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# Demographic Trends and their Humanitarian Impacts

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This paper has several purposes. It describes the present demographic situation, which inevitably contributes to future prospects, whether continued population growth or decline. This paper also addresses the central issue of the vastly different demographic situations in the world's rich and poor countries.

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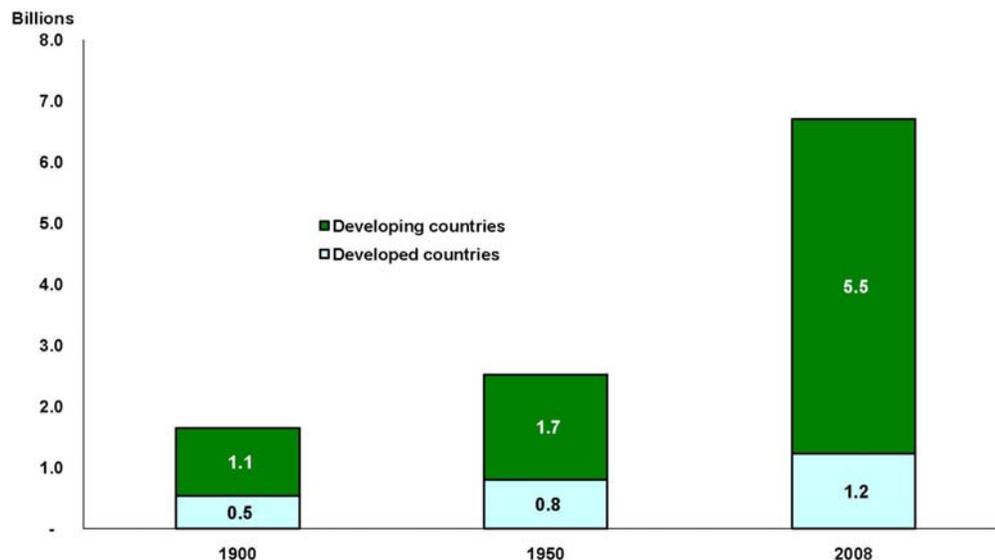
#### OVERVIEW – HOW DID WE GET WHERE WE ARE?

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One of the most significant single events of the 20<sup>th</sup> century, perhaps *the* most significant single event, was the unprecedented growth of world population. In 1900, world population totaled 1.6 billion<sup>1</sup>, after having reached the one billion mark only a century earlier. By 2000, world population had grown to 6.1 billion. The year 2009 finds us quickly approaching seven billion, which is likely to be passed just two years from now.

The transformation in world population has been more than simply an increase in total global numbers. From 1900 to 2009, about 86 percent of world population growth took place in the developing countries<sup>2</sup>. Today, virtually *all* of the 82 million yearly population growth is in the developing countries. There are 125 million births and 45 million deaths

**Figure 1. Total Population, Developed and Developing Countries  
1900, 1950 and 2008**



Source: Population Reference Bureau, United Nations Population Division

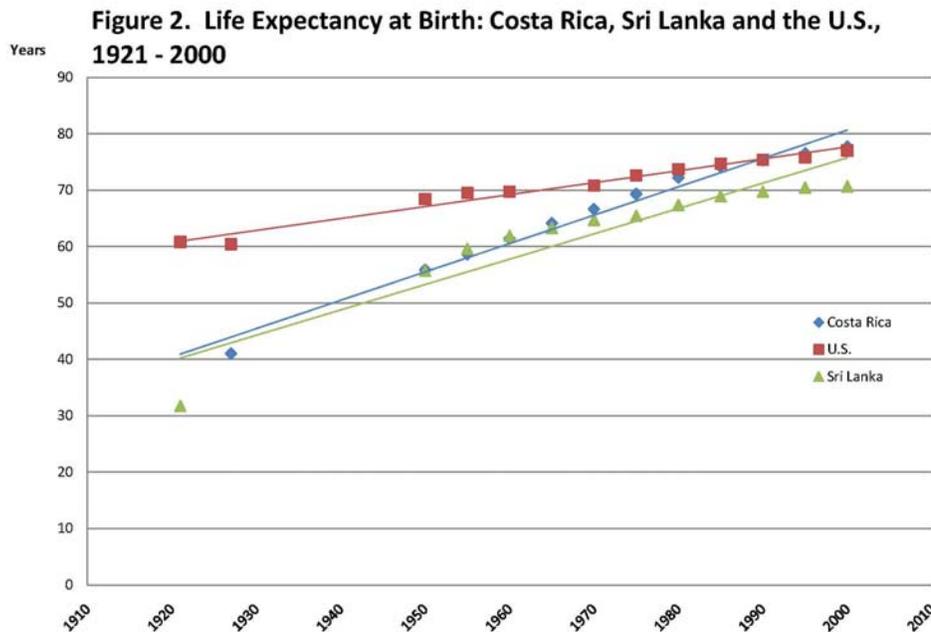
each year in the developing countries compared to 14 million births and 12 million deaths in the developed countries. The small positive balance in developed countries is largely due to the countries of the New World, such as Australia and the United States. Throughout Europe and also in Japan, deaths now exceed births, something that previously only happened during wars or epidemics but never in the long term.

In 1900, the population of the developed countries stood at about 540 million, or one-third of the global total. Despite more than doubling to the present 1.2 billion, the developed countries' share has dropped to 18 percent. Over the same period, the developing countries' population increased from 1.1 to 5.5 billion (Figure 1). But the true population “explosion” was a post-World War II event. The population of the developing countries more than *tripled* from 1950 to the present. Little wonder that Paul Ehrlich penned his iconic *Population Bomb* in 1968 as awareness of this growth began to spread. Earlier, the cover of a 1963 issue of *U.S. News and World Report* had asked: “Too Many People in the World?”

### THE MORTALITY REVOLUTION

What caused such phenomenal growth? The increase in global numbers in the second half of the last century resulted from what may be called the “mortality revolution.” Humankind’s history had been one of a constant struggle for existence against injury, disease and famine. In the 19<sup>th</sup> century, early epidemiologists began scientific investigations into disease outbreaks and their prevention. The simplest of public health measures, such as the proper disposal of waste, began to reduce disease and lead to a gradual lengthening of life<sup>3</sup>. Louis Pasteur developed germ theory as well as vaccines, following on the work of Edward Jenner. Medical practice remained relatively primitive into the 20<sup>th</sup> century but, as time went on, life expectancy at birth began to increase in the developed countries, reaching 65 years by 1950<sup>4</sup>. But few of these benefits applied to the developing countries until the second half of the century. At that point, modern medical care was exported to the developing countries virtually overnight, a process that continues, however incomplete, until the present day.

The effects were dramatic. It had taken the developed countries centuries to develop public health practices and medical care. Developing countries began to benefit almost immediately. Around 1900, life expectancy at birth in India was about 23 years; today it



Source: United Nations Population Division, U.S. National Center for Health Statistics, UN Economic and Social Commission for Asia and the Pacific

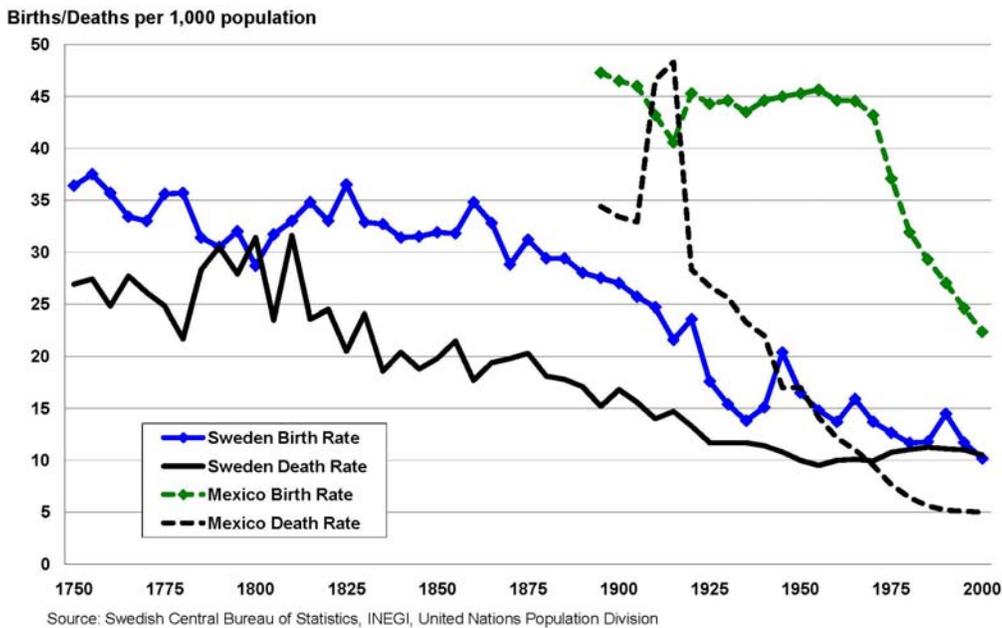
stands at 65. Figure 2 provides an illustration of the rapid rise in life expectancy at birth in Costa Rica and Sri Lanka compared to the United States. Even as late as the 1920s, life expectancy was typically in the low 30s in many developing countries. But how did rising life expectancy contribute to unprecedented population growth? The developed countries had made their transition from low to high life expectancy without a period of rapid population growth.

### THE TWO DEMOGRAPHIC TRANSITIONS

The “demographic transition” is a general pattern, or model, of changes in birth and death rates in a country over a period of time. Specifically, the transition simply describes the change from a time of high birth and death rates to low birth and death rates. But the similarity between the way the transition took place in the developed and developing countries ends there.

In Europe, gradual progress against mortality from very basic public health techniques to early medical practice and finally to modern practice consumed centuries. The rise of market economies with wider distribution of food and goods also helped countries ride out periods of local crop failures with the result that survival became a bit more predictable<sup>5</sup>.

**Figure 3. What Caused the 20th Century Population Explosion?  
Sweden and Mexico Compared**



During that lengthy period of development, society did not remain static. Market towns became small cities, cities became metropolises. The need for large families to work the farms diminished and children often became a financial liability as society urbanized. As a result, the birth rate frequently changed with the death rate, both falling more or less in parallel. This is evident in Sweden, a country with a long history of good vital statistics (Figure 3).

The Swedish birth rate decreased slowly from the mid-18<sup>th</sup> century and the death rate declined along with it. Note that the death rate was subject to some wild fluctuations in the beginning as periodic epidemics and food shortages took their toll. Over time, however, as society slowly learned to cope with such threats, mortality fluctuations began to disappear. During Sweden's history, the **rate of natural increase**, or the difference between the birth and death rate, almost never rose above 10 per 1,000, or one percent of the population.<sup>6</sup> As a result, population growth was a slow process. In Norway, the average annual growth rate from 1800 to 1950 was 0.9 percent per year as the population grew from about 880,000 to 3.3 million.

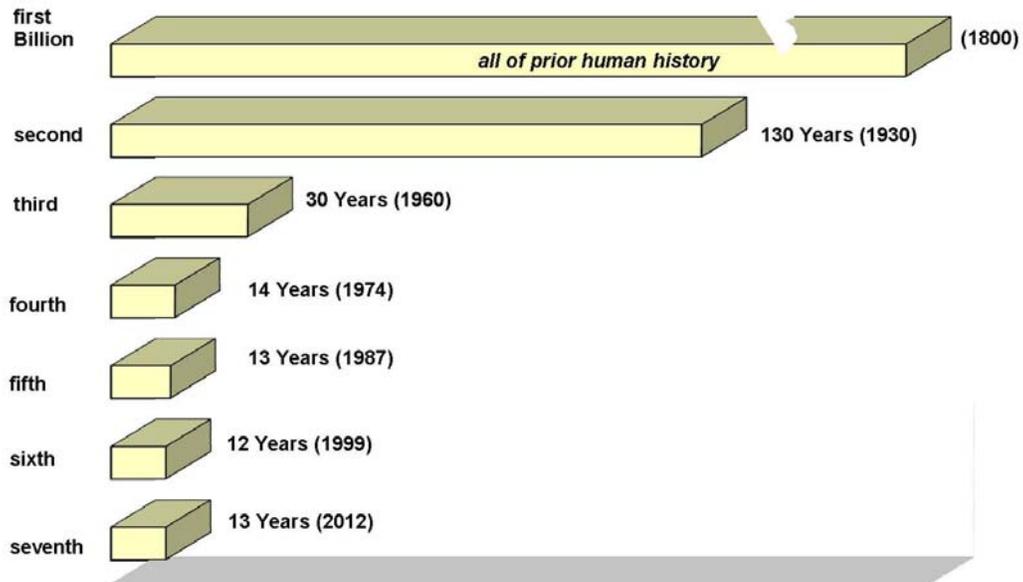
The story has been completely different in the developing countries. These countries began the 20<sup>th</sup> century with high birth and death rates, as had the developed countries centuries before. But during that century, particularly after World War II, the practice of modern medicine, immunization campaigns, and disease prevention programs spread quickly throughout the developing countries, many via the specialized agencies of the new United Nations. The change came so quickly that developing countries were left with both modern medicine *and* traditional values for large families. Death rates fell and birth rates did not. The rate of natural population increase rose to 2.5 percent, then 3.0 percent and even higher. The rates can be put into perspective when we consider them in terms of "doubling time." The 0.9 percent growth rate for Norway mentioned above will, if maintained, double a population's size in 77 years. A three percent growth rate will double a population in 23 years.

A key point regarding population growth is that the rapid population growth that was experienced in developing countries – and in many cases still is – never occurred in the developed countries. This point is very often missed in discussions of population growth "control."

#### **Box 1. The Total Fertility Rate (TFR)**

The total fertility rate (TFR) is a key demographic measure that will be referenced many times in this article. It is simply the average number of children a woman would bear in her lifetime if the rate of childbearing of a particular year were to remain constant. As an example, there are currently 40 births per 1,000 people in Ethiopia; this measure is referred to as the **crude birth rate**. The TFR, however, is 5.3 children per woman, a more meaningful way of describing fertility. In this paper, considerable attention is paid to fertility since it will be the major determinant of developing countries' demographic futures, more so than mortality and more so than migration.

**Figure 4. World Population: Number of Years Required to Add Each Billion**



Source: Population Reference Bureau, United Nations Population Division

Few graphs can bring home the effect of such never-before-seen population growth rates as Figure 4. Beginning in the 1970s, each additional billion in global population has been added in less than 15 years. While numbers alone rarely tell the whole story, numbers of that magnitude have a significant potential impact on humanitarian concerns.

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## THE TWO “WORLDS” OF POPULATION

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By the turn of this century, the planet had undergone a number of demographic transformations that have changed the way we view our world and will continue to do so for the foreseeable future. The collapse of the birth rate in many developed countries and in some newly-industrialized countries<sup>7</sup> has altered their demographic future in a number of ways. Population decline is clearly in many of those countries' futures but the more serious consequence is the unprecedented aging of their societies. In Japan, more than one out of five persons is already over age 65 and that proportion will continue to grow. Throughout many parts of Africa, Asia and Latin America, growth will continue, often very rapidly as it has in Africa. In some developing countries, consumer demand will rise while others will continue to rely on large amounts of foreign aid for their survival.

**Figure 5. Population of Developed and Developing Countries, 1950-2050**

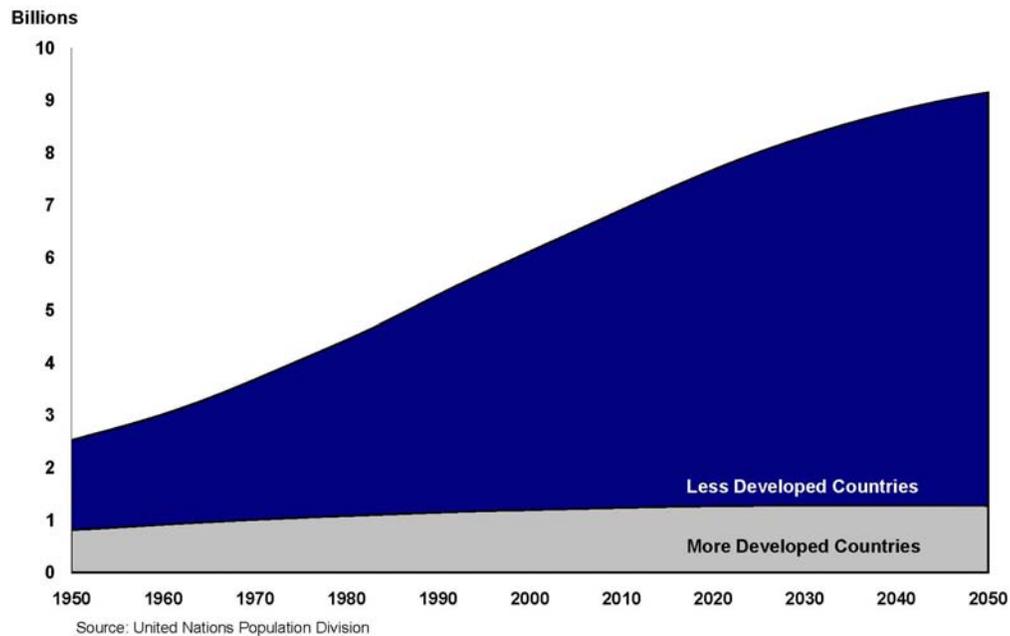


Figure 5 gives eloquent testimony to the two “worlds” of population. For a time, the primarily European colonial powers ruled the world, for all practical purposes. But, by 1950, weakened by two horrific wars, the day of the powers was ending. India was set free in 1947 and the majority of the colonies became independent in the 1960s and 1970s. At that point, however, many of the former colonies were either not completely ready for a peaceful independence nor did they have the resources for development. Quite a few remain in that condition today but the times are changing for some. Countries that were predominantly agricultural have emerged as budding or real industrial and economic powers, providing significant competition for the “West.” South Korea and Taiwan certainly serve as

examples. In some countries, India for example, a very small minority of an upper middle class has benefited from development and economic growth.

The news is full of glowing reports of economic growth in China and India. The 2008 increase in world oil prices was even blamed on those two countries as if their rising demand could have had such a huge effect in such a short period. There is some truth in the often exaggerated media reports, though the situation is far more complex as we shall discuss in later sections. But, in general, the sheer size of the developing countries, coupled with development itself, will change the world in many ways.

The picture of a world numerically dominated by the developing countries in Figure 5 is not fanciful. In making projections, demography has certain advantages over economics in that there is a partial certainty in its predictions. In economics, unseen factors can suddenly arise, radically changing the outlook. The current global economic situation gives eloquent testimony to that. But the overall picture in Figure 5 will prove to be fundamentally correct, if not to the last decimal place. The aspect of certainty in demography is that the current age distribution of a country is well known, so that we know how many people will enter the childbearing ages as time goes on. While we cannot know exactly how many children they will have, we can be relatively certain that the number will change only gradually.

There are enormous humanitarian implications in the fact that the largest population increases are now taking place in the poorest countries of the world and in the poorest areas *within* countries, and this trend will almost certainly continue for the remainder of the century. A major concern is simply that the conditions under which the poor live are not likely to improve to any extent as their numbers continue to grow disproportionately vis-a-vis the upper classes. Without significant increases in national programs to improve the housing, education and overall health situation of the poor, we will continue to have a situation in which huge numbers of people in the 21<sup>st</sup> century live in abject poverty. The situation is most acute in Africa and Asia. Roughly half the world's population lived on less than US\$2 a day in 2005, purchasing power equivalent, according to the World Bank. The challenge for the humanitarian community lies in the sheer magnitude of this problem. In sub-Saharan Africa, over half a billion people live below \$US2 a day, and in India alone this number is over 800 million. These are very large numbers, representing very many vulnerable households.

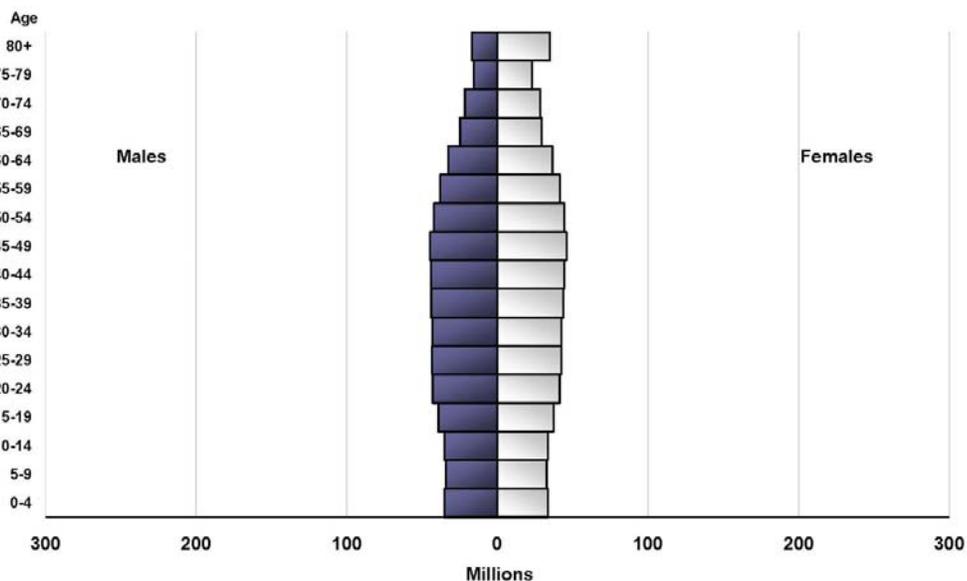
As population – and with it humanitarian need – continues to grow in the developing countries, we can legitimately question whether the wealthier nations will be able to continue to provide assistance to the poorer nations, saddled with the expense of a pension age population supported by a dwindling working age population, along with rising health and geriatric care demands. Economic constraints in the wealthier countries caused by aging populations will place great pressure on resources available for foreign aid to the poorest countries. In the industrialized countries with very low fertility, particularly those of Europe and East Asia, the large and increasing proportions of elderly and retired populations will obviously place a tremendous strain on their economies. Even in the United States, where fertility is among the highest of the “rich” countries, the unsustainable cost of social programs such as Medicare and Social Security will cause very serious budget crises. Will these countries continue to see foreign aid, upon which so many developing countries depend, as a priority or will foreign aid fall under the budget-cutting knife? A somewhat unexpected development, the current global economic crisis, may offer some clues, even if it

pales in comparison to the potential economic crisis which may be caused by the growth of an unprecedentedly large aging population (i.e. up to 40 percent of the population over age 65). This crisis would be structural in nature, and not subject to improvement or recovery.

### AGE DISTRIBUTIONS – THE REAL KEY TO FUTURE POPULATION GROWTH

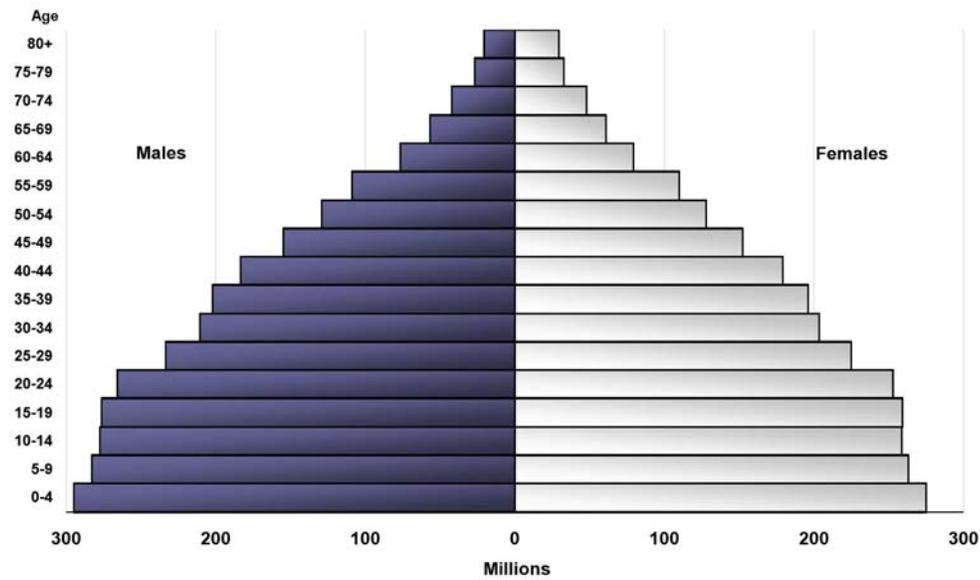
The past is prologue in demography, perhaps more so than in other socioeconomic disciplines. Barring cataclysmic changes in mortality or wild swings in the birth rate, a population’s age distribution will play a dominant role in future population growth or decline. The vast difference in the appearance of the age pyramids of the developed and developing countries in Figures 6 and 6a is astounding. Clearly, there is a large amount of population growth to come in the developing countries no matter what course the birth rate may take over the next several generations. Even today, with the declines in birth rates that have taken place, high proportions – up to 45 percent – of populations are below the age of 15, and the cohorts transitioning into the childbearing ages become larger every year. *[See Annex 1 for a more comprehensive look at the development and use of population projections.]*

Figure 6. Developed Countries by Age and Sex, 2009



Source: United Nations Population Division

Figure 6a. Developing Countries by Age and Sex, 2009



Source: United Nations Population Division

The reverse is true in the developed countries. Protracted periods of low fertility have resulted in younger age groups that have diminished greatly in size compared to those of their parents. Even very substantial rises in the birth rate – which no one expects – can now only have a modest mitigating effect on societal aging. Table 1 contains a reasonable expectation of how population growth is likely to occur between now and 2050. The small amount of growth projected for the developed countries masks the fact that the population of Europe as a whole is expected to decline while that of the “New World” countries of Australia, Canada, New Zealand and the United States grow. Much of their growth, however, will be in the form of immigration from developing countries as “native” populations decline.

Table 1. World Population by Region, 2008 and 2050 (millions)

	2008	2050	Change
WORLD	6,705	9,352	2,647
Developed Countries	1,227	1,294	67
Developing Countries	5,479	8,058	2,579
Least Developed Countries	797	1,664	867
AFRICA	967	1,932	965
North Africa	197	307	110
Sub-Saharan Africa	809	1,698	889
LATIN AMERICA & CARIBBEAN	577	778	201
ASIA	4,052	5,427	1,375

ASIA less CHINA	2,728	3,990	1,262
NORTH AMERICA	338	480	142
EUROPE	736	685	-51
OCEANIA	35	49	14

Source: Population Reference Bureau, 2008 World Population Data Sheet

## **Box 2: What Do We Know and How Do We Know It?**

In 2009, the global population total is put at 6,810 million by the Population Reference Bureau, 6,829 million by the United Nations Population Division and 6,768 million by the U.S. Census Bureau's International Programs Center. Further, the global TFR is 2.6 children per woman, and life expectancy at birth is 68 years. Such figures are frequently cited, yet the question of how we could possibly know all this is rarely asked.

The improvement in demographic statistics over the past few decades has been remarkable, particularly in the case of developing countries. In the developed countries of Europe and North America, and in Japan and others, long histories of quality census taking, along with the complete registration of births and deaths give us a picture considered as nearly accurate as possible. That is infrequently the case with statistics on immigration, however.

The real revolution in statistics has come in the developing countries. Every developing country has now taken a national census and many have done so at regular intervals. Censuses are obviously a vital component of our demographic knowledge. There are problems in taking censuses, which are among the largest exercises a country usually undertakes. Reaching remote areas or areas involved in conflict creates special problems. In developing countries, young children are often under-reported and people frequently do not know their age. But censuses tell us much more than just the population size (or a reasonable approximation). We learn much about the age distribution, and the proportions of young and old. Census questions on births and deaths in the household provide strong clues as to fertility and mortality levels. And, they form the basic frame for population surveys. But censuses are typically taken at long intervals such as ten years or have their sequence interrupted by national events. Fortunately, a regular series of demographic surveys in developing countries began in the 1970s and continues to this day.

The World Fertility Survey began in 1974 and, as its name implies, was intended to fill in gaps in knowledge on issues such as birth rate levels, family planning and related issues in developing countries. That program has continued today under the title Demographic and Health Survey (DHS) ([www.measuredhs.com](http://www.measuredhs.com)). These surveys are taken in cooperation with national statistical offices and health ministries with funding from USAID, the UNFPA, UNICEF and other foreign assistance agencies. In addition to the DHS, the Reproductive Health Survey Program (RHS), administered by the U.S. Centers for Disease Control, Multiple Indicator Cluster Surveys (MICS) ([www.childinfo.org](http://www.childinfo.org)) which are managed by UNICEF, and surveys taken by national and regional organizations fill in many gaps in our knowledge.

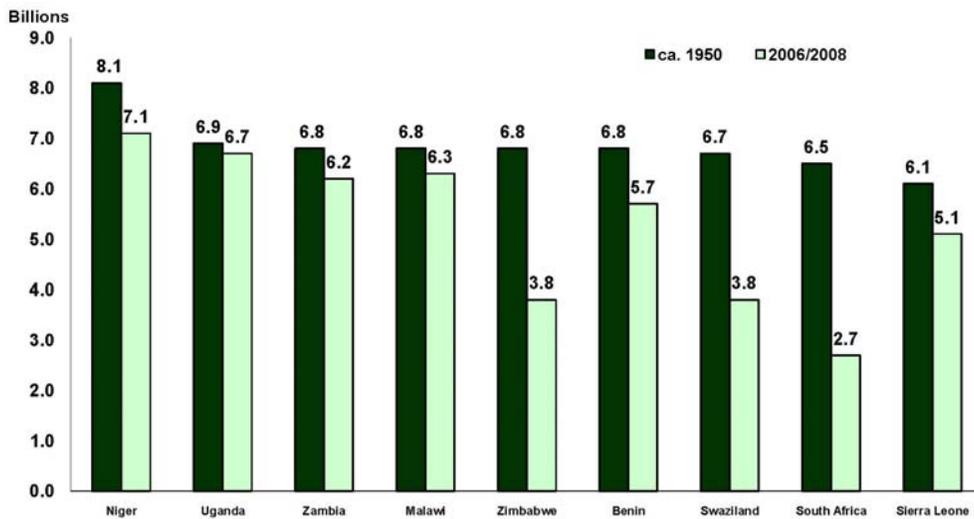
While survey data are nationally representative, they are still estimates containing typical margins of error and may suffer from response problems. Women may omit a child born who died very early, a potential problem for estimating infant mortality rates. Or, they may round off the year a child was born, pushing births back in time so fertility in the recent past may seem higher than at the current time. Some survey results have been rejected as being clearly inaccurate. Nonetheless, many of the statements we make about demographic change in developing countries come from such surveys.

## AFRICA: A REGION IN DEMOGRAPHIC CRISIS

“A region in demographic crisis” is certainly a title that pulls few punches, but realistic pessimism regarding the region’s demographic future has been gathering momentum. Demographically, sub-Saharan Africa (SSA) differs sufficiently from the North African countries so that it is usually treated separately. No other region has as much potential for percentage population increase as does SSA. No other region continues to typify the classic notion of the population “explosion.” Asia may add more people due to its sheer initial size, but SSA is projected to more than double between 2009 and 2050, even with quite high levels of HIV/AIDS in some countries.

In 2009, SSA’s population numbered about 843 million, up from 183 million in 1950, an increase of 4.6 times (UN2009). In comparison, if the same had happened in the United States, the country’s population would be more than twice the size it is today. Women in SSA now average 5.4 births per woman during their lifetimes, the highest in the world, although there has been some decrease from 6.7 in 1950. The more significant TFR declines, to less than four children per woman, have occurred in Botswana, Gabon, Lesotho, Namibia, South Africa, Swaziland and Zimbabwe on the mainland and in some small island nations such as Cape Verde, Mauritius and Seychelles.

**Figure 7. Total Fertility Rate, Selected Countries of Sub-Saharan Africa 1950 and 2006/2008**



Source: United Nations Population Division, Demographic and Health Surveys, Multiple Indicator Cluster Surveys, Statistics South Africa

TFRs for countries in SSA which have had a demographic survey since 2006 or later (for South Africa, the official recent TFR is shown) are given in Figure 7. It is apparent that fertility rates have declined little in over half a century, with some exceptions. (It is not advisable to calculate precise percentage changes from 1950 to the present, as the 1950

figures are rough estimates.) The United Nations reports that of the 15 developing countries with the smallest declines in fertility worldwide, 14 are in sub-Saharan Africa.

**Figure 8. Population of Sub-Saharan Africa, 1950 - 2050, Three Scenarios**

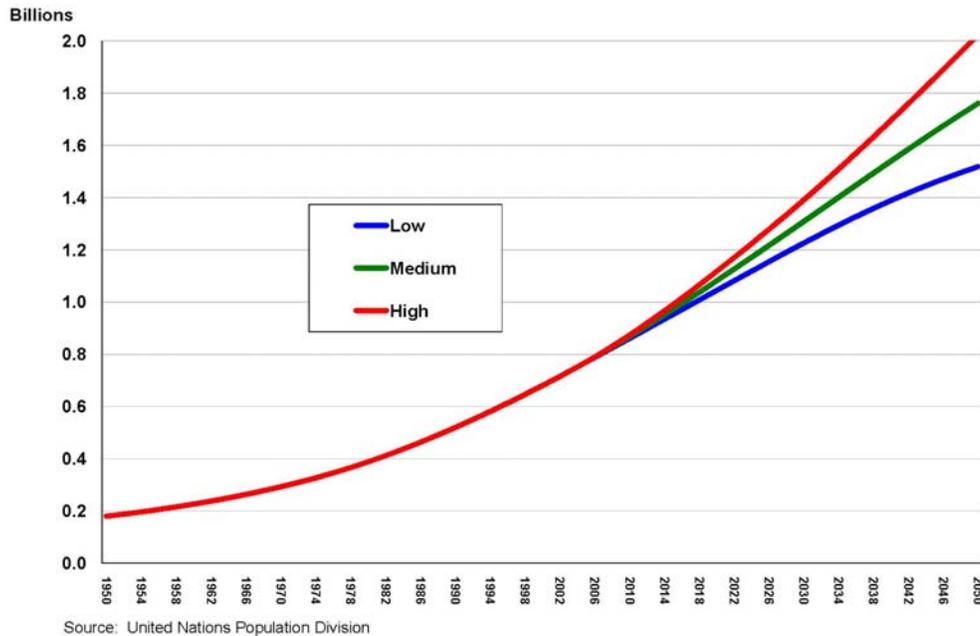


Figure 8 shows the most recent series of UN projections for SSA to mid-century, a date that now seems less distant demographically than it once did. The UN projections call for a possible range of populations in 2050 of one-half billion, from 1.5 to 2.0 billion. Although that is quite a large range, one must also look first at what was assumed about future fertility trends by the UN to arrive at any of the above projections. In order to achieve the medium projection of 1.76 billion, the TFR in SSA would have to decline to 2.5 children per woman by the last five-year period in the projection, 2045 to 2050. To realize the low projection, it would have to decline to 2.0; should it decline to only 3.0, the high projection would result. An often-overlooked point is that it is also important *where* fertility declines. If it declines more rapidly in smaller countries, which has largely been the case until now, projection assumptions will have to be re-worked, perhaps rather drastically.

Demographers and others who work in Africa and who are knowledgeable with respect to population policies on the continent have used phrases such as “benign neglect” when it comes to the attention many leaders and elites have paid to population growth. For many, even TFRs as low as 3.0 seem a near impossibility in SSA for the foreseeable future. The fact that the projection of fertility decline makes some large assumptions is often overlooked. Governments must have a policy that recognizes that rapid population growth is a terminal obstacle to development; they must make reproductive health services available either from government funds and health systems as well as private sources; and they must have the political will to maintain programs despite corruption and political upheavals. The UN is

very careful to point out that their projections essentially assume that these things will, in fact, happen:

The urgency of realizing the projected reductions of fertility is brought into focus by considering that, if fertility were to remain constant at the levels estimated for 2005-2010, the population of the less developed regions would increase to 9.8 billion in 2050 instead of the 7.9 billion projected by assuming that fertility declines. That is, without further reductions of fertility, the world population could increase by nearly twice as much as currently expected.

(UNPD press release March 11, 2009

<http://www.un.org/esa/population/publications/wpp2008/pressrelease.pdf>)

The gloomy outlook for future fertility decline in SSA has been addressed further by the Population Division. The UN classifies 49 less developed countries as *least developed*; 31 of those are in SSA. Slow fertility decline has been blamed on “lack of government commitment” by the UN, which also points out that historically, strong and consistent government efforts have been quite effective (UNPD Policy Brief 3/2009). The government of Mauritania did not report to the UN that it felt its fertility was too high until 2005, although fertility had already declined to about 4.7. The government then declared a TFR goal of 4 children, not a very ambitious one, and the National Reproductive Health Programme of 1998-2002 set a target of a contraceptive prevalence rate of only 10 percent. In fact, virtually every SSA country has stated that it now considers its fertility level to be too high<sup>8</sup> but translating the policy into action is often elusive.

Fertility decrease in Africa’s most impoverished countries could be accelerated if just the women who said that they wished to use family planning to either limit their number of children or better space their births could actually receive family planning services. One out of four women in the least developed countries has an “unmet need” for family planning, either for spacing or limiting births. The figures, according to DHS surveys, are as high as 41 percent of women in Uganda, 38 percent in Rwanda, 34 percent in Ethiopia and not far below that in many other countries of SSA.

When considering SSA’s possible demographic future, we do have a considerable body of data to take into account. In Table 2, the most recent DHS surveys are listed. Generally, the lowest fertility is found in the southern part of the continent, along with some of the highest rates of contraceptive usage. But Table 2 also allows us to evaluate just how well some indicators actually predict fertility. To put things in perspective, the contraceptive prevalence rate (CPR) in industrialized countries is about 70 percent.

**Table 2. Fertility and Family Planning Use in sub-Saharan Africa  
Recent Surveys**

Country/Survey Year	Total Fertility Rate	Modern CPR (%)	Percent of Women with 5 Living Children Who Want No More

<b>Benin 2006</b>	5.7	6.2	49.5
<b>Burkina Faso 2003</b>	5.9	8.6	37.9
<b>Cameroon 2004</b>	5.0	12.5	35.7
<b>Chad 2004</b>	6.3	1.6	10.9
<b>Congo 2005</b>	4.8	12.6	36.9
<b>Congo, Dem., Rep. 2007</b>	6.3	5.8	30.6
<b>Ethiopia 2005</b>	5.4	13.9	57.9
<b>Ghana 2003</b>	4.4	31.6	58.9
<b>Guinea 2005</b>	5.7	5.7	40.0
<b>Kenya 2003</b>	4.9	31.5	68.8
<b>Lesotho 2004</b>	3.5	35.1	76.9
<b>Liberia 2007</b>	5.2	23.1	54.2
<b>Malawi 2004</b>	6.0	28.1	63.6
<b>Mali 2006</b>	6.6	6.4	33.5
<b>Mauritania 2000/2001</b>	4.7	12.9	24.5
<b>Mozambique 2003</b>	5.5	21.6	45.7
<b>Namibia 2006/2007</b>	3.6	45.7	63.5
<b>Niger 2006</b>	7.0	5.0	11.6
<b>Nigeria 2003</b>	5.7	8.1	34.4
<b>Rwanda 2005</b>	6.1	10.3	64.3
<b>Senegal 2005</b>	5.3	10.3	36.5
<b>Sierra Leone 2008</b>	5.1	6.7	62.8
<b>Swaziland 2006</b>	3.9	47.7	77.4
<b>Tanzania 2004</b>	5.7	20.0	51.4
<b>Uganda 2006</b>	6.7	17.9	52.2
<b>Zambia 2007</b>	6.2	32.7	53.2
<b>Zimbabwe 2005/2006</b>	3.8	58.4	68.2
<b>Mean Value</b>	5.4	19.3	48.2

Notes: The total fertility rate is generally given for the three year period before the survey.  
Modern contraception includes, in order of use, injectables, the pill, female sterilization and condoms.

*Source: Demographic and Health Surveys*

In the U.S., modern usage is 68 percent of currently married women and the TFR is 2.1. Two SSA countries, Democratic Republic of the Congo (the former Zaire) and Zambia both have essentially the same TFR, 6.3 and 6.2, respectively. Yet their usage of modern contraception is hugely different; only 5.8 percent of married women reported using modern contraception in DR Congo, compared with 32.7 percent in Zambia. Despite the fact that contraceptive use is a clear necessity to lower fertility and rates are frequently cited in the literature, many other factors must be considered, including, as mentioned earlier, consistency of use. In some DHS surveys in SSA, women were asked if they had discontinued use of contraception after one year and, if so, why. The percentage that had discontinued use ranged from 20.2 percent in Zimbabwe to 40.9 percent in Ethiopia. The

fear of side effects and “other reasons” were the most common reasons, not the desire to have another child.

Another way to ponder future fertility decline is to ask women how many children they desire, whether their last birth was unwanted or mistimed, and the like. Those two methods can be affected by the possible reluctance to label a child one already has as unwanted. In Table 2, the column showing the percentage of women who had five living children and who said that they wished to cease childbearing at least avoids the need to call a child unwanted. On average, not until women in SSA have five children do half say that they would like to stop having them. This would seem to render projections of fertility decline in the region a tricky proposition at best.

### HIV/AIDS

For many years, demographers were careful to point out that population projections do not attempt to factor in the effects of epidemics, famines or wars due to their unpredictable nature. The emergence of HIV changed all that. HIV differs from most other diseases in that it remains incurable, shows no symptoms until late stages and is largely confined to younger adults in prime working age and to their children. Since SSA is the region most seriously affected, a discussion of HIV is most relevant at this point. Reports of HIV in SSA led to much speculation that SSA’s population would decline in the future and that African

populations would be “wiped out.” As serious as HIV is in some SSA countries, the situation was not as demographically grave as was first believed.

**Table 3. Prevalence of HIV among Adults 15-49 Selected Countries of SSA**

	2008		
	Population (millions)	2001	2007
Swaziland	1.1	26.3	26.1
Lesotho	1.8	26.5	23.9
Botswana	1.8	26.5	23.9
South Africa	48.3	16.9	18.1
Namibia	2.1	14.6	15.3
Zimbabwe	13.5	26.0	15.3
Zambia	12.2	-	14.3
Mozambique	20.4	10.3	12.5
Malawi	13.6	13.3	11.9
Nigeria	148.1	3.2	3.1
Sierra Leone	5.5	-	1.5

Source: UNAIDS, Demographic and Health Surveys

One early and important issue was how to determine the proportion of the population that might actually be infected with HIV. This was particularly difficult in developing countries, nearly all of which lack the complete birth and death registration as well as statistics on disease occurrence. The most common method used to evaluate the extent of HIV in a country was the use of “sentinel sites.” These sites, or groups,

consisted of maternity clinics, clinics for drug users, commercial sex workers, army recruits, etc. The percentage of people in these different groups gave an indication of the level of HIV infection. Pregnant women seeking prenatal care were considered a low-risk group for HIV while intravenous drug users who often share needles were considered high-risk. The problem with attempting to estimate a national prevalence rate of HIV from sentinel site data was that the groups were not nationally representative of the general population. It can be argued that sentinel sites were never intended as a source for making national estimates, but the demand to do so was quite intense.

**Table 4.**

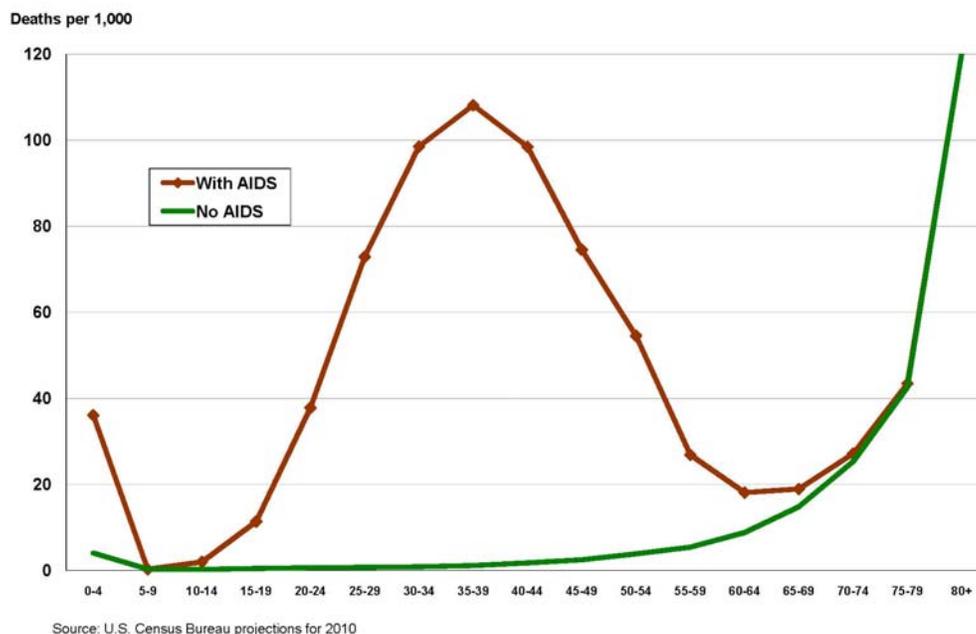
	UNAIDS Estimate in Effect	Year of UNAIDS	DHS/AIS Estimate	Percent of Respondents Actually Tested	DHS/AIS Survey Year
	When DHS/AIS Was Held	Estimate	Estimate	in DHS/AIS	
Burkina Faso	4.2	2003	1.8	89.3	2003
Cameroon	6.9	2003	5.5	91.0	2004
Cote d'Ivoire	7.1	2005	4.7	77.3	2005
Ghana	3.1	2003	2.2	84.9	2003
Guinea	3.2	2003	1.5	90.6	2005
Kenya	15.0	2001	6.7	73.4	2003
Lesotho	28.9	2003	23.5	74.7	2004
Malawi	14.2	2003	11.8	67.0	2004
Mali	1.7	2001	1.7	80.7	2001
Rwanda	5.1	2003	3.0	96.5	2005
Senegal	0.8	2003	0.7	80.4	2005
Tanzania	8.8	2003	7.0	80.5	2003-2004
Uganda	4.1	2003	6.4	86.4	2004-2005
Zambia	21.5	2001	15.6	76.5	2001-2002
<b>Average</b>	<b>8.9</b>		<b>6.6</b>	<b>80.2</b>	

Source: UNAIDS 2002, 2004, and 2006 Reports, DHS/AIS surveys

Beginning in 2001, respondents were tested for HIV infection during many DHS surveys. This revolutionized the estimation of national HIV prevalence levels because the surveys cover nationally-representative samples, providing figures much closer to reality. As it happened, virtually every DHS estimate of prevalence was lower than the previous sentinel site-based estimate. Table 4 shows the prevalence of HIV/AIDS that was estimated by UNAIDS using only sentinel site data in the first column. The third column gives the prevalence as measured during the surveys. Note that not all respondents were actually tested but further analysis suggested that levels of non-response did not present a serious problem. For further information, see “Improving Data Collection Efforts to Estimate HIV/AIDS” on the PRB website.

There was some controversy over the lower estimates as would be expected, but at this writing, DHS surveys have been testing for infection in a growing number of countries, now over 30, and the results are accepted and widely used. DHS-type surveys, it should be noted, are not taken annually but in intervals of about four or more years. Sentinel site testing is still done annually, allowing possible trends in HIV to be assessed. UNAIDS now uses the survey-based estimates to adjust the way sentinel site data are used for estimates. While the precise level of HIV infection will probably always be debated, HIV remains one of the most significant humanitarian and public health problems of our time.

**Figure 9. Age-specific Death Rates for Females, with and without AIDS, Botswana**



The effect of the disease on deaths by age is dramatically illustrated in Figure 9. The lower curve represents a normal pattern of death rates, often called the “J-curve.” Death rates are normally higher in the very youngest ages, infancy and early childhood, decline to very low levels during young adulthood and then rise sharply with age (the No AIDS curve). But, when HIV levels are high, the curve is radically changed in a manner that is completely unprecedented. Death rates for females in Botswana, a country with a very high level of HIV prevalence, are shown in Figure 10. In Botswana, death rates due to HIV in the most productive and family-formation ages are obviously devastating.

#### HUMANITARIAN ASPECTS OF HIV/AIDS

UNAIDS estimates that there are 22 million people living with HIV in SSA, or two-thirds of the world total. Of that 22 million, 1.8 million are children below age 15, representing fully 90 percent of the world’s HIV positive children. SSA also accounts for 75 percent of the annual 2 million HIV/AIDS deaths and 70 percent of the annual 2.7 million new HIV cases globally. UNAIDS (2008) points out that 27 years ago HIV was unknown, but has caused 25 million deaths since the epidemic began. Beyond its health consequences, HIV has disrupted society as its victims are subject to frequent stigmatization and discrimination. People are driven from their houses or villages or even killed; children are expelled from school; employees are discharged; many suicides result. Many of these injustices result from false beliefs about HIV, such as HIV can be contracted by sharing food or by sneezing. The lack of knowledge can also contribute to the spread of HIV. It is often believed that healthy-looking people cannot be infected or that HIV can be cured.

One of the most troubling consequences of HIV is the number of children orphaned by AIDS<sup>9</sup>. Of the estimated 15 million HIV/AIDS orphans globally in 2007, nearly 80 percent were in SSA. The increase in the number of orphans has been both anticipated and alarming. In 2001, there were 8 million orphans, so that their number nearly doubled in the six subsequent years. From 2001 to 2007, the number of AIDS orphans in just three SSA countries – Malawi, South Africa and Tanzania – rose from 1.2 to 2.9 million. Fortunately, considerable progress has been made in taking care of orphans, as the majority appears to have been taken into foster care with relatives or others. While orphans' school attendance is only slightly less than that of non-orphans, only a small minority of households receive financial aid for their care.

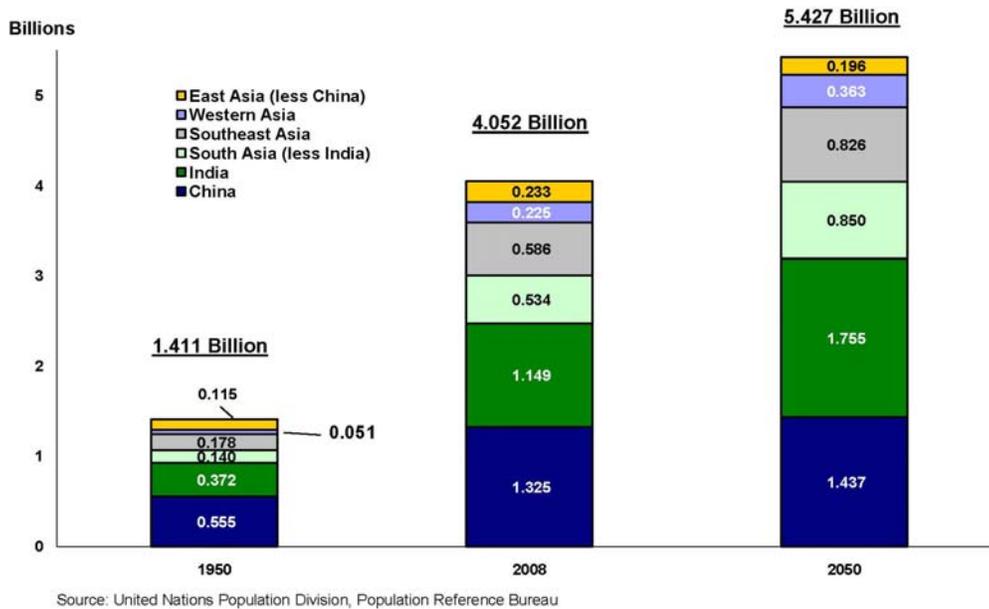
In its most recent projections, the UN predicts the size of future populations both with and without the effect of HIV. If there were no HIV, global population would be 158 million more in 2050 than the standard medium variant projection which includes the effect of HIV, representing an increase of 2.8 percent. Africa, of course, is the hardest hit region, anticipating 129 million fewer people, or 8.1 percent of the population, than would be the case in the no-HIV scenario.

North Africa's<sup>10</sup> recent demographic history has been in direct contrast to that of SSA. The regional TFR has declined to 2.7 children per woman, giving it one of the lowest fertility rates of any developing region. The area's 2008 population was 158 million and is projected to rise to 234 million by 2050, an increase of 48 percent, less than half that of SSA. Family planning programs in North Africa have a long history, particularly in Egypt and Tunisia. In Egypt, the relatively small amount of usable land was seen as inadequate to sustain a rapidly growing population.

## ASIA: THE POPULATION GIANT

Stretching eastward from Turkey to Japan, Asia encompasses a more diverse group of countries than any other region. Only two countries, China and India, account for just over 60 percent of Asia's population of 4.1 billion. Partly due to its wide range of cultures, economies and societal norms, no region has as wide a range in fertility rates as does Asia. Countries such as Japan, South Korea and Taiwan now have TFRs of 1.3, 1.2 and 1.0, respectively. Such extremely low TFRs, also found in some countries of Europe, are unparalleled in history and Taiwan's 1.0 is a world record. In other countries of Asia, fertility is quite high: 6.8 in Afghanistan, 6.7 in Timor-Leste and 6.2 in Yemen. Given the wide disparity in demographic patterns, some regional discussion is appropriate.

**Figure 10. Population of Asia, 1950, 2008 and 2050**



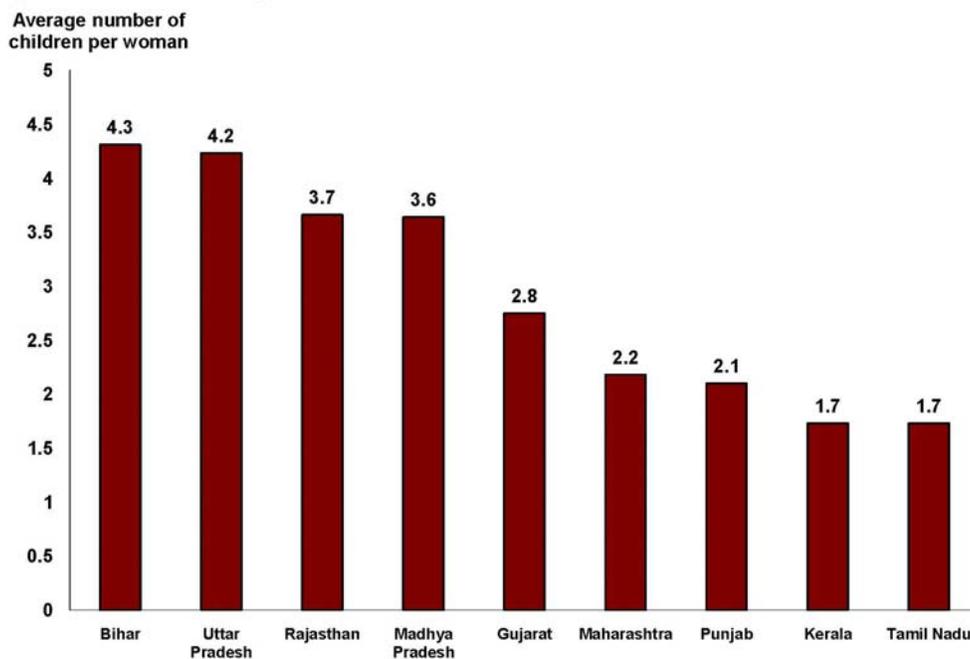
### SOUTH ASIA: NO REGION WILL HAVE GREATER POPULATION GROWTH

South Asia (now referred to by the UN as South Central Asia after the inclusion of the Central Asian countries formerly part of the Soviet Union) is the region that will have by far the largest increase in population, due in large part to India but also due to projected growth in Bangladesh and Pakistan. Both the Bangladesh and India population policies have had considerable success in lowering birth rates, but the amount of future national population growth remains uncertain. This is primarily due to the wide range of fertility rates within the countries, and is particularly true for India, which is expected to surpass China in population by about 2020 to 2025.

The government family planning program has been well received in states in southern India, such as Kerala and Tamil Nadu where the TFR has declined to a surprisingly low 1.7, below some countries of Europe. Some other states such as Maharashtra (containing Mumbai and other large cities) and West Bengal (containing Kolkata) now have TFRs of 2.1. But fertility decline has been far more stubborn in the very populous states of the northern “Hindi Belt,” such as Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, along with Jharkhand and Chhattisgarh. These states accounted for 40 percent of India’s population at the 2001 Census. Uttar Pradesh, India’s largest state in population at 166 million in 2001, has already grown to about 195 million at present. These states also have some of the highest levels of illiteracy and poverty in the country. It is upon these states that the burden of India’s reaching its goal of a TFR of 2.1 children rests. India reached one billion in population in 2000, and if it takes until mid-century for the national fertility level to reach the two child replacement level, India would be the first, and perhaps the only, country to pass two billion in population around 2070. It should be emphasized that the vast majority of population growth, about 70 percent, will now take place in its poorest states.

Although poverty is difficult to measure in predominantly rural and agrarian economies such as in India where barter is common, the World Bank estimates that 75 percent of India’s population lives on less than \$US2 a day. The *official* government poverty line in India is defined as the per capita expenditure required to provide a daily calorie intake of 2,400 in rural areas and 2,100 in urban areas. Thus, the official definition only considers the ability to purchase food for survival and does not consider any other necessities of life such as housing. This poverty level could properly be considered abject poverty and it has been panned in the press (“How to cross the poverty line? In urban areas, earn Rupees 455 a

**Figure 11. Total Fertility Rate, India and Selected States, 2005**



Source: Registrar General of India, Sample Registration System

month: Govt,” *The Times of India*, November 14, 2008). For 2004-2005, 28.3 percent of rural population was classified as below poverty and 27.5 percent of urban<sup>11</sup> population. To be below poverty, a rural family would have to earn less than \$US 7 per month and an urban family \$US11. Families above that meager level are not considered to be living in official poverty!

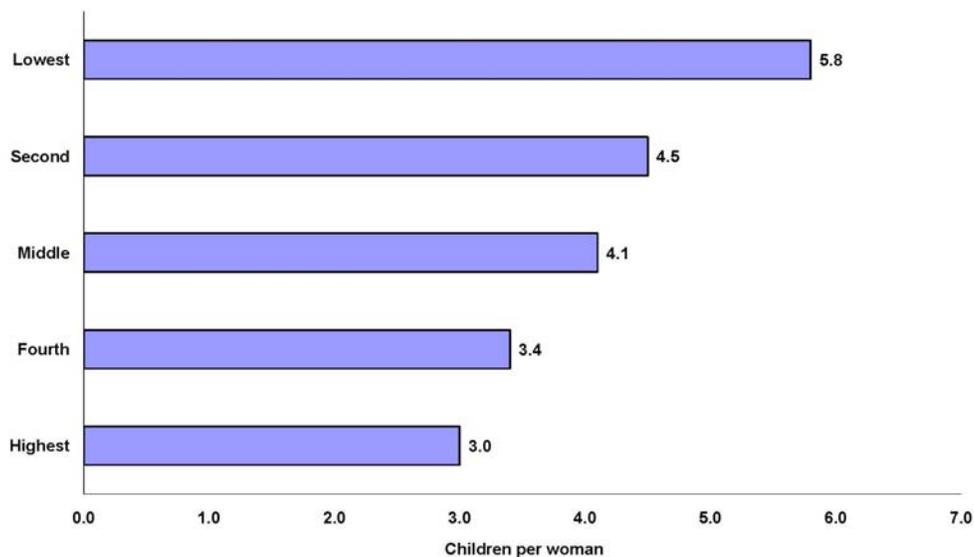
India is an excellent example that widespread impressions of a country held in the West are often at odds with reality. India’s emergence as a budding economic power hides the fact that only a relative few in the upper middle class (by Indian standards) truly benefit from salaries from such sources as government and multinational corporations to live life at a standard that approaches even the lower middle class in the West. India’s humanitarian concern is that it remains a country of poverty even more than 60 years after independence. Mumbai, the financial and entertainment center of India with a significant number of millionaires is nonetheless a city where 54 percent of the population lives in officially-defined slums.

India’s two neighbors, Bangladesh and Pakistan, both of which were once part of the country, are in many ways no better off. Pakistan has faced the same demographic problem as India, rising life expectancy and high fertility, but its results have been less satisfactory<sup>12</sup>. In its 2006-2007 DHS, the TFR was reported as 4.1 (compared to 2.8 in India in 2006). There is some doubt as to the pattern of TFR decline as previous surveys had indicated a slightly lower TFR but it does appear certain that the TFR is around four children per woman.

Comparing contraceptive use between India and Pakistan, 48.5 percent of married women in India use a modern method and 37.1 percent have been sterilized as temporary methods such as the pill, intrauterine device or injectables have never been popular. In Pakistan, 21.7 percent of married women use a modern method but reliance on temporary methods is greater as female sterilization is much lower than in India at 8.2 percent and reliance on the condom is comparatively high at 6.8 percent. The 2006-2007 DHS also indicated a slight decline in contraceptive use since previous surveys. As far as preferences are concerned, 60.2 percent of Pakistani women with four living children said that they wished to cease childbearing, suggesting that the potential for further fertility decline is present. However, when will Pakistani women actually average the two children needed for population stabilization at zero growth? This is a key question to be considered. The recently released UN 2008 population projections make the assumption that this will happen only by mid-century. Should that projection prove prophetic, Pakistan’s population would rise from about 180 million today to 335 million in 2050 and still be growing by just under one percent.

Figure 12 points to a particular humanitarian concern: the simple fact that very high fertility is a feature of the poorest segment of the population. This is true not only for Pakistan but for every other developing country. The highest rate of population growth remains in the world’s poorest countries but, within those countries, the highest population growth is in the poorest areas. This will almost certainly remain the case for the foreseeable future at the very least.

**Figure 12. Total Fertility Rate by Wealth Quintile, Pakistan 2006-2007**

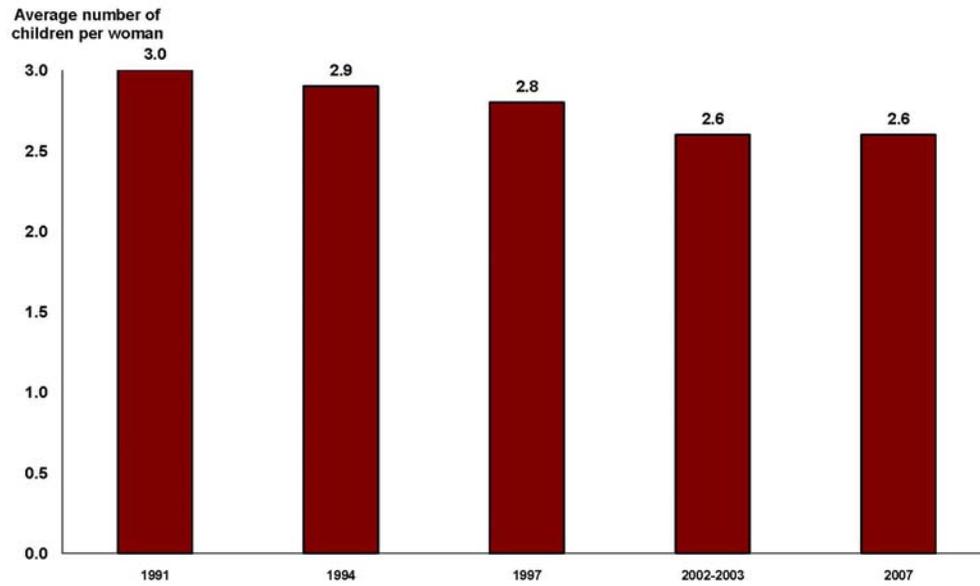


Source: 2006-2007 Pakistan Demographic and Health Survey

#### **EAST AND SOUTHEAST ASIA**

China, currently the world's largest country in terms of population, dominates a region that has seen a significant decline in fertility as well as considerable economic progress. The region has been characterized by population policies that have been as successful as they have been controversial. Of the region's largest countries, China, which had a population of 816 million in 1970, began a strict policy of population control in 1979, a policy later followed by Viet Nam. Today, China's TFR has declined to about 1.6, while that of Viet Nam is now 2.1, slightly below replacement level. Indonesia and Thailand began very well known population programs in the 1970s as well. Thailand's TFR has been well below replacement for many years. Indonesia, however, despite considerable success in lowering fertility, may be an example of a country where fertility decline to the two-child family may be elusive, at least for now. Figure 12a shows the trend in the TFR in Indonesia from the last five surveys.

**Figure 12a. Total Fertility Rate, Indonesia, Various DHS Surveys, 1991 - 2007**



Source: Demographic and Health Surveys

Indonesia's recent situation does provide an example of how assumptions made in population projections may not be borne out in reality. At present, there is clearly some doubt about the path Indonesia's fertility will take.

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**LATIN AMERICA AND THE CARIBBEAN:**

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Overall, the Latin American/Caribbean region (LAC) is the most developed of the developing regions with a *per capita* GNP of \$US 9,080 in 2007 as compared to \$US 2,430 in Africa and \$US 5,650 in Asia. Demographically, the region's statistics are dominated by two countries, Brazil and Mexico, with just over 50 percent of the population. It is also the developing region with the second highest HIV prevalence, although far below that of SSA.

**Table 5. Population of Latin America/Caribbean, 2008 and 2050 by Region and the Three Largest Countries Regionally (millions)**

	2008	2050	Percent of Pop 15-49 with HIV/AIDS 2007
<b>Latin America/Caribbean</b>	576	729	0.5
<b>Central America</b>	150	197	0.4
Guatemala	13.7	27.5	0.8
Honduras	7.3	12.4	0.7
Mexico	108.6	129.0	0.3
<b>South America</b>	385	483	0.6
Argentina	39.9	50.9	0.5
Brazil	192.0	218.5	0.6
Colombia	45.0	62.9	0.6
<b>Caribbean</b>	42	49	1.1
Cuba	11.2	9.7	0.1
Dominican Republic	10.0	13.4	1.1
Haiti	9.9	15.5	2.2

Source: United Nations Population Division,  
*World Population Prospects, the 2008 Revision*

Although it remains true that contemporary developing countries do not have the outlet of unrestricted emigration as European countries once did during times of famine or economic depression, LAC has sent very significant proportions of its population to the developed countries, many in a recent period. In the U.S. in 2007, out of 14.5 million foreign-born persons from Central America as a whole, there were 11.7 million from Mexico, 3.4 million from the Caribbean, and 2.6 million from South America, according to the U.S. Census Bureau's American Community Survey. These numbers do not include, of course, births to immigrant families, which would have added additional members to the country's population. Of the 3.4 million from the Caribbean, nearly one million are Cuban

born, stemming from the outflow in the 1960s. Many groups come to seek a better life as well as to send needed remittances back home. There is no doubt that the potential to migrate, although often regulated by laws in the receiving countries, has relieved some pressure over the years to create jobs and alleviate poverty.

Proximity has also resulted in an unusually large undocumented population in the U.S. The Pew Hispanic Center has put the number of undocumented immigrants in the U.S. at 11.5 to 12 million, 56 percent of whom are from Mexico, with an additional 22 percent from the rest of LAC, primarily Central America. Neither the U.S. decennial census nor any Census Bureau surveys question respondents on the legal status of their residence. If we consider that the Pew Center estimates that there are about six million undocumented Mexican residents in the U.S. and that 11.7 million foreign-born Mexican residents are already counted in surveys, the impact of emigration becomes readily apparent. As beneficial as this emigration may have been, one must always be concerned about the fair treatment of immigrants, both documented and undocumented, many of whom take insecure jobs at low pay that other Americans would refuse to hold.

LAC has been quite successful in reducing fertility and, as a result, has considerably lowered prospects for its future growth. For the region, the TFR has declined to 2.3 children per woman, almost reaching the replacement level. A 2007 government survey in Brazil puts the TFR at about 2.0, a very significant milestone and one that surprised observers with a much faster TFR decline than previously estimated. In Mexico, the TFR is about 2.3, actually lower than that of Mexican-Americans, who average three children per woman. Nonetheless, there are a number of LAC countries with fertility levels that remain moderately high: Guatemala, 4.4; Haiti, 4.0; Bolivia, 3.7; and Honduras, 3.3.

A relatively high wealth level in LAC does not mean that significant proportions of the population do not live below poverty. The World Bank estimates that 72.1 percent of the population of Haiti lives below \$US 2 a day. For Honduras, the same proportion is 34.8, for Nicaragua, 31.8, Venezuela, 31.7, El Salvador, 25.3 and Peru 19.4. This can be compared to relatively low rates in Brazil and Mexico, 18.3 and 4.8 percent, respectively.

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## THE DEVELOPED COUNTRIES: POPULATION PYRAMIDS TURNED UPSIDE DOWN

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Much has been made of the effects of record low fertility in the industrialized world, and the concern is completely justified. Birth rates have never been so low for such a long time. The result will be societies top-heavy with retirees with a diminished number of workers to support them and an unprecedented proportion of the “old-old” in the population. As an example, those 85 and over in Germany in 2005 numbered 1.4 million, comprising 1.7 percent of the population. By 2050, the UN projects that there will be 5.6 million old-old in Germany, 8.0 percent of the country’s total population. This is without precedent.

How countries will be able to afford proper care for the aged, let alone provide pensions for retirees is a significant humanitarian concern in the developed countries. [See Annex 2 for a discussion of the “youth bulge.”] Additionally, a humanitarian concern on the part of the least developed countries is whether or not donor countries will have sufficient resources and the political will to continue providing the financial aid upon which many depend. Along with aging, the developed countries’ economies will suffer as smaller age cohorts enter the labor force and form families, therefore reducing the size of the groups that account for a large portion of the domestic consumer market. The developed economies may also suffer as their export markets experience growing competition as developing countries expand their heavy manufacturing enterprises. Both India and China are likely to produce the next wave of inexpensive cars in much the same manner as Japan did in the 1970s. China has even announced its intention to build a very large airliner in direct competition with Airbus and Boeing, two of the developed countries’ largest exporters, although such projects will take time. Taken together, both of these developments – growing competition in some influential developing countries and excessive aging in the West – will be one of the major socioeconomic changes of the next few decades.

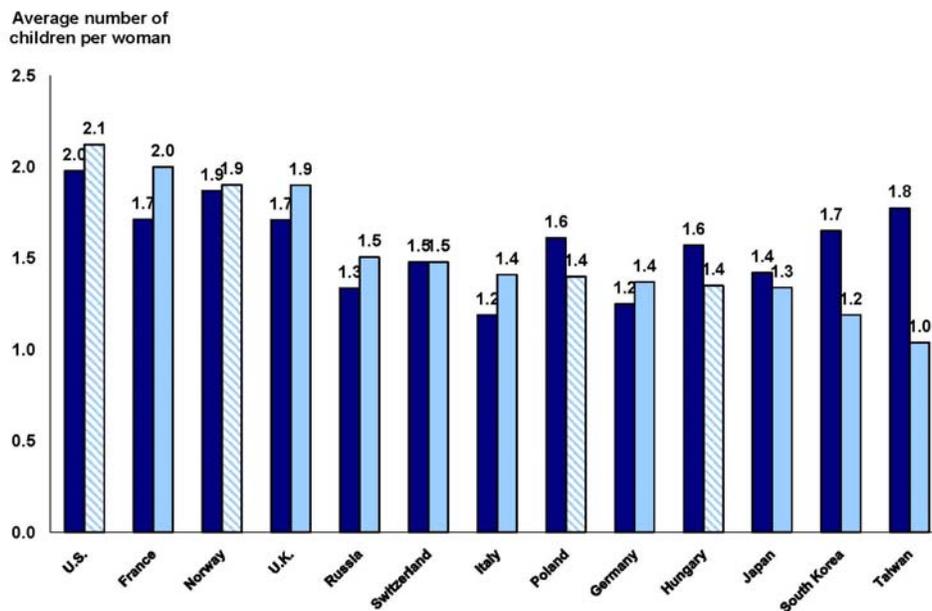
Fertility trends have become one of the most pressing concerns in much of the industrialized world, although not in all countries. For the countries with very low fertility, recovery of birth rates is virtually essential if economically catastrophic aging is to be avoided. Smaller population sizes may be advantageous in terms of environmental concerns, but the types of economic problems for which countries are poorly prepared will nonetheless have to be faced. Generally, countries which have a history of being “family friendly” have had less dramatically reduced birth rates. These would include countries in Scandinavia, Northern Europe, France and the U.S. Elsewhere, little or no support for working families has generally resulted in very low birth rates. In Germany, most day care centers (Kindergarten) still close at 1:00 PM, placing significant burdens on working couples. There is even a derogatory term, “raven mother” (*Rabenmutter*), to refer to mothers who leave their child in someone else’s care rather than caring for the child themselves. In Eastern Europe, economic collapse following the breakup of the USSR and the Warsaw Pact has resulted in low fertility from which there has been little or no rebound and which continues to decline. In Russia, the offer of a payment of the equivalent of \$9,000 for a second child appears to have had some positive effect.

Fertility collapse in Southern Europe has been even more extreme. In Italy, the very weak economy has made it difficult for young graduates to find employment with the result

that many in their late 20s still live at home, delaying family formation. Some of the most dramatic declines in fertility have taken place in East Asia, where both South Korea and Taiwan became the first countries in history to record TFRs as low as 1.1 while Taiwan's TFR has now reached as low as 1.0 (a preliminary estimate for 2008). South Korea's TFR did rise for several years but dipped again in 2008.

As Figure 13 indicates, there have been numerous increases in TFRs, but for many countries, fertility nonetheless remains extremely low. Some increases have occurred in response to policies and benefits to encourage childbearing, while others are the result of childbearing being delayed from an earlier time. In some cases, the increase in the TFR has been due in whole or in part to births to non-native women. In Spain in 2007, when the TFR had reached 1.39, up from 1.16 in 1998, all of the increase was due to foreign-born women. Countries have been addressing the issue on a near crisis basis. Japan has created a cabinet post for the purpose of seeking ways to increase the birth rate. Companies in Japan, such as Canon, are granting more time off so that couples can spend more time together. In Germany, it is planned to offer more full-time day care facilities. These measures alone are not likely to have the desired effect; a stable economy is also needed. At this writing, of course, the opposite has happened. It may be that the small fertility increases of the past few years, where they have occurred, will be slowed by the downturn in the global economy and the lack of confidence created by a situation of economic volatility.

**Figure 13. Total Fertility Rate, Selected Industrialized Countries, 1995 and ca. 2008**



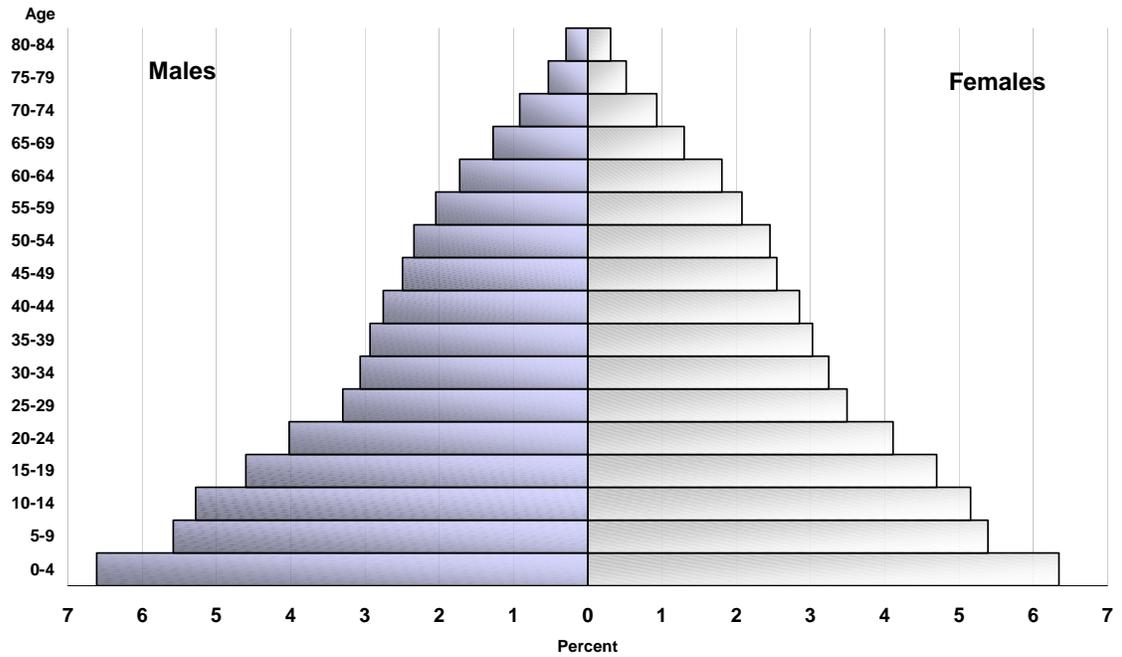
Despite some recovery in the birth rates, the age distribution of low fertility countries has been permanently altered, a situation that can only be changed by significant immigration, which is not seen as a popular solution in many countries. Figures 14 and 15 give the age-sex distribution of Italy in 1901, when the TFR was 4.4 and in 2008, when it was

1.4. In 1901, Italy had the broad-based pyramid of a contemporary developing country. Today, the youngest age cohorts are barely half the size of those in the middle age groups. This is why population policies to raise the birth rate have often come too late. As the younger groups move up the age ladder into the childbearing ages, a pronounced baby “bust” will take place simply because there are not enough women of childbearing age. This will happen regardless of any increase in the birth rate. In demography, today’s trends have a large impact upon the future.

Another pressing concern is that of excessive aging in the developed world, which will require large investments for medical and nursing home care for the elderly and the old-old. At present, it is difficult to see how such demands will be funded. In the U.S., Medicare and Medicaid entitlements, not Social Security, are the largest contributors to the national debt. While developed country populations with unprecedented proportions of the aged will cause significant problems with national budgets, thereby likely impacting foreign aid, severe difficulties are also likely in the developed countries themselves. In the U.S., Medicare has been projected to go bankrupt as early as 2017 and Social Security by 2037. While such projections are far from certain (see link to discussion below), there is no doubt that solutions will have to examine increased taxes or reductions in benefits.

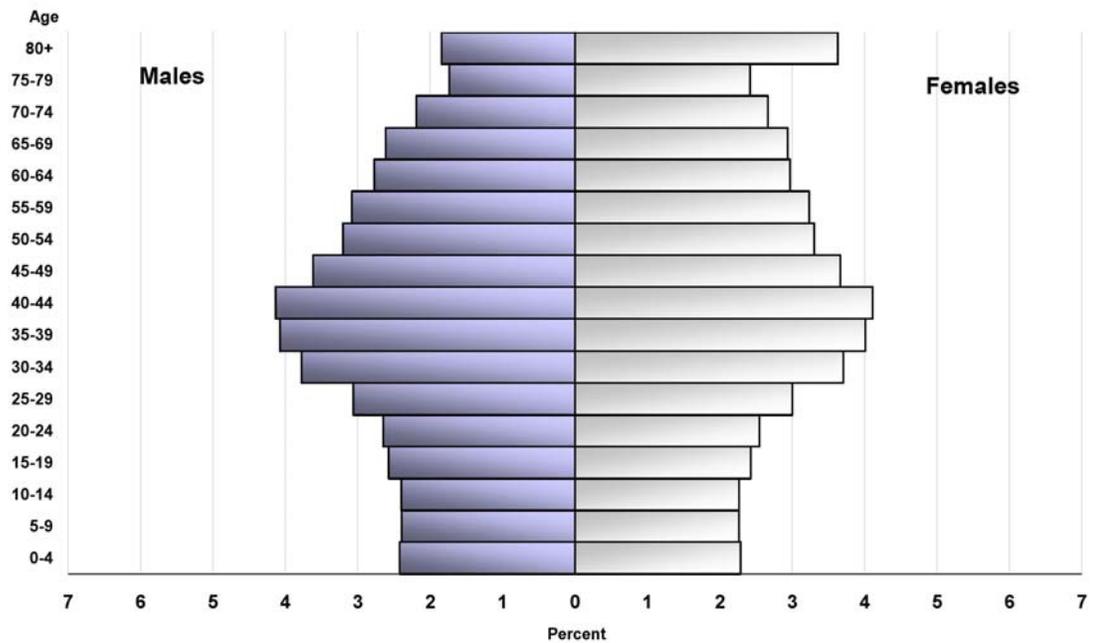
The precise impact of aging populations in the developed countries is certainly not simple to forecast, but there is no doubt that the proportion of GDP that will have to be spent on pensions and medical care for the aged will rise. The Center for Strategic and International Studies has projected that that proportion could rise to as much as 25 percent. A major humanitarian concern, beyond the possibility of deteriorating health care for older persons, may be a tendency for developed countries to turn inward to their own problems with less concern for the needs of the developing countries.

**Figure 14. Population of Italy by Age and Sex, 1901**



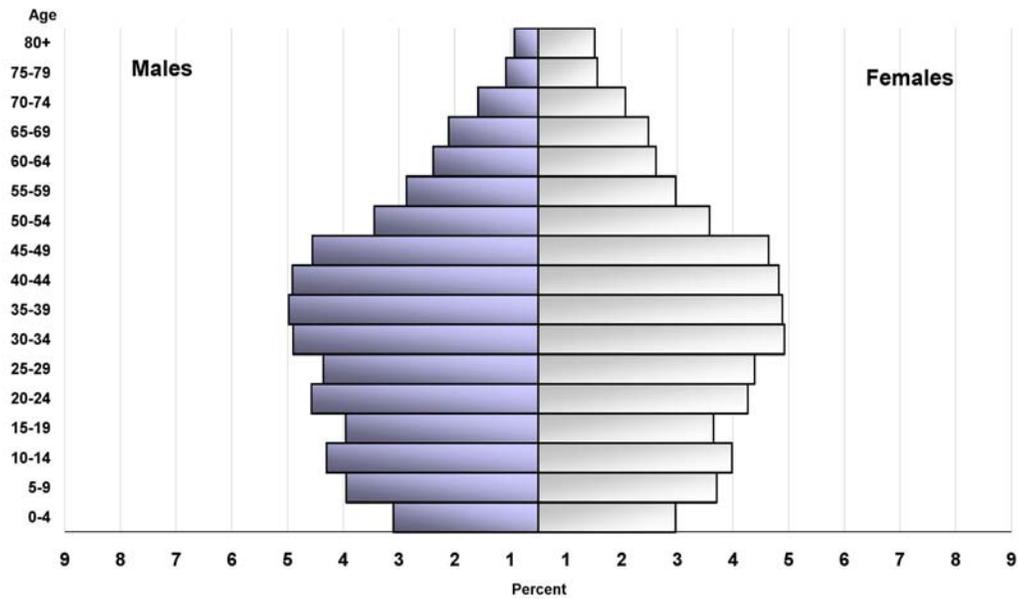
Source: Mitchell, B.R. (1976), *European Historical Statistics, 1750 - 1970*, Columbia University Press

**Figure 15. Population of Italy by Age and Sex, 2008**



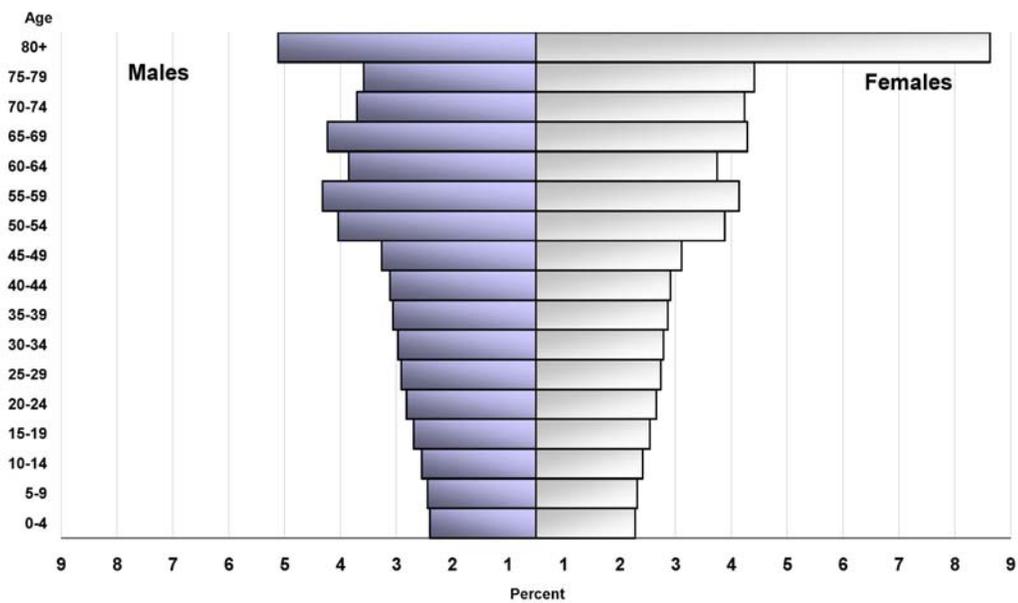
Source: Istituto nazionale di statistica

**Figure 16. Population of South Korea by Age and Sex, 2005**



Source: United Nations Population Division

**Figure 17. Population of South Korea by Age and Sex, 2050**



Source: United Nations Population Division

South Korea serves as an example of the effect that the current low birth rate will have on the country's future population. The projection in Figure 17, the UN medium variant, assumes that the country's birth rate will slowly increase to a TFR of 1.6 children per woman by 2045-2050. At present, South Korea's TFR is not rising. In 2005, 9.3 percent of the country's population was 65 years of age and over and, under the medium variant, 34 percent would be in 2050. Should the medium variant prove pessimistic, the UN high variant projection provides an alternative. Should the TFR rise to 2.1 by 2050, 30 percent of the population would be 65 and older. Future trends in fertility cannot be known with precision, to be sure, but few analysts would expect very low TFRs to rise to anything like postwar baby boom levels, so that today a future TFR of 2.1 for a country such as South Korea would certainly seem optimistic. To justify this view, even in the highest birth rate countries in the developed world with good support for two-career families, the highest TFR is 2.1. It appears, at least for now, that two children per woman or per couple has become a kind of ceiling. Thus, we can see that population aging and even decline has passed the point of no return, barring some very unexpected trends in fertility. The example of South Korea applies throughout Europe and other industrialized countries.

#### **THE IMMIGRATION DEBATE: DEALING WITH THE POPULATION IMBALANCE**

The combination of continuing, often rapid, population growth in developing countries along with the demographic stagnation in the wealthy countries has led to a lively debate on immigration in the receiving countries of Europe, as well as the U.S. Measuring the effect of immigration on population size is quite a bit more difficult than it may appear. Countries vary widely in the way both immigrants and emigrants are counted or defined and, as a result, in the way the countries' determine their actual permanent resident population. In developed countries, births and deaths are considered to be completely registered so that the only variable left is who comes in, who goes out, how long the migrants might stay and what their residency status might be. Unfortunately, countries frequently define all of this differently. "Immigration" is correctly understood by most people to mean the physical movement of people from one country to another. It does not, however, often work that way in statistics. In Spain, population size figures are determined by the *padron*, a population register of people with resident ID cards. At the same time, there can be large numbers of immigrants living in the country without ID cards on a type of temporary basis. When such people are granted permanent residence and an ID card, they become "immigrants" statistically. The same is true in the U.S. An immigrant in U.S. statistics is someone who receives a "green card" for permanent residence despite the fact that many have been living legally in the U.S. for many years. As a result, statistics on births, deaths and migration often do not equal statistics on annual population change.

Migrants will be attracted for a variety of reasons but two are dominant: the possibility of employment and the search for asylum. European countries are currently grappling with both. The European Union adopted a common immigration pact that is intended to bring some order to immigration without making Europe "a bunker or a sieve." Member states, however, resist loss of sovereignty over their borders although all members agree that some uniformity is badly needed. In October 2008, the EU adopted the European Pact on Immigration and Asylum. The pact has been criticized as being too harsh with illegal immigrants and favoring people in skilled occupations, thus discriminating against potential

immigrants from poorer countries. All in all, however, it does seem that Europe has accepted the idea that there will continue to be immigrants. But, given that policies towards immigration vary widely from relatively generous to more restrictive, Europe-wide agreement may not be attained for some time. At least for a time, the motivation for South-to-North migration may be weakening as the developed countries are no longer the economically attractive destinations they once were. There is some hint of this in Figure 18 in data from three major European receiving countries in that net immigration appears to have possibly plateaued or even significantly declined.

This need for immigrant labor in wealthier countries will likely result in some increase in xenophobic attitudes in the receiving countries as the proportion of immigrants in the labor force rises to unprecedented levels. In many cases, the number of immigrants required to maintain an appropriate ratio of workers to retirees would almost certainly be politically unacceptable. In 2000, the United Nations Population Division estimated the level of migration that would be needed to maintain reasonable ratios. In the case of Germany, the UN projected that 40 million immigrants would be needed between 1995 and 2050 to maintain a minimum ratio of three persons ages 15–64 to each person age 65 and over. Japan would require 95 million immigrants over the same period! (Around 1995, the existing ratio varied from four to five.)

It is unlikely that the developed countries of Europe with low fertility rates will be willing to accept such large numbers of immigrants, changing the fundamental social fabric of their societies. The situation could be partially ameliorated by some increase in births as well as better integration of under-utilized workers and potential workers (especially women in some countries), and some increases in retirement ages may have to be made no matter how unpopular. Yet the basic problem will remain: there are too few workers for too many retirees; it is but a matter of degree.

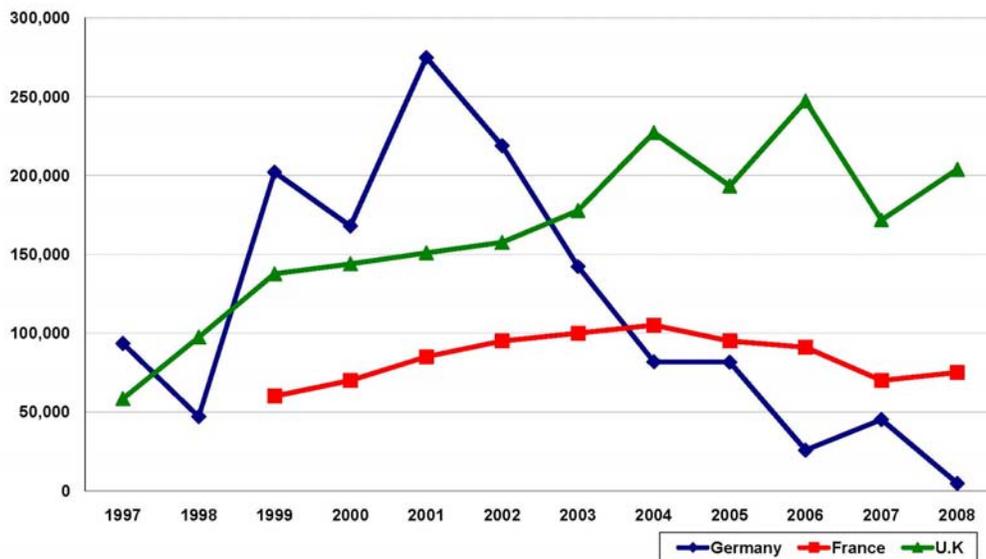
Impacts on immigration policy and legislation must also be considered in a discussion of increased migration. Despite some political resistance to immigration, developed countries have shown a willingness to accept those seeking a better life and to allow genuine refugees. These policies are often under attack and may intensify as proportions of foreigners increase more noticeably. In addition to the replacement of native workers with foreigners, anti-immigrant sentiments may also be based upon perceived cultural differences. An example is the current controversy in Germany over the construction of a large mosque on the Cologne skyline. There are objections, as many foreigners are seen as not assimilating well into the national culture. It is highly likely that immigrant proportions of European populations will continue to rise in the long term. When those proportions reach higher levels, existing tolerance may dissipate. The same can be true when immigrant populations begin moving into areas where they have previously had little presence.

On the side of the sending countries in which populations are continuing to grow, it is doubtful that there will be sufficient meaningful employment available for the eligible workforce. Today's developing countries do not have the outlet of "safety valve" migration that European countries did in the 19<sup>th</sup> and 20<sup>th</sup> centuries when they sent large proportions of their population to the countries of the New Worlds. Immigration policies in developed countries, other than those designed to admit refugees, largely favor educated, skilled workers, not those in the impoverished and uneducated classes. Assuming that developing countries lack the ability to create higher-status and higher-paying jobs, the exodus of the

better educated workers will continue, leaving poorer classes behind. Even in countries such as India, where the popular press often leaves an impression of rapid modernization, little progress has been made in improving the lot of the poor, who comprise the great bulk of the population. In India, the National Commission for Enterprises in the Unorganised Sector found that nearly all job growth was occurring in the informal sector<sup>13</sup>, where workers have little job security, low pay and no benefits. Those benefitting from employment provided by large Indian and multinational corporations are a very small proportion of the total labor force. As mentioned above, those with lower status occupations in Europe had the opportunity to migrate to the comparatively empty lands of North America and beyond, a possibility that does not exist for their counterparts in today's developing world.

In addition, the recent worldwide economic slowdown is likely to have a large impact on migrant labor, whose remittances to their families at home have become indispensable. Migrant labor is already leaving the Gulf States. While the acceptance of foreign workers in many countries has been a very significant financial benefit to families back home, the downside to such programs comes when the receiving countries experience a financial downturn. Workers have been returning to the Indian state of Kerala from the Persian Gulf, with the loss of quite good incomes by Indian standards. According to *India Today* magazine<sup>14</sup>, Indian construction workers had been earning US\$4 per hour (although only half that amount when middlemen took their cut). Upon returning to Kerala, only fishing jobs were available, which paid US\$5 per day.

**Figure 18. Net Immigration, Selected European Countries, 1997 - 2008**

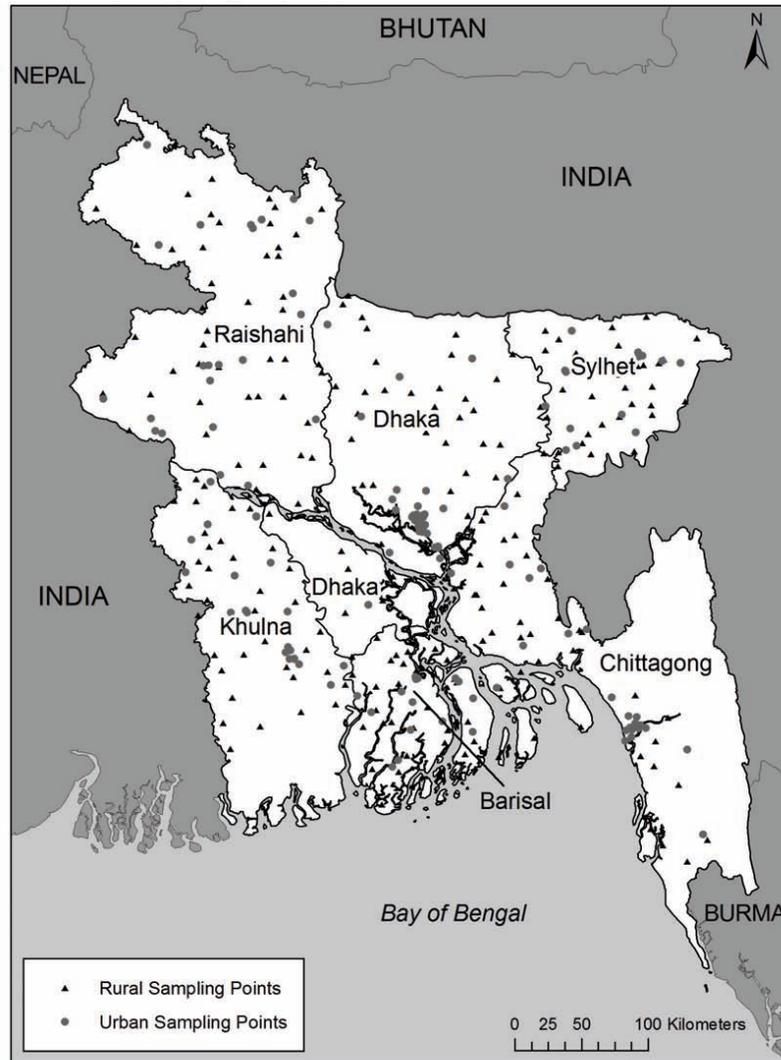


Source: EUROSTAT and Institut National Etudes Demographiques

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CASE STUDY: BANGLADESH

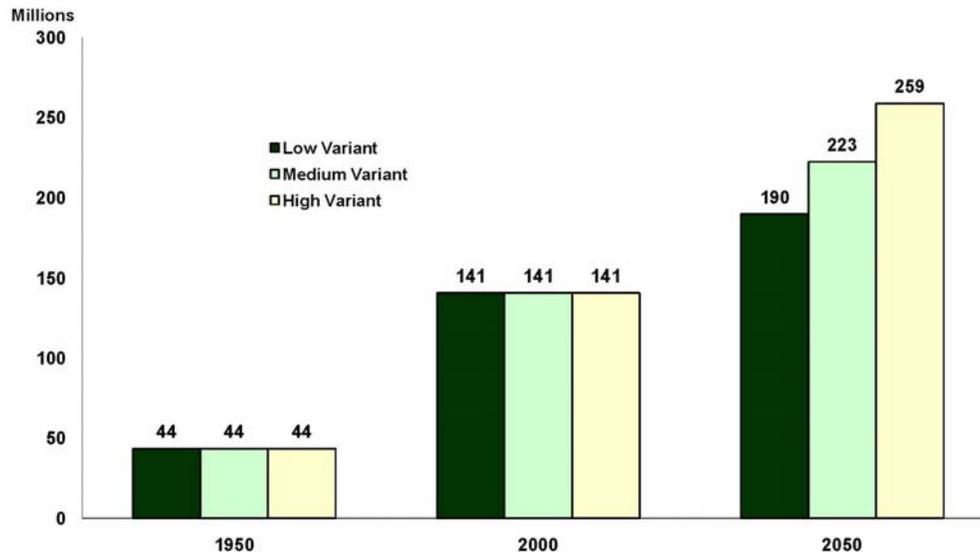
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Created in 1947 as East Pakistan and achieving complete independence in 1971, Bangladesh is the world's most densely populated country and one of its very poorest. To put its population density in perspective, the country's total area is less than one-fourth the size of France and about equal to the U.S. state of Arkansas yet it is the world's eighth largest country in population with nearly 150 million people. Bangladesh is classified by the UN as a least developed country with a per capita Gross National Income of only \$US1,340 (purchasing power parity) in 2007. In 1947, Bengal was split between the newly independent India and East Pakistan with the bulk of the Muslim population moving to what is now Bangladesh. But Bangladesh inherited only the poorest districts of Bengal with virtually no

industry and an economy dependent upon subsistence farming and jute. It also lost contact with Bengal's economic hub, Calcutta (now Kolkata).

**Figure 19. Population of Bangladesh, 1950, 2000 and 2050: Three Variants**



Source: United Nations Population Division, *World Population Prospects 2008*

Bangladesh has, however, radically altered its future population prospects with a population policy to lower the birth rate as quickly as possible. The government of then East Pakistan made a provision for family planning services in 1965 and the new government reiterated the policy in its first Five Year Plan for 1973-1978. The plan emphasized:

...the necessity of immediate adoption of drastic steps to slow down the population growth"... "no civilized measure would be too drastic to keep the population of Bangladesh on the smaller side of 15 crore (i.e., 150 million) for sheer ecological viability of the nation.

(2007 DHS, p. 3.)

Bangladesh obviously saw the danger in continuing rapid population growth in such a small and impoverished country early on. This is an important point since not all countries did and some deny the problem even today. By the early 1970s, the population growth rate was rising towards three percent and the TFR was just under seven children per woman. According to the most recent DHS in 2007, the TFR has declined to 2.7, although that decline followed a period when the decline appeared to "stall."

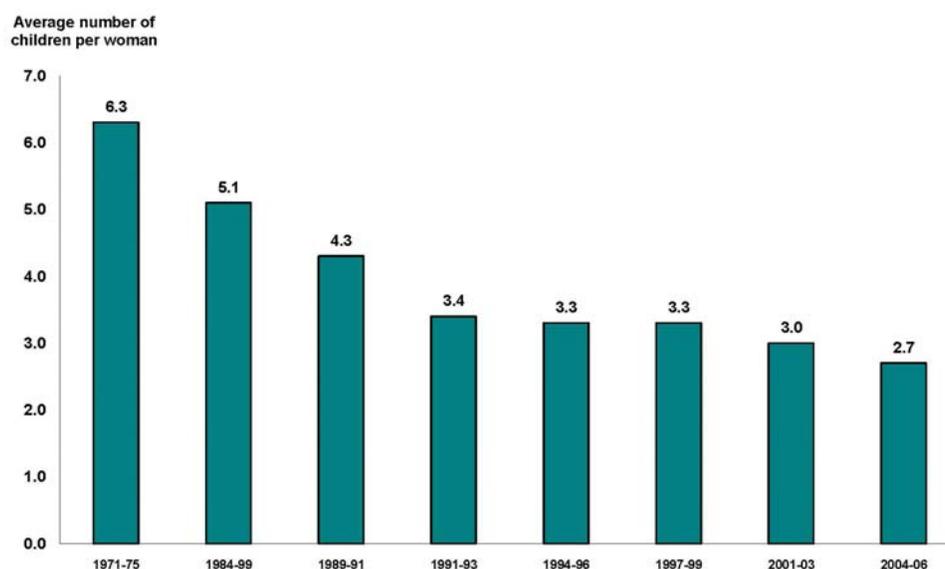
The UN projects that by 2050 Bangladesh's population will likely rise to within a range of 190 to 259 million, still a considerable difference. What must happen to the TFR for these different scenarios to play out? The medium variant assumes that the TFR will reach 2.2 by 2010-2015 which would, given Bangladesh's projected life expectancy of 68 years at that time, put the country at the replacement level. But the TFR would also have to continue to

decline to 1.85, the level at which Sweden is today. It is unclear just how likely a decline to such a low level would be in any period of time.

Survey questions on fertility preferences are available for Bangladesh. In the 2007 DHS, 69 percent of women with two living children said that they did not want another birth and another seven percent were either sterilized or were infertile. Thus, nearly one-fourth said that they wished to have another child soon or at a later time. This would indicate that a fertility level near the two-child family is in reach in Bangladesh, especially if fertility preferences continue to change. In another survey question, women gave 2.3 as their ideal number of children. Bangladesh is a good example of just how problematic it can be to derive assumptions about future changes in birth and death rates. If an exact two-child family is not in Bangladesh's future, but closer to the UN High Variant of 2.35 by 2045-2050, the country's population would be much larger than in the Medium Variant *and* continuing to grow at 0.8 percent per year instead of heading for zero growth and then decline. This is a good illustration of the fact that, when TFRs begin to approach low levels, small differences can still have very significant consequences for the future.

The graphs below illustrate the trend in fertility as well as the regional pattern of fertility in the country. The "slowdown" in fertility decline in the 1990s is quite evident as well as resumption of decline. There are some rather noticeable differences within the country. The highest fertility is in Sylhet in the northeast at 3.7, but unlike in India where the highest fertility is in the most populous states, that division's population size is one of the smallest at about nine million.

**Figure 20. Total Fertility Rate, Bangladesh, 1971-75 - 2004-2006**

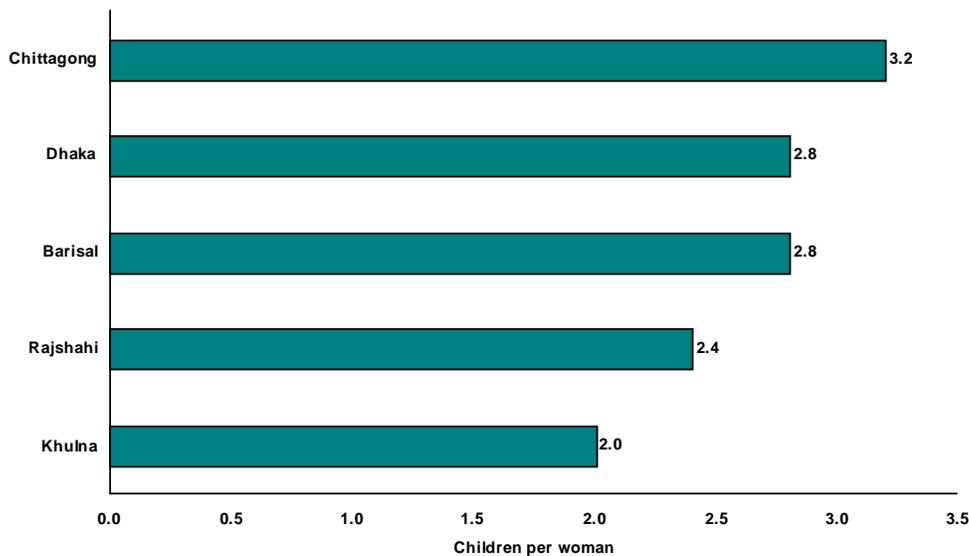


Source: World fertility Survey, Contraceptive Prevalences Surveys, and Demographic and Health Surveys

Bangladesh's fertility decline has been quite remarkable given the highly rural nature of the population, three quarters of the population, and the level of poverty. About 50 percent

of the population lives below the official national poverty line and over 80 percent live on less than \$US 2 per day, according to World Bank estimates. With such a large population on so small a territory, large rural-to-urban migration can be expected. The UN estimates that the country's urban growth is just under four percent, more than double the national growth rate. The population size of the capital, Dhaka, at 14 million, far outstrips other cities, a common occurrence in many countries. According to the International Organization for Migration, about 250,000 workers leave the country for overseas, many to the Middle East. An additional problem is the relatively open border between India and Bangladesh and illegal migration into India through West Bengal. Relations have been strained over what India sees as a problem Bangladesh is doing little to stop, along with the trafficking of women and children. Bangladeshis are able to blend into the population in west Bengal since they speak a common language. In recent months, however, the problem has been exacerbated by political and civil unrest in Bangladesh and the involvement of Bangladeshi "Maoists" in terrorist attacks within India. India has been constructing a 4,000 kilometer fence along the border and plans to increase the size of its elite Border Security Force to patrol it.

**Figure 21. Total Fertility Rate, Bangladesh, by Division, 2004-2006**

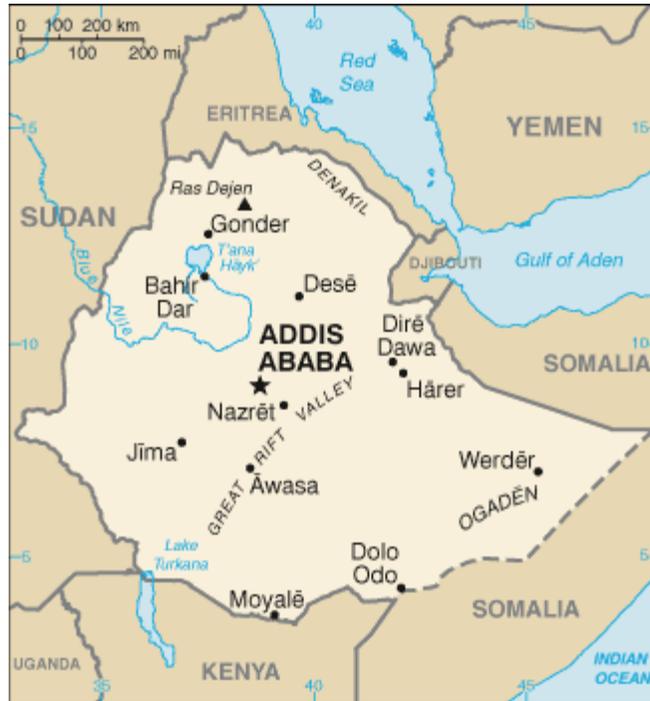


Source: 2007 Bangladesh Demographic and Health Survey

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## CASE STUDY: ETHIOPIA

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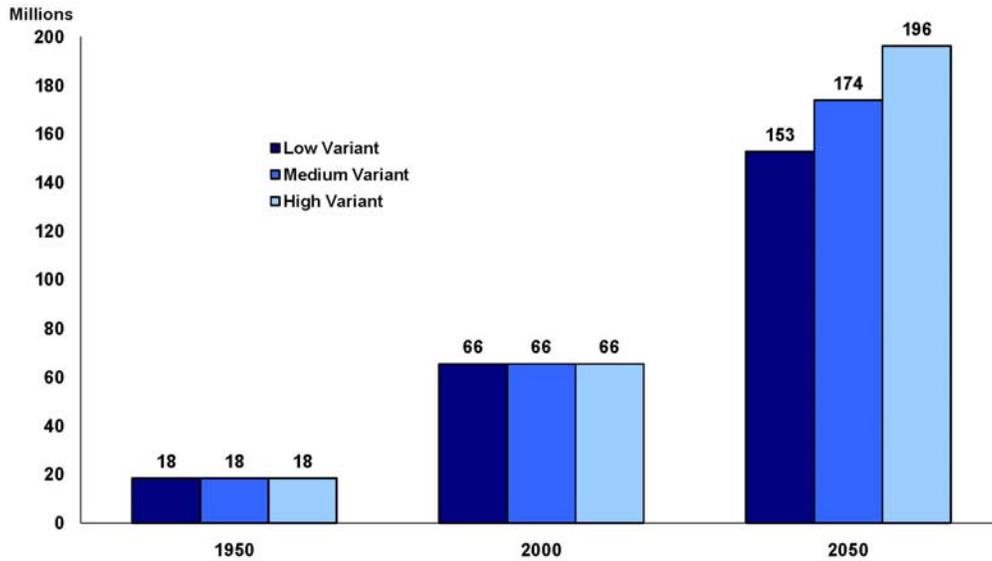


Ethiopia is the second most populous country in Africa, and one of its very poorest. In 2009, the population has likely passed 80 million and is growing at 2.5 percent. GNI PPP per capita in 2007 was estimated at \$US 780, one of the world's lowest. Unlike Bangladesh, Ethiopia is one of the world's largest countries in area. Its 432,000 square miles is about twice the size of France and two-thirds the size of the U.S. state of Alaska.

Like Bangladesh, Ethiopia is classified by the UN as a least developed country. The official poverty line puts 38 percent of the population living below that level while the World Bank estimates that 78 percent of the population lives below \$US 2 per day. The great bulk of the country's labor force, about 80 percent, is employed in agriculture, and agricultural products, especially coffee, comprise the bulk of exports.

Ethiopia's first census was held as late as 1984 with a count of 43 million, although the census could not cover all areas. At the time, the population was growing at about three percent per year and women have on average over seven children in their lifetime. The country is one of the world's least urbanized with only about 14 percent of the population living in urban areas, defined as places with a population of 2,000 or more. The 1994 census counted 54 million but that now excluded Eritrea, which had become independent in 1993 after a protracted civil war.

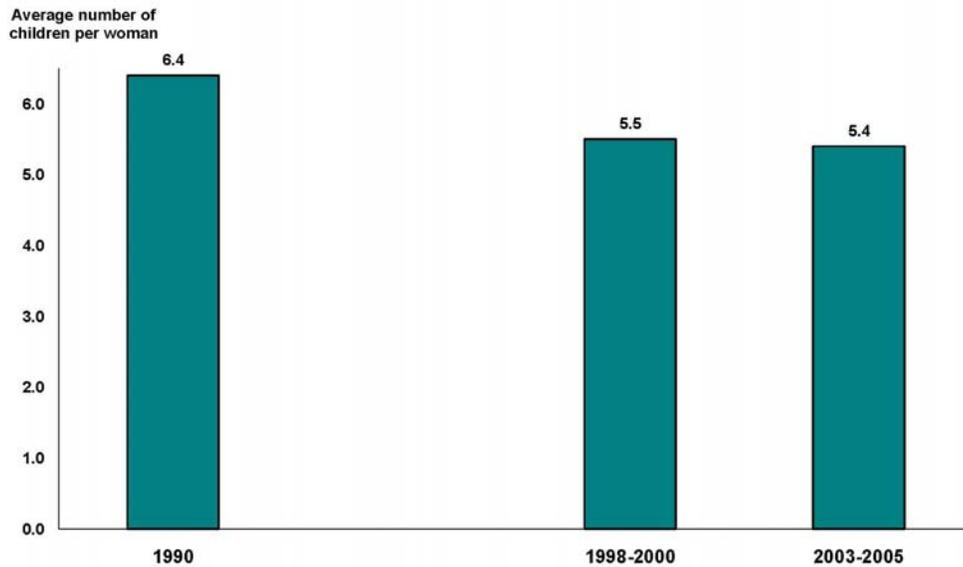
**Figure 22. Population of Ethiopia 1950, 2000 and 2050: Three Variants**



Source: United Nations Population Division,

Ethiopia's first population policy was not announced until 1993, quite late by other developing countries' timetables. The goal was to equalize the rate of population growth with economic growth in order to improve the standard of living. One goal was to reduce

**Figure 23. Total Fertility Rate, Ethiopia, 1990 - 2003-2005**

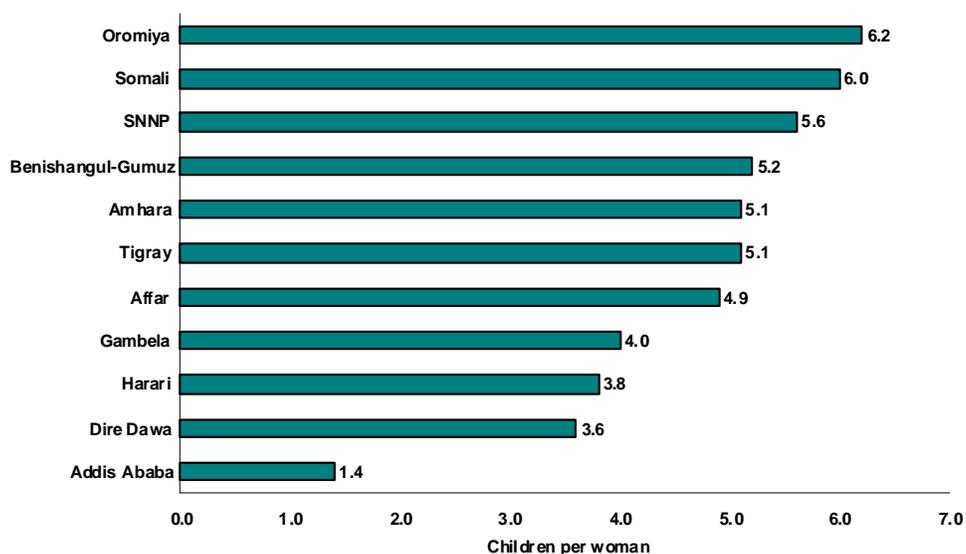


Source: National Fertility and Family Survey, Demographic and Health Surveys

the TFR to 4.0 by 2015, a more modest goal considering how high the TFR was to begin with. In 1990, a fertility survey estimated a TFR of 6.4 children per woman and two subsequent surveys measured it at 5.5 and 5.4. The last two surveys certainly suggest that fertility has stabilized or nearly so. For that reason, it is necessary to take a detailed look at the assumptions used in UN projections. The medium variant assumes that replacement level fertility would be reached by mid-century and, of course, one must ask the degree to which two or fewer children per woman is likely in Ethiopia, when this might be likely, or even if it will ever occur. Just as in Bangladesh, the question is of critical importance demographically and even more so in Ethiopia's case since it is beginning from a much higher TFR. Given the very rural and pastoral nature of Ethiopia's population spread across a much larger area, it would seem that Ethiopia's task will be more difficult.

Ethiopia also has considerable regional variation in its fertility across regions, from six or more children in Oromiya and Somali regions to an extremely low 1.4 in Addis Ababa. The very low rate in Addis Ababa, which at first appears to be an aberration, may be due to the poor economy and the lack of employment and housing. This wide range of fertility adds considerable uncertainty to any population projection for Ethiopia.

**Figure 24. Total Fertility Rate, Ethiopia, by Region, 2003-2005**



Source: 2005 Ethiopia Demographic and Health Survey

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## URBANIZATION

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### DEFINING URBAN

While world population is undergoing a gradual process of urbanization, there has also been widespread misinterpretation of the terms “urban” and “rural” as they apply across the world’s countries. First, “urban” is not synonymous with large cities, although those are included in the definition. Second, “rural” can have an entirely different meaning in developed and developing countries.

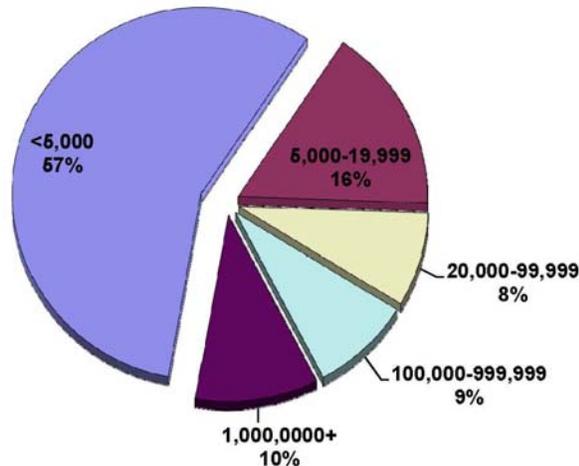
The definition of urban includes small towns, and many countries’ urban populations often exist chiefly in such smaller places. In the U.S. and Mexico, urban places are those with populations of 2,500 or more that are not located in metropolitan areas. In Ethiopia, localities of 2,000 are urban, and in India, villages and towns of 5,000 or more with 75 percent or more of the male labor force not directly involved in agriculture are urban. A similar definition is used in Bangladesh. Generally, the urban definition ranges in population size from 2,000 to 10,000 with most at the lower end and some below that. There are, however, exceptions. In Japan, cities of 50,000 or more are considered urban, with further restrictions on a city’s proportion of built-up area and the nature of the population’s economic activity. In some countries, the national capital, along with provincial capitals, comprises the urban population. The urban definition, then, is quite different from the way it is often perceived in the popular mind and also is not easily comparable from country to country. (Many countries do not actually have an urban definition at all, so the United Nations Population Division applies a reasonably comparable one.)

The urban definition also serves as an excellent example of the way in which media coverage of statistical concepts can lead to gross misunderstandings of the true social and economic situations in developing countries, a misunderstanding that fosters the notion that people in developing countries live in far better conditions than they actually do. That can lead to a sense of complacency and a reduction in humanitarian concerns.

Further, “rural” has a much different meaning in developed and developing countries. In the U.S., the contemporary rural population is largely rural in name only. Due to widespread communication and comparably efficient transportation, it is hardly cut off from urban influences and has comparable levels of education and living standards as the urban population. In developing countries, rural populations do live in relatively remote areas, with low standards of education and literacy, poor access to health care, and nonexistent transportation infrastructure. In India in the past month, for example, the media carried stories of villagers who were not aware that a national election was taking place.

Figure 25 gives the distribution of the total population of India by size of place as one example of the reality of urbanization. In 2001, 57 percent of people in India lived in places of less than 5,000, which are, of course, rural by definition. Only 11 percent live in cities of one million or more. Overall, 27.8 percent of the population lived in officially defined urban areas in 2001, a small increase from 25.7 in 1991.

**Figure 25. Population by Size of Place, India, 2001**



Source: Census of India 2001

#### PROJECTIONS OF URBANIZATION

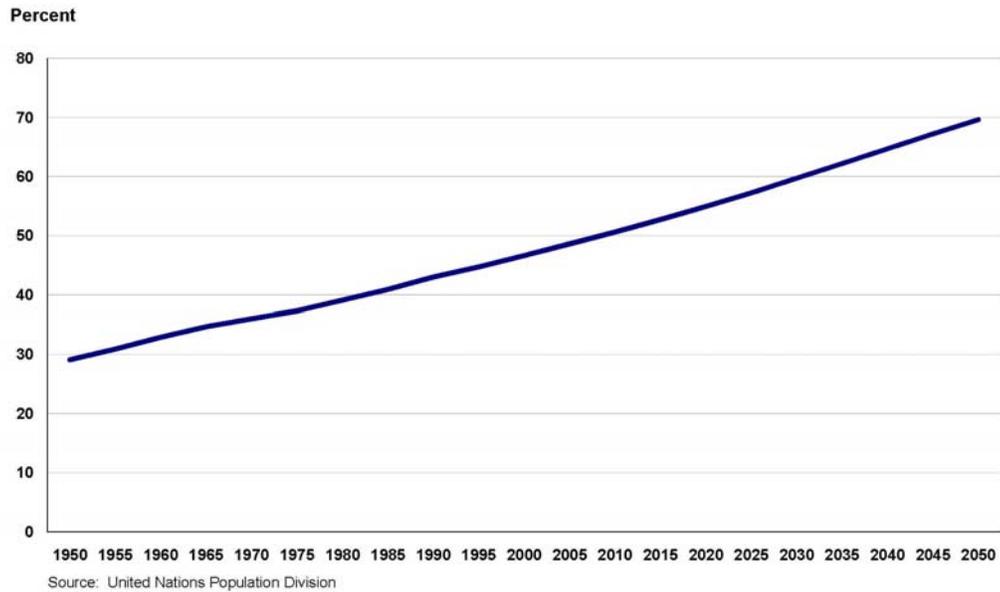
Every two years, the United Nations Population Division estimates and projects the trend of global urbanization. The most recent series, issued in 2007, projects that the proportion of global population residing in urban areas would reach 70 percent in 2050, up from 29 percent in 1950, after having passed the 50 percent mark in 2008. (See Figure 26.) The UN bases its projections upon the current differences in growth rates in urban and rural populations. In its projections, the global rural population will begin to decline in 2020-2025. While much of this growth will, by definition, be in smaller towns and villages, there will be significant pressure on governments to provide employment for growing urban populations as migrants from rural areas seek improved lives in towns and cities. Yet, the reality is that many rural-urban migrants find only the lowest-paying jobs and horrifying living conditions. Speaking at the release of UN-HABITAT's 2006/2007 *State of the World's Cities* report, the director noted:

For a long time, we suspected that the optimistic picture of cities did not reflect the reality on the ground," said Mrs. Anna Tibaijuka, UN-HABITAT's Executive Director. "This report provides concrete evidence that there are two cities within one city – one part of the urban population that has all the benefits of urban living, and the other part, the slums and squatter settlements, where the poor often live under worse conditions than their rural relatives. It is time that donor agencies and national governments recognized the urban penalty and specifically targeted additional resources to improve the living conditions of slum dwellers.

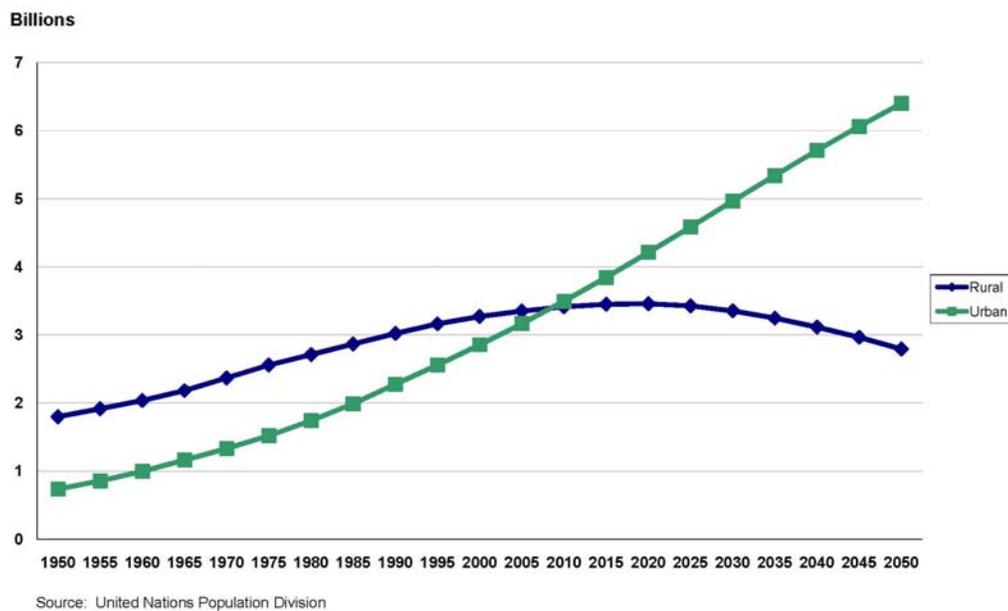
The Report shows remarkable similarities between slums and rural areas in health, education, employment and mortality. It shows how in countries such as Bangladesh, Ethiopia, Haiti and India, child malnutrition in slums is comparable to that of rural areas. In

many Sub-Saharan African cities, children living in slums are more likely to die from water-borne and respiratory illnesses than rural children. Women living in slums are also more likely to contract HIV/AIDS than their rural counterparts.

**Figure 26. World Urban Population, 1950 - 2050**

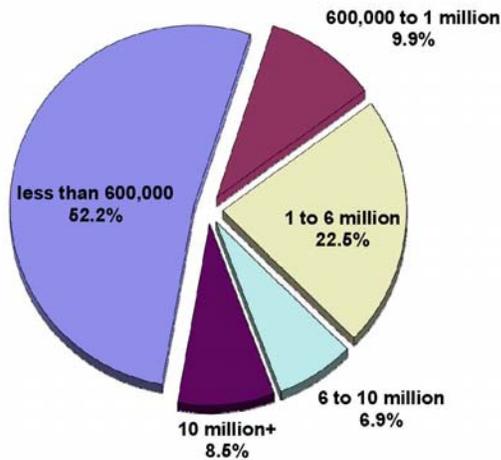


**Figure 27. World Urban and Rural Population, 1950 - 2050**

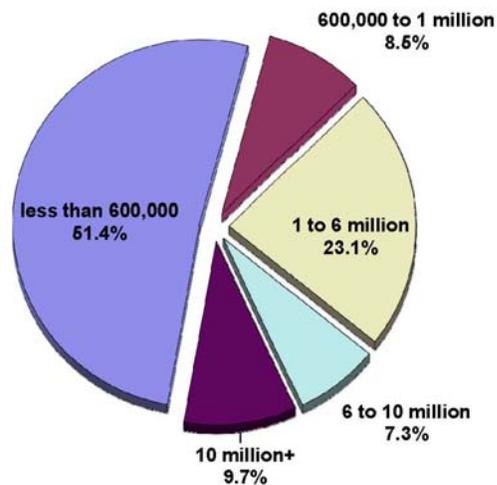


In many developing countries, this has been the reality of urban life. According to HABITAT, the slum population accounts for 70 percent of cities in many sub-Saharan countries. India first officially defined slum populations following the 2001 Census. Mumbai, India's financial capital and home to the multi-million dollar houses of movie and cricket stars in such areas as Bandra and Juhu, has a population designated as 54 percent slum-dwellers. Migrants who come to the cities find no housing available, forcing them to live in

**Figure 28. World Urban Population by Size of Place, 2005**



**Figure 28a. World Urban Population by Size of Place, 2025**



Source: United Nations Population Division

illegally constructed settlements. Not only slum-dwellers face difficulties. Chronic water shortages and/or only periodic water supply along with frequent power cuts render daily life a genuine trial for all.

Finally, with regard to the UN projections, it is interesting to note that the distribution of urban population by size of town or city remains relatively constant to 2025 (as far as the UN projects city size), as shown in Figure 28. Much of the need to accommodate urban growth will be in small to medium-sized cities (see “less than 600,000”), not just in megacities.

#### **THE POTENTIAL FOR DISASTER**

The increasing concentration of population in cities, while with some potential benefit also carries with it the risk of mass casualties. Few buildings in developing countries are constructed to resist earthquakes so that quakes occurring near cities would cause mass fatalities and widespread building collapse. Delhi lies in a high-risk zone (Category 4 out of 5 with 5 the highest risk). With over 20 million people in the metropolitan area, there is catastrophic potential. A quake in the Indian state of Gujarat in 2001 killed 20,000 and the risk is great across the entire South Asian plate. And, earthquake risk is, of course, not restricted to developing countries.

The potential for floods inundating ever-growing concentrations of people is not simply a threat but an unfortunately common occurrence. Cyclones and monsoon rains in the Bay of Bengal have caused widespread death and destruction in Bangladesh and coastal sections of India with tens of millions made homeless in Bangladesh in 1998. Industrial disasters as well, if they occur near cities, can have disastrous effects, much like the 1984 Bhopal gas tragedy did in India. Urbanization is a two-edged sword; although it has the potential for improved health and standards of living for populations, this potential is rarely achieved.

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## HUMANITARIAN CONCERNS WITH UNDERLYING DEMOGRAPHIC CAUSES

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Many contemporary humanitarian concerns are the direct result of a novel, unprecedented dichotomy in global demographic trends that began in the 1970s and accelerated in the 1990s, continuing to the present day. In most developed countries, birth rates fell to such low levels that their economic and social prospects have been forever altered. The crisis of excessive aging, loosely defined as an imbalance between the number of retirees and the number of tax-paying workers, along with very small cohorts of younger people will certainly cause many developed countries to become introverted, i.e. more and more concerned about their own difficulties even as they lack the national budgets to address them. And, the need for workers to compensate for the lack of native births will and has created its own concerns which vary from place to place and from time to time. Contemporaneously, there has been continued growth of population in the world's poorest countries and areas despite significant, albeit uneven, progress made in reducing birth rates and improving health conditions. These issues have been addressed throughout the above paper.

A final concern with humanitarian implications is the overall lack of understanding on the part of many in the developed countries of the true situation in developing countries. Given that the vast majority of the general public, and many legislators, receive their information from a media whose quality declines by the day, it would seem impossible that any true picture can emerge. This notion was alluded to in the above section on urbanization but has wide application. Media references to "rising incomes" and the "exploding middle class" form an impression that developing countries have become economic competitors more than the impoverished states they actually are. There is some truth to the descriptions of growing economies and its beneficiaries but the much larger proportion whose life is one of poverty is ignored. Even a cursory review of statistics reveals the truth and, for that reason, ignorance of the developing world as it really is may be one of the most pressing humanitarian concerns.

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**ANNEX 1: POPULATION PROJECTIONS – HOW THEY ARE MADE, HOW TO USE THEM**

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The results of projections produced by the United Nations Population Division, the U.S. Census Bureau, or by national statistical offices are often misunderstood and are certainly fodder for blaring headlines. “United Nations Lowers World Population Projections” or “World Population Crisis a Myth” or “United Nations Raises World Population Projections are examples. Such headlines create definite impressions in the public mind, in the minds of policymakers and in the minds of foundations that fund projects and programs. But what exactly *are* population projections? And, if they cause this much trouble, why do we bother to produce them? Simply put, it is not only useful but indispensable to look ahead to see what a country’s population size might be and what its age distribution might look like.

Population projections are not forecasts despite giving that appearance. They are simply scenarios of what a country’s population *would* look like if a series of *assumptions* prove true. In fact, that is all projections really are: a series of assumptions. But the majority of users (1) do not look at the assumptions, only the results, and (2) look only at the “middle” projection if an odd number of different scenarios is presented.

Using an African country as an example, let us look at the United Nations most recent series of projections for Uganda, where the TFR is currently about 6.4 children per woman:

**Table 6: United Nations Population Projections for Uganda (population in 1000s)**

	2005 Pop.	2050 Pop.	2045-50 TFR	2045-50 Growth Rate (%)
Low	28,699	80,573	2.1	1.3
Medium	28,699	91,271	2.6	1.7
High	28,699	102,678	3.1	2.1
Constant TFR	28,699	152,169	6.4	4.0

Source: United Nations Population Division, *World Population Prospects, The 2008 Revision*

Projections for developing countries with a TFR above 2.1 children per woman (“replacement” level fertility)<sup>15</sup> nearly always make one sweeping assumption: that the TFR *will* decline in the same general way as it did in the industrialized countries *and* that the TFR will decline to a similarly low level. In the case of the United Nations projections, the eventual level of the TFR is assumed to be 1.85 children per woman. This is a major assumption that drives the projections, and the United Nations is very careful to point that out. The UN notes that such an assumption makes other assumptions: (1) that couples will desire fewer children, and (2) that government policies and funds will provide accessible family planning services along with the needed information and counseling services. Uganda provides an example that we may use to assess the UN’s projections. What are the real-world prospects for fertility decline as the projections assume? Other aspects of projections, such as the consequences of different mortality levels, HIV/AIDS in particular, are considered elsewhere in this paper.

Uganda’s TFR, as measured in the 2006 Demographic and Health Survey (DHS) stood at 6.7 children per woman. This TFR referred to the 2004-2006 period. The UN TFR for the first period of the projection, 2005-2010 is 6.4, so some decline has been assumed from the

very beginning. In fact, two previous DHS surveys, one in 1995 and the other in 2000-2001, measured the same TFR, 6.9. There are some non-comparability issues in that the earlier two DHS surveys could not be conducted in northern provinces near the Sudan border, where fertility is slightly higher than the national average, due to security problems.

Armed with this evidence, what can one say about the prospects for fertility decline in Uganda? Eliminating the northern provinces data from the 2006 DHS, the TFR is then 6.5, compared to 6.9 in the earlier surveys, providing some evidence of recent TFR decline. At the same time, we must also keep in mind that surveys do not measure things perfectly (see Box 2. What Do We Know and How Do We Know It?).

We could also look at the trend in family planning use from the DHS surveys as another aid in considering Uganda's future TFR decline. The use of modern contraceptives rose from 8.1 percent of married women in 1995 to 18.5 percent in 2006. It must be pointed out that there is no 1:1 correspondence in family planning use and the actual TFR. We could also consider consistency of use. In Uganda, 58 percent of women who were using contraceptives had discontinued using them at one point or another for at least a year. The male condom, pill and injectables were the most commonly discontinued along with "traditional" methods such as rhythm and withdrawal. Finally, women were asked in the survey if they wish to cease childbearing. Not until women have five living children did more than one half wish to stop, meaning of course that nearly half wished to continue. There are many other considerations to take into account, such as the state of reproductive health services provided, political changes interrupting government programs, foreign aid made available, limits on land availability and the like.

Recognizing that predicting TFR decline is a difficult and complex task, there are other considerations as well. For one, what will the pattern of decline be and what will the "ultimate" value of the TFR be? In some countries, very high TFRs (6 and above) decline for a time but then "stall" for a while at a medium level (3 to 4 or so) before resuming their downward path. This has happened in Bangladesh, Ghana, Kenya and others. The ultimate value is dubious as well. Will, for example, African countries *really* decline to a TFR of 1.85 as most frequently used UN medium projection assume, i.e., will they assume the same TFR as Sweden? There are no easy answers.

The table above gives evidence of just how critical differences in the future path of the TFR really are. A difference of one child per woman in 2045-2050 in the UN Low to High projection results in a difference in population of 22 million *and* a growth rate that varies from 1.3 to 2.1 percent even as far out as mid-century. (To put those growth rates in some perspective, a growth rate of 1.3 percent, if held constant, will double a population in 53 years, a growth rate of 2.1 percent in 33 years.)

Clearly, population projections provide a very valuable service but must be viewed within their own practical limits. One thing we can say about this particular country, Uganda, is there is a great deal of population growth in its future and that the significance of changes in projections that the UN or any other organization might make in the future should never be over-emphasized.

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## ANNEX 2. THE “YOUTH BULGE” AND “THE DEMOGRAPHIC DIVIDEND”

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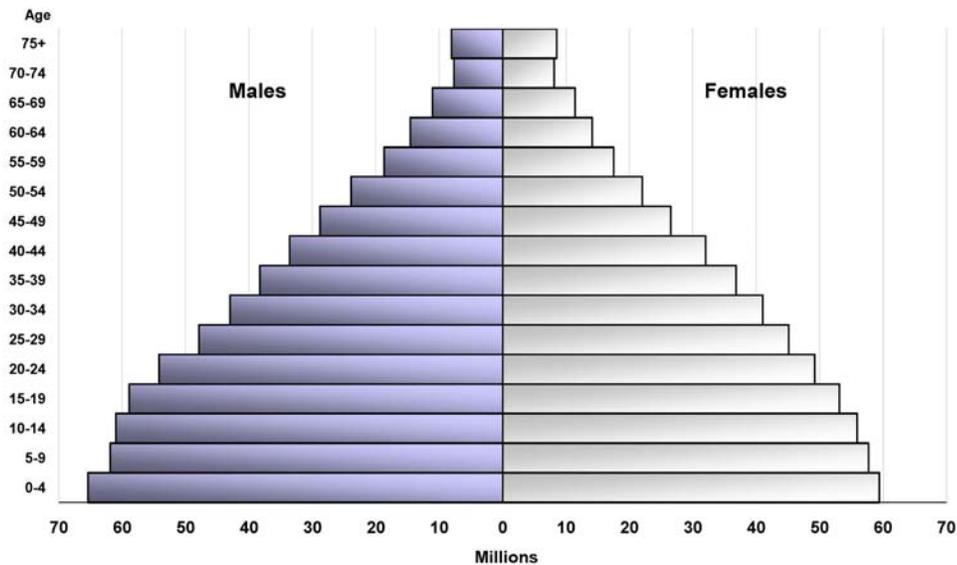
These two terms are now used with such profusion that a discussion of them is warranted. They are most often used to signify that a developing country has turned a corner both demographically and economically, a country on the verge of becoming a global economic power. This can easily lead to serious misconceptions.

The term “youth bulge” is often used in conjunction with “demographic dividend” to suggest that declining fertility has led to a situation where those in the working ages exceed those below those ages, thereby producing a pronounced bulge in the age distribution. It is simply another way of expressing the long-used youth dependency ratio of those 0-14, or 0-18, to the population 18-64 or similar ages.

Yes, in fact, I think the big change in India is that over the last 40 years we've gone from seeing a population as a burden to population as human capital. And the demographic dividend in particular arises because population growth rates have slowed down. And so we have a huge hump of people in the working age of 15-65, which is typically when economies grow very rapidly.

Nandan Nilekani, founder of Infosys, *Marketplace*, April 2, 2009

**Figure 29: India's Population by Age and Sex, 2006**



Source: Population Reference Bureau

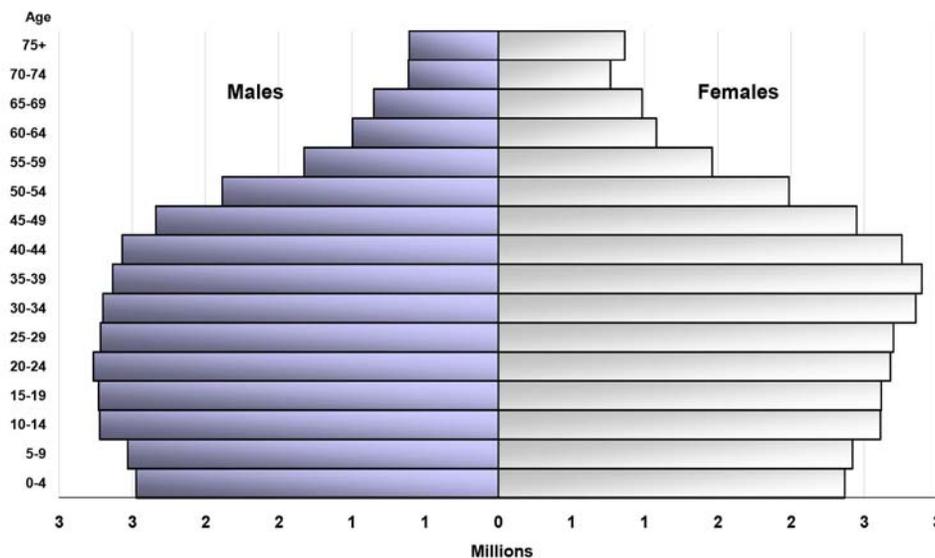
There are two problems with Mr. Nilekani’s statement. First, the demographic part of the statement is wrong. It will take several generations for the base of the population pyramid to begin to narrow so that the type of “hump” described will then only begin to appear. Secondly, India’s “human capital” is a misnomer in reality. Only four percent of the Indian labor force is in the organized sector, i.e., working for a firm of some type, collecting

a regular wage or salary and paying income taxes. The great bulk of the labor force is woefully under-educated, functionally illiterate and without any training of any kind. Further, the World Bank estimates that three out of four people in India live on less than \$US 2 per day, as we have seen.

It is true that India's age distribution will someday change and that investment in human capital can make India an economic power to be seriously reckoned with. One humanitarian concern is that the wealth of some of India's most successful companies often does not pass down to the workers who most frequently do not have the benefit of labor organizations and unions. Expanding industry and commerce will take a massive national education campaign along with large amounts of foreign investment. That is most likely a long way off.

The population pyramid of Thailand, a country's whose fertility declined rapidly in the 1980s, from 5.0 in 1970 to 2.0 in 1990, does exhibit the type of bulge to which Mr. Milekani was referring. The problem with inaccurate statements that appear in the media is that they convey incorrect impressions, making India and other developing countries appear both as near-equal competitors rather than the poverty populations that they actually are and appearing to be much further on the road to population stabilization than the facts warrant.

**Figure 30: Thailand's Population by Age and Sex, 2005**



Source: United Nations Population Division

<sup>1</sup> UN 1988 Briefing Packet

<sup>2</sup> The United Nations definition used here classifies the developed countries as those of Europe and North America plus Australia, Japan and New Zealand. All other countries are classified as developing.

<sup>3</sup> United Nations (1974), *The Determinants and Consequences of Population Trends*, p. 147-148

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<sup>4</sup> United Nations (2009) Population Division, *World Population Prospects, The 2008 Revision*

<sup>5</sup> See, E.A. Wrigley (1969), *Population and History*

<sup>6</sup> European countries also could use the “outlet” of migration to the New World when food shortages or difficult economic times struck. Ireland, Sweden and Germany, for example, sent millions of migrants abroad, amounts that represented significant proportions of their populations. Today, the option of unregulated emigration is not available to developing countries.

<sup>7</sup> The UN does not actually define individual countries as developed or developing, only *regions*. Only three exceptions to the rule made: Australia, Japan and New Zealand, although located in developing regions (Asia and Oceania), are classified as developed. The classification was made in the 1960s.

<sup>8</sup> The United Nations Population Division surveys countries every two years on their official attitudes towards the level of fertility, mortality and migration and related issues such as whether government intervention is called for.

<sup>9</sup> UNAIDS defines an AIDS orphan as a child who has lost one or both parents to HIV. The child may, of course, also be HIV-positive.

<sup>10</sup> In this discussion, Sudan has been excluded as the UN classifies it as being a sub-Saharan country although also classified as North Africa due to its location.

<sup>11</sup> In many countries, the term “urban” often denotes relatively small towns and villages, not only larger cities. In India, villages with a population 5,000 and greater and with 75 percent of the male labor force not directly engaged in agriculture are classified as urban in the census. This is a good example of statistical definitions not always being what they seem.

<sup>12</sup> It should be noted that virtually every high fertility developing country now reports to the UN that its official position on the level of fertility is “too high.” There is, of course, great variation in the course of action actually taken.

<sup>13</sup>

[http://epaper.hindustantimes.com/artMailDisp.aspx?article=13\\_05\\_2009\\_008\\_011&typ=1&pub=47](http://epaper.hindustantimes.com/artMailDisp.aspx?article=13_05_2009_008_011&typ=1&pub=47)

<sup>14</sup>[http://indiatoday.intoday.in/index.php?option=com\\_content&task=view&id=30645&sectionid=21&Itemid=1&issuclid=106](http://indiatoday.intoday.in/index.php?option=com_content&task=view&id=30645&sectionid=21&Itemid=1&issuclid=106)

<sup>15</sup> Replacement level fertility is the level of the TFR that will eventually cause a population’s growth rate to decline to zero (not including any effects of migration). It is often given as 2.1 children per woman, “0.1” largely due to the uneven, but normal, sex ratio at birth, 105 males born per 100 females. But the 2.1 is only true in countries with low mortality rates. In developing countries with low life expectancy, replacement fertility can be over 3 children per woman since women who survive to the end of their childbearing years must compensate for a larger number of those who do not.



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