Over the past 50 years, many Asian countries have experienced a remarkable pace of economic development and social change. Modernization has progressed most quickly in the countries of East Asia. At 81 years, Japan now has the highest life expectancy in the world. In South Korea, the average annual income rose nearly 10-fold between 1960 and 1999. In the Philippines, more than three-fourths of girls now attend secondary school, and one-third attend university. In India, fertility has dropped from about six to just over three children per woman. In five Asian countries, per capita incomes average more than US$10,000 a year (Appendix Table 1).

In most countries of Southeast Asia and South and Central Asia, the pace of change has been slower, resulting in wide diversity across the region. Afghanistan has one of the lowest life expectancies in the world— at 46 years. In Bangladesh, only 13 percent of girls attend secondary school. In Afghanistan, Pakistan, Cambodia, and Laos, women have, on average, more than five children each. In Afghanistan and Laos, more than 1 in 10 of these children die before their first birthday. In nine Asian countries, per capita incomes average less than US$500 a year.

These varying levels of social and economic development have major implications for the growth and structure of Asian populations. Economic transformation plus dramatic breakthroughs in health and family planning technology have been the fundamental forces driving a demographic transition. This transition—from high to low mortality and fertility—has occurred in nearly every country of the region. This demographic transition, in turn, has provided favorable conditions for social and economic development.

Before the demographic transition, both birth and death rates are high, so the total population grows slowly if at all. With modernization, death rates are the first to plummet, while birth rates remain high, so that population growth can speed up to alarming levels. Eventually, birth rates also drop, and 50 or 60 years later population numbers can be expected to stabilize or decline. Apart from population size, the demographic transition also has a dramatic effect on population age structures.

Although population growth can be expected to slow down eventually, the length of the transition phase—when death rates are low but birth rates are high—and the rate of population growth during this period determine what size a population is likely to reach before the numbers stabilize. And whether India's population, for example, eventually stabilizes at 1.3 billion (United Nations low-variant projection) or 1.9 billion (United Nations high variant)

Varying levels of social and economic development have major implications for the growth and structure of Asian populations (Kerala, India) © Steve McCurry/Magnum

makes a big difference in terms of pressure on national resources and the ultimate well-being of individuals and families.

The demographic transition has been more rapid and more dramatic in Asia than anywhere else in the world, particularly in East Asia. In 1950, women in South Korea could expect to bear more than five children on average. In 2000, they could expect to bear fewer than two. Over the same 50-year period, life expectancy in China increased from 41 to 71 years. Other countries, particularly in South and Central Asia, are only part way through the transition from high to low mortality and fertility. In Pakistan, for example, women can expect to bear five or six children throughout their lives, and nearly 1 in 10 of these children die before reaching age one. Yet even in the relatively poor countries of South and Central Asia, death and birth rates are going down, and population growth rates and structures are changing.

This report describes recent population trends in Asia and explores the likely course of Asian population dynamics in the future. Where data are available, the time frame is 100 years, from the second half of the 20th century through the first half of the 21st. The discussion covers the different population dynamics in Asia's three subregions—East, Southeast, and South and Central Asia—and includes examples from specific countries that illustrate regional trends.

The statistics that underlie much of this discussion are the medium-variant projections released recently by the United Nations Department of Economic and Social Affairs in *World population prospects: The 2000 revision* (see Appendix Table 2). Figure 1 is a map of the region.

Mortality, fertility, and population growth

In Asia as elsewhere in the world, economic growth and modernization caused a drop in death rates well before they had an effect on birth rates. Death rates fell especially rapidly in the decade after World War II because economic development brought in new medical and public-health technology from Europe and North America—such as vaccinations against major infectious diseases and pesticides to reduce the transmission of malaria. During the second half of the 20th century, life expectancy increased by more than 20 years in all three of Asia's subregions—from 43 to 71 years in East Asia, from 41 to 65 years in Southeast Asia, and from 39 to 62 years in South and Central Asia.

Although particularly dramatic during the 1950s, increases in life expectancy have continued, based on further advances in medicine and public health and improvements in the standard of living of many Asian populations. The rather sudden access to life-saving technology, largely imported from the West, has produced much higher rates of transitional population growth in Asia than occurred historically in Western countries.

Economic development and access to new technologies have also led to at

The Future of Population in Asia

Figure 1. Map of Asia

Notes: Boundary representation
is not necessarily authoritative.
The United Nations population
statistics used in this report
(2001) include statistics for
Taiwan together with China.

EAST ASIA

China
China, Hong Kong SAR
China, Macao SAR
Japan
Korea, Dem. Rep. (North)
Korea, Rep. (South)
Mongolia
Taiwan

SOUTHEAST ASIA

Brunei Darussalam
Cambodia
East Timor
Indonesia
Lao PDR (Laos)
Malaysia
Myanmar
Philippines
Singapore
Thailand
Vietnam

SOUTH AND CENTRAL ASIA

Afghanistan
Bangladesh
Bhutan
India
Iran (Islamic Rep.)
Kazakhstan
Kyrgyzstan
Maldives
Nepal
Pakistan
Sri Lanka
Tajikistan
Turkmenistan
Uzbekistan

3

least some level of fertility decline everywhere in Asia. Experience has shown that birth rates decline for three main reasons:

1. Child mortality declines so that families no longer need to produce extra children to make sure that a certain number survive. Large numbers of children also put a strain on family resources.
2. With increased opportunities for education and changes in the nature of work, children become an economic liability rather than an asset, at least until they become adults.
3. Emerging industrial economies create new material goods and new opportunities for adults that compete with children for parents' time and resources. This is especially true for women, who increasingly work outside the home.

Changes in values also play an important role in the transition to low birth rates. In pre-industrial societies, there is generally an emphasis on high fertility, which results in resistance to family planning even when it is available. This resistance is one of the major reasons why fertility decline lags behind mortality decline. As economic and social development proceeds and mortality drops, the resistance to family planning tends to collapse—often rather suddenly. Wider and wider groups within the population come to accept the idea that deliberate family limitation is morally acceptable, and fertility declines.

The change in attitudes and acceptance of family planning proceed rapidly in populations that are socially integrated, with shared values and good internal communications. These populations tend to be relatively homogeneous in terms of characteristics such as ethnicity, language, and religion. Japan, South Korea, Taiwan, and Thailand are examples of highly integrated populations where fertility has declined very rapidly over short periods.

Government and nongovernmental family planning programs can also advance the timing of fertility decline by providing accessible, low-cost family planning services and by speeding up the acceptance of birth control through public information campaigns. Fertility has fallen very quickly in countries with strong national family planning programs such as China, Thailand, Indonesia, Singapore, South Korea, and Taiwan. Fertility can decline to very low levels without strong family planning programs, however, for example in Japan.

The timing of fertility decline is a complex function of:

- Mortality rates
- Economic, social, and cultural factors at the family level relating to the costs and benefits of having children
- Economic, geographic, political, and cultural factors at the national level that influence the rate of diffusion of family planning

Fertility decline is also influenced by trends in age at marriage and migration. The timing of fertility decline results from various combinations of all these factors.

Table 1. Population trends in Asia: 1950–2050

Trend	1950	1975	2000	2025	2050
Total population (1,000s)	1,348,923	2,297,685	3,484,065	4,472,895	5,004,281
Percent of world population	54	57	58	56	54
Life expectancy at birth[a]	41.3	44.8	67.7	73.8	76.9
Total fertility rate (TFR)[a]	5.89	4.18	2.49	2.11	2.05
Crude birth rate (CBR)[a]	42.7	29.4	20.2	14.9	13.1
Crude death rate (CDR)[a]	24.0	10.5	7.7	8.1	10.2
Rate of natural increase (RNI)[a]	18.7	18.9	12.5	6.8	2.8
Percent age 0–14	36	40	30	22	19
Percent age 65+	4	4	6	10	17
Dependency ratio[b]	0.68	0.78	0.56	0.48	0.57
Percent women age 15–49	49	47	53	50	44

Source: United Nations (2001); 1998 revision for CBR, CDR, RNI, TFR, and life expectancy in 1950 and 1975.
[a] Refers to 1950–54, 1975–79, 2000–04, 2025–29, and 2045–49. CBR and CDR refer to births or deaths per 1,000 population per year.
[b] The dependency ratio is defined as the sum of the number of children age 0–14 and the number of elderly age 65+, divided by the number of working-age people age 15–64. It is interpreted as the average number of dependents that each person of working age must support.

Between 2000 and 2050, fertility in Asia as a whole—as measured by the total fertility rate, or TFR—is projected to decline from 2.7 to 2.1 children per woman (Table 1). The TFR is defined as the number of children that a woman would bear throughout her reproductive years at current age-specific fertility rates. According to these projections, fertility in Asia is expected to drop to replacement level by about 2025. This is defined as an average of about 2.1 children per woman, which includes one-tenth of a child extra to make up for the mortality of children and of women who do not reach the end of their reproductive years.

Over the same 50-year period, life expectancy at birth is projected to increase from 66 to 77 years. Another commonly used measure of mortality is the crude death rate or CDR (deaths per 1,000 population per year), also shown in Table 1. Even though life expectancy increases throughout the period until 2050, the crude death rate is also projected to begin increasing after 2015. This is because the proportion of Asia's population at the older, high-mortality ages will be increasing.

Between 2000 and 2050, Asia's population is projected to grow by 44 percent, from 3.48 to 5.00 billion (Table 1). Population will grow somewhat more slowly in Asia than in the rest of the world. As a result, Asia's share of world population is projected to decline slightly, from 58 to 54 percent, the same percentage as it was in 1950.

Another measure of population growth is the rate of natural increase, or RNI
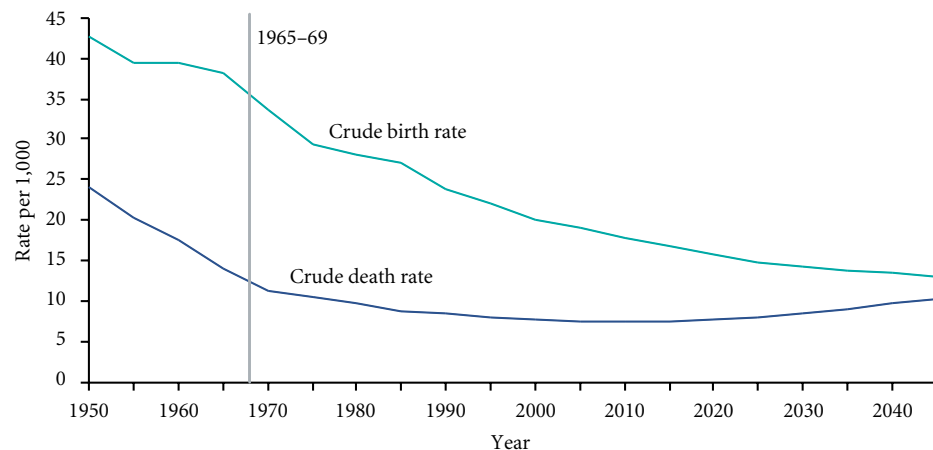
(excess of births over deaths per 1,000 population per year). This is the difference between the crude birth rate, or CBR (births per 1,000 population per year) and the crude death rate (CDR). Trends in these indicators—CBR, CDR, and RNI—reveal the progress of the demographic transition (Figure 2). The rate of natural increase, as the difference between CBR and CDR, approximately equals the annual rate of population growth if net migration is small. The rate of natural increase for Asia peaked in 1965–69, when it was 24.1 per 1,000 per year. Since then, the RNI has been declining, and it is projected to decline much more during the next 50 years. Overall, Asia's population is still growing rapidly, but the growth rate is slowing down.

Population age structure

Populations can usefully be divided into three age groups—young dependents at ages 0 to 14 years, the working-age population at ages 15 to 64, and old dependents at ages 65 and above. As mortality and fertility rates decline, the proportions in these three age groups change. Table 1 shows that the proportion of young dependents in Asia's population is projected to drop sharply, from 30 to 19 percent between 2000 and 2050, while the proportion of old dependents is projected to rise from 6 to 17 percent.

   The ratio of dependents (both young and old) in a population to those of working age is called the "dependency ratio." It is an approximation of the average number of dependents that each person of working age must support. Table 1 shows that the dependency ratio in Asia is projected to fall from 0.56 to 0.48 between 2000 and 2025, reflecting the sharp decline in the proportion of young dependents. The dependency ratio is then projected to rise to 0.57 in 2050, reflecting a sharp increase in the proportion at ages 65 and above. This means that in 2025, there will be slightly more than two people of working age for every dependent in the population, while in 2050 there will be fewer than two people of working age for every dependent.

Figure 2. Crude birth rates (CBR) and crude death rates (CDR) per 1,000: Asia, 1950–2045

Note: The rate of natural increase (RNI) is the difference between the CBR and the CDR. It peaked in 1965–69.

The temporary dip in overall dependency that typically occurs during the early phase of fertility transition has been referred to as a "demographic bonus" because, during this period, money that would otherwise be spent supporting dependents can be saved and invested, providing an impetus to economic development. The boost to development is not automatic, however, because there is no guarantee that governments, institutions, or individuals will spend the savings wisely. The trend in the dependency ratio shown in Table 1 indicates that, for Asia as a whole, demographic factors will tend to accelerate economic development between 2000 and 2025.
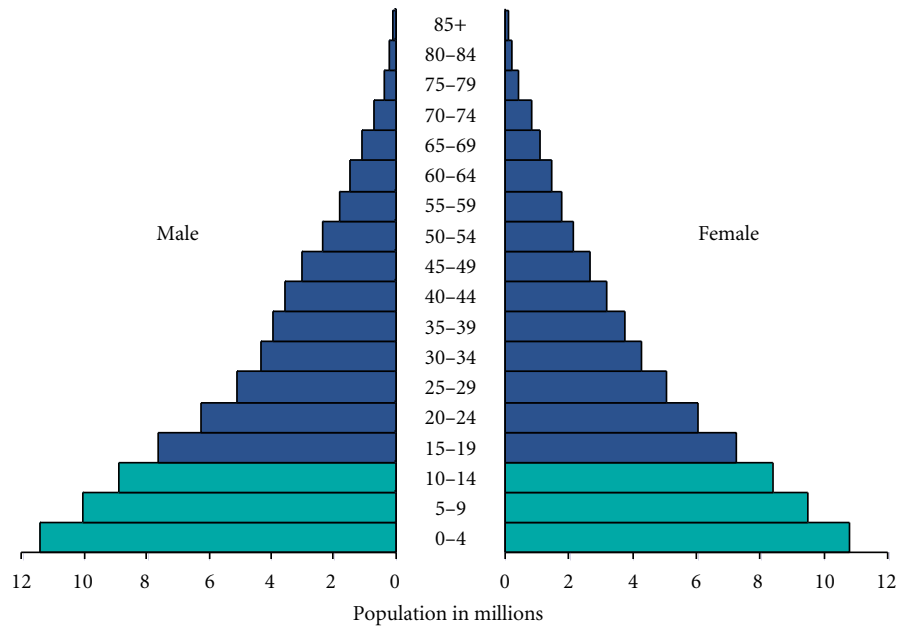
Another important aspect of population age structure is the phenomenon called "population momentum." This is a period of population growth that occurs even after fertility has fallen to the replacement level because the proportion of the population at the reproductive ages is temporarily inflated. Thus, if there is an unusually large number of women in their childbearing years (age 15 to 49), then an unusually large number of children will be born, even if these women have on average only 2.1 children each. After mortality declines, it takes a while for the population of older persons to increase, which temporarily depresses the crude death rate. This also contributes to population momentum.

Momentum-generated population growth occurs roughly in the following sequence. Fifteen years after fertility decline begins, there will be relatively few children below age 15. At the same time there will be relatively few persons over age 50, because these older age groups experienced relatively high mortality in the past. Women in the reproductive ages of 15 to 49 will constitute a relatively large group in the population because they were born before fertility started to decline but they have experienced lower mortality than their elders. The population bulge at ages 15 to 49 lasts for about four decades, and the temporary depression of crude death rates lasts even longer.

The age structure of Pakistan's population in 2000 (Figure 3) is typical of a country just entering the demographic transition from high to low fertility. There is a broad base at the bottom consisting of large numbers of children and a narrow top made up of relatively small numbers of elderly. Fertility has begun to fall in Pakistan but is still high, and the proportion of dependent children in the population is large, resulting in rapid population growth. The population of Thailand in 2000 (Figure 4) has a bulge between ages 10 and 35, reflecting a major fertility decline during the 1980s and 1990s and indicating that population momentum is accounting for a considerable amount of Thailand's current population growth.
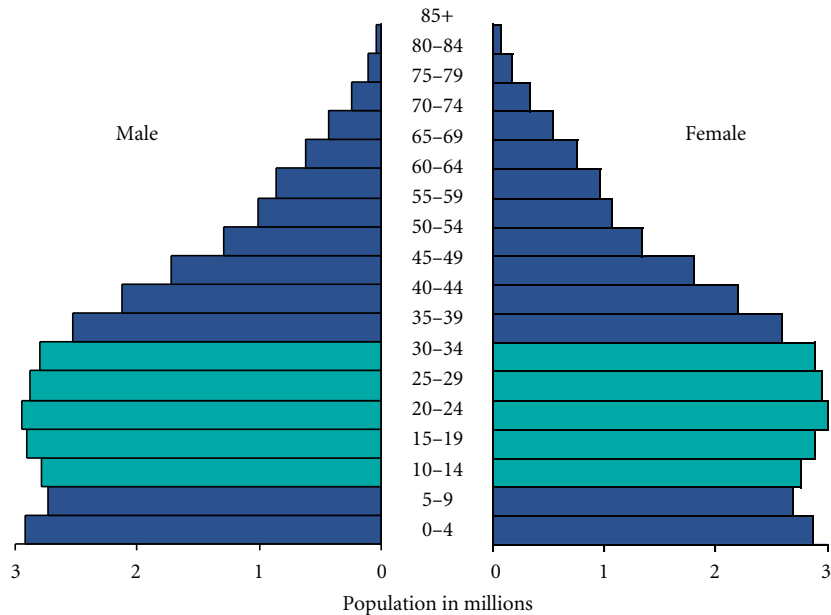
The population of Japan in 2000 (Figure 5) has a primary bulge at ages 50 to 54, corresponding to persons born in 1945–49 during Japan's brief post-World War II baby boom. Japan's fertility dropped by half during the 1950s, and this is reflected in the narrowing of the pyramid at ages 40 to 44. The secondary bulge at 25 to 29 is a generational echo—the children of the baby boomers, born on average 25 to 30 years later. In Japan, the large group at ages 50 to 54 will soon

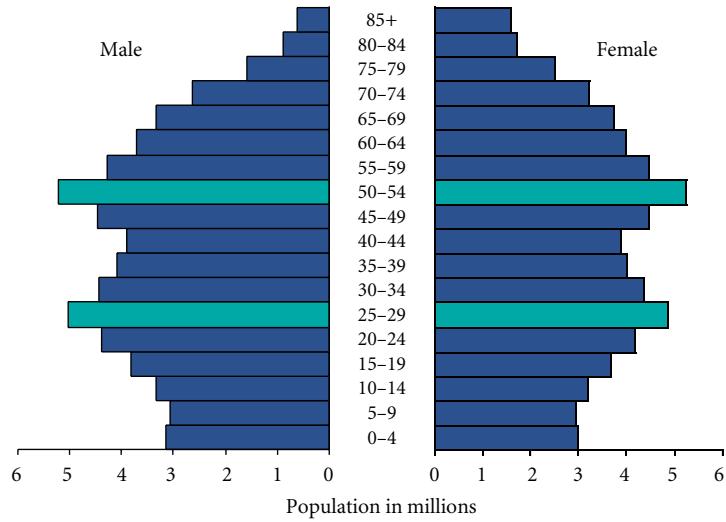Figure 3. Population age and sex structure for Pakistan, 2000

Male

Female

85+
80–84
75–79
70–74
65–69
60–64
55–59
50–54
45–49
40–44
35–39
30–34
25–29
20–24
15–19
10–14
5–9
0–4

12   10   8   6   4   2   0   0   2   4   6   8   10   12
Population in millions

Source: United Nations (2001).

Figure 4. Population age and sex structure for Thailand, 2000

Male

Female

85+
80–84
75–79
70–74
65–69
60–64
55–59
50–54
45–49
40–44
35–39
30–34
25–29
20–24
15–19
10–14
5–9
0–4

3   2   1   0   0   1   2   3
Population in millions

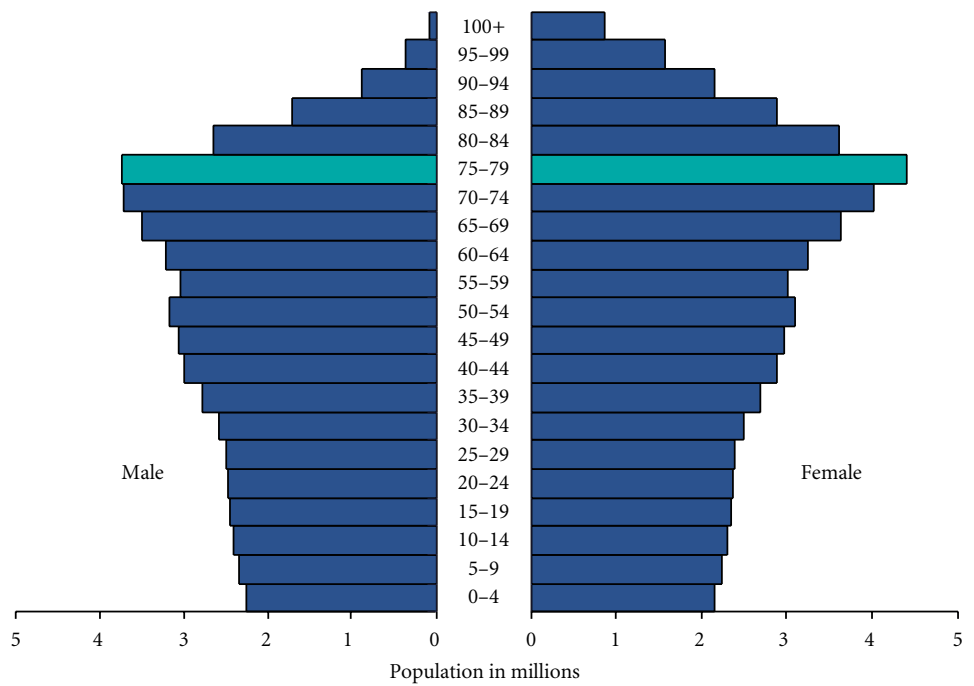*Source:* United Nations (2001).

move into retirement, causing a sharp rise in Japan's dependency ratio. Indeed, the population pyramid projected for Japan in 2050 (Figure 6) shows population aging that is so extreme that the pyramid is inverted, broadening steeply through the retirement years up to ages 75 to 79 as the numbers in these older age groups increase.

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Figure 5. Population age and sex structure for Japan, 2000

Figure 6. Population age and sex structure for Japan, 2050

Population momentum will account for much of Asia's population growth over the next 50 years. Fertility is projected to fall to the replacement level of 2.1 children per woman by 2025 and to change little between 2025 and 2050, yet population is projected to grow between 2025 and 2050 from 4.5 to 5.0 billion. Population momentum will account for virtually all of the growth during this 25-year period.

Introduction and Overview

Table 2. Population trends in East, Southeast, and South and Central Asia: 1950–2050

Trend	1950	1975	2000	2025	2050
East Asia					
Total population (1,000s)	672,483	1,096,726	1,481,075	1,685,206	1,665,197
Percent of Asia's population	50	48	43	38	33
Crude birth rate (CBR)[a]	40.8	21.0	13.9	11.0	10.5
Crude death rate (CDR)[a]	23.3	6.6	7.1	9.4	13.0
Rate of natural increase (RNI)[a]	17.5	14.3	6.8	1.6	−2.5
Total fertility rate (TFR)[a]	5.71	3.13	1.76	1.89	1.90
Life expectancy[a]	42.9	46.7	72.3	77.3	79.7
Percent age 0–14	34	38	24	18	16
Percent age 65+	4	5	8	14	24
Dependency ratio[b]	0.63	0.74	0.46	0.48	0.66
Percent of women age 15–49	50	47	55	44	39
Southeast Asia					
Total population (1,000s)	178,073	321,268	522,121	692,228	800,302
Percent of Asia's population	13	14	15	15	16
Crude birth rate (CBR)[a]	44.3	35.3	21.4	15.6	13.6
Crude death rate (CDR)[a]	24.7	13.1	7.0	7.1	9.3
Rate of natural increase (RNI)[a]	19.6	22.2	14.4	8.5	4.3
Total fertility rate (TFR)[a]	6.03	4.81	2.52	2.09	2.08
Life expectancy[a]	40.5	43.6	67.0	74.0	77.3
Percent age 0–14	39	42	32	23	20
Percent age 65+	4	4	5	8	16
Dependency ratio[b]	0.74	0.84	0.59	0.47	0.56
Percent of women age 15–49	48	46	54	52	44
South and Central Asia					
Total population (1,000s)	498,367	879,691	1,480,868	2,095,462	2,538,781
Percent of Asia's population	37	38	43	47	51
Crude birth rate (CBR)[a]	44.66	37.42	25.82	17.65	14.6
Crude death rate (CDR)[a]	24.75	14.32	8.51	7.38	8.7
Rate of natural increase (RNI)[a]	19.9	23.1	17.3	10.3	5.9
Total fertility rate (TFR)[a]	6.08	5.24	3.25	2.24	2.12
Life expectancy[a]	39.3	42.8	63.3	70.9	74.9
Percent age 0–14	39	41	35	26	21
Percent age 65+	4	4	5	7	13
Dependency ratio[b]	0.73	0.80	0.66	0.49	0.51
Percent of women age 15–49	48	47	51	53	47

Source: United Nations (2001); 1998 revision for CBR, CDR, RNI, TFR, and life expectancy in 1950 and 1975.
[a] Refers to 1950–54, 1975–79, 2000–04, 2025–29, and 2045–49. CBR and CDR refer to births or deaths per 1,000 population per year.
[b] The dependency ratio is defined as the sum of the number of children age 0–14 and the number of elderly age 65+, divided by the number of working-age people age 15–64. It is interpreted as the average number of dependents that each person of working age must support.

Projections for the three subregions of Asia _____

There are large differences among the populations of East, Southeast, and South and Central Asia. The demographic transition is most advanced in East Asia and least advanced in South and Central Asia, with Southeast Asia in between (Table 2).

In all three subregions, life expectancy is projected to increase between 2000 and 2050. The crude death rate (CDR) is also projected to increase over the full 50-year period in East and Southeast Asia and between 2025 and 2050 in South and Central Asia. This occurs because growing proportions of these populations are in the old-age group.

In East Asia, the total fertility rate (TFR) was already below replacement in 2000, at 1.8 children per woman. According to United Nations medium-variant projections, fertility in this subregion will increase slightly—to 1.9 in 2050. At the other end of the spectrum, fertility in South and Central Asia is projected to decline from 3.3 to 2.1 children per woman. In Southeast Asia, fertility is projected to decline from 2.8 to 2.1.

Because fertility is much lower in East Asia, population will grow more slowly there than in the other two subregions. As a result, East Asia's proportion of the region's total population is projected to decline from 43 to 33 percent between 2000 and 2050. The proportion in South and Central Asia is projected to increase from 43 to 51 percent, and the proportion in Southeast Asia is projected to increase slightly from 15 to 16 percent.

By 2050, population aging will have progressed much further in East Asia than in the other two subregions. In East Asia, 24 percent of the population will be age 65 and above, compared with 16 percent in Southeast Asia, and 13 percent

In Asia as a whole, there are fewer than two people of working age for each dependent person in the population (Chengdu, China)
© Keren Su/Corbis

The image that appears here in the printed version of this publication was not made available for use on the internet.

In most of Asia, the population will continue growing for 50 years or more because of the large proportion of women at childbearing ages (Gujarat, India) © Ian Berry/Magnum

in South and Central Asia. Indeed, the proportion of elderly in East Asia's population will be one of the highest of any region in the world.

Largely because of greater population aging, the dependency ratio in 2050 will be highest in East Asia, at 0.66 dependents for every individual of working age, compared with 0.56 in Southeast Asia and 0.51 in South and Central Asia. There is no dip in the dependency ratio between 2000 and 2050 in East Asia, because most countries in East Asia have already experienced the bulk of their "demographic bonus." In contrast, there is a big dip in the dependency ratio between 2000 and 2050 in Southeast and South and Central Asia, indicating that these two subregions will experience favorable demographic conditions for economic growth. It remains to be seen, however, how well countries in these subregions will take advantage of the demographic bonus to boost their economic growth rates.

By 2050, the percentage of women at the reproductive ages of 15 to 49 will be substantially lower in East Asia (39 percent) than in Southeast Asia (44 percent) or in South and Central Asia (47 percent). These percentages indicate that by 2050, population momentum will have mostly dissipated in East Asia but not in the other two subregions. South and Central Asia and Southeast Asia will still

The Future of Population in Asia

Table 3. Countries that will contribute most to Asia's population growth between 2000 and 2050 and contributions of other countries by subregion

Country, subregion, or region	Population increment (1,000s)	Percent contribution to Asia's growth	Cumulative percentage
India	563,117	37.0	37.0
Pakistan	202,914	13.3	50.4
China	186,925	12.3	62.7
Bangladesh	127,993	8.4	71.1
Indonesia	99,243	6.5	77.6
Philippines	52,730	3.5	81.1
Other East Asia	−2,803	−0.2	80.9
Other Southeast Asia	126,208	8.3	89.2
Other South and Central Asia	163,889	10.8	100.0
All Asia	1,520,216	100.0	100.0

Source: United Nations (2001).

have some potential for population growth inherent in the age structures of their populations because of unusually large proportions of women in the reproductive age groups.

Contributions to Asia's future population growth

South and Central Asia will contribute 70 percent of Asia's population growth between 2000 and 2050, Southeast Asia will contribute 18 percent, and East Asia will contribute 12 percent. The contribution of East Asia minus China (Japan, North and South Korea, and Mongolia) is –0.2 percent, indicating that the total population in these countries is projected to decline slightly during the 50-year period.

Six countries—India, Pakistan, China, Bangladesh, Indonesia, and the Philippines—are projected to contribute 81 percent of Asia's population growth between 2000 and 2050 (Table 3). India alone will contribute 37 percent, and India and Pakistan together will contribute 50 percent. China will contribute another 12 percent, which stems entirely from population momentum. Bangladesh and Indonesia will contribute 8 and 7 percent, respectively, and the Philippines will contribute 4 percent.

India is projected to surpass China in total population between 2035 and 2040. By 2050, India's population will be 1.57 billion, and China's population will be 1.46 billion. In 2050, India will account for 31 percent of Asia's population, and China for 29 percent. Thus, together, these two countries will account for 60 percent of Asia's population.