World Population Trends in 1960-70

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THIS ARTICLE presents a brief sketch of the world population situation between 1960 and 1970, with particular reference to fertility levels and trends. The 1960s saw a continuation of the rapid increase in world population which started in about 1950. Although the average annual rate of growth declined from that of the previous decade in the more developed regions, this decline was more than offset by accelerated growth in the less developed regions.²

Table 1 shows the average annual rates of growth and crude birth and death rates for the world, and for the more developed and less developed regions, for the four five-year periods 1950-55, 1955-60, 1960-65 and 1965-70. These data clearly illustrate the rapid rise in the natural population increase in the less developed regions. This is mainly attributable to a rapid decline in the crude death rate from 24.0 per 1,000 population in 1950-55 to 16.1 in 1965-70. The decline in mortality which had already started in the less developed regions in 1950-60 accelerated in 1960-70, while the decline in the birth rate which was incipient in 1950-60 did not reach the same dimensions.

During the 1960s the birth rate was further curtailed in the more developed regions, thus reducing both their annual growth rate and their rate of natural increase, in spite of the fact that the death rate declined during the same period. As will be seen, the evolution of the world's population as a whole has been dominated by the demographic trends of the more numerous populations of the less developed regions.

¹ The authors are staff members of the Population Division of the United Nations. The views expressed in this article are, however, their own and do not necessarily reflect the opinions of the United Nations. The authors acknowledge with thanks the editorial assistance of their colleague Michael Stubbs.

² As understood here, the "more developed" regions comprise Europe, the USSR, the United States and Canada, Japan, Temperate South America, Australia and New Zealand. All the rest of the world is regarded as falling in the "less developed" regions.

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Region	Average annual rate of growth (%)	Crude birth rate per 1,000 population	Crude death rate per 1,000 population	
1950-55				
World total	1.8	36.7	19.3	
More developed regions	1.3	22.9	10.2	
Less developed regions	2.0	43.9	24.0	
1955-60				
World total	1.9	36.4	17.7	
More developed regions	1.3	21.9	9.4	
Less developed regions	2.2	43.6	21.8	
1960-65				
World total	2.0	35.1	15.7	
More developed regions	1.2	20.5	9.0	
Less developed regions	2.3	42.0	18.8	
1965-70				
World total	2.0	33.8	14.0	
More developed regions	1.0	18.6	9.1	
Less developed regions	2.4	40.6	16.1	

TABLE 1. ANNUAL POPULATION GROWTH RATES AND CRUDE BIRTH AND DEATH RATES, 1950-70

Source: United Nations: World population prospects as assessed in 1968 (New York, 1973; Sales No. 72.XIII.4), tables A.6, p. 114, and A.9, p. 151.

Population size and growth

Figure 1 shows the size of the world's population, distinguishing between more developed and less developed regions, in 1930, 1950, 1960 and 1970. An increasing proportion of the world's population is constituted by the populations of the less developed regions: 63.4 per cent in 1930, 65.5 per cent in 1950, 67.3 per cent in 1960 and 70.0 per cent in 1970. Evidently the population has been growing faster there than in the more developed regions.

The data in figure 1 also show that population growth in the world as a whole, as well as in the less developed regions, accelerated between 1950-60 and 1960-70. Thus the world total increased by 22 per cent in 1960-70 as against 20 per cent in 1950-60. The increase in these two decades is, however, twice as great as that in the two decades from 1930 to 1950, during which the world total increased by only 20 per cent. Comparison of the more developed with the less developed regions reveals that in the former group there was a 14 per cent increase between



FIGURE 1. POPULATION LEVELS, 1930-70

1950 and 1960 but only a 12 per cent increase between 1960 and 1970, whereas in the latter group the increases were 23 per cent and 27 per cent respectively. In the course of the 1960s the total world population increased by 653 million, of which 540 million (83 per cent of the total) were contributed by the less developed and only 113 million (17 per cent) by the more developed regions.

Mortality

The year 1950 appears to have been a turning-point in world demographic trends because it was generally speaking at around that time that modern public health services became widely accessible to populations in the less developed regions. Consequently, a sharp fall in the previously high death rates occurred in the 1950s and continued in the 1960s. The trends in crude death rates in the world, and in both the more developed and the less developed regions, have already been summarised in table 1.

While the fall in crude death rates shown in table 1 contributed directly to the acceleration of population growth, it is to be noted that these rates are affected by differences in population age structure. To compare the more specific conditions it is necessary to use the measure of expectation of life at birth (both sexes combined). This is done in figure 2.

In terms of this measure, progress in the reduction of mortality was greater between 1935-39 and 1950-55 than between the latter period and 1965-70. Progress was faster also in the less developed than in the more developed regions, so that, in terms of mortality, the gap between the two groups of regions has narrowed somewhat. Nevertheless the discrepancy



FIGURE 2. EXPECTATION OF LIFE AT BIRTH (BOTH SEXES) 1935-70

Source: Estimated by the Population Division, United Nations.

is still wide. In the more developed countries, particularly since 1960, progress has slowed down considerably as life expectancy levels have approached 70 years. Observation of general mortality trends reveals that gains in life expectancy are more substantial for those in their forties and fifties than for those in their sixties and seventies. In fact, in a number of more developed countries in Europe, notably Czechoslovakia, Denmark and the Federal Republic of Germany, as well as in the United States (among males), life expectancy increased very little or even decreased somewhat during the decade 1960-70.

A deceleration of the fall in mortality rates has also been observed in the less developed countries in recent years, so that in the revised projections made by the United Nations in 1973, it is assumed that in many developing nations the increase in life expectancy for the periods after 1970 will be appreciably less than that postulated in the preceding series of population projections.¹

¹ The study of mortality has latterly been somewhat neglected by demographers. Because of the recent stability and stagnation of mortality levels in the more developed regions, and because of the partly spontaneous declines in mortality in the less developed countries, regardless of underlying social and economic factors, very few substantial studies have been made lately of mortality trends and levels and of factors affecting mortality. Indeed, in several regional population association meetings in recent years, no separate session has been convened on the subject of mortality, while about half of the sessions have been concerned with fertility, family planning and population policy. Nevertheless, in population estimation and projection, mortality is a very important component which determines population growth and directly affects fertility levels in less developed countries.

Fertility: levels and trends

Since births occur chiefly to young and middle-aged adults, crude birth rates are as much affected by variations in population age structure as are crude death rates. Therefore, more precise measures must be used in the analysis and estimation of fertility. The gross reproduction rate is one of them. It shows the average number of daughters that would be born per woman in a group of women, all surviving to the end of the potentially reproductive period of life and bearing daughters at each age in accordance with the rates prevailing among women of various ages in the area and during the period under consideration. This measure is widely used as the most succinct summary indicator of fertility which is free from the effects of variations in age composition.¹ Table 2 shows gross reproduction rates for four quinquennial periods for the world, for the more developed and the less developed regions, and for 31 continents or smaller areas.

Although the pattern is not completely regular, table 2 shows that the differentiation between the more developed and the less developed regions is sharp in terms of gross reproduction rates. The fertility level is markedly higher in the less developed than in the more developed regions. Our studies show that the gross reproduction rate discriminates more sharply between the more developed and less developed countries than do most other economic and social indicators.² In figure 3, which clearly shows a bi-modal frequency distribution of values for 136 countries by levels of gross reproduction rate, the countries with a gross reproduction rate of 2.0 and above broadly correspond to the less developed group of countries, while those with a gross reproduction rate of less than 2.0 correspond to the more developed group.

As was seen in table 1, the decline in crude birth rates in the less developed countries in 1960-70, while not insignificant, was very small compared with the decline in crude death rates. The decline in the crude birth rate in the less developed group was largely attributable to declines in East Asia, notably in the People's Republic of China³, the Republic of Korea and other Chinese or Chinese culture-related populations⁴, as well

¹ The gross reproduction rate is calculated by summing age-specific birth rates for any given year or period of years and multiplying the results by the proportion of female births among all births.

² United Nations: Population bulletin of the United Nations, No. 7—1963 (New York, 1965; Sales No. 64.XIII.2), and United Nations, Population Division: Data on discrimination of countries according to development (unpublished preliminary report, 4 Aug. 1972).

⁸ United Nations: *World population prospects as assessed in 1968*, op. cit., table A.9, estimates crude birth rates per 1,000 population (medium variant) at 39.4, 39.0, 36.1 and 33.0 respectively for the periods 1950-55, 1955-60, 1960-65 and 1965-70.

⁴ That is, Hong Kong, Singapore and the Chinese population of West Malaysia (Irene B. Taeuber: "Demographic modernization: continuities and transitions", in *Demography* (Chicago), Vol. 3, No. 1, 1966, pp. 90-108).

Region or area	1965-70	1970-75	1975-80	1980-85
World total	2.3	2.2	2.1	2.0
More developed regions	1.3	1.3	1.3	1.3
Less developed regions	2.7	2.6	2.5	2.3
East Asia	2.0	1.8	1.7	1.5
Mainland region	2.1	1.9	1.7	1.6
Japan	1.0	1.0	1.1	1.1
Other East Asia	2.6	2.4	2.2	2.0
South Asia	3.0	3.0	2.8	2.5
Middle South Asia	3.0	3.0	2.7	2.5
South-East Asia	3.0	3.0	2.8	2.5
South-West Asia	3.1	3.1	3.0	2.8
Southern Arab countries	3.5	3.5	3.5	3.4
Europe	1.3	1.3	1.2	1.2
Western Europe	1.3	1.3	1.3	1.3
Southern Europe	1.3	1.3	1.3	1.3
Eastern Europe	1.2	1.1	1.1	1.1
Northern Europe	1.3	1.3	1.3	1.3
USSR	1.2	1.2	1.3	1.3
Africa	3.1	3.1	3.1	3.1
Western Africa	3.2	3.2	3.2	3.2
Eastern Africa	3.1	3.1	3.1	3.1
Middle Africa	2.9	2.9	2.9	3.0
Northern Africa	3.2	3.2	3.2	3.0
Southern Africa	2.7	2.7	2.8	2.8
Northern America	1.4	1.3	1.3	1.3
Latin America	2.7	2.6	2.5	2.4
Tropical South America	2.8	2.7	2.6	2.4
Middle America (mainland)	3.1	3.1	2.9	2.8
Temperate South America	1.8	1.7	1.6	1.6
Caribbean	2.4	2.3	2.2	2.1
Oceania	1.7	1.7	1.7	1.7
Australia and New Zealand	1.4	1.4	1.4	1.4
Melanesia	2.9	2.9	2.8	2.8
Polynesia and Micronesia	2.9	2.6	2.4	2.4

TABLE 2. GROSS REPRODUCTION RATES, 1965-85

Source: United Nations: World population prospects as assessed in 1968, op. cit., tables A.2, p. 66, and A.7, p. 133.



FIGURE 3. FREQUENCY DISTRIBUTION OF 136 COUNTRIES BY LEVELS OF GROSS REPRODUCTION RATE, 1965-70

Source: United Nations: World population prospects as assessed in 1968, op. cit., and related tables.

as in some of the smaller Latin American countries and small islands off Africa, but not to declines in South Asian countries, including such demographic giants as India, Indonesia and Pakistan, or in sub-Saharan African countries. For Africa, the average gross reproduction rate, which was estimated at 3.1 for 1965-70, was projected unchanged up to 1980-85 by the United Nations projections made in 1968. Furthermore, it is reasonably anticipated that between 1970 and 1985 the gross reproduction rate will rise by 0.1 or 0.2 points in some African countries, including Liberia, Portuguese Guinea, Mozambique, Zaire, Congo, Cameroon and Equatorial Guinea, generally as a result of improvements in maternal health.¹ Likewise, in South Asia, which in 1970 contained 31 per cent of the total world population, the gross reproduction rate is estimated at 3.0 for 1965-70 and is expected to remain at this level for 1970-75.

The most interesting question, therefore, is whether any substantial downward trend in fertility has now begun in the less developed regions. Unfortunately, not all statistics are accurate, and the decrease from an

¹ United Nations: World population prospects as assessed in 1968, op. cit.

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average rate of about 44 per 1,000 in 1950-55 to about 41 per 1,000 in 1965-70 indicated in table 1 results partly from an assumption that there may have been a rather significant decline in the birth rate in the large population of the People's Republic of China¹, and when account is taken of reductions in infant mortality and the consequent survival of more children, it is clear that the modified population age structure can also produce a small decrease in the crude birth rate without any substantial decrease in fertility levels in the reproductive age groups of the population.

Again, a significant decline in fertility has been documented hitherto only for a small minority of the populations of the less developed regions, such as those of Hong Kong, Sri Lanka, Mauritius, Réunion, Tunisia, Costa Rica and Trinidad and Tobago. The question of when aggregate national fertility will decline in such demographic giants as India and Indonesia remains unanswered. In these vast countries, a strong force of demographic inertia still opposes any changes in modes of life, including reproductive behaviour, despite the introduction of extensive family planning programmes promoted and funded by their governments and aided by international organisations.² In this connection, a most interesting demographic exercise would be to assess the impact of organised family planning programmes on the decline in fertility in different cultures and value systems and then to forecast when and how rapidly the breakthrough to an incipient substantial decline can occur.³

Age patterns of fertility

Another interesting feature of fertility is the variation in its age patterns with different general levels of fertility, different regions and, possibly, different cultures. The Population Division of the United Nations has recently constructed the first preliminary tables of regional

¹ United Nations: World population prospects as assessed in 1968, op. cit., table A.9.

² At the same time, the population of such demographic giants is often characterised by a degree of ethnic, linguistic and religious heterogeneity which normally creates formidable barriers to the smooth transmission of new ideas and know-how. A notable exception, however, is China, which has recently experienced a rapid decline in fertility, despite the enormous size of its population.

³ Current knowledge of fertility and family planning is still surprisingly deficient and inadequate for the study of this kind of problem. The findings of some past studies have led to the development of the "threshold" hypothesis, which holds that improving economic and social conditions are not likely to have much impact on fertility in less developed countries until a certain threshold level of development is achieved, but that once this level is attained, fertility is likely to decline spontaneously and decisively. See United Nations: *Population bulletin of the United Nations, No. 7—1963*, op. cit., pp. 148-151. Various scholars have attempted to elaborate further upon or to modify the "threshold" hypothesis, with particular reference to the inclusion of the new dimension of population policies and action programmes. To what extent such policies and programmes, regardless of the amount of effort and investment involved, will be able to change patterns and modes of human reproductive behaviour in the forthcoming decade nevertheless remains to be seen.

model fertility rates which can give model age-specific birth rates and model distribution of total fertility rates by age group of women ¹, for various levels of gross reproduction rate, mean ages of child-bearing and reproductive age ranges. Since these model fertility rates were originally based on empirical data, some of the rates are used here as a kind of regional average of age patterns of fertility for each major geographical area.

Table 3 shows the percentage distribution of total fertility rate by age of women in nine continents or smaller areas for the respective levels of gross reproduction rate currently observed. From this table one will note, first of all, that there are marked relationships between gross reproduction rates and the age-related distribution of total fertility rates. As a general rule, the higher the gross reproduction rate, the higher the percentages of total fertility rate for the categories of women under 20 and over 35 years of age. Conversely, the lower the gross reproduction rate, the larger are the proportions of the total fertility rate among the age groups 20-24, 25-29 and 30-34, which are considered the prime childbearing ages. In the model age-specific birth rates corresponding to the model percentage distribution of the total fertility rate, variations are much smaller in the age groups 20-24, 25-29 and 30-34 than in the remaining age groups (under 20, 35-39, 40-44 and 45-49).

In this analysis, Japan presents an extraordinary case of heavy concentration of reproductive activity in the age group 25-29, which contributes exactly 50 per cent to total fertility. It is an interesting demographic phenomenon that in recent years some East Asian countries with similar cultural patterns have begun to mirror this highly concentrated child-bearing pattern. Generally, age patterns of fertility are closely related to age patterns of nuptiality. The relatively late marriage pattern prevalent in East Asia probably helps to account for this exceptional concentration of fertility in a particular age group in Japan.

Age structure

A sharp difference exists between the composition of the population by age groups in the more developed and the less developed regions, as appears from the percentages shown in figure 4. Because of generally low birth rates in the past two decades, the more developed regions have a much smaller proportion of children (0-14 years) than do the less developed regions. On the other hand, the proportion of older persons

¹ A measure of the frequency of child-bearing among women in a given age group is provided by the number of births in a calendar year per 1,000 women in the given age group at the middle of the year. This measure is known as the age-specific birth rate. If the age-specific birth rates of a given population are plotted on a chart with age on the horizontal axis, they form a bell-shaped curve, which can be called the age curve of fertility. The total fertility rate is obtained by summing each age-specific birth rate.

	Gross	Fertility distribution by women aged:					Total		
Major areas 1	reproduction - rate	15-19	20-24 25-29 30-34 35-39 40-44 45-49	45-49	rate				
Sub-Saharan Africa	3.1	16.0	24.5	22.1	17.5	11.9	6.4	1.6	100.0
Arab countries	3.4	8.0	21.7	24.9	21.7	15.0	7.3	1.4	100.0
Asia	2.5	5.6	21.4	26.6	23.3	15.4	6.7	1.0	100.0
Europe (North-West)	1.1	3.6	25.7	30.8	23.6	12.5	3.6	0.2	100.0
Europe (East)	1.1	3.4	29.7	34.9	21.9	8.4	1.6	0.1	100.0
Europe (South)	1.3	7.5	22.9	26.7	22.3	14.0	5.8	0.8	100.0
Northern America	1.2	7.9	29.6	29.8	20.2	9.6	2.7	0.2	100.0
Latin America	2.6	9.3	24.1	25.4	20.6	13.4	6.1	1.1	100.0
Japan	1.0	1.0	23.1	50.0	20.5	4.7	0.6		100.0

TABLE 3. GROSS REPRODUCTION RATES AND PERCENTAGE DISTRIBUTION OF TOTAL FERTILITY RATE BY AGE GROUPS OF WOMEN, AROUND 1970

¹ The areas listed here have been chosen for the purpose of this article and do not correspond to the United Nations classification of world regions shown in table 2.

Source: Estimated by the Population Division, United Nations.

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FIGURE 4. PERCENTAGE BREAKDOWN OF THE POPULATION BY THREE BROAD AGE GROUPS, 1970

Source: Population Division, United Nations.

(65 years and over) is markedly greater in the former than in the latter. It follows that the burdens of child rearing and education in the less developed regions are much heavier, while in the more developed regions greater and still growing needs exist as regards the care of the elderly.

The broad age span from 15 to 64 years coincides approximately with that of full working capacity. A "dependency ratio" is often calculated, relating the numbers aged under 15, and 65 and over, to every 100 persons in the "working" age groups. The figures shown in figure 4 correspond to a dependency ratio of 73 per 100 for the world, 57 for the more developed regions and 81 for the less developed regions.

Urbanisation

A rapid and radical change in population distribution over space, closely associated with the transition from agriculture to other economic activities, is now in progress throughout the world. The migration from rural settlements to urban settlements, from small towns to big cities and from big cities to their suburbs involves far larger numbers than do international migration and migration between different regions of the same country. It has been estimated that in the single year 1960 there was a net transfer of 16 million persons from the rural to the urban settlement category, mostly through migration but in part through the reclassification as urban of areas previously designated as rural. Of these 16 million persons, 7 million lived in the more developed and 9 million in the less developed regions. It is probable that such transfers have since continued on an even larger scale.

Between 1950 and 1970 the world's urban and rural population is estimated to have grown as indicated in figure 5. The figures imply an



Source: Estimated by the Population Division, United Nations.

average annual rate of growth of 2.3 per cent for the urban population of the more developed regions and 4.6 per cent for that of the less developed regions; in the latter the rural population grew at an annual rate of 1.6 per cent, whereas in the former the rural population decreased slightly. As the rural population of the more developed regions includes growing numbers of suburban residents in the vicinity of large cities, the decrease in the population of villages and the open countryside has been even more pronounced.

Especially noteworthy has been the multiplication and growth of cities of 1 million or more inhabitants. There were 75 such cities in 1950 (51 in the more developed and 24 in the less developed regions) as against 162 in 1970 (83 and 79 respectively). The combined population of these cities was 174 million in 1950 (126 million in the more developed and 48 million in the less developed regions), and 416 million in 1970 (223 million and 193 million respectively). These bare statistics show that large and increasing proportions of the world's urban population are now concentrated in big cities, far surpassing in size anything that has been known hitherto. It is therefore not surprising that, next to the general problem of accelerated growth and notwithstanding the continuing growth of the rural population in many agaraian countries —with the consequent heavy pressure on scarce land resources—the population problems commanding greatest attention are those associated with large and fast-growing cities.