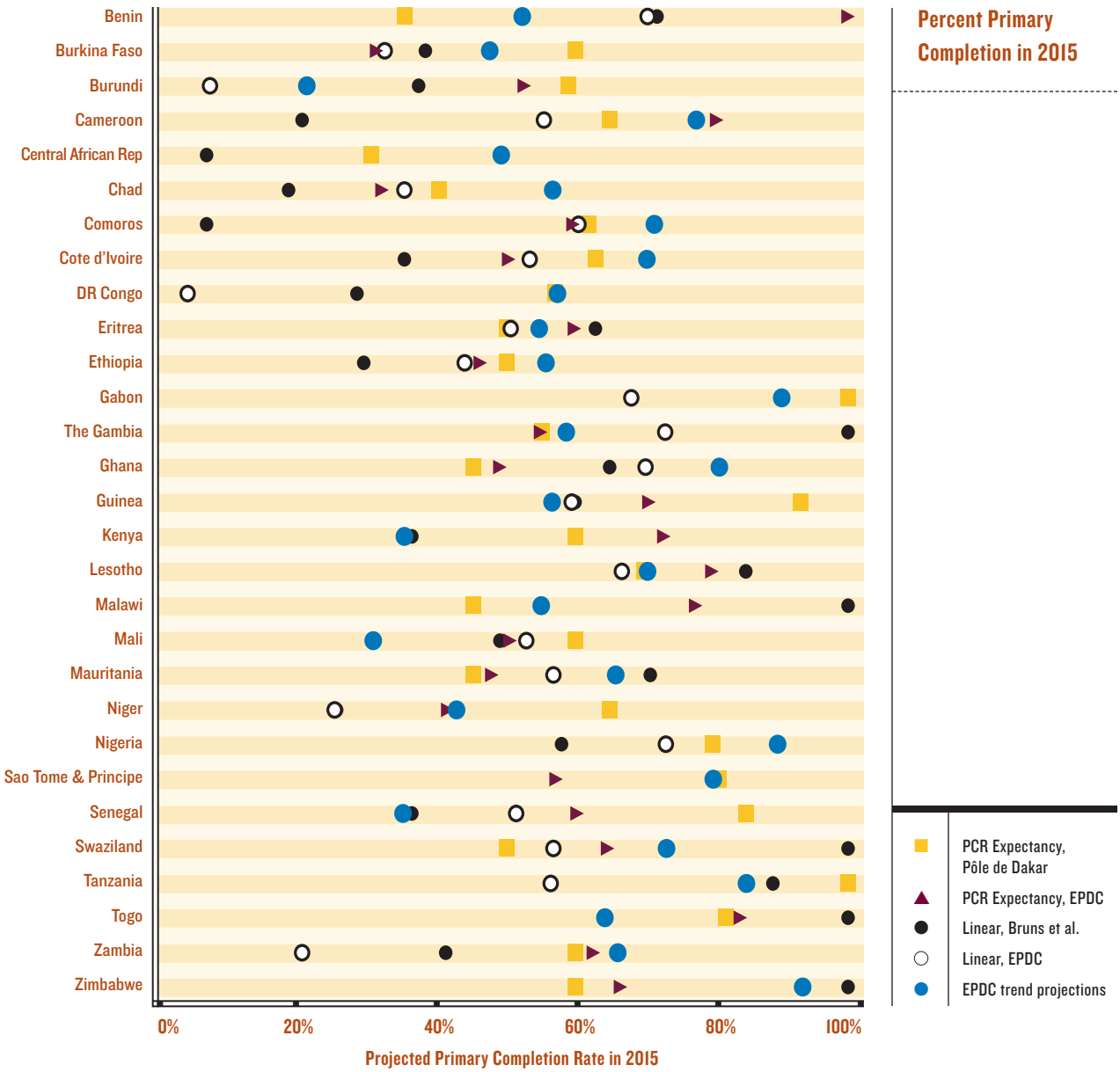
The first, A Chance for Every Child (Bruns et al., 2003), uses a linear extrapolation based on the estimated primary completion rates (1990 and most recent year). The primary completion rate is estimated as the total number of students successfully completing the final year of primary school, divided by the total number of children of official graduation age in the population. The second, Education for All in Africa: Paving the Way for Action (Pôle de Dakar, 2005) uses the 2002/3 primary completion rate, 2002/3 primary intake rate, and the 2002/3 survival rate to the end of primary school. The completion rate in the year 2002/3 + d (where d is the duration of primary school) is calculated by multiplying the 2002/3 intake and survival rates. Then the trend from 2002/3 completion to the 2002/3 + d completion rate is extrapolated to 2015.

The graph below compares the results from our analysis to these two projections for 29 African countries for which all three methodologies have been employed. In addition, we recalculated the Bruns et al. and Pôle de Dakar projections using the most recent UIS data. The correspondence between the five sets of projections is weak for most of the countries.

How does one make sense of these differences? One explanation is that results are sensitive to the different projection methodologies. Bruns et al. and Pôle de Dakar used linear extrapolations whereas we assumed a non-linear s-shaped curve. Patterns revealed in enrollment trends of countries that have already achieved universal primary education suggests that an s-shaped curve is more accurate.

Another explanation is that the differences are due to differences in data quality. There is a wide range of indicators and sources of education data used at both the international and national level, and these data are not always consistent (Loaiza, 2004). Furthermore, the quality of administrative data can vary demonstrably between and within countries. Bruns et al. and Pôle de Dakar rely mostly on administrative data from various sources; they used different definitions for the key indicator, the primary completion rate, and different methods of estimation. Our analysis relied primarily on household survey data, which we used to estimate historical trends of educational attainment. We believe attainment to be a simple measure of educational outcome, but household survey data are not without problems. They are subject to sampling error and the reporting may be biased.

Finally, all the projections are sensitive to drastic changes in the educational system since they are all based on historical trends. Therefore, the timing of the survey used in the analysis matters greatly. Whereas there is ongoing work and discussion on the standardization and the quality improvements of education data, inconsistencies in education data will lead to poor comparability of education projections.


Benin
Burkina Faso
Burundi
Cameroon
Central African Rep
Chad
Comoros
Cote d'Ivoire
DR Congo
Eritrea
Ethiopia
Gabon
The Gambia
Ghana
Guinea
Kenya
Lesotho
Malawi
Mali
Mauritania
Niger
Nigeria
Sao Tome & Principe
Senegal
Swaziland
Tanzania
Togo
Zambia
Zimbabwe
0%
20%
40%
60%
80%
100%
Projected Primary Completion Rate in 2015
Percent Primary Completion in 2015
PCR Expectancy, Pôle de Dakar
PCR Expectancy, EPDC
Linear, Bruns et al.
Linear, EPDC
EPDC trend projections

APPENDIX 2

Data Sources for Trend Graphs

Country Name	Survey Name	Year of Survey
Angola	MICS	2000
Armenia	DHS	2000
Azerbaijan	MICS	2000
Bangladesh	DHS	2000
Benin	DHS	2001
Bolivia	MICS	2000
Bosnia and Herzegovina	LSMS	2001
Brazil	Síntese de indicadores sociais 2000, based on the National Household Survey 2002 and Census 2000 (IBGE: Instituto Brasileiro de Geografia e Estatística)	2001
Burkina Faso	DHS	2003
Burundi	MICS	2000
Cambodia	DHS	2000
Cameroon	MICS	2000
Central African Republic	MICS	2000
Chad	MICS	2000
Colombia	DHS	2000
Comoros	MICS	2000
DR Congo	MICS	2000
Cote d'Ivoire	DHS	1999
Dominican Republic	DHS	2002
Egypt	DHS	2003
Eritrea	DHS	2002
Ethiopia	DHS	2000
Gabon	DHS	2000
The Gambia	MICS	2000
Ghana	DHS	2003
Guatemala	DHS	1999
Guinea	DHS	1999
Guinea-Bissau	MICS	2000
Guyana	MICS	2000
Haiti	DHS	2000
Honduras	La Encuesta de Hogares mayo, National Institute of Statistics (Instituto Nacional de Estadísticas)	2004
India	DHS	1999
Indonesia	DHS	2002
Jordan	DHS	2002
Kazakhstan	DHS	1999

Country Name	Survey Name	Year of Survey
Kenya	DHS	2003
Lao PDR	MICS	2000
Lesotho	MICS	2000
Malawi	DHS	2000
Mali	DHS	2001
Mauritania	DHS	2000
Mexico	XII Censo General de Población y Vivienda, 2000, INEGI (Instituto Nacional de Estadística Geografía e Informática)	2000
Moldova	MICS	2000
Mongolia	MICS	2000
Morocco	DHS	2002
Myanmar	MICS	2000
Nepal	DHS	2001
Nicaragua	DHS	2001
Niger	MICS	2000
Nigeria	DHS	1999
Peru	DHS	2000
Philippines	DHS	2003
Rwanda	DHS	2000
Sao Tome and Principe	MICS	2000
Senegal	MICS	2000
Sierra Leone	Sierra Leone Integrated Household Survey (Provisional 2003/2004)	2003
Solomon Islands	DHS 1999—Analytical Report	1999
Sri Lanka	Sri Lanka Integrated Survey 2000	2000
Sudan	MICS	2000
Suriname	MICS	2000
Swaziland	MICS	2000
Tajikistan	MICS	2000
Tanzania	DHS	1999
Togo	MICS	2000
Uganda	DHS	2001
Uzbekistan	MICS	2000
Vanuatu	The 1999 Vanuatu National Population and Housing Census	1999
Vietnam	DHS	2002
Zambia	DHS	2002
Zimbabwe	DHS	1999

Note: *DHS—Demographic & Health Surveys (USAID); MICS—Multiple Indicator Cluster Surveys (UNICEF); LSMS—Living Standards Measurement Study (World Bank)*

APPENDIX 3

Data Sources for Learning Pyramids

Country	% of Cohort to Ever Attend School	% of Cohort to Reach Grade 4 (or Grade 5)	% of Cohort Able to Read by End of Primary
Angola	DHS	MICS	
Azerbaijan	The Population Census of the Azerbaijan Republic	UIS	
Bangladesh	DHS	UIS	
Benin	DHS	UIS	DHS
Bolivia	DHS	UIS	LLECE
Brazil	Síntese de indicadores sociais 2000. Rio de Janeiro	UIS	
Burkina Faso	DHS	UIS	DHS
Cambodia	DHS	UIS	DHS
Colombia	DHS	UIS	LLECE
DR Congo	MICS	UIS	
Cote d'Ivoire	DHS	UIS	
Dominican Republic	DHS	UIS	DHS
Egypt	DHS	UIS	DHS
Ethiopia	DHS	UIS	DHS
Gabon	DHS	UIS	
Georgia	EFA Global Monitoring Report 2005	UIS	
Ghana	DHS	UIS	DHS
Guatemala	DHS	UIS	
Guinea	DHS	UIS	
Guinea-Bissau	DHS	UIS	
Honduras	Emilio Porta, Nicaragua	Encuesta Permanentes de Hogares de Propósitos Múltiples 2004	LLECE
India	DHS	UIS	
Indonesia	DHS	UIS	DHS
Kazakhstan	DHS	UIS	
Kenya	DHS	MICS	DHS

Country	% of Cohort to Ever Attend School	% of Cohort to Reach Grade 4 (or Grade 5)	% of Cohort Able to Read by End of Primary
Lesotho	MICS	UIS	DHS
Madagascar	DHS	UIS	MLA
Malawi	DHS	UIS	DHS
Mali	DHS	UIS	DHS
Mauritania	DHS	UIS	
Mexico	Censo General de Población y Vivienda 2000	UIS	
Nepal	Population Census 2002, Central Bureau of Statistics	UIS	DHS
Nicaragua	DHS	UIS	DHS
Niger	DHS	UIS	MLA
Peru	DHS	UIS	
Philippines	DHS	UIS	
Rwanda	DHS	UIS	DHS
Sao Tome and Principe	MICS	UIS	
Senegal	DHS	UIS	MLA
Sri Lanka	Sri Lanka Integrated Survey 2000	Sri Lanka Integrated Survey 2000	
Swaziland	MICS	UIS	
Tanzania	DHS	UIS	
Togo	DHS	UIS	
Uganda	DHS	UIS	DHS
Vietnam	DHS	UIS	
Yemen, Rep.	DHS	UIS	
Zambia	DHS	UIS	DHS
Zimbabwe	DHS	UIS	

Note: *UIS: United Nations Institute of Statistics;*
DHS: Demographic Health Surveys;
MICS: Multiple Indicator Cluster Surveys;
MLA: Monitoring Learning Achievement

Notes

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